# Environmental Assessment

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## Upper York Creek
## Ecosystem Restoration Project
### Napa County, California

**U.S. Army Corps of Engineers,** San Francisco District, South Pacific Division
**City of St. Helena,** Napa County, California

# Executive Summary

**Project Description**

The Upper York Creek Ecosystem Restoration Project is located within the five-square mile York Creek drainage basin, to the northwest of the City of St. Helena, Napa County, approximately 60 miles north of San Francisco. York Creek is a tributary of the Napa River and flows in an easterly direction through a narrow canyon before joining the Napa River northeast of the city of St. Helena in Napa County, at an elevation of approximately 225 ft.

A 2005 Salmonid Habitat Report by the Napa County Resource Conservation District found that overall, York Creek is one of the most significant spawning and rearing streams for steelhead within the Napa Basin. Specifically, the upper reaches of York Creek offer excellent rearing and spawning habitat, and creating access to these areas would greatly benefit the overall steelhead population. York Creek has also been designated as critical habitat for threatened Central California Coast steelhead by the National Marine Fisheries Service.

The Upper York Creek Dam (Upper St. Helena Dam) has been identified as a significant obstacle to passage for steelhead in the threatened Central California Coast Evolutionary Significant Unit. The removal or breeching of Upper York Creek Dam would open approximately 2 miles of suitable upstream habitat for steelhead.

The proposed project would remove the majority of Upper York Creek Dam and the accumulated sediment, restore York Creek from just below the dam to just above the sediment basin, and restore roughly 2 acres of aquatic and riparian habitat with native vegetation. The proposed project would meet the following objectives: (1) Improve fish passage for the for steelhead in the York Creek watershed by reconnecting spawning, rearing, and migratory aquatic habitat from downstream of the dam to approximately 2 miles upstream; (2) reduce future downstream habitat degradation and fish kills caused by uncontrolled sediment releases; (3) restore approximately 2 acres of riparian and riverine habitat at and above Upper York Creek Dam and; (3) provide aquatic and riparian migration and dispersal connectivity for fish and wildlife populations through the project site.

**Preferred Project Alternative**

The preferred project alternative is Alternative 2B: Small Notch, as it maximizes the fish passage objective while removing the least amount of dam possible, maximizing slope stability. This is the least-cost, environmentally sound, alternative and meets all 4 project objectives. Conceptually, Alternative 2B was designed to provide aquatic passage for the 1% storm event and to remove the least amount of the dam based on the early assumption that this could provide for higher levels of slope stability with the fewest geotechnical

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measures in place. Alternative 2B would provide for a total channel width of 23 feet. Because the determined width for the restored creek is 23 feet, this alternative does not allow for a floodplain terrace.

In general, Alternative 2B includes the following: (1) removal of approximately 72% of the earthen dam structure; (2) backfilling the spillway with dam material for stabilization; (3) removal of approximately 95% of the accumulated sediment from behind the dam; (4) construction and restoration of York Creek from just below the dam to just above the sediment basin with a slope of approximately 5%; (5) restoration of roughly 2 acres of aquatic and riparian habitat with native vegetation and; (6) use of native plants for erosion control and site stabilization.

Alternative 2B is the geotechnically favored alternative as this alternative appears to be the most stable of all alternatives.

This EA found no significant negative environmental impacts to the project area with the favored alternative.

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# UPPER YORK CREEK ECOSYSTEM RESTORATION
# NAPA COUNTY, CALIFORNIA
# ENVIRONMENTAL ASSESSMENT

## 1.0 PURPOSE AND NEED FOR ACTION

### 1.1 Proposed Action

The U.S. Army Corps of Engineers, San Francisco District (Corps), and the City of St. Helena, California, the project's non-Federal sponsor, propose to remove or modify Upper York Creek dam and appurtenances, remove accumulated sediment, and restore the local ecosystem structure in order to improve fish passage for the federally listed steelhead (Oncorhynchus mykiss), to reduce the potential for future downstream sediment releases and fish kills, and to restore approximately 2 acres of degraded riparian and riverine habitat surrounding Upper York Creek Dam to a more natural condition.

Upper York Creek dam has been identified as a significant obstacle to passage for steelhead in the threatened Central California Coast (CCC) Evolutionary Significant Unit. Under the current conditions, York creek is known to be one of most significant spawning and rearing streams for steelhead within the Napa River Watershed Basin for the CCC steelhead. The removal or breeching of Upper York Creek Dam will open approximately 2 miles of suitable upstream habitat for steelhead trout.

Because the project involves a Federal action, and because no categorical exclusion applies for this type of action, Corps regulations and the National Environmental Policy Act and require preparation of this Environmental Assessment (EA). This EA addresses the direct and indirect environmental effects the proposed action may have upon the human environment.

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### 1.2 Study Authorities and Cost Sharing

The Water Resources Development Act is one of nine legislative authorities under which the Corps of Engineers is authorized to plan, design, and construct certain types of water resource or ecosystem restoration projects of limited scope and complexity, without additional Congressional authorization. These authorities are called the Continuing Authorities Program (CAP).

This report was prepared as an interim/final response to the study authorization contained in Section 206 of the Water Resources Development Act (WRDA) of 1996 (Public Law 104-303), as amended, which reads as follows:

"(a) The Secretary may carry out an aquatic ecosystem restoration and protection project if the Secretary determines that the project – (1) will improve the quality of the environment and is in the public interest; and (2) is cost-effective…"

The City of Saint Helena is responsible for providing 35% of the First Cost of implementing the Recommended Plan or separable element. These costs include pre-construction engineering and design, and construction of the ecosystem restoration features including monitoring and adaptive management. The non-Federal sponsors shall also provide 100 percent of the costs for lands, easements, rights-of-way, utility or public facility relocations, and dredged or excavated material disposal areas that are required for implementation or operation and maintenance of the project.

### 1.3 Need for Proposed Action

Upper York Creek Dam, which is approximately 50 feet high and 140 feet long, has been identified by National Oceanic and Atmospheric Administration (NOAA) Fisheries as forming a completely impassable barrier for the federally listed steelhead, blocking them from approximately two miles of upstream migration, spawning and rearing habitat. The dam also blocks access and dispersal patterns for resident fish and other aquatic wildlife (i.e. amphibians, other, fresh water shrimp, turtles, aquatic invertebrates, etc) to suitable aquatic habitat above and below the dam. The presence of the dam and reservoir creates an ecological barrier to fish and wildlife species that live within the creek. Removal of the dam would restore the natural connectivity of the riverine habitat(s) and would allow fish and wildlife populations to disperse and migrate naturally migrate though their natural habitat range.

The riparian and aquatic habitat in the project area has been compromised for over 100 years due to the presence of the dam and reservoir. Riparian habitats immediately upstream and downstream of the project are comprised of lush riparian habitat, whereas the project site riparian habitat is sparse and limited. It is believed that a restored aquatic and riparian corridor through the project site would better support native populations of riparian and aquatic wildlife species by providing increased canopy, cover, foraging, and shelter habitat.

Approximately two acres of aquatic and riparian habitat above Upper York Creek Dam have been destroyed due to the dam and sediment accumulation. The reservoir was originally dug for water supply purposes and had a 49,511 cubic yard storage capacity. Since construction of the dam, the reservoir has captured an estimated 1,000 to 1,500 cubic yards of sediment per year, and during high rainfall years, such as the winter of 2005-2006, as much as 5,000-10,000 cubic yards of sediment can be deposited behind the dam. Today, the original creek bed is buried beneath 17 to 29 feet (approximately 28,100 total cubic yards) of accumulated sediment and the reservoir no longer has water storage capacity. An accidental, unexpected, and/or sudden release of this sediment threatens downstream riverine habitat.

According to a California Department of Fish and Game (DFG) letter dated July 30, 1992, accidental sediment releases have occurred in 1965, 1973, 1975, and 1992. In each incidence, “dense anaerobic sediments, high in toxic hydrogen sulfide, were released from the dam and deposited in pools and riffle areas downstream, quickly suffocating and

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burying all fish and aquatic invertebrates within a mile or more of the dam" (DFG, July 30, 1992).

Most recently, the 1992 catastrophic accidental release resulted in a silt discharge "within the stream bed from the face of the dam to a point where the Napa River joins the stream" (DFG, July, 1992). The total distance of impact was approximately 2.5 to 3 miles long. The depth of silt deposits varied, the heaviest deposits, up to 18 inches deep, just below the dam and continuing downstream for about 0.5 miles, then gradually thinning until only a light covering of fine silt was deposited at the confluence with the Napa River (DFG, July 1992; DFG Aug 1992). Removal of the accumulated sediment, coupled with removal or breaching of the dam to allow for natural sediment transport, could permanently reduce the threat of downstream sediment release and aquatic organism kills in the future.

**1.4 Previous Environmental Documents**

The following reports were reviewed as a part of this study:

City of St. Helena, July 2002, Initial Study-Proposed Mitigated Negative Declaration for the York Creek Dam Removal & Stream Restoration Project

Department of Water Resources (DWR), October 2001. California Reg-Legged Frog Field Survey Results and California Freshwater Shrimp Habitat Assessment.

DWR. March 2002. Revegetation and Monitoring Plan for the York Creek Dam Removal and Stream Restoration Project.

DWR, July 2002, Biological Assessment for the York Creek Dam Removal and Stream Restoration Project

DWR November 2002. Initial Study for the York Creek Diversion Modification Project.

Ecotrust, and FONR. 2001. Results of hankin-Reeves standard uncalibrated O. mykiss survey of Napa River tributaries.

ENTRIX, INC. November 27, 2002. York Creek Physical Baseline Assessment Report.

Napa County, California, July 2002, Proposed Mitigated Negative Declaration for the York Creek Dam Removal and Stream Restoration Project

Hanson Environmental, Inc. 2000. Assessment of Potential Upstream Passage of Anadromous Salmonids at the City of St. Helena Dam Site on York Creek.

Innovative Technical Solutions, Inc. December 2003. Final Report, HTRW Assessment, Upper York Creek Ecosystem Restoration Project.

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Napa County Resource Conservation District (RCD). October 2005. Central Napa River Watershed Project: Salmonid Habitat Form and Function.

St. Helena, City of. July 2002. Initial Study/Proposed Mitigated Negative Declaration for the York Creek Dam Removal and Stream Restoration Project.

St. Helena, City of. January 2004. Final Environmental Impact Statement for the City of St. Helena York Creek Diversion Modification Project.
Stillwater Sciences, 2002. Napa River Basin Limiting Factors Analysis. http://www.swrcb.ca.gov/~rwqcb2

## 1.5. Project Area and Location

The Upper York Creek Ecosystem Restoration Project is located within the five-square mile York Creek drainage basin, to the northwest of the City of St. Helena, Napa County, approximately 60 miles north of San Francisco (See Figure 1.1). Currently this area is represented by the Honorable Lynn Woolsey.

York Creek is a tributary of the Napa River and flows in an easterly direction through a narrow canyon before joining the Napa River northeast of the city of St. Helena in Napa County, at an elevation of approximately 225 ft.

### 1.5.1 Napa River Watershed

The Napa River watershed covers an area of approximately 426 square miles, and is contained on three sides by mountains to the north, west, and east. Running through the center of the watershed on the valley floor, the Napa River drains 48 major tributaries and numerous smaller ephemeral streams on its 55 mile path from the headwaters of Mt. St. Helena in the Mayacamas Mountain range to the San Pablo Bay. Along this route the river winds through varied landscapes of forested mountain slopes, vineyards, urban areas, open pasture, industrial zones, grasslands, marshes, and brackish estuary (NCRCD, 2005).

The Napa River basin is known to contain 27 species of freshwater fish, 14 of which are native and 13 exotic species that have been intentionally or accidentally introduced (Stillwater Sciences, 2002; Moyle, 2002). Historically the basin likely supported three salmonid species: chinook salmon, steelhead, and coho salmon; coho salmon are considered extirpated within the basin. Chinook salmon have been sporadically reported in the Napa River since the 1980's; however no data on run size, timing, or origin have been collected (Pers. comm. J. Emig, 2000). In 2003 and 2004, significant numbers of fall-run chinook salmon were documented in the Napa River and several tributaries (NCRCD, 2005).

In terms of population size and geographic distribution, steelhead are the most significant salmonid species within the watershed, but the Napa River steelhead populations are

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greatly reduced from historical levels. It is estimated that as recently as 100 years ago the Napa River watershed supported a population of approximately 8,000 adult steelhead.

**Figure 1.1**

The current steelhead population is unknown due to a lack of quantitative data, but recent basin wide surveys estimate the population to be between 200 and 1,000 adult steelhead (Stillwater Sciences, 2002; EcoTrust, 2001). In August 1997, NOAA Fisheries listed steelhead as a threatened species in Napa County. Spawning adult steelhead are documented each year by landowners and agencies, and most tributaries to the Napa River appear to be well seeded with juveniles (Ecotrust, 2001). Despite reduced populations, the Napa River watershed is considered one of the most significant anadromous fish streams within San Francisco Bay (Leidy et al., 2005) (NCRCD, 2005).

### 1.5.2 York Creek Watershed

The upper, and larger, part of the York Creek Watershed is located in unincorporated areas of the county, while the lower and smaller portion of the basin lie within the city limits of St. Helena. The watershed is sparsely populated mountainous terrain with urbanization accruing downstream of the existing dam area. The watershed is almost

entirely privately owned, and vehicle access exists via Highway 29 (Main Street), and Spring Mountain Road in St. Helena. (NCRCD, 2005)

York Creek, a tributary to Napa River, drains a watershed of approximately 4.4 square miles, originating in the California Coastal Range on the western side of the Napa Valley watershed and ending at the confluence with the Napa River northeast of St. Helena. Elevations range from about 220 feet at the confluence with the Napa River to 2,160 feet in the headwater areas.

Redwoods and mixed conifer forest dominates the riparian corridors in the upper watershed. Mixed hardwood forest and vineyards cover much of the remaining watershed with urban and built up areas in the lower reaches.

### 1.5.3 Project Site

The 2.1-acre project site is located at York Creek Dam (St. Helena Upper Dam) and Upper Reservoir, in York Creek Canyon, approximately 1.25 miles northwest of the city of St. Helena. At an elevation of 570 feet, the earthen dam was built by the city circa 1900 and is composed of approximately 12,670 cubic feet of material that came from soil excavated to create the three-acre Upper Reservoir. The 50-foot-high, 140-foot-long structure once impounded water to form the reservoir, which had a 10-million-gallon storage capacity and was used for municipal water supply. The City of St. Helena (City) maintains the only pre-1914 appropriative water rights, however, use of the reservoir has since been abandoned due of sedimentation.

Both sides of the dam are faced with basaltic fieldstone riprap. A six-foot-diameter steel intake pipe is located immediately behind the upstream side of the dam and extends vertically down 26 feet to a stone culvert. This culvert is 175 feet long and 3 feet in diameter, and leads to an outlet at the base of the dam's downstream side. The dam features two concrete spillways, one built simultaneously with the dam, and the other constructed in 1933. The original spillway is located on the south side of the dam, whereas the second and larger side channel concrete spillway is located adjacent and parallel to Spring Mountain Road. Below, Figure 1.2 is a conceptual diagram of the project location. Upper York Creek Dam, Upper York Creek Reservoir, the spillway and Spring Mountain road are shown.

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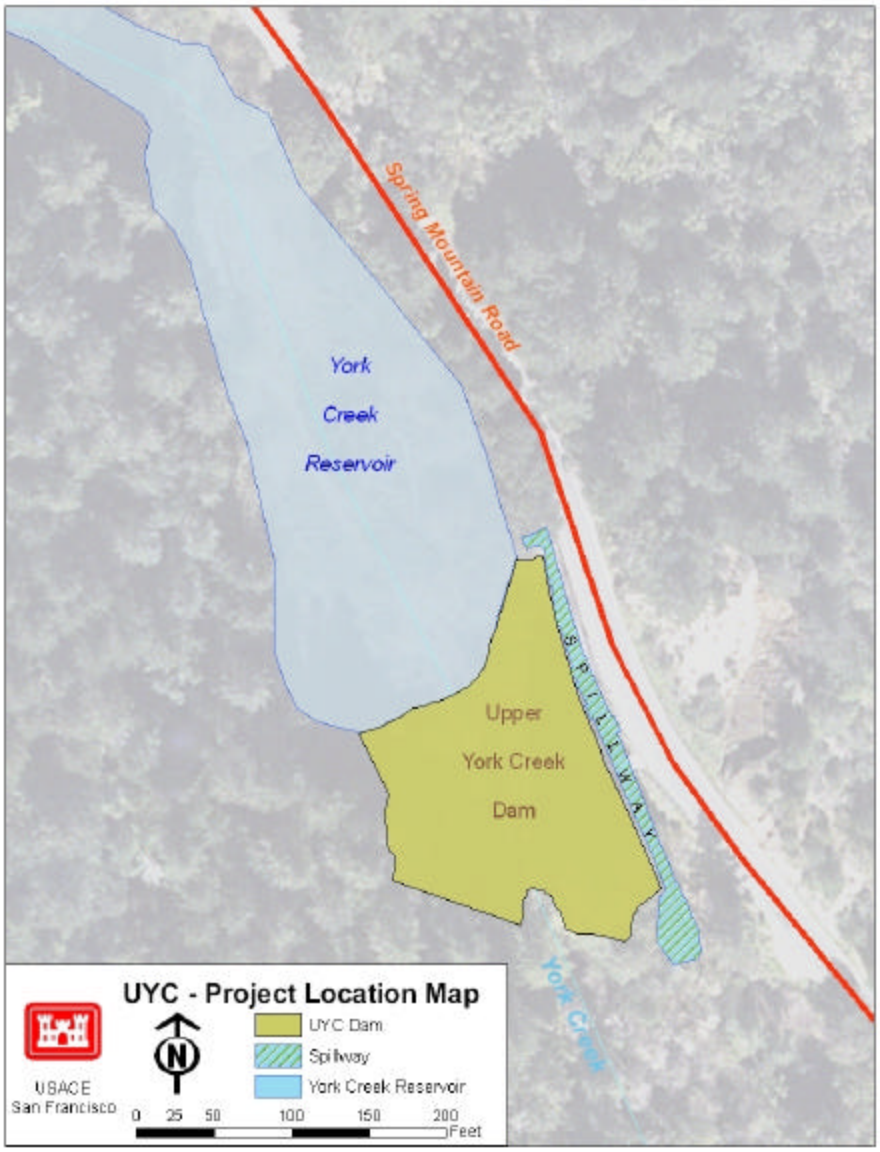


**Figure 1.2**

### 1.6 Organization of this Environmental Assessment

Section 1.0 defines the project area and location and the need for the proposed action. Section 2.0 presents the regulatory setting for environmental compliance. Proposed project alternatives are listed and defined in Section 3.0. The affected environment and changes expected in the study area, assuming an ecosystem restoration project is not built as a result of this study, are discussed in Section 4.0, while Section 5.0 discuses the Recommended Alternative. Impacts of constructing each Action Alternative are discussed in Section 6.0. Section 7.0 presents the agencies and entities consulted for this project, 8.0 provides a Bibliography and 9.0 a list of preparers.

## 2.0 ENVIRONMENTAL COMPLIANCE

The Corps must comply with all applicable Federal environmental laws and regulations, including the following.

**Clean Water Act (33 United States Code 1251-1376)**
Section 404 of the Clean Water Act establishes a permit program administered by the Army Corps of Engineers. This act regulates the discharge of fill material into waters of the United States, including wetlands. Discharge of dredge or fill material into an aquatic system is allowed only if there is no practical alternative that would have a less adverse impact. The Corps does not issue itself a Section 404 permit but it does the analysis to assure that the projects is compliant..

