Chapter 18

Cumulative Impacts and Other Required Analyses

18.1 Introduction

NEPA and CEQA require the analysis of cumulative impacts, irreversible and irretrievable commitments of resources, the relationship between short-term uses of the environment and the maintenance and enhancement of long-term environmental productivity, and growth-inducing effects.

18.2 Cumulative Impacts

Cumulative impacts are effects that produce a change in the environment that results from the incremental effect of a project when added to other closely related past, present, or reasonably foreseeable, probable future projects.

CEQ regulations and the State CEQA Guidelines require that cumulative impacts of a proposed project be addressed when the cumulative impacts are expected to be significant (40 CFR 1508.25[a][2], 14 CCR 1530[a]).

18.2.1 Methodology and Significance Criteria

The project-specific effects of the options were evaluated to assess the potential cumulative effects. Only those effects that were identified as permanent effects and that have the potential to be additive to the effects of other projects in the region are analyzed. The analysis focuses on the following resource categories:

- hydrology,
- water quality,
- biological resources—vegetation,
- biological resources—wildlife, and
- biological resources—aquatic resources.

Effects on the following resource categories were found not to have the potential to contribute to cumulative impacts because the effects were extremely minor, were temporary, or had no potential to be additive and therefore contribute to cumulative impacts:

- geology and soils;
- hazards and hazardous materials;
- transportation and circulation;
- air quality;
- noise;
- land use and planning;
- public services and utilities;
- recreation, public access, visual resources, and public health; and
- cultural resources.

The methodology used to analyze the cumulative impacts associated with the key resource topics included

- developing a list of past, present, and reasonably foreseeable future projects in the vicinity of the project area;
- reviewing concerns recently expressed by a scientific panel about the cumulative impacts of baywide restoration and mitigation efforts;
- reviewing the general plans of local counties; and
- qualitatively evaluating the cumulative impacts of past, present, and future projects.

The project would have a significant cumulative impact if it, in conjunction with other projects, would exceed the significance criteria established for a resource topic.

18.2.2 Projects Addressed in the Cumulative Impact Analysis

18.2.2.1 Salinity Reduction and Habitat Restoration Options

Projects considered during the cumulative impact analysis are listed in Table 18-1.

Table 18-1. Ongoing and Reasonably Foreseeable Projects in the Vicinity of the Project

Ongoing	Reasonably Foreseeable Projects
American Canyon Treatment Plant	Bel Marin Keys Restoration Project
Carl's Marsh Restoration Project	Cullinan Ranch Restoration Project
Greenpoint Restoration Project	Fagan Slough Restoration Project
Guadalcanal Village Wetland Mitigation Project	Hamilton Restoration Project
Inner Muzzi Restoration Project	
Mare Island Dredge Ponds Restoration/Recreation	Skaggs Island Restoration Project
Napa River Channel Dredging	Napa Crystallizer Ponds Restoration Project
North Slough Marsh Restoration Project	
Novato Sanitation District Plant Improvements	
Outer Muzzi Restoration Project	
Pond 2A Restoration Project	
Slaughterhouse Slough Restoration Project	
Sonoma Baylands Restoration Project	
Sonoma County Water Agency Storage Reservoir	
Tolay Creek Restoration Project	
Vallejo Highway 37 Widening Project	
Vallejo Marina/Yacht Club Dredging Lease	
Vallejo River Park Master Plan	
White Slough Flood Control Project	
White Slough Restoration Project	

The Napa River Salt Marsh Restoration Project would result in a substantial long-term benefit to endangered species and aquatic resources by creating a substantial amount of new subtidal habitat and eventually marsh habitat. However, there is the potential for several significant cumulative impacts associated with the project. The following sections provide a topical analysis of cumulative project effects.

18.2.2.2 Water Delivery Option

Cumulative impacts associated with the Water Delivery Option are addressed first by evaluating potential combined effects of implementing the Project and Program Components, and then by evaluating impacts associated with other water and wastewater infrastructure improvement projects anticipated to occur in the north bay region.

