

CHAPTER 2

Master Responses

Some topics in the Russian River Estuary Management Project Draft Environmental Impact Report (EIR) received multiple comments. In order to provide a thorough response on these topics, master responses have been prepared that present a comprehensive discussion of the key items of interest to the commenters. For a list of the individual comments, please refer to **Table 1**, Chapter 1, Summary of Issues Raised by Commenters. Response to each individual comment is provided in Chapter 3, Response to Comments. In the event that one of these major topics is raised in an individual comment, where appropriate, a brief response is provided and the commenter is referred to the following master responses for a complete discussion.

2.1 Relationship to Other Biological Opinion Elements

Introduction

This section addresses comments regarding analyzing the Russian River Estuary Management Project independently of other elements in the Russian River Biological Opinion, including comments stating that by not analyzing the entire Russian River Biological Opinion, specifically the Fish Habitat Flows and Water Rights Project (Fish Flow Project), the Water Agency is “piecemealing” the analysis.

Overview of Issues Raised by Commenters

- All elements of the Russian River Biological Opinion are linked and should be considered as a single “project” under CEQA.¹
- Separation of the Estuary Management Project from the Fish Flow Project is inconsistent with CEQA.
- Project objectives of Estuary Management Project and Fish Flow Project are the same, and therefore should be considered in one environmental document.
- Objective of the Fish Flow Project is flood prevention.
- The Estuary Management Project requires low summertime Russian River flows.
- The impacts associated with the Estuary Management Project could be exacerbated by implementation of the Fish Flow Project and all impacts should be addressed in this Draft EIR.

¹ CEQA is defined as the California Environmental Quality Act.

- The Russian River Biological Opinion states that low flow is required for the Estuary Management Project and therefore both projects should be considered in the same document.

Discussion

The 2008 NMFS Russian River Biological Opinion requires that the Water Agency and the United States Army Corps of Engineers (USACE) take a series of actions² throughout the Russian River watershed between 2008 and 2023. The required actions are intended to avoid jeopardizing populations of listed³ steelhead and coho salmon and their critical habitat and to improve conditions for these listed fish species. However, each required action has independent utility; any specific required action does not lead to, follow from, or make any other action more likely. Each action must be carried out at a different time and at a different location. Each has already been subject to or will be subject to its own separate environmental reviews and permit requirements.

The Russian River Biological Opinion requires that the Water Agency change its stream maintenance program, enhance Dry Creek fishery habitat, change its Estuary management practices, and request modifications to state-mandated minimum instream flow requirements. All of these required actions are intended to improve conditions for listed salmonids, but each is independent.

For example, the Russian River Biological Opinion requires that the Water Agency change the way it managed more than 200 miles of natural and engineered stream channels throughout Sonoma County so that those channels provide improved conditions for listed fish species while still providing flood protection. In 2009, the Water Agency completed an environmental impact report for its revised stream maintenance program and approved the revised program. The Water Agency obtained all necessary permits, and is now carrying out the revised stream maintenance program. The Russian River Biological Opinion also requires a series of actions on Dry Creek, the 14-mile long tributary to the Russian River into which Warm Springs Dam water is released. The Russian River Biological Opinion concluded that the releases create high velocity flows harmful to listed salmonids and requires the Water Agency to improve habitat over 6 miles of Dry Creek channel over a 12 year period. The Water Agency has released an Initial Study and Mitigated Negative Declaration for a Dry Creek habitat demonstration project and will complete appropriate CEQA analysis before implementing the demonstration and future habitat enhancement projects. The Russian River Biological Opinion also requires that the Water Agency study the feasibility of using a pipeline for water supply flows to bypass Dry Creek in case habitat enhancements do not provide the expected improvements to habitat within Dry Creek. Completion of the appropriate level of CEQA documentation would be required for implementation of such a pipeline.

² The Russian River Biological Opinion identifies these actions as Reasonable and Prudent Alternatives (RPAs). So long as the Water Agency is in compliance with the Russian River Biological Opinion and carrying out the RPAs, it is avoiding jeopardizing the continued existence of listed salmonids and their critical habitats and allowed to incidentally 'take' listed species and still be in compliance with the Endangered Species Act.

³ Under the Endangered Species Act, fish may be 'listed' as threatened or endangered.

The Estuary Management Project and the Fish Flow Project (described in Draft EIR Chapter 5.0, Cumulative Analysis, Section 5.2.4) are two additional projects required by the Russian River Biological Opinion, and similarly are independent and subject to separate environmental review. They have different objectives, are to be implemented at different times in different locations, have separate environmental impacts, and are subject to approvals of different regulatory agencies. Implementation of each project is a separate requirement of the Russian River Biological Opinion and as such, the implementation and success of one project is not predicated on the implementation and success of another project.

The separateness of the two projects is shown by evaluating the following factors:

- **Timing:** The Russian River Biological Opinion requires a wide range of Water Agency and USACE activities through 2023, and the Russian River Biological Opinion requires completion of these activities over varying timelines. The Russian River Biological Opinion requires that the Estuary Management Project be carried out immediately. In contrast, the Russian River Biological Opinion requires that the Water Agency complete a final EIR for the Fish Flow Project by September 2013 and does not anticipate that the State Water Resources Control Board will act to change the minimum instream flows until about 2014 to 2016.⁴ The Water Agency has petitioned the State Water Resources Control Board to change minimum flows and issued an NOP for the Fish Flow Project EIR, as required by the Russian River Biological Opinion, and is preparing a draft EIR. Tying the two projects into one EIR would have prevented the Water Agency from meeting the Russian River Biological Opinion requirement that the Estuary Management Project be implemented immediately.
- **Regulatory Approvals:** The two projects do not require the same regulatory approvals. The Estuary Management Project requires permits from the California Department of Parks and Recreation, California Coastal Commission, California State Lands Commission, California Department of Fish and Game, and North Coast Regional Water Quality Control Board. The Water Agency must complete the CEQA process in 2011 in order to maintain these permits. The Fish Flow Project, on the other hand, cannot be carried out without extensive changes to the Water Agency's state water rights approved by the State Water Resources Control Board, which must hold public hearings before issuing a decision. The Fish Flow Project does not require permits from California Department of Parks and Recreation, California Coastal Commission or the California State Lands Commission, and the State Water Resources Control Board is not required to issue any water rights approvals for the Estuary Management Project.
- **Location:** The Estuary Management Project has effects only from the mouth of the Russian River to Vacation Beach, approximately 14 miles upstream. The Fish Flow Project, on the other hand, affects instream flows over the majority of the Russian River and Dry Creek.

⁴ The Russian River Biological Opinion recognized that changing D1610 minimum instream flow requirements would require filing a petition to change D1610 with the State Water Board, completing a multi-year EIR, and a State Water Board hearing process, and that this process would require 6 to 8 years to complete. (NMFS 2008, page 243)

To the extent that these geographic areas overlap or result in or have overlapping impacts, these impacts are discussed in the Draft EIR Chapter 5.0, Cumulative Impacts.⁵

- **Objectives:** The Estuary Management Project's purpose is to change the way the Water Agency manages the Estuary during the lagoon management period, so that the Water Agency can improve Estuary conditions for rearing juvenile steelhead while continuing to provide flood control protection. The Fish Flow Project's purpose, on the other hand, is to reduce minimum instream flows through different reaches of the Russian River and Dry Creek, in order to enhance various salmonid life stages currently affected by the velocity of the flows.

The sharing of an overall objective, to avoid jeopardizing populations of listed steelhead and coho salmon and their critical habitat, and to improve conditions for these listed fish species, does not negate the independent utility of the Estuary Management Project to provide enhanced juvenile salmonid rearing habitat within the Estuary.

- **Relationship Between Projects:** The Estuary Management Project will govern the Water Agency's breaching of the Estuary under all foreseeable instream flow conditions, with or without the instream flow levels proposed by the Fish Flow Project. The Water Agency has been managing water levels in the Estuary through breaching since 1995. At the times the Water Agency has breached the Estuary to prevent flooding, instream flows in the Russian River have ranged from 77 cubic feet per second (cfs) to 1,250 cfs. Although the Water Agency is required by the State Water Resources Control Board to maintain *minimum* flows in the Russian River, flows often greatly exceed the prescribed minimums due to natural flow from unmanaged tributaries on the river. Thus, depending on the year type and season, instream flows into the Estuary are, and will continue to be, a combination of natural runoff and releases from storage. The Estuary Management Project was developed to govern the Water Agency's breaching activities under all flow conditions, regardless of the level of instream flows, and does not require or make more likely any changes to the existing minimum instream flows. The Fish Flow Project, on the other hand, proposes to reduce the level of flows in the Russian River and Dry Creek. Under the Fish Flow Project, flows into the Estuary could be lower in some years, depending upon the extent of natural runoff and tributary flows. Reduced minimum flows in the river, and the resultant possible reduced flows into the Estuary, if approved by the State Water Resources Control Board, may make it easier for the Water Agency to maintain the water levels identified in the Russian River Biological Opinion as beneficial in some years.⁶ However, these lower flows are not required in order for the Estuary Management Project to be carried out. The Water Agency must carry out the Estuary Management Project regardless of whether lower minimum Russian River flows are ever approved by the State Water Resources Control Board. The Estuary Management Project, as designed and as evaluated in the Draft EIR, is feasible with or without the reduced minimum flows proposed by the Fish Flow Project. Accordingly, the individual impacts of the Fish Flow Project need not be described in this EIR. The cumulative effects of both projects are analyzed in Draft EIR Chapter 5.0, Cumulative Analysis.