Section 401 of the Clean Water Act states that applicants for a Federal permit allowing activities that may result in a discharge to navigable waters or their tributaries must obtain state certification that the discharge complies with other provisions of the Clean Water Act, and will not violate State and Federal water quality standards. The Regional Water Quality Control Boards administer the certification program in California.

**National Environmental Policy Act (42 United States Code 4321 et seq.)**
The National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental impacts of their discretionary activities and disclose potential impacts to the public. NEPA requires all federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts.

The purpose of this EA is to meet NEPA requirements for the Upper York Creek Ecosystem Restoration Project.

**Federal Endangered Species Act (16 United States Code 1531-1543)**
The Federal Endangered Species Act of 1973 provides for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 7 of the act requires federal agencies to insure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat of these species.

The U.S. Fish and Wildlife Service and NOAA Fisheries maintain a list of threatened, endangered, and candidate species, as well as species of concern. Appendix B provides the currently listed species that might occur in the project area according to the agencies listed above. Section 5.0 of this report describes why this project is not likely to adversely affect these species and will likely be beneficial to them. This document shall serve as the Biological Assessment for this project.

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**Migratory Bird Treaty Act (16 United States Code 703)**
The Migratory Bird Treaty Act protects and regulates the taking of migratory birds. It sets seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs.

Section 6.0 discusses possible impacts and mitigations for migratory bird species.

**National Historic Preservation Act (16 United States Code 470)**
The National Historic Preservation Act requires federal agencies to evaluate the effects of federal discretionary actions on historical, archeological, and cultural resources or historical resources eligible for listing in the California Register of Historical Resources. At the federal level, the Office of Historic Preservation carries out reviews under Section 106. This is coordinated through the State Historic Preservation Officer (SHPO).

Section 6.0 discusses potential Cultural Resources impacts and mitigation.

**California Environmental Quality Act (Public Resources Code 21000 et seq.)**
The California Environmental Quality Act (CEQA) applies to actions directly undertaken, financed, or permitted by State lead agencies, and establishes state policy to prevent significant and avoidable damage to the environment, and requires public agencies to consider the effects of their actions. It requires all public agencies to disclose the environmental impacts of its projects to the public through appropriate environmental documentation and to mitigate negative environmental impacts. The City of St Helena will fulfill their responsibility to comply with CEQA via their Environmental Impact Report (EIR).

Section 6.0 discusses potential Cultural Resources impacts and mitigation.

**California Endangered Species Act (Fish and Game Code 2050 et seq.)**
The California Endangered Species Act requires mitigation for impacts to state-listed endangered, threatened, and candidate species. The Act mandates that state agencies should not approve projects which would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy, and requires State lead agencies to consult with the California Department of Fish and Game (CDFG) during the CEQA process. CDFG is required to issue a written finding as to whether a project would jeopardize listed species and to specify reasonable and prudent alternatives that would avoid jeopardy.

Section 6.0 of this report describes why this project is not likely to adversely affect these species and will likely be beneficial to them.

**Streambed Alteration Agreement (Fish and Game Code 1601 et seq.)**
CDFG code section 1600 requires state and local government agencies to notify the agency before beginning construction projects which would divert, obstruct or change the natural flow or bed, channel or bank of any river, stream, or lake. Preliminary notification and project review generally occurs during the environmental process. CDFG Code

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section 1601 requires project proponents to consult with the California Department of Fish and Game, and CDFG Code section 1602 requires the Department and the project proponent. reach agreement prior to the start of the proposed project. When an existing fish or wildlife resource may be adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a streambed alteration agreement.

The Corps has been coordinating with Fish and Game throughout the planning process. Contractors must obtain all necessary permits before the start of construction, including a 1600 permit from CDFG.

**Magnuson-Stevens Conservation and Management Act**

The 1996 amendments to the Magnuson-Stevens Conservation and Management Act set forth a number of new mandates for the National Oceanic and Atmospheric Administration (NOAA) Fisheries, regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The concept is similar to the critical habitat under the Endangered Species Act. The measures that are recommended by NOAA Fisheries of other agencies are advisory as opposed to being mandatory.

None of the species covered under this act are found in Upper York Creek.

**Native Plant Protection Act (Fish and Game Code 1900 et seq.)**

The Native Plant Protection Act requires State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. The Act prohibits the taking of listed plants from the wild and requires notification of CDFG at least 10 days in advance of any change in land use.

Section 6.0 of this report describes why this project is not likely to adversely affect these species and will likely be beneficial to them.

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## 3.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

### 3.1 No Action

The No-Action alternative is presented as a baseline for evaluating the effects of the Action Alternatives. Under the No-Action alternative, the Corps would take no action to remove the dam or perform any stream restoration work. Leaving York Creek Dam in its current configuration would not achieve the project goal of improving fish passage, nor would it reduce the City's liability for "take" of steelhead pursuant to the Endangered Species Act or improve water quality. The potential for sediment release and fish mortality would remain.

### 3.2 Action Alternatives.

A group of six Action Alternatives were formulated for the Upper York Creek Project. Due to engineering constraints or the cost associated with the solution, several of these alternatives were removed from the list. The remaining options were reorganized and evaluated, resulting in several additional alternatives being removed from the list (see Chapter 3 of the DPR). The remaining alternatives are shown in Table 3.1 below.

**Table 3.1 - Final Array of Action Alternatives**

| Final Alternative | Description of Alternative |
|---|---|
| **No-Action** | No ecosystem restoration measures would be implemented |
| **Alternative 1: Complete Removal** | Remove dam and spillway |
| **Alternative 2B: Small Notch** | Minimum Hydrologic Passage (i.e. 23 foot wide hydrologic corridor) |
| **Alternative 3: Fish Ladder** | Fish Ladder and notch dam to the streambed |

All alternatives include various levels of accumulated sediment removal, dam material removal, and revegetation. The revegetation plans for all alternatives would be similar, as they all would require revegetation of approximately 2 acres of disturbed area. The primary difference in the revegetation plans would be that Alternative 1 is designed with a flood plain terrace while Alternative 2B and 3 are not.

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### 3.2.1 Alternative 1: Full Dam Removal

Alternative 1 is designed to be the most complete removal of the dam. The entire earthen dam would be removed and the right wall of the spillway, when looking upstream, would be removed. This would provide for a total channel width of 53 feet. Because the determined width for the restored creek is 23 feet, this alternative could have up to a 30 foot floodplain terrace.

In general, Alternative 1 includes the following:

- removal of the entire earthen dam;
- removal of all of the accumulated sediment from behind the dam;
- construction and restoration of York Creek from just below the dam to just above the sediment basin with a slope of approximately 5%;
- restoration of roughly 2 acres of aquatic and riparian habitat with native vegetation and;
- use of native plants for erosion control and site stabilization.

### 3.2.2 Alternative 2B: Small Notch

Conceptually, Alternative 2B was designed to provide aquatic passage for a 1% storm event and to remove the least amount of the dam based on the early assumption that this could provide for higher levels of slope stability with the fewest geotechnical measures in place. Alternative 2B would provide for a total channel width of 23 feet. Because the determined width for the restored creek is 23 feet, this alternative does not allow for a floodplain terrace.

Alternative 2B is the geotechnically favored alternative as this alternative appears to be the most stable of all alternatives.

In general, Alternative 2B includes the following:

- removal of approximately 72% of the earthen dam structure;
- backfilling the spillway with dam material for stabilization;
- removal of approximately 95% of the accumulated sediment from behind the dam;
- construction and restoration of York Creek from just below the dam to just above the sediment basin with a slope of approximately 5%;
- restoration of roughly 2 acres of aquatic and riparian habitat with native vegetation and; use of native plants for erosion control and site stabilization.

### 3.2.3 Alternative 3: Fish Ladder

Alternative 3 is designed to notch the dam as necessary to construct a concrete fish ladder through the notch and over the dam. The suggested fish ladder is a step-pool/weir design through the existing dam site.

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In general, Alternative 3 includes the following:

- Notching the dam as necessary to construct a concrete fish ladder through the notch and over the dam;
- Removal of approximately 52% of the earthen dam structure;
- Backfilling the spillway with dam material for stabilization;
- Removal of approximately 37% of the accumulated sediment from behind the dam;
- Construction and restoration of York Creek from above the dam and fish latter upstream through the lowered sediment basin;
- Restoration of roughly 2 acres of aquatic and riparian habitat with native vegetation and; Use of native plants for erosion control and site stabilization

Table 3.2 lists the basic differences between the project alternatives, including the differences in total width of the excavated channel, as well as the amount of dam and sediment material removed for each alternative.

**Table 3.2 - Comparison of Alternatives**

| Alternative | Width of Total Excavated Channel (in feet) | Constructed Stream Width (in feet) | Constructed Bench Width (in feet) | **Dam Material** | | | **Reservoir Material** | |
|---|---|---|---|---|---|---|---|---|
| | | | | Dam Material Removed (Cubic Yards) | Percentage of Dam Removed | Removal of Spillway | Reservoir Material Removed (Cubic yards) | Percentage of Accumulated Reservoir Material Removed |
| **No Action** | NA | NA | NA | NA | NA | NA | NA | NA |
| **1** | 53 | 23 | 30 | 16,284 | 100% | Right Wall Removed | 28,100 | 100% |
| **2B** | 23 | 23 | 0 | 11,777 | 72% | No | 26,637 | 95% |
| **3** | 23 | 23 | 0 | 8,431 | 52% | No | 10,372 | 37% |

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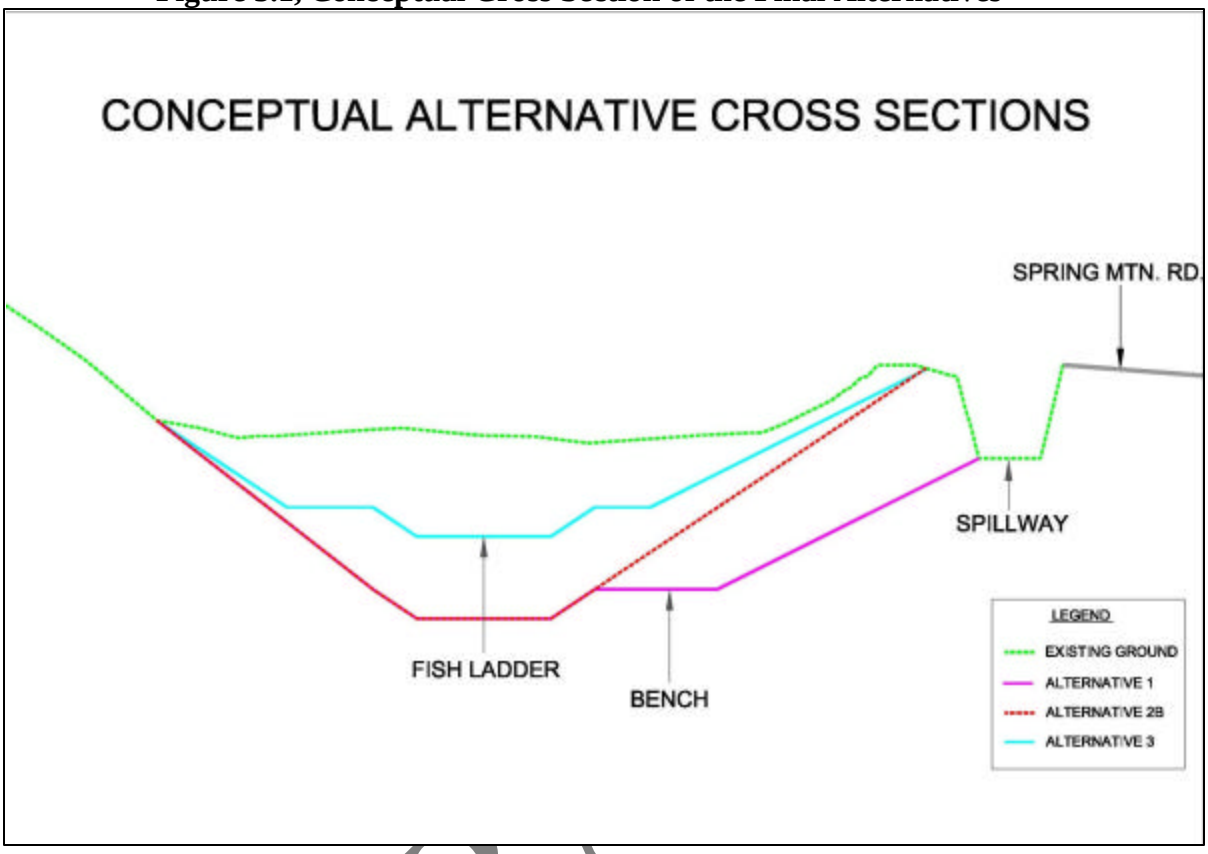
Figure 3.1, on the following page, shows a conceptual cross section of the final alternatives.

**Figure 3.1, Conceptual Cross Section of the Final Alternatives**

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# 4.0 AFFECTED ENVIRONMENT AND WITHOUT PROJECT CONDITIONS

This section describes changes expected in the study area if an ecosystem restoration project is not built as a result of this study. This description of the assumed without-project conditions serves as the baseline against which the Action Alternatives will be evaluated. Future without-project conditions are likely to be the same as current existing conditions.

## 4.1 Physical Factors

### 4.1.1. Topography, Geology, and Soils

Elevations within the entire York Creek watershed range from 3,300 feet above sea level in the upper watershed, to 25 feet above Mean Sea Level at the confluence of Upper York Creek and Napa River. The 44 square mile York Creek drainage includes four main topographic areas, with associated land uses. The topography of the Northeast portion, the headwaters of the watershed, is mountainous, with sharp relief and many steep slopes which are primarily undeveloped forest, although rural vineyard development has occurred on rounded ridge tops. The middle portion of the watershed has steep forested side slopes with rural residential uses and small vineyards. The downstream (Southwestern) portion of the lower watershed consists of an alluvial apron that gently slopes from the foothills down to the center of the Napa Valley. This is a narrow zone within, and fringing, the City of St. Helena, with dense residential land use, commercial, and some agricultural-industrial uses. The portion of York Creek crossing Napa Valley proper is dominated by agricultural-industrial and vineyard land uses, with some related commercial activities. The valley width at the reservoir in the project site is broader than either the upstream headwaters or downstream, but is still only about 200 feet wide.

#### *4.1.1.1 Project Site Geology*

The project area lies at an elevation of 800 feet within the Coastal Ranges geomorphic province of California. The Coastal Range is characterized by a series of nearly parallel mountain ranges and alleviated valleys. The geologic units are composed of a heterogeneous mixture of metamorphic and sedimentary rock types. Perlitic ryholite, Serpentinite, sheared shale, and sandstone, a large landslide, and a fault are all mapped in the vicinity of the site.

The project site includes York Creek Dam, an earthen dam, a concrete spillway and the sediment accumulated behind the dam in what was once a reservoir. Topographic surveys of York Creek Dam and the Upper Reservoir were performed in 2001 and 2002 by Albion Surveys. Additional cross section surveys were undertaken by the San Francisco District in February 2005 to obtain cross section data from portions of York Creek not affected by the sediment accumulation behind the dam. The cross sections are characteristic of a more natural creek environment and provide information on pool and riffle characteristics. See the Geotechnical Appendix for more detailed information.

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Soil types in the dam generally appear to be sandy, sily, silty sand and clayey sand mixed with gravel and cobbles. The Huntington Supplemental Geotechnical Investigation describes the dam embankment as consisting primarily of soft to medium stiff sandy clays and clayey sands, with some clayey gravel layers.

Explorations performed by Treadwell and Rollo indicate the road/pavement section at the dam is underlain by fill and then serpentinite at relatively shallow depths. The concrete spillway and left abutment of the dam are also underlain by serpentinite. The existing highway cut in the tuft is standing at about a 0.4 Horizontal (H) to 0.5 H to 1 Vertical (V) slope. The existing highway cut in the serpentine is about a 0.6 to 0.7 H to 1V slope.

Accumulated sediment behind the dam is estimated between 17 and 29 feet deep. Test pits in the sediment encountered predominately fine-grained material with coarse-grained materials consisting of sand and gravel below (USACE Geotechnical Appendix, 2006).

The future without-project conditions for topography, geology, and soils are expected to remain relatively unchanged for the foreseeable future. It is believed the dam provides limited lateral support to the spillway and Spring Mountain Road, which in turn tends to minimize ground movement in the area. However, the build up of trapped sediments upstream of the dam could cause increased lateral earth pressures to the upstream face of the dam that may result to instability of the downstream slope, overtopping of the dam and accidental releases of sediments during high storm events. Geotechnical slope stability analysis and deformation was performed and is described in the Geotechnical Appendix as well as in section 5.1.1.1 Environmental Consequences of the Proposes Action: Topography, Geology, and Soils of this report.

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### 4.1.2 Water Resources

#### *4.1.2.1 York Creek*

The headwaters of York Creek originate in the California Coast Range. The creek flows in an easterly direction through a narrow canyon, paralleling Spring Mountain Road, before joining the Napa River northeast of St. Helena. The origin of the creek is at an elevation of approximately 2,200 feet and it drops to an elevation of approximately 225 feet at its confluence with the Napa River. The drainage basin upstream of the dam covers 2.48 square miles. The basin area above the Napa River and York Creek confluence covers 5.0 square miles.

York Creek is a second order stream and has approximately 7.24 miles of blue line stream, according to the USGS Calistoga and St. Helena 7.5 minute quadrangle maps. Overall, York Creek is one of the most significant spawning and rearing streams for steelhead within the Napa Basin (NCRCD, 2005). Lower reaches of the creek have been adversely affected by riparian encroachment, levee construction, road building, and channel modifications (i.e. straightening) while middle reaches are accessible and

suitable for steelhead spawning and rearing. Middle reaches contain high quality habitat and sustained flow. The uppermost reach of York Creek offers excellent rearing and spawning habitat, but is currently isolated from potential migration by the York Creek Dam.

Without the project, the creek will continue to be isolated from potential steelhead migration.

#### *4.1.2.2 Upper York Creek Dam*

The Upper York Creek Dam, located 1.25 miles northwest of St. Helena, was constructed in approximately 1900 by the city of St. Helena. Originally used for the municipal water supply, York Creek Dam is an earthen dam made up of 12,670 cubic feet of fill material, most likely excavated from the reservoir area, 50 feet tall and 140 feet long. At its highest point, the crest of the dam is 620 feet in elevation, with a maximum thickness of 43 feet. The crest width varies between 11 and 27 feet.

The dam's side slopes are approximately 2.2 Height to 1.0 Vertical (2.2H:1.0V) upstream and 1.6H:1V downstream. The upstream and downstream faces of the dam appear stable in areas that have not been affected by overtopping events. Both sides of the dam are faced with basaltic fieldstone riprap. The intake and outlet pipes are located at the center of the base of the dam. A keystone arched stone culvert, surrounded by roughly cut stone masonry abutments, is located at the center of the outfall on the downstream side of the dam. The original concrete spillway is located on the south side of the dam, from the top of the structure to the creek bed below. A second and larger side channel concrete spillway is located adjacent and parallel to Spring Mountain Road.

The right abutment upstream of the dam stands on slope angles that vary from about 0.8 H to 1.4 H to 1 V. The right abutment in the immediate vicinity of the dam is standing at about 0.8 to 0.9 H to 1 V. The abutment slope immediately above the dam is at about a 1.4 H to 1V slope.

