

1 to keep DO levels above minimum basin plan objectives. Since the aerators are assumed to be
 2 operated under the alternatives, just as in the Existing Conditions and No Action Alternative, effects
 3 of the alternatives on DO remained less than significant.

4 Refer to Chapter 8, *Water Quality*, Section 8.3.1.7 for methodological considerations used in the
 5 assessment, and Impact WQ-9 in Appendix A for the updates to the DO assessment.

6 **2.2.9 Miscellaneous Revisions and Updates**

7 Several minor, miscellaneous revisions and updates that do not fall into the categories above were
 8 also made.

9 Regarding the Trace Metals assessment, although aluminum was mentioned in the Screening
 10 Analysis (Appendix 8C) as being included in the Trace Metals assessment, it was inadvertently
 11 omitted. Additional discussion of aluminum (as well as of iron and manganese) was therefore added
 12 to *Affected Environment* and additional assessment of aluminum was conducted.

13 Regarding the assessment of nutrients, a discussion of nutrient objectives was added and language
 14 was added to the document to explain why the N:P (nitrogen to phosphorus) ratio was not
 15 specifically evaluated, why dissolved vs. total phosphorus was used in the assessment, and how
 16 upgrades to the Sacramento Regional Wastewater Treatment Plant would affect phosphorus
 17 concentrations in the late long term.

18 Refer to Chapter 8, *Water Quality*, Section 8.1.3.16 in Appendix A for the discussion of aluminum,
 19 iron, and manganese, and Section 8.3.3.1 Impact WQ-27 in Appendix A for the assessment of
 20 aluminum.

21 Refer to Chapter 8, *Water Quality*, Section 8.1.3.10 in Appendix A for the discussion of nutrient
 22 objectives, Section 8.3.1.7 in Appendix A for a discussion of the N:P ratio and total vs. dissolved
 23 phosphorus, and Section 8.3.1.7 in Appendix A for a discussion of upgrades to the Sacramento
 24 Regional Wastewater Treatment Plant effects on phosphorus.

25 **2.3 Air Quality, Health Risk Assessment, Traffic, and** 26 **Noise Revisions**

27 Chapter 22, *Air Quality and Greenhouse Gases*, evaluates criteria pollutant and greenhouse gas (GHG)
 28 emissions from construction and operation of the water conveyance facility (CM1). For all action
 29 alternatives other than Alternatives 4A, 2D, and 5A, air quality impacts from implementation of
 30 habitat restoration and protection activities (CM2 through CM11) are also evaluated (at the
 31 programmatic level). The chapter has been revised since release of the Draft EIR/EIS to address
 32 design changes associated with the proposed project, to incorporate the latest engineering
 33 assumptions and modeling procedures, and to respond to issues and concerns raised by the public.
 34 Where these design and engineering assumptions could result in substantive changes in other
 35 impact analyses, such revisions in other impact analyses have also been made since release of the
 36 Draft EIR/EIS. These parallel changes occur most notably in Chapter 19, *Transportation*, as well as
 37 those portions of Chapter 23, *Noise*, related to noise generated by vehicles and equipment associated
 38 with construction of water conveyance facilities. The following sections briefly describe the
 39 revisions and their effects on the impact analysis. Please refer to the Chapter 22, *Air Quality and*

1 *Greenhouse Gases*, in Appendix A and Section 4, *New Alternatives: Alternatives 4A, 2D, and 5A*, of this
 2 RDEIR/SDEIS to review the revised analysis.

3 **2.3.1 Mass Emissions Modeling for Construction of the** 4 **Water Conveyance Facility**

5 As described in Section 3, *Conveyance Facility Modifications to Alternative 4*, of this RDEIR/SDEIS,
 6 several design parameters for the water conveyance facilities under Alternative 4 (described as the
 7 modified pipeline/tunnel option) were revised following the release of the Draft EIR/EIS to reflect
 8 changes in operation and further reduce environmental impacts. DWR prepared an updated
 9 economic analysis (2014 cost estimate) to evaluate these design changes. The 2014 cost estimate
 10 provides detailed information on equipment and vehicle activity (e.g., operating hours per day), as
 11 well as the start date and number of working days for each construction phase. The mass emissions
 12 analysis for Alternative 4, as found in the Draft EIR/EIS, was revised to utilize the 2014 cost estimate
 13 assumptions, which reflect the optimized CM1 design. Because the assumptions and methodology
 14 developed for the 2014 cost estimate supersede the 2010/2012 cost estimate that was used as the
 15 basis of the Draft EIR/EIS air quality analysis, emissions estimates associated with the alternatives
 16 were likewise revised using a combination of the 2010/2012 and 2014 cost estimate assumptions¹,
 17 where appropriate, as well as activity scaling factors based on consultation with DWR's Engineering
 18 Workgroup.