⁵ CEQA Guidelines Section 15156 explains: "Where one project is one of several similar projects of a public agency, but is not deemed a part of a larger undertaking or larger project, the agency may prepare one EIR for all projects, or one for each project, but shall in either case comment on the cumulative effect."

⁶ As noted in the Draft EIR Chapter 3.0, Project Background and Environmental Setting, page 3-3, however, ocean wave conditions have a significant influence over when the Estuary closes and opens, and such ocean conditions are wholly unrelated to the level of flows coming into the Estuary.

Comments stating that the Estuary Management Project depends upon the Fish Flow Project or makes the Fish Flow Project necessary misunderstand the fundamental nature of the Estuary Management Project. The Estuary Management Project has two fundamental objectives – flood protection and enhancing juvenile salmonid habitat (Draft EIR Section 2.3.1). The proposed project meets these objectives by providing for continued historic breaching of the barrier beach (Draft EIR Section 2.3.2) outside the lagoon management period, but modified breaching activities during the lagoon management period, in order to increase freshwater levels in the Estuary while minimizing flood hazard (Draft EIR Section 2.3.3). The Water Agency will also create and maintain a lagoon outlet channel in order to stabilize such higher water levels and minimize flood hazard (Draft EIR Section 2.4). The Russian River Biological Opinion concludes that reducing minimum instream flow requirements, as provided by the Fish Flow Project, will enable flows that will, among other benefits to salmon habitat in the watershed, provide a lower inflow to the Estuary between late spring and early fall, thereby enhancing the potential for maintaining a seasonal freshwater lagoon. However, the Russian River Biological Opinion does not condition lagoon management on achieving lower minimum instream flows during the lagoon management period. The Water Agency is required to implement the Estuary Management Project during the lagoon management period, regardless of the inflow into the Estuary at the time of barrier beach formation and closure of the river mouth. As discussed in detail in the Draft EIR and elsewhere in the responses to comments, because of unregulated tributary inflows, overall inflows into the Estuary are largely outside the control of the Water Agency, especially during the first part of the lagoon management period. Following natural closure of the estuary, the Estuary Management Project actions (reduced breaching, implementation of outlet channel, and maintenance of higher water levels) will take place without regard to the rate of inflow into the Estuary.

Several comments acknowledge the overlap in geographic extent of the projects required under the Russian River Biological Opinion, and this overlap is considered in the cumulative impact analysis in Draft EIR Chapter 5.0. Section 5.2.4 includes a brief description of the Fish Flow Project, types of impacts anticipated to result from the Fish Flow Project, the relationship to the Estuary Management Project, as proposed, and the potential contribution to cumulatively significant impacts. The analysis determined that the Estuary Management Project together with the proposed Fish Flow Project could have a cumulatively considerable contribution to water quality and recreational impacts.

The rationale behind the “piecemealing” prohibition is that the requirements of CEQA cannot be avoided by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial.⁷ The danger the prohibition seeks to avoid is the subdivision of a single project into smaller individual subprojects in order to avoid the responsibility of considering the environmental impact of the project as a whole. This rationale is not implicated in the present situation. The Water Agency has

⁷ The concept of project *piecemealing* or segmentation derives from the CEQA Guidelines definition of a “project,” Section 15165, and case law. The CEQA Guidelines define “project” as “the whole of an action, which has a potential for resulting in a physical change in the environment, directly or ultimately...” (Section 15378[a]). CEQA prohibits concealing the environmental consequences of a project by separately focusing on isolated parts and overlooking the cumulative effect of the whole action.

carried out a careful, detailed, and exhaustive evaluation of the potential environmental impacts of the Estuary Management Project, and has issued a Notice of Preparation for an EIR which will do the same for the Fish Flow Project. All of the environmental impacts of these two separate projects will be fully analyzed and brought to light, including any cumulative impacts of the two projects. The Water Agency is preparing two EIRs because the two projects are separate with respect to their purposes, their objectives, their physical locations, their timing, the actions that will be undertaken to carry them out, and their environmental impacts.

2.2 Project Description, Impact Areas and Scope of Analysis

Introduction

This section addresses comments about the project description, including implementation methods, and impact analysis within two geographic areas discussed in the EIR: the Estuary Study Area and the Maximum Backwater Area.

Overview of Issues Raised by Commenters

- Draft EIR focuses on impacts in Jenner and Duncans Mills, but impacts will extend upstream.
- Analysis should extend farther upstream to Vacation Beach, Monte Rio, Forestville, and Dry Creek.

Discussion

Although the focus of Water Agency Estuary management activities is the barrier beach at the mouth of the Russian River,⁸ the Draft EIR analyzes environmental impacts over a greater area, from the mouth of the Russian River upstream to and including the Vacation Beach area. The Water Agency has no information that this project would have impacts upstream of Vacation Beach, and no such information was provided by comments received on the Draft EIR.

The Water Agency has detailed information about conditions in the Estuary up to the Duncans Mills area, beyond the confluence with Austin Creek. The Draft EIR identifies this area as the Estuary Study Area. The Water Agency has more general information about conditions from Duncan Mills upstream to Vacation Beach. The Draft EIR identifies this area as the Maximum Backwater Area. Although both areas are evaluated in the Draft EIR, the level of detail reflects the level of information available to the Agency for each particular area.

⁸ As presented in Draft EIR Chapter 2.0, Project Description.

The Estuary⁹ extends from the mouth of the Russian River upstream approximately seven miles to the Duncans Mills area at the confluence of the river with Austin Creek. Within this Estuary Study Area, the Water Agency has developed high resolution water quality, vegetation, biological resource, and bathymetric information. The bathymetric data used in the analysis (EDS, 2009) is the best available information. The Estuary Study Area itself has three primary reaches: lower, middle and upper reach (see Draft EIR Figure 2-3) and the Draft EIR discusses environmental impacts for each reach based on the detailed information available.¹⁰

From this detailed information, the Water Agency determined that, under certain closed conditions, increases in water elevations that result from implementation of the proposed project may extend beyond Duncans Mills upstream as far as Vacation Beach. The impacts within this Maximum Backwater Area are also evaluated, using the less detailed information that is available. However, because the upper reach of the Estuary Study Area is primarily freshwater, as is the Maximum Backwater Area, the Water Agency was able to use the detailed information available for the upper reach of the Estuary Study Area to evaluate impacts within the Maximum Backwater Area. The Water Agency has no evidence that backwatering conditions extend further upstream nor was evidence presented by commenters.

In addition to the detailed analysis presented for impacts from the mouth of the river to Duncans Mills, the Draft EIR analyzed and disclosed environmental impacts between Austin Creek (in proximity to Duncan Mills) upstream to Vacation Beach for geology and soils (Draft EIR Section 4.1), water levels (Draft EIR Section 4.2.), Water Quality (Draft EIR Section 4.3) Biological Resources (Draft EIR Section 4.4), Fisheries (Draft EIR Section 4.5), Land Use and Agricultural Resources (Draft EIR Section 4.6), Recreational Areas (Draft EIR Section 4.7), Cultural Resources (Draft EIR Section 4.8), Noise (Draft EIR Section 4.9), Air Quality (Draft EIR Section 4.10), Traffic (Draft EIR Section 4.11), and Hazardous Materials (Draft EIR Section 4.12), Public Services, Utilities and Public Safety (Draft EIR Section 4.13) and Aesthetic Resources (Draft EIR Section 4.14).

In summary, the impact analysis for Estuary Study Area and the Maximum Backwater Area reflects the level of information available to the Agency for each particular area. The fact that there are different levels of available detailed information for the Estuary Study Area and Maximum Backwater Area does not mean that the disclosure within each area is inadequate. Although it is correct that the Water Agency did not evaluate impacts above Vacation Beach, there is no information that impacts would result from the proposed project.

⁹ As defined on page 2-2 of the Draft EIR, estuary is defined as a partly enclosed coastal body of water with a river flowing into it, and open connection to the ocean (tidally influenced). The term “Estuary,” in the context of the Draft and Final EIR, refers to the geographic location of the project, recognizing that the proposed project involves creation of a “lagoon,” which is defined as a freshwater or brackish body of water separated from the ocean by a barrier beach.

¹⁰ This information collected by the Water Agency as part of its ongoing management is the best available information about “existing conditions” in the Estuary Study Area.

2.3 Project Feasibility

Introduction

This section addresses comments about project feasibility and the ability to achieve project objectives.