The City of St. Helena maintains the only pre-1914 appropriative water rights for York Creek. The York Creek channel impacted by the current dam is known to provide steelhead spawning and rearing habitat. NOAA Fisheries has recognized that York Creek Dam is a complete barrier to upstream fish migration.

Without the project, the dam will remain in place and continue to bar upstream fish migration. Although the dam is over 100-years old, there has not been a dam-failure investigation done at this project site. If the dam is left in place, a future unforeseen dam failure could cause flood damages downstream.

#### *4.1.2.3 Upper Reservoir*

The area formed behind the dam is known as the Upper Reservoir. Though now abandoned as the result of sedimentation, the reservoir originally covered three acres and

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had a 10,000,000 gallon storage capacity. Currently, the reservoir is completely filled with sediment. The City has excavated the reservoir once since 1990.

The reservoir does not provide flood protection downstream and provides a very minor capacity for storage. This storage produces a minor delay for downstream flows in small storm events. Once the standpipe is overwhelmed and/or plugged, the reservoir fills until the water level reaches the spillway. At this point, the flows into the reservoir are the same as the flows out of the reservoir; there is no longer a downstream flow difference.

The existing dam traps almost the entire bed load and some of the suspended sediment from the basin upstream of the dam. It is estimated that approximately 28,000 cubic yards of accumulated sediment is trapped in the Upper Reservoir and that an additional 1300 cubic yards continues to accumulate annually. The City of St. Helena is required to ensure no more sediment releases occur, or they could face continued fines for incidental takes attributed to uncontrolled release of sediment.

According to Jonathon Goldman, the City's Director of Public Works and City Engineer, approximately 10,000 cubic yards of sediment was removed from behind the dam in 1992-1993. Based on this figure, a rough calculation approximates that 16,000 cubic yards of sediment have accumulated in the following 12-year period. Using this information, it is estimated that approximately 1,333 cubic yards of sediment is accumulating annually.

Without the proposed project, sediment will continue to collect in the Upper Reservoir, which will have to be excavated on a regular basis in the hope of avoiding an uncontrolled sediment release. It is assumed the City will undertake necessary maintenance steps to ensure sediment releases do not occur. Maintenance is likely to include the removal of approximately 1,000 cy of sediment per year. This maintenance will reduce, but not eliminate, the risk of unwanted sediment release. It is possible a release could happen during a high flow effect despite regular excavation, endangering fish and other aquatic organisms.

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#### *4.1.2.4 Lower Reservoir*

The Lower York Creek Reservoir is located about one-half mile down Spring Mountain Road from the project area and is currently utilized as an untreated water supply to meet a portion of the City's irrigation and other municipal uses. The Lower Reservoir has a capacity of approximately 200 acre-feet.

The future without-project conditions for the Lower Reservoir are expected to remain relatively unchanged for the foreseeable future

#### *4.1.2.5 Hydrology and Hydraulics*

The average rainfall in the proposed project area is 35 to 40 inches per year. There are no flow gages on York Creek. To compensate for this, mean daily flow records were obtained from Nevada Creek, Adams Creek, Sulphur Creek, Dry Creek, and Santa Rosa

Creeks. Based on the above data, mean daily discharges were developed for York Creek. The flow duration curves will be used for fish ladder and low flow analysis.

The Corps' Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) computer program was used to develop event discharges. The software was used to model the precipitation-runoff process in the watershed and obtain peak flow rates. The peak flow rates were checked against a model done by the California Department of Water Resources' (DWR) Technical Release 55 (TR-55).

Existing and project conditions were evaluated using the Corps' Hydrologic Engineering Center's River Analysis System (HEC-RAS) computer model. HEC-RAS models were used to determine channel velocities and water surface elevations. For existing conditions, channel velocities will range from 5 to 14.5 feet per second (fps) during a 1% event discharge.

The without-project conditions for hydrology and hydraulics are expected to remain relatively unchanged for the foreseeable future.

#### *4.1.2.6 Project Area Geomorphology*

York Creek is in reasonably good condition from a geomorphic perspective upstream and downstream from the dam site. Pools, riffles, meanders, and gravel bars are typical of streams that have been subject to limited human impacts. Past history of sediment removal from the site and recent history indicate that gravel supply for any restoration project is adequate.

The future without-project conditions for geomorphology are expected to remain relatively unchanged for the foreseeable future, however channel changes downstream of the dam caused by sediment retention behind the dam have not yet been evaluated.

**Stream Classification**

The York Creek Physical Baseline Assessment Report, prepared by ENTRIX, Incorporated on November 27, 2002, identified seven stream reaches for York Creek. These seven reaches help describe locations with relatively similar and uniform channel conditions or controlling processes. The stream reaches reflect natural and major land use patterns. Human infrastructure (i.e., dams, diversions, bridges) are used as reach boundaries when they are near or coincide with natural factors controlling geomorphic and biological processes. See Table 4.1 York Creek Stream Reaches* on the following page.

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**Table 4.1 York Creek Stream Reaches***

| Reach | Boundary | Estimated Length (ft) | Land Use |
|---|---|---|---|
| 1 | Napa River Confluence and the Napa Valley Railroad (NVRR) | 2,400 | Agricultural with related industrial/commercial buildings |
| 2 | Hwy 29 and NVRR Bridge | 2,300 | Industrial |
| 3 | Hwy 29 and Spring Mountain Road | 1,5500 | Urban and Commercial |
| 4 | Spring Mountain Road to the downstream pump station | 2,000 | Residential |
| 5 | Pump station and the diversion structure | 3,000 | Forested – mixed oak and conifer |
| 6 | Diversion structure and the upstream end of York Creek Dam Reservoir | 3,700 | Forested - Conifer |
| 7 | Upstream end of the reservoir to the headwaters. | 8,500 | Steep forested area with significant rural residential and vineyards. |

*ENTRIX, 2002

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#### *4.1.2.7 Sediment Transport and Downstream Flooding*

Under existing conditions, sediment transport capacity is highest in the steep sloped canyon reaches. Sediment transport capacity is lost as York Creek enters the Napa Valley, where the land is less steep and has less capacity to move sediment in the downstream direction. Approximately 28,100 cubic yards of accumulated sediment is trapped behind the dam. Since construction of the dam, it has captured an estimated 1,000 to 1,500 cubic yards of sediment per year. During high rainfall years (2005-2006) as much as 5,000-10,000 cubic yards of sediment can be deposited behind the dam (USACE, 2006).

Under existing conditions, there have been flood events along the lower portions of York Creek, where the Creek flows across the Napa Valley. In this area, York Creek is mostly channelized and does not have enough channel capacity to handle large storm events. The most recent event was during the New Year's Storm of 2005-2006. During this storm, York Creek exceeded channel capacity and flooded a Beringer Winery warehouse parking lot, vineyards, and the Culinary Institute's dorms.

Without-project conditions would include the continued accumulation of sediment in the Upper Reservoir as well as continued flood events in the lower reaches of York Creek. The City is expected to occasionally remove portions of the accumulated sediment to prevent downstream releases. The City has also committed to establishing a baseline condition for sediment transport, hydrological, and flooding conditions for York Creek downstream of the project site. The City has assumed the responsibility for this need and is working with PCI to evaluate pre-project baseline conditions.

## 4.2 Climate

Napa Valley enjoys weather similar to that of the Mediterranean, with a year round average high temperature of 71 degrees Fahrenheit (F). Morning low temperatures average 47F and afternoon highs average 75F. The during the gentle winter "rainy season", December through February, is gentle. It rains an average of 8 days per month during the winter months, typically, there are only 22 rainy days during the other 9 months.

Precipitation in the project area watershed averages approximately 35 to 40 inches (89 to 102 cm) annually (Lambert and Kashiwagi 1978). St. Helena receives an average of 35 inches of rain per year, most of which falls between November and March.

California's climate may change over the next century due to global warming, which could create warmer temperatures and more severe droughts and floods, resulting in a wide range of impacts. By 2100, temperatures in California could increase by about 5°F (California Environmental Protection Agency, 2000). Appreciable increases in precipitation are projected at 20-30 percent in spring and fall, with somewhat larger increases in winter (California Environmental Protection Agency, 2000). Winter runoff most likely would increase, while spring and summer runoff would decrease. More intense precipitation could increase flooding. Because evaporation is likely to increase with a warmer climate, it could result in lower river flows and lower lake levels, particularly in the summer. Groundwater could also be reduced.

California is an ecologically diverse state and climate change could have an impact on many of California's species and ecosystems. Many species are adapted to specific climate conditions, and an increase in temperatures could force changes in species, geographic extent, and health and productivity. The ranges of many species of plants and animals are restricted and fragmented. Without natural corridors to allow migration, isolated species could be limited in their ability to adapt to climate change. Plant and animal species near the borders of their ranges are likely to be most affected. In addition, climate change could create more opportunity for the establishment and spread of weeds and pests. All these factors can add to existing stresses on resources caused by other influences such as population growth, land-use changes, and pollution.

Future without-project climate conditions may be affected by global warming and climate change.

## 4.3 Visual Resources/Aesthetics

The habitat surrounding York Creek Dam is primarily an undeveloped riparian and mixed conifer forest. Behind the dam is the sediment basin, which is not representative of local habitat types but provides a visible area of open space within the canyon. The spillway is

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not fully visible from Spring Mountain Road and is illustrated with graffiti. The future without-project conditions are unlikely to change.

Without-project conditions for the Upper York Creek Dam are expected to remain relatively unchanged for the foreseeable future.

### 4.4 Cultural Resources

The proposed project area involves one of two components of a "historic property," together known for this purpose as the York Creek Upper Reservoir Dam and Lower Diversion Structure. Historic property is the federal term for cultural resources that retain integrity and meet the eligibility criteria for listing in the National Register. These two historical resources were evaluated by an architectural historian contracted by the City of St. Helena, who determined they were eligible for listing in the National Register of Historic Places (National Register) under Criterion A. These findings were documented in the Historical Resources Evaluation Report Historical Resources Evaluation Report for the Proposed Removal of an Earthen Dam and Diversion Structure on York Creek near the City of St. Helena in Napa County, California, Bright Eastman, Anthropological Studies Center, Sonoma State University.

Without-project conditions mean the historic property known as the York Creek Upper Reservoir Dam and Lower Diversion Structure would remain relatively unchanged for the foreseeable future.

### 4.5 Water Quality

York Creek drains into the Napa River approximately 3 miles downstream of Upper York Creek Dam. The Regional Water Quality Control Board (RWQCB) has designated the Napa River as an impaired water body, pursuant to section 303(d) of the Clean Water Act, because of excessive levels of nutrients, pathogens and sedimentation/siltation. Total Maximum Daily Load (TMDL) action plans are currently being developed to address water quality problems in the Napa River. Medium priority has been placed on nutrients from agriculture, as well as pathogens from agriculture and urban runoff/storm sewers. High priority has been placed on sedimentation and siltation from agriculture, construction/land development, and urban runoff/storm sewers in the Napa River watershed (ENTRIX 2002). Accidental sediment discharges over the years have had temporary but catastrophic negative affects on water quality in and around the project area, leading to downstream kills of fish and other aquatic organisms.

Future without-project conditions may improve, depending on the action plans currently being developed. Sedimentation will most likely continue to be a problem.

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## 4.6 Air Quality

Air quality in the United States is governed by the Federal Clean Air Act (CAA) and is administered by the US EPA. In addition to the federal requirements, the State of California imposes more stringent regulations under the California Clean Air Act (CCAA).

California is divided into fifteen air basins on geographical lines. These divisions are used to regionally manage the air resources of the state. York Creek Dam is located within the San Francisco Bay Area Air Basin and within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). Napa Valley is located within the Napa Valley sub-region of the Bay Area Air Basin, and is bordered by relatively high mountains with an average ridgeline of 2,000 feet, with some peaks reaching 4,000 feet.

A strong up-valley wind frequently develops during warm summer afternoons, drawing air in from the San Pablo Bay. Down-valley drainage often occurs during the evening. The air pollution potential in the Napa Valley could be high if there were sufficient sources of air contaminants nearby. Summer prevailing winds can transport ozone precursors northward from the Carquinez Strait sub-region, effectively trapping and concentrating the pollutants when stable conditions are present. The local upslope and downslope flows created by the surrounding mountains may also re-circulate pollutants already present, contributing to buildup of air pollution. High ozone concentrations are a potential problem to sensitive crops such as wine grapes, as well as to human health (BAAQMD 1996).

Both the US EPA and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants which avoid specific adverse health effects of each pollutant.

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**Table 4-2. Federal & State Ambient Air Quality Standards**

Ppm = parts per million ug/m3 = micrograms per cubic meter Source: Donald Ballanti, Meteorologist

| Pollutant | Averaging Time | Federal Primary Standard | State Standard |
|---|---|---|---|
| Ozone | 1-Hour<br>8-Hour | 0.12 ppm<br>1018 ppm | 0.09 ppm<br>-- |
| Carbon Monoxide | 1-Hour<br>8-Hour | 9.0 ppm<br>35.0 ppm | 9.0 ppm<br>20.0 ppm |
| Nitrogen Dioxide | Annual<br>1-Hour | .05 ppm<br>-- | --<br>0.25 ppm |
| Sulfur Dioxide | Annual<br>24-Hour<br>1-Hour | 0.03 ppm<br>1.14 ppm<br>-- | --<br>0.05 ppm<br>0.5 ppm |
| PM 10 | Annual<br>24-Hour | 50 ug/m3<br>150 ug/m3 | 30 ug/m3<br>50 ug/m3 |
| PM2.5 | Annual<br>24-Hour | 15 ug/m3<br>65 ug/m3 | --<br>-- |
| Lead | 30-Day Average<br>3-Month Average | --<br>1.5 ug/m3 | 1.5 ug/m3<br>-- |

The federal CAA and the CCAA of 1988 require that the CARB designate air basin within the state where federal and state ambient air quality standards are not met as "non-attainment areas". The Bay Area is currently a non-attainment area for ozone and PM10. (IS/Mitigated Negative Declaration Carpy House Parking Lot, July 2006)

**4.7 Noise**

Spring Mountain Road traffic traveling between St. Helena and Santa Rosa is currently the main source of noise at the project site. The general Napa County unincorporated area is quiet, noise levels range from 20 – 25 decibels (dBA). The human voice is about 70 dBA. Harmful decibel levels occur over 80 dBA and require hearing protection. Lawn mowers and leaf blowers produce 80 dBA (Napa County General Plan, 1990).

Future without project noise conditions are expected to be affected by traffic, population, tourism, land use, and other factors.

**4.8 Land Use**

York Creek lies within the boundaries of Napa County, with the lower portion of the Creek lying within the St. Helena City Limits. From its inception St. Helena has served as a rural agricultural center. Over the years, with the growth and development of the wine industry, the City has become an important business and banking center for the wine industry. Current land use in the York Creek watershed consists of forested open-space, agriculture (primarily viticulture), and residential. Vineyards have been developed throughout the watershed, but particularly on the valley floor near the confluence of York Creek and the Napa River, where two large wineries, Beringer and Krug, are located. Residential areas within the city limits occur primarily between Highway 12 (River Mile 1.0 of York Creek) and River Mile 1.75 of York Creek. Stevenson Junior High School is located south of the intersection of York Creek and Highway 12.

Land use in the vicinity of York Creek Dam and Upper Reservoir is designated as "Parks and Recreation" and land use in the vicinity of Dean York Lane is zoned as "Low Density Residential One Acre Minimum." Further downstream, in the vicinity of Highway 29, land use is zoned as either "Winery" or "Medium Density Residential." The York Creek corridor itself is designated as "Open Space."

The City of St. Helena has adopted a strict land use policy as part of its General Plan to discourage residential development on the outskirts of the City. The Urban Limit Line, designated in the General Plan, is intended "to discourage urban sprawl during the planning period 1993-2010" (Wallace Roberts and Todd et al. 1993). Residential areas within the city limits of St. Helena occur primarily between Highway 12, River Mile 1.0 of York Creek, and River Mile 1.75 of York Creek. Stevenson Junior High School is located south of the intersection of York Creek and Highway 12. Spring Mountain Road is a two-lane county road running adjacent to York Creek for nearly 2.5 miles, crossing the creek via three bridges. Several culverts carry water from unnamed tributaries that run under Spring Mountain Road into York Creek; three of the culverts empty into the Upper

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Reservoir of the York Creek Dam. Adjacent landowners have riparian rights to water in York Creek and divert water via pumps placed in the stream.

Future without-project land use conditions will be controlled by the General Plan and may be affected by population growth, tourism, and other factors.

### 4.9 Transportation and Utilities

Spring Mountain Road is a two-lane county road, maintained by Napa County, running adjacent to York Creek for nearly 2.5 miles and crossing the creek at three bridges. Spring Mountain Road is vulnerable to sliding into the creek unless it continues to be supported. It is currently supported by the spillway structure.

The Level of Service (LOS) for a road or intersection is a measurement that includes speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs. An A level represents virtually free-flow conditions, with unrestricted ability to maneuver in the traffic stream. Levels B, C, and D represent increasing levels of flow rate with correspondingly more interference from other vehicles in the traffic stream.

Spring Mountain Road's most recent traffic counts were completed in 1999. The Road currently operates at a LOS of A. Other roads in St. Helena are much more congested than Spring Mountain Road. Highway 29/Main Street in St. Helena has several intersections that operate at a LOS of D or lower. Vehicle access exists via Highway 29 (Main Street), and Spring Mountain Road in St. Helena. (NCRCD, 113).

Future without project conditions will be affected by population, tourism, traffic needs and other factors. Without stabilization, Spring Mountain road may slide into the creek, blocking traffic and cutting off access to a portion of the area. There is the potential for injury or loss of life to those using the road at the time of a slide.

Future without-project conditions will have no impact on utilities.

### 4.10 Hazardous, Toxic, and Radiological Waste

A Hazardous Toxic and Radiological Waste (HTRW) assessment was made at the project site. Hazardous waste criteria as defined by Total Threshold Limit Concentrations (TTLCs) and Soluble Threshold Limit Concentrations (STLCs) for metals and pesticides were not exceeded in samples of materials collected from the earthen dam or sediment bed, or in extracts of those materials. The TTLC for asbestos was exceeded in several samples of the earthen dam materials, but because the asbestos is naturally-occurring, California policy is that the materials would not be considered hazardous waste.

It is not anticipated that future without project conditions would have an affect on HTRW.

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## 4.11 Biological Environment

DWR's Environmental Services Office has carried out biological and cultural resource surveys in the vicinity of York Creek Dam and the masonry diversion structure. These surveys included, but were not limited to, protocol surveys for red-legged frogs, California freshwater shrimp, northern spotted owls, and sensitive plant species. DWR then prepared an Initial Study, which provides a thorough consideration of special-status species.

The full list of special-status fish and wildlife species that were considered for their potential to occur in the vicinity of the project area can be found in Appendix B. Only those species with reasonable potential to occur in the project vicinity are discussed in this EA.

This EA has included some species that are listed by the State of California but not the Federal Government.

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### 4.11.1 Vegetation

Mixed hardwood forest and vineyards cover much of the watershed, with urban and built up areas in the lower reaches. The watershed is almost entirely privately owned, and the Upper York Creek site is located in an area of typical Coastal Range riparian habitat. The project site comprises an area of approximately 2,000 square feet of riparian habitat, including both banks of the stream and about 87,000 square feet of upland habitat. Historically, the project site had extensive riparian habitat along the stream corridor and upland savanna. That habitat has been degraded by construction of the dam, operational errors and neglect, contributing to a large influx of sediment, which has had negative impacts on downstream habitat and water quality. Continued disturbance of the sediment inhibits woody native vegetation and favors weedy exotic vegetation. Lack of tree canopy shade increases the temperature of the stream.

