

Amendments to the 1994 Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

The Third Edition of the Basin Plan was adopted by the Central Valley Water Board on 9 December 1994, approved by the State Water Board on 16 February 1995 and approved by the Office of Administrative Law on 9 May 1995. The Fourth Edition of the Basin Plan was the 1998 reprint of the Third Edition incorporating amendments adopted and approved between 1994 and 1998.

The Basin Plan is in a loose-leaf format to facilitate the addition of amendments. The Basin Plan can be kept up-to-date by inserting the pages that have been revised to include subsequent amendments. The date subsequent amendments are adopted by the Central Valley Water Board will appear at the bottom of the page. Otherwise, all pages will be dated 1 September 1998.

Basin plan amendments adopted by the Regional Central Valley Water Board must be approved by the State Water Board and the Office of Administrative Law. If the amendment involves adopting or revising a standard which relates to surface waters it must also be approved by the U.S. Environmental Protection Agency (USEPA) [40 CFR Section 131(c)]. If the standard revision is disapproved by USEPA, the revised standard remains in effect until it is revised by the basin planning process, or USEPA promulgates its own rule which supersedes the standard revision [40 CFR Section 131.21(c)]

Each version of the Basin Plan includes all amendments that are in effect as of the date of the version. It is the intent of the Central Valley Water Board to release updated versions of the Basin Plan as soon as adopted amendments are approved and in effect

The following are the amendments adopted by the Regional Water Board after 1 September 1998 that have been fully approved and are now in effect:

| Subject | Date Adopted By Reg. Bd. | Regional Board Resolution No. | Date in Effect |
|---|-----------------------------|----------------------------------|-------------------|
| 1. Amendment Specifically Authorizing Compliance Schedules in NPDES Permits for Achieving Water Quality Objectives or Effluent Limits Based on Objectives | 5/26/95 | 95-142 | 5/26/95 |
| 2. Adoption of Water Quality Objectives and an Implementation Plan Regulation of Agricultural Subsurface Drainage in the Grassland Area | 5/3/96 | 96-147 | 1/10/97 |
| 3. Adoption of Site Specific Water Quality Objectives for pH and Turbidity for Deer Creek in El Dorado County | 7/19/02 | R5-2002-0127 | 10/21/03 |
| 4. Adoption of Corrective Language | 9/6/02 | R5-2002-0151 | 1/27/04 |
| 5. Adoption of a Control Program for Mercury in Clear Lake, including COMM use for Clear Lake and Mercury Objectives for Fish Tissue | 12/6/02 | R5-2002-0207 | 10/2/03 |

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| Subject | Date Adopted By Reg. Bd. | Regional Board Resolution No. | Date in Effect |
|---|-----------------------------|----------------------------------|-------------------|
| 6. Adoption of a Control Program for Orchard Pesticide Runoff and Diazinon Runoff into the Sacramento and Feather Rivers, including Site-Specific Water Quality Objectives for Diazinon | 10/16/03 | R5-2003-0148 | 8/11/04 |
| 7. Adoption of Site Specific Temperature Objectives for Deer Creek in El Dorado And Sacramento Counties | 1/31/03 9/16/05 | R5-2003-0006 R5-2005-0119 | 5/17/06 |
| 8. Amendment for the Control of Salt and Boron Discharges into the Lower San Joaquin River | 9/10/04 | R5-2004-0108 | 7/28/06 |
| 9. Amendment to De-Designate Four Beneficial Uses of Old Alamo Creek, Solano County | 4/28/05 | R5-2005-0053 | 8/7/06 |
| 10. Amendment for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel | 1/27/05 | R5-2005-0005 | 8/23/06 |
| 11. Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River | 10/21/05 | R5-2005-0138 | 12/20/06 |
| 12. Amendment for the Control of Mercury in Cache creek, Bear Creek, Sulphur Creek and Harley Gulch | 10/21/05 | R5-2005-0146 | 2/6/07 |
| 13. Amendment for the Control of Nutrients in Clear Lake | 6/23/06 | R5-2006-0060 | 7/12/07 |
| 14. Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta | 6/23/06 | R5-2006-0061 | 10/10/07 |
| 15. Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento and Feather Rivers | 5/3/07 | R5-2007-0034 | 8/11/08 |
| 16. Amendment to Revise Water Quality Objectives for pH and Turbidity | 10/25/07 | R5-2007-0136 | 7/7/09 |
| 17. Amendment to Determine Certain Beneficial Uses are not Applicable and Establish Water Quality Objectives in Sulphur Creek, Colusa County | 3/16/07 | R5-2007-0021 | 9/4/09 |

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| Subject | Date Adopted By Reg. Bd. | Regional Board Resolution No. | Date in Effect |
|--|-----------------------------|----------------------------------|-------------------|
| 18. Non-Regulatory Amendments to Correct Editing Errors and Update Language | 8/13/09 | R5-2009-0069 | 5/18/11 |
| 19. Amendments to Control Methylmercury And Total Mercury in the Sacramento-San Joaquin Delta Estuary | 4/22/2010 | R5-2010-0043 | 10/20/11 |
| 20. Non-Regulatory Amendments to Provide A Cost Estimate and Potential Sources of Financing for a Long-Term Irrigated Lands Program | 10/13/2011 | R5-2011-0075 | 12/14/12 |
| 21. Amendments to Establish Site-Specific Water Quality Objectives for Chloroform, Chlorodibromomethane, and Dichlorobromomethane for New Alamo And Ulatis Creeks, Solano County, and Permit Implementation Provisions | 5/27/2010 | R5-2010-0047 | 4/9/13* |
| 22. Amendments for the Control of Selenium In the Lower San Joaquin River Basin | 5/27/2010 | R5-2010-0046 | 11/7/13 |
| 23. Amendment to Establish a Drinking Water Policy for Surface Waters of the Delta and Its Upstream Tributaries | 7/26/2013 | R5-2013-0098 | 11/20/14 |
| 24. Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin Regarding Onsite Wastewater System Implementation Program | 3/27/2014 | R5-2014-0036 | 1/26/15 |
| 25. Amendments to Edit and Update Language | 3/27/2014 | R5-2014-0037 | 1/26/15 |
| 26. Amendment to Provide a Groundwater Regulatory Framework Towards Closure of the Royal Mountain King Mine Site, Calaveras County | 3/28/2014 | R5-2014-0047 | 6/17/15 |

* For R5-2010-0047, U.S. Environmental Protection Agency specifically did not approve the implementation provisions.

THE WATER QUALITY CONTROL PLAN (BASIN PLAN)
FOR THE
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
FOURTH EDITION
Revised June 2015 (with Approved Amendments)
THE SACRAMENTO RIVER BASIN AND
THE SAN JOAQUIN RIVER BASIN



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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APPENDIX

MAPS

BASIN DESCRIPTION

This Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins (see maps in pocket* and Figure II-1). The basins are bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. They extend some 400 miles from the California - Oregon border southward to the headwaters of the San Joaquin River.

*NOTE: The planning boundary between the San Joaquin River Basin and the Tulare Lake Basin follows the southern watershed boundaries of the Little Panoche Creek, Moreno Gulch, and Capita Canyon to boundary of the Westlands Water District. From here, the boundary follows the northern edge of the Westlands Water District until its intersection with the Firebaugh Canal Company's Main Lift Canal. The basin boundary then follows the Main Lift Canal to the Mendota Pool and continues eastward along the channel of the San Joaquin River to the southern boundary of the Little Dry Creek watershed (Hydrologic Subareas No. 540.70 and 545.30) and then follows along the southern boundary of the San Joaquin River drainage basin.

The Sacramento River and San Joaquin River Basins cover about one fourth of the total area of the State and over 30% of the State's irrigable land. The Sacramento and San Joaquin Rivers furnish roughly 51% of the State's water supply. Surface water from the two drainage basins meet and form the Delta, which ultimately drains to San Francisco Bay. Two major water projects, the Federal Central Valley Project and the State Water Project, deliver water from the Delta to Southern California, the San Joaquin Valley, Tulare Lake Basin, the San Francisco Bay area, as well as within the Delta boundaries.

The Delta is a maze of river channels and diked islands covering roughly 1,150 square miles, including 78 square miles of water area. The legal boundary of the Delta is described in Section 12220 of the Water Code (also see Figure III-1 of this Basin Plan).

Ground water is defined as subsurface water that occurs beneath the ground surface in fully saturated zones within soils and other geologic formations. Where ground water occurs in a saturated geologic unit that contains sufficient permeability and thickness to yield significant quantities of water to wells or springs, it can be defined as an aquifer (USGS, Water Supply Paper 1988, 1972). A ground

water basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers (Todd, *Groundwater Hydrology*, 1980).

Major ground water basins underlie both valley floors, and there are scattered smaller basins in the foothill areas and mountain valleys. In many parts of the Region, usable ground waters occur outside of these currently identified basins. There are water-bearing geologic units within ground water basins in the Region that do not meet the definition of an aquifer. Therefore, for basin planning and regulatory purposes, the term "ground water" includes all subsurface waters that occur in fully saturated zones and fractures within soils and other geologic formations, whether or not these waters meet the definition of an aquifer or occur within identified ground water basins.

Sacramento River Basin

The Sacramento River Basin covers 27,210 square miles and includes the entire area drained by the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks.

The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa.

DWR Bulletin 118-80 identifies 63 ground water basins in the Sacramento watershed area. The Sacramento Valley floor is divided into 2 ground water basins. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground waters that have beneficial uses.

San Joaquin River Basin

The San Joaquin River Basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to

Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

Beneficial Use De-designations

Ground waters at the Royal Mountain King Mine Site are de-designated for MUN and AGR in the de-designation area shown in Figure II-2.

In making any exceptions to the beneficial use designation of municipal and domestic supply (MUN), the Regional Water Board will apply the criteria in State Water Board Resolution No. 88-63, 'Sources of Drinking Water Policy'. The criteria for exceptions are:

- "The total dissolved solids (TDS) exceed 3,000 mg/l (5,000 & mhos/cm, electrical conductivity) and it is not reasonably expected by the Regional Water Board [for the ground water] to supply a public water system, or
- "There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
- "The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day, or
- "The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR Section 261.3."

To be consistent with State Water Board Resolution No. 88-63 in making exceptions to beneficial use designations other than municipal and domestic supply (MUN), the Regional Water Board will consider criteria for exceptions, parallel to Resolution

No. 88-63 exception criteria, which would indicate limitations on those other beneficial uses as follows:

In making any exceptions to the beneficial use designation of agricultural supply (AGR), the Regional Water Board will consider the following criteria:

- There is pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for agricultural use using either Best Management Practices or best economically achievable treatment practices, or
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day, or
- The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR Section 261.3.

In making any exceptions to the beneficial use designation of industrial supply (IND or PRO), the Regional Water Board will consider the following criteria:

- There is pollution, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for industrial use using either Best Management Practices or best economically achievable treatment practices, or
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

TABLE II-1

SURFACE WATER BODIES AND BENEFICIAL USES

| SURFACE WATER BODIES | HYDRO UNIT NUMBER | MUN | AGRI-CULTURE | | INDUSTRY | | | RECREATION | | | FRESHWATER HABITAT (2) | | MIGRATION | | SPAWNING | | WILD | NAV | |
|--|-------------------|-----|-------------------------------|------------|----------------|------|-----|------------|---------|--------------------------|------------------------|------|-----------|------|----------|----------|------|-----|----------|
| | | | MUNICIPAL AND DOMESTIC SUPPLY | IRRIGATION | STOCK WATERING | PROC | IND | POW | CONTACT | CANOEING (1) AND RAFTING | OTHER NONCONTACT | WARM | COLD | MIGR | COLD (4) | WARM (3) | | | COLD (4) |
| | | | | | | | | | | | | | | | | | | | |
| 1 McCloud River | 505. | E | | | | | E | E | P | E | E | E | | | E | E | | | |
| 2 GOOSE LAKE | 527.20 | | E | E | | | | E | | E | E | E | | | | E | E | | |
| 3 PIT RIVER | 526.00 | E | E | E | | | | E | P | E | E | E | | | E | E | E | | |
| 4 NORTH FORK, SOUTH FORK, PIT RIVER | 526.35 | E | E | E | | | E | E | E | E | E | E | | | E | E | E | | |
| 5 CONFLUENCE OF FORKS TO HAT CREEK | 526.41 | E | E | E | | | E | E | E | E | E | E | | | | E | E | | |
| 6 FALL RIVER | 526.30 | | E | | | | E | E | | E | E | E | | | | E | E | | |
| 7 HAT CREEK | 526.34 | | | | | | E | E | | E | E | E | | | | P | E | | |
| 8 BAUM LAKE | 526. | E | E | E | | | E | E | E | E | P | E | | | E | E | E | | |
| 9 MOUTH OF HAT CREEK TO SHASTA LAKE | 525.22 | | E | E | | | | E | | E | E | E | | | | E | E | | |
| 10 SACRAMENTO RIVER | 525.22 | | | | | | | E | | E | E | E | | | | P | E | | |
| 11 SOURCE TO BOX CANYON RESERVOIR | 525.2 | | E | E | | | | E | E | E | E | E | | | | E | E | | |
| 12 LAKE SISKIYOU | 506.10 | E | E | E | | | E | E | E | E | E | E | | | E | E | E | E | |
| 13 BOX CANYON DAM TO SHASTA LAKE | 524.61 | E | E | E | | E | E | E | E | E | E | E | E | E | E | E | E | E | |
| 14 SHASTA LAKE | 524.62 | | E | E | | | | E | E | E | E | E | | | E | E | E | E | |
| 15 SHASTA DAM TO COLUSA BASIN DRAIN | 507.3 | P | E | E | | | E | E | P | E | E | E | | | E | E | E | E | |
| 16 WHISKEY TOWN RESERVOIR | 507.12 | | E | E | | | E | E | E | E | E | E | | | E | E | E | E | |
| 17 CLEAR CREEK BELOW WHISKEYTOWN RESERVOIR | 524.3 | E | E | E | P | P | P | E | E | E | E | E | | | E | E | E | E | |
| 18 COW CREEK | 509.63 | | E | E | | | | E | | E | E | E | | | E | E | E | E | |
| 19 BATTLE CREEK | 509.42 | | E | E | | | | E | | E | E | E | | | E | E | E | E | |
| 20 COTTONWOOD CREEK | 523.10 | | E | E | | | | E | | E | E | E | | | E | E | E | E | |
| 21 ANTELOPE CREEK | 509.20 | E | E | E | | | | E | | E | E | E | | | E | E | E | E | |
| 22 MILL CREEK | 509.14 | | E | E | | | | E | E | E | E | E | | | E | E | E | E | |
| 23 THOMES CREEK | 522.00 | | | E | | | | E | E | E | E | P | | | E | E | E | E | |
| 24 DEER CREEK | 522.33 | | | E | | | | E | E | E | E | P | | | E | E | E | E | |
| 25 BIG CHICO CREEK | 522.12 | | E | E | | | | E | E | E | E | | | | E | E | E | E | |
| 26 STONY CREEK | 521.30 | E | E | E | | | E | E | | | E | E | | | E | E | E | E | |
| 27 EAST PARK RESERVOIR | 520.40 | | | E | | | | E | E | | E | E | | | E | E | E | E | |
| 28 BLACK BUTTE RESERVOIR | 520.21 | | E | E | | | | E | E | | E | E | | | E | E | E | E | |
| 29 BUTTE CREEK | | | | | | | | | | | | | | | | | | | |

LEGEND

- E = EXISTING BENEFICIAL USES
- P = POTENTIAL BENEFICIAL USES
- L = EXISTING LIMITED BENEFICIAL USE

NOTE:

Surface waters with the beneficial uses of Groundwater Recharge (GWR), Freshwater Replenishment (FRSH), and Preservation of Rare and Endangered Species (RARE) have not been identified in this plan. Surface waters of the Sacramento and San Joaquin River Basins falling within these beneficial use categories will be identified in the future as part of the continuous planning process to be conducted by the State Water Resources Control Board.

TABLE II-1 (cont'd)

SURFACE WATER BODIES AND BENEFICIAL USES

| | SURFACE WATER BODIES | HYDRO UNIT NUMBER | MUN | | AGRI-CULTURE | | INDUSTRY | | | RECREATION | | | FRESHWATER HABITAT (2) | | MIGRATION | | SPAWNING | | WILD | NAV |
|----|---|-------------------|-------------------------------|------------|--------------|----------------|----------|-----|-----|------------|-------|------|------------------------|------|-----------|--------------------------|------------------|------|------|-----|
| | | | MUNICIPAL AND DOMESTIC SUPPLY | IRRIGATION | AGR | STOCK WATERING | PROC | IND | POW | REC-1 | REC-2 | WARM | COLD | MIGR | SPWN | | | | | |
| | | | | | | | | | | | | | | | | CANOEING (1) AND RAFTING | OTHER NONCONTACT | WARM | | |
| 30 | COLUSA BASIN DRAIN TO EYE ("I") STREET BRIDGE | 520.00 | E | E | | | | | E | E | E | E | E | E | E | E | E | E | E | E |
| 31 | SUTTER BYPASS | 520.3 | E | E | | | | | E | E | E | E | E | E | E | E | E | E | E | E |
| 32 | FEATHER RIVER | | | | | | | | | | | | | | | | | | | |
| 32 | LAKE ALMANOR | 518.41 | | | | | | E | E | | | | | | E | | | | | E |
| 33 | NORTH FORK, FEATHER RIVER | 518.4 | E | | | | | E | E | E | E | | | | | | | E | E | |
| 34 | MIDDLE FORK, FEATHER RIVER | 518.3 | | | | | | | | E | E | | | | | | | E | E | |
| 34 | SOURCE TO LITTLE LAST CHANCE CREEK | 518.35 | | E | E | | | | | E | E | | | | | | | E | E | |
| 35 | FRENCHMAN RESERVOIR | 518.36 | | | | | | | | E | P | | | | | | | E | E | |
| 36 | LITTLE LAST CHANCE CREEK TO LAKE OROVILLE | 518.3 | E | | | | | | E | E | E | | | | | | | E | E | |
| 37 | LAKE DAVIS | 518.34 | | | | | | | E | P | E | | | | | | | E | E | |
| 38 | LAKES BASIN LAKES | 518.5 | | | | | | | E | E | E | | | | | | | E | E | |
| 39 | LAKE OROVILLE | 518.12 | E | E | | | | E | E | E | E | | | | E | | | E | E | |
| 40 | FISH BARRIER DAM TO SACRAMENTO RIVER | 515. | E | E | | | | | E | E | E | | | E | E | E | E | E | E | |
| 41 | YUBA RIVER | | | | | | | | | | | | | | | | | | | |
| 41 | SOURCES TO ENGLEBRIGHT RESERVOIR | 517. | E | E | E | | | | E | E | E | | | E | | | | E | E | |
| 42 | ENGLEBRIGHT DAM TO FEATHER RIVER | 515.3 | | E | E | | | | E | E | E | | | E | E | E | E | E | E | |
| 43 | BEAR RIVER | 515.1 | E | E | E | | | | E | E | E | | | E | P | P | P | P | E | |
| 44 | AMERICAN RIVER | | | | | | | | | | | | | | | | | | | |
| 44 | NORTH FORK, SOURCE TO FOLSOM LAKE | 514.5 | E | E | | | | | E | E | E | P | | E | | | | E | E | |
| 45 | MIDDLE FORK, SOURCE TO FOLSOM LAKE | 514.4 | E | E | E | | | | E | E | E | P | | E | | | | E | E | |
| 46 | DESOLATION VALLEY LAKES | 514.4 | | | | | | | E | | E | | | | | | | E | E | |
| 47 | SOUTH FORK | 514.3 | | | | | | | | | | | | | | | | | | |
| 48 | SOURCE TO PLACERVILLE | 514.3 | E | | | | | | E | E | E | P | | E | | | | E | E | |
| 49 | PLACERVILLE TO FOLSOM LAKE | 514.32 | E | E | | | | | E | E | E | | | | | | | E | E | |
| 50 | FOLSOM LAKE | 514.23 | E | E | | | P | | E | E | E | | | | | | | E | E | |
| 51 | FOLSOM DAM TO SACRAMENTO RIVER | 519.21 | E | E | | | E | | E | E | E | | | E | E | E | E | E | E | |
| 52 | YOLO BYPASS (8) | 510. | | E | E | | | | E | E | E | | | E | E | E | E | E | E | |
| 53 | CACHE CREEK | | | | | | | | | | | | | | | | | | | |
| 53 | CLEAR LAKE (a) | 513.52 | E | E | E | | | | E | E | E | P | | | | | | E | E | |
| 54 | CLEAR LAKE TO YOLO BYPASS (d) | 511/513 | E | E | E | E | E | | E | E | E | P | | | | | | E | E | |

(1) Shown for streams and rivers only with the implication that certain flows are required for this beneficial use.
 (2) Resident does not include anadromous. Any Segments with both COLD and WARM beneficial use designations will be considered COLD water bodies for the application of water quality objectives.
 (3) Striped bass, sturgeon, and shad.
 (4) Salmon and steelhead
 (5) As a primary beneficial use.

