Chapter 3 Environmental Analysis

3.1 Introduction

This chapter is designed to help readers understand how the environmental impact analysis was conducted for the environmental resources and topics evaluated in the subsequent chapters of this RDEIR/SDEIS.

3.2 Analysis

Chapters 5 through 27, which address topics that are covered by both CEQA and NEPA, are organized according to the following framework.

- Environmental setting
- Methods of analysis
- Impact analysis and mitigation measures

Environmental impacts are discussed for the No Project Alternative/No Action Alternative and the three action alternatives (Alternatives 1, 2, and 3). As described in Section 3.2.1, *Existing Conditions and No Project Alternative/No Action Alternative*, the term *No Project Alternative* is primarily used in this document to represent both the CEQA No Project Alternative and NEPA No Action Alternative. BMPs included as integral components of the Project description are discussed in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, and are incorporated by reference into the methods of analysis and impact analysis for each environmental topic as appropriate. The impact analysis for each environmental topic includes the assumptions considered and the applicable thresholds of significance. Where feasible, mitigation measures are proposed for impacts determined to be significant to reduce the level of impact.

3.2.1 Existing Conditions and No Project Alternative/No Action Alternative

This section discusses the approach to existing conditions (i.e., environmental baseline) under CEQA and the No Project Alternative, as well as under NEPA and the No Action Alternative.

Under CEQA, the lead agency assesses the significance of the impacts of a proposed project by comparing those impacts against the environmental baseline. Pursuant to Section 15125(a) of the CEQA Guidelines, the baseline generally consists of the physical conditions that exist at the time a Notice of Preparation (NOP) is published for an environmental impact report (EIR). Where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture of a project's impacts, the existing conditions baseline may be defined by

referencing historical conditions or conditions that are expected to occur when the project commences its operations. A CEQA lead agency may also use a future conditions baseline (i.e., beyond the date when project operations commence), but if the agency relies solely on such a future baseline, it must demonstrate that use of an existing conditions baseline would be uninformative or misleading. In defining the baseline, the goal is "to give the public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts."

The impact analyses in this RDEIR/SDEIS use an existing conditions baseline that incorporates water supply facilities and ongoing plans and programs that existed as of the January 23, 2017, date for the Authority's NOP. However, regulatory operating requirements (i.e., 2019 Biological Opinions [BiOps] for the Coordinated Long-Term Operations of the CVP and SWP and Incidental Take Permit for the Long-Term Operation of the SWP) have changed since January 2017, and an updated baseline is necessary to provide the most accurate picture of the Project's impacts. Therefore, the existing conditions baseline under CEQA has been updated to capture conditions through 2020. The baseline reflects a range of historical hydrologic conditions (e.g., watershed runoff); current physical conditions (e.g., dams); current regulatory operating conditions of the CVP and the SWP; the water rights orders and decisions and water quality criteria from the State Water Resources Control Board (State Water Board); current municipal, environmental, and agricultural water uses; current land uses; and relevant current laws, regulations, plans, and policies.

In addition to defining the baseline, CEQA requires analysis of the No Project Alternative, which represents existing environmental conditions, as well as what would be reasonably expected to occur in the foreseeable future if the Project were not implemented. The purpose of the No Action Alternative is to allow the public and the decision makers to compare the impacts of approving the Project with the impacts of not approving the Project. For ongoing activities, the No Project Alternative represents the continuation of existing facilities, plans, programs, and operations into the future, assuming that the Project is not implemented.

NEPA has no baseline requirement, but, similar to CEQA, it requires analysis of the No Action Alternative, which represents a projection of current and reasonably foreseeable future conditions, including the continuation of preexisting, ongoing plans, programs, and operations, without Alternatives 1, 2, or 3 being implemented. Like the CEQA No Project Alternative, the NEPA No Action Alternative is intended to provide a comparative analysis of the impacts of the proposed action and the impacts of not proceeding with the action. The term *No Project Alternative* is primarily used in this document to represent both the CEQA No Project Alternative and NEPA No Action Alternative; however, the terms are interchangeable. For example, the terms *NAA* or *No Action Alternative*, which are identical to the No Project Alternative, may be used in the presentation of modeled results throughout this document and are noted where appropriate in resource method sections.

