APPENDIX A

Summary of Surface Water Quality for the Central Valley

Content:

- Table 64449-A and Table 64449-B from Title 22 of the California Code of Regulations (Secondary Maximum Contaminant Levels).

- Tables A-1 to A-3 summarizes surface water quality data for constituents with secondary MCLs for the following regions:
    - A-1 Sacramento River Hydrologic Region
    - A-2 San Joaquin River Hydrologic Region
    - A-3 Tulare Lake Hydrologic Region

- Figures A-1 to A-39 summarizes water quality for specific constituents organized by regions. For each constituent, graphs may include a scatter graph and/or box plot.
    - Sacramento River Hydrologic Region (Figures A-1 to A-14)
        - Conductivity
        - Nitrate
        - Aluminum (dissolved and total)
        - Iron (dissolved and total)
        - Manganese (dissolved and total)
    - San Joaquin River Hydrologic Region (Figures A-15 to A-25)
        - Conductivity
        - Nitrate
        - Aluminum (dissolved)
        - Iron (dissolved)
        - Manganese (dissolved)
    - Delta Hydrologic Region (Figures A-26 to A-35)
        - Conductivity
        - Nitrate
        - Aluminum (dissolved and total)
        - Iron (dissolved and total)
        - Manganese (dissolved and total)
    - Tulare Lake Hydrologic Region (Figures A-36 to A-39)
        - Conductivity
        - Nitrate

Data and detailed analyses utilized in the development of tables and figures can be found in the final CV-SALTS Salt and Nitrate Management Plan (CV-SALTS SNMP 2016) at: https://www.cvsalinity.org/docs/central-valley-snmp/final-snmp.html

Title 22. Social Security
Division 4. Environmental Health
Chapter 15. Domestic Water Quality and Monitoring Regulations

Article 16. Secondary Drinking Water Standards

§64449. Secondary Maximum Contaminant Levels and Compliance.

(a) The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.

Table 64449-A
Secondary Maximum Contaminant Levels
"Consumer Acceptance Contaminant Levels"

Constituents	Maximum Contaminant Levels/Units
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl-*tert*-butyl ether (MTBE)	0.005 mg/L
Odor – Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

Table 64449-B
Secondary Maximum Contaminant Levels
"Consumer Acceptance Contaminant Level Ranges"

Constituents, Units	Recommended	Upper	Short Term
Total Dissolved Solids, mg/L or	500	1,000	1,500
Specific Conductance, µS/cm	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

Table A - 1. Summary of surface water quality data for the Sacramento River Hydrologic Region for constituents with secondary MCLs.

Analyte	Units	Secondary MCL	Sacramento River	
			Number of Samples	Median
Aluminum, Dissolved	µg/L	--	27	12.9
Aluminum, Total	µg/L	200	45	130.7
Chloride, Dissolved	mg/L	--	300	1.87
Chloride, (Form not specified) [a]	mg/L	--	40	4.02
Chloride, Total	mg/L	250 (recommended)	28	0.05[b]
Copper, Dissolved	µg/L	--	422	2.11
Copper, Total	µg/L	1,000	632	3.54
Iron, Dissolved	µg/L	--	16	55.7
Iron, Total	µg/L	300	143	415.5
Manganese, Dissolved	µg/L	--	27	4.3
Manganese, Total	µg/L	50	155	32.5
MBAS, Total	µg/L	500	50	10.7
Silver, Dissolved	µg/L	--	95	0.001
Silver, Total	µg/L	100	180	0.004
Sulfate, Dissolved	µg/L	--	296	1.98
Sulfate, Form not specified [a] (mg/L)	µg/L	--	40	3.07
Sulfate, Total	mg/L	250 (recommended)	198	6.62
Thiobencarb, Total	µg/L	1	306	0.00044
Turbidity	NTU	5	5,717	5.55
Zinc, Dissolved	µg/L	--	241	2.12
Zinc, Total	µg/L	5,000	484	4.86

Source: CEDEN, as cited and presented in Larry Walker Associates 2016a.
Notes:
[a] Values indicate probable representation of "total" fraction for analyte.
[b] Limited amount of data compared to dissolved, resulting in lower "total" fraction value.

Table A - 2 Summary of surface water quality data for the San Joaquin River Hydrologic Region for constituents with secondary MCLs.

Analyte	Units	Secondary MCL	San Joaquin River	
			Number of Samples	Median
Aluminum, Dissolved	µg/L	--	4	9.48
Aluminum, Total	µg/L	200	---	---
Chloride, Dissolved	mg/L	--	177	3.3
Chloride, Form not specified [a]	mg/L	--	1,321	64.7
Chloride, Total	mg/L	250 (recommended)	33	0.13
Copper, Dissolved	µg/L	--	2,372	1.38
Copper, Total	µg/L	1,000	3,851	3.44
Iron, Dissolved	µg/L	--	15	47
Iron, Total	µg/L	300	14	572
Manganese, Dissolved	µg/L	--	25	4.03
Manganese, Total	µg/L	50	25	24.9
MBAS, Total	µg/L	500	10	40.4
Silver, Dissolved	µg/L	--	59	0.0013
Silver, Total	µg/L	100	58	0.0034
Sulfate, Dissolved	µg/L	--	126	2.38
Sulfate, Form not specified [a] (mg/L)	µg/L	--	1,323	74.89
Sulfate, Total	mg/L	250 (recommended)	11	0.99 [b]
Thiobencarb, Total	µg/L	1	957	ND [c]
Turbidity	NTU	5	7,305	13.49
Zinc, Dissolved	µg/L	--	2,097	0.99
Zinc, Total	µg/L	5,000	3,510	4.95

Source: CEDEN, as cited and presented in Larry Walker Associates 2016a.
Notes:
[a] Values indicate probable representation of "total" fraction for analyte.
[b] Limited amount of data compared to dissolved, resulting in lower "total" fraction value.
[c] ND = non-detect; less than 10 percent of data reported with a detectable concentration.

Table A - 3. Summary of surface water quality data for the Tulare Lake Hydrologic Region for constituents with secondary MCLs.

Analyte	Units	Secondary MCL	Tulare Lake Basin	
			Number of Samples	Median
Aluminum, Dissolved	µg/L	--	---	---
Aluminum, Total	µg/L	200	---	---
Chloride, Dissolved	mg/L	--	167	1.7
Chloride, Form not specified [a]	mg/L	--	49	4.17
Chloride, Total	mg/L	250 (recommended)	4	32.2
Copper, Dissolved	µg/L	--	476	1.5
Copper, Total	µg/L	1,000	368	5.33
Iron, Dissolved	µg/L	--	139	18.6
Iron, Total	µg/L	300	49	145
Manganese, Dissolved	µg/L	--	139	1.7
Manganese, Total	µg/L	50	44	14.2
MBAS, Total	µg/L	500	---	---
Silver, Dissolved	µg/L	--	---	---
Silver, Total	µg/L	100	---	---
Sulfate, Dissolved	µg/L	--	167	2.74
Sulfate, Form not specified [a] (mg/L)	µg/L	--	49	5.64
Sulfate, Total	mg/L	250 (recommended)	---	---
Thiobencarb, Total	µg/L	1	177	ND [c]
Turbidity	NTU	5	1,124	3.01
Zinc, Dissolved	µg/L	--	279	1.82
Zinc, Total	µg/L	5,000	392	7.14

Source: CEDEN, as cited and presented in Larry Walker Associates 2016a.

Notes:

[a] Values indicate probable representation of "total" fraction for analyte.

[b] Limited amount of data compared to dissolved, resulting in lower "total" fraction value.

[c] ND = non-detect; less than 10 percent of data reported with a detectable concentration.

Figure A - 1. Sacramento River Hydrologic Region, Conductivity Observations in Sacramento River Tributaries

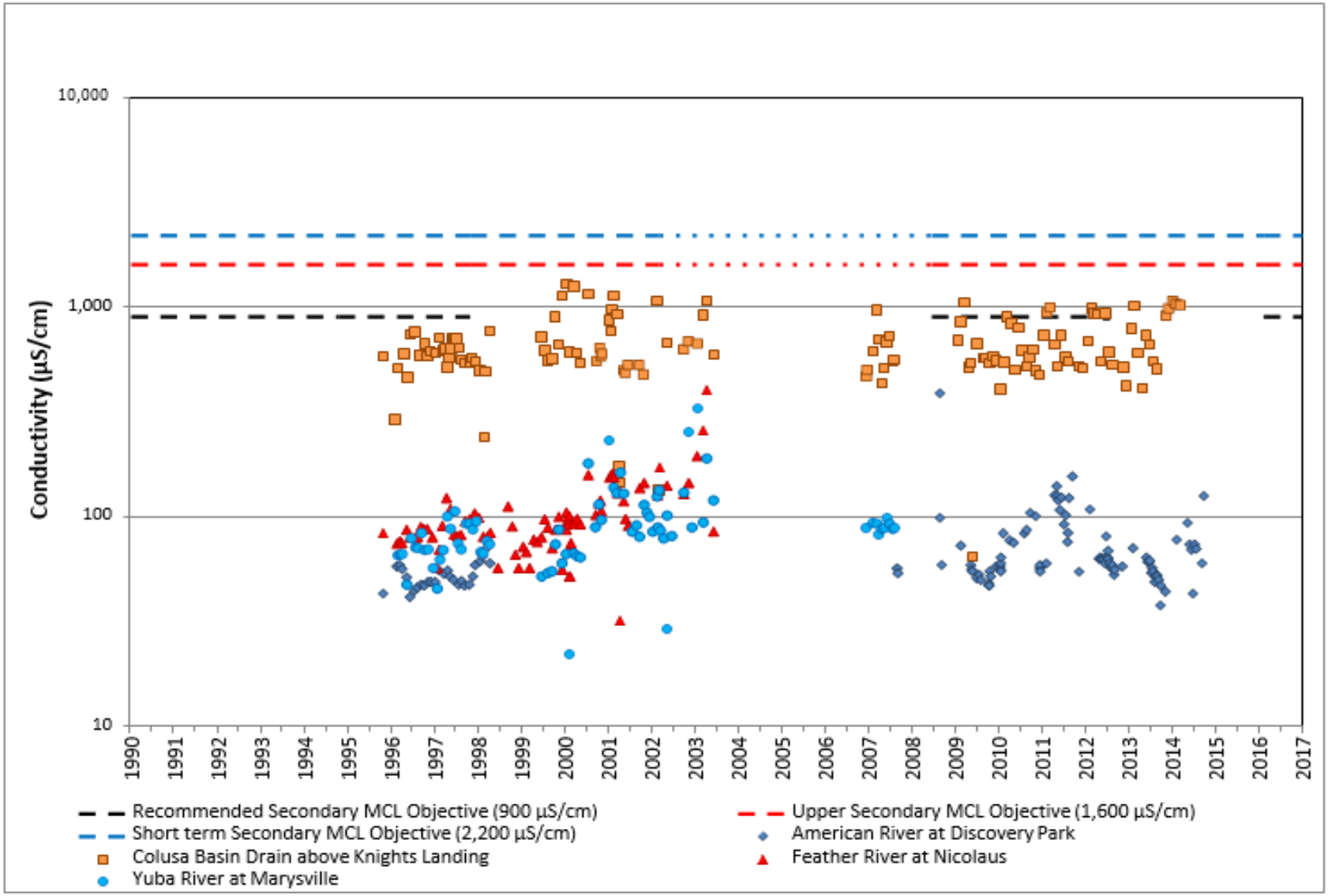


Figure A - 2. Sacramento River Hydrologic Region, Conductivity Observations in Sacramento River

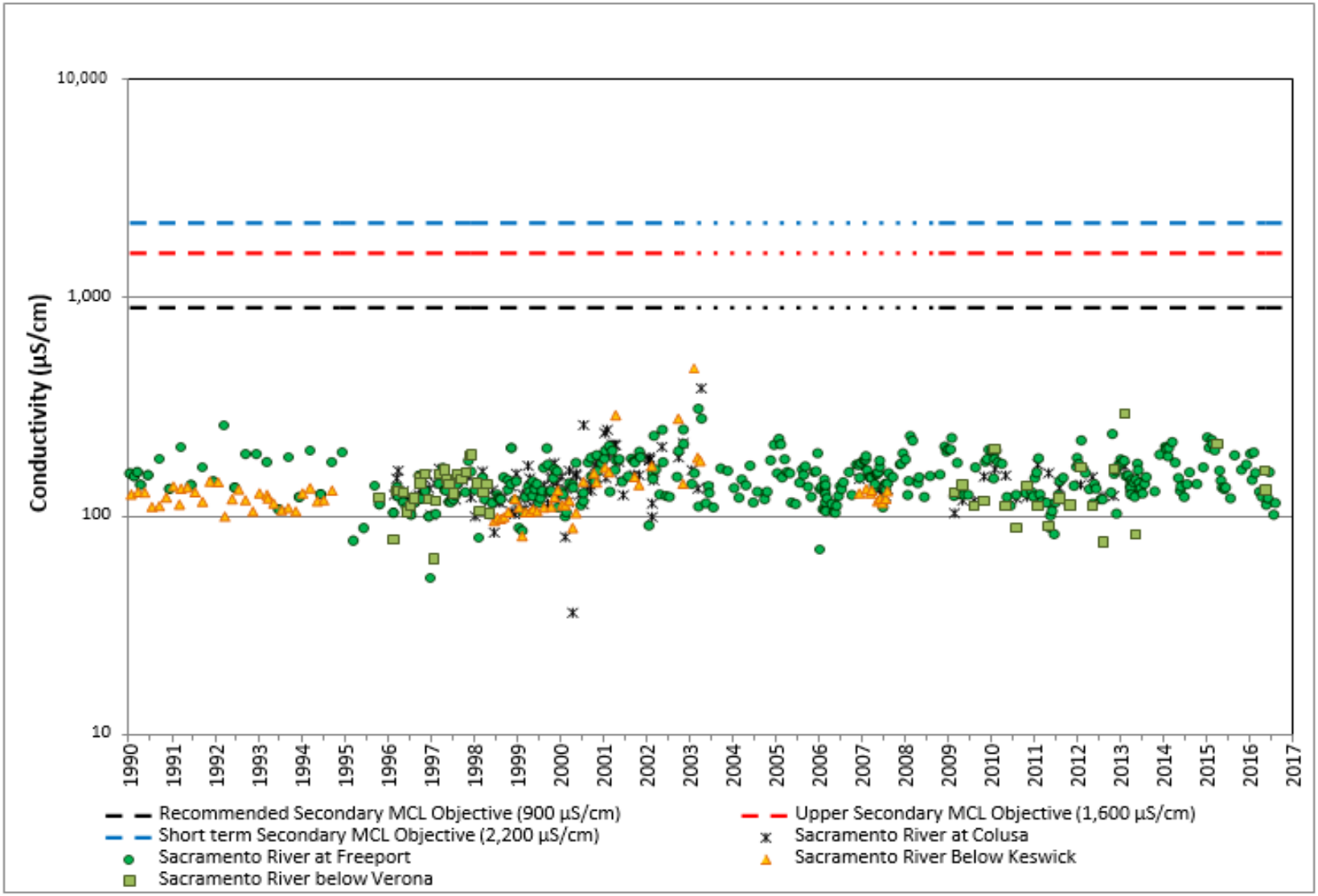


Figure A - 3. Sacramento River Hydrologic Region, Median Conductivity Values

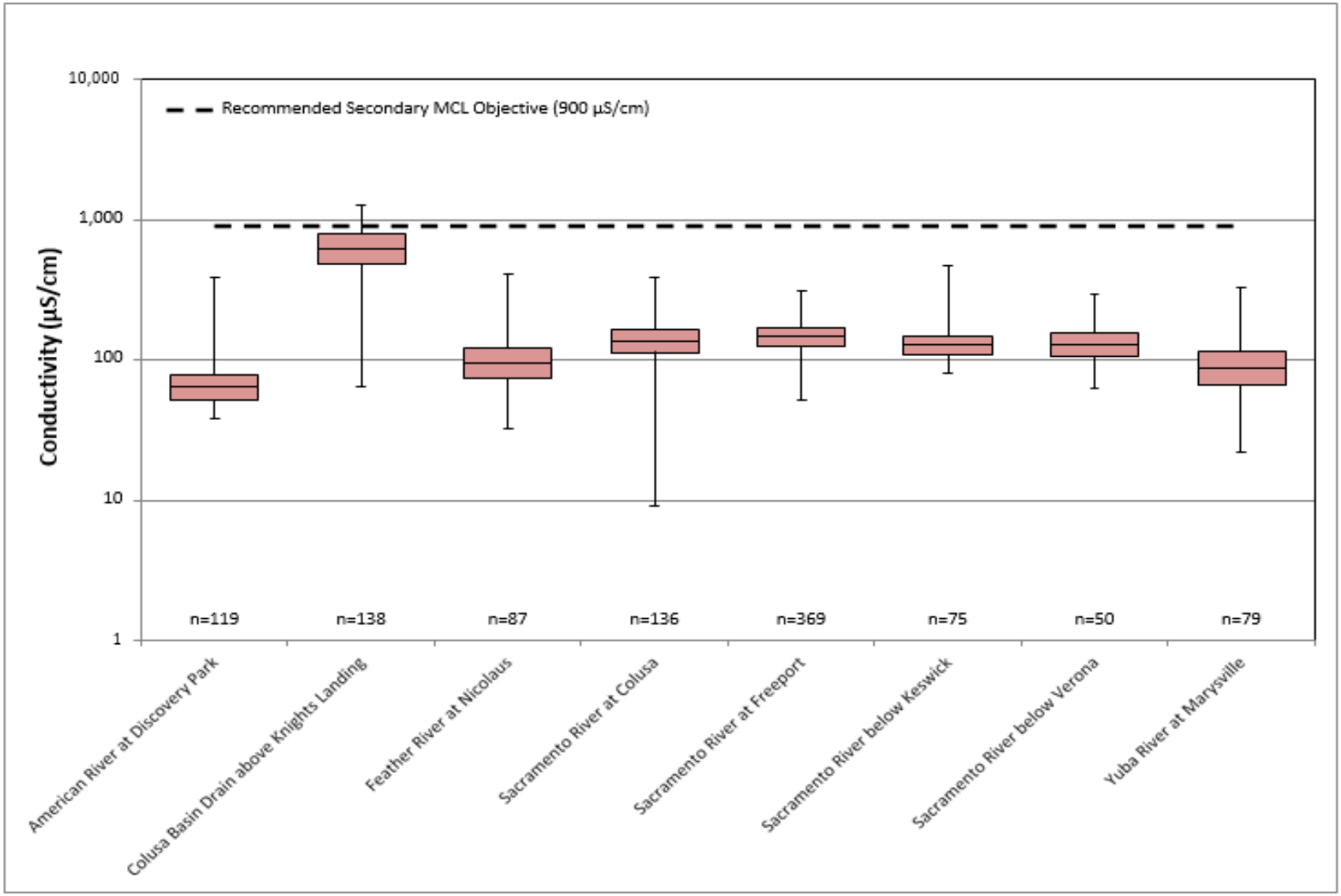


Figure A - 4. Sacramento River Hydrologic Region, Nitrate as N Observations in Sacramento River Tributaries

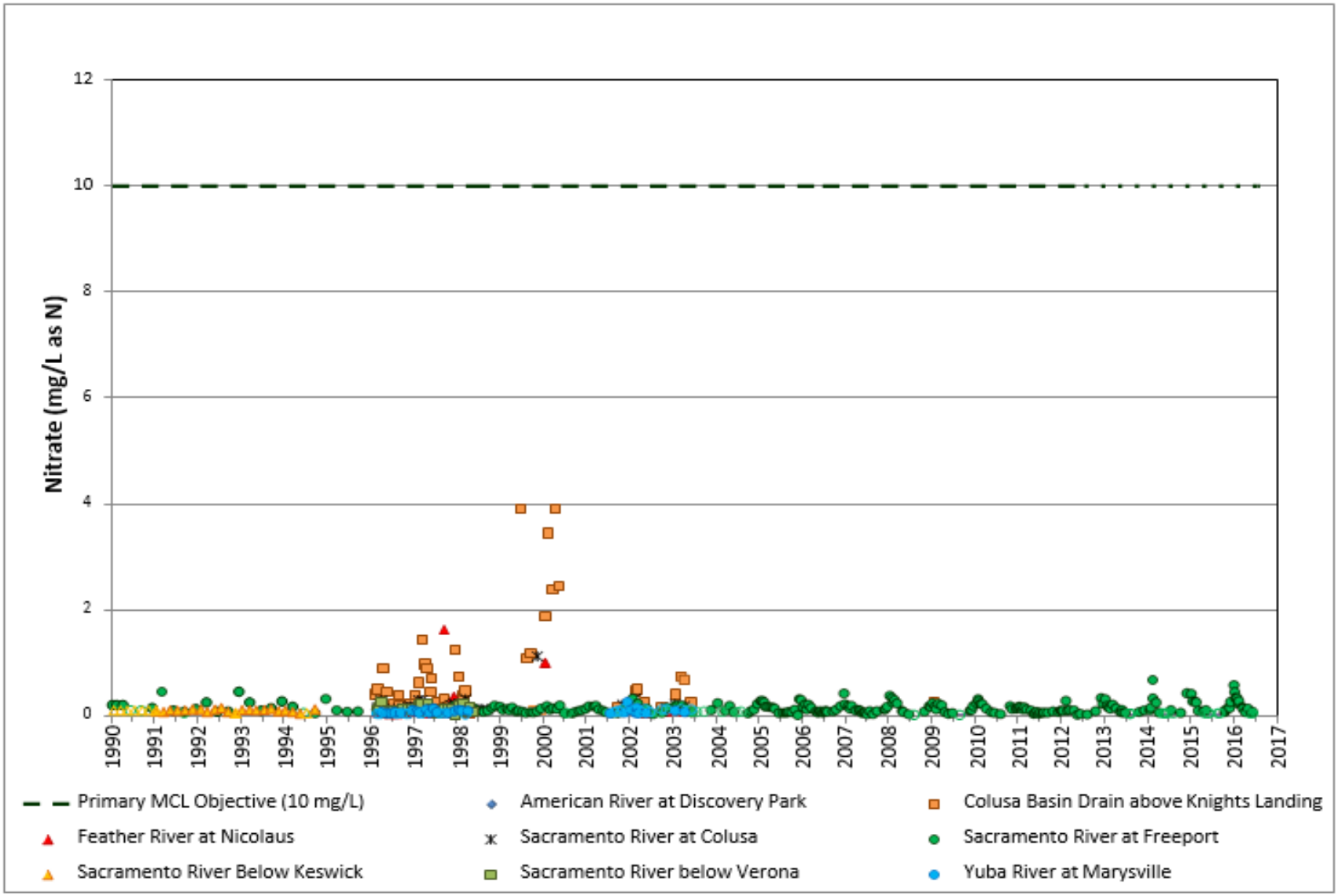


Figure A - 5. Sacramento River Hydrologic Region, Median Nitrate as N Values

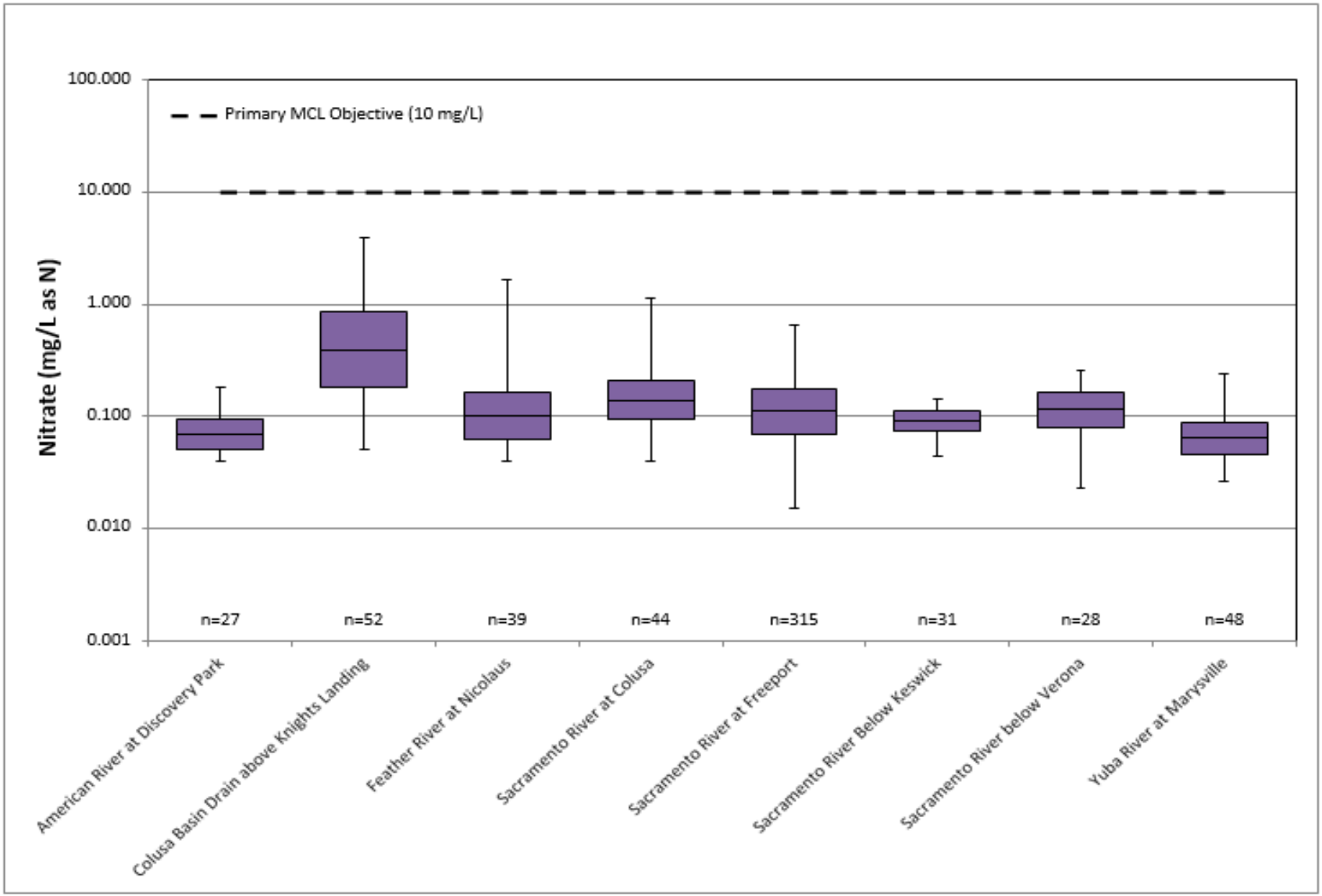


Figure A - 6. Sacramento River Hydrologic Region, Aluminum (dissolved) Observations in Sacramento River Tributaries