(6) The indicated beneficial uses are to be protected for all waters except in specific cases where evidence indicates the appropriateness of additional or alternative beneficial use designations.
 (7) Sport fishing is the only recreation activity permitted.
 (8) Beneficial uses vary throughout the Delta and will be evaluated on a case-by-case basis. COMM is a designated beneficial use for the Sacramento San Joaquin Delta and Yolo Bypass waterways listed in Appendix 43 and not any tributaries to the listed waterways or portions of the listed waterways outside of the legal Delta boundary unless specifically designated.

(9) Per State Water Board Resolution No. 90-28, Marsh Creek and Marsh Creek Reservoir in Contra Costa County are assigned the following beneficial uses: REC1 and REC2 (potential uses), WARM, WILD and RARE. COMM is a designated beneficial use for Marsh Creek and its tributaries listed in Appendix 43 within the legal Delta boundary.
 A/ Hidden Reservoir = Hensley Lake
 B/ Buchanan Reservoir = Eastman Lake

(a) The following beneficial uses EXIST in addition to those noted in Table II-1

Mud Slough (north): COMM and SHELL
 Salt Slough: COMM, BIOL, and SHELL
 Wetland Water Supply Channels: BIOL
 Clear Lake: COMM

(d) In addition to the beneficial uses noted in Table II-1, COMM exists for Cache Creek from Clear Lake to Yolo Bypass and in the following tributaries only: North Fork Cache Creek and Bear Creek.

SURFACE WATER BODIES AND BENEFICIAL USES

| | SURFACE WATER BODIES | HYDRO UNIT NUMBER | MUN | AGRI-CULTURE | | INDUSTRY | | | RECREATION | | FRESHWATER HABITAT (2) | | MIGRATION | | SPAWNING | | WILD | NAV |
|----|---|-------------------|-----|--------------|----------------|----------|-----|-----|------------|-------|------------------------|------|-----------|------|-----------------|---------|------|-----|
| | | | | IRRIGATION | STOCK WATERING | PROC | IND | POW | REC-1 | REC-2 | WARM | COLD | MIGR | SPWN | | | | |
| | | | | | | | | | | | | | | | DOMESTIC SUPPLY | PROCESS | | |
| 55 | PUTAH CREEK | 512.21 | E | E | E | | | P | E | | E | E | | | | E | | |
| 56 | LAKE BERRYESSA | 510/511 | E | E | E | | | | E | | E | E | | | | E | | |
| | LAKE BERRYESSA TO YOLO BYPASS | | E | E | E | | | | E | | E | E | | | | E | | |
| | OTHER LAKES AND RESERVOIRS IN SACRAMENTO R. BASIN 5A (6) | | E | E | E | E | | E | E | | E | E | | | | E | | |
| 57 | COSUMNES RIVER | 532. | E | E | | | | | E | | E | E | | | | E | | |
| 58 | SOURCES TO NASHVILLE RESERVOIR (PROPOSED) | 532. | P | | | | | P | P | | P | P | P | | P | P | P | E |
| 59 | NASHVILLE RESERVOIR (PROPOSED) | 531/532 | E | E | E | | | | E | | E | E | E | E | E | E | E | E |
| | SOURCE TO DELTA | | E | E | E | | | | E | | E | E | E | E | E | E | E | E |
| 60 | MOKELUMNE RIVER | 532.6 | E | | | | | E | E | E | E | E | E | E | E | E | E | E |
| 61 | SOURCES TO PARDEE RESERVOIR | 532.6 | E | | | | | E | E | E | E | E | E | E | E | E | E | E |
| 62 | PARDEE RESERVOIR (7) | 531.2 | E | E | E | | | | E | | E | E | E | E | E | E | E | E |
| 63 | CAMANCHE RESERVOIR | 531.2 | | E | E | | | | E | | E | E | E | E | E | E | E | E |
| 64 | CAMANCHE RESERVOIR TO DELTA | | | E | E | | | | E | | E | E | E | E | E | E | E | E |
| 65 | CALAVERAS RIVER | 533. | | | | | | | E | | E | E | E | E | E | E | E | E |
| 66 | SOURCE TO NEW HOGAN RESERVOIR | 533.1 | | | | | | | E | | E | E | E | E | E | E | E | E |
| 67 | NEW HOGAN RESERVOIR | 531.3 | E | E | E | P | P | | E | | E | E | E | E | E | E | E | E |
| | NEW HOGAN RESERVOIR TO DELTA | | E | E | E | P | P | | E | | E | E | E | E | E | E | E | E |
| | OTHER LAKES AND RESERVOIRS IN HYDRO UNIT NOS. 531, 532, 533, 543, 544 (6) | | E | E | E | E | | E | E | | E | E | E | | | E | | E |
| 68 | SAN JOAQUIN RIVER | 540. | E | E | E | | | E | E | | E | E | E | | | | | E |
| 69 | SOURCES TO MILLERTON LAKE | 540.12 | P | E | E | | | | E | | E | E | P | | | | | E |
| 70 | MILLERTON LAKE | 545. | E | E | E | E | | | E | | E | E | E | E | E | E | P | E |
| 71 | FRIANT DAM TO MENDOTA POOL | 545.1 | P | E | E | E | | | E | | E | E | E | E | E | E | P | E |
| 72 | MENDOTA DAM TO SACK DAM | 535.7 | P | E | E | E | | | E | | E | E | E | E | E | E | P | E |
| 73 | SACK DAM TO MOUTH OF MERCED RIVER | | | | | | | | E | | E | E | E | E | E | E | P | E |
| 74 | FRESNO RIVER | 539.31 | E | E | E | | | | E | | E | E | | | | | | E |
| 75 | SOURCE TO HIDDEN RESERVOIR A/ | 539.32 | E | E | E | | | | E | | E | E | | | | | | E |
| 76 | HIDDEN RESERVOIR A/ | 545. | P | E | E | | | | E | | E | E | | | | | | E |
| 77 | HIDDEN RESERVOIR TO SAN JOAQUIN RIVER | | | | | | | | E | | E | E | | | | | | E |
| 78 | CHOWCHILLA RIVER | 539.11 | | | | | | | E | | E | E | | | | | | E |
| 79 | SOURCE TO BUCHANAN RESERVOIR B/ | 539.12 | E | E | E | | | | E | | E | E | | | | | | E |
| 80 | BUCHANAN RESERVOIR B/ | 535/545 | P | E | E | E | | | E | | E | E | | | | | | E |
| 81 | BUCHANAN DAM TO SAN JOAQUIN RIVER | | | | | | | | E | | E | E | | | | | | E |

(1) Shown for streams and rivers only with the implication that certain flows are required for this beneficial use.
 (2) Resident does not include anadromous. Any Segments with both COLD and WARM beneficial use designations will be considered COLD water bodies for the application of water quality objectives.
 (3) Striped bass, sturgeon, and shad.
 (4) Salmon and steelhead
 (5) As a primary beneficial use.

(6) The indicated beneficial uses are to be protected for all waters except in specific cases where evidence indicates the appropriateness of additional or alternative beneficial use designations.
 (7) Sport fishing is the only recreation activity permitted.
 (8) Beneficial uses vary throughout the Delta and will be evaluated on a case-by-case basis. COMM is a designated beneficial use for the Sacramento San Joaquin Delta and Yolo Bypass waterways listed in Appendix 43 and not any tributaries to the listed waterways or portions of the listed waterways outside of the legal Delta boundary unless specifically designated.

(9) Per State Water Board Resolution No. 90-28, Marsh Creek and Marsh Creek Reservoir in Contra Costa County are assigned the following beneficial uses: REC1 and REC2 (potential uses), WARM, WILD and RARE. COMM is a designated beneficial use for Marsh Creek and its tributaries listed in Appendix 43 within the legal Delta boundary.

A/ Hidden Reservoir = Hensley Lake
 B/ Buchanan Reservoir = Eastman Lake

SURFACE WATER BODIES AND BENEFICIAL USES

| SURFACE WATER BODIES | HYDRO UNIT NUMBER | MUN | AGRI-CULTURE | | INDUSTRY | | | RECREATION | | | FRESHWATER HABITAT (2) | | MIGRATION | | SPAWNING | | WILD | NAV |
|--|-------------------|-----|--------------|----------------|----------|----------------|-------|------------|--------------------------|------------------|------------------------|------|-----------|----------|----------|----------|------|-----|
| | | | IRRIGATION | STOCK WATERING | PROCESS | SERVICE SUPPLY | POWER | CONTACT | CANOEING (1) AND RAFTING | OTHER NONCONTACT | WARM | COLD | WARM (3) | COLD (4) | WARM (3) | COLD (4) | | |
| | | | | | | | | | | | | | | | | | | |
| 78 MERCED RIVER | 537. | P | E | | | | | E | E | E | E | E | | | | | E | |
| 79 SOURCE TO McCLURE LAKE | 537.22 | P | E | | | | | E | E | E | E | E | | | | | E | |
| 80 McCLURE LAKE | 537.1 | P | E | | | | | E | E | E | E | E | | | | | E | |
| 81 McSWAIN RESERVOIR | 535. | E | | E | E | E | E | E | E | E | E | E | E | E | E | E | E | |
| 82 YOSEMITE LAKE | 535.9 | | | | | | | E | E | E | E | E | | | | | E | |
| 83 MOUTH OF MERCED RIVER TO VERNALIS TUOLUMNE RIVER | 535/541 | P | E | E | E | | | E | E | E | E | E | E | E | E | E | E | |
| 84 SOURCE TO [NEW] DON PEDRO RESERVOIR | 536. | E | E | E | | | | E | E | E | E | E | E | | | | E | |
| 85 NEW DON PEDRO RESERVOIR | 536.32 | P | | | | | | E | E | E | E | E | | | | | E | |
| 86 NEW DON PEDRO DAM TO SAN JOAQUIN RIVER | 535. | P | E | E | | | | E | E | E | E | E | | E | E | E | E | |
| 87 STANISLAUS RIVER | 534. | E | E | E | | | | E | E | E | E | E | | | | | E | |
| 88 SOURCE TO NEW MELONES RESERVOIR (PROPOSED) | 534.21 | E | E | E | | | | E | E | E | E | E | | | | | E | |
| 89 NEW MELONES RESERVOIR | 534.22 | P | E | E | | | | E | E | E | E | E | | | | | E | |
| 90 TULLOCH RESERVOIR | 535. | P | E | E | E | | | E | E | E | E | E | | E | E | E | E | |
| 91 GOODWIN DAM TO SAN JOAQUIN RIVER | 542.32 | E | E | E | | | | E | E | E | E | E | | | | | E | |
| 92 SAN LUIS RESERVOIR | 541.2 | E | E | E | | | | E | E | E | E | E | | | | | E | |
| 93 O'NEILL RESERVOIR | | E | E | E | | | | E | E | E | E | E | | | | | E | |
| 94 OTHER LAKES AND RESERVOIRS IN SAN JOAQUIN R. BASIN, (EXCLUDING HYDRO UNIT NOS. 531-533, 543, 544) (6) | | E | | | | | | E | E | E | E | E | | | | | E | |
| 95 CALIFORNIA AQUEDUCT | 541. | E | E | E | E | | | E | E | E | E | E | | E | E | E | E | |
| 96 DELTA-MENDOTA CANAL | 541/543 | E | E | E | | | | E | | E | E | E | | | | | E | |
| 97 GRASSLAND WATERSHED [a] | 541.2 | | | | | | | E | | E | E | E | | | | | E | |
| 98 MUD SLOUGH (NORTH) | | | L (b) | E | | | | E | | E | E | E | | | | | E | |
| 99 SALT SLOUGH | | | E | E | | | | E | | E | E | E | | | | | E | |
| 100 WETLAND WATER SUPPLY CHANNELS (10) | | | L (b) | E | | | | E | | E | E | E | | | | | E | |
| C SACRAMENTO SAN JOAQUIN DELTA (8, 9) | 544. | E | E | E | E | | | E | | E | E | E | | E | E | E | E | E |

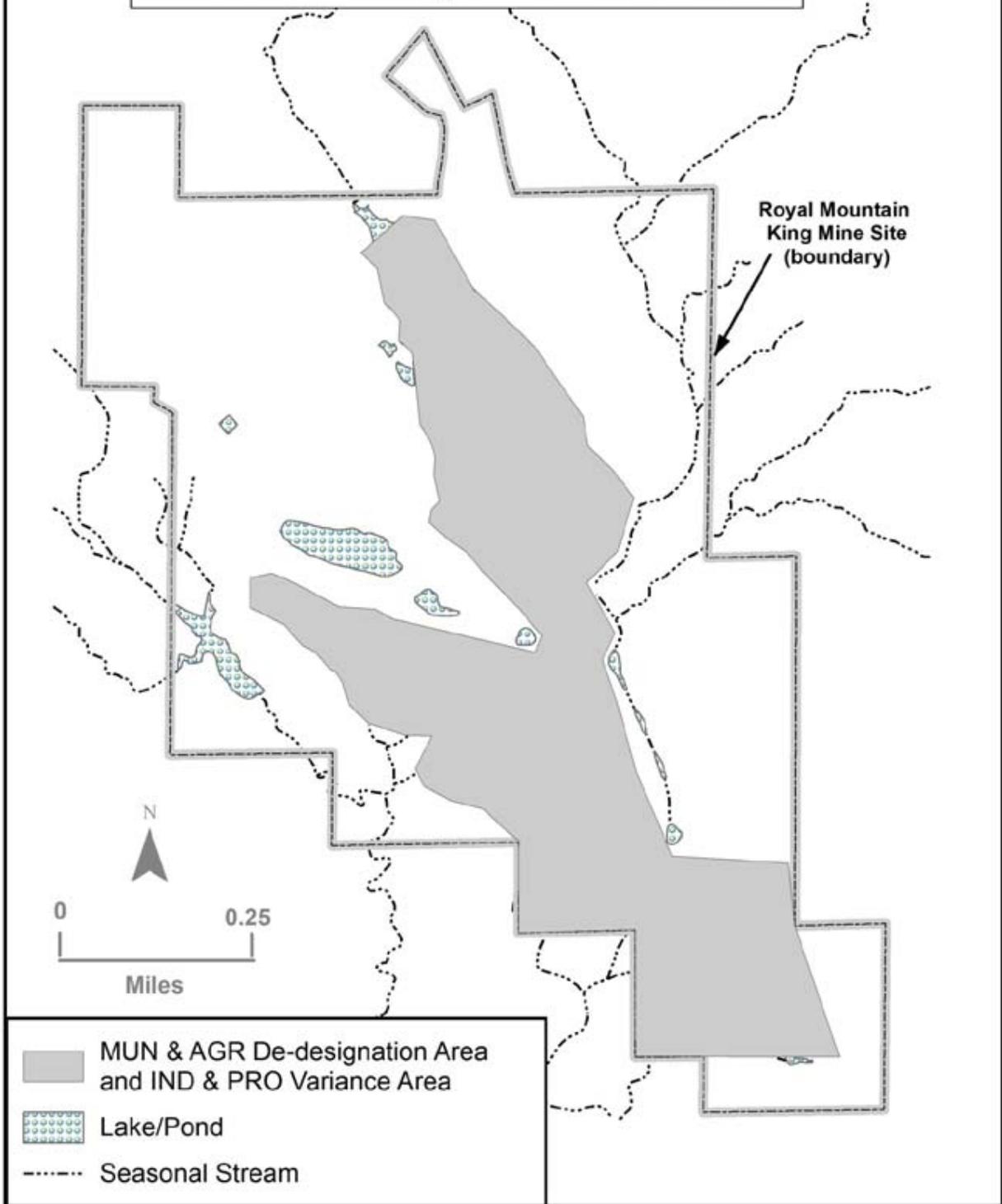
(1) Shown for streams and rivers only with the implication that certain flows are required for this beneficial use.
 (2) Resident does not include anadromous. Any Segments with both COLD and WARM beneficial use designations will be considered COLD water bodies for the application of water quality objectives.
 (3) Striped bass, sturgeon, and shad.
 (4) Salmon and steelhead
 (5) As a primary beneficial use.
 (a) The following beneficial uses EXIST in addition to those noted in Table II-1
 Mud Slough (north): COMM and SHELL
 Salt Slough: COMM, BIOL, and SHELL
 Wetland Water Supply Channels: BIOL
 Clear Lake: COMM

(6) The indicated beneficial uses are to be protected for all waters except in specific cases where evidence indicates the appropriateness of additional or alternative beneficial use designations.
 (7) Sport fishing is the only recreation activity permitted.
 (8) Beneficial uses vary throughout the Delta and will be evaluated on a case-by-case basis. COMM is a designated beneficial use for the Sacramento San Joaquin Delta and Yolo Bypass waterways listed in Appendix 43 and not any tributaries to the listed waterways or portions of the listed waterways outside of the legal Delta boundary unless specifically designated.

(9) Per State Water Board Resolution No. 90-28, Marsh Creek and Marsh Creek Reservoir in Contra Costa County are assigned the following beneficial uses: REC1 and REC2 (potential uses), WARM, WILD and RARE. COMM is a designated beneficial use for Marsh Creek and its tributaries listed in Appendix 43 within the legal Delta boundary.
 (10) Wetland water supply channels for which beneficial uses are designated are defined in Appendix 40

(b) Elevated natural salt and boron concentrations may limit this use to irrigation of salt and boron tolerant crops. Intermittent low flow conditions may also limit this use.
 (c) Wetland channels can sustain aquatic life, but due to fluctuating flow regimes and habitat limitations, may not be suitable for nesting and/or propagation.

Figure II-2 Royal Mountain King Mine Site
Groundwater De-designation and Variance Area



already resulted in water quality objectives being exceeded. The Regional Water Board recognizes that man made changes that alter flow regimes can affect water quality and impact beneficial uses.

The **third point** is that objectives are to be achieved primarily through the adoption of waste discharge requirements (including permits) and cleanup and abatement orders. When adopting requirements and ordering actions, the Regional Water Board considers the potential impact on beneficial uses within the area of influence of the discharge, the existing quality of receiving waters, and the appropriate water quality objectives. It can then make a finding as to the beneficial uses to be protected within the area of influence of the discharge and establish waste discharge requirements to protect those uses and to meet water quality objectives. The objectives contained in this plan, and any State or Federally promulgated objectives applicable to the basins covered by the plan, are intended to govern the levels of constituents and characteristics in the main water mass unless otherwise designated. They may not apply at or in the immediate vicinity of effluent discharges, but at the edge of the *mixing zone* if areas of dilution or criteria for diffusion or dispersion are defined in the waste discharge specifications.