Overview of Issues Raised by Commenters

- Project design and adaptive management are experimental and unsubstantiated.
- Russian River watershed is different than referenced examples identified in the Russian River Biological Opinion and used to formulate project approach. Other watersheds referenced are not as large, do not have the same level of agricultural and urban land uses, or are not as impaired as Russian River Watershed.
- Project is experimental; should review other proven restoration examples in other West Coast locations.
- Lagoon outlet channel will not be successful because it is not possible to design a sand spillway that will withstand erosional force.
- Project does not have an established timeframe or success criteria.

Discussion

The National Marine Fisheries Service (NMFS) is the federal agency responsible for management of federally listed marine species, in this case endangered and threatened coho salmon, Chinook salmon, and steelhead, under the Endangered Species Act. In the Russian River Biological Opinion, NMFS assessed the condition of each of the three listed salmonid species relative to their extinction risk and described the function and role of their respective critical habitats for species conservation. The Estuary Management Project, both in terms of its design methodology and the use of adaptive management, has been developed to provide enhancement of habitat conditions for these species. A discussion of design methodology, adaptive management, success criteria, and use of this approach in other watersheds by NMFS is presented below.

Design Methodology

Design methodology for developing the lagoon outlet channel is based on understanding how a naturally-closing estuary forms a freshwater lagoon during summer time conditions at other California small to mid size coastal river mouths. The design was developed using a conceptual model of physical processes based on the following design criteria (PWA, 2010):

- Knowledge gained from prior artificial breaching
- Principles of adaptive management
- Observations of conditions during past periods of outlet channel closures
- Variables influencing implementation

- Channel alignment before closure
- Beach berm elevation
- Rate of lagoon water surface elevation increase
- Use of existing bedrocks as grade control
- Predicted outcomes/success/feasibility of the channel
- Target conditions – lagoon water level non-tidal, between 7 and 9 feet water level, some slow variation in response to river discharge, wave overwash, tides, evolving morphology of the outlet channel.

Because of the dynamic nature of channel morphology, it is difficult to predict the specific performance of the outlet channel. Therefore, the Estuary Management Project has been developed using adaptive management, which proposes design strategies, adjusts to the current conditions at the time of closure, and implements, monitors, and revises strategy and implementation methods as needed.

As described in the process flow chart in Draft EIR Figure 2-5, the proposed project assumes potential for channel closure after the outlet channel is initially established, and includes a maintenance component to re-establish the channel if necessary. The channel design is included in the Adaptive Management Plan (PWA, 2011). Based on engineering calculations, the channel bed slope must be essentially flat (slope on the order of 0.0001) with water depths of less than 2 ft, preferably 0.5 to 1 ft, to reduce the likelihood of channel scour. Tidal fluctuations in water level and variability in wave intensity will cause the locations of scour and deposition to shift at hourly timescales, but averaging across several tidal cycles, any sand lost by scour will be balanced by an equivalent amount of deposition (PWA, 2011).

Adaptive Management

Recognizing the variable and dynamic nature of the Russian River system, influence from external human inputs, and the future uncertainty of natural conditions, the Estuary Management Project is intended to be implemented as an adaptive management project. Adaptive management is a decision process that promotes flexible decision-making within a given set of accepted criteria that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Adaptive management requires: 1) monitoring of biological productivity, water quality, and physical processes in the Estuary in response to the changes in management actions that control water surface elevations in the estuary-lagoon system; and 2) refinement of management actions to achieve desired water levels to support improved biological productivity, while simultaneously providing flood management for properties adjacent to the Estuary. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. Adaptive management is not an experimental ‘trial and error’ process; rather, it provides a structured approach to resource management. It is an iterative process in which the actions and tasks implemented to meet the management objectives are continually revisited and revised based on monitoring results and analysis relative to performance. Although predicting the actual outcome of the actions may be uncertain, actions are implemented purposefully, in coordination with regulatory agencies, with a

specific intended outcome. By repeating the lagoon management cycles, collecting information, and generating increasing knowledge about the Estuary system, the Water Agency and NMFS are able to refine prescriptions to more closely meet the objectives of the Russian River Biological Opinion. For many important problems now facing the resource management community, adaptive management may reduce the uncertainties inherent to the management of natural resource systems, and allow for flexibility of response to changing conditions. For many conservation and management problems, utilizing management itself in an experimental context may be the only feasible way to gain the system understanding needed to improve management (USGS, 2009).

Timeframe and Success Criteria

The Russian River Biological Opinion identified specific targets for the Estuary Management Project (NMFS 2008, page 249) that were noted in Draft EIR Chapter 2.0, pages 2-12 and 2-14: “The Estuary water level management targets (NMFS, 2008) are as follows:

1. Daily maximum water surface elevation of 3.2 feet during 70% of the year.
2. Average daily water surface elevation of at least 7 feet from May 15 to October 15.”

Other Estuary Examples

NMFS, as the federal agency with fisheries expertise, concluded that information from other estuaries was relevant. Based upon the range of the three salmonid species at issue and the benefits of estuarine rearing for the survival of steelhead, and possibly coho salmon, shown in some of these systems, analysis of other watersheds, including those in Santa Cruz, San Mateo, Marin, Sonoma and Humboldt counties, were discussed in the Russian River Biological Opinion. Although each watershed, including the Russian River, is unique in terms of its physical and land use characteristics, the issues contributing to species decline within the broader recovery area for these species are generally thought to be consistent across these watersheds. The Estuary Management Project is based on the NMFS analysis in the Russian River Biological Opinion and is proposed to enhance juvenile salmonid rearing habitat within the Russian River Estuary. Other estuaries, including the Soquel Creek, Carmel, Pescadero, San Lorenzo, Navarro, and Gualala, among others, are actively managed areas in California with restoration programs targeting salmonid fishery recovery. Each of these estuaries provide rearing habitat for steelhead during the summer months, which is thought to be a key and consistent habitat requirement for species recovery.

2.4 Water Quality

Introduction

This section addresses comments about potential water quality impacts associated with implementing the Russian River Estuary Management Project.

Overview of Issues Raised By Commenters

- Relationship of Basin Plan, water quality objectives, and TMDL 303(d) list to the proposed project.
- Characterization of observed low oxygen conditions in the Estuary (anoxic and hypoxic conditions) as existing or natural conditions.
- Water quality impacts related to dissolved oxygen, nutrients and bacteria, with potential secondary effects to public health and recreation (water contact sports).
- Water quality impacts associated with lower flows associated with the Fish Flow Project (See Master Response 2.1).
- Potential project effects on sedimentation within the Estuary.
- Relationship of water quality to secondary biological effects (fish health, algal blooms, *Ludwigia*).
- Potential project effects on ocean water quality.
- Monitoring data is insufficient; specifically, the availability, adequacy, and range of water quality data collected in 2009 and 2010 is not adequate. Additional monitoring should be implemented.
- Draft EIR should address a broad range of water quality topics.
- Draft EIR should address water quality effects on fish.

Discussion

Basin Plan, Water Quality Objectives, 303(d) List of Impaired Waterbodies, and TMDL Policy

As discussed in Draft EIR Section 4.3, Water Quality, potential project impacts are considered in relation to the Regional Water Quality Control Board's (NCRWQCB) North Coast Basin Plan (Basin Plan). The Basin Plan identifies beneficial uses for surface waters within the project area and establishes water quality objectives (WQOs) for freshwater and estuarine bodies to protect these beneficial uses. Together, the WQOs and beneficial uses are called "water quality standards". As discussed in the Draft EIR, the proposed project would not result in changes to water quality that would violate any such water quality standards applicable to the Estuary. The Draft EIR does, however, identify the potential for nutrient and pathogen conditions in the Estuary to be adversely affected.

Section 303(d) of the federal Clean Water Act requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., do not meet one or more of the water quality standards established in a basin plan). These waters are then identified on the "Section 303(d) List of Impaired Water Bodies." Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant that is causing the conditions of impairment. A TMDL is the maximum amount of a pollutant that a water body can receive and

still meet water quality standards. The TMDL process provides a quantitative assessment of contributing sources of pollution and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual water body for a given pollutant. In other words, TMDLs focus on controlling discharges into impaired waters.

The Estuary Management Project would not create or control sources of discharges of pollution or pollutant loads into the Russian River system. Therefore, the proposed project would not affect existing or proposed TMDL processes. It should be noted that the 2010 303(d) List of Impaired Waterbodies includes three impairments for the Russian River: pathogen/indicator bacteria; temperature; and sedimentation/siltation. NCRWQCB staff are in the process of developing a pathogen TMDL to address indicator bacteria with an extensive monitoring program to be implemented in 2011. NCRWQCB staff are proposing to develop a region-wide temperature TMDL implementation policy. Sedimentation is addressed, in part, by the TMDL Policy Statement for Sediment-Impaired Receiving Waters in the North Coast Region (Resolution No. R1-2004-0087).

The Water Agency has no authority to compel any person or entity to take any action to improve or maintain water quality within any part of the Russian River, including the lower Russian River. Nor does the Water Agency have any authority over any land use activities that may be contributing to degradation of water quality. The Water Agency is, however, required by the Russian River Biological Opinion to continue to monitor water quality parameters in the Estuary, and will integrate results of monitoring into the adaptive management process. Results of monitoring have been, and will continue to be, made available to the NCRWQCB and the public.