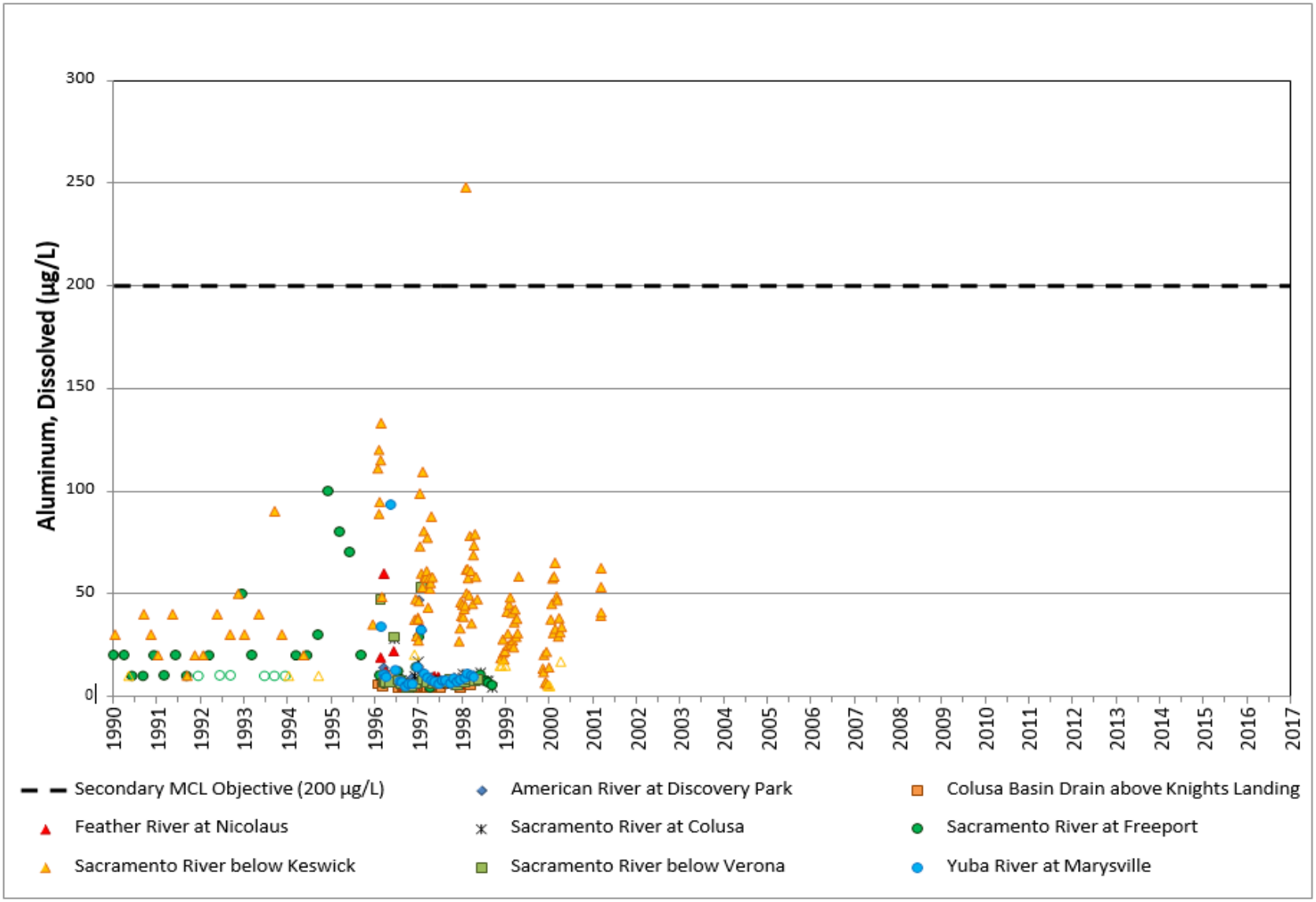


Figure A - 7. Sacramento River Hydrologic Region, Aluminum (total) Observations in Sacramento River

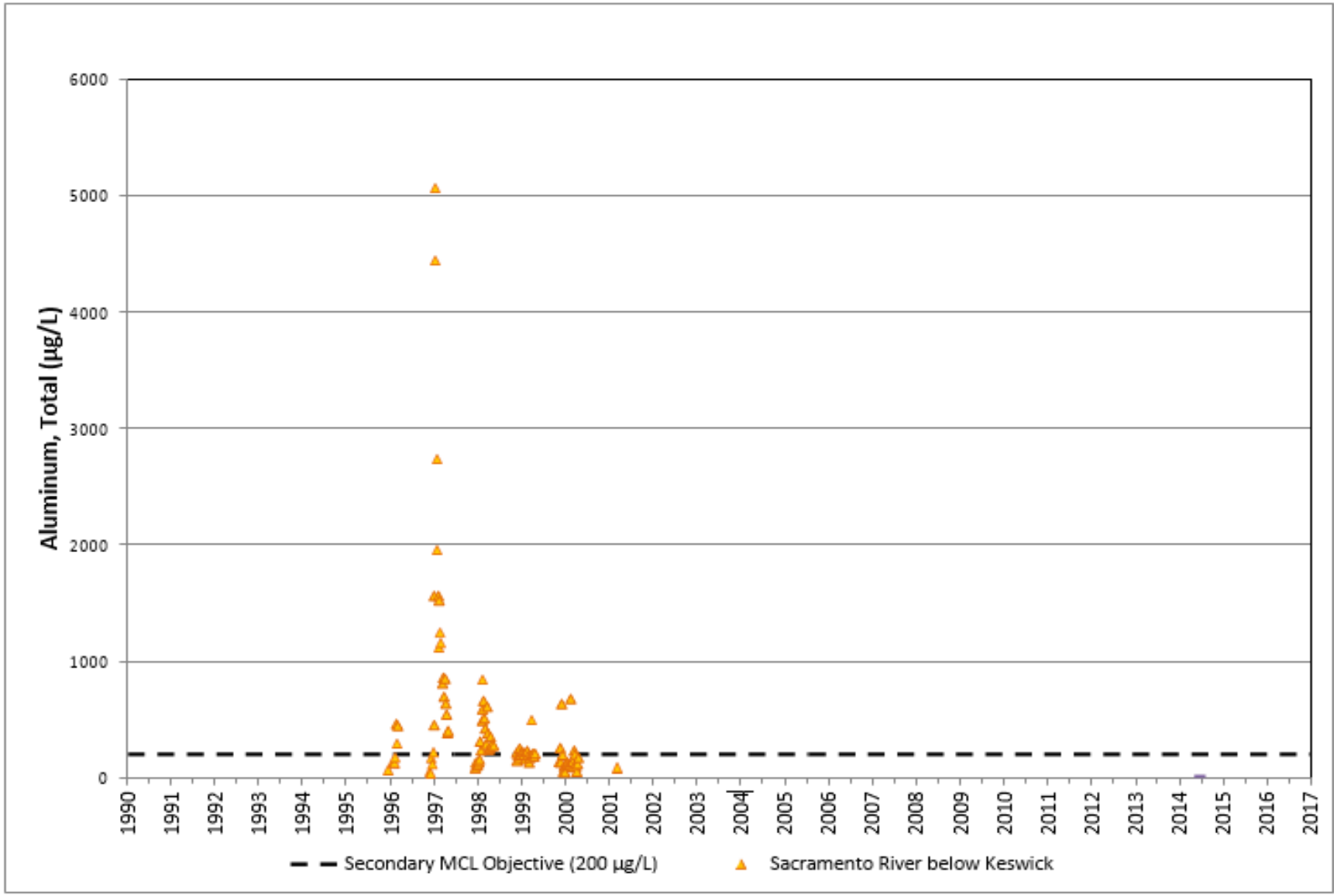


Figure A - 8. Sacramento River Hydrologic Region, Median Aluminum (dissolved and total) Values

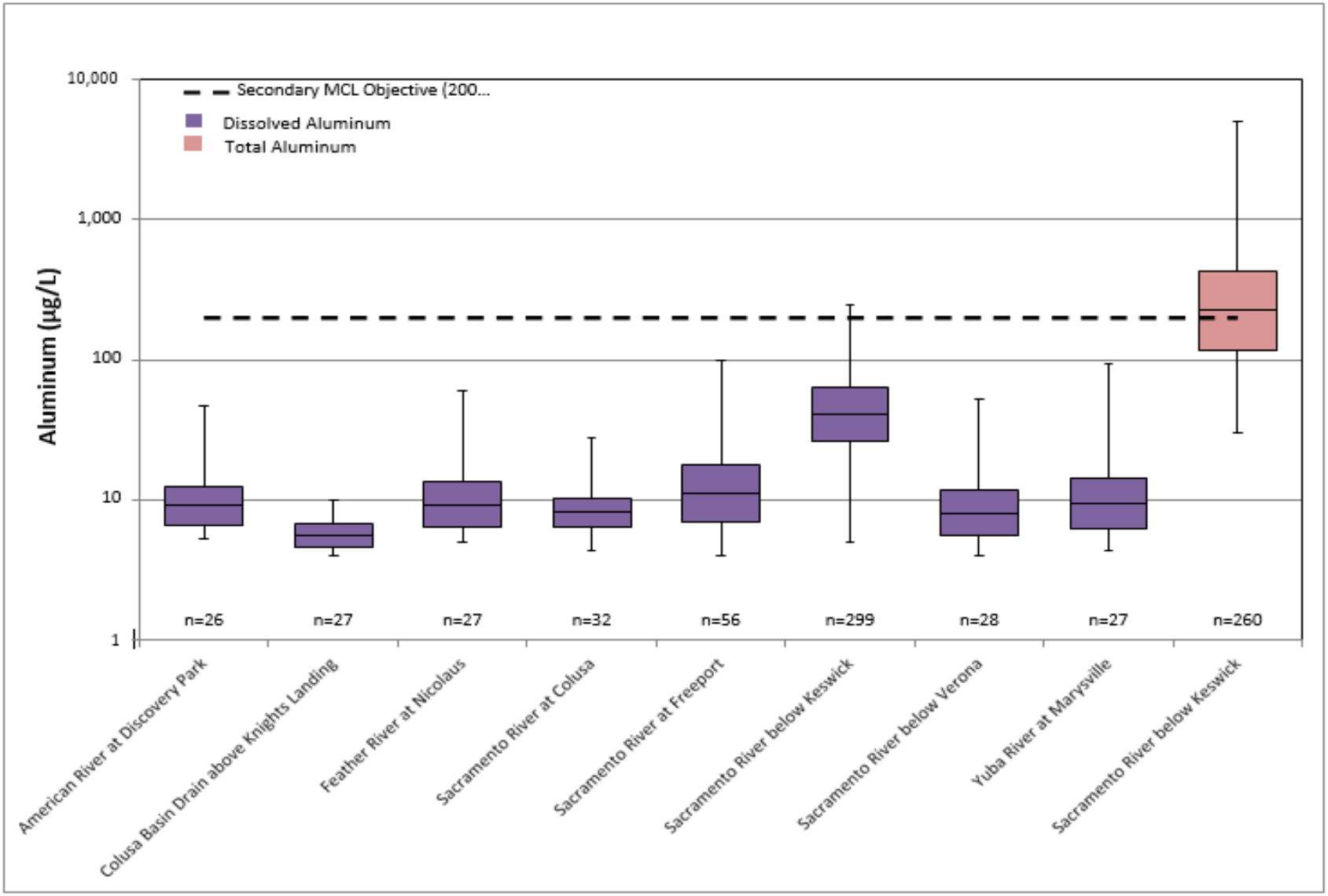


Figure A - 9. Sacramento River Hydrologic Region, Iron (dissolved) Observations in Sacramento River Tributaries

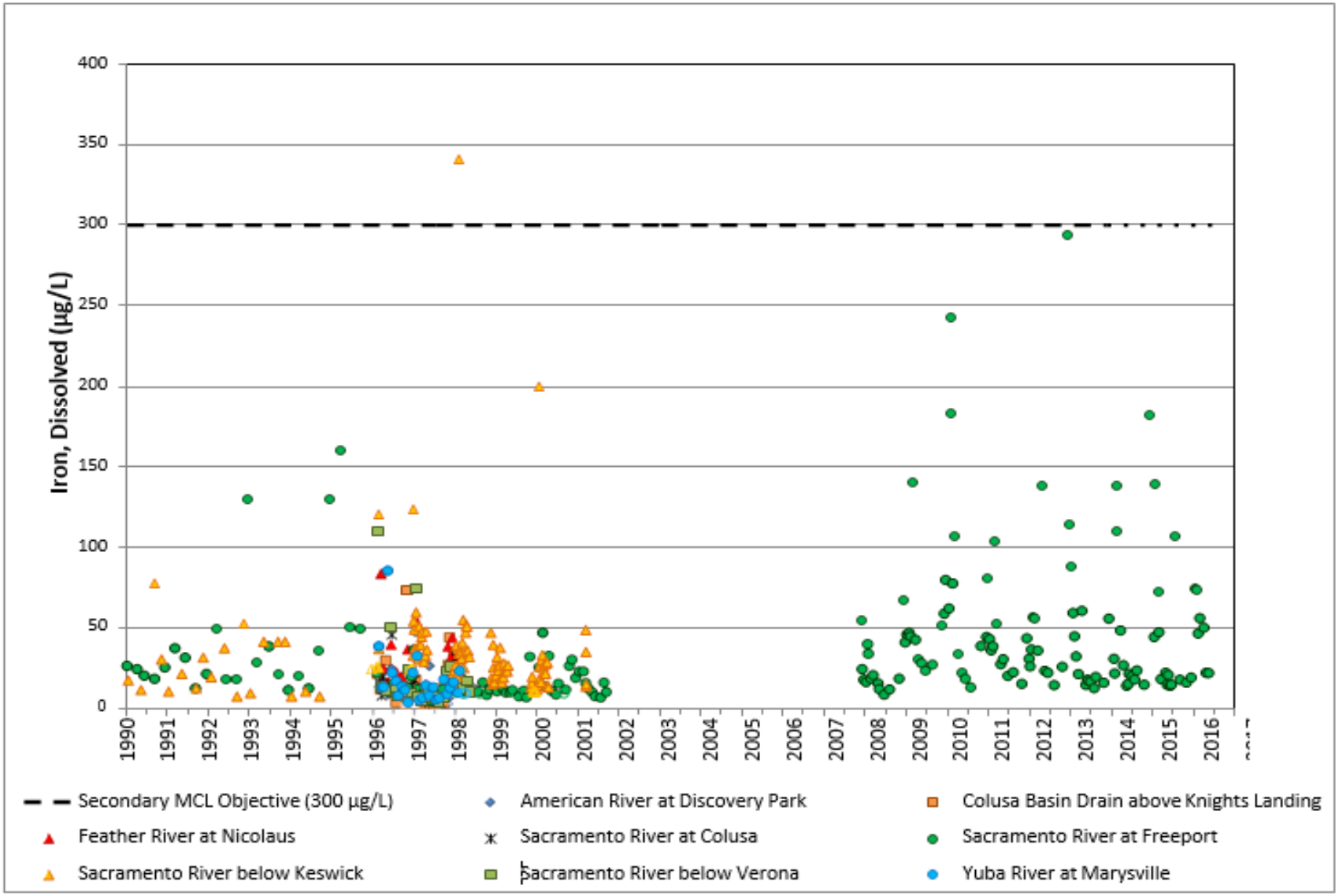


Figure A - 10. Sacramento River Hydrologic Region, Iron (total) Observations in Sacramento River

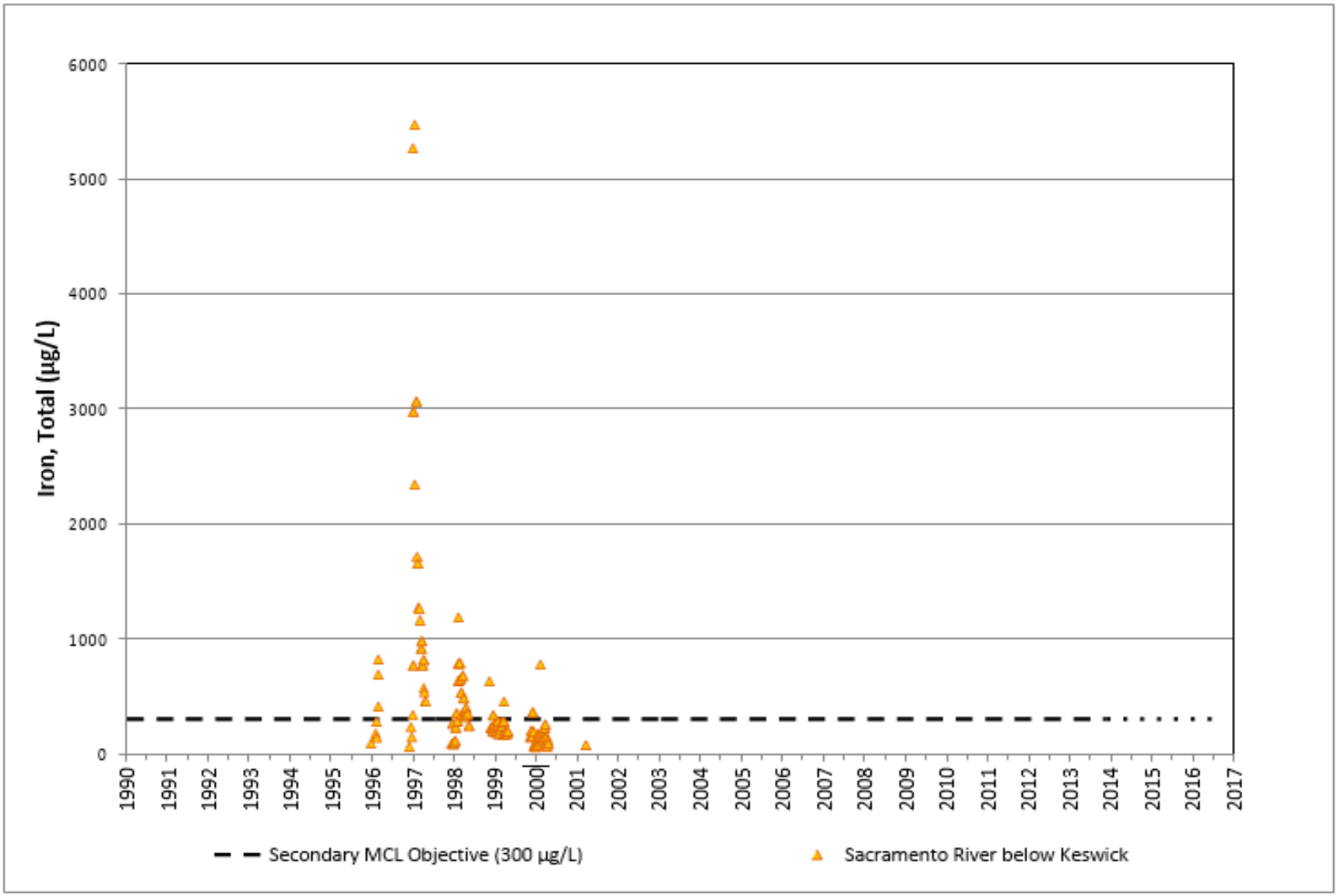


Figure A - 11. Sacramento River Hydrologic Region, Median Iron (dissolved and total) Values

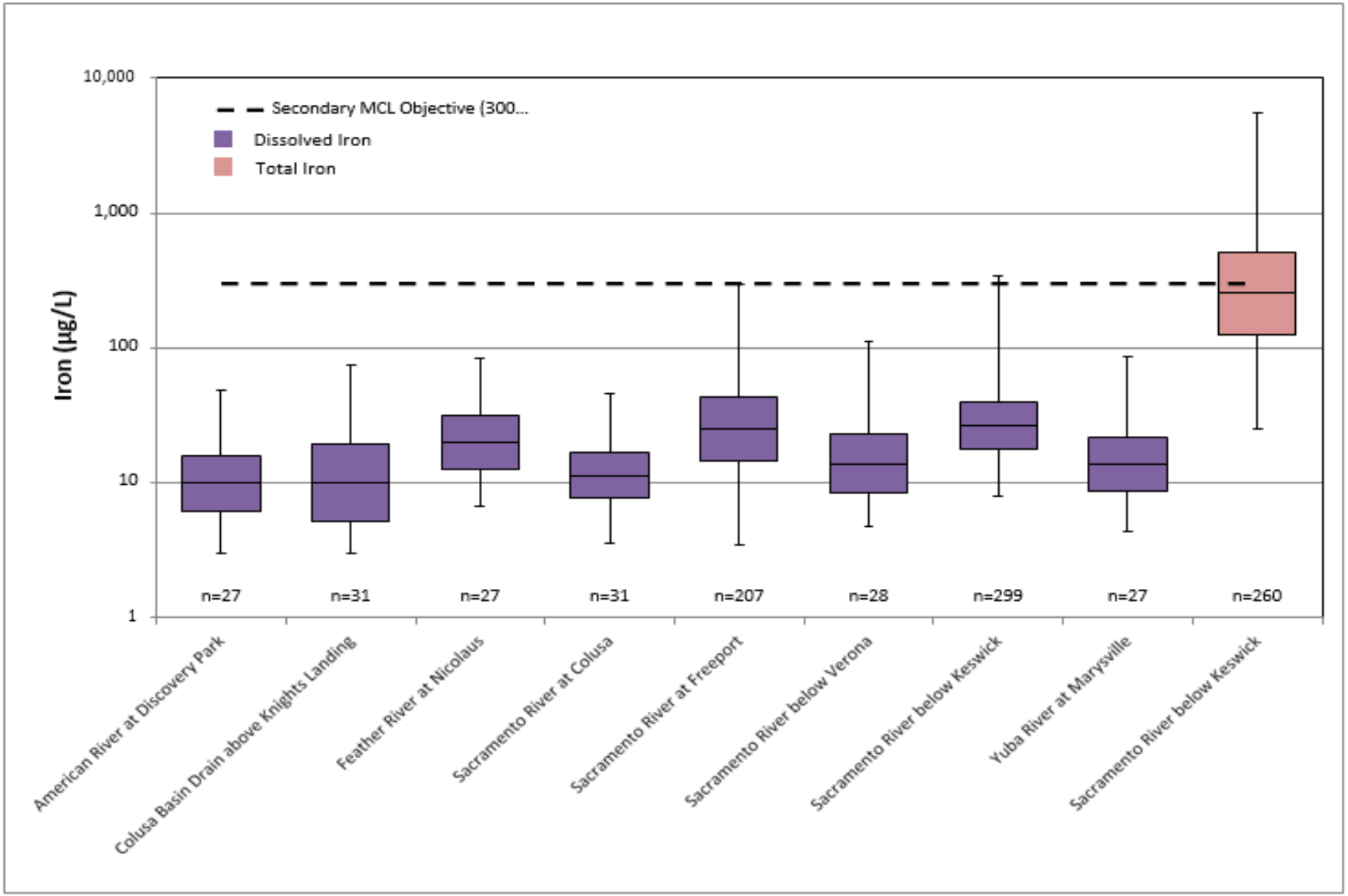


Figure A - 12. Sacramento River Hydrologic Region, Manganese (dissolved) Observations in Sacramento River Tributaries