The **fourth point** is that the Regional Water Board recognizes that immediate compliance with water quality objectives adopted by the Regional Water Board or the State Water Board, or with water quality criteria adopted by the USEPA, may not be feasible in all circumstances. Where the Regional Water Board determines it is infeasible for a discharger to comply immediately with such objectives or criteria, compliance shall be achieved in the shortest practicable period of time (determined by the Regional Water Board), not to exceed ten years after the adoption of applicable objectives or criteria. This policy shall apply to water quality objectives and water quality criteria adopted after the effective date of this amendment to the Basin Plan [25 September 1995]. The Regional Water Board will establish compliance schedules in NPDES permits consistent with the provisions of the State Water Board's Compliance Schedule Policy (Resolution 2008-0025). Time schedules in waste discharge requirements are established consistent with Water Code Section 13263.

The **fifth point** is that in cases where water quality objectives are formulated to preserve historic conditions, there may be insufficient data to determine completely the temporal and hydrologic variability representative of historic water quality.

When violations of such objectives occur, the Regional Water Board judges the reasonableness of achieving those objectives through regulation of the controllable factors in the areas of concern.

The **sixth point** is that the State Water Board adopts policies and plans for water quality control which can specify water quality objectives or affect their implementation. Chief among the State Water Board's policies for water quality control is State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California). It requires that wherever the existing quality of surface or ground waters is better than the objectives established for those waters in a basin plan, the existing quality will be maintained unless as otherwise provided by Resolution No. 68-16 or any revisions thereto. This policy and others establish general objectives. The State Water Board's water quality control plans applicable to the Sacramento and San Joaquin River Basins are the Thermal Plan and Water Quality Control Plan for Salinity. The Thermal Plan and its water quality objectives are in the Appendix. The Water Quality Control Plan for Salinity water quality objectives are listed as Table

III-5. The State Water Board's plans and policies that the Basin Plan must conform to are addressed in Chapter IV, Implementation.

The **seventh point** is that water quality objectives may be in numerical or narrative form. The enumerated milligram-per-liter (mg/l) limit for copper is an example of a numerical objective; the objective for color is an example of a narrative form.

Information on the application of water quality objectives is contained in the section, *Policy for Application of Water Quality Objectives*, in Chapter IV.

WATER QUALITY OBJECTIVES FOR INLAND SURFACE WATERS

The objectives below are presented by categories which, like the Beneficial Uses of Chapter II, were standardized for uniformity among the Regional Water Boards. The water quality objectives apply to all surface waters in the Sacramento and San Joaquin River Basins, including the Delta, or as noted. (*The legal boundary of the Delta is contained in Section 12220 of the Water Code and identified in Figure III-1.*) The numbers in parentheses following specific water bodies are keyed to Figure II-1.

Bacteria

In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

For Folsom Lake (50), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 100/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 200/100 ml.

Biostimulatory Substances

Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

Chemical Constituents

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.*

The chemical constituent objectives in Tables III-1 and III-1A apply to the water bodies specified. Metal objectives in the table are dissolved concentrations.

Selenium, molybdenum, and boron objectives are total concentrations. Water quality objectives are also contained in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta, adopted by the State Water Board in May 1995 and revised in 2006.

At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or

*This includes drinking water chemical constituents of concern, such as organic carbon.

TABLE III-1
TRACE ELEMENT WATER QUALITY OBJECTIVES

| <u>CONSTITUENT</u> | <u>MAXIMUM CONCENTRATION</u> ^a (mg/l) | <u>APPLICABLE WATER BODIES</u> |
|--------------------|--|---|
| Arsenic | 0.01 | Sacramento River from Keswick Dam to the I Street Bridge at City of Sacramento (13, 30); American River from Folsom Dam to the Sacramento River (51); Folsom Lake (50); and the Sacramento-San Joaquin Delta. |
| Barium | 0.1 | As noted above for Arsenic. |
| Boron | 2.0 (15 March through 15 September) 0.8 (monthly mean, 15 March through 15 September) | San Joaquin River, mouth of the Merced River to Vernalis |
| | 2.6 (16 September through 14 March) 1.0 (monthly mean, 16 September through 14 March) | |
| | 1.3 (monthly mean, critical year ^b) | |
| | 5.8 2.0 (monthly mean, 15 March through 15 September) | |
| Cadmium | 0.00022 ^c | Sacramento River and its tributaries above State Hwy 32 bridge at Hamilton City |

TABLE III-1 TRACE ELEMENT
WATER QUALITY OBJECTIVES (Continued)

| <u>CONSTITUENT</u> | <u>MAXIMUM CONCENTRATION</u> ^a (mg/l) | <u>APPLICABLE WATER BODIES</u> |
|--------------------|--|--|
| Copper | 0.0056 ^c | As noted above for Cadmium. |
| | 0.01 ^d | As noted above for Arsenic. ^d |
| Cyanide | 0.01 | As noted above for Arsenic. |
| Iron | 0.3 | As noted above for Arsenic. |
| Manganese | 0.05 | As noted above for Arsenic. |
| Molybdenum | 0.015 | San Joaquin River, mouth of the Merced River to Vernalis |
| | 0.010 (monthly mean) | |
| | 0.050 0.019 (monthly mean) | Salt Slough, Mud Slough (north), San Joaquin River from Sack Dam to the mouth of Merced River |
| Selenium | 0.012 | San Joaquin River, mouth of the Merced River to Vernalis |
| | 0.005 (4-day average) | |
| | 0.020 0.005 (4-day average) | Mud Slough (north), and the San Joaquin River from Sack Dam to the mouth of Merced River |
| | 0.020 | |
| | 0.002 (monthly mean) | Salt Slough and constructed and re-constructed water supply channels in the Grassland watershed listed in Appendix 40. |
| Silver | 0.01 | As noted above for Arsenic. |
| Zinc | 0.1 ^d | As noted above for Arsenic. ^d |
| | 0.016 ^c | As noted above for Cadmium. |

a Metal objectives in this table are dissolved concentrations. Selenium, molybdenum, and boron objectives are total concentrations.

b See Table IV-3.

c The effects of these concentrations were measured by exposing test organisms to dissolved aqueous solutions of 40 mg/l hardness that had been filtered through a 0.45 micron membrane filter. Where deviations from 40 mg/l of water hardness occur, the objectives, in mg/l, shall be determined using the following formulas:

$$C_{Cu} = e^{(0.905)(\ln \text{hardness}) - 1.612} \times 10^{-3}$$

$$C_{Zn} = e^{(0.830)(\ln \text{hardness}) - 0.289} \times 10^{-3}$$

$$C_{Cd} = e^{(1.160)(\ln \text{hardness}) - 5.777} \times 10^{-3}$$

d Does not apply to Sacramento River above State Hwy. 32 bridge at Hamilton City. See relevant objectives (c) above.

TABLE III-1A
ORGANIC CHEMICAL WATER QUALITY OBJECTIVES

| <u>CONSTITUENT</u> | <u>MAXIMUM CONCENTRATION</u> ($\mu\text{g/l}$) | <u>APPLICABLE WATER BODIES</u> |
|-----------------------------|---|---|
| Chlorodibromomethane (DCBM) | 4.9 | New Alamo Creek, from Old Alamo Creek to Ulatis Creek; Ulatis Creek, from New Alamo Creek to Cache Slough |
| Dichlorobromomethane (DCBM) | 16 | New Alamo Creek, from Old Alamo Creek to Ulatis Creek; Ulatis Creek, from New Alamo Creek to Cache Slough |
| Chloroform | 46 | New Alamo Creek, from Old Alamo Creek to Ulatis Creek; Ulatis Creek, from New Alamo Creek to Cache Slough |

municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To protect all beneficial uses the Regional Water Board may apply limits more stringent than MCLs.

Cryptosporidium and Giardia

Waters shall not contain *Cryptosporidium* and *Giardia* in concentrations that adversely affect the public water system component¹ of the MUN beneficial use. This narrative water quality objective for *Cryptosporidium* and *Giardia* shall be applied within the Sacramento-San Joaquin Delta and its tributaries below the first major dams (shown in Figure A44-1) and should be implemented as specified in Section IV of the Basin Plan. Compliance with this objective will be assessed at existing and new public water system intakes.

¹ Public water system as defined in Health and Safety Code, section 116275, subdivision (h)

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Toxicity

All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board.

The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate

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quality control, the State Water Board found that "[r]esearch on liner systems for landfills indicates that (a) single clay liners will only delay, rather than preclude, the onset of leachate leakage, and (b) the use of composite liners represents the most effective approach for reliably containing leachate and landfill gas" (State Water Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*).

As a result of similar information on a national scale, the U. S. Environmental Protection Agency (USEPA) has adopted new regulations under Subtitle D of the Resource Conservation and Recovery Act (RCRA) which require the containment of municipal solid wastes by composite liners and leachate collection systems. Composite liners consist of a flexible synthetic membrane component placed above and in intimate contact with a compacted low-permeability soil component. This liner system enhances the effectiveness of the leachate collection and removal system and provides a barrier to vapor-phase transport of VOCs from the unit. Regional Water Boards and the CIWMB are implementing these new regulations in California under a policy for water quality control from the State Water Board (Resolution No. 93-62, discussed above) and new regulations from CIWMB. While a single composite liner of the type that can be approved under Subtitle D regulations is a significant improvement over past municipal solid waste containment systems, it should be noted, however, that single composite liners will not necessarily provide complete protection for ground water resources.

Contaminated Sites Threatening Ground Water Quality

The Regional Water Board has identified over 7000 sites with confirmed releases of constituents of concern which have adversely impacted or threaten to impact the quality of ground water resources. Sources of pollution at these sites include: leaking underground storage tanks and sumps; leaking above ground tanks; leaking pipelines; leaking waste management units, such as landfills, disposal pits, trenches and ponds; surface spills from chemical handling, transfer or storage; poor housekeeping; and illegal disposal. A policy for investigation and cleanup of such sites is contained in the section of this chapter titled "Policy for Investigation and Cleanup of Contaminated Sites."

8. Drinking Water Policy

The Regional Water Board supports protection of the MUN beneficial use in surface waters of the Sacramento-San Joaquin Delta and its tributaries. The Delta provides drinking water to over 25 million people in the Southern California, Central Valley, Central Coast, and San Francisco Bay regions, and several million people obtain their water supply from the tributaries of the Delta. The tributaries of the Sacramento and San Joaquin Rivers that originate in the Cascades and Sierra Nevada Mountains generally have high water quality. However, as the tributaries flow into lower elevations, they are affected by natural processes, urban, industrial, and agricultural land uses, and a highly managed water supply system. This Policy pertains to the following drinking water constituents of concern: organic carbon, *Cryptosporidium*, *Giardia*, salt and nutrients. Work on the Policy was initiated in 2000 in response to concerns that these constituents might pose significant drinking water risks and result in significant additional treatment costs for water agencies due to the potential increased loading as a result of population growth in the watershed. Source control evaluations conducted in 2011 show that the load of organic carbon and nutrients will not likely increase in the future as a result of current regulatory actions. Monitoring of *Cryptosporidium* at public water system intakes from 2006 to 2011, as required by USEPA regulations, has not resulted in additional treatment requirements for public water systems treating water from the Delta and its tributaries. The *Cryptosporidium* and *Giardia* narrative objective and associated implementation program are to maintain existing conditions for public water systems, to comply with the Policy with Respect to Maintaining High Quality of Water in California and the Antidegradation Implementation Policy.

Other elements of the Drinking Water Policy include the following:

- The Basin Plan contains the following elements that address the protection of the MUN beneficial use:
 - All water quality objectives are developed to protect the MUN beneficial use unless otherwise stated. The Basin Plan also includes specific narrative and numeric objectives to protect the MUN beneficial use.

- The existing narrative water quality objective for chemical constituents includes drinking water chemical constituents of concern, such as organic carbon.
- The Implementation Chapter of the Basin Plan contains the following Policies relevant to the protection of the MUN beneficial use:
 - Resolution No. 68-16, Policy with Respect to Maintaining High Quality of Water in California (IV – 8.00).
 - Resolution No. 88-63, Sources of Drinking Water Policy (IV – 9.00).
 - Antidegradation Implementation Policy (IV – 15.01).
 - Policy for Application of Water Quality Objectives (IV – 16.00).
 - Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California; a.k.a. State Implementation Plan or SIP (IV-26.02)
- Continued coordinated monitoring and modeling of the identified drinking water constituents of concern is necessary to confirm that concentrations will not likely increase to levels that adversely affect beneficial uses. Monitoring completed to support the implementation of the Drinking Water Policy shall be coordinated with other monitoring programs already in place as well as the Delta Regional Monitoring Program. The Delta Regional Monitoring Program is a Regional Water Board initiated stakeholder effort to address the need for a comprehensive monitoring, assessment and reporting program.
- To further protect the public health, drinking water utilities employ a multibarrier approach to control contaminants that includes source water protection, water treatment, and protection of distribution system water quality.
- Source evaluations based on 2011 permit conditions for publically owned treatment works, urban runoff, and irrigated agriculture, indicate that concentrations of organic carbon at public water system intakes are not expected to increase over time.
- Drinking water constituents of concern shall continue to be considered when NPDES facilities conduct their Antidegradation analysis.
- If there are significant changes to the characteristics of the project area, drinking water treatment standards based on source water quality, or

knowledge regarding drinking water constituents of concern, the Central Valley Water Board may consider the need to reevaluate the Drinking Water Policy. The Drinking Water Policy will be reviewed by the Regional Water Board in 2023 to determine if the provisions should be revised.

- The Regional Water Board supports and recognizes the importance of USEPA's efforts to refine analytical methods to measure *Cryptosporidium* and *Giardia* in water.
- The Regional Water Board supports refinement of analytical modeling efforts to improve understanding of the fate and transport of drinking water constituents of concern.
- It is appropriate to use *Cryptosporidium* concentrations as an indicator of compliance with the *Cryptosporidium* and *Giardia* objective since *Cryptosporidium* is not as readily treated as *Giardia* when conventional drinking water treatment processes are employed, and USEPA promulgated new drinking water requirements specifically to address *Cryptosporidium*.

Other Discharge Activities

Some remaining discharges of major concern include sedimentation from land development activities in the foothills and mountains, leachate from septic tank/individual wastewater disposal systems, and dredging and dredging spoils runoff.

Many of the foothill/mountain counties in the sub-basins face high growth rates. Sedimentation from the land disturbances associated with residential and commercial development is an increasing problem that, when added to the sedimentation resulting from farming and silvicultural operation, may require establishment of a region-wide erosion control program. The Regional Water Board's current practice is to emphasize local government control of erosion caused by residential development. Erosion control guidelines are included in the erosion/sedimentation action plan which is in the Appendix.

Improperly located, designed, constructed and/or maintained on-site wastewater treatment and disposal systems can result in ground and surface water degradation and public health hazards. The Regional Water Board's approach is that the control of individual wastewater treatment and disposal systems is best accomplished by local environmental health departments enforcing county ordinances designed to

provide protection to ground and surface waters. Consistent with this approach, the Regional Water Board implements the State Water Board's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy).

The energy crisis of the 1970s resulted in a surge of small hydroelectric facility development in the mountains and foothills. Impairments to beneficial uses may occur because of erosion from construction and changes in water temperature. The Regional Water Board has published guidelines for small hydro-electric facilities (see Guidelines section of this chapter and Appendix) to help address some of the problems associated with small hydroelectric plants.

Dredging is a problem because the process can result in turbidity and the reintroduction and resuspension of harmful metal or organic materials. This latter effect occurs directly as a result of the displacement

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5. *State Water Board Resolution No. 77-1, Policy and Action Plan for Water Reclamation in California*

The policy was adopted 6 January 1977. Among other things, the policy requires the Regional Water Boards to conduct reclamation surveys and specifies reclamation actions to be implemented by the State and Regional Water Boards and other agencies. The policy and action plan are contained in the State Water Board report titled, *Policy and Action Plan for Water Reclamation in California*. See Appendix Item 5.

6. *State Water Board Resolution No. 87-22, Policy on the Disposal of Shredder Waste*

This State Water Board Resolution, adopted 19 March 1987, permits the disposal into certain landfills of wastes, produced by the mechanical destruction of car bodies, old appliances and similar castoffs, under specific conditions designated and enforced by the Regional Water Boards. See Appendix Item 6.

7. *State Water Board Resolution No. 88-23, Policy Regarding the Underground Storage Tanks Pilot Program*

The State Water Board adopted this policy on 18 February 1988. The policy implements a pilot program to fund oversight of remedial action at leaking underground storage tank sites, in cooperation with the California Department of Public Health (formerly the California Department of Health Services). Oversight may be deferred to the Regional Water Boards. See Appendix Item 7.

8. *State Water Board Resolution No. 88-63, Sources of Drinking Water Policy*

This policy for water quality control, adopted on 19 May 1988, is essential to the designation of beneficial uses. The policy specifies that, except under specifically defined exceptions, all surface and ground waters of the state are to be protected as existing or potential sources of municipal and domestic supply. The specific exceptions include waters with existing high total dissolved solids concentrations (greater than 3000 mg/l), low sustainable yield (less than 200 gallons per day for a single well), waters with contamination that cannot be treated for domestic use using best management practices or best economically achievable treatment practices, waters within

particular municipal, industrial and agricultural wastewater conveyance and holding facilities, and regulated geothermal ground waters. Where the Regional Water Board finds that one of the exceptions applies, it may remove the municipal and domestic supply beneficial use designation for the particular body of water through a formal Basin Plan amendment and a public hearing, followed by approval of such an amendment by the State Water Board and the Office of Administrative Law. See Appendix Item 8.

9. *State Water Board Resolution No. 90-67, Pollutant Policy Document (PPD)*

The PPD was adopted by the State Water Board in 1990, as part of their overall Delta water rights proceedings. The PPD establishes state policy for water quality control to be used by the San Francisco Bay Regional Water Board and the Central Valley Regional Water Board in updating basin plans. The PPD requires the Central Valley Regional Water Board to develop a mass emission strategy for limiting loads of heavy metals, PAHs and selenium entering the Delta. It also requires that specific actions be taken to eliminate the discharge of chlorinated dibenzodioxins and dibenzofurans to the Delta. The PPD describes other actions for controlling antifouling compounds used on boats and for regulating dredging.

10. *State Water Board Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*

This resolution contains policies and procedures for Regional Water Boards to follow for the oversight and regulation of investigations and cleanup and abatement activities from all types of discharge or threat of discharge subject to Section 13304 of the Water Code. It directs Regional Water Boards to ensure that dischargers are required to cleanup and to abate the effect of discharges. This cleanup and abatement shall be done in a manner that promotes attainment of background water quality, or the highest water quality which is reasonable if background levels of water quality cannot be restored. Any cleanup less stringent than background water quality shall be consistent with maximum benefit to the people of the state and not unreasonably affect present and anticipated beneficial uses of such water. See Appendix Item 9.

State Water Board and Regional Water Boards by the California Legislature, will be used to implement and enforce the NPS Program Plan. The policy also provides a bridge between the NPS Program Plan and the *SWRCB Water Quality Enforcement Policy*.

15. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California” (a.k.a. State Implementation Policy or SIP)*

The State Water Board adopted a policy that establishes:

- (1) Implementation provisions for priority pollutant criteria promulgated by the U.S. Environmental Protection Agency (U.S. EPA) through the National Toxics Rule (40 CFR 131.36) (promulgated on 22 December 1992 and amended on 4 May 1995) and through the California Toxics Rule (40 CFR 131.38) (promulgated on 18 May 2000 and amended on 13 February 2001), and for priority pollutant objectives established by Regional Water Boards in their basin plans; and
- (2) Monitoring requirements for 2,3,7,8-TCDD equivalents; and
- (3) Chronic toxicity control provisions.

In addition, the SIP includes special provisions for certain types of discharges and factors that could affect the application of other provisions in the SIP. The SIP, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy’s provisions.

16. *Water Quality Enforcement Policy (Enforcement Policy) and Policy on Supplemental Environmental Projects (SEP Policy)*

The State Water Board adopted the Enforcement Policy to create a framework for identifying and investigating instances of noncompliance, for taking enforcement actions that are appropriate in relation to the nature and severity of the violation, and for prioritizing enforcement resources to achieve maximum environmental benefits. The State Water Board adopted the SEP Policy as an adjunct to the Water Boards’ enforcement program and allows for the inclusion of a supplemental environmental project in administrative civil liability actions as long as certain criteria are met to ensure that such a project has environmental

value, furthers the goals of the State Water Board and Regional Water Boards, and are subject to appropriate input and oversight by the Water Boards. Both the Enforcement Policy and the SEP Policy, including future revisions, are incorporated into this Basin Plan and shall be implemented according to the policies’ provisions.