Primary Impacts to Water Quality

Water quality conditions existing in the Estuary are characterized in Chapter 3.0, Project Background and Environmental Setting, and analyzed in Section 4.3, Water Quality. The EIR uses the best available information regarding existing conditions within the Estuary, and notes that there are existing exceedances of certain water quality standards identified in the Basin Plan. There are also water quality constituents that have not been specifically addressed in the Basin Plan for estuaries; draft guidelines and recommendations have been used as surrogates for comparison. In considering the Basin Plan's WQOs and their corresponding goal of protecting beneficial uses, Draft EIR Section 4.3, Water Quality, notes that many of the Basin Plan's WQO are established for freshwater conditions. As such, they are not necessarily applicable to the dynamic processes that are found within estuarine systems, particularly with respect to dissolved oxygen conditions associated with stratification.

It should be noted that RWQCB regulates discharges of pollutants or waste, and that the regulatory scheme is not intended to protect beneficial uses from naturally occurring water quality conditions. Rather, its intent is to ensure that anthropogenic sources and activities do not adversely affect beneficial uses. The Estuary Management Project does not generate any such anthropogenic sources that would affect water quality. The State Water Resources Control Board is currently investigating estuaries to determine what appropriate bacterial (and nutrient source) levels are. Until then, existing water quality guidance only relates to freshwater, not estuarine, systems.

Water quality issues, including short-term impacts during outlet channel creation (Impact 4.3.1), impacts to salinity, dissolved oxygen, and temperature during the lagoon management period (Impact 4.3.2), and effect of nutrient and bacteria levels during the lagoon management period (Impact 4.3.3), are disclosed in Draft EIR Section 4.3, Water Quality. The impacts are evaluated in accordance with criteria identified in the CEQA Guidelines Appendix G, which require analysis of violation of water quality standards, alteration of drainage such that increased siltation or sedimentation occurs, or creation of additional pollutant sources. Additionally, Draft EIR Chapter 5.0, Cumulative Analysis, includes a review of water quality impacts considering other cumulative projects, including the Fish Flow Project. The analysis concludes that the Estuary Management Project, considered in conjunction with foreseeable effects associated with other cumulative projects, could result in cumulatively considerable water quality impacts related to nutrients and bacteria. Therefore, the Draft EIR analyzed and disclosed the range of potential adverse water quality impacts associated with the Estuary Management Project relative to the significance criteria required under CEQA. Under CEQA Guidelines Section 15151, an evaluation of the environmental effects of a proposed project need not be exhaustive; the range of water quality issues examined in the Draft EIR was reasonable based on available data and range of potential impacts. A discussion of specific water quality constituents identified in the comments received is provided below.

Dissolved Oxygen

Several comments received on the Draft EIR state that water quality conditions in the Estuary resulting from the project will exceed Basin Plan WQOs for dissolved oxygen, and that such exceedances are indicative of impaired water quality conditions. Although dissolved oxygen may exceed Basin Plan WQOs within the deepest parts of the Estuary water column, this is not an impact of the project. Rather, this is an existing condition that has been well documented by the Water Agency and others since 1996. Dissolved oxygen is an indicator of water quality as it relates to biological productivity. Existing dissolved oxygen conditions reflect re-occurring annual processes in the Estuary, including the formation of anoxic and hypoxic zones in the deepest parts of the Estuary. The dynamic steady-state between oxygen supply and consumption determines the oxygen concentration. In water bodies where the rate of consumption equals the rate of supply, water becomes devoid of oxygen and thus anoxic.

Reduced dissolved oxygen levels are a function of stratification of the Estuary along temperature and salinity gradients. These areas become isolated zones, where biological processes and lack of turnover or mixing result in consumption of available oxygen by biological processes, resulting in low dissolved oxygen levels. Anoxic and hypoanoxic zones currently occur within the Estuary, and are commonly observed phenomena in estuaries in California. Therefore, the occurrence of these zones is a well-documented existing condition that results from physical processes. As noted in the Draft EIR and past Water Agency sampling efforts, overlying freshwater layers provide ample dissolved oxygen in those layers during open and closed conditions.

Nutrients and Bacteria

Potential significant and unavoidable impacts to water quality associated with nutrient and bacteria levels are acknowledged and analyzed in Draft EIR Section 4.3, Water Quality. As noted on Draft EIR pages 4.3-7 and 4.3-12, there are currently no specific limits on nutrient and bacteria levels for estuarine systems, only freshwater. As discussed in the Draft EIR (page 4.3-24), the precise response of the Estuary to the Estuary Management Project cannot be predicted with certainty. As discussed in Draft EIR Section 4.3, it is anticipated that nutrient and bacteria conditions would remain within the range of those experienced within the Estuary over the past 15 years, but that the duration of those conditions would likely increase as a result of the project. Therefore, based upon the best available information, this EIR concludes that the proposed project would have the potential to result in significant and unavoidable impacts to water quality related to bacterial and nutrient levels in the Estuary.

Localized water quality may be improved in some areas of the Estuary and diminished in others. Freshwater lagoon conditions and stratification observed within the Estuary, in combination with the proposed Estuary Management Project, could result in physical processes and water quality conditions that could have a temporary, adverse affect on aquatic ecology. These conditions include potential algal blooms associated with nutrient loading, or other dynamic physical processes that could affect water quality. The potential for dynamic physical processes to adversely affect water quality currently exists within the Estuary, and their occurrence is considered part of the existing ecological regime of the Estuary.

The Estuary Management Project is intended to improve habitat conditions for juvenile salmonids. Adverse water quality conditions have occurred as a result of currently-occurring physical processes of the Russian River Estuary under existing conditions, and may occur in the future both with, and without, implementation of the Estuary Management Project. It should be noted that the Estuary Management Project's Adaptive Management Plan includes provisions for breaching in the event that flooding conditions, water quality conditions, or biological resource conditions warrant, after consultation with NMFS and California Department of Fish and Game.

Sampling events in 2009 and 2010 indicate there is a large variation in indicator bacteria levels observed through the different sections of the Estuary. These variations were observed to occur under both open and closed mouth conditions and may be seasonal as well. As noted in Draft EIR Section 4.3, Water Quality, pages 4.3-7 and 4.3-12, there are currently no quantified limits on nutrient and bacteria levels for estuarine systems, only freshwater. The Draft EIR also includes a cumulative analysis to evaluate the potential cumulative water quality impacts of the Estuary Management Project with the Fish Flow Project and concludes that potential adverse impacts are cumulatively considerable. As analyzed in Draft EIR Chapter 5.0, Cumulative Analysis (page 5-12), reduced inflows into the Estuary resulting from the Fish Flow Project could adversely affect water quality conditions, particularly with respect to bacteria and nutrient levels within the Estuary during freshwater lagoon conditions. Reduced flows may reduce the assimilative dilution capacity of Russian River flows upstream of the Estuary, and assuming inputs within the watershed remain constant, could result in increased concentrations of nutrients and indicator bacteria. Diminished water quality would have the greatest potential to occur during dry

hydrologic years. As discussed in Section 4.3, Water Quality, areas upstream of the Estuary (upstream of Austin Creek) are identified by the NCRWQCB as impaired for bacteria. Water quality sampling by various entities, including the Water Agency, have not identified bacterial levels that warrant listing the Estuary as impaired, and the 303(d) listing for bacteria is limited to areas upstream of Austin Creek.

Secondary Effects related to Water Quality

As noted in Draft EIR Sections 4.4, Biological Resources, and 4.5, Fisheries, project implementation is not expected to result in water quality conditions that would produce adverse secondary biological effects. The following discussion responds to comments regarding potential secondary impacts to Estuary ecology associated with changes in water quality, including: fish health, algal (blue-green, phosphorescent) blooms and red tides, and *Ludwigia* distribution. While these comments did not specify potential impacts related to project implementation, this response provides general information regarding these topics and demonstrates that the Estuary Management Project would not result in such adverse environmental effects.

Fish Health

As described in Draft EIR Section 4.5, Fisheries, Impact 4.5.2, impacts from potential changes to water quality conditions on special status and other native fish species in the Estuary are considered less than significant. Water quality impacts related to the project are addressed in detail in Draft EIR Section 4.3, Water Quality. As noted by commenters, many species are affected by the dynamics of lagoon formation and breaching in the Estuary. Draft EIR Section 4.5.2 describes the varied aquatic species and habitat within the project area. Draft EIR Section 4.5, Fisheries, specifically outlines the benefits to salmonids of lagoon rearing, and Impacts 4.5-1 and 4.5-2 specifically address the likely effects of the proposed management action on salmonids.

Algal Blooms

The proposed project is not anticipated to result in increased production of blue-green algae. Blue green algae (Cyanobacteria) are microscopic organisms naturally present in lakes and streams. Blue-green algae can become very abundant in warm, shallow, undisturbed surface water that receives a lot of sunlight and contains high nutrient (phosphorus and nitrogen) levels. When these conditions occur, algae can form blooms that discolor the water or produce floating rafts or scums on the surface of the water. Conditions conducive to blue green algae growth, accumulation, and blooms (shallow, warm, nutrient-rich water) currently exist within the Russian River system and have been documented in areas such as Laguna de Santa Rosa.