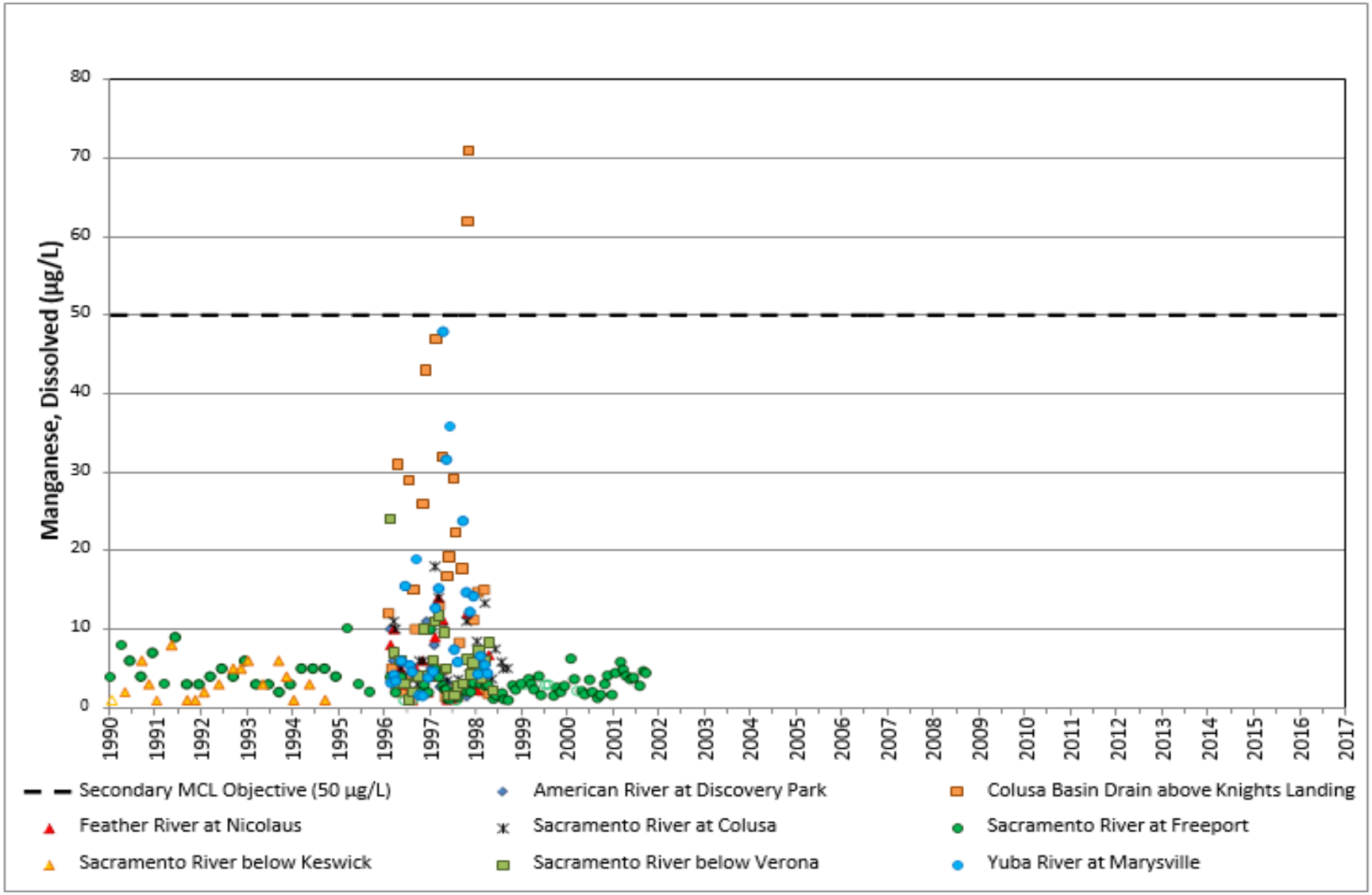


Figure A - 13. Sacramento River Hydrologic Region, Manganese (total) Observations in Sacramento River

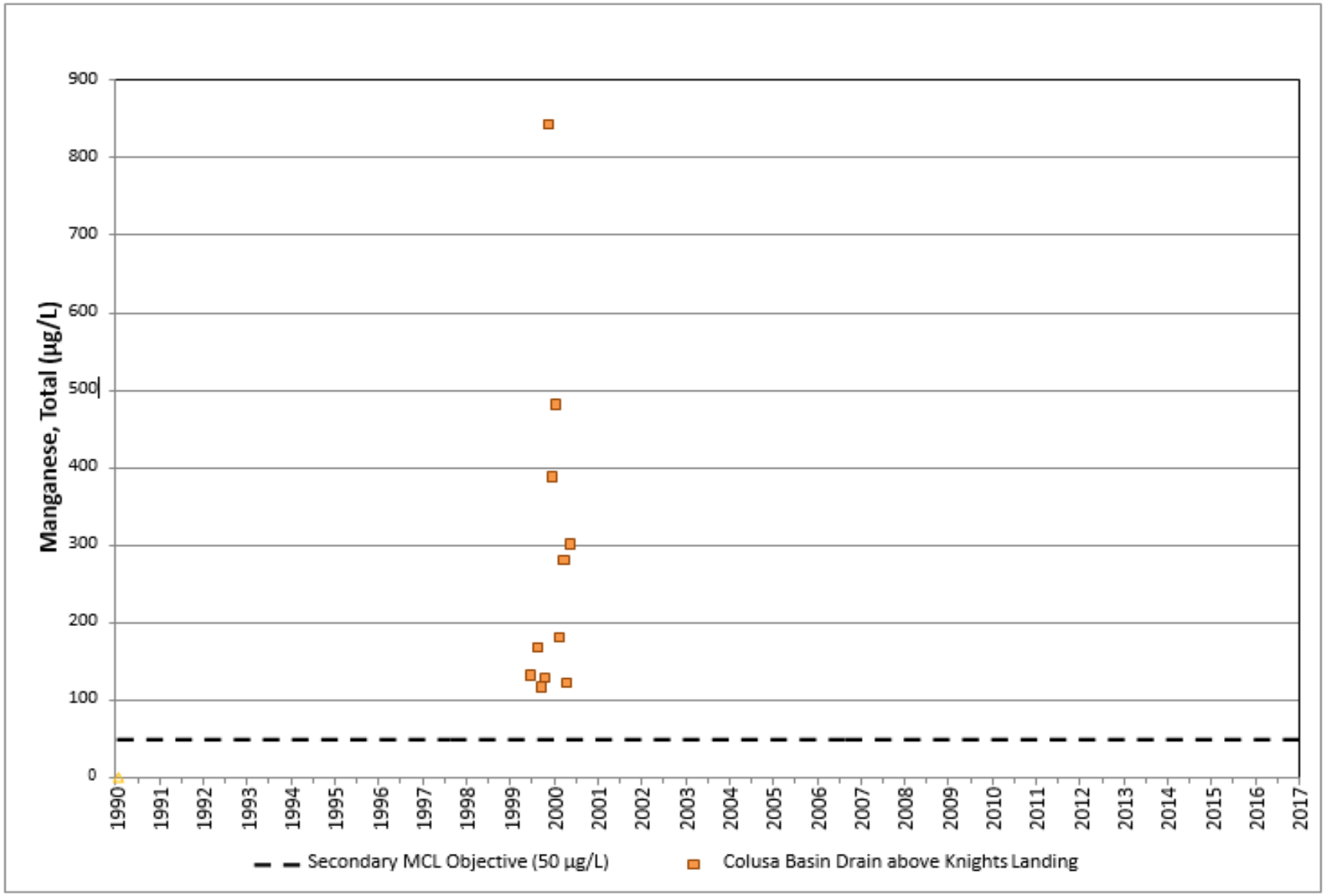


Figure A - 14. Sacramento River Hydrologic Region, Median Manganese (dissolved and total) Values

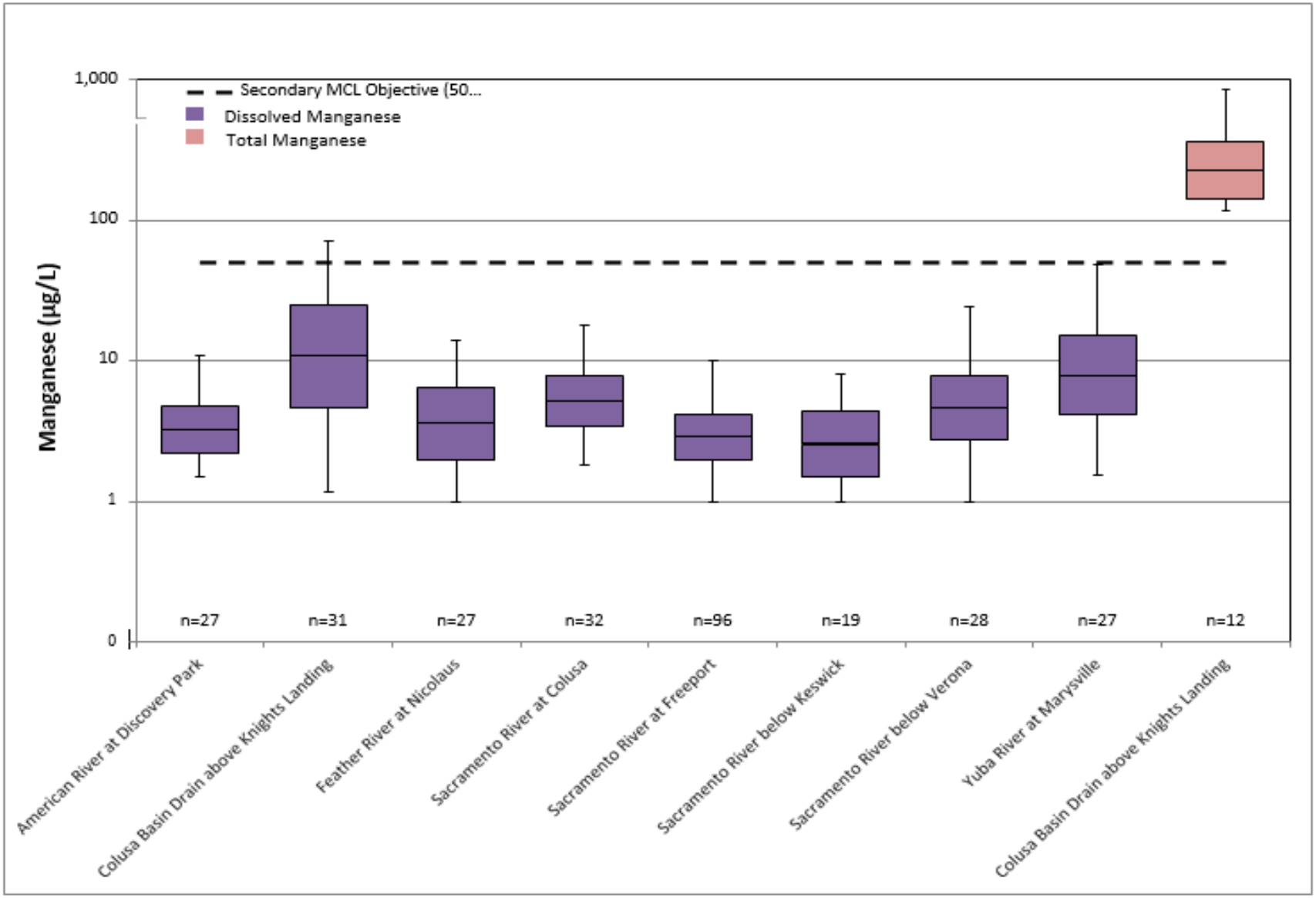


Figure A - 15. San Joaquin River Hydrologic Region, Conductivity Observations in San Joaquin River Tributaries

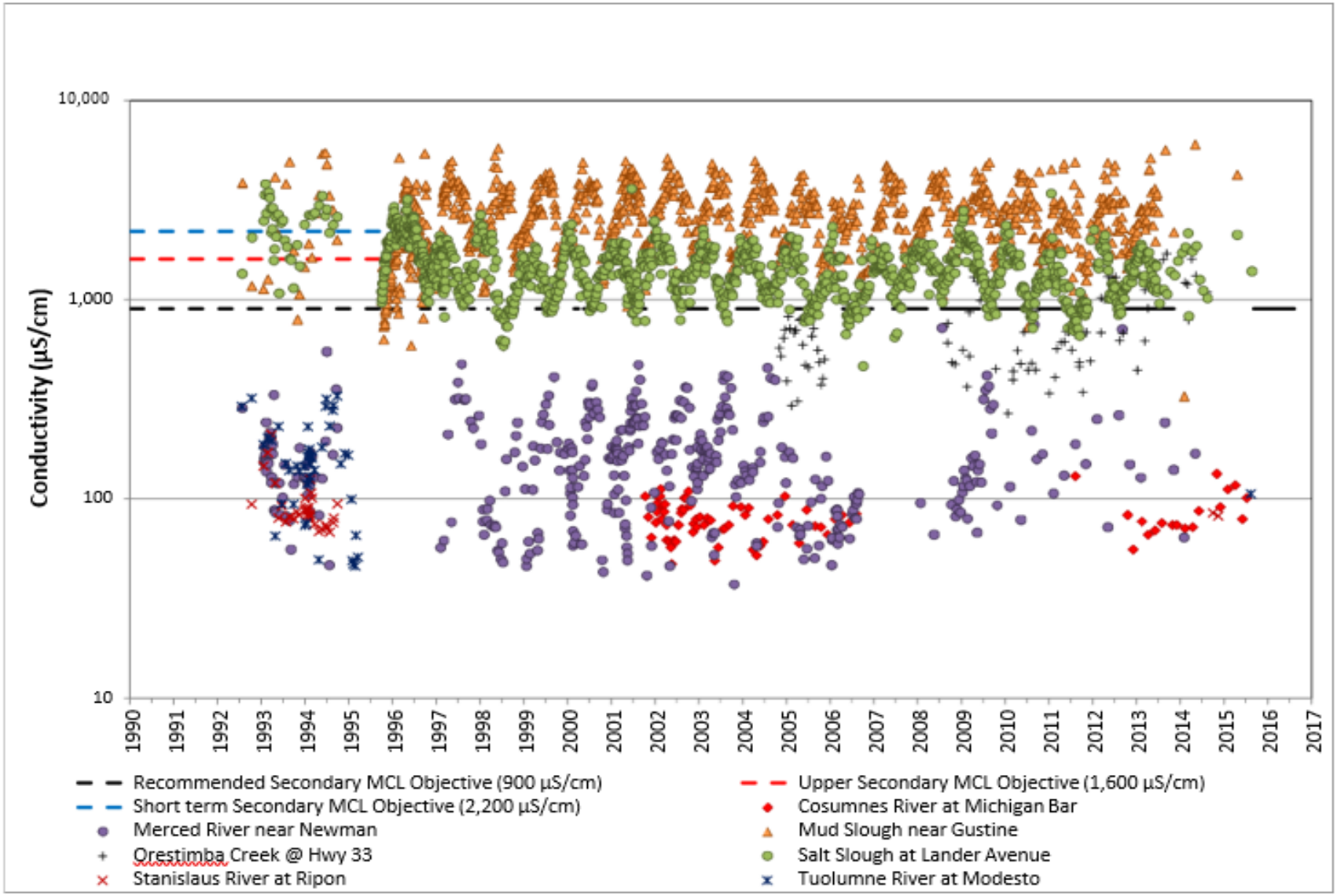


Figure A - 16. San Joaquin River Hydrologic Region, Conductivity Observations in San Joaquin River

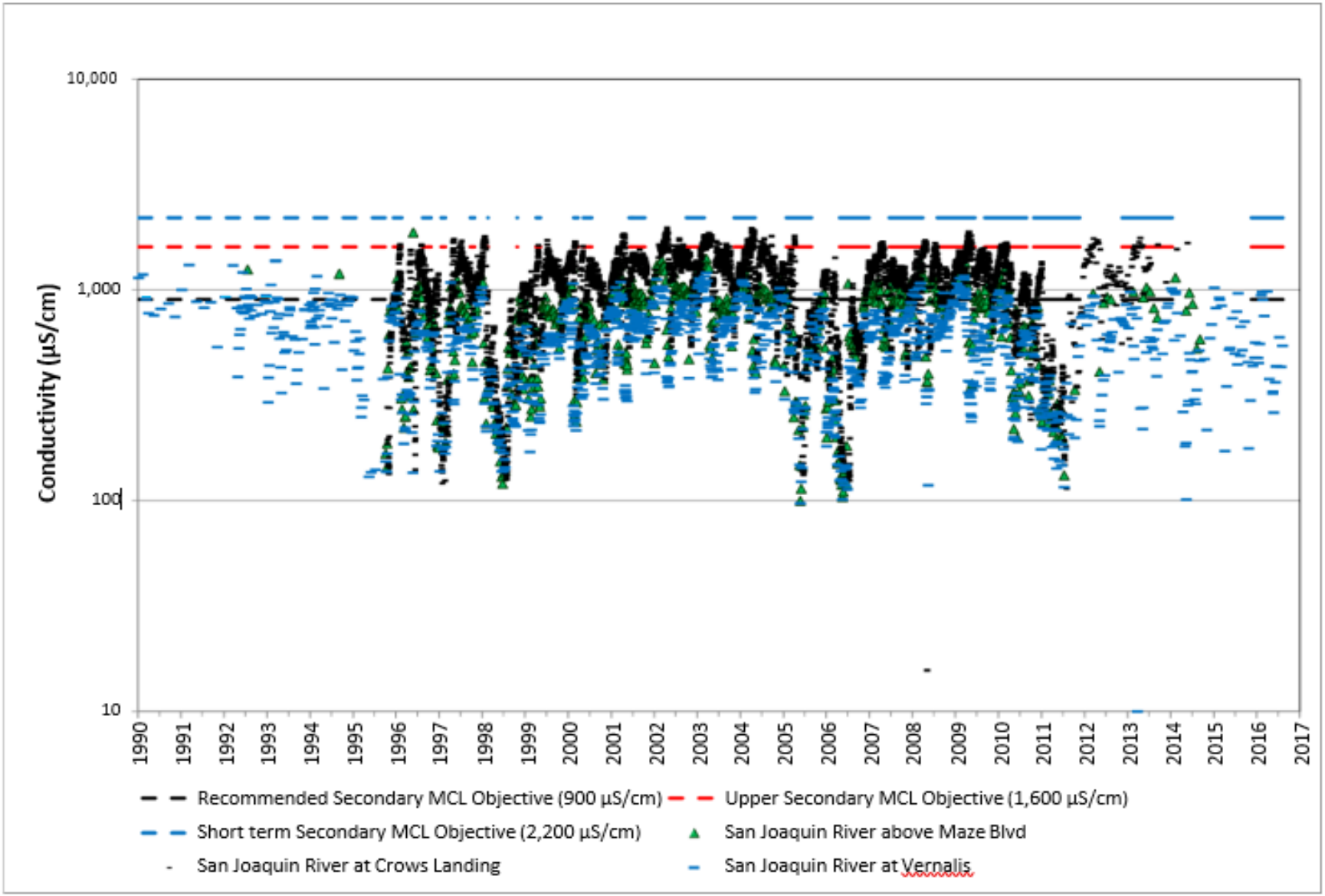


Figure A - 17. San Joaquin River Hydrologic Region, Median Conductivity Values

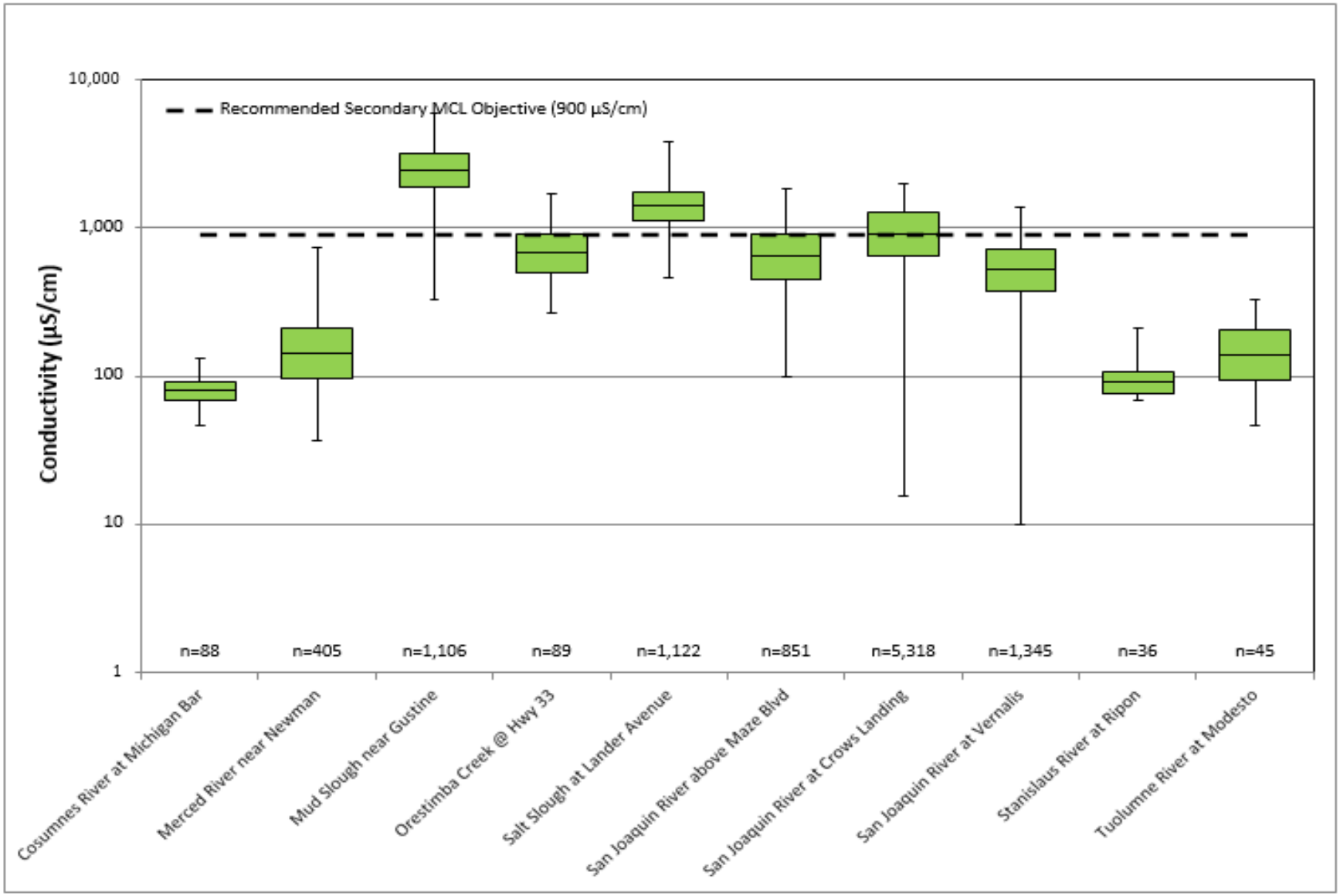


Figure A - 18. San Joaquin River Hydrologic Region, Nitrate as N Observations in San Joaquin River Tributaries

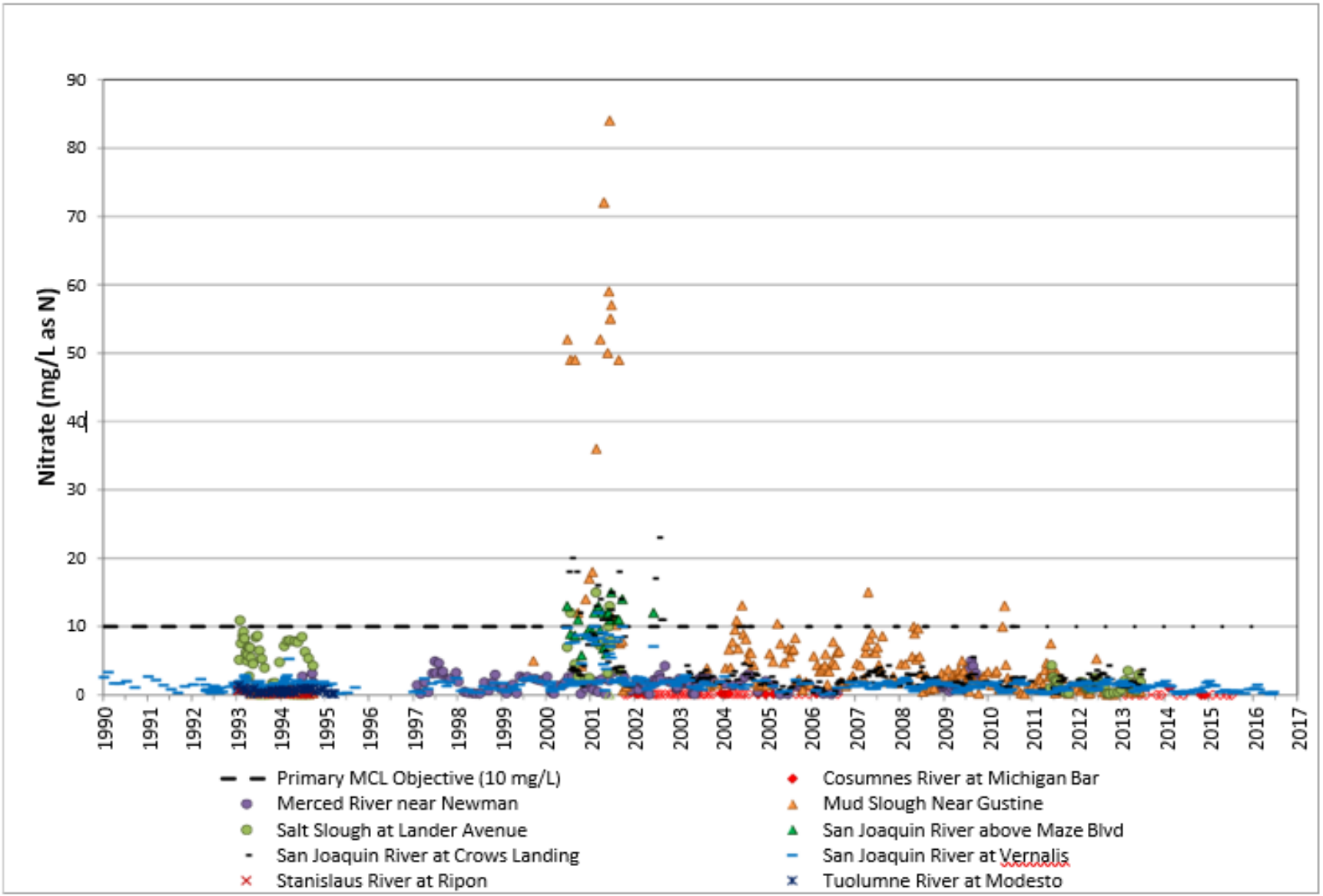


Figure A - 19. San Joaquin River Hydrologic Region, Median Nitrate as N Values

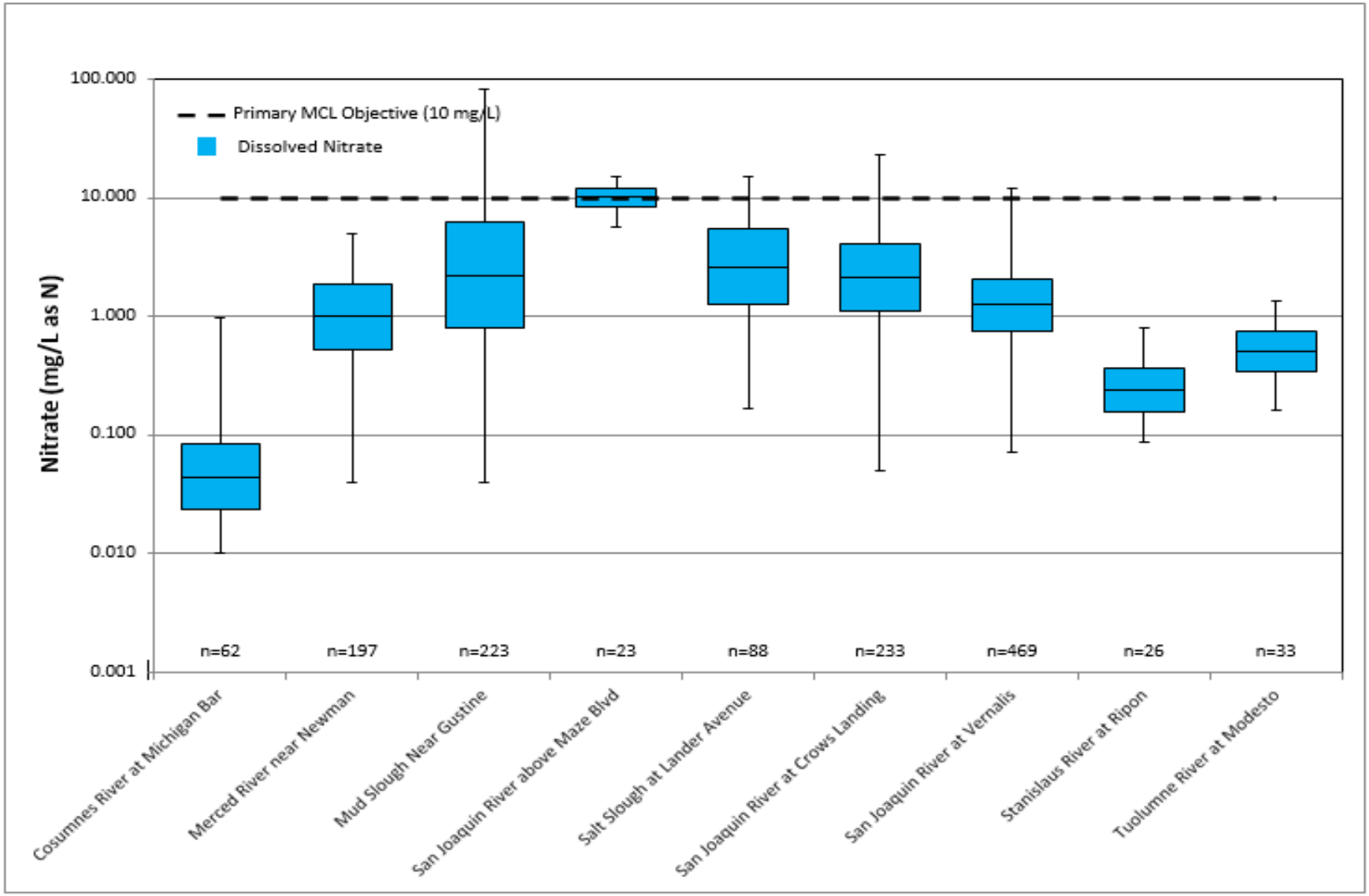


Figure A - 20. San Joaquin River Hydrologic Region, Aluminum (dissolved) Observations in San Joaquin River