17. *Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List*

Pursuant to California Water Code section 13191.3(a), this State policy for water quality control describes the process by which the State Water Board and the regional water boards will comply with the listing requirements of section 303(d) of the federal Clean Water Act. The objective of this policy is to establish a standardized approach for developing California’s section 303(d) list in order to achieve the overall goal of achieving water quality standards and maintaining beneficial uses in all of California’s surface waters.

18. *Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options*

Section 303(d) of the Clean Water Act requires states to identify waters within their borders that are not attaining water quality standards. This State policy for water quality control describes the existing tools and mechanisms that the regional water boards will use to address the water bodies listed as impaired under section 303(d) of the federal Clean Water Act.

19. *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits*

The Policy authorizes the Regional Water Board to include a compliance schedule in a permit for an existing discharger to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent than the limitation previously imposed.

20. *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy)*

This Policy implements Water Code, Chapter 4.5, Division 7, sections 13290 through 13291.7 by establishing statewide regulations and standards for permitting onsite wastewater systems. The OWTS Policy specifies criteria for existing, replacement, and new onsite systems and establishes a conditional waiver of waste discharge requirements for onsite systems that comply with the policy. The OWTS Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

21. *Policy for Water Quality Control for Recycled Water (Recycled Water Policy)*

The Recycled Water Policy establishes requirements to increase the use of recycled water in California. These requirements include the development and adoption of salt/nutrient management plans, regulation of incidental runoff from landscape irrigation with recycled water, criteria and procedures for streamlined permitting of recycled water landscape irrigation projects, procedures for permitting groundwater recharge projects including procedures for demonstrating compliance with the Resolution No. 68-16 (the State Antidegradation Policy), and provisions for addressing constituents of emerging concern. The Recycled Water Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

Programs

1. *Discharges of Hazardous Waste to Land, California Code of Regulations Title 23, Division 3, Chapter 15 and Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid Waste, California Code of Regulations Title 27, Division 2, Subdivision*

Title 23, CCR, Division 3 Chapter 15 and Title 27 CCR, Division 2, Subdivision 1 includes regulations governing discharges of hazardous and solid waste to land for treatment, storage, or disposal. The regulations cover landfills, surface impoundments, waste piles, land treatment units, mining waste management units and confined animal facilities. In addition, actions to clean up and abate conditions of pollution or nuisance at

contaminated sites are covered by relevant portions of the regulations where contaminated materials are taken off-site for treatment, storage, or disposal and, as feasible, where wastes are contained or remain on-site at the completion of cleanup actions. The regulations classify wastes according to their threat to water quality, classify waste management units according to the degree of

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Technology (BCT) to reduce or eliminate industrial storm water pollution. Municipal permits establish controls to reduce/eliminate pollutants to the maximum extent possible (MEP) and to effectively prohibit illicit discharges to storm sewer systems.

In 1991 (amended in 1992), the State Water Board adopted a statewide general NPDES permit (Order No. 91-13-DWQ, General Permit No. CAS000001) for storm water discharges associated with industrial activities. The Order applies to facilities which discharge storm water to surface waters, either directly or through a storm drain system, excluding construction activities.

The State Water Board also adopted a statewide general NPDES permit (Order No. 92-08-DWQ, General Permit No. CAS000002) in 1992, which applies to construction projects resulting in land disturbance of five acres or greater.

7. *U.S. Department of Defense (DOD) Program*

The State and Regional Water Board's DOD Program provides regulatory oversight for the restoration and protection of surface and ground water quality during environmental cleanup of military facilities listed in the DOD/State Memorandum of Agreement (DSMOA). The State Water Board will enter into an interagency agreement with the Department of Toxic Substances Control (DTSC) which, in turn, will enter into the DSMOA with DOD for cleanup oversight reimbursement. The State and Regional Water Boards provide regulatory oversight by their authority pursuant to Division 7 of the Water Code and Section 120(f) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Title 42, U.S.C., Section 9620 (f). The DOD enters into a two-year cooperative agreement with DTSC to support DTSC's mandated mission to protect public health and the environment. The DOD Program should continue until DSMOA facility cleanups are completed (20 to 30 years) or Congress decides to terminate State oversight funding.

The cleanup of military facilities is required to be consistent with the applicable provisions of CERCLA (Section 120 relating to Federal Facilities), the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Contingency Plan, and State laws.

State Water Board Management Agency Agreements (MAAs), Memorandum of Agreement (MOA), and Memoranda of Understanding (MOUs)

The Regional Water Board abides by State Water Board agreements with federal and State agencies which have been formalized with either an MAA, MOA, or an MOU signed by the State Water Board.

1. *U. S. Forest Service Agreement*

On 26 February 1981 the State Water Board Executive Director signed an MAA with the U.S. Forest Service (USFS) which waives discharge requirements for certain USFS nonpoint source discharges provided that the Forest Service implements State Water Board approved best management practices (BMPs) and procedures and the provisions of the MAA. The MAA covers all USFS lands in California. Implementation of the BMPs, in conjunction with monitoring and performance review requirements approved by the State and Regional Water Boards, is the primary method of meeting the Basin Plan's water quality objectives for the activities to which the BMPs apply. The MAA does not include USFS point source discharges and in no way limits the authority of the Regional Water Board to carry out its legal responsibilities for management or regulation of water quality. See Appendix Item 13.

2. *Department of Toxic Substances Control*

On 27 January 1986, the State Water Board Chairperson signed an MOA with the Department of Health Services (later renamed to the Department of Toxic Substances Control) regarding the implementation of the hazardous waste program. The agreement covers surveillance and enforcement related to water quality at landfills, surface impoundments, waste piles, and land treatment facilities that treat, store, or dispose of hazardous waste. It also covers the issuance, modification, or denial of permits to facilities, including the revision of the water quality aspects of hazardous waste management facility siting, design, closure, post-closure, and surface and ground water monitoring and protection. See Appendix Item 14.

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3. *State Water Board Division of Drinking Water Programs*

In 1988, the Chairman of the State Water Board signed an MOA with the Department of Health Services (later named the State Water Board Division of Drinking Water Programs) regarding the use of reclaimed water.

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The MOA outlines the basic activities of the agencies, allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms to assure coordination for activities related to the use of reclaimed water. See Appendix Item 15.

4. *California Department of Forestry Agreement*

In February 1988, the State Water Board signed an MAA with the California Department of Forestry and Fire Protection (*CDFFP*) and the California Board of Forestry (*BOF*), for the purpose of carrying out, pursuant to Section 208 of the Federal Clean Water Act, those portions of the State's Water Quality Management Plan (*WQMP*) related to controlling water quality impacts caused by silvicultural activities on nonfederal forest lands. As with the USFS MAA, the CDFFP agreement requires the Department to implement certain BMPs to protect water quality from timber harvest and associated activities. Approval of the MAA as a WQMP component by the USEPA results in the Regional Water Boards relinquishing some authority to issue WDRs for State timber operations (Public Resources Code Section 4514.3). However, CDF and the Regional and State Water Boards must still ensure that the operations incorporate BMPs and comply with applicable water quality standards. Appendix F of the MAA also calls for the preparation of a Memorandum of Understanding (*MOU*) for the Regional Water Boards, the State Water Board, and the CDFFP to prescribe interagency procedures for implementing BMPs. See Appendix Item 16.

5. *Department of Conservation Agreement*

In March 1988, the State Water Board amended a February 1982 MOA with the State Department of Conservation, Division of Oil and Gas (*CDOG*), to regulate oil, gas, and geothermal fields' discharges. The agreement requires CDOG to notify the Regional Water Boards of all new operators, all pollution problems associated with operators, and proposed discharges. CDOG and Regional Water Boards must also work together, within certain time-lines, to review and prepare discharge permits. See Appendix Item 17.

6. *Department of Toxic Substances Control*

In July 1990, the State Water Board and the Department of Health Services, Toxic Substances Control Program (later reorganized into the Department of Toxic Substances Control) signed an MOU which explains the roles of the agencies (and of the Regional Water Boards) in the cleanup of hazardous waste sites. The MOU describes the protocol the agencies will follow to determine which agency will act as lead and which will act as support, the responsibilities of the agencies in their respective roles, the procedures the agencies will follow to ensure coordinated action, the technical and procedural requirements which each agency must satisfy, the procedures for enforcement and settlement, and the mechanism for dispute resolution. This MOU does not alter the Board's responsibilities with respect to water quality protection. See Appendix Item 18.

7. *Soil Conservation Service, U.S. Department of Agriculture*

On 31 July 1990, the State Water Board Executive Director signed an MOU with Soil Conservation Service (SCS), a technical agency for the U.S. Department of Agriculture. Through this MOU, State Water Board seeks to utilize the personnel and expertise of SCS in the development and implementation of water quality programs and projects. The goal is to accelerate implementation of best management practices and other nonpoint source pollution prevention measures. See Appendix Item 19.

8. *Environmental Affairs Agency, Air Resources Board, and California Integrated Waste Management Board*

On 27 August 1990, the State Water Board Executive Director signed an MOU with the Environmental Affairs Agency, Air Resources Board, and California Integrated Waste Management Board to enhance program coordination and reduce duplication of effort. This MOU consists of provisions describing the scope of the agreement (including definitions of the parties and issues to which the MOU applies), the principles which will govern the conduct of the parties, and the existing statutory framework. See Appendix Item 20.

9. *California Department of Pesticide Regulation*

On 23 December 1991, the State Water Board Chairman signed a MOU with the California Department of Pesticide Regulation (DPR) to ensure that pesticides registered in California are used in a manner that protects water quality and the beneficial uses of water while recognizing the need for pest control.

The State Water Board and nine Regional Water Boards are responsible for protecting the beneficial use of water in California and for controlling all discharges of waste into waters of the state while DPR is the lead agency for pesticide regulation in California.

This will be accomplished by implementing Best Management Practices (BMPs) initially upon voluntary compliance to be followed by regulatory-based encouragement of BMPs as circumstances dictate. Mandatory compliance will be based, whenever possible, on DPR's implementation of regulations and/or pesticide use permit requirements. However, the State Water Board and Regional Water Boards retain ultimate responsibility for compliance with water quality objectives. The agreement was revised on 19 January 1993 to facilitate implementation of the original agreement. See Appendix Item 21.

10. *Implementation of the San Joaquin Valley Drainage Program's Recommended Plan*

In January 1992, the State Water Board Chairman signed a MOU with the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the U.S. Soil Conservation Service, the U.S. Geological Survey, the California Department of Fish and Game (later renamed the California Department of Fish and Wildlife), and the Department of Food and Agriculture. The MOU is an agreement by the agencies to use the management plan described in the September 1990 final report of the San Joaquin Valley Drainage Program as a guide for remedying subsurface drainage and related problems. See Appendix Item 22.

11. *California Integrated Waste Management Board*

On 16 December 1992, the State Water Board Executive Director signed a MOU to address the Regional Water Board's review of Solid Waste Assessment Test reports. See Appendix Item 23.

12. *Bureau of Land Management*

On 27 January 1993, the State Water Board Vice Chairman signed a MOU to address nonpoint source water quality issues on public lands managed by the Bureau. See Appendix Item 24.

Control Action Considerations of the Central Valley Regional Water Board

Policies and Plans

The following policies were adopted, or are hereby adopted, by the Regional Water Board. The first four policies listed were adopted as part of the 1975 Basin Plan. Items 7 through 11 are new policies:

1. *Urban Runoff Policy*
 - a. Subregional municipal and industrial plans are required to assess the impact of urban runoff on receiving water quality and consider abatement measures if a problem exists.
 - b. Effluent limitations for storm water runoff are to be included in NPDES permits where it results in water quality problems.
2. *Wastewater Reuse Policy*

The Regional Water Board encourages the reclamation and reuse of wastewater, including treated ground water resulting from a cleanup action, where practicable and requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods. Reuse options should include consideration of the following, where appropriate, based on the quality of the wastewater and the required quality for the specific reuses: industrial and municipal supply, crop irrigation, landscape irrigation, ground water recharge, and wetland restoration. Where studies show that Year-round or continuous reuse or land disposal of all of the wastewater is not practicable, the Regional Water Board will require dischargers to evaluate how reuse or land disposal can be optimized, such as consideration of reuse/disposal for part of the flow and seasonal reuse/disposal options (e.g., dry season land disposal).

pollution after it has occurred. Once degraded, surface water is often difficult to clean up when it has passed downstream. Likewise, cleanup of ground water is costly and lengthy due, in part, to its relatively low assimilative capacity and inaccessibility. The prevention of degradation is, therefore, an important strategy to meet the policy's objectives.

The Regional Water Board will apply 68-16 in considering whether to allow a certain degree of degradation to occur or remain. In conducting this type of analysis, the Regional Water Board will evaluate the nature of any proposed discharge, existing discharge, or material change therein, that could affect the quality of waters within the region. Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

Pursuant to this policy, a Report of Waste Discharge, or any other similar technical report required by the Board pursuant to Water Code Section 13267, must include information regarding the nature and extent of the discharge and the potential for the discharge to affect surface or ground water quality in the region. This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives. The extent of information necessary will depend on the specific conditions of the discharge. For example, use of best professional judgment and limited available information may be sufficient to determine that ground or surface water will not be degraded. In addition, the discharger must identify treatment or control measures to be taken to minimize or prevent water quality degradation.

8. *Drinking Water Policy Implementation*

As a part of the Drinking Water Policy, a narrative objective has been established for *Cryptosporidium* and *Giardia* to protect the public water system component of the MUN beneficial use. Although it is unclear what levels of *Cryptosporidium* and *Giardia* will impair this use, the goal of implementation is to maintain existing levels of pathogens at public water system intakes. This will be achieved by

addressing controllable sources that are shown to cause or substantially contribute to *Cryptosporidium* levels increasing to the trigger level of the next highest bin classification. In accordance with the USEPA Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), public water systems are required to monitor for *Cryptosporidium* at their intakes; the monitoring results are used to establish the bin classification for the water system. To assure that *Cryptosporidium* levels at public water systems stay within the range of their existing bin classifications, triggers at public water system intakes are included below based on USEPA LT2ESWTR bin classifications. The triggers and the changes to LT2ESWTR bin levels do not indicate a violation of the narrative water quality objective for *Cryptosporidium* and *Giardia* nor are the triggers and the LT2ESWTR bin levels to be used for numeric effluent limits. Instead, the proposed numeric triggers may prompt action by the Regional Water Board.

Cryptosporidium Ambient Trigger Exceedance

If *Cryptosporidium* monitoring data from an existing public water system intake indicate that the maximum running annual average² has reached 80 percent of the next highest bin, as existed in 2013, the affected public water system may request that the Regional Water Board initiate the investigation described below and shown in Figure IV-1. Table IV-1.1 shows the 2013 LT2ESWTR bin classifications and the 80 percent trigger levels.

Table IV-1.1. Bin Levels and 80 Percent Triggers

| Bin Classification | Maximum Running Annual Average (oocysts/L) | 80 Percent Trigger (oocysts/L) |
|--------------------|--|--------------------------------|
| 1 | < 0.075 | 0.06 |
| 2 | 0.075 to < 1.0 | 0.80 |
| 3 | 1.0 to < 3.0 | 2.40 |

If the affected public water system requests assistance, the Regional Water Board should coordinate with CDPH, the affected public water system and potential sources (e.g., storm water

² Maximum Running Annual Average as defined in USEPA Long Term 2 Enhanced Surface Water Treatment Rule

management entities, wastewater treatment or wetland managers, etc.) to assess the data and evaluate the need to conduct source evaluations and implement control options. The affected public water system may decline assistance from the Regional Water Board in addressing their compliance with the LT2ESWTR. The coordination and investigation effort should include the steps represented by the schematic overview in Figure IV-1.

Antidegradation Analysis

In addressing *Cryptosporidium* and *Giardia* in an antidegradation analysis for evaluating the public water system component of the MUN beneficial use, the monitoring results of the nearest impacted public water system intake shall be considered. In cases where a trigger (Section IV) at the nearest public water system intake has not been exceeded, the analysis should be simplified and may be curtailed, depending on the magnitude of the discharge in question and the likelihood of potential impact at public water system intakes. If a trigger has been exceeded, information from the resulting investigation should be considered in the antidegradation analysis.

Reasonable Potential

The Regional Water Board evaluated data representing 2013 conditions. An evaluation of this data indicates that the narrative water quality objective for *Cryptosporidium* and *Giardia* is being attained in surface waters at all public water system intakes in the Delta and its tributaries. The triggers and the changes between LT2ESWTR bin levels do not indicate a violation of the narrative water quality objective for *Cryptosporidium* and *Giardia* nor are the triggers and the LT2ESWTR bin levels to be used for numeric effluent limits.

The Regional Water Board will determine reasonable potential in accordance with the applicable state and federal regulatory requirements. For NPDES permittees, the numeric triggers as applied at the public water system intakes are part of the Regional Water Board's procedures under 40 CFR § 122.44(d)(1)(ii) for determining whether a discharge has reasonable potential. At the request of an affected public water system, implementation of the trigger provisions described in (Figure IV-1, flowchart) will help to

ensure that management measures prevent violations of the narrative objective. As a result, NPDES dischargers are not expected to have a reasonable potential to cause or contribute to an excursion above the narrative objective, and NPDES permits are not expected to include effluent limitations to implement the narrative objective.

8. *Policy for Application of Water Quality Objectives*

Water quality objectives are defined in the Water Code as "the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area". (see Chapter III). Water quality objectives may be stated in either numerical or narrative form. Water quality objectives apply to all waters within a surface water or ground water resource for which beneficial uses have been designated, rather than at an intake, wellhead or other point of consumption.

In conjunction with the issuance of NPDES and storm water permits, the Regional Water Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Water Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Water Board will consider the applicable procedures and guidelines in EPA's Water Quality Standards Handbook and the Technical Support Document for Water Quality-based Toxics Control. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.