The lagoon under the proposed Estuary Management Project would increase water levels during summer seasons when water temperatures could be warmer. However, the system would not be entirely closed, and water would continue to flow out to the Pacific Ocean through the sandbar. The primary change associated with the proposed project is the change in water level and change in duration of maintaining the water level. The Estuary Management Project would not result in new sources of nutrients. Areas exposed to sunlight and subsequently warmer water temperatures,

and that are currently affected by nutrient inputs, will still be exposed to sunlight, warmer temperatures, and nutrients. For this reason, no change is expected in production of blue-green algae.

“Fluorescent” algae referenced in the comments are assumed to mean “phosphorescent” algae, a marine dinoflagellate (*Pyrocystis lunula*) that exhibits bioluminescent qualities. If water containing a high concentration of these phosphorescent organisms is disturbed (i.e. near shore during wave action), the water (wave crest) glows with a luminous blue light. These organisms require light and temperatures between 50 and 70 degrees Fahrenheit to photosynthesize. The Estuary Management Project focuses on developing a freshwater lagoon and will not change the presence or distribution of phosphorescent algae.

“Red tide” is a naturally occurring, non-anthropogenic phenomenon caused by a dramatic increase in populations of naturally occurring microscopic plankton (specifically, the dinoflagellate subgroup). The proposed project would not affect ocean conditions or weather patterns that contribute to the occurrence of red tide. Organisms that cause these blooms on the Pacific west coast from California to Alaska include *Alexandrium catenella*. “Blooms” of the poison-producing plankton are a coastal phenomena caused by environmental conditions, which promote explosive growth. Factors that are especially favorable include warm surface temperatures, high nutrient content, low salinity, and calm seas. Rain followed by sunny weather in the summer months is often associated with red tide blooms. Water in coastal areas can be colored red by the algae, thus the term “red tide.” Although toxic blooms often turn the water reddish brown, many nontoxic species of reddish brown plankton cause the same discoloration. In California the majority of red tides are not caused by species that produce deadly toxins such as domoic acid and the paralytic shellfish poisoning toxins (Langlois and Tom, 2008). The California Department of Public Health (CDPH) has a volunteer-based program to monitor the California coast for the presence of toxin-producing phytoplankton. CDPH also routinely monitors shellfish for the presence of these dangerous toxins with the active participation of local county health departments, other agencies and universities, and volunteers. Project implementation would increase the duration of freshwater lagoon conditions in the Estuary; it would not affect ocean conditions or weather patterns that contribute to red algal bloom occurrence. No evidence to the contrary was provided by comments received on the Draft EIR.

Ludwigia

Invasive *Ludwigia*¹¹ is a rapidly growing, perennial, freshwater aquatic shrub. This plant poses many threats to ecosystems due to its rapid and extensive growth and the damaging effects it has on native species. The Draft EIR does not discuss *Ludwigia* because, as discussed below, several factors within the Estuary limit *Ludwigia* distribution, including tidal conditions and resulting salinity and riverine scour processes, which would not be altered by project implementation.

¹¹ Recent botanical evaluations have raised questions about the species designation of invasive *Ludwigia*, also called aquatic primrose, in the Russian River system. Although it was initially identified as *Ludwigia hexapetala*, botanists now believe the invader to be either the non-native *Ludwigia peploides* subspecies *montevidensis*, a hybrid, or a species new to California. *Ludwigia* is the subject of active scientific research, evaluating its ecology and the environmental triggers that promote explosive growth (Okada and Grewell, 2009; Grewell and Hoch, 2009).

Under certain conditions, invasive *Ludwigia* can grow over surrounding vegetation to produce a thick mat of woody perennial stems and decaying plant matter. This mat can inhibit the recovery and recruitment of other plants and eliminates open-water habitats that are important foraging grounds for birds and other wildlife. As *Ludwigia* tissue sloughs off and decomposes, microbial growth reduces dissolved oxygen in the water, impacting fish and invertebrate populations.

Ludwigia occurs in transition zones of shallow, slow moving waterways, and along margins of lakes and reservoirs. *Ludwigia* is adapted to submersed and low-oxygen (anaerobic) conditions. Along with the ability to tolerate low oxygen, it also prospers in nutrient-rich water. *Ludwigia* is found in several systems in California. Based on consideration of the habitat requirements and ranges of tolerance of the *Ludwigia* species, the Estuary Management project would not result in *Ludwigia* colonization in the Estuary. The conditions that exist in the Laguna de Santa Rosa system and in other locations where *Ludwigia* may be present along the Russian River are very different than those that exist in the tidal portions of Russian River channel and estuary. *Ludwigia* requires slow moving, shallow water, and has a low tolerance for both saline conditions and scouring. The Estuary is saline and not a freshwater system for much of the year when it is open to the ocean tides. During this time, the Estuary is a dynamic hydrologic and geomorphic environment, where water flows, elevations, and velocities continually change (from hour to hour, day to day, and dramatically across seasons) and where tidal and fluvial sediment is continually transported, scoured, and re-deposited. *Ludwigia* thrives in static hydrologic and geomorphic conditions that do not exist along the tidal reaches of the river. Both the Estuary Study Area and the maximum backwater area experience winter flows and scour that limit the plant's ability to establish in gravel bar areas. There are currently gravel bars that experience periodic inundation which could support *Ludwigia* growth; however, *Ludwigia* is not currently present within these areas. Project implementation would not alter winter flow or scour events experienced within the Estuary.

Studies show that *Ludwigia* has low tolerance for salinity, and thrives only in freshwater. While there are other examples in California of locations of *Ludwigia* growth in saline or brackish water, it is expected that if *Ludwigia* developed in the Estuary, growth would be “reset” or eliminated with re-establishment of tidal conditions outside of the lagoon management period.

Finally, research developed by Dr. Brenda Grewell, University of California Davis, Exotic and Invasive Weeds Ecologist and Researcher, University of California Davis Department of Plant Sciences,¹² demonstrates that, contrary to assertions by individual commenters, the presence of *Ludwigia* is not an indicator of poor water quality. There are several locations within the Russian River watershed, including the Alexander Valley, where *Ludwigia* is present in stream reaches with high water quality conditions. Therefore, the assertion that reduced water quality conditions associated with the Estuary Management Project would influence *Ludwigia* distribution is not supported by evidence.

¹² Pers. Comm Bozkurt and Grewell, 2011.

Water Quality Monitoring

As described in Draft EIR Chapter 3.0, Project Background and Environmental Setting, the Water Agency's Estuary water quality monitoring program, as required by the Russian River Biological Opinion, is in place and will continue to be updated as new data is developed. The Adaptive Management Plan (PWA, 2011) provides for breaching in the event significant adverse water quality conditions are observed, following consultation with NMFS and CDFG. Although not required by the Russian River Biological Opinion, the Water Agency has augmented the water quality sampling program to include areas upstream of the Estuary and specific constituents, including adding datasonde monitoring stations in Monte Rio and the Willow and Austin Creek tributaries in 2010. Monitoring conducted as required under the Russian River Biological Opinion and as part of the Temporary Urgency Change Order will continue to be made available to the RWQCB and general public. This data is developed in order to assess river health from an ecological standpoint. Potential water quality threats relating to public health and recreation are monitored by the Sonoma County Environmental Health Division, including at Goat Rock State Beach.

Availability of Water Quality Data

Commenters questioned the accuracy of the water quality monitoring done in 2009, and requested that water quality studies and data from 2010 be made available to the Regional Water Quality Control Board and the public. The comments received did not specify why the water quality data collected in 2009 was inadequate, nor specify which water quality data was of concern. The analysis contained in Draft EIR Section 4.3, Water Quality, is based on the best available information at the time of publication.

The Water Agency has reviewed additional 2010 data that has been published since the circulation of the Draft EIR and, as discussed below, none of the new data changes the analysis presented in the Draft EIR. A discussion of individual data sources used to prepare this EIR is provided below. Contrary to some comments, all data gathered by the Water Agency regarding water quality monitoring in the Estuary has been and is being made available to the NCRWQCB.

- Water Agency long-term water quality monitoring, under various sampling programs, 1996 to present.
- *2009 Extended Closure Data Report* for results of salinity, temperature and dissolved oxygen monitoring conducted by University of California Davis' Bodega Marine Laboratory during an extended Estuary closure event in 2009.
- U.S. Geological Survey (USGS) of baseline water quality data during summer flows in the Russian River. Monitoring sites in the Estuary (Jenner and Willow Creek Marsh) were sampled in summer 2004 for inorganic and organic constituents, nutrients, trace elements, organic carbon, and mercury (Anders et al., 2006).
- Estuary nutrients monitoring conducted by Water Agency June through October, 2010.

Long-term water quality information collected at Water Agency datasonde monitoring stations (salinity, temperature, dissolved oxygen) is discussed in Draft EIR Section 4.3, Water Quality, Impact 4.3.2.