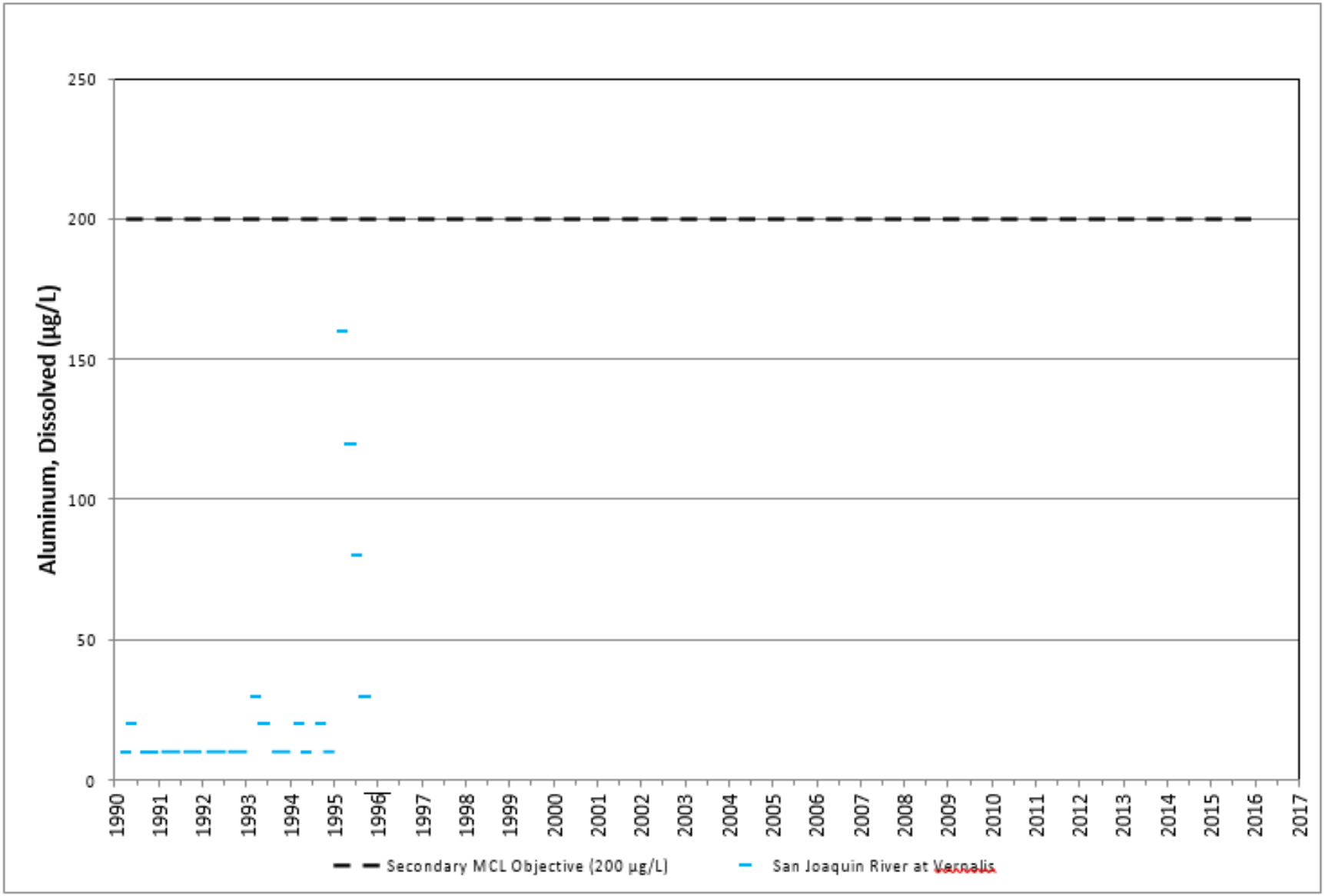


Figure A - 21. San Joaquin River Hydrologic Region, Median Aluminum (dissolved) Values

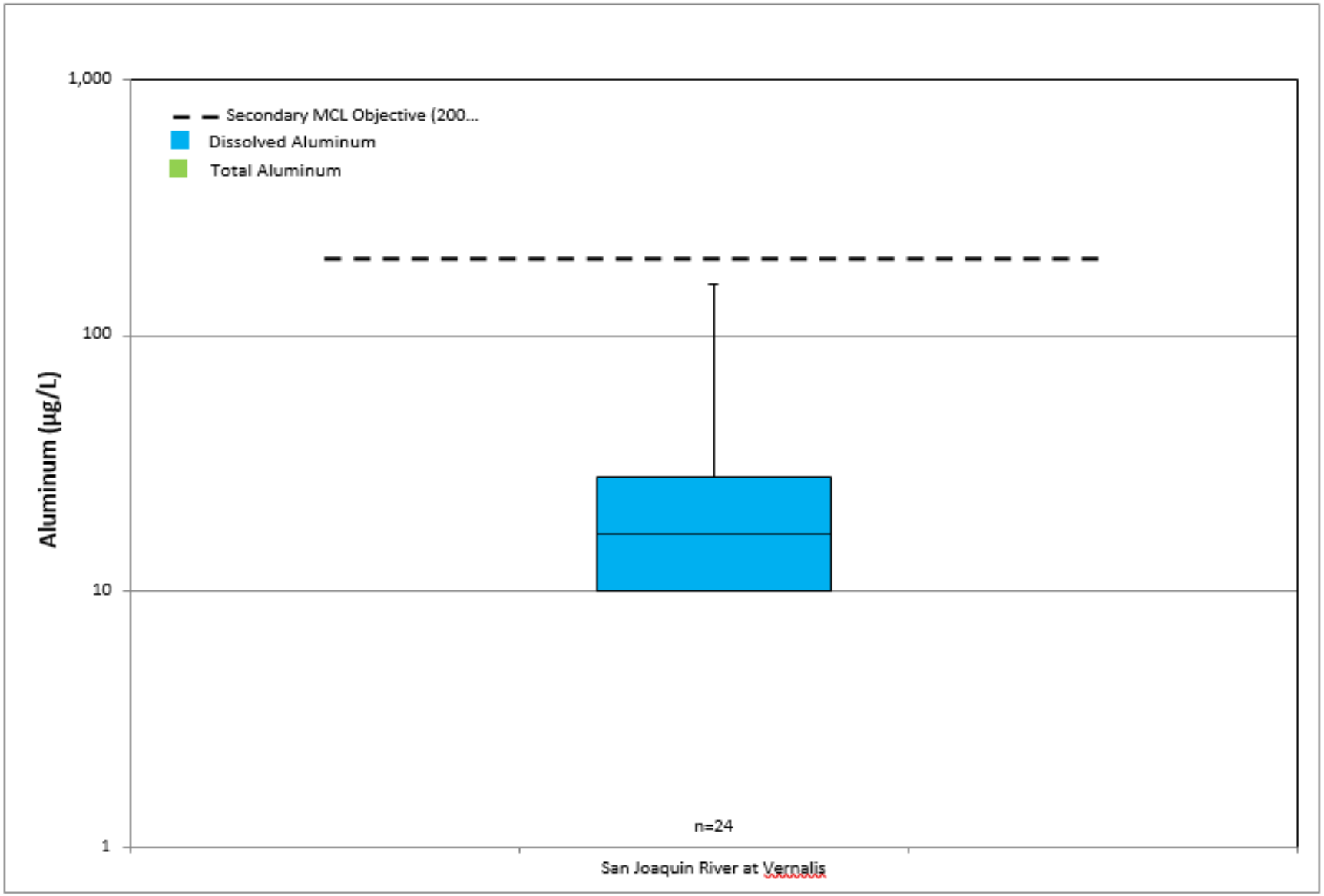


Figure A - 22. San Joaquin River Hydrologic Region, Iron (dissolved) Observations in San Joaquin River Tributaries

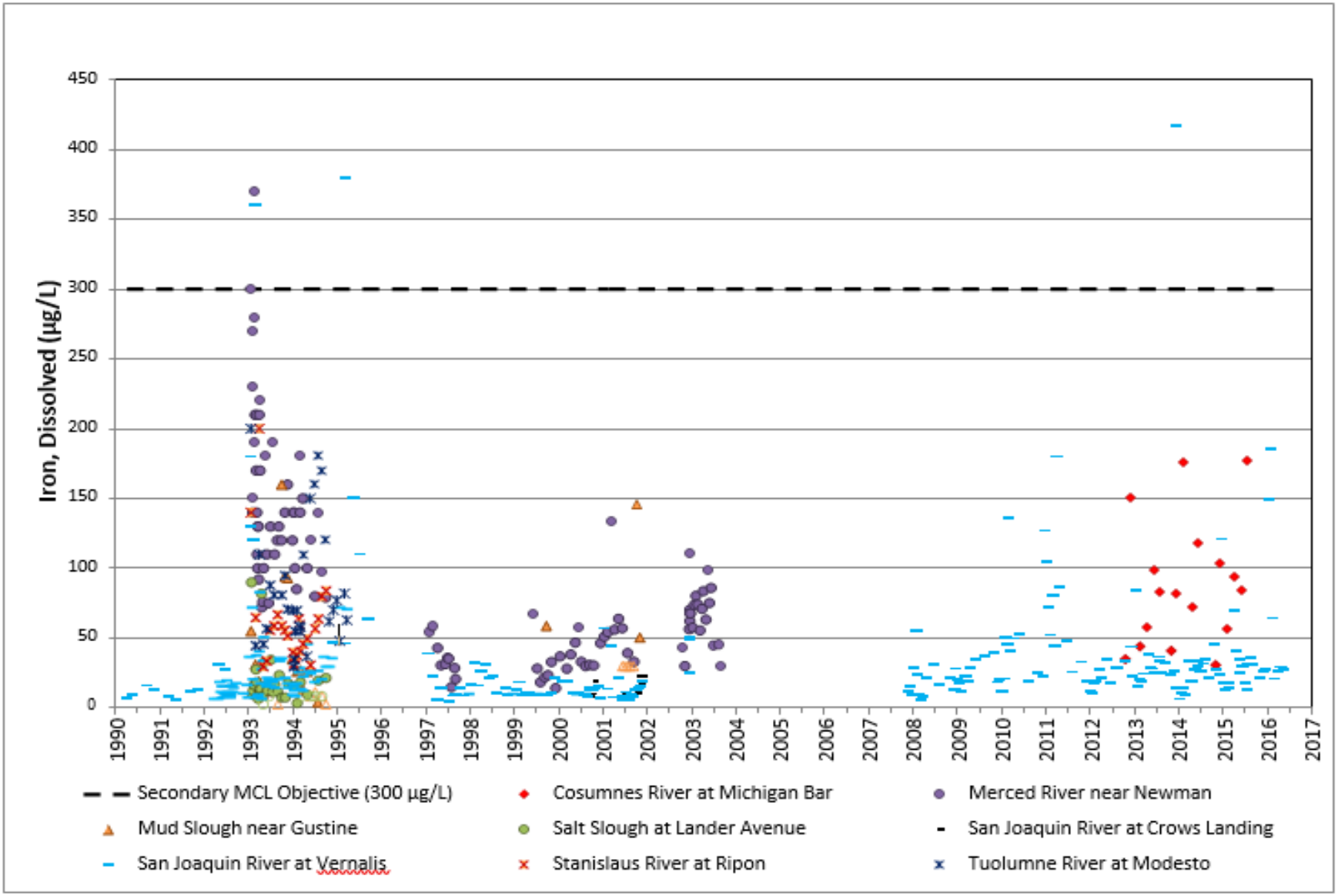


Figure A - 23. San Joaquin River Hydrologic Region, Median Iron (dissolved) Values

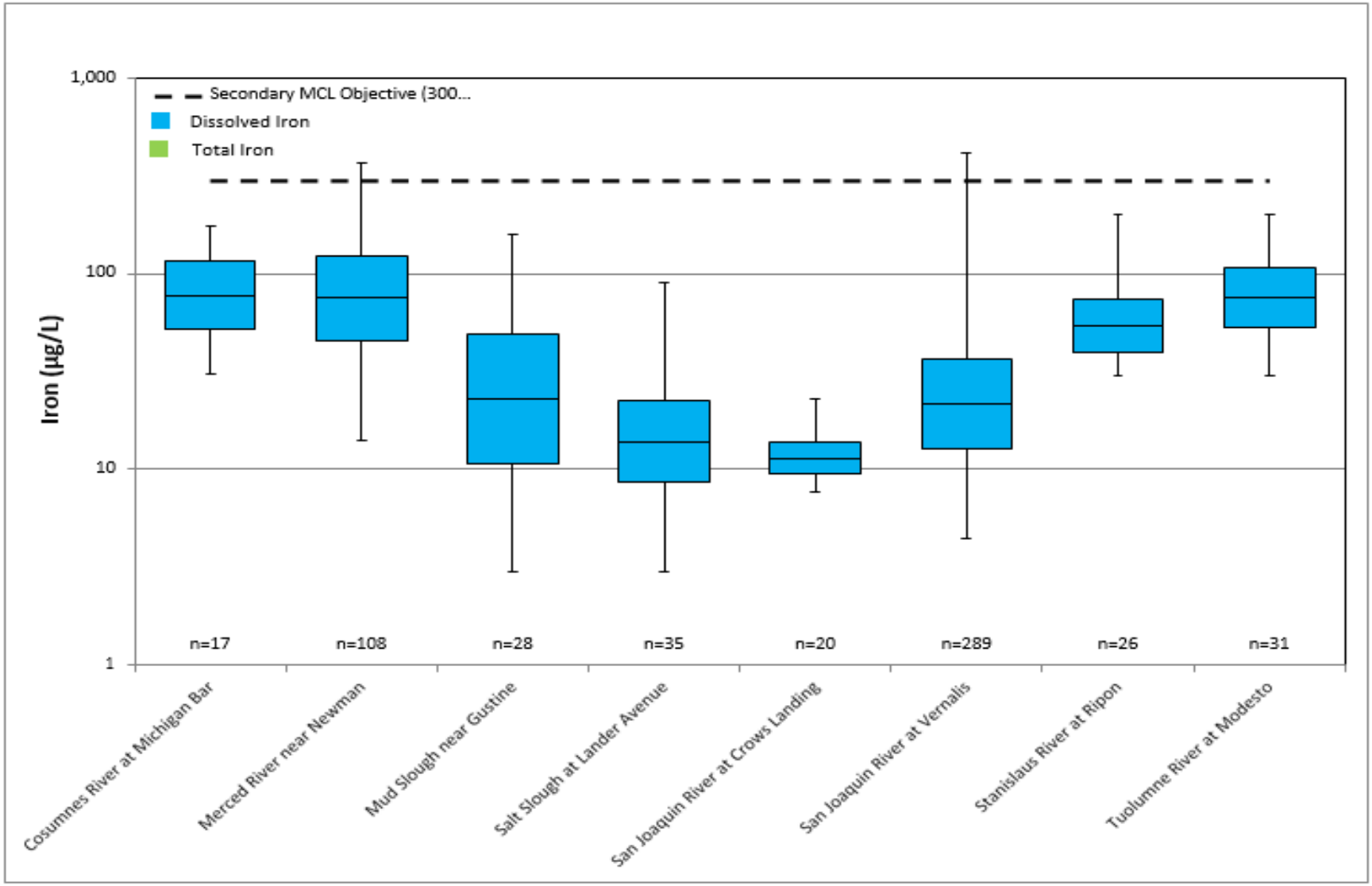


Figure A - 24. San Joaquin River Hydrologic Region, Manganese (dissolved) Observations in San Joaquin River Tributaries

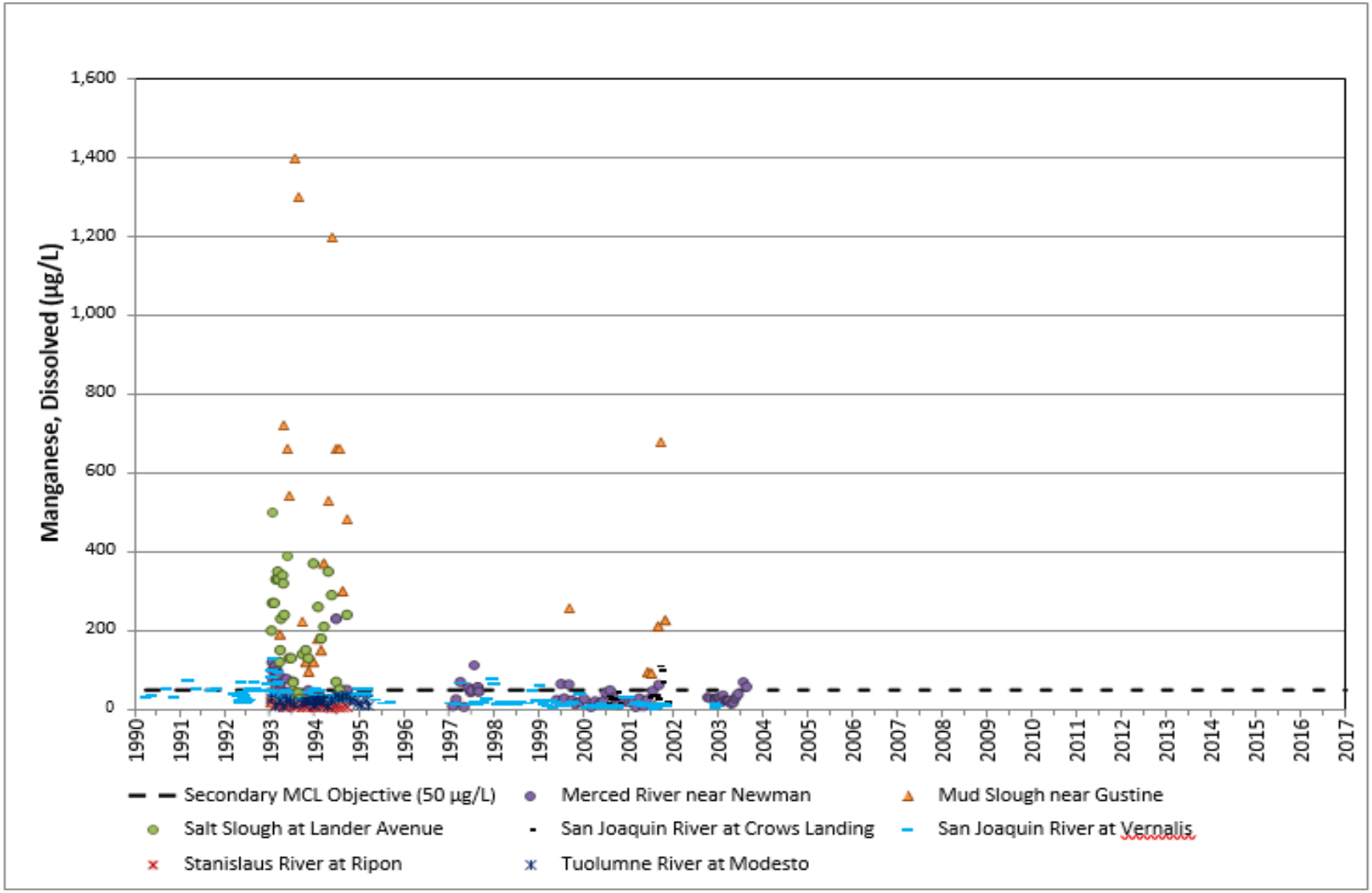


Figure A - 25. San Joaquin River Hydrologic Region, Median Manganese (dissolved) Values