Where the Regional Water Board determines it is infeasible to achieve immediate compliance with water quality objectives adopted by the Regional Water Board or the State Water Board, or with water quality criteria adopted by the USEPA, or

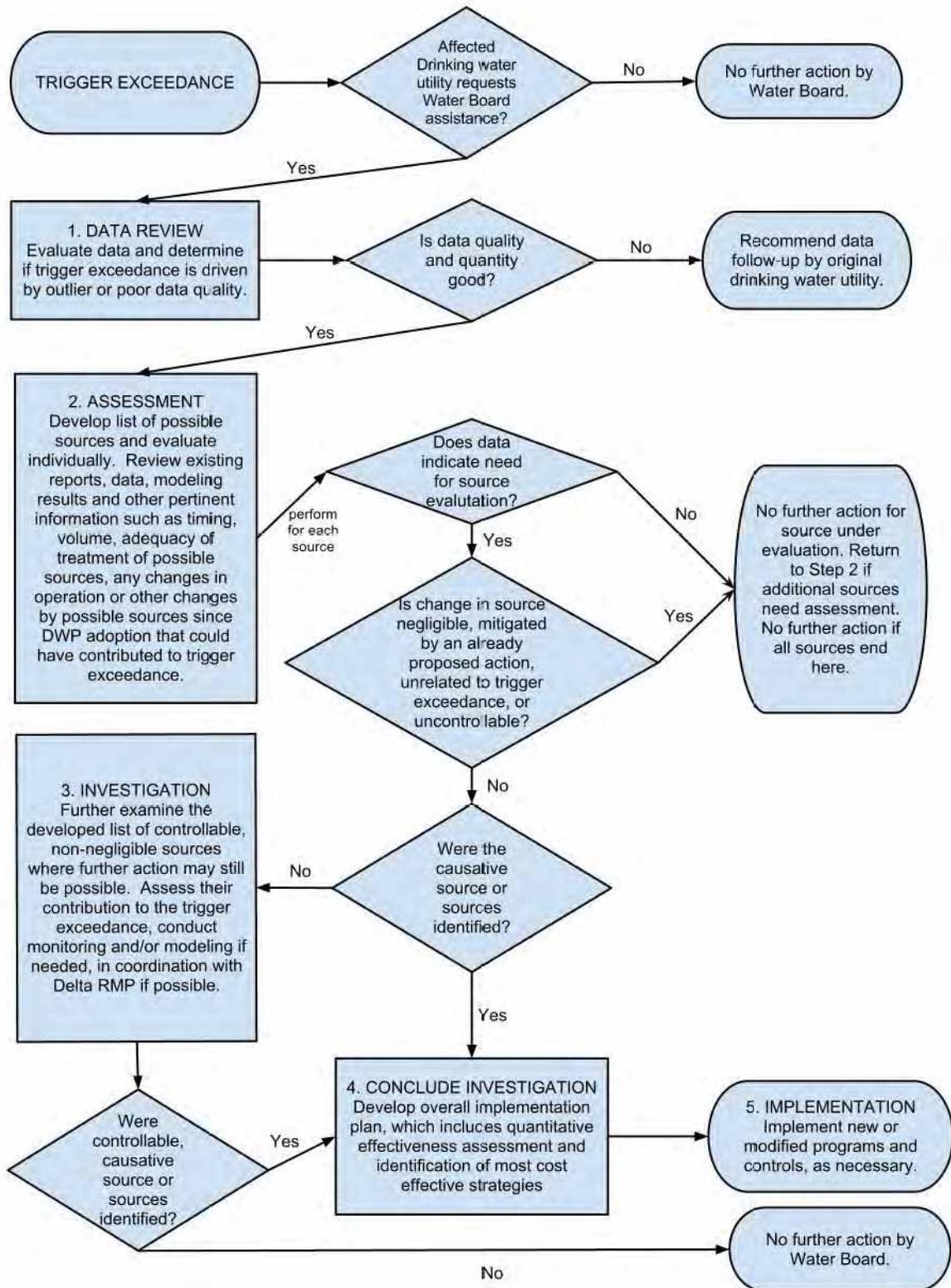


Figure IV-1: Schematic Overview of Actions prompted by Cryptosporidium Trigger Exceedance

with an effluent limitation based on these objectives or criteria, the Regional Water Board may establish in NPDES permits a schedule of compliance. The schedule of compliance shall include a time schedule for completing specific actions that demonstrate reasonable progress toward the attainment of the objectives or criteria and shall contain a final compliance date, based on the shortest practicable time (determined by the Regional Water Board) required to achieve compliance. In no event shall an NPDES permit include a schedule of compliance that allows more than ten years (from the date of adoption of the objective or criteria) for compliance with water quality objectives, criteria or effluent limitations based on the objectives or criteria. Schedules of compliance are authorized by this provision only for those water quality objectives or criteria adopted after the effective date of this provision [25 September 1995]. The Regional Water Board will establish compliance schedules in NPDES permits consistent with the provisions of the State Water Board's Compliance Schedule Policy (Resolution 2008-0025). Time schedules in waste discharge requirements are established consistent with Water Code Section 13263.

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State Water Board Resolution No. 68-16 requires the maintenance of the existing high quality of water (i.e., "background") unless a change in water quality "will be consistent with maximum benefit to the people of the State....". This policy explains how the Regional Water Board applies numerical and narrative water quality objectives to ensure the reasonable protection of beneficial uses of water and how the Regional Water Board applies Resolution No. 68-16 to promote the maintenance of existing high quality waters.

The numerical and narrative water quality objectives define the least stringent standards that the Regional Water board will apply to regional waters in order to protect beneficial uses. Numerical receiving water limitations will be established in Board orders for constituents and parameters which will, at a minimum, meet all applicable water quality objectives. However, the water quality objectives do not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective. Consistent with Resolution No. 68-16, the Regional Water Board will impose more stringent numerical limitations (or prohibitions) which will maintain the existing quality of the receiving water, unless, pursuant to Resolution No. 68-16, some adverse change in water quality is allowed. Maintenance of the existing high quality of water means maintenance of "background" water quality conditions, i.e., the water quality found upstream or upgradient of the discharge, unaffected by other discharges. Therefore, the water quality objectives will define the least stringent limits which will be imposed and background defines the most stringent limits which will be imposed on ambient water quality.

This Basin Plan contains numerical water quality objectives for various constituents and parameters in Chapter III. Where numerical water quality objectives are listed, these are the limits necessary for the reasonable protection of beneficial uses of the water. In many instances, the Regional Water Board has not been able to adopt numerical water quality objectives for constituents or parameters, and instead has adopted narrative water quality objectives (e.g., for bacteria, chemical constituents, taste and odor, and toxicity). Where compliance with

these narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Regional Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.

To evaluate compliance with the narrative water quality objectives, the Regional Water Board considers, on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations (e.g., State Water Board, State Water Board Division of Drinking Water Programs, California Office of Environmental Health Hazard Assessment, California Department of Toxic Substances Control, University of California Cooperative Extension, California Department of Fish and Wildlife, USEPA, U.S. Food and Drug Administration, National Academy of Sciences, U.S. Fish and Wildlife Service, Food and Agricultural Organization of the United Nations). In considering such criteria, the Board evaluates whether the specific numerical criteria, which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective. For example, compliance with the narrative objective for taste and odor may be evaluated by comparing concentrations of pollutants in water with numerical taste and odor thresholds that have been published by other agencies. This technique provides relevant numerical limits for constituents and parameters which lack numerical water quality objectives. To assist dischargers and other interested parties, the Regional Water Board staff has compiled many of these numerical water quality criteria from other appropriate agencies and organizations in the Central Valley Regional Water Board's staff report, *A Compilation of Water Quality Goals*. This staff report is updated regularly to reflect changes in these numerical criteria.

Where multiple toxic pollutants exist together in water, the potential for toxicologic interactions exists. On a case by case basis, the Regional Water Board will evaluate available receiving water and effluent data to determine whether there is a reasonable potential for interactive

constituents of concern will not threaten to cause ground water to exceed applicable ground water cleanup levels, and that remaining constituents do not pose significant risks to health or the environment. The Regional Water Board will consider water quality, health, and environmental risk assessment methods, as long as such methods are based on site-specific field data, are technically sound, and promote attainment of all of the above principles.

k. Verification of Soil Cleanup

Verification of soil cleanup generally requires verification sampling and follow-up ground water monitoring. The degree of required monitoring will reflect the amount of uncertainty associated with the soil cleanup level selection process. Follow-up ground water monitoring may be limited where residual concentrations of leachable/mobile constituents in soils are not expected to impact ground water quality.

l. Remaining Constituents

Where leachable/mobile concentrations of constituents of concern remain on-site in concentrations which threaten water quality, the Regional Water Board will require implementation of applicable provisions of Title 23, CCR, Division 3 Chapter 15 and Title 27, CCR, Division 2, Subdivision 1. Relevant provisions of Title 23, CCR, Division 3 Chapter 15 and Title 27, CCR, Division 2, Subdivision 1 which may not be directly applicable, but which address situations similar to those addressed at the cleanup site will be implemented to the extent feasible, in conformance with Title 23, CCR, Section 2511(d)/27 CCR, Section 20090(d). This may include, but is not limited to, surface or subsurface barriers or other containment systems, waste immobilization, toxicity reduction, and financial assurances.

10. *Policy for Obtaining Salt Balance in the San Joaquin Valley*

It is the policy of the Regional Water Board to encourage construction of facilities to convey agricultural drain water from the San Joaquin and Tulare Basins. A valley-wide conveyance

facility for agricultural drain waters impaired by high levels of salt is the only feasible, long-range solution for achieving a salt balance in the Central Valley.

11. *Watershed Policy*

The Regional Water Board supports implementing a watershed based approach to addressing water quality problems. The State and Regional Water Boards are in the process of developing a proposal for integrating a watershed approach into the Board's programs. The benefits to implementing a watershed based program would include gaining participation of stakeholders and focusing efforts on the most important problems and those sources contributing most significantly to those problems.

12. *Policy for the Royal Mountain King Mine Site in Calaveras County*

a. Groundwater Management Strategy at the Royal Mountain King Mine Site, in Calaveras County

The owner of the Royal Mountain King Mine Site shall continue to implement a groundwater management strategy to manage poor-quality groundwater at the Site and to protect good-quality groundwater. The strategy is to maintain the lowest practicable level of water in Skyrocket Pit Lake and prevent any measurably significant degradation of current water quality in groundwater downgradient of the MUN and AGR de-designation area shown in Figure II-2. In addition, saline leachate that emerges as springs at the base of the Gold Knoll Overburden Disposal Site and the West Overburden Disposal Site, as well as the Flotation Tailings Reservoir leachate collection and recovery system, shall be collected in sumps and transferred by pumping to Skyrocket Pit Lake or regulated with an NPDES permit or WDRs.

b. Variance for IND and PRO Uses in Groundwaters at the Royal Mountain King Mine site, in Calaveras County

Groundwaters within the area shown in Figure II-2 at the Royal Mountain King Mine Site are subject to a variance for the IND and PRO uses based on high background levels of total dissolved solids. The variance exempts the constituents listed in the table, below, from regulatory limits that would otherwise be determined from the IND and PRO beneficial uses.

| |
|--|
| Constituents in groundwater subject to the variance for IND and PRO include: |
| Total Dissolved Solids |
| Arsenic |
| Chloride |
| Nitrate |
| Selenium |
| Sulfate |

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Regional Water Board Memoranda of Understanding (MOU) and Memoranda of Agreement (MOA)

1. *U.S. Bureau of Land Management*

In September 1985, the Regional Water Board Executive Officer signed MOUs with the three U.S. Bureau of Land Management Districts in the Central Valley (i.e., the Ukiah District, the Susanville District, and the Bakersfield District). The MOUs, which are identical for each District, aim at improving coordination between the two agencies for the control of water quality problems resulting from mineral extraction activities on BLM administered lands. See Appendix Items 26 through 28.

2. *U. S. Bureau of Reclamation Agreement*

On 2 July 1969, the Regional Water Board signed an MOA with the Bureau of Reclamation to schedule water releases from the New Melones Unit of the Central Valley Project to maintain an oxygen level at or above 5 mg/l in the Stanislaus River downstream of the unit and to not exceed a mean monthly TDS concentration of 500 mg/l in the San Joaquin River immediately below the mouth of the Stanislaus River. The MOA's water quality requirements are subject to some conditions. See Appendix Item 29.

3. *California Department of Fish and Wildlife and Mosquito Abatement and Vector Control Districts of the South San Joaquin Valley*

On 25 February 1993, the Regional Water Board Executive Officer signed an MOU with the California Department of Fish and Game (later renamed to the California Department of Fish and Wildlife) and 11 mosquito abatement and vector control districts of the south

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San Joaquin valley regarding vegetation management in wastewater treatment facilities. The MOU designates the Districts as lead agencies in determining the adequacy of vegetation management operations in abating mosquito breeding sources. Included in the MOU are the definition of vegetative management operations and conditions to protect nesting birds, eggs, and nests. See Appendix Item 30.

Regional Water Board Waivers

State law allows Regional Water Boards to conditionally waive WDRs for a specific discharge or types of discharges where the waiver is consistent with any applicable state or regional water quality control plan and it is in the public interest. A waiver may not exceed five years in duration, but may be renewed by a Regional Water Board. Waiver conditions must include monitoring requirements unless the Regional Water Board determines that the discharge does not pose a significant threat to water quality. Prior to renewing any waiver for a specific type of discharge, the Regional Water Board shall review the terms of the waiver policy at a public hearing. At the hearing, the Regional Water Board shall determine whether the discharge for which the waiver policy was established should be subject to general or individual waste discharge requirements. (Water Code Section 13269)

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- b. The discharge of agricultural subsurface drainage water to Salt Slough and wetland water supply channels identified in Appendix 40 is prohibited after 10 January 1997, unless water quality objectives for selenium are being met.
- c. The discharge of agricultural subsurface drainage water to the San Joaquin River from Sack Dam to Mud Slough (north) is prohibited after 1 October 2010, unless water quality objectives for selenium are being met. The discharge of agricultural subsurface drainage water to Mud Slough (north) and the San Joaquin River from the Mud Slough confluence to the Merced River is prohibited after 31 December 2019 unless water quality objectives for selenium are being met. The prohibition becomes effective immediately upon Board determination that timely and adequate mitigation, as outlined in the 2010-2019 *Agreement for Continued Use of the San Luis Drain*¹ has not been provided.
- d. The discharge of selenium from agricultural subsurface drainage systems in the Grassland watershed to the San Joaquin River is prohibited in amounts exceeding 8,000 lbs/year for all water year types beginning 10 January 1997.
- e. Activities that increase the discharge of poor quality agricultural subsurface drainage are prohibited.

7. *Diazinon and Chlorpyrifos Discharges into the Sacramento and Feather Rivers*

Beginning August 11, 2008, the direct or indirect discharge of diazinon or chlorpyrifos into the Sacramento and Feather Rivers is prohibited if, in the previous year (July-June), any exceedance of the diazinon or chlorpyrifos water quality objectives, or diazinon and chlorpyrifos loading capacity occurred.

These prohibitions do not apply if the discharge of diazinon or chlorpyrifos is subject to a waiver of waste discharge requirements implementing the diazinon and chlorpyrifos water quality objectives and load allocations for diazinon and

¹ United States Department of the Interior, Bureau of Reclamation, Central Valley Project, California and San Luis & Delta-Mendota Water Authority, Los Banos, CA, *Agreement for Continued Use of the San Luis Drain for the period January 1 2010, through December 31, 2019.*

chlorpyrifos for the Sacramento and Feather Rivers, or governed by individual or general waste discharge requirements.

These prohibitions apply only to dischargers causing or contributing to the exceedance of the water quality objective or loading capacity.

8. *Dissolved Oxygen in the Stockton Deep Water Ship Channel(DWSC)*

The discharge of oxygen demanding substances or their precursors into waters tributary to the DWSC portion of the San Joaquin River is prohibited after 31 December 2011 when net daily flow in the DWSC portion of the San Joaquin River in the vicinity of Stockton is less than 3,000 cubic feet per second, unless dissolved oxygen objectives in the DWSC are being met.

Any increase in the discharge of oxygen demanding substances or their precursors into waters tributary to the DWSC portion of the San Joaquin River is prohibited after 23 August 2006.

These prohibitions do not apply if the discharge is regulated by a waiver of waste discharge requirements, or individual or general waste discharge requirements or NPDES permits, which implement the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel* or which include a finding that the discharge will have no reasonable potential to cause or contribute to a negative impact on the dissolved oxygen impairment in the DWSC. These prohibitions will be reconsidered by the Regional Water Board by December 2009 based on:

- a) the results of the oxygen demand and precursor studies required in the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel*
- b) the prevailing dissolved oxygen conditions in the DWSC

9. *Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River*

Beginning 1 December 2010, the direct or indirect discharge of diazinon or chlorpyrifos into the San Joaquin River is prohibited during

the dormant season (1 December through 1 March) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous dormant season.

Beginning 2 March 2011, the direct or indirect discharge of diazinon or chlorpyrifos into the

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San Joaquin River is prohibited during the irrigation season (2 March through 30 November) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous irrigation season.

These prohibitions apply only to i) dischargers who discharge the pollutant causing or contributing to the exceedance of the water quality objective or loading capacity; and ii) dischargers located in those subareas not meeting their load allocations.

These prohibitions do not apply if the discharge of diazinon or chlorpyrifos is subject to a waiver of waste discharge requirements implementing the diazinon and chlorpyrifos water quality objectives and load allocations for diazinon and chlorpyrifos for the San Joaquin River, or governed by individual or general waste discharge requirements.

10. *Control of Diazinon and Chlorpyrifos Runoff into Delta Waterways (as identified in Appendix 42)*

Beginning December 1, 2011, the direct or indirect discharge of diazinon or chlorpyrifos into Delta Waterways is prohibited during the dormant season (1 December through 1 March) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous dormant season.

Beginning March 2, 2012, the direct or indirect discharge of diazinon or chlorpyrifos into Delta Waterways is prohibited during the irrigation season (2 March through 30 November) if any exceedance of the chlorpyrifos or diazinon water quality objectives, or diazinon and chlorpyrifos loading capacity occurred during the previous irrigation season.

These prohibitions do not apply if the discharge of diazinon or chlorpyrifos is subject to a waiver of waste discharge requirements implementing the diazinon and chlorpyrifos water quality objectives and load allocations for diazinon and chlorpyrifos for the Delta Waterways, or governed by individual or general waste discharge requirements.

These prohibitions apply only to dischargers causing or contributing to the exceedance of the water quality objective or loading capacity.

These prohibitions do not apply to direct or indirect discharges to the Sacramento or San Joaquin Rivers upstream of the legal boundary of the Delta (as defined in Section 12220 of the California Water Code).

Regional Water Board Guidelines

The Regional Water Board has adopted guidance for certain types of dischargers which is designed to reduce the possibility that water quality will be impaired. The Regional Water Board may still impose discharge requirements. All of the Guidelines are contained in the Appendix (Items 33 through 37). Currently, the following Guidelines apply to the Sacramento and San Joaquin River Basins:

1. *Wineries*

This Guideline contains criteria for protecting beneficial uses and preventing nuisance from the disposal to land of stillage wastes.

2. *Erosion and Sedimentation*

This Guideline identifies practices to be implemented by local government to reduce erosion and sedimentation from construction activities.

3. *Small Hydroelectric Facilities*

This Guideline specifies measures to protect water quality from temperature, turbidity, and dissolved oxygen effects from the construction and operation of small hydroelectric Facilities.

4. [Deleted 27 March 2014.]

5. *Mining*

This Guideline identifies actions that the Regional Water Board takes to address the water quality problems associated with mining. It requires owners and operators of active mines to prepare plans for closure and reclamation, but it does not specify any practices or criteria for mine operators.

Recommended for Implementation by Other Agencies

Water Resources Facilities

1. Consideration should be given to the construction of a storage facility to store surplus wet-weather Delta outflows. Construction should be contingent on studies demonstrating that some portion of wet-weather Delta outflow is truly surplus to the Bay-Delta system.
2. Consideration should be given to the use of excess capacity in west San Joaquin Valley conveyances, or of using a new east valley conveyance to:
 - a. Augment flows and improve water quality in the San Joaquin River and southern Delta with the goal of achieving water quality as described in Table IV-3.

TABLE IV-3

| <u>TDS MG/L</u> | <u>TYPE PF YEAR¹</u> | | | |
|---------------------------------|---------------------------------|------------------------|--------------------------|------------------------|
| | <u>CRITICAL²</u> | <u>DRY³</u> | <u>NORMA⁴</u> | <u>WET⁴</u> |
| Max. 3-day (arith. avg.) | 500 | 500 | 500 | 500 |
| Maximum (annual avg.) | 385 | 385 | 385 | 285 |
| Max. May-Sep (arith. avg.) | 300 | 250 | 250 | 250 |
| Max. 3-Day May-Sep (arith Avg.) | 450 | 350 | 350 | 350 |

1 Relative to unimpaired runoff to Delta Based on 1922 - 1971 period. See definitions in Figure 2 of the 2006 Bay-Delta Plan

2 Less than 57% , or less than 70% when preceding year critical

3 Less than 70%, or less than 90% when preceding year critical

4 Greater than 125%

- b. Prevent further ground water overdrafts and associated quality problems.

3. Agencies responsible for existing water resources facilities that reduce flow through the Stockton Deep Water Ship Channel (DWSC) should evaluate and reduce their impacts on excess net oxygen demand conditions in the DWSC in accordance with the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the DWSC*.
 4. Agencies responsible for future water resources facilities projects, which potentially reduce flow through the DWSC, should evaluate and fully mitigate the potential negative impacts on excess net oxygen demand conditions in the DWSC.