In most places in the project area, the vegetation forms an actual forest, while in some areas the plants (largely species that normally are trees) are small enough to be regarded as large shrubs. There is a mixture of vegetation types, including montane hardwood-conifer, mixed chaparral, fresh emergent wetland, meadow, riverine, and lacustrine habitats. The hardwood-conifer type grades into chaparral on the drier, south-facing slopes, redwood trees grow in the more shaded areas, and wetlands occur in and around the reservoir area. Dominant tree species of the area include live oaks (*Quercus spp.*), bigleaf maple (Acer *macrophyllum*), California laurel (*Umbellularia californica*), hazel (*Corylus cornuta*), madrone (*Arbutus menziesii*), coast redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga menziesii*), and alder (*Alnus sp.*).

Without-project conditions are expected to remain as they are, or to continue to degrade.

#### *4.11.1.1 Habitat*

Habitat in the project vicinity is Valley Foothill Riparian and Riverine Aquatic. Riparian forest adjacent to a stream modifies the riverine habitat in the stream, producing what is known as shaded riverine aquatic cover within the broader category of riverine habitat. This habitat is essential to the viability of salmonids (salmon and trout) in the region. Riparian vegetation is found along most of the creek, consisting of both forest and scrub vegetation. This riparian scrub and forest vegetation is by far the most valuable wildlife habitat in the study area, being highly productive and very important for a great variety of birds. Those portions of the riparian vegetation which have dense vegetation at ground level are also good habitat for small terrestrial vertebrates such as lizards, salamanders, and rodents, as well as medium-sized mammals such as raccoons and opossums. Larger and more wide-ranging species such as bobcats and coyotes may utilize parts of the corridor. Ninety percent or more of the riparian forest in California has been lost, and the remaining riparian vegetation is considered a very important resource by the resource agencies (DWR 2002).

Riparian vegetation along the upper portion of Upper York Creek has been relatively undisturbed in many areas. In some areas where riparian vegetation has been removed it has come back as secondary growth. The south bank of the Creek below the dam in particular has some large redwood, bay and oak trees. Even though this is new growth, one of these trees is a fairly substantial redwood, 52 inches wide and 30 feet tall.

The project site comprises an area of approximately 0.05 acre of riparian habitat, including both banks of the stream. Historically, the project site had riparian habitat along the stream corridor and upland savanna. That habitat has been degraded by construction of the dam, operational errors and neglect, contributing to a large influx of sediment, which has had negative impacts on project site habitat and water quality. Continued disturbance of the sediment inhibits woody native vegetation and favors weedy exotic vegetation. Lack of tree canopy shade increases the temperature of the stream.

There are approximately 22 large trees on the project site. Without project conditions, these trees would remain in place. Without the project, riparian habitat is expected to remain in its present state.

#### *4.11.1.2 Threatened or Endangered Plants*

A list of special-status plant species with the potential to occur in the project area were consolidated from three sources: 1) USFWS Species List provided for project; 2) California Natural Diversity Database listings for occurrences within the project area (DFG, 2001b); and 3) the California Native Plant Society Inventory of Rare and Endangered Plants of California (DWR 2002). Twenty-seven species were included on the list of sensitive species for this project.

The project site was visited three times, on April 4, 2001, May 14, 2001, and June 25, 2001, by DWR botanist Mr. Harry Spanglet. Mr. Spanglet's visits covered the range of flowering times of special-status species. Mr. Spanglet surveyed the project area

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thoroughly on each visit, searching for special-status plants and compiling a list of all plant species observed on the site. His complete list of plant species found at the project site is in Table 4.3, below.

After considering elevation range and habitat requirements, two species were determined to have a reasonable probability of occurring in the project's riparian habitat below an 800 foot elevation, the California black walnut (*Juglans californica var. hindsii*) and Calistoga allocarya (*Plagiobothrys strictus*). Special efforts were made to find any plants of these species. No occurrences of sensitive species are recorded in the California Natural Diversity Database on the project site.

Threatened or endangered plants are expected to remain in their present state under without-project conditions, although there is the potential for special-status species to move into the project area or the immediate vicinity.

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**Table 4-3. Plant species surveyed at York Creek project sites April – June, 2001**

| Upstream of Reservoir | |
|---|---|
| *Alnus rhombifolia* | Alder |
| *Acer macrophyllum* | Bigleaf maple |
| *Aralia californica* | California aralia |
| *Fraxinus latifolia* | Ash |
| *Lithocarpus densiflorus* | Tanbark |
| *Pseudotsuga menziesii* | Douglas-fir |
| *Polypodium californicum* | California polypody |
| *Polystichum californicum* | California sword fern |
| *Polystichum imbricans ssp. Curtum* | Sword fern |
| *Rubus discolor*[1, 2] | Himalayan blackberry |
| *Sequoia sempervirens* | Coast redwood |
| *Toxicodendron diversilobum* | Poison Oak |
| **Upper Reservoir** | |
| *Alnus rhombifolia* | Alder |
| *Artemisia douglasiana* | Mugwort |
| *Brassica nigra* [1] | Black mustard |
| *Carex sp.* | |
| *Cicuta sp* | |
| *Cynoglossum occidentale* | Hound's tongue |
| *Equisetum arvense* | Horsetail |
| *Hedera helix* [1, 2] | English Ivy |
| *Hypericum perforatum* | St. John's wort |
| *Lemna sp* | Pondweed |
| | |
| *Melilotus alba* | White clover |
| *Melissa officinalis* | Lemon balm |
| *Mentha spicata* [1] | Spearmint |
| *Mimulus moschatus* | Monkey flower |
| *Oxalis corniculata* | Oxalis |
| *Quercus kellogii* | California black oak |
| *Rorippa nasturtium-aquaticum* | Watercress |
| *Rubus discolor*[1, 2] | Himalayan blackberry |
| *Salix laevigata* | Red willow |
| *Salix lasiocarpus* | Coyote willow |
| *Salix* sp | Willow |
| *Scirpus microcarpus* | Bulrush |
| *Typha latifolia* | Cattail |
| *Urtica dioica* | Stinging nettle |
| *Vinca major* [1, 2] | Periwinkle |

| Roadside | |
|---|---|
| *Briza maxima* [1] | Rattlesnake grass |
| *Bromus diandrus* [1] | Ripgut brome |
| *Bromus hordeaceous* [1] | |
| *Calycanthus occidentalis* | Spicebush |
| *Foeniculum vulgare* | Fennel |
| *Mimulus aurantiacus* | Monkey flower |
| *Pseudotsuga menziesii* | Douglas-fir |
| *Triteleia laxa* | Ithuriel's spear |
| Misc. exotic annual grasses [1] | |
| | |
| **Top of Dam** | |
| *Baccharis pilularis* | Coyote bush |
| *Cytisus striatus* | Broom |
| *Foeniculum vulgare* [1] | Fennel |
| *Juncus* sp | Rush |
| *Rubus discolor*[1, 2] | Himalayan blackberry |
| *Toxicodendron diversilobum* | Poison oak |
| *Umbellularia californica* | California bay laurel |
| *Vinca major* [1, 2] | Periwinkle |
| | |
| **Upland** | |
| *Arbutus manziesii* | Madrone |
| *Arctostaphylos sp.* | Manzanita |
| *Quercus agrifolia* | Coast live oak |
| *Umbellularia californica* | California bay laurel |

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### 4.11.2 Wildlife

The forest in the vicinity of the project sites provides habitat for numerous wildlife species typical of the California Coast Ranges. Common mammals include black-tailed deer, coyote, bobcat, raccoon, and skunks. Birds include a variety of raptors and songbirds. During site visits to the lower diversion structure restoration project, which, is located downstream of York Creek dam, DWR biologists observed red-tailed hawks, Cooper's hawks, turkey vultures and juvenile great horned owls, among other bird species, in the vicinity of Upper Reservoir.

The relatively cool, moist forest surrounding York Creek Dam and Upper Reservoir also provides suitable habitat for banana slugs, observed during several site visits, and Pacific giant salamanders, indicated by the observation of one dead adult in York Creek, upstream from Upper Reservoir, on November 19, 2001. The Upper Reservoir and a scour hole at the base of the York Creek Dam spillway contain numerous non-native bullfrogs. The signal crayfish is another non-native predator observed throughout York Creek and in the Upper Reservoir. (ENTRIX 2002).

Without the project, wildlife is expected to remain in its present state, although there is the possibility that it could become susceptible to invasive species.

#### *4.11.2.1 Threatened or Endangered Wildlife*

**Bats**

The following Species of Special Concern bats may occur in the vicinity of the York Creek Dam.

*Pacific Townsend's Big-eared Bat* (Corynorhinus townsendii townsendii)

It is not likely the Pacific Townsend's big-eared bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

*Fringed Myotis Bat* (Myotis thysanodes)

It is not likely the Fringed Myotis Bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

*Western Long-eared Myotis Bat* (Myotis evotis)

The Western Long-eared Myotis Bat may utilize the York Creek Dam site for roosting and foraging, as they prefer large trees and snags with exfoliating bark.

*Long-legged Myotis Bat* (Myotis volans),

The Long-legged Myotis Bat might utilize the York Creek Dam site for roosting and foraging, as they prefer large trees and snags with exfoliating bark.

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*Yuma Myotis Bat* (Myotis yumanensis)
It is not likely the Yuma Myotis Bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

*Western Mastiff Bat* (Eumops perotis)
It is not likely the Western Mastiff Bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

***Bat Without Project Condition Impacts***
Threatened or endangered bats are expected to remain in their present state under without-project conditions, although there is the potential for special-status species to move into the project area or the immediate vicinity.

**Birds**
Migratory song birds which may be found in the project area are protected by the U.S. Fish and Wildlife Service pursuant to the Migratory Bird Treaty Act (MBTA) of 1918

Several bird species considered State Species of Special Concern or federal species of concern have the potential to occur in the vicinity of York Creek and the project site. None of these Species of Special Concern or Federal Species of Concern were found at the project site during focused surveys for Northern Spotted Owls or during recent site visits.

*Northern Spotted Owl* (Strix occidentalis caurina)
A pair of Northern Spotted Owls in the upper York Creek watershed maintains a territory approximately one mile upstream from York Creek Dam. The owls have been monitored annually since 1995 by Mr. Ted Wooster, a biological consultant. The York Creek watershed is not located within a critical habitat unit for the Northern Spotted Owl, and according to a habitat analysis done for the Terra Springs Habitat Conservation Plan and Timber Harvest Plan, the area surrounding the York Creek dam structure is considered "Open, Non-habitat" for Northern Spotted Owls (Butler and Wooster 2001).

*Bald Eagle* (Haliaeetus leucocephalus)
The Bald Eagle is federally listed as a threatened species. Nesting sites are typically in large trees along shorelines in relatively remote areas (USFWS 1999). Nesting locations recorded in the California Natural Diversity Database nearest to the York Creek project site are Lake Berryessa, about 17 miles to the northeast in Napa County, and McCreary Reservoir, approximately 17 miles due north in Lake County. The most recent occurrence of nesting Bald Eagles at these locations was for two adults and one young observed at a nest on the southwest edge of McCreary Reservoir on April 2, 2000.
The California winter population of Bald Eagles has increased, with more than 1,000 wintering birds in the state during some years. Wintering sites are generally close to open water, in locations that offer good perch trees and night roosts (USFWS 1999). Wintering

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bald eagles are recorded in the California Natural Diversity Database from locations near Lake Hennessey, approximately 6.5 miles from the project site, and at Lake Berryessa. It is likely that eagles continue to use the sites for wintering.

The project site does not provide open water habitat for hunting or large trees that could be used by Bald Eagles for nesting or roosting. Bald Eagles have not been observed by DWR biologists during site visits to the area surrounding the project site or during focused surveys for other species even though other raptors have been observed in the vicinity of York Creek Dam and Upper Reservoir.

*Little Willow Flycatcher* (Empidonax traillii brewsterii)
The Little Willow Flycatcher is a state-listed endangered subspecies of bird that is also considered a federal species of concern. The species breeds from Tulare County north, along the western side of the Sierra Nevada and Cascades, extending to the northern California coast in the Klamath River basin. Little Willow Flycatchers prefer willow thickets, successional scrub, and brushy habitats in wet areas, pastures and mountain meadows. A qualified DWR biologist, Mr. Chris Lee, assessed the lower diversion structure project site on March 20, 2003 for Willow Flycatcher breeding habitat and determined that the site does not provide suitable nesting habitat for the species. It is possible, but unlikely, that the project area could be utilized by Willow Flycatchers as a potential migratory corridor.

***Bird Without Project Condition Impacts***
Threatened or endangered birds are expected to remain in their present state under without-project conditions, although there is the potential for special-status species to move into the project area or the immediate vicinity.

**Amphibians and Reptiles**

*California Red-legged Frog* (Rana aurora draytonii)
In 1999, the City of St. Helena hired Ibis Environmental Services to conduct a habitat assessment of the project site. Their report determined that the site contained suitable habitat for California red-legged frogs (Rana aurora draytonii) and noted that the Upper Reservoir contains suitable breeding habitat for red-legged frogs, and York Creek provides suitable dispersal, foraging, and refuge habitat. The U.S. Fish and Wildlife Service (USFWS) had formal surveys for red-legged frogs conducted by DWR in May and June 2001, following established protocols (USFWS 1997). Two daytime and two nighttime protocol surveys for red-legged frogs found no occurrences of the species (adults, metamorphs or tadpoles) and an abundance of bullfrogs (sub-adults) within the Upper Reservoir area. All bullfrogs were relatively small individuals, suggesting a reproducing population. Bullfrogs, an introduced species, predate on red legged frogs. They use the same habitat and eventually displace them. Habitat evaluation and reconnaissance-level surveys found that suitable red-legged frog habitat did not occur at the York Creek diversion structure.
*Foothill Yellow-Legged Frog* (Rana boylii)

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The foothill yellow-legged frog is a State Species of Special Concern found in rocky streams and moist meadows in most of Northern California west of the Cascade Range. Electrofishing surveys by the Department of Fish and Game (DFG) in September 2002 yielded one yellow-legged frog in York Creek between the diversion and York Creek Dam.

*The Western Spadefoot Toad* (Spea hammondii)
The Western spadefoot toad is a State Species of Special Concern usually found in grassland habitats, but the toad will also utilize valley foothill hardwood woodlands. Historically, the western spadefoot ranged from Redding to northwestern Baja California. In California, the species was found throughout the Central Valley, and in the Coast Ranges and coastal lowlands from San Francisco Bay to Mexico. It has been extirpated from many locations within this range. The species is found mostly below 3000 feet, but can occur up to 4500 feet. The average elevation of sites where the species still occurs is significantly higher than the average elevation for historical sites, suggesting that declines have been more pronounced in lowlands. This species has not been observed in the project area.

*The Northwestern pond turtle* (Clemmys marmorata marmorata)
The Northwestern pond turtle is a State Species of Special Concern that inhabits slow moving streams, ponds, lakes, and wetlands west of the Cascade and Sierra Nevada crest and also in the Coastal Ranges. The Northwestern pond turtle is found in quiet water and typically ranges in salinity content from fresh to brackish to seawater (Holland 1991). The habitat of the pond turtle ranges from California, where it is nearly extinct, up the West Coast through Oregon and Washington. In Oregon, the Western Pond Turtle is listed as a threatened species, with only about 2,000 remaining. This species has not been observed in the project area.

***Amphibian and Reptile Without Project Condition Impacts***
Threatened or endangered amphibians and reptiles are expected to remain in their present state under without-project conditions, although there is the potential for special-status species to move into the project area or the immediate vicinity.

**Fisheries and Aquatic Resources**

The Napa River basin is known to contain 27 species of freshwater fish, 14 of which are native and 13 are exotic species that have been intentionally or accidentally introduced (Stillwater Sciences, 2002; Moyle, 2002). It is likely the basin historically supported three salmonid species: chinook salmon, steelhead, and coho salmon; coho salmon are considered extirpated within the basin. Chinook salmon have been sporadically reported in the Napa River since the 1980's; however no data on run size, timing, or origin have been collected (Pers. comm. J. Emig, 2000). In 2003 and 2004, significant numbers of fall-run chinook salmon were documented in the Napa River and several tributaries (NCRCD, 2005)

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Streams of the York Creek Watershed system can be roughly divided into longitudinal reaches based on the fish species that occur in different stream reaches (Moyle 1976). The upper reaches of York Creek, from approximately the Highway 29 crossing, contain species and habitats characteristic of the Rainbow Trout Zone described by Moyle in 1976. Stream gradients of 3 percent or higher, with cold, oxygen saturated water, and shaded, undercut banks make the habitat here especially suitable for steelhead/rainbow trout (Oncorhynchus mykiss) and sculpin (Cottus spp.). Below the dam, channel habitat includes pools, riffles, and runs, which provide a resident fish habitat function. In contrast, the lower gradient portion of York Creek, from Highway 29 to the confluence with Napa River (Reach 1), is more typical of the California Roach Zone, characterized by intermittent surface flows during the summer, warmer water temperatures, and lower dissolved oxygen [Moyle 1976] (ENTRIX 2002).

***Steelhead Habitat***

Shaded riverine aquatic cover habitat is essential to the viability of salmonids (salmon and trout) in this region, providing valuable habitat diversity in the stream, and providing shading that is critical to maintaining suitable water temperatures for these fish. York Creek contains high quality spawning and rearing habitat and has been designated as critical habitat for threatened Central California Coast steelhead (NMFS 2000).

In 2005, J. Koehler conducted a systematic habitat assessment of York Creek, including the use of standardized California Department of Fish and Game stream inventory methods, and regular measurement of stream flow and temperature. Average monthly flows in 2003-2004 were consistently 1-3 cubic feet per second (cfs), and the average temperature varied from 43-71 degrees Fahrenheit. Mesohabitat composition was 20 percent pools, 41 percent riffles, and 27 percent flatwater. Nearly all potential spawning areas were considered suitable, and temperature monitoring indicates suitable conditions for steelhead trout. The report concludes that the upper reach of York Creek offers excellent rearing and spawning habitat for steelhead, and that measures to allow access would greatly benefit the overall steelhead population.

Flatwater habitat comprised 27 percent of the total length of the surveyed area, riffles 41 percent, and pools 20 percent. The pools were relatively shallow, with only 11 of the 62 pools having a maximum residual depth greater than 2 feet (NCRCD, 2005).

An embeddedness rating of one indicates good quality spawning substrate for salmon and steelhead. In total, 12 of the 61 pool tail-outs measured had embeddedness ratings of one or two, and 12 of the pool tail-outs had embeddedness ratings of three or four. None of the pool tail-outs had a rating of 5, which is considered unsuitable for spawning. Twenty three of the 66 measured pool tail-outs had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids, typically, steelhead are not limited by spawning gravel availability (NCRCD, 2005).

The mean shelter rating for pools was 58 and the shelter rating in the flatwater habitats was 26. A pool shelter rating of approximately 100 is desirable. Boulders are the dominant cover type in pools followed by root mass. (NCRCD, 2005).

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The percentage of right and left banks covered with vegetation was high, at 71 percent and 73 percent, respectively. Bank vegetation was most sparse in Reach 1 (NCRCD, 2005).

Very few suitable spawning areas are currently found in the immediate area below the dam. Suitable spawning habitat is limited, but more spawning sized substrate is available upstream of the reservoir than exists downstream of it.

***Steelhead Habitat Without Project Condition Impacts***

Without the proposed project, stream habitat is expected to remain as it is. However, should there be an uncontrolled sediment release, this habitat may be adversely affected.