Water Delivery Project and Program Components

As described in detail in Chapter 2, "Site Description, Options, and Alternatives," the Project Component includes the Sonoma, CAC, and Napa Pipelines, and the Program Component includes the American Canyon, Novato, Petaluma, and Las Gallinas Pipelines.

Other Water/Wastewater Infrastructure Projects

Table 18-2 is an overview of the other infrastructure improvement projects anticipated to occur within the north bay region based on information received from the responsible district or city.

Table 18-2. Other Infrastructure Improvement Projects Anticipated to Occur within the North Bay Region

District or City	Project
Sonoma Valley County Sanitary District	Upgrade the existing plant from secondary to tertiary treatment (next several years~~summer 2004~~).
Novato Sanitation District	Upgrade the Ignacio plant to improve secondary treatment capabilities or combine the Ignacio plant with the Novato plant (scheduled to occur over the next 4–5 years).
	Provide an additional 1-mgd treatment capacity by 2020 (still in planning stages).
City of Petaluma	Implement a 3-phase project to provide recycled water for urban uses. Phase 1 (spring 2004) would bring recycled water from the city's existing agricultural recycled water system to Rooster Run Golf Course and two vineyards. Phase 2 (spring 2007) would connect a new Title 22 recycled water pump station to the Phase 1 pipeline in order to add more customers to the distribution system. Phase 3 (spring 2010) would complete the recycled water distribution system.

18.2.3 Cumulative Impact Analysis

18.2.3.1 Hydrology

Salinity Reduction and Habitat Restoration Options

Impact Cu-1: Cumulative Hydrologic Changes in the Lower Napa River

Implementation of the proposed project in conjunction with other projects would result in potential hydrologic effects on the lower Napa River. Preliminary project modeling, which included the proposed project and the Cullinan Ranch

Restoration Project, indicates that localized hydrologic changes would occur in the tidal sloughs and in the Napa River (Philip Williams and Associates 2002c). Implementation of the Skaggs Island Restoration Project would likely have similar effects, but those effects have not yet been quantified.

The above projects would cumulatively cause a substantial increase in the tidal prism and would likely cause rapid scour of the tidal sloughs and adjoining fringe marshes, resulting in sediment suspension and redistribution throughout the Napa River and into San Pablo Bay. This suspension and redistribution could result in beneficial effects, such as a reduction in the amount of dredging needed in the Napa River and the Vallejo marina. It could also result in adverse effects, such as a slowing of current restoration efforts along the lower Napa River.

Until the tidal sloughs are enlarged enough to convey the full tidal prism, the tidal range will be muted (Philip Williams Associates 2002c). Muted tides may slow the accretion of sediments in the restoration areas; slow the evolution of higher marsh habitats in the restoration areas; and modify the hydrologic regime of existing marshlands within the slough network, potentially causing a vegetation type shift. This vegetation type shift is not expected to be adverse because it represents the natural movement and evolution of habitats, and will be monitored through the adaptive management program designed for the project.

The increased tidal prism would also increase the maximum velocities through the Mare Island Strait and the lower Napa River. Although increased channel velocities may aid in long-term channel maintenance by reducing the need for dredging, the increased velocities may pose a hazard to maritime traffic. Model runs that include the proposed project and the Cullinan Ranch Restoration Project predict that channel velocities may increase by up to 1 meter per second (Philip Williams Associates 2002c). It should be noted that the increased tidal prism is only a partial restoration of the historical tidal prism.

Some uncertainty remains regarding the sediment redistribution effects of the project in the lower Napa River, and this redistribution has the potential to cause substantial adverse affects throughout the area; therefore, this impact is considered significant.

Implementation of Mitigation Measure Cu-1 would reduce this impact to a less-than-significant level.

Mitigation Measure Cu-1: Implement Monitoring and Adaptive Management Program. The project sponsors will prepare a program to monitor and evaluate natural resource changes throughout the project area and in the lower Napa River, and an adaptive management program to rectify, avoid, or minimize long-term adverse project effects. The monitoring program will identify and establish ongoing data collection stations throughout the Napa River Unit, including the lower Napa River. The project sponsors will monitor key project parameters including erosion, water quality, vegetation, wildlife, and fish. The results from this data collection effort will be shared with regional natural resource managers from USFWS, DFG, and the San Francisco Estuary Institute, who are evaluating habitat conditions as a whole. The project sponsors will set

performance criteria for each of these parameters; if the performance criteria are not achieved, the adaptive management program will take effect. The adaptive management program will identify supplemental management techniques to be implemented for each resource parameter.