Agricultural Drainage Facilities

Facilities should be constructed to convey agricultural drain water from the San Joaquin and Tulare Basins. It is the policy of the Regional Water Board to encourage construction. The discharge must comply with water quality objectives of the receiving water body.

Subsurface Agricultural Drainage

1. The entire drainage issue is being handled as a watershed management issue. The entities in the Drainage Problem Area and entities within the remainder of the Grassland watershed need to

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establish a regional entity with authority and responsibility for drain water management.

2. The regional drainage entity and agricultural water districts should consider adopting economic incentive programs as a component of their plans to reduce pollutant loads. Economic incentives can be an effective institutional means of promoting on-farm changes in drainage and water management.
3. If fragmentation of the parties that generate, handle and discharge agricultural subsurface drainage jeopardizes the achievement of water quality objectives, the Regional Water Board will consider petitioning the Legislature for the formation of a regional drainage district.
4. The Legislature should consider putting additional bond issues before the voters to provide low interest loans for agricultural water conservation and water quality projects and incorporating provisions that would allow recipients to be private landowners, and that would allow irrigation efficiency improvement projects that reduce drainage discharges to be eligible for both water conservation funds and water quality facilities funds.
5. The San Joaquin Valley Drainage Implementation Program or other appropriate agencies should continue to investigate the alternative of a San Joaquin River Basin drain to move the existing discharge point for poor quality agricultural subsurface drainage to a location where its impact on water quality is less.
6. The selenium water quality objective for the wetland channels can not be achieved without removal of drainage water from these channels. The present use of the Grassland channels has developed over a 30-year period through agreements between the dischargers, water and irrigation districts, the U.S. Bureau of Reclamation, the California Department of Water Resources, the U.S. Fish and Wildlife Service, the California Department of Fish and Game (now the Department of Fish and Wildlife), the Grassland Water District and the Grassland Resource Conservation District. Because each entity shared in the development of the present drainage routing system, each shares the responsibility for implementation of a wetlands bypass.

Stockton Deep Water Ship Channel (DWSC)

1. The U.S. Army Corps of Engineers should reduce the impacts of the existing DWSC geometry on excess net oxygen demand conditions in accordance with the *Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the DWSC*.

Delta Mercury

1. USEPA and the California Air Resources Board should work with the State Water Board and develop a memorandum of understanding to evaluate local and statewide mercury air emissions and deposition patterns and to develop a load reduction program(s).
2. The State of California should establish the means to fund a portion of the mercury control projects in the Delta and upstream watersheds.
3. Watershed stakeholders are encouraged to identify total mercury and methylmercury reduction projects and propose and conduct projects to reduce upstream non-point sources of methylmercury and total mercury. The Regional Water Board recommends that state and federal grant programs give priority to projects that reduce upstream non-point sources of methylmercury and total mercury.
4. Dischargers may evaluate imposed administrative civil liabilities projects for total mercury and methylmercury discharge and exposure reduction projects, consistent with Supplemental Environmental Project policies.

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authorized by AB 3048, to promote salinity management schemes including time discharge releases, real time monitoring and source control.

Per the amendment to the Basin Plan for San Joaquin River subsurface agricultural drainage, approved by the State Water Board in Resolution No. 96-078, as amended by Resolution No. R5-2010-0046 and incorporated herein, the following actions will be implemented.

1. In developing control actions for selenium, the Regional Board will utilize a priority system which focuses on a combination of sensitivity of the beneficial use to selenium and the environmental benefit expected from the action.
2. Control actions which result in selenium load reduction are most effective in meeting water quality objectives.
3. With the uncertainty in the effectiveness of each control action, the regulatory program will be conducted as a series of short-term actions that are designed to meet long-term water quality objectives.
4. Best management practices, such as water conservation measures, are applicable to the control of agricultural subsurface drainage.
5. Performance goals will be used to measure progress toward achievement of water quality objectives for selenium. Prohibitions of discharge and waste discharge requirements will be used to control agricultural subsurface drainage discharges containing selenium. Compliance with performance goals and water quality objectives for nonpoint sources will occur no later than the dates specified in Table IV-4 for Mud Slough (north) and the San Joaquin River from the Mud Slough confluence to the Merced River.
6. Waste discharge requirements will be used to control agricultural subsurface drainage discharges containing selenium and may be used to control discharges containing other toxic trace elements.
7. Selenium load reduction requirements will be incorporated into waste discharge requirements as effluent limits as necessary to ensure that the selenium water quality objectives in the San Joaquin River downstream of the Merced River inflow is achieved. The Board adopted a TMDL for selenium in the San Joaquin River in 2001 after public review.

Table IV-4. Compliance Time Schedule for Meeting the 4-day Average Water Quality Objective for Selenium

Selenium Water Quality Objectives (in bold) and Performance Goals (in italics)

| Water Body | 31 December 2015 | 31 December 2019 |
|---|-----------------------------|--------------------------|
| Mud Slough (north) and the San Joaquin River from the Mud Slough confluence to the Merced River | <i>15 µg/L monthly mean</i> | 5 µg/L 4-day avg. |

**TABLE IV-6.3
IMPLEMENTATION SUMMARY**

| Implementation Activity | Affected Watersheds | Assigned Responsibility | Action | Completion Date |
|--|---|--|---|---|
| Inactive Mines | Bear Creek, Harley Gulch, Sulphur Creek | Mine owners and other responsible parties, USBLM | Cleanup mines, sediment, and wetlands | 2011 |
| Creek Sediments-Harley Gulch Delta | Harley Gulch | USBLM | Conduct additional studies | 2006 |
| | | | Submit report on engineering options | 2008 |
| | | | Conduct projects, as required | 2011 |
| Creek Sediments-Upper Watershed | Bear Creek, Davis Creek, Harley Gulch, Sulphur Creek, and Cache Creek (Harley Gulch to Camp Haswell) | USBLM, SLC, CDFW, Colusa, Lake, and Yolo Counties, private landowners | Conduct additional studies | 2007 |
| | | | Feasibility studies | (Scope and time schedule for plan and reports determined as needed) |
| | | | Conduct Projects (as required) | |
| Erosion Control-Upper Watershed | Sub-watersheds with "enriched" mercury. Includes areas of Bear Creek, Sulphur Creek, and Cache Creek (Harley Gulch to Camp Haswell) | USBLM, SLC, CDFW, Colusa, Lake, and Yolo Counties, private landowners | Conduct additional studies | 2006 |
| | | | Identify activities that increase erosion | 2007 |
| | | | Submit erosion control plans, as required | 2009 |
| | | | Implement erosion control plans, as required | 2011 |
| Erosion Control from New Projects, 10-yr Floodplains | Cache Creek (Harley Gulch to Settling Basin), Bear and Sulphur Creeks, Harley Gulch | Yolo County, Reclamation Board, private landowners, US Army Corps of Engineers | Implement management practices and monitoring for erosion control | During and after project construction |
| New Reservoirs, Ponds, and Wetlands | Cache Creek watershed | Yolo County or project proponents | Submit plans to control methylmercury discharges | Prior to project construction |
| Anderson Marsh | Cache Creek at Clear Lake | California Department of Parks and Recreation | Conduct additional studies | 2006 |
| | | | Submit report on management options | 2008 |
| | | | Conduct Project (as required) | 2011 |

**TABLE IV-6.4
CACHE CREEK WATERSHED INACTIVE
MINES (a)**

| Mine | Average Annual Load Estimate, kg mercury/year (b) |
|---|---|
| Abbott and Turkey Run Mines | 7 |
| Rathburn and Rathburn-Petray Mines | 20 |
| Petray North and South Mines | 5 |
| Wide Awake Mine | 0.8 |
| Central, Cherry Hill, Empire, Manzanita, and West End Mines | 5 |
| Elgin Mine | 3 |
| Clyde Mine | 0.4 |

- a. The mines are grouped by current landowner. Although cleanup requirements apply to each mine, a single owner or responsible party having adjacent mines may apply the 95% reduction to the total discharge from their mines.
- b. Estimates of average annual loads are preliminary, based on data collected by the California Geological Survey (Rathburn, Rathburn-Petray, Petray North, and Petray South mines) and Regional Water Board staff (other mines). Load estimates do not include mercury that would be discharged in extreme erosional events. Responsible parties may be required to refine the load estimates.

Creek Sediment – Upper Watershed

There are areas downstream from mines in Harley Gulch, Bear Creek, Sulphur Creek, Davis Creek and Cache Creek that have significant deposits of mercury-containing sediment that were derived, at least in part, from historic discharges from the mines. Where feasible, sediment discharges from these deposits need to be reduced or eliminated.

The Regional Water Board and the USBLM will conduct additional studies to determine the extent of mercury in sediment at the confluence of Harley Gulch and Cache Creek. The Regional Water Board will require the USBLM to evaluate engineering options to reduce erosion of this material to Cache Creek. If feasible projects are identified, the Regional Water Board will require USBLM to cleanup the sediment.

At other sites, further assessments are needed to determine whether responsible parties should be required to conduct feasibility studies to evaluate methods to control sources of mercury and methylmercury. The Executive Officer will, to the extent appropriate, prioritize the need for feasibility studies and subsequent remediation actions based on mercury concentrations and masses, erosion potential, and accessibility. Staff intends to complete the assessments by 6 February 2009. Where applicable, the Executive Officer will notify responsible parties to submit feasibility studies. Following review of the feasibility studies, the Executive Officer will determine whether cleanup actions will be required. Responsible parties that could be required to conduct feasibility studies include the US Bureau of Land Management (USBLM); State Lands Commission (SLC), California Department of Fish and Wildlife (CDFW); Yolo, Lake, and Colusa Counties, mine owners, and private landowners. Assessments are needed of stream beds and banks in the following areas: Cache Creek from Harley Gulch to Camp Haswell, Harley Gulch, Sulphur Creek, and Bear Creek south of the Bear Valley Road crossing.

Erosion Control – Upper Watershed

Activities in upland parts of the watershed (i.e., outside the active floodplain), such as road construction and maintenance, grazing, timber management and other activities, can result in increased erosion and transport of mercury to the creeks, especially in parts of the watershed where the soils have enriched levels of mercury. Enriched soil and sediment is defined as having an average concentration of mercury of 0.4 mg/kg, dry weight in the silt/clay fraction (less than 63 microns). Provisions described below are applicable in the following areas: the Cache Creek watershed (Harley Gulch to Camp Haswell), Harley Gulch and Sulphur Creek watersheds, and the Bear Creek watershed south of the Bear Valley Road crossing. Some projects subject to this implementation plan may be subject to permits, including general stormwater permits. This implementation plan does not preclude the requirement to obtain any applicable federal, state, or local permit applicable to such projects.

Road Construction and Maintenance

Management practices shall be implemented to control erosion from road construction and maintenance activities in parts of the watershed identified above. All California Department of Transportation (Caltrans) road construction projects or maintenance activities that result in soil disturbance shall comply with the Caltrans statewide Storm Water Management Plan and implement best

management practices to control erosion, including pre-project assessments to identify areas with enriched mercury and descriptions of additional management practices that will be implemented in these areas. Water quality and sediment monitoring may be required to ensure compliance with these requirements. For paved roads, entities maintaining or constructing road shall implement the Caltrans or equivalent management practices to comply with these requirements. For unpaved roads, entities maintaining or constructing road shall implement all reasonable management practices to control erosion during construction and maintenance activities. By 6 February 2009, county and agency road departments shall submit information describing the management practices that will be implemented to control erosion.

Other Activities

A goal of the Regional Water Board is to minimize erosion from areas with enriched mercury concentrations. Further studies are needed to identify specific upland sites within the watershed areas described above that have enriched mercury concentrations and to evaluate whether activities at these sites could result in increased erosion (i.e., grazing, timber harvest activities, etc.) or contribute to increases in methylmercury production. Staff will identify areas with enriched mercury concentrations by 6 February 2008. After the studies are complete, the Executive Officer will require affected landowners and/or land managers to 1) submit reports that identify anthropogenic activities on their lands that could result in increased erosion and 2) implement management practices to control erosion. As necessary, erosion control plans will be required no later than 6 February 2011. Entities responsible for controlling erosion include the US Bureau of Land Management (USBLM); State Lands Commission (SLC); California Department of Fish and Wildlife (CDFW); Yolo, Lake, and Colusa Counties; and private landowners.

Landowners implementing new projects or proposing change in land use on land in the enriched areas shall implement practices to control erosion and minimize discharges of mercury and methylmercury. If the dischargers are not implementing management practices to control erosion or methylmercury discharges, the Regional Water Board may consider individual prohibitions of waste discharge. For proposed changes in land use or new projects, landowners shall submit a plan including erosion estimates from the new project, erosion control practices, and, if a net increase in erosion is expected to occur, a remediation plan.

Erosion Control in the 10-Year Floodplains

Sediment and soil in the depositional zone of creeks downstream of mines in the Cache Creek watershed contains mercury. A goal of this plan is to minimize erosion of the mercury-containing sediment and soil due to human activities in order to protect beneficial uses in Cache Creek and to reduce loads of mercury moving downstream to the Settling Basin and the Delta. Some projects subject to this implementation plan may be subject to permits, including general stormwater permits. This implementation plan does not preclude the requirement to obtain any applicable federal, state, or local permit applicable to such projects.

The following requirements for erosion control apply to all projects conducted within the 10 year floodplains of Cache Creek (from Harley Gulch to the Settling Basin outflow), Bear Creek (from tributaries draining Petray and Rathburn Mines to Cache Creek), Sulphur Creek, and Harley Gulch.

Project proponents are required to: 1) implement management practices to control erosion and 2) conduct monitoring programs that evaluate compliance with the turbidity objective, and submit monitoring results to the Regional Water Board. The monitoring program must include monitoring during the next wet season in which the project sites are inundated. In general, there must be monitoring for each project. However, in cases where projects are being implemented as part of a detailed resource management plan that includes erosion control practices, monitoring is not required as a condition of this amendment for individual projects. Instead, the project proponent may conduct monitoring at designated sites up and downstream of the entire management plan area.

Upon written request by project proponents, the Executive Officer may waive the turbidity monitoring requirements for a project, or group of projects, if the project proponents submit an alternative method for assessing compliance with the turbidity objective.

Whenever practicable, proponents should maximize removal of mercury enriched sediment from the floodplain. Sediment removed from the channel or the Settling Basin must be placed so that it will not erode into the creek. For projects related to habitat restoration or erosion control consistent with a comprehensive resource management plan, the project proponent may relocate sediment within the

channel if the proponent uses the sediment to enhance habitat and provides appropriate erosion controls.

Some projects may not be able to meet the turbidity objectives even when all reasonable management practices will be implemented to control erosion. These projects may still be implemented if project proponents implement actions (offset projects) in some other part of the watershed that would reduce or otherwise prevent discharges of sediment containing mercury in an amount at least equivalent to the incremental increases expected from the original project. Removal of sediment from the Settling Basin would be an acceptable offset project.

All bridge, culvert, or road construction or maintenance activities that may cause erosion within the 10-year flood plains must follow the Caltrans management practices or equivalent to control erosion.

The Executive Officer may waive, consistent with State and federal law, the requirement for erosion control from a project conducted in the 10-year floodplain for habitat conservation or development activities for bank swallows that are proposed under the State's adopted Bank Swallow Recovery Plan (Department of Fish and Game (later renamed the Department of Fish and Wildlife), 1992).

New Reservoirs, Ponds, and Wetlands

Reservoirs, ponds, impoundments and wetlands generally produce more methylmercury than streams or rivers. Building new impoundments and wetlands that discharge to creeks in the Cache Creek watershed can add to the existing loads of methylmercury in Cache Creek and its tributaries. New impoundments, including reservoirs and ponds, and constructed wetlands shall be constructed and operated in a manner that would preclude an increase in methylmercury concentrations in Cache Creek, Bear Creek, Harley Gulch, or Sulphur Creek. This requirement applies to all new projects in the watershed, including gravel mining pits in lower Cache Creek that are being reclaimed as ponds and wetlands, for which physical construction is started after the approval of this implementation plan. "Preclude an increase in methylmercury concentrations" shall be defined as a measurable increase in aqueous concentration of methylmercury downstream of the discharge relative to upstream of the discharge.

Any entity creating an impoundment or constructed wetland that has the potential through its design to discharge surface water to Cache Creek, Bear Creek, Harley Gulch, or Sulphur Creek (uncontrollable

discharge after inundation by winter storm flows is excepted) must submit plans to the Regional Water Board that describe design and management practices that will be implemented to limit the concentration of methylmercury in discharges to the creek.

The Executive Officer will consider granting exceptions to the no net increase requirement in methylmercury concentration if: 1) dischargers provide information that demonstrates that all reasonable management practices to limit discharge concentrations of methylmercury are being implemented and 2) the projects are being developed for the primary purpose of enhancing fish and wildlife beneficial uses. In granting exceptions to the no net increase requirement, the Executive Officer will consider the merits of the project and whether to require the discharger to propose other activities in the watershed that could offset the incremental increases in methylmercury concentration in the creek. The Regional Water Board will periodically review the progress towards achieving the objectives and may consider prohibitions of methylmercury discharge if the plan described above is ineffective.

The Cache Creek Nature Preserve (CCNP), which includes a wetland restored from a gravel excavation, currently minimizes any methylmercury discharges to Cache Creek by holding water within the wetlands. If water management in the CCNP wetlands is changed significantly, the operator must submit plans describing management practices that will be implemented to limit methylmercury discharge to Cache Creek.

Anderson Marsh Methylmercury

The Regional Water Board, in coordination with California Department of Parks and Recreation (DPR), will continue to conduct methylmercury studies in Anderson Marsh. If the Regional Water Board finds that Anderson Marsh is a significant methylmercury source to Cache Creek, the Regional Water Board will require DPR to evaluate potential management practices to reduce methylmercury loads. The Regional Water Board will then consider whether to require DPR to implement a load reduction project.

Cache Creek Settling Basin

Although the Cache Creek settling basin retains about one half of the total mercury attached to sediment that enters the basin, there is a net increase in methylmercury discharged from the settling basin. Methylmercury loads are expected to decrease as inflow mercury concentrations decline. The Regional Water Board will continue to conduct methylmercury studies in the basin and work with the

Compliance Monitoring

Within two years after the start of Phase 2, entities responsible for meeting load and waste load allocations shall monitor methylmercury loads and concentrations and submit annual reports to the Regional Water Board. The points of compliance for waste load allocations for NPDES facilities shall be the effluent monitoring points described in individual NPDES permits. The points of compliance for MS4s required to conduct methylmercury monitoring are those locations described in the individual MS4 NPDES permits or otherwise determined to be representative of the MS4 service areas and approved by the Executive Officer on an MS4-specific basis. The points of compliance and monitoring plans for non-point sources shall be determined during the Control Studies. Compliance with the load allocations for nonpoint sources and waste load allocations for MS4s may be documented by monitoring methylmercury loads at the compliance points or by quantifying the annual average methylmercury load reduced by implementing pollution prevention activities and source and treatment controls.

Entities will be allowed to comply with their mercury receiving water monitoring requirements by participating in a regional monitoring program, when such a program is implemented.

Chapter V, Surveillance and Monitoring, contains additional monitoring guidance.

Requirements for State and Federal Agencies

Open water allocations are assigned jointly to the State Lands Commission, the Department of Water Resources, and the Central Valley Flood Protection Board as applicable. Other agencies that are identified in Phase 1 that implement actions and activities that have the potential to contribute to methylmercury production and loss in open water will be required to take part in the studies. In the Phase 1 review, the Regional Water Board will modify, as appropriate, the list of entities that are responsible for meeting the open water allocations. Open water allocations apply to the methylmercury load that fluxes to the water column from sediments in open-water habitats within channels and floodplains in the Delta and Yolo Bypass.