As discussed in the Draft EIR Chapter 3.0, Project Background and Environmental Setting, the water quality analysis also references the data report published by Bodega Marine Laboratory (University of California, Davis; 2009), reviewing circulation, stratification, residence and salinity in the Estuary Study Area from July through October 2009. An extended closure period lasting 29 days from September 7 through October 5, 2009, allowed for a study of prolonged closure conditions in the Estuary at high spatial and time resolution, along with two later closures (October 14-17 and October 22-27). This information represents the best available information on water quality during an extended closure of the Russian River estuary. Comments received do not identify specific inadequacies in this data. This report is available on the Water Agency's webpage: <http://www.scwa.ca.gov/russian-river-estuary/>

The results of nutrient and bacteria sampling collected as part of the 2009 and 2010 Temporary Urgency Change Orders were also discussed in Draft EIR Section 4.3, Water Quality, under Impact 4.3.3. Nutrient and bacteria sampling results from 2009 were provided to the NCRWQCB and the public in beginning on June 16, 2009, and are available on the Water Agency's website (<http://www.scwa.ca.gov/stateboard2009/>). Updates and sampling activities continued through October 5, 2009, and all data is still available online. With respect to public comment regarding NCRWQCB comments regarding this data related to whether statistical analysis should be conducted; the NCRWQCB did not submit any additional comments regarding the data's accuracy or adequacy to the Water Agency. Results of nutrient and bacteria monitoring in 2010 were provided to the NCRWQCB and the public for mainstem Russian River supplemental water quality monitoring and the Estuary on January 14, 2011, and January 18, 2011, respectively. This data is available on the Water Agency's website (<http://www.scwa.ca.gov/tucp/>), and was published in *the Russian River Biological Opinion Status and Data Report Year 2009-2010* (SCWA, February 28, 2011).

Inclusion of 2010 Continuous Monitoring Data

USGS and the Water Agency mainstem supplemental water quality results were posted to the web on January 14, 2011 and the estuary results were posted on January 18, 2011. Water quality data (temperature, salinity, dissolved oxygen, pH) collected in 2010 by the Water Agency has been evaluated and a reference has been added to Draft EIR Section 3.5 that pertains to the discussion of Estuary water quality (see Final EIR **Chapter 4, Changes to the Draft EIR**). Data collected in 2010 were not available for incorporation into the Estuary EIR background discussion or the impact analysis at the time of release of the Draft EIR. However, since release of the Draft EIR, the 2010 data has undergone a quality assurance review and been analyzed by the Water Agency.

Data collected in 2010 was consistent with data collected in past years, and included water temperature, salinity, dissolved oxygen content, and pH. Conditions observed during the 2010 season were also consistent with conditions observed in past years and with the characterization

of estuarine function provided in Draft EIR Section 3.5, as well as being consistent with conditions occurring in similar estuarine habitats. Therefore, the data collected in 2010 and incorporated into the Final EIR by reference supports the Draft EIR discussion of water quality conditions and estuarine functions currently existing in the Russian River Estuary.

Correction to 2010 Indicator Bacteria Sample Results

Draft EIR Chapter 4.3, Water Quality included a discussion of indicator bacteria data, including data on *Escherichia coli* (*E. coli*), collected by the Water Agency in 2010. The laboratory performing the analysis of water quality samples incorrectly reported the results for fecal coliform as *E. coli*. The laboratory has since reissued the results with the correct bacterial constituent identified and the text in the Draft EIR has been changed to reflect this correction (See Final EIR **Chapter 4, Changes to the Draft EIR**). This change is not substantive and does not affect the environmental analysis in the Draft EIR, or the conclusion that potential impacts related to nutrients and bacteria are significant and unavoidable.

E. coli is a species of fecal coliform that is often used as a surrogate for identifying potential bacterial contamination related to the presence of fecal coliforms. As identified in Draft EIR Section 4.3, Water Quality, page 4.3-8 and 4.3-22, sampling events in 2009 and 2010 indicated there is a large variation in indicator bacteria levels observed through the different sections of the Estuary. Variability in total coliform counts was observed at all sampling stations in 2009 and 2010; similar variability was observed in 2009 *E. coli* data and the 2010 fecal coliform data that was incorrectly reported as *E. coli* data.

2.5 Alternatives Analysis

Introduction

This section discusses comments about the selection process, range of alternatives, and evaluation of impacts examined in the Draft EIR.

Overview of Issues Raised by Commenters

- Study of the effects of jetty modification and alternative flood control measures as future potential actions should be included in the proposed project, rather than be considered as project alternatives.
- Draft EIR does not include a cost analysis to differentiate between alternatives.
- The basis for the project chosen is not substantiated. Draft EIR does not consider combining alternatives: for example the Alternative Flood Control and Habitat Restoration Alternatives, to meet project objectives.
- Other alternatives should be evaluated based on least amount of construction to achieve objectives.

- Under a Reduced Project Alternative, no buildings would be flooded at this level, making low flow unnecessary.
- Jetty removal would return river to more natural conditions.

Discussion

Several commenters expressed preference for specific alternatives or requested that additional alternatives be reviewed. Under CEQA Guidelines Section 15126.6(a), an EIR need not consider every conceivable alternative to a project. Rather, an EIR must describe a range of reasonable alternatives which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project. Additionally, an EIR must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The range of alternatives examined in the Draft EIR is consistent with the “rule of reason” established by CEQA, and is focused on those alternatives capable of meeting the project objectives. Further, the EIR identifies potential alternatives that were considered by the lead agency, but were rejected by the agency. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: 1) failure to meet most of the basic project objectives, 2) infeasibility based upon technical, economic, and/or institutional issues, or 3) inability to avoid significant environmental impacts.

CEQA Guidelines Section 15126.6(d) provides that impacts of an alternative need not be discussed in as great detail as significant effects of the proposed project. In discussing alternatives, an EIR must include sufficient information to compare the impacts of the alternatives to those of the project. According to the CEQA Guidelines, a matrix displaying the major characteristics and significant effects of each alternative may be used to summarize the comparison, such as is provided in the Draft EIR at page 6-21 for the alternatives evaluated. Specific discussions about alternatives selection, description of selected alternatives, and environmental feasibility and tradeoffs associated with the Reduced Project Alternative (8-foot maximum water level), the Habitat Restoration Alternative, and Jetty Modification Alternative, and Alternative Flood Control Measures are provided in Draft EIR Chapter 6.0, Alternatives Analysis. The alternatives analysis in the Draft EIR is consistent with the requirements of CEQA.

Several comments questioned whether the “No Project Alternative” would include continued Estuary management activities. Consistent with CEQA Guidelines Section 15126.6 (e)(1), the purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. CEQA also determines that the no project analysis shall discuss the existing conditions at the time the notice of preparation is published, or continuation of the existing activities. The Draft EIR alternatives discussion compares the environmental effects of the Estuary continuing to be managed as tidally influenced and artificially breached during the lagoon management period against environmental effects which would occur if the Estuary Management Project is approved. Therefore, the No Project Alternative assumes that the proposed project, in this case, modification of Estuary management, as required by the Russian River Biological Opinion, would not be implemented. Under such a scenario, the Water Agency’s

management of the Estuary, which has been ongoing since the 1990s, would not be modified and would continue. With respect to the request by a commenter for a “no breaching alternative”, the Draft EIR did consider a “No Future Estuary Management” Alternative (described in Section 6.3 on page 6-3).

Several comments expressed preference for the Reduced Project Alternative, and identified it as the “preferred alternative”. The Estuary Management Project proposes a target elevation of 7 feet with a 9 foot maximum; the Reduced Project Alternative includes an 8 foot maximum. Under the Reduced Project Alternative (8-foot maximum water level), structures would still be affected. As discussed in the Draft EIR (Chapter 6.0, Alternatives Analysis, Section 6.7), the Reduced Project Alternative is identified as the environmentally superior alternative compared to the proposed project. It is not the “preferred alternative,” as asserted in several comments.

Several comments expressed preference for the Jetty Modification Alternative. As required under the Russian River Biological Opinion, the Water Agency is developing a study plan for analyzing the effects and role of the existing jetty at Goat Rock State Beach on barrier beach permeability, sand storage and transport, flood hazard, and water surface elevations in the Estuary. Results of this analysis will be used within the context of the Estuary Management Project to determine whether modifications to the jetty would enhance rearing habitat for juvenile salmonids.

2.6 Recreational Impacts, Socioeconomic Impacts and Mitigation Feasibility

Introduction

This section discusses comments regarding recreational impacts and related socioeconomic impacts, and lack or inadequacy of mitigation measures identified to reduce or mitigate significant impacts.

Overview of Issues Raised by Commenters

- Potential project effects to surfing at Russian River mouth and the need to analyze ocean wave conditions.
- Potential impacts on recreational uses at Goat Rock State Beach, Estuary, and lower Russian River.
- Significant impacts to low cost recreational opportunities are not consistent with the California Coastal Act.
- Socio-economic effects related to loss of recreational opportunity.
- Project does not propose appropriate mitigation to offset impacts.
- Draft EIR should include mitigation for private property used for recreation and restoration opportunities.
- Draft EIR should evaluate consistency with the California Coastal Act.