Water Delivery Option

Implementation of the Water Delivery Option components and the other water and wastewater infrastructure improvements is not expected to substantially alter existing drainage patterns, substantially increase runoff, or increase the risk of substantial property loss, injury, or death as a result of flooding.

18.2.4 Water Quality

18.2.4.1 Salinity Reduction and Habitat Restoration Options

Impact Cu-2: Cumulative Adverse Change in Water Quality

The flushing of other conventional physical and chemical constituents from the salt ponds and other regional projects, including the use of recycled water, into the Napa River could temporarily degrade water quality in the lower Napa River and sloughs.

However, in the future, allowable numeric and narrative water quality objectives will most likely become more restrictive as water quality regulatory programs are implemented. For example, Phase II NPDES stormwater permit rules for municipal and industrial discharges begin to take effect in 2003. TMDL programs for 303(d) listed constituents in Bay Area waters and associated implementation plans will also be completed by the San Francisco Bay RWQCB in the next several years and the draft TMDL for mercury has just recently been prepared. The TMDL implementation plans will contain new restrictions on the allowable mass loading of contaminants from various discharge sources in the watersheds. The specific requirements of these programs and ramifications of the discharges affecting the lower Napa River and northern San Pablo Bay are currently speculative. However, in general these future regulatory programs should improve background water quality conditions and reduce exposure of the restored ponds to water quality impacts from other discharges of toxic and conventional constituents. In addition, background concentrations of the most toxic constituents, such as mercury, organochlorine pesticides, and PCBs are expected to decline gradually over time because their use has been either discontinued or greatly reduced.

Ongoing issues of concern from the point-source and nonpoint-source discharges include adverse changes in the concentrations of pH, temperature, TSS, DO,

oxygen-demanding substances [BOD], and biostimulatory nutrients (nitrogen and phosphorus). Resources that might be adversely affected include fish habitat and habitat for other marine and estuarine aquatic organisms. Some of the contaminants present in the ponds are potentially harmful to aquatic wildlife if the concentration and duration of exposure is sufficiently elevated above baseline conditions. BOD may increase and DO may be sufficiently suppressed to cause short-term impairment of habitat. Specific modeling of fate and transport characteristics of these constituents during salinity reduction operations has not been conducted. In general, the concentration differences of conventional constituents between the ponds and background receiving water are relatively low compared to the difference in salinity. Therefore, careful management of the salinity reduction operations should result in only small increases in receiving water concentrations of conventional constituents. In addition, cumulative restoration efforts for tidal wetland areas throughout the north bay have the potential to provide net environmental benefits. Wetlands are generally acknowledged to provide favorable water quality improvement mechanisms such as filtration, settling, photodegradation, adsorption, and enhanced biological activity (uptake, chemical transformation, degradation).

However, if project operations are not controlled, adverse water quality impacts could potentially occur in receiving waters. Therefore, this impact is considered significant. Implementation of Mitigation Measure WQ-2, "Design Project in Compliance with Resource Agency Permit Conditions and Conduct Water Quality Monitoring" (see Chapter 4, "Water Quality"), and Mitigation Measure Cu-1, "Implement Monitoring and Adaptive Management Program" (see "Hydrology" above) would reduce this impact to a less-than-significant level.