The reasonably foreseeable future conditions under the No Project Alternative would not be materially different from the conditions under the CEQA existing conditions baseline. This is because the existing, ongoing plans and programs that serve as the basis for the existing conditions baseline would reasonably be anticipated to continue to be implemented into the

future. This includes the BiOps issued on October 21, 2019, by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for the Reinitiation of Consultation on the Coordinated Long-Term Operations of the CVP and SWP (National Marine Fisheries Service 2019, U.S. Fish and Wildlife Service 2019); Reclamation's February 18, 2020, Record of Decision based on those BiOPs (U.S. Department of the Interior, Bureau of Reclamation 2020); and the California Department of Water Resources' March 31, 2020, Incidental Take Permit for the Long-Term Operation of the SWP (California Department of Fish and Wildlife 2020). These have all established new regulatory requirements that govern water supply operations and delivery in California. These new requirements have been incorporated into the existing conditions baseline in order to present the most accurate and up-to-date picture of how the Project, if approved and implemented, would affect baseline water supply, water quality, and fisheries conditions. These new requirements are also reasonably anticipated to continue into the future, and it is not reasonably foreseeable at this juncture to speculate about what future requirements, if any, might be adopted in their place and, if so, when.

In addition, historical land use and water demands, hydrology, and existing water rights and contracts reflected in the CALSIM model would not be materially different between the No Project Alternative and the existing conditions baseline. The CALSIM period of record is reasonable baseline with regard to drought frequency and duration because droughts have occurred in the past. The maximum water supplied to a service area, as identified by water rights and contracts, is not expected to change under the No Project Alternative because it represents the maximum water needed by a service area to meet demand over time. CALSIM allocates water supply to different service areas based on specific hydrologic conditions and regulations and the demand under those hydrologic conditions as specified by water rights or contracts. CALSIM rarely provides the maximum amount of water supply to meet the maximum demand because hydrologic conditions and regulations seldom allow for these types of deliveries to different users. Generally, SWP and CVP water users receive less than their full contract amount due to limited water availability. The difference between the existing conditions and the No Project Alternative assumed water demands is minimal in most areas because the existing conditions assumptions included full use of most CVP and SWP contract amounts for most agricultural uses and CVP and SWP municipal and industrial users that divert water from the Delta, when hydrological conditions allow. This would be the same under existing conditions and the No Project Alternative.

Finally, the physical environmental setting and land uses in Glenn and Colusa Counties, where the reservoir would be located, are not expected to materially change under the No Project Alternative. These two counties have shown limited growth over the last 20 years (approximately 14% for Colusa County and approximately 6% for Glenn County) and are expected to show little to slight growth through 2030 as a result of implementing general plans (approximately 7% for Colusa County and approximately 3.5% for Glenn County; see Chapter 25, *Population and Housing*, Table 25-2). The area where the reservoir would be located contains privately owned parcels in Glenn and Colusa Counties and are mainly designated as residential or foothill agriculture with supporting zoning. The primary uses of these lands are residential, grazing and agricultural. By virtue of this zoning and land use designations any future development would be restricted and would ultimately require zoning or land use designation changes reviewed and approved by local governments, none of which are currently reasonably foreseen. Therefore, it is

reasonable to anticipate existing land would continue under its current condition, which is generally rural. Existing effects associated with grazing or existing land uses would continue without the Project, such as disturbance of vegetation and soil.

3.2.2 Regulations and Regulatory Setting

Laws, policies, plans, and regulations potentially applicable to the Project are described in Appendix 4A, *Regulatory Requirements*. Information contained in this appendix is considered in various resource chapters (i.e., Chapters 5 through 31) and informs the existing conditions for these resources. For example, the federal Endangered Species Act is described in Appendix 4A *Regulatory Requirements*, as it is applicable to Chapter 9, *Vegetation and Wetland Resources*; Chapter 10, *Wildlife Resources*; and Chapter 11, *Aquatic Biological Resources*.

3.2.3 Study Areas

The introduction of each resource chapter identifies a study area relevant to the existing conditions and the analysis of impacts and effects of that chapter. Study areas are determined in consideration of variables such as the type of resource, the presence or absence of a particular resource, the nature of construction or operational disturbance, the presence or absence of sensitive receptors for a particular resource, and the regulating entities or agencies with jurisdiction over a resource. The study area generally includes the locations of Project components and footprints; however, certain Project components or geographies may be included or excluded from the study area, as appropriate.