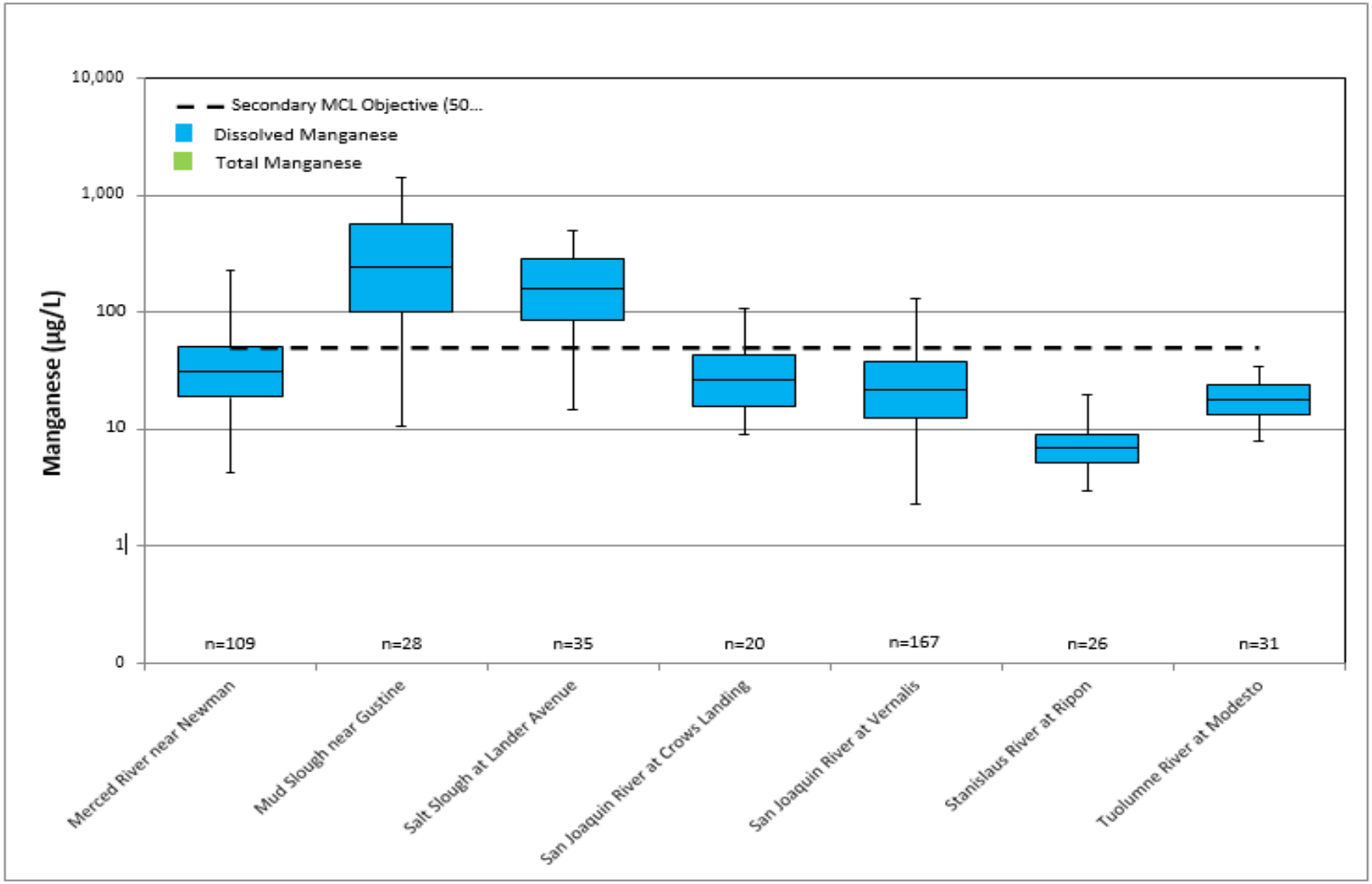


Figure A - 26. Delta Region, Conductivity Observations

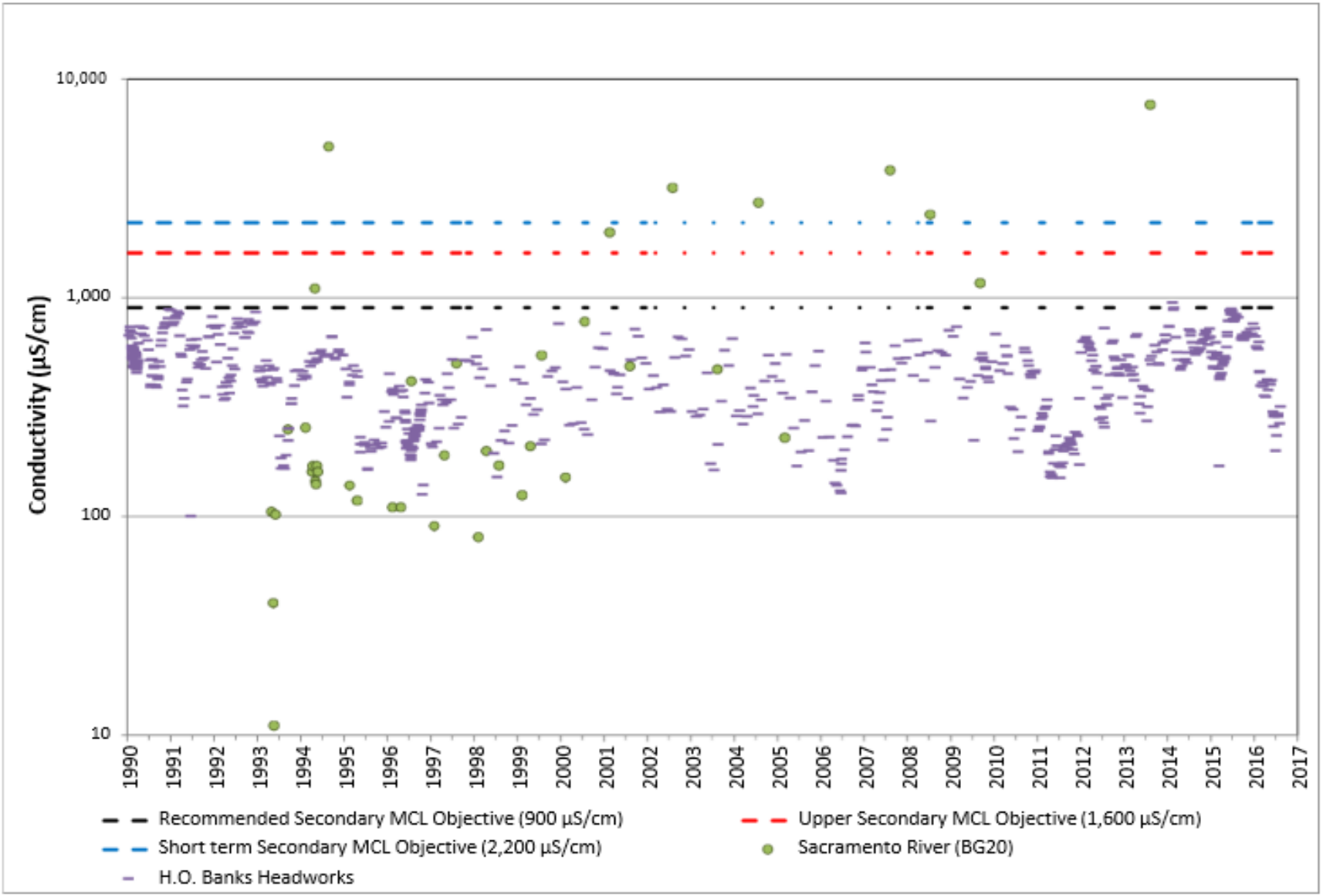


Figure A - 27. Delta Region, Median Conductivity Values

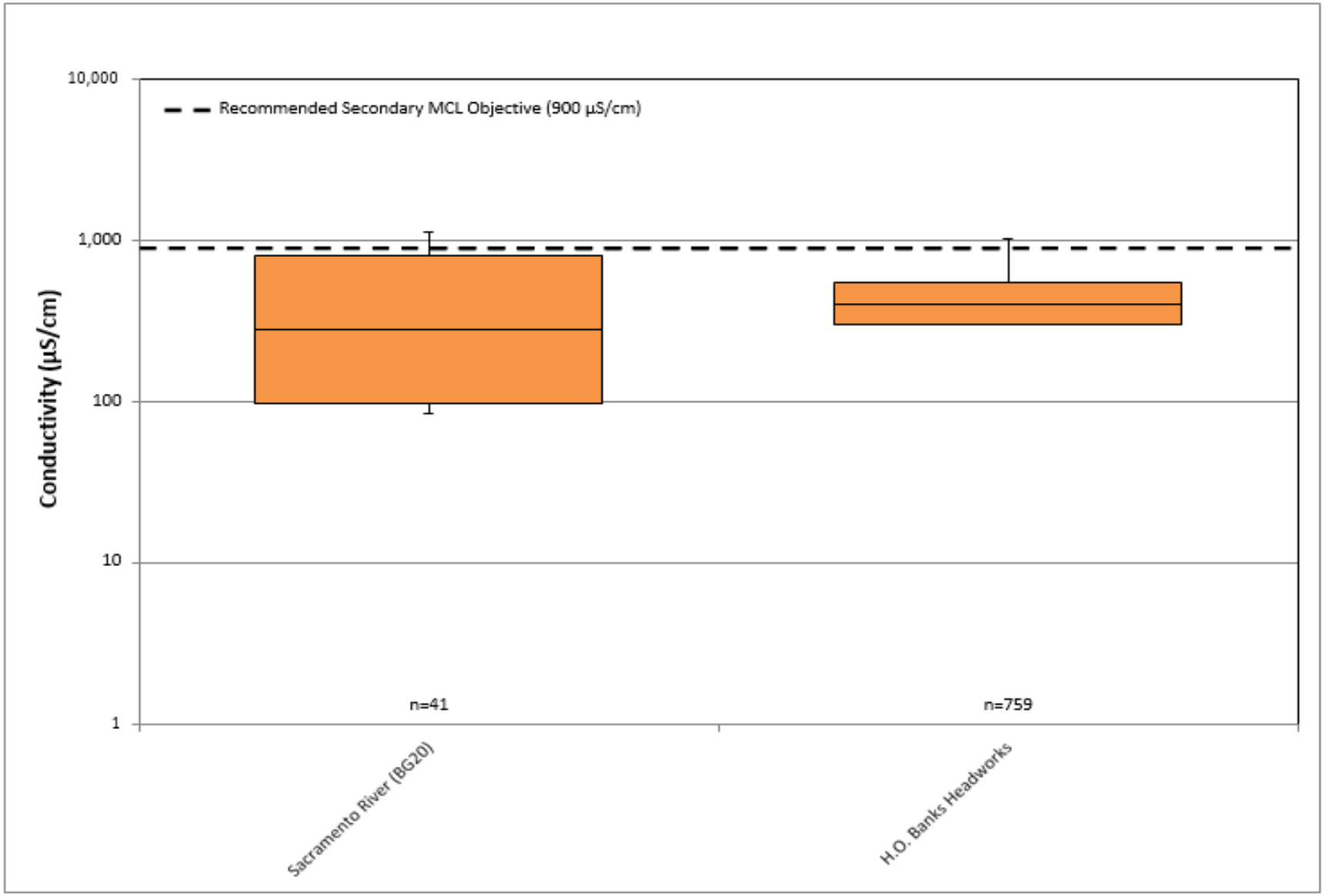


Figure A - 28. Delta Region, Nitrate as N Observations

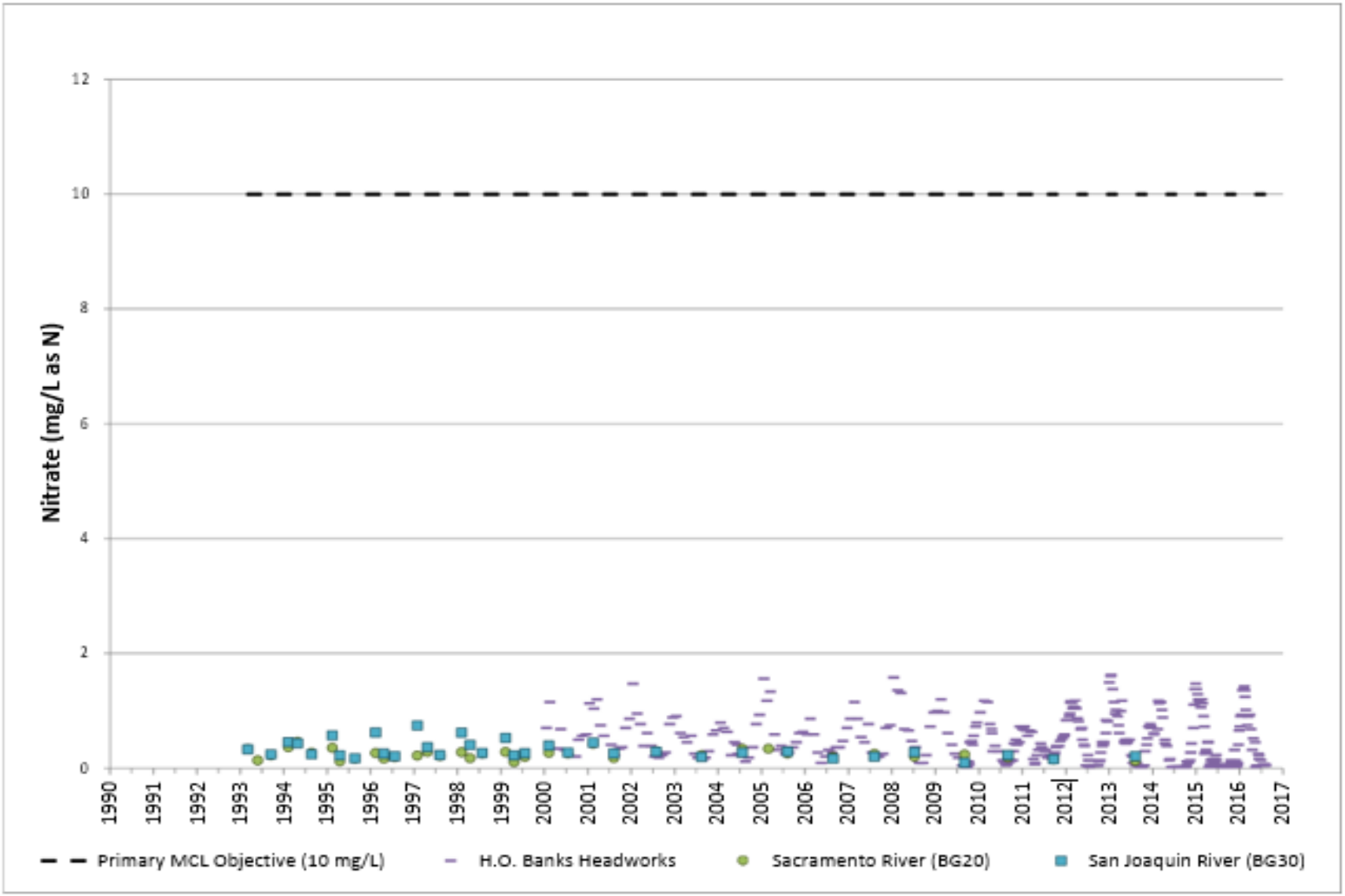


Figure A - 29. Delta Region, Median Nitrate as N Values

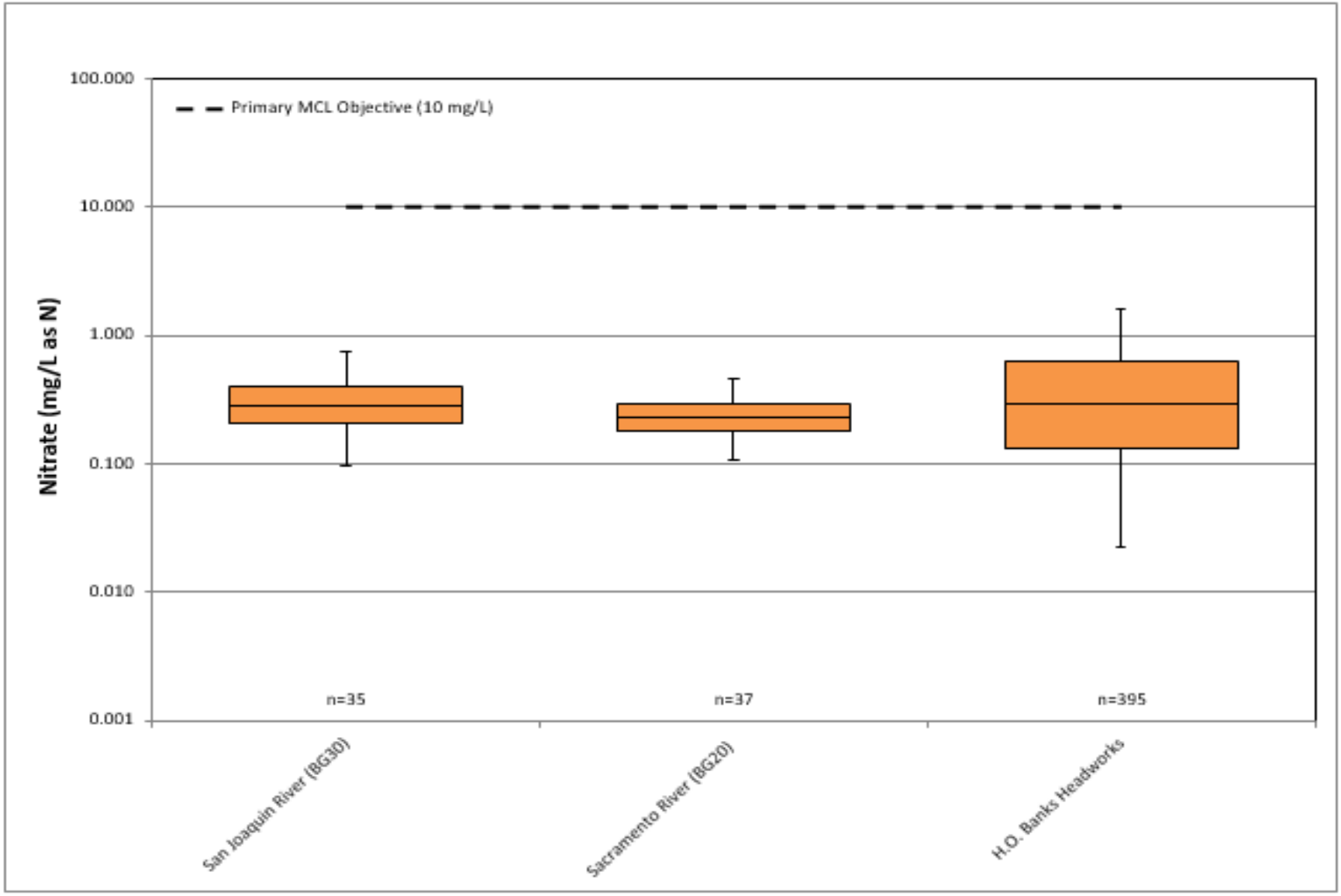


Figure A - 30. Delta Region, Aluminum Observations

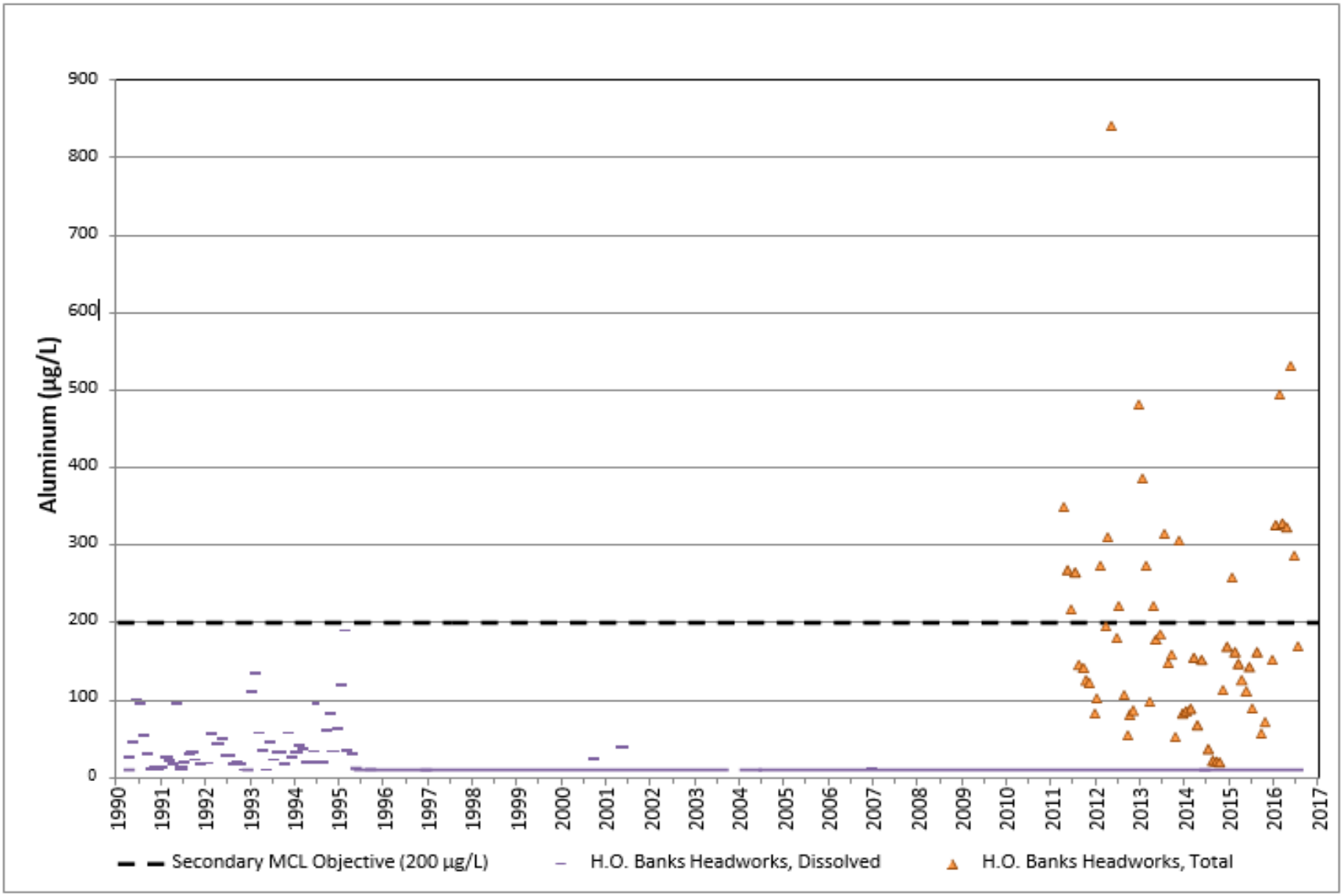


Figure A - 31. Delta Region, Median Aluminum (dissolved and total) Values

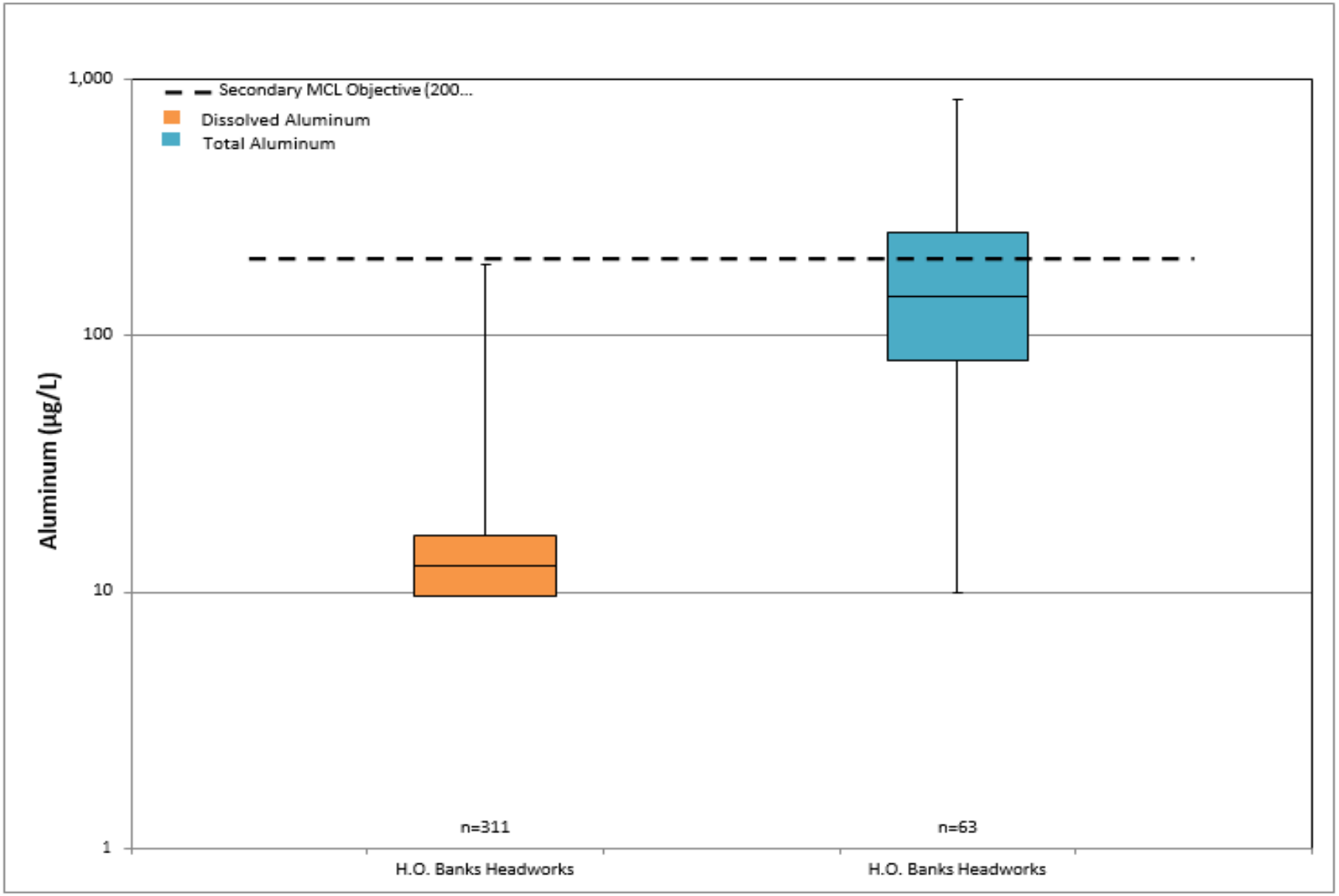


Figure A - 32. Delta Region, Iron Observations

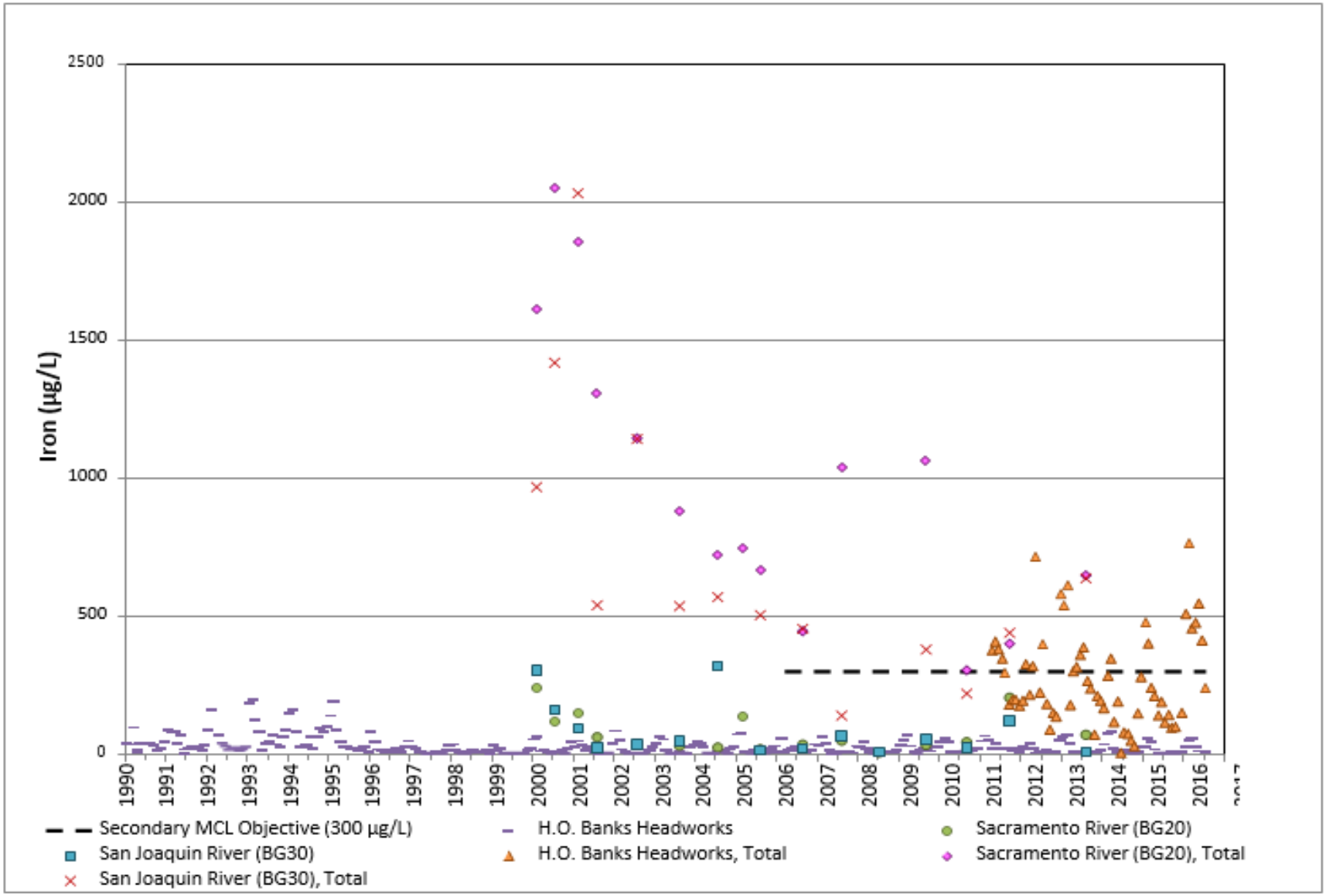