18.2.4.2 Water Delivery Option

Construction activities associated with the Water Delivery Option components and the other water and wastewater infrastructure improvement projects pose the potential to substantially degrade surface water quality. ~~The most notable impacts would relate to erosion and sedimentation from surface runoff on exposed soils. Such impacts would be temporary and local in nature, but are considered cumulatively significant. Implementation of Mitigation Measure Cu-2 would reduce this impact to a less-than-significant level.~~

The use of recycled water for projects with net environmental benefits is considered an important component of the overall waste management strategy of San Francisco Bay RWQCB. Wetland enhancement projects using recycled water are specifically encouraged. The proposed project would eventually provide net environmental benefits in the form of less discharge of waste to the Napa River and San Pablo Bay, once salinity reduction is completed. At that time, the recycled water will be available for irrigated agricultural operations or other wetland enhancement projects, thus reducing discharges to receiving waters. However, construction could result in localized cumulative water quality effects as described below.

Impact Cu-2: Cumulative Adverse Change in Water Quality

Construction activities associated with the Water Delivery Option components and the other water and wastewater infrastructure improvement projects could substantially degrade surface water quality. The most notable impacts would result from erosion and sedimentation caused by surface runoff on exposed soils. Such impacts would be temporary and local in nature, but are considered cumulatively significant. Implementation of Mitigation Measure WQ-6 "Prepare and Implement Water Pollution Prevention Plans," would reduce this impact to a less-than-significant level. This mitigation is described in Chapter 4, "Water Quality."

18.2.5 Biological Resources—Vegetation

18.2.5.1 Salinity Reduction and Habitat Restoration Options

Beneficial Impact Cu-3: Cumulative Change in Sensitive Marsh Plant Communities

Implementation of the project would result in a long-term net increase in habitat suitable for sensitive communities and special-status plant species. Several other restoration projects in the vicinity may have similar long-term benefits. The timing, scope, type, and rate of restoration of this and other projects would vary, and it is considered unlikely that potential effects from multiple projects would coincide such that the viability of sensitive communities or any one special-status plant species is threatened in the region. The implementation of this and other projects is therefore expected to result in the long-term net increase in the availability, connectivity, and quality of habitats suitable for sensitive communities, and the population of special-status plant species. Project implementation would result in a cumulative net benefit to sensitive communities and special-status plant species. This impact is considered beneficial. No mitigation is required.

Impact Cu-4: Increase in Nonnative Smooth Cord Grass

Implementation of this and other tidal marsh restoration projects in the vicinity would increase the probability that nonnative plant species, especially smooth cord grass, would become established and adversely affect habitat restoration. Smooth cord grass and other nonnative invasive species are aggressive colonizers of open, unvegetated habitats typical of early tidal marsh restoration projects, and the number of restoration projects planned in the area increases the availability of suitable habitat for colonization. Several restoration projects along San Francisco Bay have been degraded because nonnative, smooth cord grass has outcompeted native California cord grass. One occurrence of smooth cord grass

was discovered in the project area and removed. The most intact remaining stand of native California cord grass is adjacent to the project site. Consequently, native California cord grass is expected to readily colonize the project area and other tidal marsh restoration projects in the vicinity. Nonetheless, this impact is considered significant. Mitigation Measure V-3, "Monitor and Manage Invasive Exotic Plant Species," would minimize or prevent the establishment of nonnative smooth cord grass in the project area and would reduce this impact to a less-than-significant level. This measure is described in Chapter 5, "Biological Resources—Vegetation."

18.2.5.2 Water Delivery Option

The most notable potential for cumulative impacts on biological resources would occur in conjunction with the Water Delivery Option components, -SVCSD's new reclaimed water storage reservoir, and possibly the City of Petaluma's recycled water improvements. The other projects would occur primarily as improvements at existing WWTPs.

Impact Cu-5: Cumulative Reduction in Sensitive Upland Vegetation Species and Their Habitats

As described in Chapter 5, "Biological Resources—Vegetation," construction of the pipelines under the Project and Program Components of the Water Delivery Option poses the potential for significant impacts on sensitive vegetation species. In addition, construction of SCWA's new reservoir would occur in an area near Schell Slough that could contribute to indirect impacts on sensitive biological resources. Completion of the City of Petaluma's recycled water distribution system could include construction of, or improvements to, pipelines located in proximity to sensitive biological resources.

The overall impacts associated with these projects are considered cumulatively significant. Implementation of Mitigation Measure Cu-~~3~~2 would reduce this impact to a less-than-significant level.