***Aquatic Resources***

These fish of special concern, the Sacramento splittail (*Pogonichthys macrolepidotus*), Russian River tule perch (*Hysterocarpus traski pomo*) and longfin smelt (*Spirinchus thaleichthys*), are not found in the project site.

*Steelhead Trout* (Oncorhynchus mykiss)

In terms of population size and geographic distribution, steelhead are the most significant salmonid species within the watershed. The Federally listed Steelhead Trout occur in York Creek, which contains high quality spawning and rearing habitat. NOAA Fisheries listed steelhead as a threatened species in Napa County in August 1997. Napa River steelhead populations have been greatly reduced from historical levels. It is estimated that the Napa River watershed supported a population of approximately 8,000 adult steelhead as recently as 100 years ago. Although the current steelhead population is unknown due to a lack of quantitative data, recent basin wide surveys estimate the population to be between 200 to 1,000 adult fish (Stillwater Sciences, 2002; EcoTrust, 2001). Despite reduced populations, the Napa River watershed is considered one of the most significant anadromous fish streams within San Francisco Bay.

Surveys by the National Marine Fisheries Service (NOAA Fisheries), and DFG during the summers of 2000 and 2002 found juvenile steelhead in York Creek both above and below the dam. DFG indicated that steelhead are abundant in York Creek below York Creek Dam, while the *Oncorhynchus mykiss* occurring in the two miles of suitable habitat above York Creek Dam are considered a resident population of rainbow trout that could be related to steelhead in the drainage. There are no records of DFG stocking rainbow trout in the creek (J. Emig, DFG Region 3 Senior Fishery Biologist, pers. comm. 2001).

Rainbow trout and steelhead are the same species of fish; the two names reflect two distinct life history patterns. The name rainbow trout is used for the fish with a non-anadromous life history. Rainbow trout do not leave the stream to go to the ocean but spend their entire life in the stream. Anadromous forms of the trout can convert to resident populations when drought events or damming of rivers blocks their access to the ocean. Conversely, resident trout populations can become anadromous if ocean access becomes available (NCRCD, 2006).

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A snorkel survey of York Creek, conducted from June 29 through July 1, 2004, by J. Koehler, D. Chase, and C. Edwards found that York Creek had high to moderate densities of juvenile steelhead (yoy, 1+, 2+) and larger resident rainbow trout in most reaches. York Creek had the highest fish densities of all area streams surveyed, and is one of the most significant steelhead streams in the Napa Basin. Juvenile steelhead were observed primarily in reaches upstream of Highway 29, where year-round water is present. A few juvenile steelhead were observed in pools in Reach 1 during the habitat survey, but rearing habitat is severely limited.

*California Freshwater Shrimp* (Syncaris pacifica)
The California freshwater shrimp, listed as endangered, is endemic to the Napa Valley watershed but is not known to occur in York Creek (USFWS 1998). As noted in the *York Creek Dam Removal and Stream Restoration Project, York Creek, Napa County, California Red-Legged Frog Field Survey Results and California Freshwater Shrimp Habitat Assessment*, written by the California Department of Water Resources for the City of St Helena in October, 2001, the species is generally found in streams of low elevation (less than 116 meters) and low gradient (less than 1 percent), with undercut banks, exposed roots, overhanging woody debris, or overhanging vegetation. Habitat conditions considered "excellent" for the species include streams 30 to 90 centimeters in depth with exposed live roots along completely submerged undercut banks with overhanging vegetation.

Bill Cox, a DFG Fishery Biologist, surveyed York Creek for fishes in September 2000 and assessed the habitat suitability for California freshwater shrimp in the vicinity of the diversion structure. In his assessment, Mr. Cox states that the "stream was much too shallow, had much too high a gradient, and had essentially no undercut banks or overhanging vegetation to provide any habitat for the shrimp" (B. Cox, pers. comm. 2001). The results of Mr. Cox's habitat assessment were reported to the U.S. Fish and Wildlife Service (DWR 2001). The lower section of York Creek, where stream gradients might be more suitable for the species, is characterized by intermittent flow and going dry during the summer months, and therefore does not provide suitable habitat for the species.

***Aquatic Resources Without Project Condition Impacts***
The existing dam and reservoir blocks fish passage to spawning habitat for the federally listed CCC steelhead. Without-project conditions would mean the dam would continue to present an impassable barrier to steelhead migration into the upper reaches of York Creek, with the potential to lose the local steelhead population. In addition, the dam will continue to act as a barrier to sediment transport, sediment will continue to accumulate, and the threat of downstream sediment releases and fish kills will persist.

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## 4.12 Recreation

York Creek Dam provides very little opportunity for recreation. Spring Mountain Road may be utilized by bicyclists or people traveling to other recreational areas. The spillway structure itself is used by budding graffiti "artists" (Friends of the Napa River, 2006).

Future without-project conditions should have no impact on recreation in the area.

## 4.13 Socioeconomic Factors

### 4.13.1 Population

The project area is relatively unpopulated. As of January 1, 2005, the City of St. Helena encompassed an area of approximately 4 square miles, with a population of 6,006. There is adequate vacant and under-utilized land in the City to accommodate the maximum population projection of 6,389 by the year 2010, according to the City's General Plan. Future without project conditions should have no impact on the population.

### 4.13.2 Income

In 1999, the City's median household income was $58,902 and its per capita income was $31,971 (Census 2000 SF1, SF3, DP1-DP4)

The City's General Fund Budget is approximately $6.7 million and the City has an assessed valuation of $1,031,356,008.

Future without-project conditions should have no impact on income.

### 4.13.3 Public Services

Emergency Services and other non-emergency public services have the potential to be impacted by future without-project conditions, should Spring Mountain road slide into the creek. This slide could have the potential to cut off access to a portion of the area for the various public services.

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## 5.0 FINAL ACTION ALTERNATIVES AND RECOMMENDED PLAN

### 5.1. Final Action Alternatives

Of the final array of Action Alternatives, three have been carried forward. All of the final action alternatives involve varying levels of dam modification, removal of dam material, removal of accumulated sediment material, revegetation of approximately 2 acres, and channel restoration. Alternative 1 provides the greatest portion of dam removal, Alternative 2B provides for the removal of a "notch" through the dam, and Alternative 3 provides for the lowering of the dam and placement of a fish ladder over the remainder of the dam.

Reestablishment of fish passage upstream of Upper York Creek Dam is also common to all Action Alternatives. Alternatives 1 and 2B provide for a restored natural creek bed and Alternative 3 provides for a fish ladder aquatic passage over the lowered dam. It is estimated that Alternatives 1 and 2B would provide 100% effectiveness for upstream migrating steelhead whereas Alternative 3 would provide for 67-95% effectiveness. Alternatives 1 and 2B would provide for the most natural hydrologic and wildlife migration and dispersal corridor. These alternatives would allow fish and wildlife species to migrate and disperse though their historical aquatic and riparian habitat ranges.

All Action Alternatives provide for sediment removal. Alternatives 1and 2B provide for the removal of 95-100% of sediment and Alternative 3 provides for the removal of 37% of the sediment. The naturally restored creek for alternatives 1 and 2B also provides for the most natural sediment transport system in the future and thus eliminate the threat of an accidental accumulated sediment release. Alternative 3 reduces the threat of accidental sediment releases but does not eliminate it.

Riverine restoration in York Creek is most natural for Alternatives 1 and 2B, which would be constructed, as feasible, to flow through the historical channel. Alternative 3 would be constructed from the top of the fish ladder (over the dam) and through the remaining sediment basin. For Alternative 3, the channel would be 10-12 feet above the original channel bed.

All Action Alternatives provide for the revegetation of approximately two acres of disturbed area. Alternative 1 allows for a floodplain terrace that would be planted with native vegetation, while Alternative 2B and Alternative 3 do not allow for a terrace. Although floodplain terraces are not a natural feature to the upper York Creek watershed, the 100-year old reservoir has left an unnaturally wide open area at the project site and there was initial resource agency support for an increased floodplain terrace habitat through the project site. Alternative 1 provides this additional habitat whereas a cut slope with riprap would be necessary for the right-bank of Alternative 2B. Alternative 3 provides for the least amount of revegetation.

Construction activities for all Action Alternatives would occur from June to October during daylight hours, beginning after 8 AM and ending before sunset each day. Night

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work would not be allowed. Sediment hauling on Spring Mountain Road would be completed by October 15th coinciding with the end of the construction window for streams supporting salmonids.

Table 5.1, below, provide a summary of Environmental Quality Impacts.

**Table 5.1 Summary of Environmental Quality Impacts**

| Alts | Environmental Quality Impacts | | | | |
|---|---|---|---|---|---|
| | **Air Quality Impacts** | **Cultural Resources Impacts** | **Downstream Sediment Impacts** | **Noise Impacts** | **Road Truck Traffic Impacts** |
| **No-Action** | NA | NA | Low | NA | NA |
| **1** | Low Impact from Trucks and Large Equipment | Moderate: Structure would be removed. | Low: To be further investigated in Design | Low | Moderate |
| **2B** | Low Impact from Trucks and Large Equipment | Moderate: Structure would be modified | Low: To be further investigated in Design | Low | Moderate |
| **3** | Low Impact From Trucks And Large Equipment | Low: Historical Structure would be changed | Low: To be further investigated in Design | Low | Moderate |

| Alts | Environmental Quality Impacts | | | | |
|---|---|---|---|---|---|
| | **Slope Stability Impacts** | **T&E Species Impacts** | **Turbidity** | **Vegetation Resources (acres restored)** | **Water Quality Impacts** |
| **No-Action** | NA | NA | NA | 0 | NA |
| **1** | Low: To be further investigated in Design | Habitat Improved | Low | 22 | Low |
| **2B** | Low: To be further investigated in Design | Habitat Improved | Low | 2 | Low |
| **3** | Low: To be further investigated in Design | Habitat Improved | Low | 1.9 | Low |

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## 5.2 Recommended Action Alternative

The recommended Action Alternative is 2B. Conceptually, Alternative 2B was designed to provide aquatic passage for a 1% storm event and to remove the least amount of the dam based on the early assumption that this could provide for higher levels of slope stability with the fewest geotechnical measures in place. Alternative 2B would provide for a total channel width of 23 feet. Because the determined width for the restored creek is 23 feet, this alternative does not allow for a floodplain terrace.

Alternative 2B is the geotechnically favored alternative as this alternative appears to be the most stable of all alternatives.

In general, Alternative 2B includes the following:

- removal of approximately 72% of the earthen dam structure;
- backfilling the spillway with dam material for stabilization;
- removal of approximately 95% of the accumulated sediment from behind the dam;
- construction and restoration of York Creek from just below the dam to just above the sediment basin with a slope of approximately 5%;
- restoration of roughly 2 acres of aquatic and riparian habitat with native vegetation and; use of native plants for erosion control and site stabilization.

### 5.2.1 Channel Design

The constructed channel would be approximately 23 feet wide and 5 feet deep. The proposed trapezoidal channel has either a 1.5H:1V (horizontal:vertical) or 2H:1V side slopes and would be designed to maintain a low-erosion flow velocity with approximately a 5.09% slope

Two specific channel restoration designs have been developed from the dimensions and parameters given above:

- The first channel design (Channel Design 1) would be designed to include all features of a functioning creek. This design would include channel cross-sections, pools and riffles, channel slope and bottom material.

- The second channel design (Channel Design 2) would be limited to a basic cross-section, plan, slope, and bottom material. Pool and riffles would be allowed to form naturally over time within this cross-section.

Currently, the channel has been designed using the parameters of Channel Design 1. There are 4 pools, 5 riffles, and 1 run included in the initial design. These features are preliminary and subject to alteration. The riffles are designed to be approximately 64 feet long, the pools 105 feet long, and the run to be between 69 and 92 feet long. Pool and riffle lengths for this design are purposely longer than representative reaches in York

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Creek. There is adequate existing sediment in the upper watershed that is expected to move downstream and into the project area. This sediment load would allow the engineered creek to adapt to its own equilibrium over time. Pools and riffles are expected to shorten until an equilibrium state is reached.

Channel Design Two would provide the recommended restoration cross-sections, plan and slope requirements while allowing for the natural formation of pools, riffles, and bars over time. There is an adequate supply of gravel for the restoration area. A simple cross-section set on the original channel, combined with a reasonable meander plan, should provide a good base for future channel evolution. It is likely that this method would be more cost effective and therefore will be further considered during the Plans and Specifications Phase.

Earthmoving equipment would be used for construction activities. Construction activities would include recontouring the stream banks, placing rock for bed and bank stabilization, and placing boulders and trees for fish habitat structures.

### 5.2.2 Sediment Removal and Disposal

Two primary disposal sites have been identified for the project's estimated 38,900 cubic yards of material. The first site is the City's Lower Reservoir and the second location is Clover Flat, a permitted landfill located within 9 miles of the project site. It is expected that 75% of the total project material (approximately 29,180 cubic yards) will be taken to the Lower Reservoir and 25% (approximately 9,730 cubic yards) will be taken to Clover Flat. Please note that these disposal options will be further analyzed during the Plans and Specifications Phase, and that the disposal location(s) will ultimately be the decision of the construction contractor.

The Lower Reservoir is located approximately 1 mile downstream from the project site. Instead of disposal, the City is considering making the Lower Reservoir available for off-site reuse and storage of the project sediment. To accomplish this, the water surface elevation would be lowered and fine sediments placed on the exposed bank and graded to a stable configuration for long-term storage. It is estimated that storage of the fine sediments would require approximately 6-12 acre-feet, 3.5-7% of the reservoir's capacity.

Clover Flat is a permitted landfull located in the City of Calistoga, within 9 miles of the project site. Project trucks would drive 2 miles from the Upper Reservoir along Spring Mountain Road and Madrona, then 6.5 miles to the Clover Flat landfill via Highway 29, Deer Park Road, and Silverado Trail.

### 5.2.3 Revegetation

Revegetation would focus on the creation of self-sustaining native vegetative habitat, control of erosion and stabilization of the newly created stream channel. For specific details, please refer to Appendix G of the DPR, Habitat Revegetation Report.

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It is important that revegetation efforts proceed as soon as possible after the earthwork, thereby taking advantage of a relatively weed free starting condition and filling the vacuum with desirable native plants rather than exotic weedy species. If a phased approach to revegetation is taken, it is important that desirable erosion control grasses and forbes are seeded first to help crowd out weeds. Plants can be installed over one or two years, however higher costs would be associated with a two year installation.

Temporary irrigation during the planting installation and the following four-year maintenance period would be provided. The irrigation goal is to increase plant survival rates, growth rates and encourage deep plant rooting. This requires frequent watering in the first season, followed by increasingly infrequent and deep watering in the second, third and fourth years. Irrigation in most locations would be by drip, the tubing and pipes removed at the end of the establishment period. Overhead spray irrigation systems would be used for areas with high density plug plantings. Plantings in the bank zone would be irrigated for two years. Plantings in the terrace zone would be irrigated for 3 years. Upland zone plantings would be irrigated for 4 years. The irrigation water source would likely be provided from a well developed on site. The well should be located above the 100-year floodplain. At the end of the maintenance period the well should be abandoned per local regulations.

### 5.2.4 Vegetated Riprap for Erosion Control

It has been found that vegetation alone would not protect the embankment against calculated channel velocities of 13 ft/sec. As part of maintaining slope stability and Spring Mountain road, the lower slope of the dam would need to be protected against erosion with vegetated riprap.

The riprap design for this project is based on the DFG California Salmonid Sream Restoration Manuel, part VII, Project Implementation, Boulder Riprap. The height of the riprap above the proposed design channel bottom is 4.5 feet. Additional riprap would be required at the toe of the riprap slope to support the slope and to protect against scour. A toe trench as shown in Figure 5.1 would be constructed 3 feet below the planned channel bottom. Place riprap would be placed with soil and willow stakes. The riprap would be covered with vegetation. The filter behind the riprap would be constructed of geotechnical fabric reinforced with geogrid matting. The filter layer can also be constructed of rock and gravel if appropriate for vegetation, geotechnical stability and economical.

Below, Figure 5.1 shows a cross-section of the riprap design. For more information, please refer to the Hydrology and Hydraulics Appendix.

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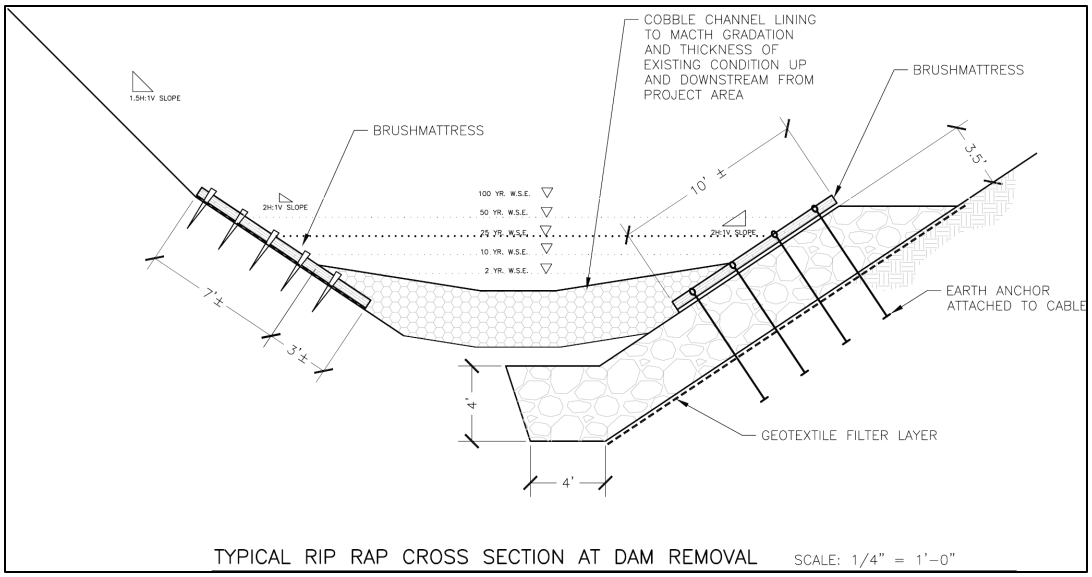


**FIGURE 5.1**

### 5.2.5 Slope Stability

The actual size of the notch would be based on further geotechnical analysis performed during the Design and Implementation Phase for Construction. Slope stability and new stability measures to be put in place must also be based on further analysis and field exploration during the Design and Implementation Phase.

Current analysis has shown that the Recommended Alternative 2B would require 2 rows of 11 reinforcing screw anchor nails (geotechnical slope stability tools) placed through the dam site. These screw anchor nails would be installed 50 to 100 feet into the ground, based on their starting position. The actual number of rows of anchors will be determined upon completion of the final investigation and design

For more information, please refer to DPR Appendix C: Geotechnical Engineering.

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# 6.0 ENVIRONMENTAL CONSEQUENCES AND ISSUES

Chapter 4.0 described current conditions in the project area and any changes expected should no project be constructed. These without-project conditions act as the baseline against which the Action Alternatives can now be evaluated.

This section describes changes expected in the study area assuming one of the Action Alternatives is constructed, with emphasis on 2B, the Preferred Action Alternative. Significant long-term impacts, both indirect and cumulative, are explored and identified - as positive or negative. Measures are presented to mitigate any potential negative impacts.

## 6.1 Physical Factors

### 6.1.1. Topography, Geology, and Soils

The proposed Action Alternatives would have no impact on the area's topography.