Discussion

Recreational Impacts

The Draft EIR analyzed project impacts to recreational facilities and opportunities based on significance criteria established in Appendix G of the CEQA Guidelines. Recreation is of particular importance in the Russian River Estuary and the surrounding area. The Draft EIR acknowledges this importance by analyzing the proposed Estuary Management Project against additional criteria relating to the potential removal or diminished use of recreational opportunities (Draft EIR Section 4.7, Recreation, pages 4.7-6 and 4.7-7). As discussed in Draft EIR Section 4.7 and below, the proposed project is expected to have a significant adverse on recreation because it would change the frequency of open tidal conditions during lagoon management period, thereby reducing potential surfing conditions.

Several comments requested additional discussion of wave conditions near the Russian River mouth and analysis of the outlet channel effects on access on the barrier beach. Additional characterization of wave conditions at the Russian River mouth is beyond the scope of analysis necessary to evaluate the environmental effects of the Estuary Management Project. As discussed in Draft EIR Section 4.7, Recreation, compared to historical estuary management practices, project implementation would result in the reduction in the frequency of open channel tidal conditions that contribute to wave conditions preferable for surfing. Although the specific set of variables that contribute to favorable wave conditions for surfing, and their frequency of occurrence are difficult to quantify, project implementation would reduce the occurrence of open channel tidal conditions. As such, project implementation would reduce the overall occurrence of surfable wave conditions at the Russian River mouth.

Several commenters expressed concern that creating an outlet channel would reduce physical access to the north end of Goat Rock State Beach. When the mouth of the Estuary is open and tidal, access to the north end of Goat Rock State Beach is limited. Establishment of the outlet channel would be generally consistent with current barrier beach conditions, under which the Water Agency establishes a pilot channel to breach the sandbar within 7-14 days of barrier beach closure. Breaching the barrier beach reopens the mouth of the Estuary and returns the condition to limited access on the north side of the river. This change in the availability of access to the barrier beach north of the outlet channel would be incrementally decreased compared to existing conditions.

Recreational Impacts and California Coastal Act Consistency

Commenters questioned whether the proposed project is consistent with the California Coastal Act. A formal consistency analysis by the California Coastal Commission is required to determine whether the proposed Estuary Management Project is consistent with the coastal resources planning and management policies in Chapter 3 of the California Coastal Act of 1976 (CCA), Public Resources Code Division 20. This Coastal Commission consistency analysis also evaluates consistency with Local Coastal Programs. A more detailed consistency review of the Estuary Management Project under the applicable Sonoma Local Coastal Plan and the California Coastal Act would be required for approval of coastal development permits when the project proceeds to the

permitting phase. However, both California Coastal Commission and Sonoma County Permit and Resource Management Department have found the Water Agency's Estuary management activities, including the lagoon management identified in the Russian River Biological Opinion, to be consistent with the Local Coastal Plan in the past, and the Water Agency anticipates issuance of appropriate permits for implementation of the Estuary Management Project.

Mitigation Nexus and Feasibility

Several comments assert that the Draft EIR fails to identify relevant mitigation measures for the significant and unavoidable impacts to recreation (surfing and riverfront beaches), water quality (nutrients and bacteria) and biological resources (vegetation and pinnipeds) identified in the draft EIR. Consistent with CEQA Guidelines Section 15126.4(a)(4)(B), mitigation measures must be roughly proportional to the impacts of a project and there must be an essential nexus (i.e., connection) between mitigation measures and the impacts caused by the project (CEQA Guidelines Section 15126.4(a)(4)(A)). Mitigation measures identified in comments on the Draft EIR would not be consistent with these guidelines.

Recreation

Feasible mitigation for the reduced frequency of favorable surf conditions or access to the barrier beach north of the outlet channel (when established) is not available, aside from implementation of the No Project Alternative. Suggested mitigation measures, such as artificial reefs to alter or improve surfing conditions, are infeasible given the engineering, construction, and financial challenges attendant to such a project, and would have the potential for their own substantial environmental effects. For mitigation measures to be feasible, they must be sufficient to reduce the impact to a level below the significance threshold. Comments on the Draft EIR, including comments from California State Parks, suggest mitigation measures to provide offsetting benefits to recreational access. Potential mitigation strategies identified by commenters include improving public access or providing additional public access to surfing areas in new locations, or building an artificial reef to enhance surfing conditions. The types of mitigation suggested by commenters and listed above are not commensurate with the temporary nature of the impacts, which only occur during a portion the 5-month lagoon management period.

Providing new points for public access to beaches or surfing locations would have potential environmental impacts which could ultimately be more severe than the temporary impact to recreation during the lagoon management period. For example, opening a new point of access could result in increased vehicle and foot traffic in a previously undisturbed, biologically sensitive area. Opportunities to improve and enhance public access at other locations to offset reduced frequency of open tidal conditions conducive to surfing would need to be coordinated with land owners or agencies with jurisdiction at the alternative locations. There may be public safety, traffic, sensitive biological resource, erosion and other environmental constraints or limitations associated with implementing new public access points.

Similarly, installation, maintenance, and long-term operation of an artificial reef to create new or improved surfing opportunities could result in additional environmental impacts. There is no

expert evidence to substantiate the viability, either recreationally or from a biological resource perspective, of an artificial reef. Construction of a physical structure would result in direct, adverse environmental effects to marine life, hydrology, and geomorphology during construction. Cases of successful artificial reefs are most prevalent outside of North America, in locations that are subject to severe weather (i.e. monsoons). Feasibility studies would need to be undertaken to determine if an artificial reef would be feasible or functional in the Russian River area.

Water Quality

With respect to mitigation for potential water quality impacts, the Draft EIR explains that given the uncertainty of impacts, it is not reasonable, nor environmentally beneficial, to provide mitigation for an unknown or uncertain impact.

Continued monitoring will provide tangible and real-time information about water quality as the Estuary Management Project is implemented. Irregularities or adverse trends will be tracked, noted, and addressed to the extent feasible through the adaptive management process, which provides a mechanism for correction and management of deviation from the desired future condition. The Water Agency does not have jurisdiction, enforcement authority, or scientific justification for setting thresholds for water quality standards. The Estuary Management Project, consistent with the Russian River Biological Opinion, has included contingency actions for overriding breaching conditions. No additional mitigation measures are feasible or required. As discussed in Draft EIR Chapter 2, Project Description, page 2-22:

“Certain conditions during the lagoon management period, such as water quality degradation or imminent flooding to properties and structures adjacent to the Estuary, could require a change in management, and may result in the Water Agency breaching the barrier beach during the lagoon management period. If Estuary water surface elevations rise above 7 feet (at the Jenner gage) and flooding appears imminent (approaching 9 feet; giving consideration to river inflow, rate of Estuary water surface elevation rise, and ocean conditions), the Water Agency may artificially breach the barrier beach during the lagoon management period to alleviate potential flooding, as discussed in the NMFS’ Russian River Biological Opinion. The Water Agency would consult with NMFS, CDFG, and State Parks regarding the potential for flooding as described in the Lagoon Outlet Channel Adaptive Management Plan (PWA, 2010). The Russian River Biological Opinion incidental take statement estimates that the Water Agency may need to artificially breach the barrier beach “twice per year between May 15 and October 15 during the first three years covered by this opinion, and once per year between May 15 and October 15 during years four to 15 covered by this opinion” (NMFS, 2008). Water Quality parameters are defined in the North Coast Regional Water Quality Control Board’s Basin Plan and would be further defined in consultation with NMFS and RWQCB.” [Footnotes omitted]

Biological Resources

The Water Agency currently implements pinniped monitoring as part of its Estuary Management activities, and is required to continue pinniped monitoring throughout the duration of its management activities. No additional mitigation measures were identified by commenters or are required.

Economic Impacts

According to the Section 15358(b) of the CEQA Guidelines, impacts to be analyzed in an EIR must be “related to physical changes” in the environment. The CEQA Guidelines do not directly require an analysis of a project’s social or economic effects because such impacts are not, in and of themselves, considered significant effects on the environment. CEQA Guidelines §15131(a) states:

“Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.”

Under CEQA, economic impacts to businesses and land owners are generally only considered if the economic impacts themselves are so severe that they result in adverse physical changes. The Water Agency has no evidence of, and commenters presented no evidence of, adverse physical changes arising from economic impacts as a result the Estuary Management Project. Therefore, no additional analysis of economic impacts related to implementation of the Estuary Management Project is required.

2.7 CEQA Statutes: Adequacy of EIR Analysis

Introduction

This section discusses comments on the Draft EIR’s specificity and how the Draft EIR addresses uncertainty.

Overview of Issues Raised by Commenters

- Draft EIR is inadequate because it assumes artificial breaching is the baseline condition.
- Conclusions are not based on substantial evidence.
- Analyses are speculative.
- Projections of project performance assume existing conditions will remain; does not consider foreseeable future conditions, i.e. climate change.