Mitigation Measure Cu-~~3~~2: Conduct Biological Surveys for Sensitive Biological Resources.

Before completion of final plans for design and construction of each project included in the cumulative impacts analysis, a biological survey(s) will be conducted as necessary to determine the presence or absence of sensitive biological resources in, or near, projects proposed by the SCWA or sanitation districts. The survey(s) should be conducted in a manner similar to that described in Chapters 5 and 6 for the currently proposed components of the Water Delivery Option (e.g., use a qualified biologist[s], survey during appropriate season). Additionally, provisions for impact avoidance, minimization, or mitigation similar to those described in Chapters 5 and 6 will be included in each project as appropriate, based on the findings of the biological survey(s) and coordination with affected resources agencies.

18.2.6 Biological Resources—Wildlife

18.2.6.1 Salinity Reduction and Habitat Restoration Options

Beneficial Impact Cu-6: Long-Term Increase in Lower and Middle Marsh Habitat Suitable for Special-Status Species

Restoration of the tidal marshes in the project area would result in a substantial long-term increase in lower marsh and middle marsh habitats. These habitats are suitable for endangered species and species of special concern, including the California clapper rail, California black rail, salt marsh harvest mouse, Suisun shrew, northern harrier, saltmarsh common yellowthroat, and San Pablo song sparrow. Cumulatively, restoration efforts would result in greater habitat complexity, diversity, and productivity and contribute to the overall reestablishment of tidal marsh habitats throughout the bay. This impact is considered beneficial. No mitigation is required.

Impact Cu-7: Loss of Open-Water Habitat for Migratory Shorebirds and Waterfowl

A cumulative change in open water habitats in San Pablo Bay is expected over the next 20–50 years. This change could result in either an increase or decrease of open-water habitat, depending on which restoration/mitigation projects are implemented. For example, if the Cullinan Ranch and Skaggs Island restoration projects (several of the largest possible north bay restoration projects) are implemented, a net increase in open-water habitat would occur. However, if only the Cullinan Ranch project is implemented, there would be a net decrease in open-water habitat.

The ecological values and productivity of the open-water habitat being gained or lost must be considered. Studies being conducted by USGS are beginning to provide insight into these values within the NSMWA (Takekawa et al. 2000). Ponds 1 and 1A, which provide some of the best values to migratory shorebirds, would be unaffected by the project. Pond 2, a pond that has traditionally provided high values to some migratory waterfowl, would be made more sustainable with the improvement of water control structures and levees. Ponds 3, 4, and 5 provided high-quality waterfowl foraging and refuge habitat during salt production and several years ago, although these habitats appear to have declined in value in the last few years because of an inability to manage the ponds effectively. These ponds would be converted to successional tidal marsh that would initially provide foraging and refuge habitat but would become lower and middle marsh in the long term. Ponds 6, 6A, 7, 7A, and 8 would be improved for waterfowl and shorebird use as a result of the reduction in salinity, improved water management ability, and levee improvements.

Changes in open-water habitat are not expected to adversely affect migratory shorebirds and waterfowl because of the numerous foraging and refuge areas throughout San Pablo Bay. Migratory shorebirds and waterfowl would redistribute among available habitats, including White Slough, Slaughterhouse Slough, Carl's Marsh, Ponds 1 and 1A, other ponds within the project area, other restoration/mitigation sites like Cullinan Ranch, and nearshore waters of San Pablo Bay. Proposed monitoring by USGS would provide additional information on the habitat values and species composition changes in the NSMWA and could provide important direction for future adaptive management decisions. Therefore, this impact is considered less than significant. No mitigation is required.

Impact Cu-8: Exposure of Wildlife to Contaminants in Sediments and Waters from San Pablo Bay and the Napa River

Restoration of the tidal marshes in the project area would result in a substantial long-term increase in lower marsh and middle marsh habitats. Reestablishing tidal connectivity to these marsh areas would result in hydrologic exchange between restored marshlands and waters of San Pablo Bay and the Napa River, possibly resulting in the deposition of contaminant ~~laden~~ containing sediments. As discussed in Chapter 4, "Water Quality," reestablishing tidal exchange is expected to cause the quality of water and sediments within the ponds to become closer to the quality of water in San Pablo Bay and the Napa River. The levels of some constituents are expected to increase. Conversely, the levels of other constituents are expected to decrease. On a regional level, contaminants may have an adverse effect on biological resources, including reduction in reproductive success at multiple levels of the ecosystem, immune system effects, and overall reduced population viability. Appendix C, "Contaminants Toxic to Wildlife," includes information on the contaminants and associated biological effects.