While none of the proposed Action Alternatives would impact soil quality, each Action Alternative carries the possibility of negative soil impacts due to erosion, both during and after construction. In order to avoid negative erosion impacts, the contractor will create a Storm Water Prevention Plan that specifies minimum acceptable erosion and sedimentation Best Management Practices.

Erosion control Best Management Practices would consist of seeding permanent native vegetative cover in all areas. In addition to the vegetative cover, areas disturbed by construction which have steep topography and generate sheet flow would receive appropriate erosion control, such as straw mulch, bonded fiber matrix hydromulch, and erosion control fabric etc. Disturbed construction areas with topography that concentrates flow or conveys concentrated off site run-on would receive erosion controls such as straw mulch, bonded fiber matrix hydromulch, cobble dissipaters and erosion control fabric etc., in addition to the vegetative cover. Sedimentation controls would consist of straw rolls, silt fences and/or sedimentation ponds, which would be implemented where necessary to prevent discharge of sediment-laden runoff into receiving waters.

Where rock is not present, surface erosion from rainfall runoff would need to be controlled by establishing erosion control grasses. As these grasses establish in the first season after seeding, temporary erosion control would be provided by straw mulch with tackifier. A sufficient overburden of soil would need to be designed into the embankments to allow ripping and cultivation of the compacted surfaces to allow grasses to thrive. Native and non-native species may be used, as the highly compacted soils limit species choice. These harsh conditions require use of grasses adapted to drier conditions and poorer soil than the immediately surrounding area. Erosion control is described in detail in Appendix G: Habitat Revegetation Report.

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#### 6.*1.1.1 Project Site Geology*

The project site's geologic and geotechnical conditions have a significant bearing on design, construction, and implementation of all the Action Alternatives. There is an observed ground movement in the area bounded by the hillside to the east, Spring Mountain Road in the middle portion and the spillway and the dam towards Upper York Creek. The exact reason for the movement is unknown at this time but it suspected that it is part of the historical landslide, and quite possibly related to road equipment that traversed close enough to the spillway to cause movement.

The serpentine bedrock and sheared shale that underlay the project site are prone to instability. Slope stability is considered vital to the success of this project, and there is concern that altering the dam with any of the Action Alternatives could negatively affect slope stability of the project site with the potential to result in slope failure.

**Figure 6.1 Spring Mountain Road Facing Upstream - Spillway located to left of road**

Slope failure has the potential for negative environmental effects on all organisms and habitat affected by the failure. There is the potential for habitat and organisms to be smothered by soil or killed by falling debris. There is also the potential for long term habitat loss in the path of a slope failure, as important habitat plants could be smothered and replaced by opportunistic invasive plants atop the newly raw earth. A geotechnical slope stability analysis and deformation was performed and is described in the Geotechnical Appendix and the DPR.

**Alternative 1: Full Dam Removal**

Geotechnical analysis has determined that Alternative 1 requires the highest level of reinforcement measures for the long term structural stability. Results from the geotechnical modeling of lateral deformation indicate excessive deformation on the order of at least 29 inches. This magnitude of deformation could trigger the instability of the

excavated slope and the area east of the dam. While this deformation seems excessive, it was based on a conservative assumption of design strengths that took into account unknown factors such the presence of sheared zones not readily apparent from laboratory testing of intact samples.

Current analysis has shown that Alternative 1 would require 3 rows of 11 reinforcing screw anchor nails (geotechnical slope stability tools) placed through the dam site. These screw anchor nails would be installed 50 to 100 feet into the ground based on their starting position.

**Recommended Action Alternative 2B: Small Notch**
Current analysis has shown that Alternative 2 would require 2 rows of 11 reinforcing screw anchor nails (geotechnical slope stability tools) placed through the dam site. These screw anchor nails would be installed 50 to 100 feet into the ground based on their starting position. The actual number of rows of anchors will be determined upon completion of the final investigation and design.

**Alternative 3: Fish Ladder**
The concrete fish ladder would be built over a lowered Upper York Creek Dam. It is not expected that this alternative would change the level of stability from the No Action alternative. Therefore no geotechnical modeling was done for this alternative.

### 6.1.2 Water Resources

Construction of any of the Action Alternatives would result in positive impacts to Water Resources within the project area.

#### 6.*1.2.1 York Creek*

York Creek has been declared one of the most significant spawning and rearing streams for steelhead within the Napa Basin, but the uppermost reach of York Creek, which offers excellent rearing and spawning habitat, is currently isolated from potential migration by the York Creek Dam.

All proposed Action Alternatives will have the positive impact of allowing steelhead access to the rearing and spawning habitat in the uppermost reaches of York Creek.

#### *6.1.2.2 Upper York Creek Dam*

All proposed Action Alternatives would allow fish and wildlife species to migrate and disperse though their historical aquatic and riparian habitat ranges, would restore the natural connectivity of the riverine habitat(s), would allow fish and wildlife populations to disperse and migrate naturally migrate though their natural habitat range and would have the potential to better support native populations of riparian and aquatic wildlife species by providing increased canopy, cover, foraging, and shelter habitat.

**Alternative 1: Full Dam Removal, and**
**Recommended Action Alternative 2B: Small Notch**

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Both Alternatives 1 and 2B provide for a restored natural creek bed and an estimated 100% effectiveness for upstream migrating steelhead. They would also provide for the most natural hydrologic and wildlife migration and dispersal corridor.

**Alternative 3: Fish Ladder**
Alternative 3 provides for a fish ladder aquatic passage over the lowered dam with an estimated 67-95% effectiveness for upstream migrating steelhead

#### *6.1.2.3 Upper Reservoir*

All Action Alternatives have the potential to restore natural fluvial processes to provide a long-term solution to the problem of sediment build up. Removal of the accumulated sediment, coupled with removal or breaching of the dam to allow for natural sediment transport, could permanently reduce the threat of downstream sediment release and aquatic organism kills in the future.

**Alternative 1: Full Dam Removal, and**
**Recommended Action Alternative 2B: Small Notch**
Alternatives 1 and 2B would remove 95-100% of the accumulated sediment in the Upper Reservoir and provide for a natural hydrologic and sediment transport through the project site. Unlike existing condition, where the dam acts as a sediment trap, the stream design for Alternatives 1 and 2B is expected to transport all sediment downstream, eliminating the threat of a detrimental downstream sediment release.

Two possible sediment deposition areas on the project site within the channel may fill in over time and eventually match the 5% profile in the rest of the project area (the slopes in these areas is less than 1%). This is not expected to increase the risk for sudden sediment releases downstream.

**Alternative 3: Fish Ladder**
Alternative 3 would provide for the removal of 37% of the accumulated sediment and the remaining sediment would be covered with a naturally restored creek or restored with native vegetation. The fish ladder would be made entirely of concrete to avoid sediment contributions from the sides of the dam. The only source of sediment would be expected to come from upstream sources and would be expected to flow through the ladder much as they would through the full removal and notch alternatives.

The profile of the fish ladder would be 3% instead of the 5% of the other action alternatives. As such, velocities approaching the ladder are expected to be slightly reduced due to the more gradual slope. This decrease in velocity through the project site could lead to future sediment deposition upstream of the dam. Deposition is expected to reach equilibrium and is not expected to cause detrimental sediment releases downstream.

The ladder's box weirs would trap some of the downstream flowing sediment and debris and would require routine maintenance in order to keep it unplugged and functional for fish passage. These costs have been incorporated into the operations and maintenance costs for this alternative.

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Two primary disposal sites have been identified for the project, the City's Lower Reservoir and Clover Flat, a permitted landfill. It is expected that 75% of the total project material (approximately 29,180 cubic yards) will be taken to the Lower Reservoir and 25% (approximately 9,730 cubic yards) will be taken to Clover Flat.

#### *6.1.2.4 Lower Reservoir*

The Lower Reservoir is located approximately 1 mile downstream from the project site. Instead of disposal, the City is considering making the Lower Reservoir available for off-site reuse and storage of the project sediment. To accomplish this, the water surface elevation would be lowered and fine sediments would be place on the exposed bank and graded to a stable configuration for long-term storage. It is estimated that storage of the fine sediments would require approximately 6-12 acre-feet, 3.5-7% of the reservoir's capacity.

The Lower Reservoir is considered a water of the U.S. and there is wetland vegetation on the edges of the lower reservoir. Appropriate permits and approvals will need to be aquired for utilization of the Lower Reservoir. There is currently agency support for this use.

Additional effects of transporting material to the disposal sites are discussed in this Chapter under Transportation and Air Quality.

#### *6.1.2.5 Hydrology and Hydraulics*

Hydrology and Hydraulics within the project area would be enhanced by construction of any of the Action Alternatives. HEC-RAS computer model showed that, currently, existing channel velocities range from 5 to 14.5 feet per second (fps) during a 1% event discharge. Under the new conditions created by the Recommended Action Alternative, channel velocities under project conditions will average 13 fps.

#### *6.1.2.6 Project Area Geomorphology*

York Creek is in reasonably good condition from a geomorphic perspective upstream and downstream from the dam site. Channel changes created by all proposed Action Alternatives will have a positive effect on the project area geomorphology, increasing its usefulness as riverine habitat.

#### *6.1.2.7 Sediment Transport and Downstream Flooding*

All watersheds yield sediment, and sediment deposition on alluvial fans (valley bottoms) is a natural process. The gradient of the stream above the City is relatively steep and the stream has a relatively high capacity to move sediment in the downstream direction. The reach through the Valley is less steep and has less capacity to move sediment in the downstream direction.

The recommended alternative would modify the dam that currently blocks natural sediment transport to downstream reaches of York Creek, and would allow for natural sediment transport thought the project site. According to the Corps' *Lower York*

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*Creek Existing Conditions Assessment and Dam Removal Impacts* report of July 2006, a significant percentage of the sediment could be deposited on the bottom of York Creek in the Napa Valley Reach (USACE, 2006). It is possible that creek capacities in this area would be reduced as sediment that was once deposited behind York Creek Dam falls out in these flatter areas and the creek channel reaches a new equilibrium. During high rainfall years, an estimated 2,000 cubic yards of sediment could be deposited in York Creek from its confluence with the Napa River in a location one mile upstream (USACE, 2006).

If a bottom width of 10 feet is assumed, sediment deposition of one foot could be deposited throughout the lower one mile of York Creek. One foot of sediment could raise the water surface elevations during maximum capacity events by an estimated .5 feet (USACE. 2006).

The Corps' Conditions Assessment offered several preliminary treatments for future consideration. These include: (1) trim riparian vegetation to reduce channel roughness; (2) remove instream obstructions; (3) construct a 1-3 foot tall levee or floodwall in low capacity areas; (4) widen the channel in low capacity areas; (5) regrade and/or contour so sheet flows are channeled back towards the creek in an area of higher capacity (USACE, 2006).

The non-Federal sponsor, the City of St. Helena, understands the project's risks and uncertainties and has committed to establishing a baseline condition for sediment transport and hydrological conditions for York Creek downstream of the project site. The City assumed the responsibility for this need and is working with Prunuske Chatham, Inc. to evaluate pre-project baseline conditions to be used during the design phase to predict potential changes in the channel morphology as a result of project implementation. The City will develop a monitoring plan to track deposition, aggradation, and induced flooding from the project and will actively manage post-project conditions to maintain flood control downstream of the project area.

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### 6.2 Climate

The proposed Action Alternatives would have no affect on climate conditions.

### 6.3 Visual Resources/Aesthetics

All proposed Action Alternatives would have a positive impact on the aesthetics of the project site.

**Alternative 1: Full Dam Removal**

Alternative 1 is expected to improve the overall aesthetics of the project site. Restoration would lead to the development of more natural riverine and riparian habitat. Although removal of the dam and spillway would create the largest project footprint, it would provide the greatest opportunity to create a more natural stream habitat at the project location.

There would be short-term visual impacts during construction of the proposed project due to the presence of construction equipment and the necessary removal of some vegetation at the project site. Specifically, earthmoving operations would be visible from the roadway along approximately 600 feet of Spring Mountain Road. However, this negative visual impact would not be significant, and the long-term impact of the project, after re-vegetation, would be positive because it would result in the project sites blending with the natural appearance of their surroundings.

Aesthetics would be an integral part of project design and would include a major revegetation effort using native plant species that blend with the natural surroundings. Cuts made by construction equipment would not be left with a machined or unnatural appearance and contour grading would blend with the natural topography. Site specific measures for erosion control would be utilized, including erosion control methods that blend with the natural surroundings. The project site would have clearly defined limits, and a row of trees would be left along much of the roadside to minimize the area that is visually impacted.

**Recommended Alternative 2B: Small Notch**

Alternative 2B is expected to improve the overall aesthetics of the project site and lead to the development of more natural riverine and riparian habitat. Where the dam is notched to create a restored channel, riprap would be placed for erosion protection. Due to high costs, backfilling and planting through the riprap is not planned. The placement of riprap for slope stability would lower the aesthetic quality in comparison to Alternative 1. However, in comparison to the No Action Alternative, these alternatives would contribute to an overall improvement in aesthetics. Aesthetics would be an integral part of project design and would include a smaller, but still considerable revegetation effort using native plant species.

There would be short-term visual impacts during construction of the proposed project due to the presence of construction equipment and the necessary removal of some vegetation at the project site. Specifically, earthmoving operations would be visible from the roadway along approximately 600 feet of Spring Mountain Road. However, this negative visual impact would not be significant, and the long-term impact of the project would be positive because it would result in helping to restore the creek to natural condition and open nearly 2 miles of upstream habitat to migrating steelhead and other migratory fish.

Cuts made by construction equipment would not be left with a machined or unnatural appearance and contour grading would blend with the natural topography. Site specific measures for erosion control would be utilized, including erosion control methods that blend with the natural surroundings. The project site would have clearly defined limits, and a row of trees would be left along much of the roadside to minimize the area that is visually impacted.

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**Alternative 3: Fish Ladder**

The fish ladder alternative would involve excavating a short, V-shaped channel through the dam, about 10-feet deep, 30-to-60-feet wide at the top, 10-feet wide at the bottom, and 120-feet long. This is much less excavation than the other Action Alternatives, but there would still be eight V-notch weirs upstream of the remaining dam to account for the 10 feet of grade drop. Compared to the other alternatives, Alternative 3 would place a large concrete structure in the project site and is considered less aesthetically pleasing than the other alternatives, including the No Action Alternatives.

Given the substantial woody debris and sediment load, a ladder alternative would undoubtedly require an additional, perpetual maintenance cost, would be vulnerable to vandalism, and may require fencing to reduce human risk or vandalism. The reduced grade upstream of the finished ladder would remain more depositional than the other alternatives.

## 6.4 Cultural Resources

The San Francisco District consulted with the State Historic Preservation Officer in accordance with regulations at 36 CFR Part 800 implementing Section 106 (National Historic Preservation Act). This resulted in a consensus-based determination that the York Creek Upper Reservoir Dam and Lower Diversion Structure qualified as a historic property, citing architectural and engineering features that exhibit a local level of significance under the theme of community planning and development. These two major features of St. Helena's water-supply system were important parts of the town's infrastructure during the early 20th century, and essential for its growth and development. They eventually provided water service to a large number of new commercial and residential properties and assured more reliable water for fire protection.

The Upper York Creek Dam has not been reconstructed or altered in a major way since initial construction in 1900. Modifications within the historic property have not been substantial, and despite the addition of a concrete spillway in 1933, routine repair and maintenance of existing parts in the 1970s, and the 1985 work to comply with safety standards, the appearance has not changed dramatically, nor has the quality of setting, feeling, or association with the original design been diminished.

All Action Alternatives would have an adverse effect on the historic property. Typically, negative impacts to historic or archaeological properties are caused by new development that either disturbs or destroys the location of the property. The modification or removal of the Dam for purposes of restoring fish passage is different in that the impact to the historic property actually derives from a proposal that benefits the environment. Thus the proposed undertaking cannot avoid affecting the integrity of the historic property's design, feeling, and association.

The Corps, as the Federal agency responsible for meeting the Section 106 requirements, would continue consultation with the State Historic Preservation Officer (SHPO) to

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discuss the adverse impact and to offer a treatment plan (i.e. mitigation documentation) to resolve the adverse effects. The appropriate scope of the documentation (considering the nature and significance of the property) would be based upon results of SHPO consultation and views expressed by interested parties. Such documentation is often the last means of preserving the physical information about a historic property, so that future researchers would have access to valuable information that otherwise would have been lost.

**Alternative 1: Full Dam Removal**
Action Alternative 1 would produce the greatest adverse affect to the historic property by removing the entire dam, which would preclude the property from conveying its historical significance.

Consultation and a mitigation documentation would be used to resolve the adverse effects. The appropriate scope of the documentation will consider the nature and significance of the property and be based upon results of SHPO consultation and views expressed by interested parties.

**Recommended Alternative 2B: Small Notch**
Action Alternative 2B would produce a degree of physical alteration to the historic property that would constitute an adverse effect by removing part of the dam, which would preclude the property from conveying its historical significance.

Consultation, mitigation, and documentation would be the same as that noted in Alternative 1.

**Alternative 3: Fish Ladder**
Action Alternative 3 would produce a degree of physical alteration to the historic property that would constitute an adverse effect by installing a fish ladder, which would preclude the property from conveying its historical significance.

Consultation, mitigation, and documentation would be the same as that noted in Alternative 1.

### 6.4.1 Unexpected Archaeological Discoveries

There are no known submerged or buried cultural resources. Should any cultural resources be found during any earth-moving activities associated with project construction, the project engineer or superintendent must ensure that work at the discovery site be temporarily stopped and the Corps of Engineers Contracting Officer and Archaeologist contacted at once. Work may not proceed in the vicinity of the discovery site until the Corps has evaluated the finds, and, if needed, consulted with the Native American community and the State Historic Preservation Officer.

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## 6.5 Water Quality

All proposed Action Alternatives would remove the potential for accidental sediment discharges and have a positive impact on Water Quality.

## 6.6 Air Quality

Temporary air quality impacts will occur during construction due the increase in emissions from construction equipment and standing vehicles during times when traffic control is required to accommodate construction activity.

All construction equipment emissions must meet within State Standards. Traffic control stoppages will last no longer than 10 minutes.

## 6.7 Noise

This project will have a slight and temporary impact on noise during construction due to the movement of construction equipment and traffic control stoppages.

Construction activities will take place during the business hours. Traffic control stoppages will last no longer than 10 minutes.

## 6.8 Land Use

This project will not impact land use.

## 6.9 Transportation and Utilities

### 6.9.1 Transportation

Project construction would result in a temporary increase in truck traffic, primarily along Spring Mountain Road, a two-lane county road running adjacent to York Creek for nearly 2.5 miles and crossing the creek at three bridges. Truck and other heavy construction equipment will also travel along two existing access roads to the Upper York Creek Dam. These two roads are barely visible, and both roads require improvements before they can accommodate the heavy equipment traffic required for this project. Improvements to these roads may also cause a temporary increase in traffic.

For disposal, it is expected that 3 dump trucks will be adequate for disposal at the Lower Reservoir and 6 trucks for disposal at Clover Flat. Each truck can carry 12.5 cubic yards of materiel. Trucks disposing at the Lower Reservoir will be capable of hauling 600 cubic yards per day with 48 daily trips. Similarly, trucks disposing at Clover Flats will be capable of hauling 600 cubic yards per day with 48 daily trips.

Assuming that 75 % of the truckloads will be taken to the Lower Reservoir and 25% of the loads will be taken to Clover Flat, there will be a minimum of 66 days of disposal

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truck traffic. It will require approximately 3,114 truck trips and will result in approximately 17,910 total miles of road use. More specifically, Clover Flat disposal will result in approximately 13, 240 miles of road use and disposal at the Lower Reservoir will result in approximately 4670 miles of road use.