19 In addition to updating the cost estimate, DWR also revised the Construction Equipment Exhaust
 20 Reduction Plan, as found in Section 3B.1.9 of Appendix 3B, *Environmental Commitments*, in Appendix
 21 A of this RDEIR/SDEIS, to provide additional implementation flexibility and to improve the level of
 22 achieved environmental protection. The revised Construction Equipment Exhaust Reduction Plan,
 23 now found in Appendix 3B as revised and reissued as part of this RDEIR/SDEIS, is comprised of
 24 several conservative performance standards. Specifically, an average performance standard of
 25 model year 2013 engines is identified for offroad equipment (equivalent to a Tier 3 to Tier 4 engine,
 26 depending on the equipment type and horsepower). This performance standard must be achieved at
 27 each construction site, although construction contractors may utilize a variety of control strategies
 28 to meet an emissions output equivalent to or better than a model year 2013 fleet. Potential control
 29 strategies include engine electrification, use of Tier 3 or 4 engines, and use of diesel particulate
 30 filters. The revised Construction Equipment Exhaust Reduction Plan also includes a performance
 31 standard of model year 2010 engines for onroad vehicles, a Tier 3 engine requirement for marine
 32 vessels, and a Tier 4 engine requirement for tunneling locomotives. The air quality emissions
 33 modeling for Alternative 4 and other alternatives have been revised to reflect implementation of
 34 these commitments.

35 The mass emissions analysis was also revised to incorporate new air quality models released since
 36 the Draft EIR/EIS, as well as to respond to public comments. The California Air Resources Board
 37 (ARB) released the EMFAC2014 model on December 30, 2014. This model supersedes the
 38 EMFAC2011 model, which was used to estimate emissions from onroad vehicles in the Draft EIR/EIS
 39 air quality analysis. Accordingly, onroad vehicle emission estimates have been revised using
 40 emission factors generated by the EMFAC2014 model. Helicopter emissions were also updated

¹ Features exclusive to the BDCP Alternatives (e.g., intake pumping plants) were not evaluated in the 2014 cost estimate for Alternative 4. Accordingly, the 2010/2012 cost estimate, which represents the best available data for the features, was used to evaluate emissions based on guidance from DWR's Engineering Working Group. Please refer to Appendix 22A, *Air Quality Analysis Methodology*, in Appendix A for additional information.

1 based on the Federal Aviation Administration’s (FAA’s) Emissions and Dispersion Modeling System
 2 (EDMS). Finally, minor technical revisions have been made in response to public input, including use
 3 of GHG emission factors that account for multiple concrete compression strengths. The revisions
 4 ensure that the mass emissions analysis and construction impact assessment use the most recent air
 5 quality modeling procedures and incorporate applicable public input.

6 This revised analysis is included for Alternative 4A in Section 4.3.18, for Alternative 2D in Section
 7 4.4.18, for Alternative 5A in Section 4.5.18, and for the remainder of the alternatives in Chapter 22,
 8 *Air Quality and Greenhouse Gases* in Appendix A of this RDEIR/SDEIS. The updated modeling
 9 resulted in slightly higher mass emission estimates than those presented in the Draft EIR/EIS.
 10 However, similar to the Draft EIR/EIS, the project proponents would pursue offsets to reduce
 11 emissions below air district thresholds or to net zero. Thus, this impact would be less-than-
 12 significant.

13 **2.3.2 Health Risk Assessment for Construction of the** 14 **Water Conveyance Facility**

15 The health risk assessment (HRA) prepared for the Draft EIR/EIS characterized cancer risks and
 16 non-cancer hazards from inhaled diesel particulate matter based on the mass emissions analysis
 17 conducted for construction of the water conveyance facilities. Because the mass emissions analysis
 18 has been revised based on changes to the project design and underlying engineering assumptions,
 19 the HRA was likewise revised to incorporate the updated modeling results. The revised HRA also
 20 reflects implementation of the modified Construction Equipment Exhaust Reduction Plan (see
 21 revised Appendix 3B), as well as changes to the onroad vehicle (EMFAC2014) and helicopter
 22 (EDMS) emission factors. These revisions ensure that the HRA utilizes the most recent engineering
 23 data and air quality modeling procedures. The cancer risk analysis was also updated to incorporate
 24 recent guidance from the Office of Environmental Health Hazard, which includes age-specific factors
 25 to account for increased sensitivity to carcinogens during early-in-life exposure.