Figure A - 33. Delta Region, Median Iron (dissolved and total) Values

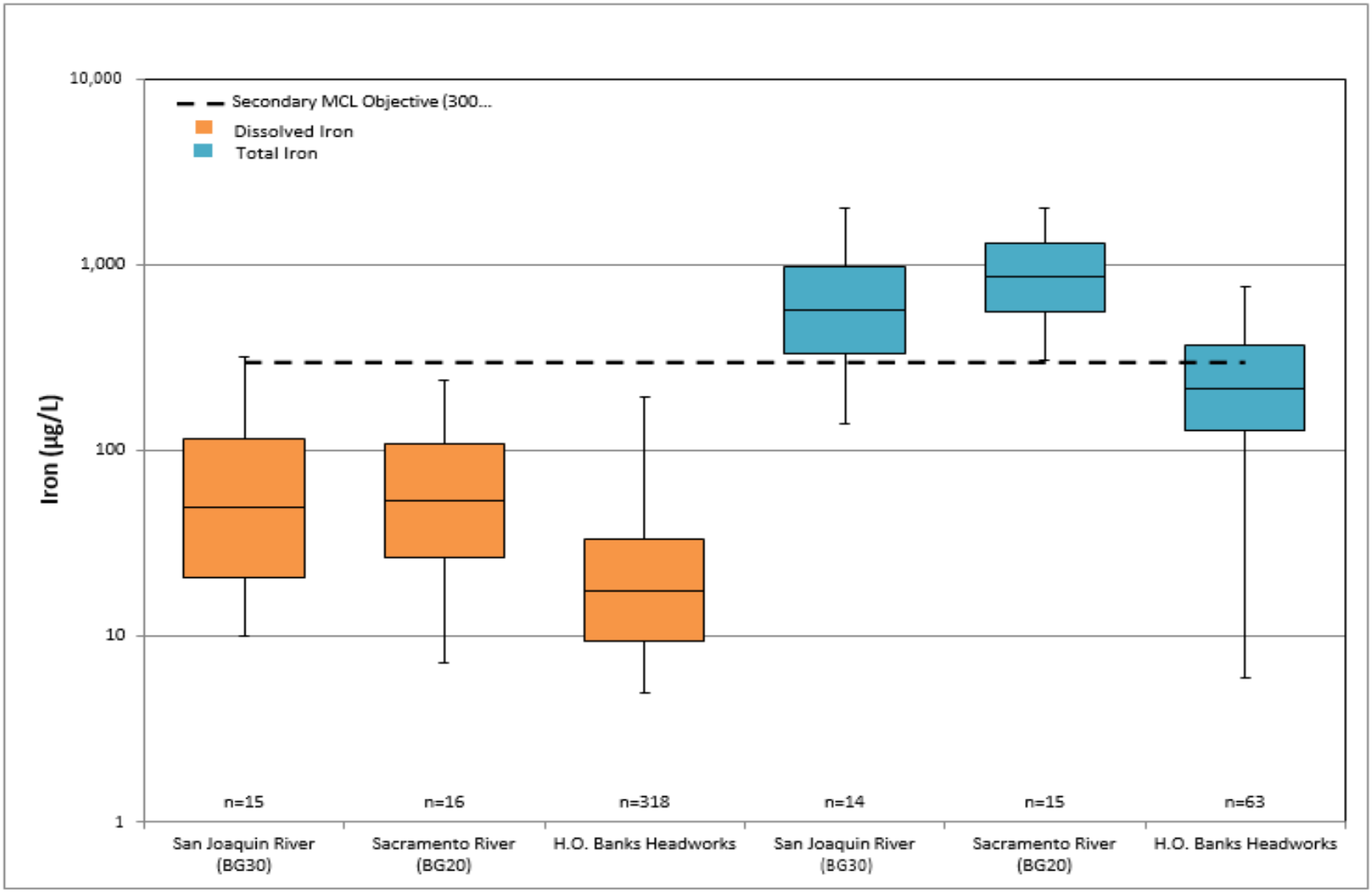


Figure A - 34. Delta Region, Manganese Observations

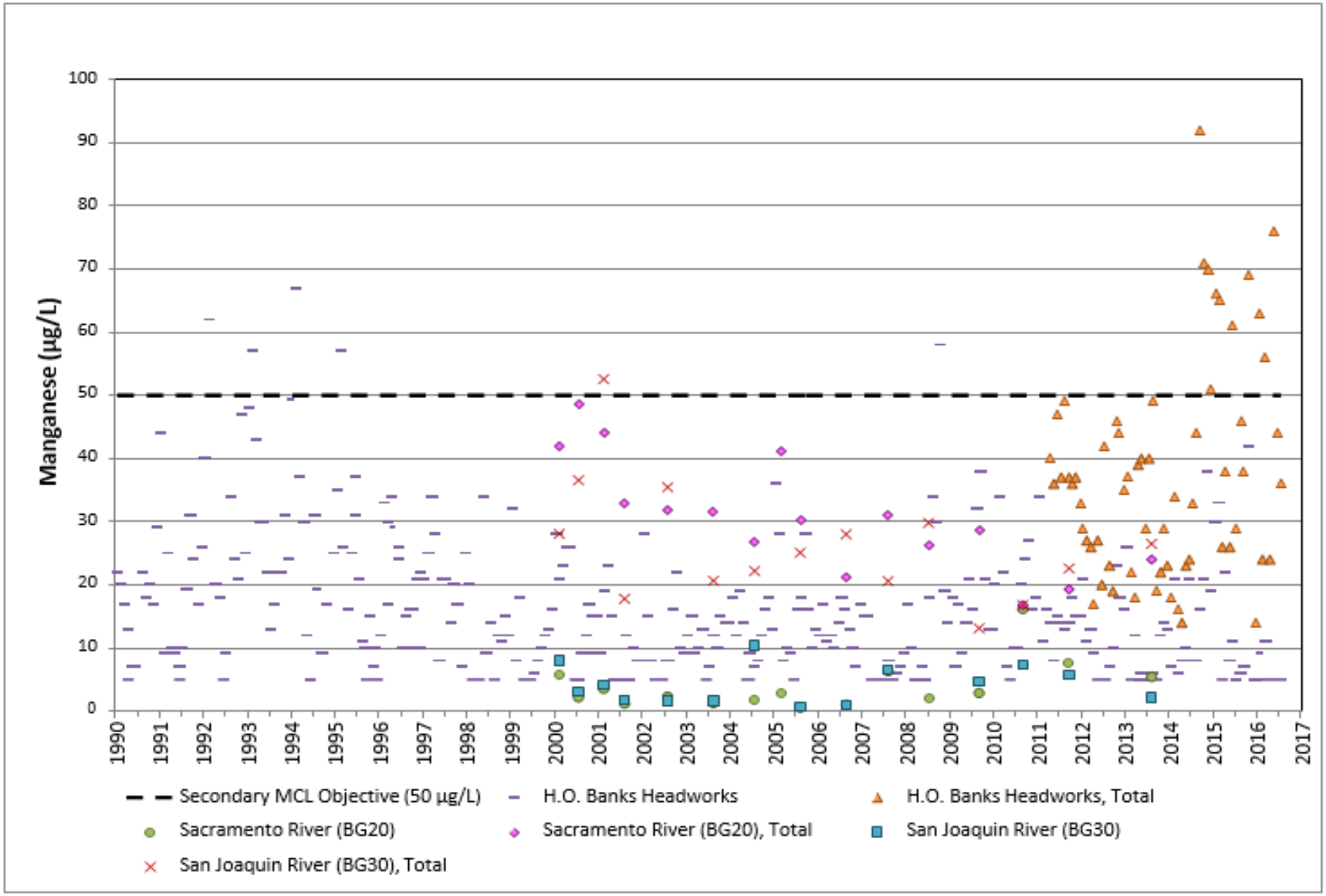


Figure A - 35. Delta Region, Median Manganese (dissolved and total) Values

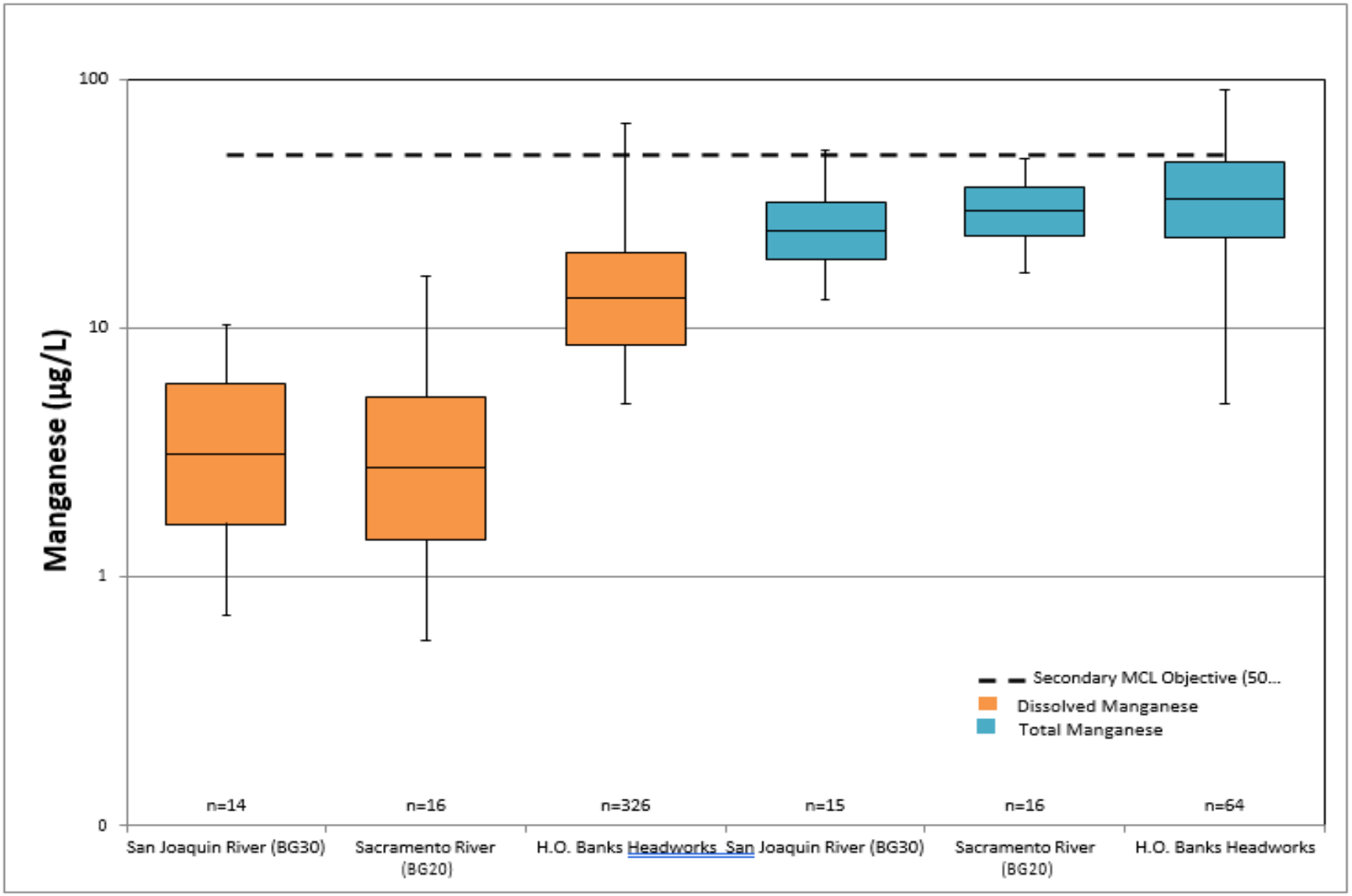


Figure A - 36. Tulare Lake Hydrologic Region, Conductivity Observations in Tulare Lake Tributaries

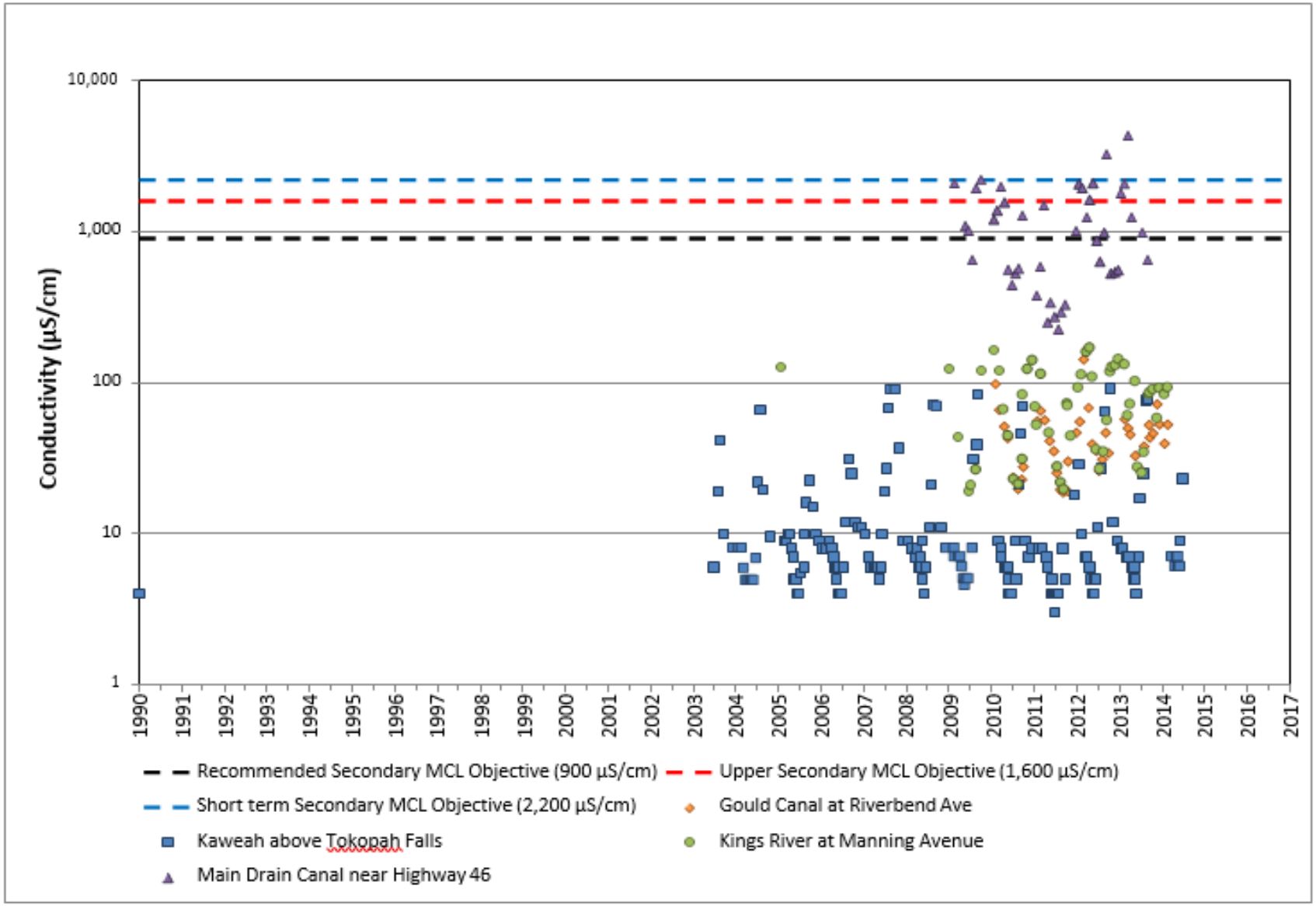


Figure A - 37. Tulare Lake Hydrologic Region, Median Conductivity Values

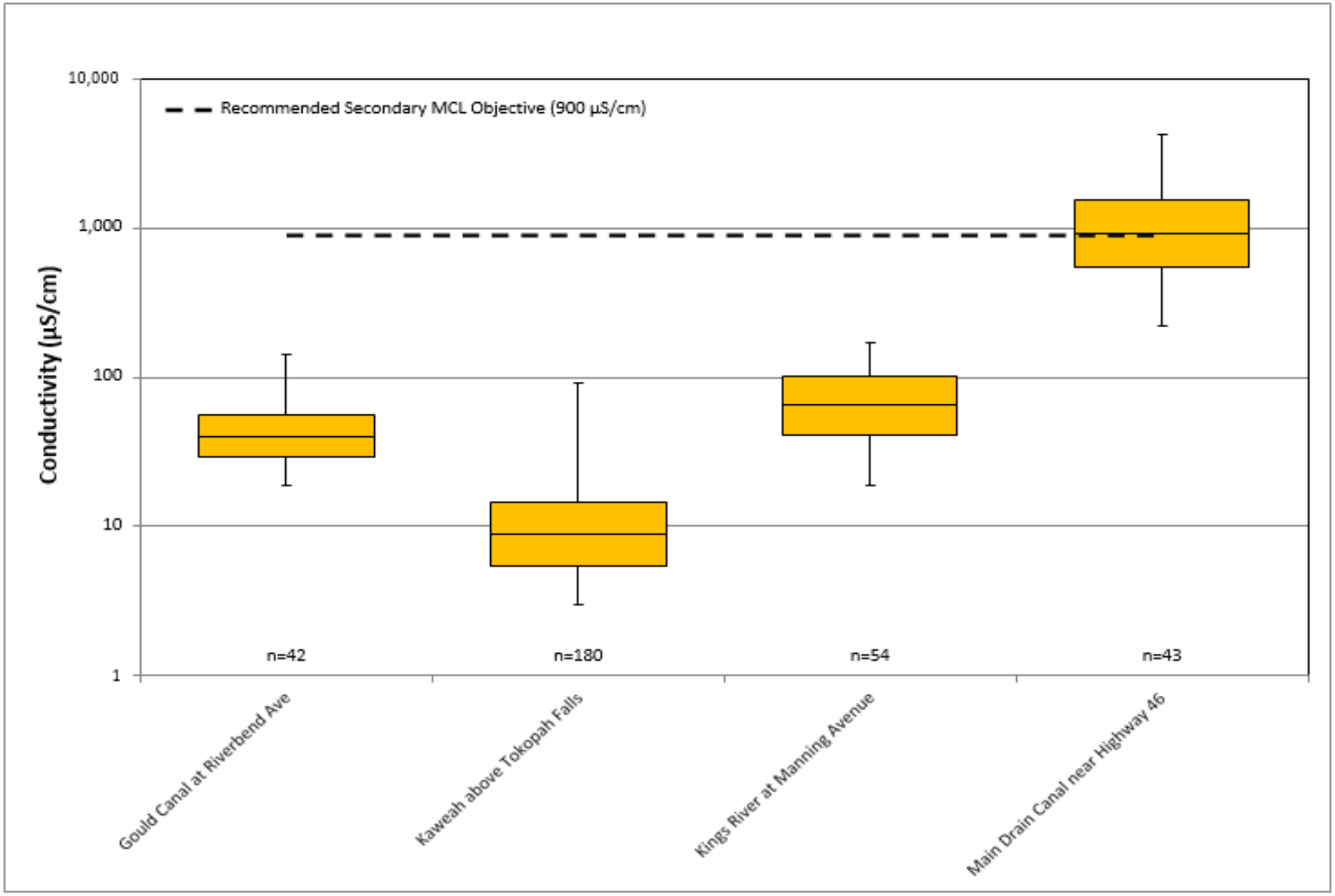


Figure A - 38. Tulare Lake Hydrologic Region, Nitrate as N Observations in Tulare Lake Tributaries

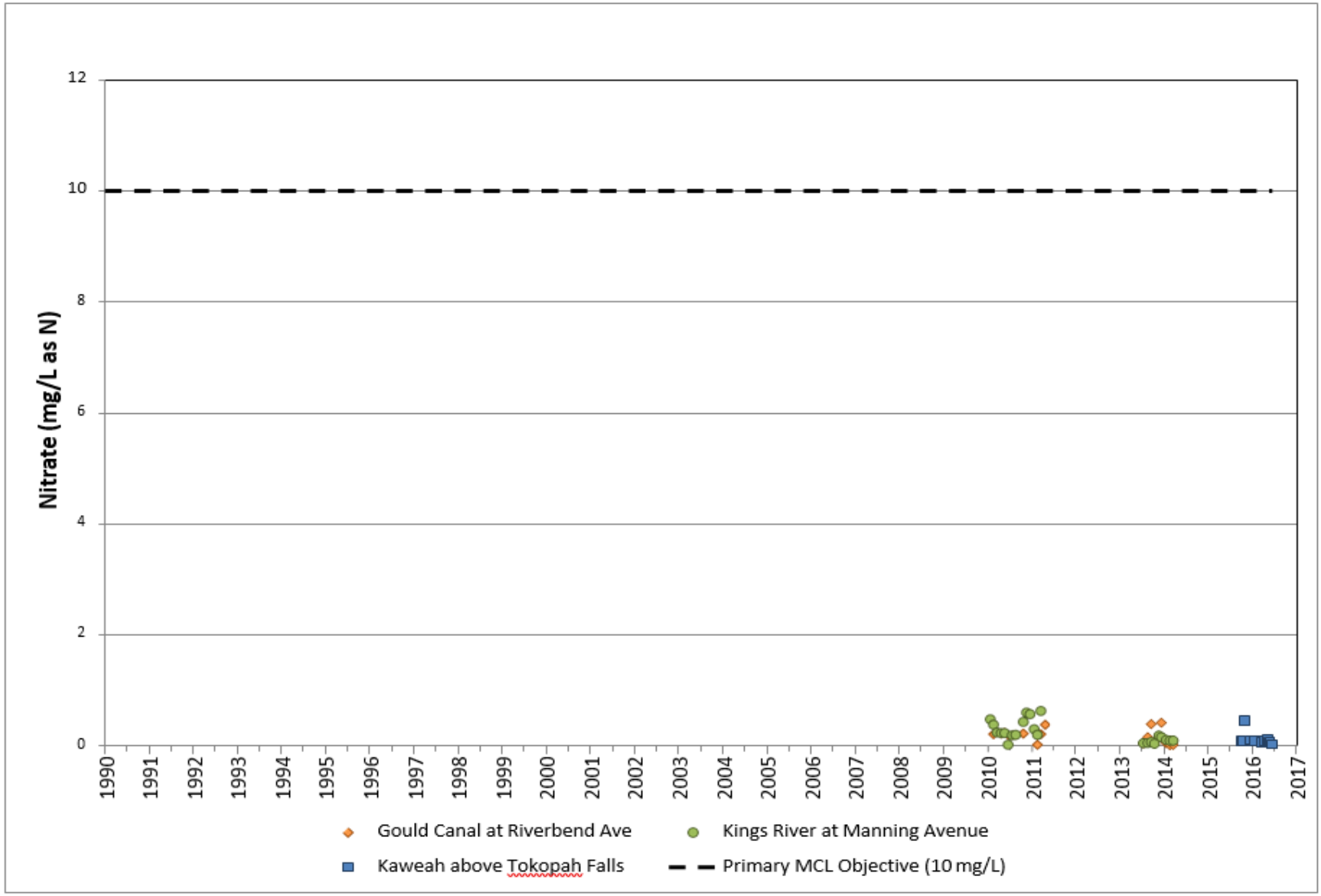
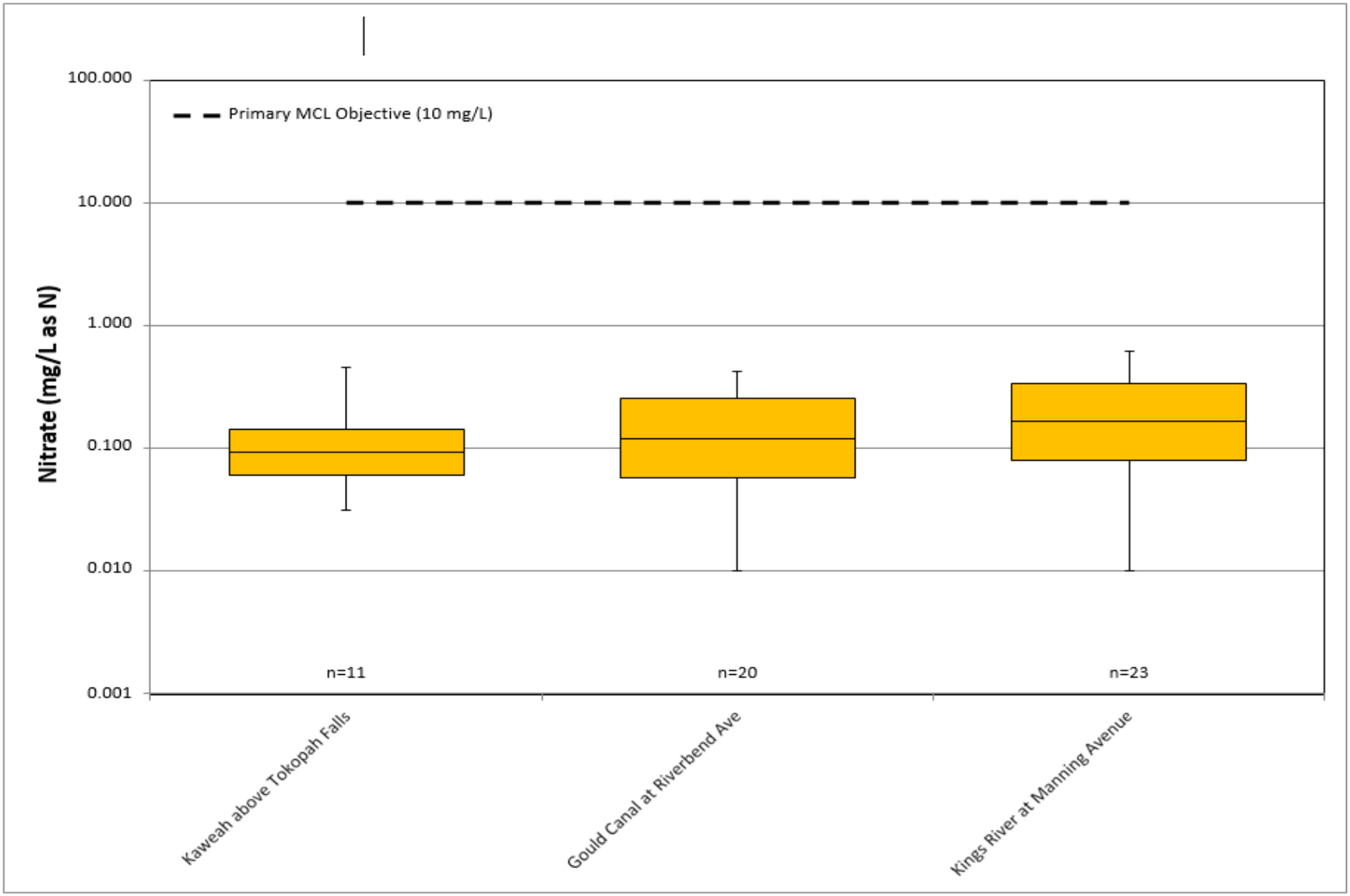