3.2.4 Methods

The resource chapters include a description of the methods used to identify and assess the potential environmental impacts that would result from Project construction and operations. These methods include previous survey results, desktop reviews, database queries, and modeling that utilized the best available information and science. “Best available science” is defined as the best scientific information and data for informing management and policy decisions. The Authority and Reclamation strived to use the best available science throughout this RDEIR/SDEIS. Development of the preferred project and analysis of its environmental impacts utilized a wide range of relevant data, literature, and tools. The Authority and Reclamation used the best available scientific information to produce analyses of the effects of the Project, drawing on a number of scientific and engineering disciplines that include geology, hydrology, biology, ecology, chemistry, engineering, and climatology. The data, models, and literature are publicly available and the methodologies used to apply these tools and information are described in the analyses in the various resource chapters and appendices of this RDEIR/SDEIS. The data, models, literature, and analyses have been subjected to review either as part of the customary practices of scientific publication or as part of legal and regulatory processes.

On-the-ground field surveys were conducted by DWR during earlier phases of the Project. In many cases, DWR had to obtain court orders to enter private properties. Due to the sensitivity of landowners and earlier commitments to maintain confidentiality of survey data locations, the Authority has not been able to conduct additional surveys on properties that it does not own or otherwise have legal access to enter or inspect. Instead, the Authority has pursued targeted access

in recent years to support environmental clearance for geotechnical investigations. The analysis in this RDEIR/SDEIS relies in part on the comprehensive surveys conducted by DWR and the data collected for the area of the original project footprint at that time. The current study area is 21,628 acres and includes 487 county assessor's office parcels. Of these 21,628 acres, 19,237 acres were surveyed by DWR. Although the data was collected in the early 2000s, due to rural the rural nature of the area and minimal change in land use, the data collected still provides a robust and viable dataset that has been updated based on extensive desktop reviews, database queries, and the best available science approach noted above.

For multiple resources, the quantitative or qualitative analysis of construction generally ranges from 2024 to 2029. Some analyses may evaluate peak year(s) of construction or a particular timeframe within the total construction duration. Operations is assumed to begin in 2030 and would continue for the life of the Project. Operations impacts for the Project are evaluated using multiple quantitative and qualitative tools over different timeframes. For example, CALSIM is used to evaluate resources related to hydrology (e.g., water quality and aquatic biological resources) and uses hydrologic conditions from 1922 to 2003 with current infrastructure and regulations to model the existing conditions and the alternatives. The water year types documented during this period represent a wide range of hydrologic conditions, and this variability is expected to occur during the operation of the Project. In addition, for the purposes of disclosing potential future effects associated with climate change, the 2035 Central Tendency (CT 2035) climate change scenario which extends from 2020 to 2049, was applied. The results from this evaluation were used to modify the 1922 to 2003 hydrology in CALSIM to represent a range of hydrologic conditions under climate change. These effects are addressed in Chapter 28, *Climate Change*. The methods of analysis section in each resource chapter notes the types of qualitative or quantitative analysis applied, the timeframe evaluated, and the types of models and modeling output used (if appropriate to the impact analysis). Appendix 1A, *Introduction to Appendices and Modeling Information*, provides information on the models used in this document.

Modeling output informs the evaluations for environmental topics such as surface water and groundwater resources, water quality, aquatic biological resources, air quality, greenhouse gases, and transportation. Models are used to assist in comparing the potential impacts between alternatives by using existing conditions. Modeling output does not predict absolute conditions in the future under alternative conditions; rather, the output is intended to show the types of changes under alternative conditions that could occur for comparative purposes. Multiple models and methods were used as part of an analytical framework to characterize and evaluate the changes in water operations in the CVP and SWP systems under Alternatives 1, 2, and 3. The analytical framework, tools, and analyses were formulated for evaluating the benefits and impacts of implementing and operating each of the alternatives. The framework provides for iteratively refining operations criteria to minimize both the system-wide and localized impacts on various resources while meeting the Project objectives and purpose and need.