26 This revised analysis is included for Alternative 4A in Section 4.3.18, for Alternative 2D in Section
 27 4.4.18, for Alternative 5A in Section 4.5.18, and for the remainder of the alternatives in Chapter 22,
 28 *Air Quality and Greenhouse Gases* in Appendix A of this RDEIR/SDEIS. The updates identify separate
 29 health risks associated with exposure to localized particulate matter (PM) and diesel particulate
 30 matter (DPM). Significant impacts from receptor exposure to localized PM were found for all
 31 alternatives, but would be reduced to less than significant through dust suppressants, receptor
 32 relocation, or onsite paving. Receptor exposure to DPM would result in significant impacts for all
 33 alternatives except for 4, 4A, and 9. A stepped mitigation approach would ensure that this impact
 34 would be less-than-significant.

35 **2.3.3 Mass Emissions Modeling for Operations and** 36 **Maintenance of the Water Conveyance Facility**

37 As improvements were made to the construction design, DWR similarly continued, following release
 38 of the Draft EIR/EIS, to refine operations and maintenance (O&M) protocols for the water
 39 conveyance facilities. DWR developed updated equipment and employee O&M assumptions to
 40 reflect the latest understanding of project operations. These new assumptions have been
 41 incorporated into the mass emissions modeling and operational air quality impact assessment. The
 42 analysis has also been revised to utilize onroad emission factors generated by the EMFAC2014

1 model. The combined revisions ensure that the analysis utilizes the most recent engineering data
2 and air quality modeling procedures.

3 This revised analysis is included for Alternative 4A in Section 4.3.18, for Alternative 2D in Section
4 4.4.18, for Alternative 5A in Section 4.5.18, and for the remainder of the alternatives in Chapter 22,
5 *Air Quality and Greenhouse Gases* in Appendix A of this RDEIR/SDEIS. The updated modeling
6 resulted in slightly higher mass emission estimates than those presented in the DEIR/EIS, but all
7 impacts would remain less than significant.

8 **2.3.4 Air District Thresholds and Localized Health Analysis**

9 The Lead Agencies have also added to Chapter 22, *Air Quality and Greenhouse Gases*, further
10 discussion identifying and disclosing the purpose of local air district thresholds with respect to
11 evaluating both regional and local air quality impacts. The added text highlights the fact that,
12 because the regional criteria pollutant thresholds are derived from air quality plans developed to
13 meet and attain the state and federal health-based ambient air quality standards on a regional basis,
14 these thresholds are not indicators of potential localized human health impacts. This additional
15 context better explains how the Plan Area air districts' criteria pollutant thresholds should be
16 applied; and it defines their purpose in evaluating air quality impacts. In general, the thresholds are
17 only used to assess the project's effect on *regional* attainment of the ambient air quality standards.
18 The new language in Chapter 22 explains why localized health impacts cannot be derived from
19 analyses of regional air quality impacts, and why localized exceedences of regional criteria pollutant
20 thresholds recommended by Plan Area air districts do not necessarily translate into adverse health
21 effects.

22 With these general principles in mind, the chapter has also been revised to explain better how both
23 regional and localized changes in pollutant emissions associated with a project could impact human
24 health. The revised analysis evaluates health effects from pollutants with the greatest potential to
25 result in a significant, material impact on human health. Because health effects related to regional
26 pollutants, such as ozone precursors (ROG and NO_x), are the products of emissions generated by
27 numerous sources throughout a region, minor increases in regional air pollution from project-
28 generated ROG and NO_x would have nominal or negligible impacts on human health. Consequently,
29 potential health effects related to increases in ozone precursors are discussed with respect to
30 cumulative air quality impacts. Project-level analysis of localized pollutants (particulate matter,
31 carbon monoxide, and the pathogenic fungus *Coccidioides immitis*, which can cause valley fever),
32 which can directly affect the health of certain sensitive receptors, has been added to the chapter. The
33 additional analysis addresses concerns regarding the relationship between localized pollutant
34 concentrations and human health by documenting the potential health outcomes induced by
35 project-generated emissions.