Figure A - 39. Tulare Lake Hydrologic Region, Median Nitrate as N Values



APPENDIX B

Summary of Groundwater Quality for the Central Valley

Content:

- **Groundwater Basins/Sub-basins in the Central Valley Floor**
  - **Figure B – 1** DWR Bulletin 118 (2003) Groundwater Basins/Sub-basins in the Central Valley Floor

- **Final Assessment Water Quality Data**
  - **Tables B – 1** and **B – 2** contain average and median Nitrate and TDS concentration for wells defined in the Upper or Lower Zones in the Central Valley floor groundwater basin/sub-basins
  - **Tables B – 3** and **B – 4** contain average and median Nitrate and TDS concentration for wells in groundwater basins/sub-basins outside the Central Valley floor
  - **Table B – 5** contains aggregate (volume-weighted) ambient concentrations of Nitrate and TDS in the Lower, Upper, and Production Zones in Central Valley floor groundwater basins/sub-basins
  - **Figures B – 2** and **B – 3** illustrates ambient conditions for Nitrate in the Upper and Production Zones of groundwater basin/sub-basins in the Central Valley floor, respectively.
  - **Figures B – 4** and **B – 5** illustrates ambient conditions for TDS in the Upper and Production Zones of groundwater basins/sub-basins in the Central Valley floor, respectively.
  - **Tables B – 6 and B – 7** contain Region 5: DWR Bulletin 118 (2003) groundwater basins/sub-basins Nitrate and TDS concentration statistics, respectively.
  - **Table B – 8** contains Region 5: DWR Bulletin 118 groundwater basins/sub-basins wells with Nitrate results and statistics for wells with or without construction information.
  - **Tables B – 9 and B – 10** contain YOLO Sub-basin (DWR Code: 5-21.67) TDS Data
  - **Tables B – 11 and B – 12** contain YOLO Sub-basin (DWR Code: 5-21.67) Nitrate Data
  - **Figures B – 6 and B – 7** illustrates Average TDS Concentration for Wells in the Upper Zone and Production Zone of the YOLO Sub-basin from 2000-2016, respectively.
  - **Figures B – 8 and B – 9** illustrates Average Nitrate Concentration for Wells in the Upper Zone and Production Zone of the YOLO Sub-basin from 2000-2016, respectively.

- **Assimilative Capacity Water Quality Data**
  - **Table B - 13** contains estimated assimilative capacity for Nitrate and TDS in the Lower, Upper, and Production Zones in Central Valley groundwater basins/sub-basins
  - **Figures B - 10** and **B - 11** illustrates the estimated assimilative capacity for Nitrate in the Upper Zone and Production Zone of Central Valley floor groundwater basins/sub-basins, respectively
  - **Figures B - 12** and **B - 13** illustrates the estimated assimilative

capacity for TDS in the Upper Zone and Production Zone of Central Valley floor groundwater basins/sub-basins, respectively

- **Initial Analysis Zones Water Quality Data**
  - **Tables B – 14** through **B – 21** contain ambient Nitrate and TDS concentrations and trends in the Northern Central Valley, Middle Central Valley, and Southern Central Valley Initial Analysis Zones
  - **Tables B – 22** through **B – 27** contain Nitrate and TDS concentration statistics in the Northern Central Valley, Middle Central Valley, and Southern Central Valley Initial Analysis Zones
  - **Table A – 28** contains aggregate (volume-weighted) ambient concentrations of Nitrate and TDS in the Northern Central Valley, Middle Central Valley, and Southern Central Valley Initial Analysis Zones
  - **Figures B – 15** through **B – 26** illustrates average Nitrate and TDS mass and the starting, net change, and final Nitrate and TDS mass in the Northern Central Valley, Middle Central Valley, and Southern Central Valley Initial Analysis Zones

Data and detailed analyses utilized in the development of tables and figures can be found in the final CV-SALTS Salt and Nitrate Management Plan (CV-SALTS SNMP 2016) at: https://www.cvsalinity.org/docs/central-valley-snmp/final-snmp.html

Figure B - 1. DWR Bulletin 118 Groundwater Basins/Sub-basins in the Central Valley Floor

Table B - 1. Average and Median Nitrate Concentration Statistics for Wells Defined in Upper or Lower Zones in Central Valley Floor Groundwater Basins/Sub-basins[1]

DWR Bulletin 118 Groundwater Basin		Aquifer Zone	Number of Wells	Average (mg/L as N)	Median (mg/L as N)
Northern Central Valley	5-6.01	Upper Zone	7	2.17	0.92
		Lower Zone	80	1.10	0.81
	5-6.02	Lower Zone	2	4.97	4.97
	5-6.03	Upper Zone	115	0.83	0.28
		Lower Zone	67	1.09	1.01
	5-6.04	Upper Zone	45	0.66	0.23
		Lower Zone	32	1.76	1.32
	5-6.05	Upper Zone	3	0.65	0.64
		Lower Zone	6	1.87	1.37
	5-6.06	Lower Zone	4	0.94	0.97
	5-21.50	Upper Zone	78	3.42	0.94
		Lower Zone	164	1.35	0.92
	5-21.51	Upper Zone	181	2.25	0.66
		Lower Zone	49	3.37	2.22
	5-21.52	Upper Zone	279	3.53	0.90
		Lower Zone	203	3.10	1.72
	5-21.53	Lower Zone	36	2.98	2.34
	5-21.54	Upper Zone	6	2.25	2.48
		Lower Zone	22	3.26	3.28
	5-21.55	Upper Zone	2	2.87	2.87
		Lower Zone	45	1.92	1.74
	5-21.56	Lower Zone	60	2.18	1.99
	5-21.57	Upper Zone	30	3.76	3.30
		Lower Zone	97	3.12	1.92
	5-21.58	Upper Zone	41	3.42	0.32
		Lower Zone	63	1.85	0.76
	5-21.59	Upper Zone	96	1.69	0.43
		Lower Zone	49	2.55	1.52
	5-21.60	Upper Zone	66	2.08	0.37
		Lower Zone	21	2.23	0.94
	5-21.61	Upper Zone	79	4.22	2.61
		Lower Zone	66	2.05	0.43
	5-21.62	Upper Zone	66	7.78	0.23
		Lower Zone	73	2.99	0.87
	5-21.64	Upper Zone	236	13.83	1.32
		Lower Zone	252	1.56	1.28
	5-21.67	Upper Zone	431	36.78	1.90
		Lower Zone	120	3.50	3.45
	5-21.68	Lower Zone	3	6.87	7.55
Middle Central Valley	2-3	Upper Zone	5	3.18	0.41
		Lower Zone	16	3.67	2.24
	2-4	Lower Zone	4	1.03	0.94

Table B - 1. Average and Median Nitrate Concentration Statistics for Wells Defined in Upper or Lower Zones in Central Valley Floor Groundwater Basins/Sub-basins[1]

DWR Bulletin 118 Groundwater Basin		Aquifer Zone	Number of Wells	Average (mg/L as N)	Median (mg/L as N)
Middle Central Valley	5-21.65	Upper Zone	440	3.35	0.68
		Lower Zone	213	2.06	1.54
	5-21.66	Upper Zone	197	14.16	2.66
		Lower Zone	130	2.45	0.88
	5-22.01	Upper Zone	1012	22.43	3.12
		Lower Zone	589	5.28	2.71
	5-22.02	Upper Zone	440	9.58	5.20
		Lower Zone	109	4.51	3.31
	5-22.03	Upper Zone	925	17.87	11.95
		Lower Zone	126	7.86	3.67
	5-22.04	Upper Zone	355	11.30	5.20
		Lower Zone	108	4.58	3.40
	5-22.05	Upper Zone	114	9.78	7.33
		Lower Zone	14	7.73	4.43
	5-22.06	Upper Zone	44	8.41	6.79
		Lower Zone	165	4.02	2.50
	5-22.07	Upper Zone	478	13.67	7.07
		Lower Zone	109	4.71	2.22
	5-22.15	Upper Zone	331	7.43	2.64
		Lower Zone	120	2.16	0.53
	5-22.16	Upper Zone	106	3.85	2.63
		Lower Zone	163	2.74	1.60
Southern Central Valley	5-22.08	Upper Zone	390	11.24	6.24
		Lower Zone	796	6.29	3.56
	5-22.09	Upper Zone	4	0.91	0.51
		Lower Zone	22	5.58	0.28
	5-22.10	Upper Zone	9	1.15	0.23
		Lower Zone	2	0.18	0.18
	5-22.11	Upper Zone	329	18.20	12.20
		Lower Zone	304	13.75	9.93
	5-22.12	Upper Zone	140	10.32	4.13
		Lower Zone	106	8.58	2.03
	5-22.13	Upper Zone	176	9.92	7.15
		Lower Zone	191	10.24	6.80
	5-22.14	Upper Zone	198	9.79	1.12
		Lower Zone	383	2.93	1.42

[1] Nitrate statistics based on arithmetic averages of well data; no spatial averaging was conducted.

Table B - 2. Average and Median TDS Concentration Statistics[1] for Wells Defined in Upper or Lower Zones in Central Valley Floor Groundwater Basins/Sub-basins

DWR Bulletin 118 Groundwater Basin		Aquifer Zone	Number of Wells	Average (mg/L)	Median (mg/L)
Northern Central Valley	5-6.01	Upper Zone	7	164	134
		Lower Zone	74	199	184
	5-6.02	Lower Zone	2	215	215
	5-6.03	Upper Zone	22	169	172
		Lower Zone	45	143	139
	5-6.04	Upper Zone	11	667	172
		Lower Zone	21	169	161
	5-6.05	Lower Zone	4	176	175
	5-6.06	Lower Zone	4	282	221
	5-21.50	Upper Zone	24	627	229
		Lower Zone	135	217	183
	5-21.51	Upper Zone	112	343	300
		Lower Zone	25	226	214
	5-21.52	Upper Zone	145	516	370
		Lower Zone	139	461	361
	5-21.53	Lower Zone	32	333	300
	5-21.54	Upper Zone	6	283	269
		Lower Zone	12	271	266
	5-21.55	Upper Zone	2	323	323
		Lower Zone	37	211	203
	5-21.56	Lower Zone	50	206	206
	5-21.57	Upper Zone	17	216	201
		Lower Zone	59	206	189
	5-21.58	Upper Zone	33	473	403
		Lower Zone	51	238	199
	5-21.59	Upper Zone	64	339	242
		Lower Zone	46	281	223
	5-21.60	Upper Zone	41	351	320
		Lower Zone	18	246	216
	5-21.61	Upper Zone	74	529	330
		Lower Zone	57	339	272
	5-21.62	Upper Zone	50	849	521
		Lower Zone	54	766	519
	5-21.64	Upper Zone	177	957	410
		Lower Zone	239	256	234
	5-21.67	Upper Zone	194	1,488	1,050
		Lower Zone	87	539	543
Middle Central Valley	2-3	Upper Zone	4	1,062	717
		Lower Zone	9	555	634
	2-4	Lower Zone	2	722	722
	5-21.65	Upper Zone	175	646	405
		Lower Zone	149	211	172

Table B - 2. Average and Median TDS Concentration Statistics[1] for Wells Defined in Upper or Lower Zones in Central Valley Floor Groundwater Basins/Sub-basins

DWR Bulletin 118 Groundwater Basin		Aquifer Zone	Number of Wells	Average (mg/L)	Median (mg/L)
Middle Central Valley	5-21.66	Upper Zone	169	1,868	765
		Lower Zone	94	508	425
	5-22.01	Upper Zone	451	2,418	740
		Lower Zone	232	304	249
	5-22.02	Upper Zone	186	602	489
		Lower Zone	79	273	206
	5-22.03	Upper Zone	117	506	488
		Lower Zone	53	285	225
	5-22.04	Upper Zone	80	498	392
		Lower Zone	62	289	211
	5-22.05	Upper Zone	21	625	623
		Lower Zone	5	370	208
	5-22.06	Upper Zone	22	500	518
		Lower Zone	126	234	194
	5-22.07	Upper Zone	241	1,234	1,080
		Lower Zone	76	922	809
	5-22.15	Upper Zone	288	1,714	1,260
		Lower Zone	86	801	720
	5-22.16	Upper Zone	35	380	167
		Lower Zone	53	218	166
Southern Central Valley	5-22.08	Upper Zone	260	637	504
		Lower Zone	654	267	214
	5-22.09	Upper Zone	2	1,305	1,305
		Lower Zone	19	1,058	894
	5-22.10	Upper Zone	9	4,056	3,200
		Lower Zone	2	934	934
	5-22.11	Upper Zone	124	936	672
		Lower Zone	141	365	306
	5-22.12	Upper Zone	57	4,006	1,196
		Lower Zone	28	423	280
	5-22.13	Upper Zone	86	708	500
		Lower Zone	90	330	302
	5-22.14	Upper Zone	171	2,418	710
		Lower Zone	341	388	259

[1] Nitrate statistics based on arithmetic averages of well data; no spatial averaging was conducted.

Table B - 3. Average and Median Nitrate Concentration Statistics[1] for Wells Groundwater Basins/Sub-basins Outside the Central Valley Floor

Area	DWR Bulletin 118 Groundwater Basin	Number of Wells	Average (mg/L as N))	Median (mg/L as N))
Northern Central Valley	**5-2.01**	43	0.76	0.50
	5-2.02	19	0.60	0.39
	5-4	29	0.56	0.23
	5-5	8	1.08	0.23
	5-7	12	0.25	0.21
	5-9	31	0.32	0.23
	5-10	32	0.34	0.24
	5-11	12	0.67	0.42
	5-12.01	44	0.54	0.23
	5-12.02	6	0.95	0.33
	5-13	15	1.09	0.48
	5-14	46	0.87	0.23
	5-15	26	1.35	0.23
	5-16	5	0.23	0.23
	5-17	14	1.33	0.70
	5-18	5	1.76	1.94
	5-19	13	0.56	0.23
	5-30	7	1.58	0.34
	5-35	9	1.49	0.59
	5-46	2	0.23	0.23
	5-50	4	0.88	0.17
	5-56	2	0.38	0.38
	5-60	29	0.69	0.25
	5-62	5	0.34	0.24
	5-63	4	0.18	0.18
	5-66	3	0.27	0.23
	5-68	2	0.23	0.23
	5-87	9	0.22	0.23
Middle Central Valley	**5-69**	5	0.16	0.23
Southern Central Valley	**5-25**	115	3.16	1.65
	5-27	35	4.37	3.92
	5-28	51	6.10	5.48
	5-29	8	3.47	3.91
	5-80	7	2.74	3.88
	5-82	9	3.44	2.77
	5-83	11	3.00	2.28
	5-84	19	1.28	0.48
	5-85	10	0.85	0.75

[1] Nitrate statistics based on arithmetic averages of well data; no spatial averaging was conducted.

Table B - 4. Average and Median TDS Concentration Statistics[1] for Wells Groundwater Basins/Sub-basins Outside the Central Valley Floor

Area	DWR Bulletin 118 Groundwater Basin	Number of Wells	Average (mg/L)	Median (mg/L)
Northern Central Valley	5-2.01	14	310	250
	5-2.02	12	252	234
	5-4	8	234	193
	5-5	4	184	153
	5-7	11	93	89
	5-9	17	129	132
	5-10	20	107	80
	5-11	6	178	188
	5-12.01	25	254	170
	5-13	9	207	163
	5-14	7	165	139
	5-15	22	394	365
	5-16	4	621	665
	5-17	4	327	311
	5-18	5	299	318
	5-19	40	1,084	384
	5-30	6	408	442
	5-35	3	42	39
	5-50	3	112	100
	5-60	12	140	155
	5-63	4	258	256
	5-66	4	280	271
	5-68	2	568	568
	5-87	3	167	175
Middle Central Valley	5-69	5	33	32
Southern Central Valley	5-25	106	325	326
	5-27	39	381	356
	5-28	50	393	330
	5-29	6	577	570
	5-80	8	325	346
	5-82	8	664	705
	5-83	9	632	675
	5-84	13	470	410
	5-85	9	528	552

[1] Nitrate statistics based on arithmetic averages of well data; no spatial averaging was conducted.

Table B - 5. Volume-Weighted Ambient Concentrations of Nitrate and TDS in the Lower, Upper, and Production Zones Central Valley Floor Groundwater Basins/Sub-basins.

Area	DWR B118 Groundwater Basin Code	Nitrate (mg/L as N)			TDS (mg/L)		
		Lower Zone*	Upper Zone	Production Zone	Lower Zone*	Upper Zone	Production Zone
Northern Central Valley	**5-6.01**	1.05	1.04	1.05	178	164	172
	5-6.02	1.36	0.95	1.16	202	149	176
	5-6.03	1.21	1.03	1.12	147	190	168
	5-6.04	1.45	0.99	1.22	159	258	198
	5-6.05	1.76	0.92	1.28	160	148	154
	5-6.06	0.89	0.85	0.87	192	162	176
	5-21.50	1.88	1.37	1.67	238	238	238
	5-21.51	2.34	1.78	2.16	264	289	272
	5-21.52	2.87	3.29	3.06	472	613	533
	5-21.53	2.20	1.23	1.77	262	234	250
	5-21.54	3.06	1.92	2.66	297	361	320
	5-21.55	1.91	1.59	1.80	223	226	224
	5-21.56	1.36	2.42	1.67	181	200	186
	5-21.57	2.08	2.83	2.28	192	204	195
	5-21.58	1.38	2.62	1.80	313	403	343
	5-21.59	0.99	1.93	1.31	310	338	320
	5-21.60	2.35	2.19	2.28	295	349	317
	5-21.61	1.90	2.91	2.30	365	430	391
	5-21.62	1.15	2.37	1.67	918	992	950
	5-21.64	1.58	3.67	2.37	298	446	353
	5-21.67	3.59	12.27	7.63	523	790	647
	5-21.68	6.03	2.66	4.58	635	1069	823
Middle Central Valley	**2-3**	3.47	3.48	3.47	564	1400	900
	2-4	1.07	4.82	2.68	671	2896	1628
	5-21.65	1.55	2.13	1.78	222	343	270
	5-21.66	2.68	4.46	3.36	504	935	669
	5-22.01	3.69	6.07	4.72	293	506	385
	5-22.02	3.74	7.58	5.53	217	352	280
	5-22.03	4.63	10.97	7.74	211	439	322
	5-22.04	3.46	6.48	4.85	261	418	334
	5-22.05	6.64	8.88	8.21	540	874	774
	5-22.06	3.78	4.65	4.09	275	417	325
	5-22.07	3.32	5.84	5.01	928	1307	1184
	5-22.15	2.30	3.64	3.04	890	1255	1091
	5-22.16	1.48	2.65	1.87	227	206	220
Southern Central Valley	**5-22.08**	6.62	7.12	6.84	391	560	464
	5-22.09	2.86	1.26	1.80	1165	2038	1744
	5-22.10	0.43	2.32	1.37	846	3218	2025
	5-22.11	13.38	11.88	12.64	419	514	465
	5-22.12	1.36	5.33	3.23	740	1659	1173
	5-22.13	8.29	8.31	8.30	382	588	465
	5-22.14	3.29	5.54	3.76	561	2313	1177

* Above the Corcoran Clay where present.

Figure B - 2. Ambient Conditions for Nitrate (mg/L as N) in the Upper Zone of Groundwater Basins/Sub-basins in the Central Valley Floor

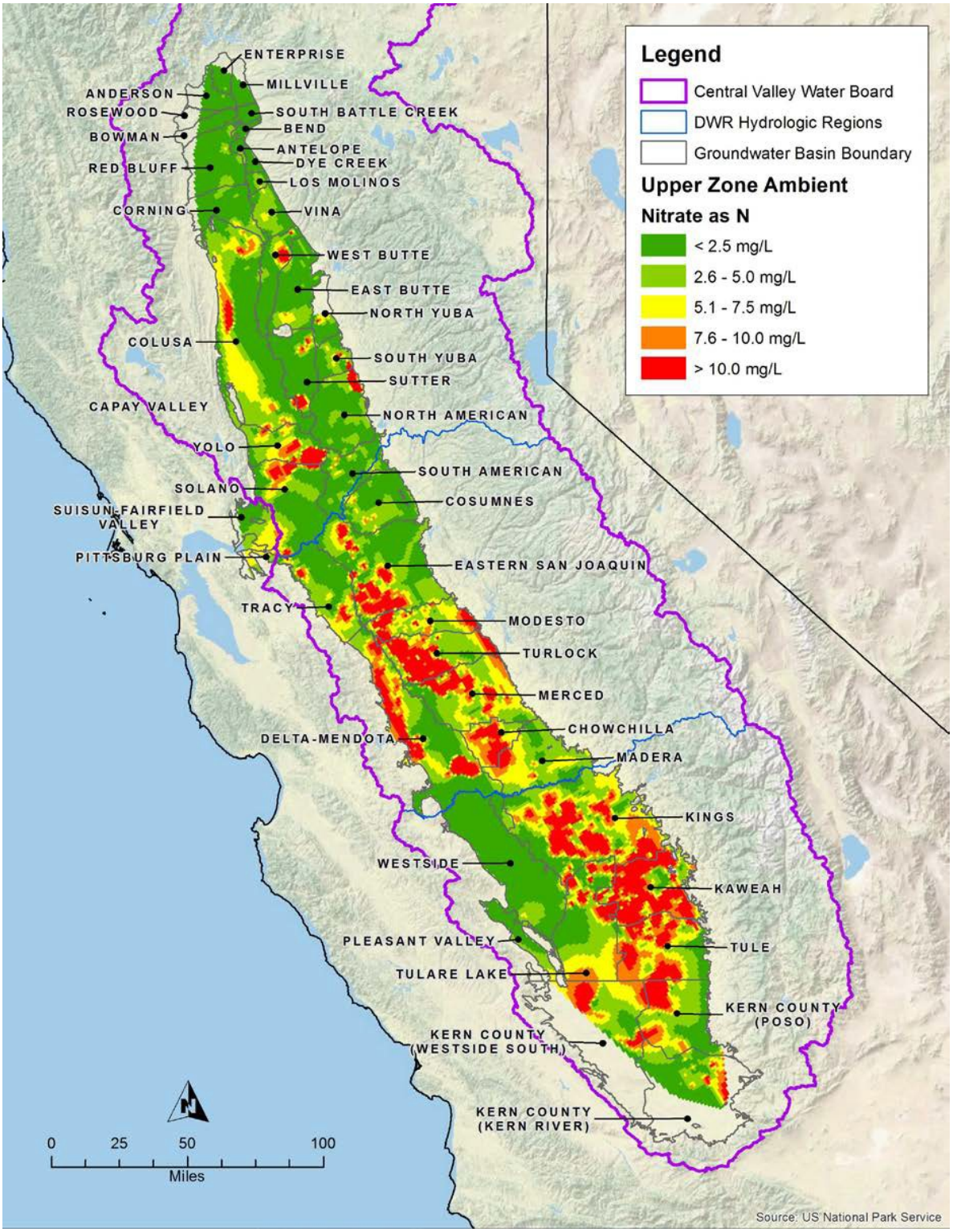


Figure B - 3. Ambient Conditions for Nitrate (mg/L as N) in the Production Zone of Groundwater Basins/Sub-basins in the Central Valley Floor (above Corcoran Clay where present)