3.2.5 Determination of Impacts

The thresholds and criteria used for the impact analyses in this RDEIR/SDEIS for determining significance are specified in each resource chapter. These criteria were developed in

consideration of current regulations, standards (e.g., CEQA Appendix G Environmental Checklist Form), and/or consultation with state and federal agencies; professional judgement; knowledge of the Project design and the area that would be affected; and the context and intensity of the environmental effects.

Under CEQA, the impacts of the alternatives are compared to the existing conditions baseline and the No Project Alternative and are classified as follows:

- No impact—No change in the environment would result from implementing the alternative.
- Less-than-significant impact—No substantial adverse change in the environment would result from implementing the alternative.
- Less than significant with mitigation—The implementation of one or more mitigation measures would reduce the impact from an alternative to a less-than-significant level.
- Significant impact—A potentially substantial adverse change in the physical conditions of the environment would result from implementing the alternative based on the evaluation of project effects using specified significance criteria. Mitigation measures are proposed, when feasible, to reduce effects on the environment.

Under NEPA, the effects of Alternatives 1, 2, and 3 are compared to the No Action Alternative, which is equivalent to the CEQA existing conditions baseline for this RDEIR/SDEIS, and are classified as follows:

- An effect is considered *beneficial* if it would provide benefit to the environment as defined for that resource.
- A finding of *no effect* is identified if the analysis concludes that the alternative would have no effect or would not affect the particular resource in any adverse way.
- A finding of *no adverse effect* is identified if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- A finding of *adverse effect* or *substantial adverse effect* is identified if the analysis concludes that it would cause an adverse or substantial adverse change to the environment even with the inclusion of one or more feasible mitigation measures or could not be mitigated.

The impacts and effects of each alternative, including the No Project Alternative, are discussed by resource area and alternative. Each resource area section is structured so that a bold impact statement introduces potential changes that could occur from implementation of each alternative. A discussion of how the resource area would be affected then follows the initial impact statement. Pursuant to NEPA, significance is used to determine whether an EIS or some other level of documentation is required, and once the decision to prepare an EIS is made, the magnitude of the effect is evaluated and no further judgment of significance is required. Therefore, any determinations of significance are for CEQA purposes only.

Direct impacts are those effects that would be caused by the Project and would occur at the same time and place. For example, filling of the reservoir is considered a direct impact, even though it would take time for the reservoir to be filled completely. Indirect impacts are those effects caused by the Project later in time (e.g., impacts from operations) or farther from the Project but are reasonably foreseeable (e.g., impacts downstream of the Project). Direct and indirect impacts may be either permanent or temporary. Direct and indirect impacts are evaluated in each resource chapter and could include, for example, indirect or temporary effects associated with construction and direct or permanent effects associated with operation, depending on the resource evaluated and the potential impact mechanism. These types of impacts and effects are resource-specific, and the methods used to analyze these impacts are described in each of the resource chapters.

For the purposes of CEQA and NEPA, impacts and effects are determined by comparing an alternative to the existing conditions/No Project Alternative, as identified above. The impact analysis also includes a discussion of the similarities and differences between Alternatives 1, 2, and 3 to enable readers to compare the mechanisms, magnitudes, and durations of the impacts associated with Alternatives 1, 2, or 3.

Several resource chapters provide an analysis of Alternative 1A and Alternative 1B, which are both considered under Alternative 1. This information is provided for the purposes of the operational impact analysis and is based on modeled results. The model results represent two different operation options under Alternative 1 as a result of the different participation for Reclamation, as described in Section 2.3, *Overview of Alternatives*. The chapters with operational discussions of Alternatives 1A and 1B are: Chapter 5, *Surface Water Resources*; Chapter 6, *Surface Water Quality*; Chapter 7, *Fluvial Geomorphology*; Chapter 11, *Aquatic Biological Resources*; Chapter 16, *Recreation Resources*; Chapter 17, *Energy*; Chapter 21, *Greenhouse Gas Emissions*; Chapter 28, *Climate Change*; and Chapter 32, *Other Required Analyses* and the supporting appendices of these chapters.

In addition, as noted in Chapter 2, *Project Description and Alternatives*, all Project components are the same between Alternatives 1 and 3. Therefore, in some chapters, the impact analyses for Alternatives 1 and 3 are combined under subheadings. If the impact mechanisms and types of impacts are similar across Alternatives 1, 2, and 3, the impact analyses may be aggregated to reduce redundancy and provide ease of comparisons between alternatives. All alternatives have been co-equally analyzed as required by NEPA, even if alternatives are combined under subheadings.