This traffic is expected to put pressure on the normally narrow and bucolic Spring Mountain Road. Hauling traffic through St. Helena and on Spring Mountain Road has the potential to cause temporary impacts to traffic along the hauling route. Trucks turning in and out of the project site may also cause traffic hazards. Traffic control would be required as would haul time restrictions (or a hauling window) to allow local residents and businesses reasonable and safe access to roads. Beginning in mid-September, hauling traffic will be subject to potential delays and re-routing as wine production traffic increases during harvest and crush.

During road repair and project construction, emergency vehicles will always be given the right of way

The following measures would reduce project-related traffic impacts to a level that is less than significant:

- The contractor shall prepare a traffic control plan and provide a copy for Caltrans review and approval. The plan shall identify the following: staging areas; dump sites; operating hours; project duration; scheduling; phasing; the total number and type of construction vehicles; and respective vehicle haul routes per project phase.

- A minimum of 2 flaggers would be necessary. Beginning in mid-September, hauling traffic will be subject to potential delays and re-routing as wine production traffic increases during harvest and crush

- Hauling along State Routes 29 and 128 shall be limited to off-peak hours to the extent possible.

- The contractor would be required to provide standard Caltrans traffic controls for trucks entering and leaving the roadway.

- To minimize wear on roads, dump trucks would be filled such that their maximum weight is 10% less than the legal limit of 60,000 pounds on Spring Mountain Road.

- The City and County would evaluate degradation of road conditions by surveying and documenting road conditions before and after project implementation.

### 6.9.2 Utilities

Erosion protection shall be applied at existing storm water culverts underneath Spring Mountain Road.

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The Underground Service Alert's (USA) preliminary search found no major utility lines within the project foot print. However, USA should be is contacted (at 1-800-277-2600) at least two working days before any digging occurs.

### 6.10 Hazardous, Toxic, and Radiological Waste

Innovative Technical Solutions, Inc. (ITSI) conducted a soil assessment for hazardous and toxic waste at the Upper York Creek Dam, Spring Mountain Road, St. Helena, California in December 2003. They conducted tests of both the soil used in the earthen dam and in the sediment built up in the Upper Reservoir behind the dam. All material was tested for polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides, metals, and asbestos.

Hazardous waste criteria for metals and pesticides, as defined by Total Threshold Limit Concentrations (TTLCs) and Soluble Threshold Limit Concentrations (STLCs), were not exceeded in samples of materials collected from the earthen dam or sediment bed, or in extracts of those materials. The TTLC for asbestos was exceeded in several samples of the earthen dam materials, but because the asbestos is naturally-occurring, California policy is that the materials would not be considered hazardous waste.

The following recommendations have been developed as a result of the assessment:

- No areas requiring remediation before construction were identified.

- Concentrations of asbestos were much higher in the dam samples (serpentintinite-rich) than in samples of sediments (poor in serpentinite). The presence of asbestos in samples of the earthen dam and sediment bed at York Creek would necessitate the adoption of specific BMPs. Generally, BMPs would include the following:

    - The maintenance of adequately wetted conditions to prevent the release of asbestos fibers into the air; run-off and mud control; upwind, downwind, and personal exposure air monitoring

    - Asbestos-specific training for site workers. Different operational requirements apply, depending on whether sites are less than or greater than one acre in size, and whether site operations are construction or grading versus quarrying or surface mining. However, because the ACM is naturally occurring, a California-licensed asbestos contractor would not be required to excavate the site.

    - Re-use of materials from the earthen dam for surfacing applications, e.g., roads, parking lots, near-surface filling (less than six inches deep), or use in concrete or mortar, is prohibited, based on reported asbestos detections of greater than 0.25 percent.

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- Based on low asbestos concentrations in samples of the sediment bed, the sediments may possibly be suitable for re-use in surfacing applications. However, additional sampling and analysis would be required to fully characterize materials for surfacing applications, per California regulations. Assuming a weight of 12,000 tons for the sediment bed, additional analyses of four three-way composite samples would be required.

## 6.11 Biological Environment

All proposed Action Alternatives will have a positive impact on the biological environment of the Upper York Creek project area.

### 6.11.1 Vegetation

Existing native vegetation to be preserved shall be surrounded by protective fencing near construction areas requiring vehicular access or access by mechanized construction equipment.

#### *6.11.1.1 Habitat*

The project site comprises an area of approximately 0.05 acre of riparian habitat, including both banks of the stream. Historically, the project site had riparian habitat along the stream corridor and upland savanna. That habitat has been degraded by construction of the dam, operational errors and neglect, contributing to a large influx of sediment, which has had negative impacts on project site habitat and water quality. Continued disturbance of the sediment inhibits woody native vegetation and favors weedy exotic vegetation. Lack of tree canopy shade increases the temperature of the stream.

**Alternative 1: Full Dam Removal**

Alternative 1 would restore 0.4 acres of Bank Zone, 0.6 acres of Terrace Zone and 1.2 acres of Riparian Zone. This would total 2.2 acres of habitat acreage.

The primary difference in the revegetation plan for Alternative 1 is that it allows for a floodplain terrace that would be planted with native vegetation while Alternatives 2B and 3 do not allow for a terrace.

Alternative 1 would require the removal of approximately 22 large trees. Approximately 9 trees measuring at least 20 inches diameter at breast height (dbh), 8 trees measuring 30 inches dbh or less, and 5 measuring

Alternative 1 would require the removal of approximately 22 large trees. Approximately 9 trees measuring at least 20 inches in diameter at breast height (dbh), 8 trees measuring 30 inches dbh or less, and 5 measuring greater than 30 inches dbh would need to be removed. The largest tree to be removed is 78 inches dbh.

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Approximately 475 medium and large tree species would be planted as specified in the Replanting Plan. Specifically, 23 maples, 15 box elders, 15 Oregon ash trees, 26 coastal redwoods, 152 tanbark oaks, 36 douglas firs, 23 valley oaks, 21 California bay laurels, 21 madrones and 144 coast live oaks would be planted.

**Recommended Alternative 2B: Small Notch**
Revegetation for Alternative 2B is similar to the description for Alternative 1. Specifically, Alternative 2B would have 0.4 acres of Bank Zone, 0.5 acres of Terrace Zone and 1.1 acres of Riparian Zone. This totals 2.0 acres of restored habitat acreage. Alternative 2B does not allow for a terrace.

Alternative 2B would require the removal of approximately 20 large trees. Approximately 8 trees measuring at least 20 inches dbh, 7 trees measuring 30 inches dbh or less, and 5 measuring greater than 30 inches dbh would need to be removed. The largest tree to be removed is 78 inches dbh .

Approximately 475 medium and large tree species would be planted as specified in the Replanting Plan. Specifically, 23 maples, 15 box elders, 15 Oregon ash trees, 26 coastal redwoods, 152 tanbark oaks, 36 douglas firs, 23 valley oaks, 21 California bay laurels, 21 madrones and 144 coast live oaks would be planted.

**Alternative 3: Fish Ladder**
Revegetation for Alternative 3 is generally similar to the revegetation described for the other action alternatives. However, specific design differences result in slight variations. The fish ladder would be a concrete structure built over a lowered dam connecting the upper and lower portions of York Creek. A channel, similar to the channels for the other Action Alternatives, would be constructed within the remaining sediment basin. Bank Zone vegetation would be used on the channel slopes and the remaining sediment would be planted as a Terrace Zone, as done for Alternative 1. As Alternative 3 requires the removal of some sediment, the slopes created by sediment removal would be planted with the trees and shrubs mentioned for the Riparian Zone in Alternative 1. Specifically, Alternative 3 would have 0.4 acres of Bank Zone, 0.9 acres of Terrace Zone and 0.6 acres of Riparian Zone. This totals 1.9 acres of restored habitat acreage.

Alternative 3 would require the removal of approximately 21 large trees. Approximately 8 trees measuring at least 20 inches dbh, 8 trees measuring 30 inches dbh or less, and 5 measuring greater than 30 inches dbh would need to be removed. The largest tree to be removed is 78 inches dbh.

Approximately 475 medium and large tree species would be planted as specified in the Replanting Plan. Specifically, 23 maples, 15 box elders, 15 Oregon ash trees, 26 coastal redwoods, 152 tanbark oaks, 36 douglas firs, 23 valley oaks, 21 California bay laurels, 21 madrones and 144 coast live oaks would be planted.

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#### 6.*11.1.2 Threatened or Endangered Plants*

A list of special-status plant species with the potential to occur in the project area were consolidated from three sources, twenty-seven species were included on this list. The project site was visited three times by DWR botanist Mr. Harry Spanglet, during the range of flowering times of special-status species. No occurrences of sensitive species are recorded in the project site. Although two occurrences were found within 1 mile of the site, they were not of species that inhabit riparian habitat. It was also determined that two species had a reasonable probability of occurring in the project's riparian habitat below an 800 foot elevation, the California black walnut (*Juglans californica var. hindsii*) and Calistoga allocarya (*Plagiobothrys strictus*). Special efforts were made to find any plants of these species, but none were located.

A biologist will instruct the contractor on identifying species with the potential to be found within the project area, as documented in this EA.

Existing sensitive State or Federally listed threatened or endangered plant species and adjacent existing native plant communities located within the project limits or adjacent to access routes shall be surrounded during construction by protective fencing.

Should any sensitive State or Federally listed threatened or endangered plant species be discovered during construction, the project engineer or superintendent must ensure that work at the discovery site be temporarily stopped and the Corps of Engineers San Francisco District biologist contacted at once. Work may not proceed in the vicinity of the discovery site until the biologist has evaluated the find, and, if needed, surrounded the plant and adjacent plant species by protective fencing and given permission to proceed.

### 6.11.2 Wildlife

Should any sensitive State or Federally listed threatened or endangered species be discovered during construction, the project engineer or superintendent must ensure that work at the discovery site be temporarily stopped, the species safely isolated, if possible, and the Corps of Engineers San Francisco District biologist contacted at once. Work may not proceed until the biologist has evaluated the find and given permission to proceed.

A biologist will instruct the contractor on identifying species with the potential to be found within the project area, as documented in this EA.

#### 6.*11.2.1 Threatened or Endangered Wildlife*

**Bats**

The following Species of Special Concern may occur in the vicinity of York Creek Dam.

*Pacific Townsend's Big-eared Bat* (Corynorhinus townsendii townsendii)

It is not likely the Pacific Townsend's big-eared bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels

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and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

There will be no project construction outside of normal business hours, thus there should be no impact on this species.

*Fringed Myotis Bat* (Myotis thysanodes)
It is not likely the Fringed Myotis Bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

There will be no project construction outside of normal business hours thus there should be no impact on this species.

*Western Long-eared Myotis Bat* (Myotis evotis)
The Western Long-eared Myotis Bat may utilize the York Creek Dam site for roosting and foraging, as they prefer large trees and snags with exfoliating bark. The project site is on the fringe of their known habitat and they could occur in the project area.

A biologist will search for evidence of these bats prior to construction. If they are found, an "avoidance" plan will be developed.

*Long-legged Myotis Bat* (Myotis volans),
The Long-legged Myotis Bat might utilize the York Creek Dam site for roosting and foraging, as they prefer large trees and snags with exfoliating bark.

A biologist will search for evidence of these bats prior to construction. If they are found, an "avoidance" plan will be developed.

*Yuma Myotis Bat* (Myotis yumanensis)
It is not likely the Yuma Myotis Bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

There will be no project construction outside of normal business hours, thus there should be no impact on this species.

*Western Mastiff Bat* (Eumops perotis)
It is not likely the Western Mastiff Bat would be found roosting in the vicinity of the York Creek Dam because they prefer to roost in buildings, bridges, tunnels and caves. However, the bats are known to use stream corridors as foraging habitat and might use the York Creek area for nocturnal foraging.

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There will be no project construction outside of normal business hours, thus there should be no impact on this species.

**Birds**

Migratory song birds are protected by the U.S. Fish and Wildlife Service pursuant to the Migratory Bird Treaty Act (MBTA) of 1918

In order to avoid potential impacts to migratory song birds, the following measures will be implemented:

- All construction personnel shall be advised that birds are protected by the U.S. Fish and Wildlife Service pursuant to the Migratory Bird Treaty Act (MBTA) of 1918, and impacts to nesting birds are to be avoided

- If project work occurs prior to August 15, the site will be assessed by a qualified wildlife biologist to determine the presence or absence of nesting birds.

- Should active nests be found for any species other than starlings and house sparrows, that tree or shrub shall be left untouched until a qualified wildlife biologist can establish that nesting is finished.

- If nesting activity is so dense that it is impracticable to avoid nests during construction, construction will be delayed until after August 15 when nesting activity is complete.

*Northern Spotted Owl* (Strix occidentalis caurina)

A pair of Northern Spotted Owls in the upper York Creek watershed maintains a territory approximately one mile upstream from York Creek Dam. The owls have been monitored annually since 1995 by biological consultant Mr. Ted Wooster. The project site is located within the 1.3 mile radius the California Department of Forestry considers to be the limit of their foraging area. However, project activities will occur at least 1 to 1.5 miles away. In order to avoid impacts to northern spotted owls, construction shall be carried out only during the day. Lights will not be used. Breeding habitat should not be affected because the project is more than 0.7 mile from the activity center.

*Bald Eagle* (Haliaeetus leucocephalus)

The Bald Eagle is federally listed as a threatened species. Nesting sites are typically in large trees along shorelines in relatively remote areas (USFWS 1999). Nesting locations recorded in the California Natural Diversity Database nearest to the York Creek project site are Lake Berryessa, about 17 miles to the northeast in Napa County, and McCreary Reservoir, approximately 17 miles due north in Lake County. The most recent occurrence of nesting Bald Eagles at these locations was for two adults and one young observed at a nest on the southwest edge of McCreary Reservoir on April 2, 2000.

The California winter population of Bald Eagles has increased, with more than 1,000 wintering birds in the state during some years. Wintering sites are generally close to open

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water, in locations that offer good perch trees and night roosts (USFWS 1999). Wintering bald eagles are recorded in the California Natural Diversity Database from locations near Lake Hennessey, approximately 6.5 miles from the project site, and at Lake Berryessa. It is likely that eagles continue to use the sites for wintering.

The project site does not provide open water habitat for hunting or large trees that could be used by Bald Eagles for nesting or roosting. Bald Eagles have not been observed by DWR biologists during site visits to the area surrounding the project site or during focused surveys for other species even though other raptors have been observed in the vicinity of York Creek Dam and Upper Reservoir.

*Little Willow Flycatcher* (Empidonax traillii brewsterii)
The Little Willow Flycatcher is a state-listed endangered subspecies of bird that is also considered a federal species of concern. The species breeds from Tulare County north, along the western side of the Sierra Nevada and Cascades, extending to the northern California coast in the Klamath River basin. Little Willow Flycatchers prefer willow thickets, successional scrub, and brushy habitats in wet areas, pastures and mountain meadows. A qualified DWR biologist, Mr. Chris Lee, assessed the lower diversion structure project site on March 20, 2003 for Willow Flycatcher breeding habitat and determined that the site does not provide suitable nesting habitat for the species.

It is possible, but unlikely, that the project area could be utilized by Little Willow Flycatchers as a potential migratory corridor. The noise of construction should keep any potential Little Willow Flycatcher from the project area.

**Amphibians and Reptiles**

*California Red-legged Frog* (Rana aurora draytonii)
In 1999, the City of St. Helena hired Ibis Environmental Services to conduct a habitat assessment of the project site. Their report determined that the site contained suitable habitat for California red-legged frogs, noting that the Upper Reservoir contains suitable breeding habitat for red-legged frogs, and York Creek provides suitable dispersal, foraging, and refuge habitat. The U.S. Fish and Wildlife Service had formal surveys for red-legged frogs conducted by DWR in May and June 2001, following established protocols (USFWS 1997). Two daytime and two nighttime protocol surveys found no occurrences of the species (adults, metamorphs or tadpoles) and an abundance of bullfrogs (sub-adults) within the Upper Reservoir area. All bullfrogs were relatively small individuals, suggesting a reproducing population. Bullfrogs, an introduced species, predate on red legged frogs. They use the same habitat and eventually displace them.

Habitat evaluation and reconnaissance-level surveys found that suitable red-legged frog habitat did not occur at the York Creek diversion structure.

*Foothill Yellow-Legged Frog* (Rana boylii)
The foothill yellow-legged frog is a State Species of Special Concern found in rocky streams and moist meadows in most of Northern California west of the Cascade Range.

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Electrofishing surveys by the Department of Fish and Game (DFG) in September 2002 yielded one yellow-legged frog in York Creek between the diversion and York Creek Dam.

A biologist will search for evidence of the Yellow-Legged Frog prior to construction. If they are found, an "avoidance" plan will be developed.

*The Western Spadefoot Toad* (Spea hammondii)
The Western spadefoot toad is a State Species of Special Concern usually found in grassland habitats, but the toad will also utilize valley foothill hardwood woodlands. Historically, the western spadefoot ranged from Redding to northwestern Baja California. In California, the species was found throughout the Central Valley, and in the Coast Ranges and coastal lowlands from San Francisco Bay to Mexico. It has been extirpated from many locations within this range. The species is found mostly below 3000 feet, but can occur up to 4500 feet. The average elevation of sites where the species still occurs is significantly higher than the average elevation for historical sites, suggesting that declines have been more pronounced in lowlands.

This species has not been observed in the project area. A biologist will search for evidence of the Western Spadefoot Toad prior to construction. If they are found, an "avoidance" plan will be developed.

*The Northwestern pond turtle* (Clemmys marmorata marmorata)
The Northwestern pond turtle is a State Species of Special Concern that inhabits slow moving streams, ponds, lakes, and wetlands west of the Cascade and Sierra Nevada crest and also in the Coastal Ranges. The Northwestern pond turtle is found in quiet water and typically ranges in salinity content from fresh to brackish to seawater (Holland 1991). The habitat of the pond turtle ranges from California, where it is nearly extinct, up the West Coast through Oregon and Washington. In Oregon, the Western Pond Turtle is listed as a threatened species, with only about 2,000 remaining. This species has not been observed in the project area.

A biologist will search for evidence of the Northwestern Pond Turtle prior to construction. If they are found, an "avoidance" plan will be developed.

**Fisheries and Aquatic Resources**

Temporary impacts may occur to fish and other aquatic organisms during dewatering of the sediment basin, which is necessary to provide dry land for construction work. Given the magnitude of work to be performed in the Upper York Creek project area, complete isolation of the water from the creek bed appears to be necessary for construction. One solution is the use of a cofferdam, which would prevent water from entering the sediment basin work area. A cofferdam, in combination with a bypass channel or a piping mechanism would divert water flow around the sediment basin and would likely be passed through the spillway to below the dam.

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Guidelines for dewatering based on best management practices would be further considered during Design and Implementation Phase. Steelhead can't get above the dam, so the majority of their population would not be affected. However, juvenile steelhead inhabit a scour pool at the foot of the dam. During dewatering, water must be dropped into the scour pool to keep the population of steelhead in the pool alive. The Corps biologists will coordinated with the contractor and NOAA Fisheries and arrange for the steelhead to be removed from scour pool and released downstream of the project area once removal of the dam is initiated.

***Aquatic Resources***

These fish of special concern, the Sacramento splittail (*Pogonichthys macrolepidotus*), Russian River tule perch (*Hysterocarpus traski pomo*) and longfin smelt (*Spirinchus thaleichthys*), are not found in the project site.