Discussion

The Draft EIR has been prepared with sufficient analysis to provide decision-makers with information to enable them to make a decision on project approval that intelligently takes into account environmental consequences. CEQA Guidelines Section 15151 says that “[a]n evaluation of the environmental effects of a proposed project need not be exhaustive, but [rather] the

sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible.” Data gathering need not be “exhaustive.”

Baseline Condition

Some commenters argued that the Draft EIR is inadequate because it considers the Water Agency’s artificial breaching of the barrier beach as the baseline condition. In accordance with CEQA Guidelines Section 15125, for the purposes of this analysis, the environmental setting described in Chapter 3.0, Project Background and Environmental Setting, constitutes the physical baseline conditions within the Estuary Study Area and Maximum Backwater Area by which the Water Agency determines whether an impact is significant. The analysis reviews project impacts relative to “change from existing conditions.” At present and since the 1990s, the Water Agency breaches the sandbar by creating a channel when necessary to minimize potential for flooding. The project proposes a change in the Water Agency’s management practices. The Draft EIR evaluates the impacts of this change in practice. CEQA requires a description of the physical environmental conditions as they exist at the time the notice of preparation is published. The physical environment at the time of the notice of preparation included existing, ongoing Agency estuary management practices.

Substantial Evidence

Some commenters stated that the conclusions in the Draft EIR were not supported by substantial evidence. CEQA Guidelines Section 15384(a) defines “substantial evidence” as “enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on the environment is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence.”

Speculation and Future Conditions

Estuaries are complex, dynamic ecosystems, and experience changed conditions daily, between seasons, between years, and between different places in the same estuary. These conditions make estuaries extremely difficult to study. Moreover, the evaluation of the significance of the effects of changes due to Estuary management must be judged against the baseline required by CEQA (i.e. current conditions and ongoing management). Under the current Estuary management practices, water depth and salinity, as well as other water quality parameters, continuously fluctuate across a wide range of values.

As stated in CEQA Guidelines Section 15151, “[a]n evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts.

The courts have looked not for perfection, but for adequacy, completeness and a good faith effort at full disclosure.” For the proposed Estuary Management Project, this Guideline is particularly relevant for two reasons: 1) as discussed in Draft EIR Chapter 3, Project Background and Environmental Setting, the Estuary is a complex environment subject to changing environmental conditions on daily, seasonal, and yearly timeframes. Therefore, it may not be possible to precisely predict the effects of the proposed Estuary Management Project with precision; and 2) the Estuary Management Project proposes implementation of an Adaptive Management Plan that would, by definition, monitor and react to conditions that are observed in the Estuary during the course of its implementation. Application of the adaptive management process to the Russian River Estuary is prescribed in the Russian River Biological Opinion by NMFS, the agency with the legal responsibility and expertise on sensitive fisheries species management.

Within this context, the Water Agency recognizes that the precise response of the Estuary cannot be predicted with certainty. However, it is anticipated that conditions will remain within the range of those experienced within the Estuary during closed periods over the past 15 years, although the duration of those conditions may be extended, depending on the length of estuary closures. With respect to listed fish species, this increase in duration of freshwater lagoon conditions is a primary objective of the proposed project, and is anticipated to provide benefit to juvenile salmonids, particularly steelhead. This increase in duration may also result in secondary effects. Several technical issues will require additional monitoring, with subsequent alteration of the Adaptive Management Plan using the best information available.

Some commenters stated that the Draft EIR failed to consider the effects of future climate change on the project, including sea level rise. The Draft EIR describes Climate Change and Sea Level Rise in Draft EIR Section 4.2, Hydrology and Flooding (page 4.2-9) and in Chapter 5.0, Cumulative Analysis, under Impact 5.2.4.

2.8 Public Review Process

Introduction

This section discusses comments regarding the public review process.

Overview of Issues Raised by Commenters

- Biological Opinion did not include public participation of western Sonoma County.
- Members of public with knowledge of river conditions should be included in the EIR process.

Discussion

Prior to developing the Draft EIR, the Water Agency released the Notice of Preparation (NOP) and entered into the scoping process to solicit input from agencies and the public. The NOP was

prepared by the Water Agency in accordance with CEQA Guidelines Section 15082 to provide responsible and trustee agencies and the Office of Planning and Research with sufficient information describing the project and the potential environmental effects to enable agencies to make a meaningful response. As summarized in Draft EIR Chapter 1.0, Introduction, the NOP was circulated on Water Agency letterhead on May 7, 2010. The NOP identified the Water Agency as the CEQA Lead Agency, and established a 45-day public review period, which ended June 21, 2010. The purpose of the NOP public review period is to allow for review and comment by public agencies or interested members of the public on the scope of significant environmental issues to be analyzed, reasonable alternatives to be examined, and mitigation measures to be included in the Draft EIR. A response to a Notice of Preparation, at a minimum, should identify: the significant environmental issues and reasonable alternatives and mitigation measures that the responsible or trustee agency, or the Office of Planning and Research, will need to have explored in the Draft EIR. The NOP was mailed to the State Clearinghouse, and was posted to the Water Agency's website. Public legal notices and display advertisements were placed in five local newspapers informing the general public of the availability of the NOP and the times and locations of scheduled scoping meetings. The NOP was directly mailed to 431 parties,¹³ and a postcard notification of the NOP's availability was sent to 1,231 parties.

Scoping has been found to be an effective way to bring together and resolve the concerns of affected federal, state, and local agencies, the proponent of the action, and other interested persons including those who might not be in accord with the action on environmental grounds (CEQA Guidelines Section 15083). The Water Agency held publically noticed scoping meetings on May 19 and 20, 2010, at the locations identified below.

Wednesday May 19, 2010
Open House Scoping Meeting: 7:30 p.m. – 9:00 p.m.
Jenner Community Center, 10398 Highway 1, Jenner CA 95450

Thursday May 20, 2010
6:30 p.m. – 8:30 p.m.
Sonoma County Permit and Resource Management Department Meeting Room
2550 Ventura Avenue
Santa Rosa, CA 95403

During an additional meeting on June 15, 2010, the Water Agency requested participation from regulatory agencies with jurisdiction over the project area or resources to solicit their comments and input on the scope of the EIR. Scoping has been helpful to agencies in identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating detailed study issues found not to be important. A primary purpose of the Scoping Report, included in Draft EIR Appendix 1.2, was to document the process of soliciting and identifying comments from interested agencies and the public. The Scoping Process provides the means by which the Water Agency and the responsible agencies can determine those issues that interested participants consider to be the principal areas for study and analysis.

¹³ Distribution List provided in **Appendix 1**.

The Draft EIR was released on December 15, 2010. Public review and input was solicited on the Draft EIR during the public review period and public hearing, on the Draft EIR, held on January 18, 2011. The Draft EIR public review period extended 60 days from release on December 15, 2010, through February 14, 2011. The public comment period generally lasts for 45 days; the Water Agency determined 60 days was appropriate for this project.

Although NMFS was not required to and did not carry out any public process prior to adopting the Russian River Biological Opinion, the Russian River Biological Opinion was the result of ten years of consultation which included multiple opportunities for public participation. The Section 7 consultation process under the Endangered Species Act formally includes only regulatory agencies; however additional outreach to collaborate with the public and local agencies has been conducted over the past fourteen years, beginning in 1997. A Public Policy Facilitating Committee (PPFC) was formed, comprised of representatives of NMFS, USACE, the Water Agency, Mendocino County, the California Resources Agency, and the North Coast Regional Water Quality Control Board. The purpose of the committee was to receive reports from the Water Agency and its Endangered Species Act consultant, as well as public comment, on the analysis of the impact of the Water Agency's activities on the listed species and proposals to mitigate those impacts. This committee met in public over 19 times from 1998 to 2006. Since the Russian River Biological Opinion was issued in 2008, there have been 3 more PPFC meetings to introduce the Russian River Biological Opinion to the PPFC and the public, and to provide updates regarding progress made in implementing the Russian River Biological Opinion requirements.

2.9 Draft EIR Recirculation

Introduction

This section discusses comments regarding Draft EIR Recirculation.

Overview of Issues Raised by Commenters

- Draft EIR analysis is inadequate and should be updated and recirculated.
- Draft EIR should be analyzed with the Fish Flow project and recirculated (See Master Response 2.1).
- 2010 water quality data should be included as new information and recirculated (See Master Response 2.4).

Discussion

Under CEQA Guidelines Section 15088.5, recirculation of a Draft EIR is required when significant new information is added to the Draft EIR following the public review period, but before certification. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid

such an effect that the project proponents have declined to implement. “Significant new information” requiring recirculation would include the following:

- A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
- A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
- A feasible project alternative or mitigation measure considerably different from those previously analyzed would clearly lessen the environmental impacts of the project, but the project’s proponents decline to adopt it.

None of the above criteria established by CEQA Guidelines Section 15088.5 are applicable to the Draft EIR and therefore, recirculation of the EIR is not warranted. The Master Responses 2.1 through 2.8 provided above in this section provide clarification regarding a number of technical items, and do not change the analysis or conclusions provided in the Draft EIR.

2.10 References

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