The analyses contained in this RDEIR/SDEIS are inherently conservative (overestimated). Analyses are based on the preliminary design of the Project and on limited access to certain resources (e.g., wildlife, vegetation). As with any large infrastructure project, the Project must and will continue toward final design. Project components will be refined as the Project moves toward final design and as parcels become accessible to survey. The Authority and Reclamation have made intentionally conservative and appropriate assumptions based on reasonable facts and evidence regarding Project construction and design, where needed. In addition, the Authority and Reclamation have made intentionally conservative and appropriate assumptions regarding footprint locations and buffers to evaluate existing resources on various parcels.

3.2.6 Mitigation Measures

Mitigation measures are proposed, where feasible, to avoid, minimize, rectify, reduce, or compensate for significant and potentially significant impacts of the alternatives, in accordance with Section 15126.4 of the CEQA Guidelines and NEPA (40 CFR 1502.14, 1502.16, 1508.8). To aid the reader, each mitigation measure is identified numerically to correspond with the number of the associated impact.

When significant impacts are identified, feasible mitigation measures are formulated to eliminate or reduce the intensity of the impacts and focus on the protection of sensitive resources. Under CEQA, the effectiveness of a mitigation measure is subsequently determined by evaluating the impact remaining after the application of the mitigation and reaching one of two conclusions: (1) the mitigation reduces the impact to a less-than-significant level; or (2) no feasible mitigation exists to reduce the impact to a less-than-significant level, and, therefore, the impact is determined to be significant and unavoidable. No mitigation measures are needed or proposed when an impact is determined to be beneficial or less than significant. Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance.

Under NEPA, an EIS must identify relevant, reasonable mitigation measures not already included in the proposed action or alternatives to the proposed action that could avoid, minimize, rectify, reduce, eliminate, or compensate for the project's adverse environmental effects (40 CFR 1508.20). Mitigation measures are presented for each resource to avoid, minimize, rectify, reduce, eliminate, or compensate for adverse environmental effects of Alternatives 1, 2, and 3 as compared to the No Action Alternative. The Authority would be responsible for implementing all mitigation measures identified in this document.

3.3 Additional Analyses

Chapters 28 through 30 address topics that are specific to NEPA. Therefore, the organization and terminology in these chapters are slightly different from that in Chapters 5 through 27, according to the following framework.

- Affected environment
- Methods of analysis
- Environmental consequences

It should be noted that NEPA focuses on the effects of climate change and sea level rise on the Project along with climate change effects that would potentially result from the Project. Climate change effects that would potentially result from the Project or that would worsen environmental impacts of the Project also require evaluation under CEQA.

Similar to the discussion in Section 3.2.4, *Methods*, the approaches for the analysis of effects related to climate change, Indian Trust Assets, and environmental justice included desktop reviews, database queries, and modeling. Modeling was used to analyze socioeconomic and climate change impacts. A range of potential impacts of future climate and sea-level conditions

on Project operations are evaluated. Appendix 1A, *Introduction to Appendices and Modeling Information*, contains more information on these models. The environmental consequences analysis discloses the effects of the alternatives on a particular resource. NEPA determinations consist of those identified in Section 3.2.5, *Determination of Impacts*.

3.4 Other Required Analyses

Other CEQA and NEPA analyses are addressed in Chapter 31, *Cumulative Impacts*, and Chapter 32, *Other Required Analyses*. These chapters describe and evaluate the following:

- Cumulative impacts (CEQA and NEPA)
- Growth-inducing impacts (CEQA only) and indirect impacts (NEPA)
- Relationship between short-term uses and long-term productivity and irreversible or irretrievable resource commitments (NEPA only)
- Significant irreversible environmental impacts (CEQA only)
- Mitigation measures with the potential for environmental effects (CEQA only)

3.5 References

3.5.1 Printed References

California Department of Fish and Wildlife. 2020. *Long-Term Operation of the State Water Project in the Sacramento–San Joaquin Delta*. Incidental Take Permit No. 2081-2019-066-00. March 31, 2020. Sacramento, CA. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/ITP-for-Long-Term-SWP-Operations.pdf. Accessed: June 4, 2021.

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