Contaminants are found in the waters and sediments throughout the San Pablo Bay, the Napa River, and adjacent areas. As indicated in Tables 4-5 and 4-6, some of these contaminants exceed sediment quality criteria established by NOAA and the water quality criteria established by the SWRCB (CTR). For example, the waters of the Napa River and San Pablo Bay exceed CTR water quality criteria for copper, mercury, nickel and total PAHs. In addition, sediments exceed the ER-L values for copper, mercury, nickel, arsenic, chromium, and DDT, but not the ER-M values for any constituent. The level these constituents would need to reach in combination with the duration of exposure to result in a substantial effect on wildlife abundance is not known. Similarly, the possible accumulation of bioavailable mercury is not known. Cumulatively, over the long-term, changing contaminant levels could result in regional adverse effects on wildlife. Therefore, this impact is considered significant. Implementation of Mitigation Measure Cu-4~~2~~3, "Contribute to Regional Research Efforts on the Exposure of Wildlife to Contaminants," would reduce this impact to a less-than-significant level.

Mitigation Measure Cu-43: Contribute to Regional Research Efforts on the Exposure of Wildlife to Contaminants

As discussed in Section 2.7.3.2, "Wildlife Monitoring in Managed Ponds and Restored Tidal Habitat," USGS would continue to monitor conditions at the project site. At a minimum, monitoring would occur during the salinity reduction phase of the project and for 10 years after each pond is breached. This information would be used to compare preproject and postproject conditions and to identify changes in the condition of biological resources. In addition, as discussed in Section 2.7.4, "Adaptive Management," the project sponsors would implement an adaptive management plan. This plan would establish quantitative standards for the project. The combination of wildlife monitoring and adaptive management would ensure that adverse effects on wildlife are identified and addressed as the tidal marsh is restored.

In the event these monitoring efforts provide data that suggests a regional problem, the project sponsors would contribute their proportional share to the following types of additional mitigation:

- regional ecological risk assessment;
- additional research efforts on contaminants effects on wildlife and methods for minimizing toxic pathways; and
- alternative management methods for restoration areas that demonstrate approaches to reduce susceptibility to chronic bioaccumulation.

18.2.6.2 Water Delivery Option

Impact Cu-9: Cumulative Reduction in Sensitive Wildlife Species and their Habitats

As described in Chapter 6, "Biological Resources—Wildlife," construction of the pipelines under the Project and Program Components of the Water Delivery Option poses the potential for significant impacts on sensitive vegetation and wildlife species. In addition, SVCSD's new reservoir occurs in an area near Schell Slough that could contribute to indirect impacts on sensitive biological resources. Completion of the City of Petaluma's recycled water distribution system could include construction of, or improvements to, pipelines located in proximity to sensitive biological resources.

The overall impacts associated with these projects are considered cumulatively significant. Implementation of Mitigation Measure Cu-32, "Conduct Biological Surveys for Sensitive Biological Resources," would reduce this impact to a less-than-significant level. This measure is described under "Biological Resources—Vegetation" above.

18.2.7 Biological Resources—Aquatic Resources

18.2.7.1 Salinity Reduction and Habitat Restoration Options

Beneficial Impact Cu-10: Increase in Subtidal Habitat

Implementation of the project in conjunction with other projects envisioned in the area could result in an overall increase in the availability, and ultimately the quality, of marsh fringe aquatic habitats throughout the San Francisco Bay area. Nursery habitat for many species would be greatly enhanced by the implementation of this and other restoration efforts. Ongoing water quality monitoring is proposed and would need to be conducted to ensure no adverse effects on aquatic resources. However, this impact is considered beneficial. No mitigation is required.