The State Lands Commission, Central Valley Flood Protection Board, Department of Water Resources, and other identified agencies shall conduct Control Studies and evaluate options to reduce methylmercury in open waters under jurisdiction of the State Lands Commission and floodplain areas

inundated by flood flows. These agencies shall evaluate their activities to determine whether operational changes or other practices or strategies could be implemented to reduce ambient methylmercury concentrations in Delta open water areas and floodplain areas inundated by managed floodplain flows. Evaluations shall include inorganic mercury reduction projects. By 20 April 2012, these agencies shall demonstrate how the agencies have secured adequate resources to fund the Control Studies. Regional Water Board staff will work with the agencies to develop the Control Studies and evaluate potential mercury and methylmercury reduction actions.

Activities including water management and impoundment in the Delta and Yolo Bypass, maintenance of and changes to salinity objectives, dredging and dredge materials disposal and reuse, and management of flood conveyance flows are subject to the open water methylmercury allocations. Agencies responsible for these activities in the Delta and Yolo Bypass include, but are not limited to, Department of Water Resources, State Lands Commission, Central Valley Flood Protection Board, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers (USACE), and the State Water Resources Control Board. Control Studies shall be completed for the activities that have the potential to increase ambient methylmercury levels. These agencies may conduct their own coordinated Control Studies or may work with the other stakeholders in comprehensive, coordinated Control Studies.

The agencies should coordinate with wetland and agricultural landowners during Phase 1 to characterize existing methylmercury discharges to open waters from lands immersed by managed flood flows and develop methylmercury control measures.

New wetland, floodplain, and other aquatic habitat restoration and enhancement projects, including but not limited to projects developed, planned, funded, or approved by individuals, private businesses, non-profit organizations, and local, State, and federal agencies such as USACE, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration Fisheries, U.S. Environmental Protection Agency, U.S. Bureau of Reclamation, State Water Resources Control Board, California Department of Water Resources, and California Department of Fish and Wildlife, shall comply with all applicable requirements of this program, including conducting or participating in Control Studies and complying with allocations. To the

**TABLE IV-7B
MUNICIPAL AND INDUSTRIAL WASTEWATER METHYLMERCURY (MeHg) ALLOCATIONS**

| PERMITTEE ^(a) | NPDES Permit No. | MeHg Waste Load Allocation ^(b) (g/yr) |
|--|---------------------|---|
| Central Delta | | |
| Discovery Bay WWTP | CA0078590 | 0.37 |
| Lincoln Center Groundwater Treatment Facility | CA0084255 | 0.018 |
| Lodi White Slough WWTP | CA0079243 | 0.94 |
| Metropolitan Stevedore Company | CA0084174 | ^(c) |
| Unassigned allocation for NPDES facility discharges | ^(d) | 0.31 |
| Marsh Creek | | |
| Brentwood WWTP | CA0082660 | 0.14 |
| Unassigned allocation for NPDES facility discharges | ^(d) | 0.16 |
| Sacramento River | | |
| Rio Vista Northwest WWTP | CA0083771 | 0.069 |
| Rio Vista WWTP | CA0079588 | 0.056 |
| Sacramento Combined WWTP | CA0079111 | 0.53 |
| SRCSA Sacramento River WWTP | CA0077682 | 89 |
| Unassigned allocation for NPDES facility discharges | ^(d) | 8.5 |
| San Joaquin River | | |
| Deuel Vocational Inst. WWTP | CA0078093 | 0.021 |
| Manteca WWTP | CA0081558 | 0.38 |
| Mountain House Community Services District WWTP | CA0084271 | 0.37 |
| Oakwood Lake Subdivision Mining Reclamation ^(f) | CA0082783 | 0.38 ^(f) |
| Stockton WWTP | CA0079138 | 13 |
| Tracy WWTP | CA0079154 | 0.77 |
| Unassigned allocation for NPDES facility discharges | ^(d) | 1.7 |
| West Delta | | |
| GWF Power Systems ^(e) | CA0082309 | 0.0052 |
| Mirant Delta LLC Contra Costa Power Plant | CA0004863 | ^(e) |
| Ironhouse Sanitation District | CA0085260 | 0.030 |
| Unassigned allocation for NPDES facility discharges | ^(d) | 0.22 |
| Yolo Bypass | | |
| Davis WWTP ^(g) | CA0079049 | 0.17 ^(g) |
| Woodland WWTP | CA0077950 | 0.43 |
| Unassigned allocation for NPDES facility discharges | ^(d) | 0.42 |

Regional Board monitoring will consist primarily of chemical analysis and biotoxicity testing of major water bodies receiving irrigation return flows. The focus will be on pesticides with use patterns and chemical characteristics that indicate a high probability of entering surface waters at levels that may impact beneficial uses. Board staff will advise other agencies that conduct water quality and aquatic biota monitoring of high priority chemicals, and will review monitoring data developed by these agencies. Review of the impacts of "inert" ingredients contained in pesticide formulations will be integrated into the Board's pesticide monitoring program.

When a pesticide is detected more than once in surface waters, investigations will be conducted to identify sources. Priority for investigation will be determined through consideration of the following factors: toxicity of the compound, use patterns and the number of detections. These investigations may be limited to specific watersheds where the pesticide is heavily used or local practices result in unusually high discharges. Special studies will also be conducted to determine pesticide content of sediment and aquatic life when conditions warrant. Other agencies will be consulted regarding prioritization of monitoring projects, protocol, and interpretation of results.

To ensure that new pesticides do not create a threat to water quality, the Board, either directly or through the State Water Resources Control Board, will review the pesticides that are processed through the Department of Pesticide Regulation's (DPR) registration program. Where use of the pesticide may result in a discharge to surface waters, the Board staff will make efforts to ensure that label instructions or use restrictions require management practices that will result in compliance with water quality objectives. When the Board determines that despite any actions taken by DPR, use of the pesticide may result in discharge to surface waters in violation of the objectives, the Board will take regulatory action, such as adoption of a prohibition of discharge or issuance of waste discharge requirements to control discharges of the pesticide. Monitoring may be required to verify that management practices are effective in protecting water quality.

The Board will notify pesticide dischargers through public notices, educational programs and DPR of the water quality objectives related to pesticide discharges. Dischargers will be advised to implement management practices that result in full compliance with these objectives by 1 January 1993,

unless required to do so earlier. (Dischargers of carbofuran, malathion, methyl parathion, molinate and thiobencarb must meet the requirements detailed in the Prohibitions section.) During this time period, dischargers will remain legally responsible for the impacts caused by their discharges.

The Board will conduct reviews of the management practices being followed to verify that they produce discharges that comply with water quality objectives. It is anticipated that practices associated with one or two pesticides can be reviewed each year. Since criteria, control methods and other factors are subject to change, it is also anticipated that allowable management practices will change over time, and control practices for individual pesticides will have to be reevaluated periodically.

Public hearings will be held at least once every two years to review the progress of the pesticide control program. At these hearings, the Board will

- review monitoring results and identify pesticides of greatest concern,
- review changes or trends in pesticide use that may impact water quality,
- consider approval of proposed management practices for the control of pesticide discharges,
- set the schedule for reviewing management practices for specific pesticides, and
- consider enforcement action.

After reviewing the testimony, the Board will place the pesticides into one of the following three classifications. When compliance with water quality objectives and performance goals is not obtained within the timeframes allowed, the Board will consider alternate control options, such as prohibition of discharge or issuance of waste discharge requirements.

1. Where the Board finds that pesticide discharges pose a significant threat to drinking water supplies or other beneficial uses, it will request DPR to act to prevent further impacts. If DPR does not proceed with such action(s) within six months of the Board's request, the Board will act within a reasonable time period to place restrictions on the discharges.

2. Where the Board finds that currently used discharge management practices are resulting in violations of water quality objectives, but the impacts of the discharge are not so severe as to require immediate changes, dischargers will be given three years, with a possibility of three one year time extensions depending on the circumstances involved, to develop and implement practices that will meet the objectives. During this period of time, dischargers may be required to take interim steps, such as meeting Board established performance goals to reduce impacts of the discharges. Monitoring will be required to show that the interim steps and proposed management practices are effective.
3. The Board may approve the management practices as adequate to meet water quality objectives. After the Board has approved specific management practices for the use and discharge of a pesticide, no other management practice may be used until it has been reviewed by the Board and found to be equivalent to or better than previously approved practices. Waste discharge requirements will be waived for irrigation return water per Resolution No. 82-036 if the Board determines that the management practices are adequate to meet water quality objectives and meet the conditions of the waiver policy. Enforcement action may be taken against those who do not follow management practices approved by the Board.

Carbofuran, malathion, methyl parathion, molinate and thiobencarb have been detected in surface waters at levels that impact aquatic organisms. Review of management practices associated with these materials is under way and is expected to continue for at least another two years. A timetable of activities related to these pesticides is at the end of the Prohibitions section. A detailed assessment of the impacts of these pesticides on aquatic organisms is also being conducted and water quality objectives will be adopted for these materials by the State or Regional Board by the end of 1993.

In conducting a review of pesticide monitoring data, the Board will consider the cumulative impact if more than one pesticide is present in the water body. This will be done by initially assuming that the toxicities of pesticides are additive. This will be evaluated separately for each beneficial use using the following formula:

$$\frac{C_1}{O_1} + \frac{C_2}{O_2} + \dots + \frac{C_i}{O_i} = S$$

Where:

- C = The concentration of each pesticide.
- O = The water quality objective or criterion for the specific beneficial use for each pesticide present, based on the best available information. Note that the numbers must be acceptable to the Board and performance goals are not to be used in this equation.
- S = The sum. A sum exceeding one (1.0) indicates that the beneficial use may be impacted.

The above formula will not be used if it is determined that it does not apply to the pesticides being evaluated. When more than one pesticide is present, the impacts may not be cumulative or they may be additive, synergistic or antagonistic. A detailed assessment of the pesticides involved must be conducted to determine the exact nature of the impacts.

For most pesticides, numerical water quality objectives have not been adopted. USEPA criteria and other guidance are also extremely limited. Since this situation is not likely to change in the near future, the Board will use the best available technical information to evaluate compliance with the narrative objectives. Where valid testing has developed 96 hour LC50 values for aquatic organisms (the concentration that kills one half of the test organisms in 96 hours), the Board will consider one tenth of this value for the most sensitive species tested as the upper limit (daily maximum) for the protection of aquatic life. Other available technical information on the pesticide (such as Lowest Observed Effect Concentrations and No Observed Effect Levels), the water bodies and the organisms involved will be evaluated to determine if lower concentrations are required to meet the narrative objectives.

To ensure the best possible program, the Board will coordinate its pesticide control efforts with other agencies and organizations. Wherever possible, the burdens on pesticide dischargers will be reduced by working through the DPR or other appropriate regulatory processes. The Board may also designate another agency or organization as the responsible party for the development and/or implementation of management practices, but it will retain overall

Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta Waterways (as identified in Appendix 42)

1. The pesticide runoff control program shall:
 - a. Ensure compliance with water quality objectives applicable to diazinon and chlorpyrifos in the Sacramento-San Joaquin Delta Waterways through the implementation of management practices.
 - b. Ensure that measures that are implemented to reduce discharges of diazinon and chlorpyrifos do not lead to an increase in the discharge of other pesticides to levels that cause or contribute to violations of applicable water quality objectives and Regional Water Board plans and policies, and
 - c. Ensure that discharges of pesticides to surface waters are controlled so that pesticide concentrations are at the lowest levels that are technically and economically achievable.

2. Dischargers must consider whether any proposed alternative to the use of diazinon or chlorpyrifos has the potential to degrade ground or surface water. If the alternative has the potential to degrade groundwater, alternative pest control methods must be considered. If the alternative has the potential to degrade surface water, control measures must be implemented to ensure that applicable water quality objectives and Regional Water Board plans and policies are not violated, including State Water Resources Control Board Resolution 68-16.

3. Compliance with applicable water quality objectives, load allocations, and waste load allocations for diazinon and chlorpyrifos in the Delta Waterways is required by December 1, 2011.

The water quality objectives and allocations will be implemented through one or a combination of the following: the adoption of one or more waivers of waste discharge requirements, and general or individual waste discharge requirements. To the extent not already in place, the Regional Water Board expects to adopt or revise the appropriate waiver(s) or waste discharge requirements by December 31, 2009.

4. The Regional Water Board intends to review the diazinon and chlorpyrifos allocations and the implementation provisions in the Basin Plan at

least once every five years, beginning no later than December 31, 2010.

5. Regional Water Board staff will meet at least annually with staff from the Department of Pesticide Regulation and representatives from the California Agricultural Commissioners and Sealers Association to review pesticide use and instream pesticide concentrations during the dormant spray and irrigation application seasons and to consider the effectiveness of management measures in meeting water quality objectives and load allocations.

6. The waste load allocations (WLA) for all NPDES-permitted dischargers, load allocations (LA) for nonpoint source discharges, and the loading capacity (LC) of each of the Sacramento-San Joaquin Delta Waterways defined in Appendix 42 shall not exceed the sum (S) of one (1) as defined below.

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

where

C_D = diazinon concentration in $\mu\text{g/L}$ of point source discharge for the WLA; nonpoint source discharge for the LA; or a Delta Waterway for the LC.

C_C = chlorpyrifos concentration in $\mu\text{g/L}$ of point source discharge for the WLA; nonpoint source discharge for the LA; or a Delta Waterway for the LC.

WQO_D = acute or chronic diazinon water quality objective in $\mu\text{g/L}$.

WQO_C = acute or chronic chlorpyrifos water quality objective in $\mu\text{g/L}$.

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as “non-detectable” concentrations are considered to be zero.

7. The established waste load and load allocations for diazinon and chlorpyrifos, and the water quality objectives for chlorpyrifos and diazinon in the Delta Waterways represent a maximum allowable level. The Regional Water Board shall require any additional reductions in diazinon and chlorpyrifos levels necessary to account for additional additive or synergistic

Point Source Discharges Containing Trihalomethanes Lower New Alamo and Ulatis Creeks

Municipal wastewater that is chlorinated to remove bacteria generally forms trihalomethanes as disinfection by-products. The Policy for Implementation of Toxics Standards for Inland Waters, Enclosed Bays, and Estuaries of California ("State Implementation Plan" or "SIP") (see the 15th Policy in State Water Board Policies and Plans, page IV-10.01) implements criteria for priority pollutants, including trihalomethanes. However, the SIP does not address situations where water quality objectives for water bodies downstream of the first receiving water are more stringent than the water quality objectives for the first receiving water.

Old Alamo Creek is tributary to New Alamo Creek and Ulatis Creek. Ulatis Creek, downstream of the confluence with New Alamo Creek, is within the legal boundary of the Delta. Old Alamo Creek is not designated MUN, but New Alamo and Ulatis Creeks are designated MUN. The SIP does not specifically address how to determine the need for water quality-based effluent limitations or calculate water quality-based effluent limitations in this situation, so special permitting provisions are needed for discharges of trihalomethanes to Old Alamo Creek.

With respect to the site-specific water quality objectives in Table III-1A for trihalomethanes in New Alamo Creek, from Old Alamo Creek to Ulatis Creek, and Ulatis Creek, from New Alamo Creek to Cache Slough, the following provisions shall apply to any point source discharges into Old Alamo Creek. For determining if water quality-based effluent limitations are necessary, Section 1.3 of the SIP does not apply. For calculation of water quality-based effluent limitations, Section 1.4 of the SIP does not apply, unless specified below.

Determination of Need for Water Quality-Based Effluent Limitations:

Step 1: For chlorodibromomethane (DBCM), dichlorobromomethane (DCBM) and chloroform, if the pollutant is not detected in the effluent and any of the reported detection limits is less than or equal to the site-specific objectives specified in Table III-1A (the site-specific objectives specified in Table III-1A will be referred to as C), then water quality-based effluent limitations are not necessary. If the pollutant is not detected in the effluent and all of the detection limits are greater than site-specific objectives (C), then proceed to Step 5. If the pollutant is detected in the effluent then proceed to Step 2.

Step 2: Determine the observed maximum ambient background concentration for DBCM, DCBM, and chloroform. The observed maximum ambient background concentrations shall be measured in New Alamo Creek at Lewis Road and is the B, as defined in section 1.4.3.1 of the SIP. If the background (B) is greater than the site-specific objectives (C), then water quality-based effluent limitations are necessary. If the background (B) is less than or equal to the site-specific objectives (C), then proceed to Step 3.

Step 3: Determine the observed maximum pollutant concentration for the effluent (MEC). If the MEC is less than or equal to the site-specific objectives (C), water quality-based effluent limitations are not necessary. If the MEC is greater than the site-specific objectives (C), then proceed to Step 4 to determine if water quality-based effluent limitations are necessary.

Step 4: If the in-stream maximum concentrations of DBCM, DCBM or chloroform at the terminus of Old Alamo Creek are greater than the site-specific objectives (C), then water quality-based effluent limitations are necessary for the constituents that exceeded the applicable objectives.

Step 5: If the pollutant has not been detected in the effluent and all detection limits are greater than the site-specific objectives (C), then the discharger shall be required to conduct twice-monthly monitoring of the effluent and of the terminus of Old Alamo Creek between 1 November and 31 March using detection limits less than or equal to the site-specific objectives (C). Steps 1-4 above will then be applied to these data to determine whether water-quality based effluent limitations are necessary.

Calculation of water quality-based effluent limitations for DBCM, DCBM, and chloroform shall be as follows:

An Attenuation Factor, which is the median of the individual sample attenuation values, is necessary because the water quality objectives do not apply in the first receiving water of the discharge (i.e., do not apply in Old Alamo Creek). If water quality-based effluent limitations are required, an attenuation factor to account for the reduction in constituent concentrations between the point of effluent discharge to Old Alamo Creek and the terminus of Old Alamo Creek shall be applied to the calculation of the Effluent Concentration Allowance (ECA), which is one of the factors used in the derivation of the effluent limitations as described in Section 1.4B of the SIP.

The ECA shall be calculated as:

$$\begin{aligned} \text{ECA} &= \text{Attenuation Factor} \times [\text{C} + \text{D}(\text{C}-\text{B})] && \text{when } \text{C} > \text{B} \\ \text{ECA} &= \text{Attenuation Factor} \times \text{C} && \text{when } \text{C} \leq \text{B} \end{aligned}$$

Where:

Attenuation Factor = the median of the individual sample attenuation values derived from all representative historical data for the 1 November through 31 March period of each year. An individual sample attenuation value is calculated as the effluent constituent concentration measured on a given day divided by the in-stream constituent concentration at the terminus of Old Alamo Creek measured the same day. It should be noted that the effluent should be sampled prior to sampling at the terminus of Old Alamo Creek.

C = the site-specific objective specified in Table III-1A

D = dilution credit, as determined in section 1.4.2 of the SIP

B = background concentration, as defined by Section 1.4.3 of the SIP, and measured in New Alamo Creek at Lewis Road

Dilution credits may be allowed in deriving water quality-based effluent limitations for DBCM, DCBM, and chloroform in accordance with Section 1.4.2 of the SIP.

The Average Monthly Effluent Limitation (AMEL) and the Maximum Daily Effluent Limitation (MDEL) shall be calculated in accordance with Section 1.4 of the SIP using the ECA calculated above.

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Long-Term Irrigated Lands Regulatory Program

The Central Valley Water Board intends on establishing a long-term irrigated lands regulatory program (Long-Term Program) by adopting one or more general waste discharge requirements and/or conditional waivers of WDRs to regulate the discharge of waste to ground and surface waters from irrigated agricultural operations. The Long-Term Program will be based, in whole or in part, on six alternatives described in the *Irrigated Lands Regulatory Program Final Environmental Impact Report* (Final PEIR; ICF International 2011) certified by resolution R5-2011-0017. The cost estimate below is based upon and encompasses the full range of those alternatives.

The cost estimate for the Long-Term Program accounts for program administration (e.g., Board oversight and third-party activities), monitoring for groundwater and surface water quality, and implementation of management practices throughout the Central Valley. The estimated cost for the annual capital and operational costs to comply with the Long-Term Program range from \$216 million to \$1,321 million (2007 dollars). This cost estimate is a cumulative total that includes costs from the Sacramento River and San Joaquin River Basins, and the Tulare Lake Basin.