36 This analysis is included for Alternative 4A in Section 4.3.18, for Alternative 2D in Section 4.4.18, for
37 Alternative 5A in Section 4.5.18, and for the remainder of the alternatives in Chapter 22, *Air Quality
38 and Greenhouse Gases* in Appendix A of this RDEIR/SDEIS (refer to Impacts AQ-9 through AQ-18 and
39 AQ-28 through AQ-31).

40 **2.3.5 Odor Analysis**

41 The Draft EIR/EIS air quality analysis evaluated potential odor impacts from equipment and
42 vehicles that would be required for construction and O&M of the water conveyance facilities. The

1 impact analysis has been expanded to assess potential odors from excavated organic matter during
 2 removal of reusable tunnel material (RTM) and sediment. If present in the muck and sediment,
 3 anaerobic decay of organic material can generate gases, specifically hydrogen sulfide. Hydrogen
 4 sulfide is commonly described as having a foul or “rotten egg” smell. Odor analysis for
 5 implementation of CM2 through CM11 has also been added to Chapter 22, *Air Quality and*
 6 *Greenhouse Gases*. The additional discussion provides a more thorough analysis of potential odor
 7 impacts associated with the project.

8 This revised analysis is included for Alternative 4A in Section 4.3.18, for Alternative 2D in Section
 9 4.4.18, for Alternative 5A in Section 4.5.18, and for the remainder of the alternatives in Chapter 22,
 10 *Air Quality and Greenhouse Gases* in Appendix A of this RDEIR/SDEIS (refer to Impacts AQ-19 and
 11 AQ-26). Odor impacts for all alternatives would be less than significant, consistent with what was
 12 presented in the DEIR/EIS.

13 **2.3.6 General Conformity Determination**

14 The project study area is in federally classified nonattainment and/or maintenance areas for ozone,
 15 carbon monoxide, and particulate matter. Consequently, to fulfill general conformity requirements, a
 16 general conformity determination was prepared for the applicant-preferred alternative (APA),
 17 Alternative 4A. Since construction and operation of the project under Alternative 4A would be
 18 identical to Alternative 4, the general conformity determination applies to those activities pertaining
 19 to both Alternative 4 and Alternative 4A (henceforth referred to as Alternative 4/4A).

20 The determination concluded that, with implementation of Mitigation Measures AQ-1 through AQ-4,
 21 which would develop and implement emissions offset programs, Alternative 4/4A would not conflict
 22 with or obstruct implementation of the applicable air quality plans. The Lead Agencies undertook an
 23 extensive consultation process with SJVAPCD and BAAQMD to confirm that sufficient emissions
 24 reduction credits were available to offset project-generated emissions to net zero. Copies of the air
 25 district consultation efforts have been provided in Appendix 22E, *General Conformity Determination*.
 26 The appendix also presents the complete general conformity determination for Alternative 4/4A.
 27 Consultation with SMAQMD and YSAQMD is still ongoing.

28 **2.3.7 Transportation and Noise Analysis for Construction** 29 **of the Water Conveyance Facilities**

30 As described in Section 2.3.1, *Mass Emissions Modeling for Construction of the Water Conveyance*
 31 *Facility*, an updated analysis was prepared to evaluate design changes, associated changes based on
 32 detailed information of revised equipment and vehicle activity (e.g., operating hours per day), and
 33 the start date and number of working days for each construction phase. The transportation and
 34 traffic-based noise analyses for Alternative 4 were revised to utilize these revised assumptions,
 35 which reflect the optimized design of the water conveyance facilities. Because the assumptions and
 36 methodology developed as part of this effort supersede those used as the basis for the Draft EIR/EIS
 37 transportation and traffic-based noise analyses, vehicle trip estimates associated with construction
 38 of the other alternatives, along with their associated impact discussions, were likewise revised
 39 where appropriate.

40 This revised construction traffic assessment is included for Alternative 4A in Section 4.3.15, for
 41 Alternative 2D in Section 4.4.15, for Alternative 5A in Section 4.5.15, and for the remainder of the
 42 alternatives in Chapter 19, *Transportation* in Appendix A of this RDEIR/SDEIS (refer to Impacts