18.2.7.2 Water Delivery Option

Although construction activities associated with the Water Delivery Option components and other water and wastewater infrastructure improvement projects have the potential to degrade surface water quality and adversely affect fish, such degradation would be temporary and local in nature. Most tertiary treated waste water disposal projects are being conducted to reduce the long-term discharges and improve water quality, thereby benefiting aquatic species. No mitigation is required.

18.3 Other Required Analyses

18.3.1 Relationship between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the environment that would occur with restoration include the impacts on existing wetlands and habitat and those from construction-related activities. However, in the long term, the site is expected to be substantially more productive for habitat and wildlife values.

18.3.2 Irreversible or Irretrievable Commitments of Resources

The project would result in the irretrievable commitment of fossil fuels and other energy sources to build, operate, and maintain the wetlands. The restoration of the site to wetlands, however, is not considered an irreversible commitment because the landscape could be converted to other land uses in the future.

18.3.3 Growth-Inducing Impacts

~~Section 15162.2(d) of the State CEQA Guidelines requires that an EIR address the potential growth-inducing impacts of a proposed project. Specifically, the EIR shall "discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing either directly or indirectly, in the surrounding environment."~~ NEPA requires the analysis of growth inducing effects (40 C.F.R. 1508.8[b]) and t~~T~~hese effects are described for the various project components below.

18.3.3.1 Salinity Reduction and Habitat Restoration Options

The salinity reduction and habitat restoration components of the project would not contribute to regional urbanization, as no urban infrastructure or facilities are proposed as part of the project; therefore, they would not result in any growth-inducing effects.

18.3.3.2 Water Delivery Option

The essence of the proposed Napa River Salt Marsh Restoration Project—restoration of an existing degraded salt marsh—would not, in itself, have any growth-inducing impact (i.e., foster economic or population growth, or the construction of additional housing). ~~However,~~ iImplementation of the Water Delivery Option, if selected, would not be growth-inducing for urban development, but could have a growth-inducing impact relative to the potential future use of recycled water for agricultural irrigation.

SVCSD, NSD, and CAC Waste Water Treatment Plants (WWTPs) would be contributing their recycled water to a pipeline designed to put this water to a beneficial use. The proposed project is not proposing to expand their service areas or otherwise expand their existing treatment facilities. These WWTPs have undergone appropriate CEQA analysis for past facility expansions and are not currently constrained in their operations besides the conditions stipulated in their NPDES permits. In summary, construction of the pipeline and use of recycled

water for the project would not induce urban growth because the WWTPs are not increasing discharges beyond what they could already be discharging.

As described below, the growth of agricultural activity in the north bay region is currently constrained by the availability of water suitable for irrigation. The provision of recycled water suitable for agricultural irrigation could foster economic growth in the north bay region, especially relative to vineyard operations in Napa and Sonoma Counties. The following describes the background of, and basis for, that conclusion.

Background

Napa and Sonoma Counties have a Mediterranean climate (mild wet winters, warm summers) with relatively low precipitation levels. Despite this relatively low rainfall, Sonoma and Napa Counties comprise one of the most important agricultural regions in the state of California. Agricultural land in Napa and Sonoma Counties consists of a variety of agricultural uses including rangeland, pasture, croplands, and intensive agricultural lands.

Rangeland and pastures are primarily grazing lands for cattle, mostly on the hillsides surrounding the diked wetlands. Croplands typically consist of oat hay and are primarily under dryland production, although productivity can be increased by applying irrigation methods. The majority of the lowlands in the diked baylands consist of field crops because the acidic, poorly drained, and highly saline soils are not favorable for more intensive agricultural practices. The moderately well drained soils in the uplands are more favorable for intensively farmed crops including pears, plums, apples, apricots, nuts, and wine grapes. In Sonoma County, 55% of the farmland is used for wine grapes and apples, yet these industries make up 86% of the annual production value (Northwest Economic Associates 1997). Intensive agriculture brings the highest economic yield in the agriculture sector for both counties; however, its productivity is largely dependent on an adequate water supply for irrigation.