*Steelhead Trout* (Oncorhynchus mykiss)

In terms of population size and geographic distribution, steelhead are the most significant salmonid species within the watershed. The Federally listed Steelhead Trout occur in York Creek, which contains high quality spawning and rearing habitat. NOAA Fisheries listed steelhead as a threatened species in Napa County in August 1997. Napa River steelhead populations have been greatly reduced from historical levels. It is estimated that the Napa River watershed supported a population of approximately 8,000 adult steelhead as recently as 100 years ago. Although the current steelhead population is unknown due to a lack of quantitative data, recent basin wide surveys estimate the population to be between 200 to 1,000 adult fish (Stillwater Sciences, 2002; EcoTrust, 2001). Despite reduced populations, the Napa River watershed is considered one of the most significant anadromous fish streams within San Francisco Bay. The existing dam and reservoir blocks fish passage to spawning habitat for the federally listed CCC steelhead.

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**Alternative 1: Full Dam Removal**

Alternative 1 includes the complete removal of the dam and looking upstream, includes the removal of the right wall of the spillway. Alternative 1 removes the barrier to aquatic and fisheries dispersal, allowing separate populations to move more readily upstream and downstream.

The removal of the dam and the construction of an engineered channel would result in three specific sources of habitat benefit to steelhead and other aquatic wildlife including: (1) restored aquatic habitat through the project site; (2) access to approximately 2 miles of spawning and rearing habitat above the project site, (3) elimination of the threat of downstream habitat destruction via uncontrolled sediment releases, and (4) provides aquatic habitat connectivity for fish and aquatic wildlife species populations through the project site.

Alternative 1 is different from Alternative 2B in that it provides for a total dam removal width of 53 feet, including a 30 foot wide and 50 foot long floodplain terrace through the dam site. Although floodplain terraces are not common in the upper portions of this watershed, the historical presence of the reservoir has resulted in the widening of an

otherwise narrow riparian corridor. Alternative 1 uses this reservoir area as an opportunity to provide additional riparian habitat to upland wildlife.

The floodplain terrace would be planted with native vegetation. The presence of this vegetation is expected to provide for a future riparian cover through the dam site and could provide future shading and habitat cover for steelhead.

**Recommended Alternative 2B: Small Notch**

Alternative 2B provides the same benefits to aquatic and fisheries resources as Alternative 1. The primary difference between Alternative 2B and Alternative 1 is that it does not provide for a floodplain terrace or riparian planting area through the dam site. This quantifies to 1,150 square feet less of restored riparian habitat and shading and 0.1 acres less of upland riparian habitat than Alternative 1.

**Alternative 3: Fish Ladder**

A fish ladder ideally maintained and cleared throughout the storm season and had that would have adequate flows during the steelhead migratory windows would be expected to provide for similar upstream steelhead passage as Alternatives 1 and 2B. However, as previously mentioned in Section 3.12.5.1, it is unlikely that a fish ladder on York Creek would function as such. The levels of uncertainty are higher, and the likelihood of functional success is lower.

Although there is no scientific literature that specifically compares the effectiveness of steelhead passage through a fish ladder versus a naturally engineered aquatic passage, there is a general acceptance by fish experts that a naturally restored creek would provide for more effective fish passage. A naturally engineered aquatic passage would more closely resemble a natural state when compared to a fish ladder and would be expected to provide aquatic passage for all species and lifestages. A fish ladder would not. Fish ladders are designed for specific species of migratory fish and tend to not be a successful tool for the migration and dispersal of other fish and aquatic species.

Additionally, unlike a large-scale hydroelectric dam that has a functioning reservoir behind it and a consistent flow rate, flows cannot be guaranteed or implemented at this site. Flow rates are expected to change through the ladder depending on the time of year and would be inconsistent. Flow fluctuation and natural sediment yields tend to accumulate debris and sediment and require significant, regular maintenance in order to keep them operable for fish passage. Figure 3.5 shows the sediment and debris accumulation from the 2005-2006 storm season.

*California Freshwater Shrimp* (Syncaris pacifica)

The California freshwater shrimp, listed as endangered, is endemic to the Napa Valley watershed but is not known to occur in York Creek (USFWS 1998). Bill Cox, a DFG Fishery Biologist, surveyed York Creek for fishes in September 2000 and assessed the habitat suitability for California freshwater shrimp in the vicinity of the diversion structure. In his assessment, Mr. Cox states that the "stream was much too shallow, had much too high a gradient, and had essentially no undercut banks or overhanging

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vegetation to provide any habitat for the shrimp" (B. Cox, pers. comm. 2001). The results of Mr. Cox's habitat assessment were reported to the U.S. Fish and Wildlife Service (DWR 2001). The lower section of York Creek, where stream gradients might be more suitable for the species, is characterized by intermittent flow and going dry during the summer months, and therefore does not provide suitable habitat for the species.

No California Freshwater Shrimp have been found in the project area, therefore the proposed Action Alternatives should have no impact on the species.

## 6.12 Recreation

York Creek Dam currently provides very little opportunity for recreation. There is the potential for the proposed Action Alternatives to have a positive impact on sports fishing in the watershed.

## 6.13 Socioeconomic Factors

This project will have no impact on population or income.

### 6.13.3 Public Services

Construction traffic through St. Helena and on Spring Mountain Road has the potential to cause temporary impacts to traffic along the hauling route.

During road repair and project construction, emergency vehicles will always be given the right of way.

## 6.14 Cumulative Impacts

The Environmental Impacts Table, below, is an assessment of the order, magnitude, and impact mechanism for the major physical, biological, and socioeconomic conditions. An impact is defined as an effect causing a change in conditions and can be beneficial or adverse.

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**KEY:** Primary: P
Secondary: S
Temporary: T
Continuing: C

**MAGNITUDE:** Slight: S
Moderate: M
Large: L

| Condition | Beneficial | Adverse | Magnitude | Impact Mechanism |
|---|---|---|---|---|
| **Physical** | | | | |
| Air Quality | | PT | S | Construction equipment emissions. |
| Air Quality | | SC | S | Emissions from traffic on Spring Mountain Road. |
| Water Quality | PC | | M | Natural flow restored. |
| Water Quality | | PT | S | Increased turbidity during construction. |
| Noise | | PT | S | Construction equipment related. |
| Noise | | SC | | Motor vehicles using the road. |
| Wildlife/Habitat | | PT | S | Removal/destruction of riverine habitat at construction site. |
| Wetlands | | N/A | | No impact anticipated. |
| Threatened & Endangered Species | | N/A | | No impact anticipated. |
| Wild & Scenic Rivers | PC | | M | Natural flow and gradient upgraded. |
| Hydrology (floodplain values) | | N/A | | Not applicable. |
| **Socio-Economic** | | | | |
| Growth-Inducement | | N/A | | Not applicable. |
| Transportation | | N/A | | Not applicable. |
| " | | PT | S | Presence of construction equipment has potential to interfere with the flow of vehicular traffic. |
| Recreation | | N/A | | Not applicable. |
| Cultural Resources | | N/A | | No impact anticipated. |
| Aesthetics | | PT | S | Presence of construction equipment; noise; denuded project area; turbidity. |
| Energy | | PT | S | Commitment of energy to construction. |
| Economics | PC | | M | Protect existing investments and industry. |
| " | | PT | S | Expenditure of monetary resources for construction |
| Health & Safety | | N/A | | Not applicable. |
| Agriculture | | N/A | | Not applicable. |
| National Defense | | N/A | | Not applicable. |

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## 7.0 CONSULTATIONS

The non-Federal sponsor for the feasibility phase of the Detailed Project Report is the City of St. Helena. The City has shown clear willingness to restore fish passage in this area by undertaking a modification of a diversion structure downstream of the Dam in 2004. The US Army Corps of Engineers, San Francisco District, and the non-Federal sponsor, the City of St. Helena, have jointly developed the restoration plan presented in this report.

In 1999, the Department of Water Resources (DWR) prepared plans for this project. The work prepared by DWR formed the basis for the work undertaken by the Corps and has been used to the maximum extent possible to avoid duplicate efforts.

During the Feasibility Study, the staff from the City of St. Helena, staff from the Department of Fish and Game, U.S. Fish and Wildlife Service, the Regional Water Quality Control Board, and the National Oceanic and Atmospheric Administration participated in the monthly team meetings with the study technical team and contributed to the study effort.

A list of Federal, State, and local environmental agencies with whom this project has been coordinated with includes, but is not limited to:

Bay Area Air Quality Management District
Bay Conservation and Development Commission
California Department of Fish and Game
California Regional Water Quality Control Board
California State Historic Preservation Office
California State Lands Commission
California State Resources Agency
City of St. Helena
Napa County Resource Conservation District
National Oceanic and Atmospheric Administration Fisheries
Trout Unlimited
United States Environmental Protection Agency
United States Fish and Wildlife Service

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## 9.0 LIST OF PREPARERS

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## APPENDIX A
## List of Acronyms

| | |
|---|---|
| ARB | Air Resources Board |
| BAAQMD | Bay Area Air Quality Management District |
| bgs | below ground surface |
| CAP | Continuing Authorities Program |
| CCC | Central Coast Steelhead |
| CEQA | California Environmental Quality Act |
| CDF | California Department of Forestry |
| City | City of Saint Helena |
| cfs | cubic feet per second |
| Corps | U.S. Army Corps of Engineers, San Francisco District |
| CNDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| CRWQCB | California Regional Water Quality Control Board |
| cy | cubic yards |
| dbh | diameter at breast height |
| DFG | Department of Fish and Game |
| DWR | Department of Water Resources |
| EA | Environmental Assessment |
| ESA | Endangered Species Act |
| ESU | Evolutionarily Significant Unit |
| H | Horizontal |
| HCP | Habitat Conservation Plan |
| LOS | Level of Service |
| NEPA | National Environmental Quality Act |
| NOAA | National Oceanic & Atmospheric Administration |
| NPPA | Native Plant Protection Act |
| NRCS | Natural Resources Conservation Service |
| NVRR | Napa Valley Railroad |
| RWQCB | Regional Water Quality Control Board |
| THP | Timber Harvest Plan |
| TMDL | Total Maximum Daily Load |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| V | Vertical |
| WRDA | Water Resources Development Act |
| yoy | young of the year |

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## APPENDIX B
## Federal Endangered and Threatened Species

Federal Endangered and Threatened Species that Occur in, or may be Affected by, Projects in the USGS Quads ST. HELENA (516C) and CALISTOGA (517D)

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**CRITICAL HABITAT:**
On August 11, 2005, the Service published a revised critical habitat designation for vernal pool species. It did not specify critical habitat locations on a species by species basis. If there are species on the list(s) below that were covered under the rule, they are shown because we believe that they are present in the area or may be affected by projects in the area, not because it has specifically been designated as critical habitat for them.
Quad Lists

**ST. HELENA (516C)**

Listed Species

Invertebrates
Desmocerus californicus dimorphus - valley elderberry longhorn beetle (T)
Syncaris pacifica - California freshwater shrimp (E)

Fish
Hypomesus transpacificus - delta smelt (T)
Oncorhynchus mykiss - Central California Coastal steelhead (T)
Oncorhynchus mykiss - Central Valley steelhead (T)
Oncorhynchus mykiss - Critical habitat, Central California coastal steelhead (X)
Oncorhynchus tshawytscha - Central Valley spring-run chinook salmon (T)
Oncorhynchus tshawytscha - winter-run chinook salmon, Sacramento River (E)

Amphibians
Rana aurora draytonii - California red-legged frog (T)

Birds
Haliaeetus leucocephalus - bald eagle (T)
Strix occidentalis caurina - northern spotted owl (T)

Plants
Astragalus clarianus - Clara Hunt's milk-vetch (E)

Candidate Species

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Fish
Oncorhynchus tshawytscha - Central Valley fall/late fall-run chinook salmon (C)
Oncorhynchus tshawytscha - Critical habitat, Central Valley fall/late fall-run chinook (C)

Species of Concern

Fish
Pogonichthys macrolepidotus - Sacramento splittail (SC)
Spirinchus thaleichthys - longfin smelt (SC)

Amphibians
Rana boylii - foothill yellow-legged frog (SC)
Spea hammondii (was Scaphiopus h.) - western spadefoot toad (SC)

Reptiles
Clemmys marmorata marmorata - northwestern pond turtle (SC)

Birds
Agelaius tricolor - tricolored blackbird (SC)
Amphispiza belli belli - Bell's sage sparrow (SC)
Athene cunicularia hypugaea - western burrowing owl (SC)
Baeolophus inornatus - oak titmouse (SLC)
Carduelis lawrencei - Lawrence's goldfinch (SC)
Chaetura vauxi - Vaux's swift (SC)
Cypseloides niger - black swift (SC)
Elanus leucurus - white-tailed (=black shouldered) kite (SC)
Empidonax traillii brewsteri - little willow flycatcher (CA)
Falco peregrinus anatum - American peregrine falcon (D)
Lanius ludovicianus - loggerhead shrike (SC)
Melanerpes lewis - Lewis' woodpecker (SC)
Numenius americanus - long-billed curlew (SC)
Riparia riparia - bank swallow (CA)
Selasphorus rufus - rufous hummingbird (SC)
Selasphorus sasin - Allen's hummingbird (SC)
Toxostoma redivivum - California thrasher (SC)

Mammals
Corynorhinus (=Plecotus) townsendii townsendii - Pacific western big-eared bat (SC)
Eumops perotis californicus - greater western mastiff-bat (SC)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)
Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)
Perognathus inornatus - San Joaquin pocket mouse (SC)

Plants

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Amorpha californica var. napensis - Napa false indigo (SLC)
Brodiaea californica var leptandra - narrow-anthered California brodiaea (SLC)
Ceanothus divergens - Calistoga ceanothus (SC)
Ceanothus purpureus - holly-leaved ceanothus (SLC)
Erigeron angustatus - narrow-leaved daisy (=serpentine fleabane) (SLC)
Hesperolinon bicarpellatum - two-carpeled dwarf-flax (=western flax) (SC)
Layia septentrionalis - Colusa layia (=Colusa tidytips) (SLC)
Linanthus jepsonii - Jepson's linanthus (SLC)
Lupinus sericatus - Cobb Mountain lupine (SLC)
Navarretia leucocephala ssp. bakeri - Baker's narvarretia (SC)
Perideridia gairdneri ssp. gairdneri - Gairdner's yampah (SC)
Sidalcea oregana ssp. hydrophila - water-loving checkermallow (=marsh checkerbloom) (SC)
Streptanthus breweri var hesperidis (=S. hesperidi) - green (=serpentine) jewel-flower (SLC)

**CALISTOGA (517D)**

Listed Species

Invertebrates
Syncaris pacifica - California freshwater shrimp (E)

Fish
Hypomesus transpacificus - delta smelt (T)
Oncorhynchus kisutch - coho salmon - central CA coast (E)
Oncorhynchus mykiss - Central California Coastal steelhead (T)
Oncorhynchus mykiss - Central Valley steelhead (T)
Oncorhynchus mykiss - Critical habitat, Central California coastal steelhead (X)
Oncorhynchus tshawytscha - California coastal chinook salmon (T)
Oncorhynchus tshawytscha - Central Valley spring-run chinook salmon (T)
Oncorhynchus tshawytscha - winter-run chinook salmon, Sacramento River (E)

Amphibians
Rana aurora draytonii - California red-legged frog (T)

Birds
Haliaeetus leucocephalus - bald eagle (T)
Strix occidentalis caurina - northern spotted owl (T)

Plants
Astragalus clarianus - Clara Hunt's milk-vetch (E)
Eryngium constancei - Loch Lomond coyote-thistle (=button-celery) (E)
Plagiobothrys strictus - Calistoga allocarya (popcorn-flower) (E)
Poa napensis - Napa bluegrass (E)

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Candidate Species

Fish
Oncorhynchus tshawytscha - Central Valley fall/late fall-run chinook salmon (C)
Oncorhynchus tshawytscha - Critical habitat, Central Valley fall/late fall-run chinook (C)

Species of Concern

Invertebrates
Carterocephalus palaemon ssp. - Sonoma arctic skipper (SC)

Fish
Hysterocarpus traski pomo - Russian River tule perch (SC)
Pogonichthys macrolepidotus - Sacramento splittail (SC)

Amphibians
Rana aurora aurora - Northern red-legged frog (SC)
Rana boylii - foothill yellow-legged frog (SC)
Spea hammondii (was Scaphiopus h.) - western spadefoot toad (SC)

Reptiles
Clemmys marmorata marmorata - northwestern pond turtle (SC)

Birds
Agelaius tricolor - tricolored blackbird (SC)
Amphispiza belli belli - Bell's sage sparrow (SC)
Athene cunicularia hypugaea - western burrowing owl (SC)
Baeolophus inornatus - oak titmouse (SLC)
Chaetura vauxi - Vaux's swift (SC)
Cypseloides niger - black swift (SC)
Elanus leucurus - white-tailed (=black shouldered) kite (SC)
Empidonax traillii brewsteri - little willow flycatcher (CA)
Falco peregrinus anatum - American peregrine falcon (D)
Lanius ludovicianus - loggerhead shrike (SC)
Melanerpes lewis - Lewis' woodpecker (SC)
Numenius americanus - long-billed curlew (SC)
Riparia riparia - bank swallow (CA)
Selasphorus rufus - rufous hummingbird (SC)
Selasphorus sasin - Allen's hummingbird (SC)
Toxostoma redivivum - California thrasher (SC)

Mammals
Corynorhinus (=Plecotus) townsendii townsendii - Pacific western big-eared bat (SC)
Eumops perotis californicus - greater western mastiff-bat (SC)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)

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Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)

Plants
Amorpha californica var. napensis - Napa false indigo (SLC)
Brodiaea californica var leptandra - narrow-anthered California brodiaea (SLC)
Ceanothus divergens - Calistoga ceanothus (SC)
Linanthus jepsonii - Jepson's linanthus (SLC)
Lupinus sericatus - Cobb Mountain lupine (SLC)
Navarretia leucocephala ssp. bakeri - Baker's narvarretia (SC)
Trifolim depauperatum var. hydrophilum - water sack (=saline) clover (SC)

No county species lists requested.

**Key:**
(E) Endangered - Listed (in the Federal Register) as being in danger of extinction.
(T) Threatened - Listed as likely to become endangered within the foreseeable future.
(P) Proposed - Officially proposed (in the Federal Register) for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Marine Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
(C) Candidate - Candidate to become a proposed species.
(CA) Listed by the State of California but not by the Fish & Wildlife Service.
(D) Delisted - Species will be monitored for 5 years.
(SC) Species of Concern/(SLC) Species of Local Concern - Other species of concern to the Sacramento Fish & Wildlife Office.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) Critical Habitat designated for this species

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**Important Information About Your Species List**

**How We Make Species Lists**

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.

Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.

Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regard-less of whether they appear on a quad list.

Any plants on your list are ones that have actually been observed in the quad or quads covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the nine surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

**Surveying**

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

**State-Listed Species**

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. However you should contact the California Department of Fish and Game Wildlife and Habitat Data Analysis Branch for official information about these species.

**Your Responsibilities Under the Endangered Species Act**

All plants and animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take

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permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

**Critical Habitat**

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our critical habitat page for maps.

**Candidate Species**

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

**Species of Concern**

Your list may contain a section called Species of Concern. This is an informal term that refers to those species that the Sacramento Fish and Wildlife Office believes might be in need of concentrated conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. At one extreme, there may only need to be periodic monitoring of populations and threats to the species and its habitat. At the other extreme, a species may need to be listed as a Federal threatened or endangered species. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers.

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Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days.

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