Potential funding sources include:

1. The Federal Farm Bill, which authorizes funding for conservation programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program.
2. Grant and loan programs administered by the State Water Resources Control Board and Department of Water Resources, which are targeted for agricultural drainage management, water use efficiency, and water quality improvement. These programs include:
 - a. Agricultural Drainage Management Program (State Water Resources Control Board)
 - b. Agricultural Drainage Loan Program (State Water Resources Control Board)
 - c. Clean Water Act funds (State Water Resources Control Board)
 - d. Agricultural Water Quality Grant Program (State Water Resources Control Board)
 - e. Clean Water State Revolving Fund (State Water Resources Control Board)

- f. Integrated Regional Water Management grants (State Water Resources Control Board, Department of Water Resources)

3. Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program.

Drinking Water Policy

The total estimated costs to implement management practices, if necessary, range from zero to approximately \$6.8 million (2013 dollars).

Potential funding sources include:

1. Those identified in the San Joaquin River Subsurface Agricultural Drainage Control Program and Pesticide Control Program.

V. SURVEILLANCE AND MONITORING

This chapter describes the methods and programs that the Regional Water Board uses to acquire water quality information. Acquisition of data is a basic need of a water quality control program and is required by both the Clean Water Act and the Porter-Cologne Water Quality Control Act.

The Regional Water Board's surveillance and monitoring efforts include different types of sample collection and analysis. Surface water surveillance may involve analyses of water, sediment, or tissue samples and ground water surveillance often includes collection and analysis of soil samples. Soil, water, and sediment samples are analyzed via standard, EPA approved, laboratory methods. The Regional Water Board addresses quality assurance through bid specifications and individual sampling actions such as submittal of split, duplicate, or spiked samples and lab inspections.

Although surveillance and monitoring efforts have traditionally relied upon measurement of key chemical/physical parameters (e.g., metals, organic and inorganic compounds, bacteria, temperature, and dissolved oxygen) as indicators of water quality, there is increasing recognition that close approximation of water quality impacts requires the use of biological indicators. This is particularly true for regulation of toxic compounds in surface waters where standard physical/chemical measurement may be inadequate to indicate the wide range of substances and circumstances able to cause toxicity to aquatic organisms. The use of biological indicators to identify or measure toxic discharges is often referred to as *biotoxicity testing*. EPA has issued guidelines and technical support materials for biotoxicity testing. A key use of the method is to monitor for compliance with narrative water quality objectives or permit requirements that specify that there is to be no discharge of toxic materials in toxic amounts. The Regional Water Board will continue to use biotoxicity procedures and testing in its surveillance and monitoring program.

As discussed previously, the protection, attainment, and maintenance of beneficial uses occur as part of a continuing cycle of identifying beneficial use impairments, applying control measures, and assessing program effectiveness. The Regional Water Board surveillance and monitoring program provides for the collection, analysis, and distribution of the water quality data needed to sustain its control

program. Under ideal circumstances, the Regional Water Board surveillance and monitoring program would produce information on the frequency, duration, source, extent, and severity of beneficial use impairments. In attempting to meet this goal, the Regional Water Board relies upon a variety of measures to obtain information. The current surveillance and monitoring program consists primarily of seven elements:

Data Collected by Other Agencies

The Regional Water Board relies on data collected by a variety of other agencies. For example, the Department of Water Resources (DWR) has an ongoing monitoring program in the Delta and the United States Geological Survey (USGS) and DWR conduct monitoring in some upstream rivers. The Department of Fish and Wildlife, Fish and Wildlife Service, USGS, and State Water Board Division of Drinking Water Programs also conduct special studies and collect data.

Regional Water Board and State Water Board Monitoring Programs

The State Water Board manages its own Toxic Substances Monitoring (*TSM*) program to collect and analyze fish tissue for the presence of bioaccumulative chemicals. The Regional Water Board participates in the selection of sampling sites for its basins and annually is provided with a report of the testing results.

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Special Studies

Intensive water quality studies provide detailed data to locate and evaluate violations of receiving water standards and to make waste load allocations. They usually involve localized, frequent and/or continuous sampling. These studies are specially designed to evaluate problems in potential water quality limited segments, areas of special biological significance or hydrologic units requiring sampling in addition to the routine collection efforts.

One such study is the *San Joaquin River Subsurface Agricultural Drainage Monitoring Program*. The program includes the following tasks:

1. The dischargers will monitor discharge points and receiving waters for constituents of concern and flow (discharge points and receiving water points)
2. The Regional Board will inspect discharge flow monitoring facilities and will continue its cooperative effort with dischargers to ensure the quality of laboratory results.
3. The Regional Board will, on a regular basis, inspect any facilities constructed to store or treat agricultural subsurface drainage.
4. The Regional Board will continue to maintain and update its information on agricultural subsurface drainage facilities in the Grassland watershed. Efforts at collecting basic data on all facilities, including flow estimates and water quality will continue.
5. The Regional Water Board, in cooperation with other agencies, will regularly assess water conservation achievements, cost of such efforts and drainage reduction effectiveness information. In addition, in cooperation with the programs of other agencies and local district managers, the Regional Board will gather information on irrigation practices, i.e., irrigation efficiency, pre-irrigation efficiency, excessive deep percolation and on seepage losses.

Another such study is a surveillance and monitoring program conducted by the El Dorado Irrigation District (EID) on Deer Creek in El Dorado and Sacramento Counties. Regional Board staff will work with EID to ensure adequate temperature, flow and biological monitoring is conducted to evaluate compliance with the site-specific temperature objectives for Deer Creek and their effect on beneficial uses.

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Aerial Surveillance

Low-altitude flights are conducted primarily to observe variations in field conditions, gather photographic records of discharges, and document variations in water quality.

Self-Monitoring

Self-monitoring reports are normally submitted by the discharger on a monthly or quarterly basis as required by the permit conditions. They are routinely reviewed by Regional Water Board staff.

For point source discharges to Old Alamo Creek that contain detectable concentrations of chlorodibromomethane (DCBM), dichlorobromomethane (DCBM) or chloroform, the discharger's monitoring and reporting program shall include coordinated monitoring of the effluent and Old Alamo Creek at its terminus, immediately prior to Old Alamo Creek's discharge into New Alamo Creek, for DCBM, DCBM or chloroform. It should be noted that the effluent should be sampled prior to sampling at the terminus of Old Alamo Creek. At a minimum, the discharger shall conduct the coordinated monitoring twice-monthly from 1 November through 31 March once during the 5-year term of the NPDES permit.

Compliance Monitoring

Compliance monitoring determines permit compliance, validates self-monitoring reports, and provides support for enforcement actions. Discharger compliance monitoring and enforcement actions are the responsibility of the Regional Water Board staff.

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Complaint Investigation

Complaints from the public or governmental agencies regarding the discharge of pollutants or creation of nuisance conditions are investigated and pertinent information collected.

Mercury and Methylmercury

The Regional Water Board will use the following criteria to determine compliance with the methylmercury fish tissue objectives. Site-specific criteria for various water bodies are described below.

The number of fish collected to determine compliance with the methylmercury objective will be based on the statistical variance within each species. The sample size will be determined by methods described in USEPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (Third Edition, 2000) or other statistical methods approved by the Executive Officer.

Analysis of fish tissue for total mercury is acceptable for assessing compliance. Compliance with the fish tissue objective is achieved when the average concentrations in local fish are equivalent to the respective objective for three consecutive years.

Clear Lake

Fish from the following species will be collected and analyzed every ten years. The representative fish species for trophic level 4 shall be largemouth bass (total length 300-400 mm), catfish (total length 300 – 400 mm), brown bullhead (total length 300-400 mm), and crappie (total length 200-300 mm). The representative fish species for trophic level 3 shall be carp, hitch, Sacramento blackfish, black bullhead, and bluegill of all sizes; and brown bullhead and catfish of lengths less than the trophic level 4 lengths.

Fish tissue mercury concentrations are not expected to respond quickly to remediation activities at Sulphur Bank Mercury Mine, Clear Lake sediments, or the tributaries. Adult fish integrate methylmercury over a lifetime and load reduction efforts are not expected to be discernable for more than five years after remediation efforts. To assess remedial activities, part of the monitoring at Clear Lake will include indicator species, consisting of inland silversides and largemouth bass less than one year old, to be sampled every five years. Juveniles of these species will reflect recent exposure to methylmercury and can be indicators of mercury reduction efforts.

- Mokelumne/Cosumnes River subarea: Mokelumne River from the Interstate 5 bridge to New Hope Landing;
- Sacramento River subarea: Sacramento River from River Mile 40 to River Mile 44;
- San Joaquin River subarea: San Joaquin River from Vernalis to the Highway 120 bridge;
- West Delta subarea: Sacramento/San Joaquin River confluence near Sherman Island;
- Yolo Bypass-North subarea: Tule Canal downstream of its confluence with Cache Creek; and
- Yolo Bypass-South subarea: Toe Drain between Lisbon and Little Holland Tract.

Compliance fish methylmercury monitoring will include representative fish species for comparison to each of the methylmercury fish tissue objectives:

- Trophic Level 4: bass (largemouth and striped), channel and white catfish, crappie, and Sacramento pikeminnow.
- Trophic Level 3: American shad, black bullhead, bluegill, carp, Chinook salmon, redear sunfish, Sacramento blackfish, Sacramento sucker, and white sturgeon.
- Small (<50 mm) fish: primary prey species consumed by wildlife in the Delta, which may include the species listed above, as well as inland silverside, juvenile bluegill, mosquitofish, red shiner, threadfin shad, or other fish less than 50 mm.

Trophic level 3 and 4 fish sample sets will include three species from each trophic level and will include both anadromous and non-anadromous fish. Trophic level 3 and 4 fish sample sets will include a range of fish sizes between 150 and 500 mm total length. Striped bass, largemouth bass, and sturgeon caught for mercury analysis will be within the CDFW legal catch size limits. Sample sets for fish less than 50 mm will include at least two fish species that are the primary prey species consumed by wildlife at sensitive life stages. In any subarea, if multiple species for a particular trophic level are not available, one species in the sample set is acceptable.

Water Methylmercury and Total Mercury Compliance Monitoring

Compliance points for irrigated agriculture and managed wetlands methylmercury allocations shall be developed during the Phase 1 Control Studies.

In conjunction with the Phase 1 Control Studies, nonpoint sources, irrigated agriculture, and managed wetlands shall develop and implement mercury and/or methylmercury monitoring, and submit monitoring reports.

NPDES facilities' compliance points for methylmercury and total mercury monitoring are the effluent monitoring points currently described in individual NPDES permits.

During Phase 1 and Phase 2, facilities listed in Table IV-7B shall conduct effluent total mercury and methylmercury monitoring starting by 20 October 2012. Monitoring frequencies shall be defined in the NPDES permits. Effluent monitoring requirements will be re-evaluated during the Delta Mercury Control Program Reviews.

Facilities that begin discharging to surface water during Phase 1 and facilities for which effluent methylmercury data were not available at the time Table IV-7B was compiled, shall conduct monitoring.

Compliance points and monitoring frequencies for MS4s required to conduct methylmercury and total mercury monitoring are those locations and wet and dry weather sampling periods currently described in the individual MS4 NPDES permits or otherwise determined to be representative of the MS4 service areas and approved by the Executive Officer on an MS4-specific basis.

Annual methylmercury loads in urban runoff in MS4 service areas within the Delta and Yolo Bypass may be calculated by the following method or by an alternate method approved by the Executive Officer. The annual methylmercury load in urban runoff for a given MS4 service area during a given year may be calculated by the sum of wet weather and dry weather methylmercury loads. To estimate wet weather methylmercury loads discharged by MS4 urban areas, the average of wet weather methylmercury concentrations observed at the MS4's compliance locations may be multiplied by the wet weather runoff volume estimated for all urban areas within the MS4 service area within the Delta and Yolo Bypass. To estimate dry weather methylmercury loads, the average of dry weather methylmercury concentrations observed at the MS4's compliance locations may be multiplied by the estimated dry weather urban runoff volume in the MS4 service area within the Delta and Yolo Bypass.

6. Determine whether the discharge causes or contributes to a toxicity impairment due to additive or synergistic effects of multiple pollutants.
7. Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

Dischargers are responsible for providing the necessary information. The information may come from the dischargers' monitoring efforts; monitoring programs conducted by State or federal agencies or collaborative watershed efforts; or from special studies that evaluate the effectiveness of management practices.

With Regional Water Board Executive Officer approval, monitoring can be performed in a subset of the Delta Waterways listed in Appendix 42, and the tributaries of those waterways, to determine compliance with the water quality objectives, loading capacity and load allocations.

Clear Lake Nutrients

The responsible parties – Lake County, City of Clearlake, City of Lakeport, Caltrans, USBLM, USFS and irrigated agriculture – will work with Regional Water Board staff to estimate nutrient loadings from activities in the watershed. Loading estimates can be conducted using either water quality monitoring or computer modeling or a combination of the two.

Drinking Water Policy

Monitoring and surveillance for the Drinking Water Policy consists of two elements.

Cryptosporidium and Giardia Monitoring

It is not the intent of the Drinking Water Policy to require routine effluent monitoring for *Cryptosporidium* and *Giardia*. Rather, the Regional Water Board should work with interested stakeholders to gather data that could be used to help identify potential sources if *Cryptosporidium* levels increase to the trigger level (in Section IV) at an existing public water system intake in the future. This one-time *Cryptosporidium* special study could be conducted through the Delta Regional Monitoring Program or through another coordinated effort between dischargers, drinking water suppliers, and state agencies. The study will characterize ambient background conditions and potential sources to be used when and if exceedance of a trigger occurs. The

study is envisioned to last two years targeting the period of Long Term 2 Enhanced Surface Water Treatment Rule second round monitoring. The study may consist of the following elements:

- Literature review to identify available source information
- Continued monitoring at existing public water systems intakes
- Monitoring at several ambient locations that will be identified as sites that integrate the pathogen sources where historic pathogen data are unavailable
- Monitoring at several representative discharge locations, if representative pathogen concentrations are not available or if coordinated data are necessary
- Hydrodynamic and particle tracking models to simulate the transport of pathogens from potential sources to public water system intakes
- If needed, focused studies to identify the viability and fate and transport of *Cryptosporidium*.

A report documenting the results of the special study should be prepared.

Organic carbon, salinity, and nutrients

As waste discharge requirements are renewed, the Regional Water Board should consider the necessity for inclusion of monitoring of organic carbon, salinity, and nutrients. This consideration should include a combination of the following:

1. The location with respect to drinking water intakes.
2. The importance of the load based on available information.
3. Whether the information exists that the load has significantly increased.
4. Importance of data to management decisions to protect drinking water.

For general permits, agriculture and small dischargers (smaller than 5 mgd), careful consideration should be made as to whether monitoring for these constituents is necessary.

Where water quality monitoring is performed to evaluate management practices to control other constituents, the Regional Water Board recommends monitoring of organic carbon, salinity, and nutrients be considered to evaluate the influence on drinking water quality.

APPENDIX

APPENDIX DIRECTORY

| <u>ITEM*</u> | <u>DESCRIPTION</u> |
|--------------|---|
| 1. | State Water Board Policy for Water Quality Control |
| 2. | State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California |
| 3. | State Water Board Resolution No. 74-43, Water Quality Control Policy for the Enclosed Bays and Estuaries of California |
| 4. | State Water Board Resolution No. 75-58, Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling |
| 5. | State Water Board Resolution No. 77-1, Policy with Respect to Water Reclamation in California |
| 6. | State Water Board Resolution No. 87-22, Policy on the Disposal of Shredder Waste |
| 7. | State Water Board Resolution No. 88-23, Policy Regarding the Underground Storage Tank Pilot Program |
| 8. | State Water Board Resolution No. 88-63, Sources of Drinking Water Policy |
| 9. | State Water Board Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304 |
| 10. | State Water Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste |
| 11. | State Water Board Water Quality Control Plan for Temperature in Coastal and Inerstate Waters and Enclosed Bays and Estuaries in California (Thermal Plan) |
| 12. | State Water Board Resolution No. 92-82, exception to the Thermal Plan for Sacramento Regional County Sanitation District |
| 13. | State Water Board MAA with Forest Service, U. S. Department of Agriculture |
| 14. | State Water Board MOA with Department of Health Services (later renamed the Department of Public Health) (implementation of hazardous waste program) |
| 15. | State Water Board MOA with Department of Health Services (later renamed State Water Board Division of Drinking Water Programs) (use of reclaimed water) |
| 16. | State Water Board MAA with the Board of Forestry and California Department of Forestry and Fire Protection |
| 17. | State Water Board MOA with CA Department of Conservation, Division of Oil and Gas |

* Appendix items are paginated by: item number/item page/item total pages

APPENDIX DIRECTORY

| <u>ITEM*</u> | <u>DESCRIPTION</u> |
|----------------|--|
| 18. | State Water Board MOU with Department of Health Services/Department of Toxic Substances Control (later the Department of Health Services was renamed the Department of Public Health and the Toxic Substances Control Program was reorganized into the Department of Toxic Substances Control) |
| 19. | State Water Board MOU with Soil Conservation Service, U.S. Department of Agriculture for Planning and Technical Assistance Related to Water Quality Policies and Activities |
| 20. | State Water Board MOU with the Environmental Affairs Agency, Air Resources Board, and California Integrated Waste Management Board |
| 21. | State Water Board MOU with the California Department of Pesticide Regulation for the Protection of Water Quality from Potentially Adverse Effects of Pesticides |
| 22. | State Water Board MOU with Several Agencies Regarding the Implementation of the San Joaquin Valley Drainage Program's Recommended Plan |
| 23. | State Water Board MOU with the California Integrated Waste Management Board |
| 24. | State Water Board MOU with the Bureau of Land Management US Department of Interior - Nonpoint Source Issues, Planning and Coordination of Nonpoint Source Water Quality Policies and Activities |
| 25. | Regional Water Board Resolution No. 70-118, Delegation of Certain Duties and Powers of the Regional Water Board to the Board's Executive Officer |
| 26. | Regional Water Board MOU with U.S. Bureau of Land Management (Ukiah District) |
| 27. | Regional Water Board MOU with U.S. Bureau of Land Management (Susanville District) |
| 28. | Regional Water Board MOU with U.S. Bureau of Land Management (Bakersfield District) |
| 29. | Regional Water Board MOA with U. S. Bureau of Reclamation |
| 30. | Regional Water Board MOU with California Dept. of Fish and Game (later renamed the California Dept. of Fish and Wildlife) and Mosquito Abatement and Vector Control Districts of the South San Joaquin Valley Regarding Vegetation Management in Wastewater Treatment Facilities |
| 31. | Regional Water Board Resolution No. 89-247, Conditional Waiver of Waste Discharge Requirements at Retail Fertilizer Facilities - - - Removed 13 August 2009 |

* Appendix items are paginated by: item number/item page/item total pages

APPENDIX DIRECTORY

| <u>ITEM*</u> | <u>DESCRIPTION</u> |
|----------------|--|
| 32. | Regional Water Board Resolution No. 90-34, Conditional Waiver of Waste Discharge Requirements at Pesticide Applicator Facilities - - - Removed 13 August 2009 |
| 33. | Regional Water Board Guidelines for Winery Waste |
| 34. | Regional Water Board Guidelines for Erosion |
| 35. | Regional Water Board Guidelines for Small Hydroelectric Facilities |
| 36. | Regional Water Board Guidelines for Disposal from Land Developments - - - Removed 27 March 2014 |
| 37. | Regional Water Board Guidelines for Mining |
| 38. | Regional Water Board list of Water Quality Limited Segments - - - Removed 6 September 2002 |
| 39. | Federal Anti-degradation policy (40 CFR 131.12) |
| 40. | Grassland Watershed Wetland Channels |
| 41. | San Joaquin Area Subarea Descriptions |
| 42. | Sacramento-San Joaquin Delta Waterways |
| 43. | Delta and Yolo Bypass Waterways Applicable to the Delta Mercury Control Program |

* Appendix items are paginated by: item number/item page/item total pages