The availability of water for irrigation and other purposes in Napa and Sonoma Counties is limited by a number of factors including, but not limited to, water right issues involving a number of users; low precipitation; saltwater intrusion; and poor soil permeability and aquifer recharge.

Surface water sources in the area include Carneros Creek, Huichica Creek, and other Sonoma Creek and Napa River tributaries. Natural runoff from these creeks into San Pablo Bay is highly variable. The upper elevations in the Coast Ranges have very little snowpack, and permeability of the soil is low. Consequently, the majority of runoff occurs during relatively short rain events, and the base flow is poorly sustained. Small tributary streams are often naturally dry during summer months, and the flows between the wet and dry seasons are highly variable. Additionally, the salinity of the surface water near San Pablo Bay varies seasonally and often fluctuates with the quantity of surface water flows. Surface water sources can be brackish and unsuitable during the dry summer months.

Groundwater is also often used for irrigation purposes. Much of the Napa-Sonoma area overlies the Huichica Formation, which is a clay-rich, well-consolidated formation that is low yielding for groundwater. Aquifers underneath the baylands are also in limited supply and often brackish. The groundwater wells meet drinking water standards; however, concentrations of chloride, sodium, or boron are high enough to cause some agricultural concerns.

Recycled water is used in both Napa and Sonoma Counties for irrigation; it irrigates pasture, forage, vineyards, and orchard operations, with forage and pasture being the most prevalent agricultural uses. Currently, about 7,800 acres are irrigated with recycled water.

Increase in Intensive Agricultural Activity

Based on the role that intensive agriculture plays in the regional economy, the importance of irrigation to intensive agriculture, and the existing constraints related to local water sources, the increased availability of, and accessibility to, recycled water in Napa and Sonoma Counties afforded by the Water Delivery Option would likely lead to increased intensive agricultural activity in the region. In particular, vineyard operations could increase, based on economic considerations compared to other types of intensive agriculture. The exact nature, extent, and location(s) of increases in agricultural activity are unknown because converting from passive agriculture to active agriculture or changing intensive agriculture would be a decision made by individual property owners/operators.

It is not anticipated that the provision of recycled water through the Water Delivery Option would result in the conversion of land from agricultural use to urban/suburban development. Title 22, Division 4 of the California Code of Regulations establishes the minimum water quality criteria for various use categories of recycled water. The level of treatment for the recycled water associated with the Water Delivery Option allows the water to be used for irrigation, wetlands, and industrial purposes. The recycled water is not potable.

Napa and Sonoma Counties are, and have long been, occupied predominantly by agricultural uses. Based on history and the extent of these agricultural uses, and the associated general plan and zoning land use designations, the potential for conversion of land from agricultural use to industrial use is considered remote. More likely, the availability of recycled water would reduce the potential for land use conversion in the agricultural portions of Napa and Sonoma Counties by making agricultural operations more economically viable.

Environmental Impacts

The growth inducement described above poses the potential for environmental impacts. The introduction of, or increase in, agricultural irrigation is not expected to notably affect hydrology or water quality, based on state regulations

governing the use and quality of recycled water (i.e., runoff of recycled water is prohibited from leaving the irrigated site).

The availability of recycled water is anticipated to supplement the irrigation supply for existing intensive agricultural areas or enable the conversion of dryland farming areas to irrigated crops. It is not expected to result in the conversion of undisturbed natural areas to agricultural use. As such, potential impacts on biological resources would generally be limited to changes in the nature and activity level of existing disturbed (agricultural) areas. Similarly, potential impacts related to cultural resources, geology and soils, hazardous materials, and public recreation access would be limited by the fact that the change or increase in agricultural activities would likely occur in existing disturbed areas.

No significant land use impacts are expected to occur because the increase in agricultural activities would not represent a notable change in the general nature of land use. Increased agricultural activity may result in increased traffic and associated vehicular air pollutants and noise. Given the rural nature of the general area and the likelihood that the impacts would be localized, the impacts are anticipated to be less than significant.

Overall, the growth inducement associated with the Water Delivery Option is anticipated to have a less-than-significant impact on the environment.