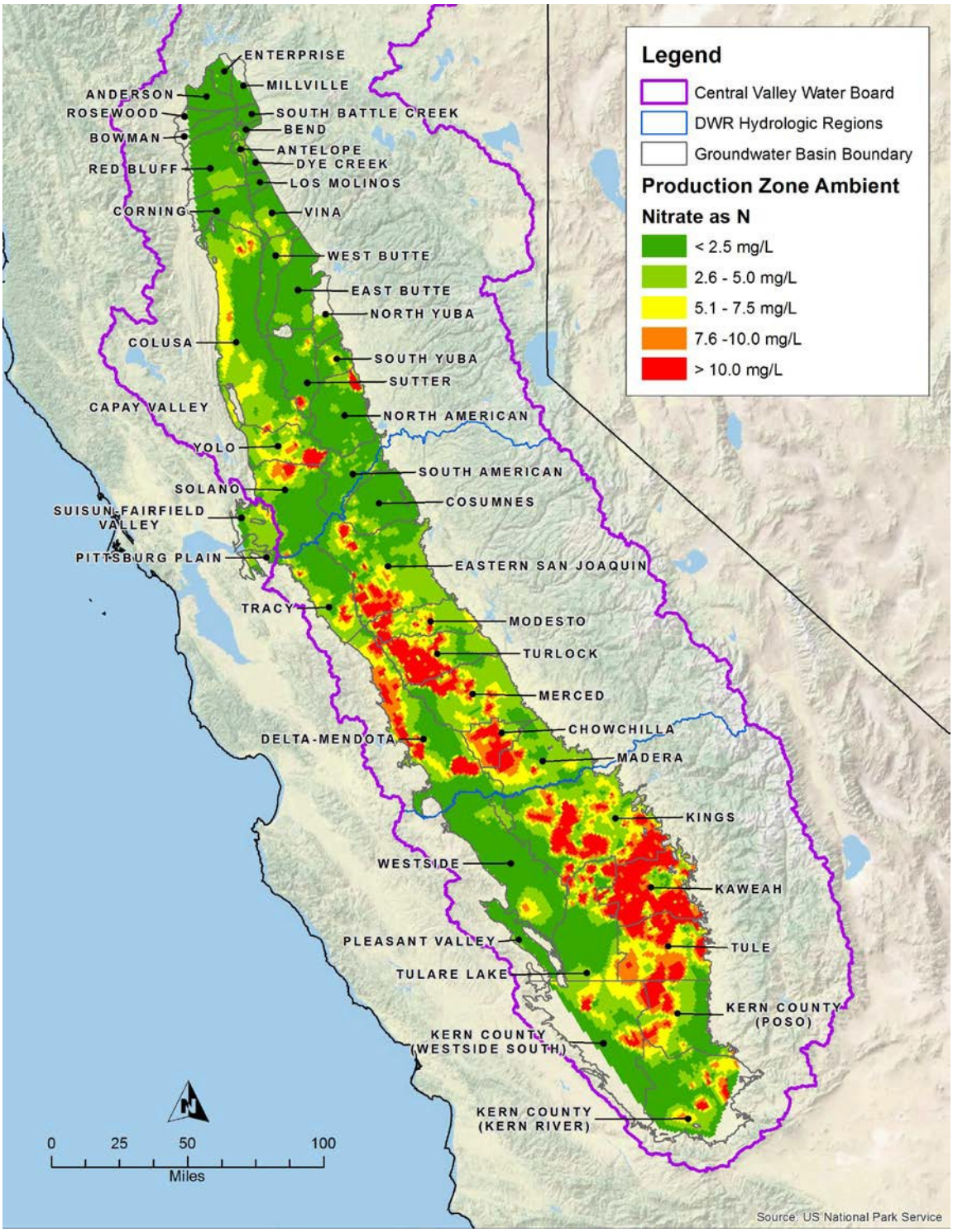


Figure B - 4. Ambient Conditions for TDS (mg/L) in the Upper Zone of Groundwater Basins/Sub-basins in the Central Valley Floor

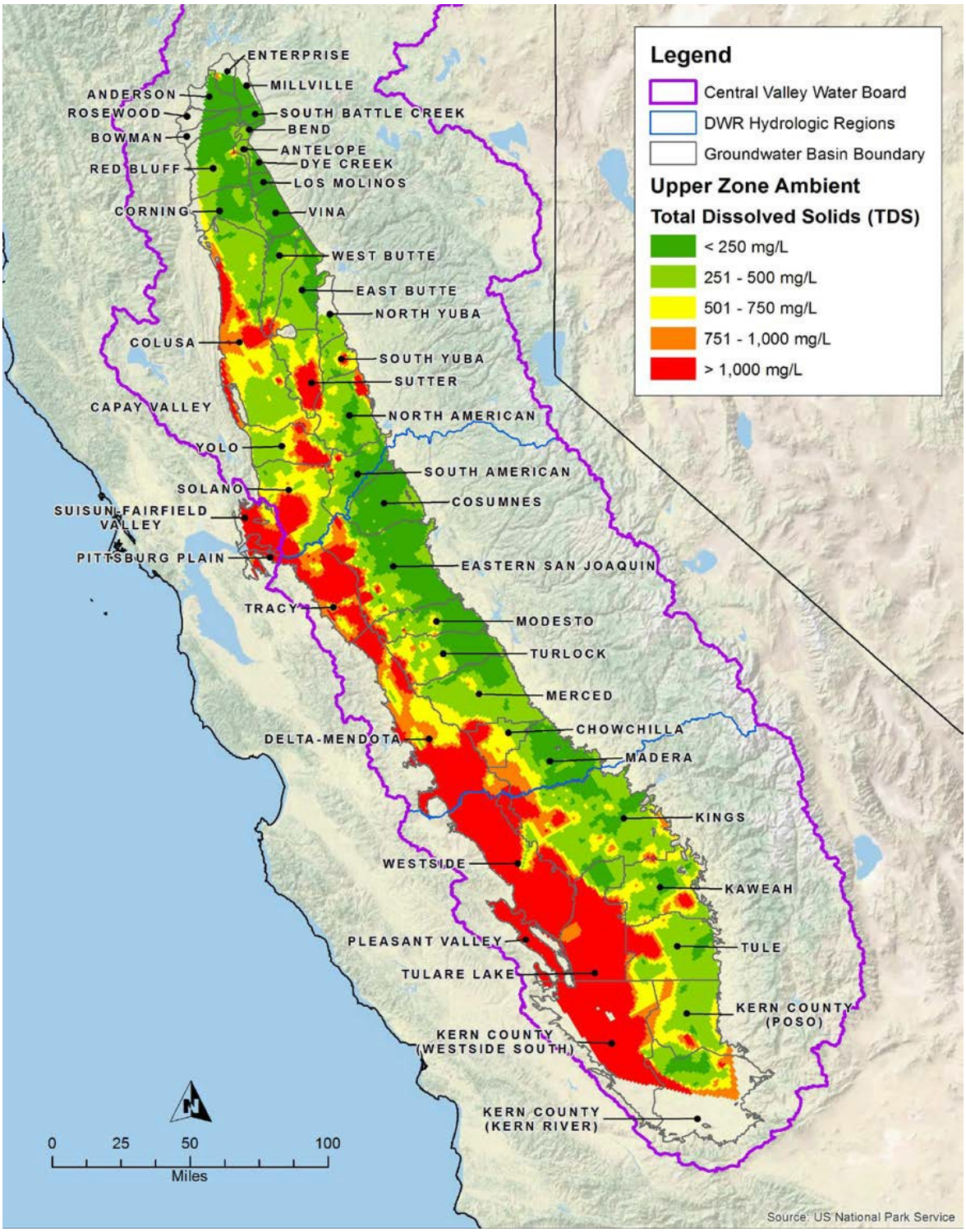


Figure B - 5. Ambient Conditions for TDS (mg/L) in the Production Zone of Groundwater Basins/Sub-basins in the Central Valley Floor (above Corcoran Clay where present)

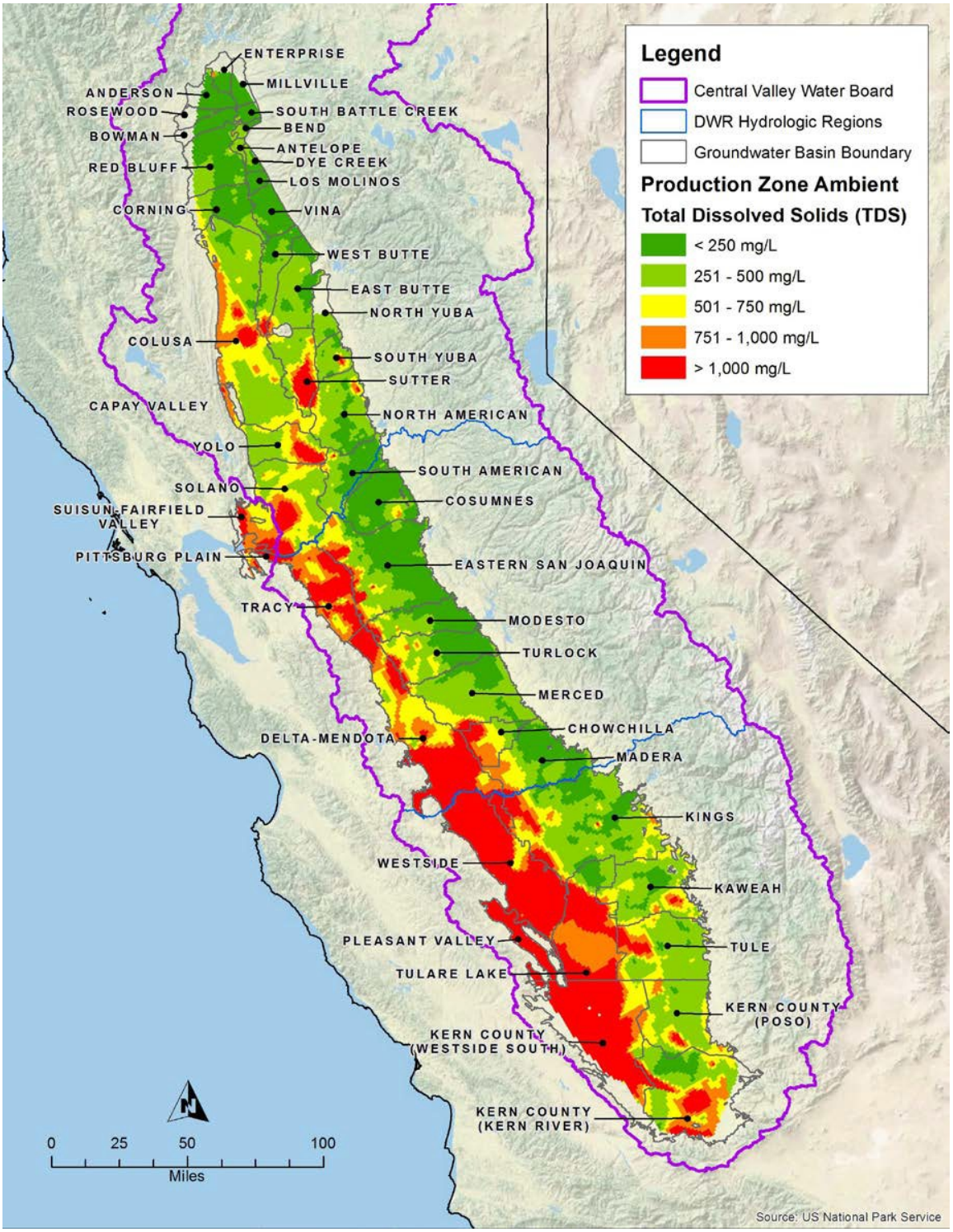


Table B - 6. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Nitrate Concentration Statistics

		Average Well Nitrate Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
2-3	Upper Zone	5	0.19	3.18	0.41	9.40
	Lower Zone	16	0.23	3.67	2.24	10.87
	Unknown	4	0.24	1.59	0.68	4.75
2-4	Lower Zone	4	0.23	1.03	0.94	2.03
	Below Production Zone	4	2.10	3.75	3.28	6.32
	Outside Valley Floor	2	1.90	2.60	2.60	3.30
5-21.50	Upper Zone	78	0.11	3.42	0.94	94.28
	Upper and Lower Zone	19	0.19	1.35	1.01	3.33
	Lower Zone	164	0.23	1.35	0.92	10.80
	Below Production Zone	5	0.23	0.63	0.62	1.23
	Unknown	11	0.23	2.56	1.64	6.62
5-21.51	Upper Zone	181	0.00	2.25	0.66	31.74
	Upper and Lower Zone	10	0.43	2.26	2.37	4.68
	Lower Zone	49	0.17	3.37	2.22	10.40
	Below Production Zone	2	0.23	0.23	0.23	0.23
	Unknown	17	0.09	3.65	2.12	12.44
5-21.52	Upper Zone	279	0.02	3.53	0.90	78.27
	Upper and Lower Zone	26	0.23	2.82	1.94	9.94
	Lower Zone	203	0.03	3.10	1.72	22.00
	Unknown	42	0.08	3.92	3.09	19.19
5-21.53	Lower Zone	36	0.23	2.98	2.34	13.55
5-21.54	Upper Zone	6	0.24	2.25	2.48	5.03
	Upper and Lower Zone	6	0.23	1.96	1.23	5.51
	Lower Zone	22	0.23	3.26	3.28	7.84
	Unknown	42	0.16	5.22	4.04	14.18
5-21.55	Upper Zone	2	0.74	2.87	2.87	4.99
	Upper and Lower Zone	2	0.67	0.75	0.75	0.83
	Lower Zone	45	0.21	1.92	1.74	5.07
5-21.56	Upper and Lower Zone	2	0.83	0.94	0.94	1.06
	Lower Zone	60	0.23	2.18	1.99	7.45
5-21.57	Upper Zone	30	0.07	3.76	3.30	20.92
	Upper and Lower Zone	17	0.20	1.67	0.96	4.65
	Lower Zone	97	0.12	3.12	1.92	20.81
	Below Production Zone	2	0.54	1.45	1.45	2.35
	Unknown	5	0.12	8.28	5.07	21.83
5-21.58	Upper Zone	41	0.04	3.42	0.32	24.40
	Upper and Lower Zone	11	0.13	1.29	1.02	3.66
	Lower Zone	63	0.04	1.85	0.76	10.27
	Unknown	21	0.03	2.85	0.29	18.61
5-21.59	Upper Zone	96	0.02	1.69	0.43	27.49
	Upper and Lower Zone	19	0.25	1.82	1.52	4.70
	Lower Zone	49	0.09	2.55	1.52	14.99
	Unknown	7	0.01	2.33	1.20	10.11
	Outside Valley Floor	3	0.23	0.81	0.82	1.39
5-21.60	Upper Zone	66	0.02	2.08	0.37	19.31
	Upper and Lower Zone	8	0.35	1.26	1.17	2.36
	Lower Zone	21	0.23	2.23	0.94	19.08
	Unknown	14	0.20	1.68	0.46	10.46
	Outside Valley Floor	28	0.23	3.33	1.79	11.26
5-21.61	Upper Zone	79	0.11	4.22	2.61	32.36
	Upper and Lower Zone	10	0.23	0.69	0.24	2.97
	Lower Zone	66	0.11	2.05	0.43	19.20
	Below Production Zone	3	0.23	0.23	0.23	0.23
	Unknown	27	0.08	1.79	0.70	8.59

Table B - 6. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Nitrate Concentration Statistics

		Average Well Nitrate Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
	Outside Valley Floor	5	0.23	5.24	6.10	8.79
5-21.62	Upper Zone	66	0.02	7.78	0.23	97.29
	Upper and Lower Zone	27	0.09	3.09	1.06	10.81
	Lower Zone	73	0.13	2.99	0.87	15.51
	Unknown	18	0.02	2.48	0.23	22.42
5-21.64	Upper Zone	236	0.02	13.83	1.32	1219.84
	Upper and Lower Zone	109	0.22	1.65	1.52	5.88
	Lower Zone	252	0.07	1.56	1.28	6.88
	Below Production Zone	4	0.23	0.99	0.23	3.27
	Unknown	19	0.17	1.38	0.84	3.69
	Outside Valley Floor	4	0.23	0.23	0.23	0.23
5-21.65	Upper Zone	440	0.07	3.35	0.68	81.32
	Upper and Lower Zone	91	0.02	1.97	1.62	7.17
	Lower Zone	213	0.07	2.06	1.54	18.10
	Below Production Zone	13	0.21	0.22	0.23	0.23
	Unknown	3	1.48	1.92	1.94	2.34
5-21.66	Upper Zone	197	0.10	14.16	2.66	218.39
	Upper and Lower Zone	25	0.22	1.68	0.57	7.91
	Lower Zone	130	0.20	2.45	0.88	17.40
	Below Production Zone	5	0.23	0.62	0.58	1.11
	Unknown	8	0.20	3.29	1.63	14.02
5-21.67	Upper Zone	431	0.06	36.78	1.90	1541.75
	Upper and Lower Zone	21	0.23	4.19	4.40	9.21
	Lower Zone	120	0.09	3.50	3.45	18.91
	Below Production Zone	8	0.23	0.46	0.26	1.11
	Unknown	11	0.23	2.36	0.25	8.52
5-21.68	Lower Zone	3	2.82	6.87	7.55	10.23
5-22.01	Upper Zone	1012	0.05	22.43	3.12	1920.68
	Upper and Lower Zone	183	0.10	2.85	2.02	40.90
	Lower Zone	589	0.05	5.28	2.71	67.30
	Below CC Zone	24	0.23	3.49	2.69	13.30
	Below Production Zone	6	0.23	0.66	0.23	2.32
	Unknown	42	0.15	3.74	2.40	18.75
5-22.02	Upper Zone	440	0.06	9.58	5.20	85.80
	Upper and Lower Zone	96	0.87	4.34	3.98	12.39
	Lower Zone	109	0.23	4.51	3.31	21.70
	Below CC Zone	123	0.23	6.17	3.96	54.20
5-22.03	Upper Zone	925	0.15	17.87	11.95	282.28
	Upper and Lower Zone	23	1.24	7.32	6.48	30.34
	Lower Zone	126	0.23	7.86	3.67	59.40
	Below CC Zone	221	0.20	13.15	6.00	127.30
5-22.04	Upper Zone	355	0.10	11.30	5.20	179.61
	Upper and Lower Zone	15	0.98	5.26	5.26	12.66
	Lower Zone	108	0.23	4.58	3.40	24.60
	Below CC Zone	191	0.10	7.52	3.00	71.00
5-22.05	Upper Zone	114	0.23	9.78	7.33	46.40
	Lower Zone	14	0.23	7.73	4.43	19.40
	Below CC Zone	141	0.20	8.24	4.32	65.00
5-22.06	Upper Zone	44	0.22	8.41	6.79	38.61
	Upper and Lower Zone	27	0.23	3.05	2.78	10.68
	Lower Zone	165	0.22	4.02	2.50	43.30
	Below CC Zone	8	0.85	7.61	6.22	19.30
	Outside Valley Floor	2	5.00	5.08	5.08	5.17
	Upper Zone	478	0.03	13.67	7.07	602.30

Table B - 6. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Nitrate Concentration Statistics

		Average Well Nitrate Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
5-22.07	Upper and Lower Zone	36	0.23	4.71	4.63	14.15
	Lower Zone	109	0.19	4.71	2.22	49.00
	Below CC Zone	62	0.03	5.97	4.06	24.19
	Unknown	21	0.07	6.61	5.20	18.98
5-22.08	Upper Zone	390	0.03	11.24	6.24	111.46
	Upper and Lower Zone	163	0.23	4.36	3.87	13.94
	Lower Zone	796	0.10	6.29	3.56	63.05
	Below CC Zone	14	0.23	15.13	13.45	59.60
	Below Production Zone	15	0.23	2.79	2.46	7.34
	Outside Valley Floor	7	0.75	10.75	2.21	35.58
5-22.09	Upper Zone	4	0.27	0.91	0.51	2.34
	Upper and Lower Zone	4	0.05	3.11	2.61	7.16
	Lower Zone	22	0.05	5.58	0.28	79.06
5-22.09	Below CC Zone	4	0.23	2.41	0.35	8.69
	Unknown	74	0.02	23.90	0.93	284.63
5-22.10	Upper Zone	9	0.23	1.15	0.23	6.56
	Lower Zone	2	0.13	0.18	0.18	0.23
	Outside Valley Floor	2	0.23	1.04	1.04	1.85
5-22.11	Upper Zone	329	0.10	18.20	12.20	269.38
	Upper and Lower Zone	103	0.22	4.83	3.63	27.37
	Lower Zone	304	0.15	13.75	9.93	74.50
	Below CC Zone	136	0.22	7.22	3.08	55.85
	Outside Valley Floor	11	1.49	6.22	4.78	11.65
5-22.12	Upper Zone	140	0.10	10.32	4.13	104.36
	Upper and Lower Zone	11	0.12	0.25	0.23	0.50
	Lower Zone	106	0.10	8.58	2.03	63.20
	Below CC Zone	38	0.21	2.56	0.23	57.10
5-22.13	Upper Zone	176	0.10	9.92	7.15	54.18
	Upper and Lower Zone	54	0.21	4.84	3.35	28.58
	Lower Zone	191	0.15	10.24	6.80	54.89
	Below CC Zone	71	0.23	7.29	3.44	37.65
	Below Production Zone	3	0.32	3.54	2.98	7.32
	Outside Valley Floor	3	0.23	3.45	3.49	6.63
5-22.14	Upper Zone	198	0.04	9.79	1.12	556.46
	Upper and Lower Zone	125	0.16	3.13	2.01	19.42
	Lower Zone	383	0.07	2.93	1.42	29.55
	Below CC Zone	117	0.23	5.37	4.95	29.40
	Below Production Zone	3	0.21	0.48	0.22	1.00
	Outside Valley Floor	2	0.23	3.21	3.21	6.20
5-22.15	Upper Zone	331	0.06	7.43	2.64	501.15
	Upper and Lower Zone	41	0.20	2.32	0.23	13.99
	Lower Zone	120	0.16	2.16	0.53	15.65
	Below CC Zone	59	0.17	2.59	1.72	18.50
	Unknown	11	0.14	5.14	4.18	14.62
	Outside Valley Floor	3	0.23	2.15	0.23	5.99
5-22.16	Upper Zone	106	0.21	3.85	2.63	30.10
	Upper and Lower Zone	13	0.26	1.56	1.47	3.90
	Lower Zone	163	0.16	2.74	1.60	22.10
	Unknown	24	0.23	2.59	1.49	15.38
5-6.01	Upper Zone	7	0.38	2.17	0.92	5.87
	Upper and Lower Zone	10	0.31	0.88	0.90	1.27
	Lower Zone	80	0.23	1.10	0.81	7.00
5-6.02	Lower Zone	2	3.39	4.97	4.97	6.55
	Upper Zone	115	0.00	0.83	0.28	4.73

Table B - 6. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Nitrate Concentration Statistics

		Average Well Nitrate Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
5-6.03	Upper and Lower Zone	11	0.23	1.31	1.23	2.58
	Lower Zone	67	0.07	1.09	1.01	3.52
	Below Production Zone	4	0.49	0.95	0.77	1.76
	Unknown	5	0.80	1.26	1.03	2.17
5-6.04	Upper Zone	45	0.08	0.66	0.23	2.93
	Upper and Lower Zone	7	0.77	1.67	1.72	2.34
	Lower Zone	32	0.07	1.76	1.32	6.53
	Below Production Zone	5	0.23	0.45	0.23	1.34
	Unknown	5	0.16	1.41	1.37	3.18
5-6.05	Upper Zone	3	0.57	0.65	0.64	0.73
	Upper and Lower Zone	2	1.01	1.07	1.07	1.13
	Lower Zone	6	0.29	1.87	1.37	4.38
	Unknown	4	0.72	2.76	2.47	5.39
5-6.06	Lower Zone	4	0.32	0.94	0.97	1.49
5-35	Outside Valley Floor	9	0.23	1.49	0.59	3.31
5-46	Outside Valley Floor	2	0.23	0.23	0.23	0.23
5-50	Outside Valley Floor	4	0.12	0.88	0.17	3.05
5-56	Outside Valley Floor	2	0.21	0.38	0.38	0.54
5-60	Outside Valley Floor	29	0.11	0.69	0.25	5.54
5-62	Outside Valley Floor	5	0.23	0.34	0.24	0.75
5-63	Outside Valley Floor	4	0.16	0.18	0.18	0.21
5-66	Outside Valley Floor	3	0.23	0.27	0.23	0.36
5-68	Outside Valley Floor	2	0.23	0.23	0.23	0.23
5-69	Outside Valley Floor	5	0.07	0.16	0.23	0.23
5-80	Outside Valley Floor	7	0.23	2.74	3.88	4.94
5-82	Outside Valley Floor	9	2.06	3.44	2.77	4.92
5-83	Outside Valley Floor	11	0.23	3.00	2.28	7.00
5-84	Outside Valley Floor	19	0.21	1.28	0.48	5.79
5-85	Outside Valley Floor	10	0.21	0.85	0.75	2.24
5-87	Outside Valley Floor	9	0.16	0.22	0.23	0.29
5-4	Outside Valley Floor	29	0.12	0.56	0.23	2.91
5-5	Outside Valley Floor	8	0.11	1.08	0.23	6.16
5-7	Outside Valley Floor	12	0.06	0.25	0.21	0.48
5-9	Outside Valley Floor	31	0.02	0.32	0.23	1.46
5-10	Outside Valley Floor	32	0.18	0.34	0.24	0.96
5-11	Outside Valley Floor	12	0.04	0.67	0.42	1.72
5-13	Outside Valley Floor	15	0.23	1.09	0.48	3.87
5-14	Outside Valley Floor	46	0.16	0.87	0.23	5.74
5-15	Outside Valley Floor	26	0.07	1.35	0.23	14.40
5-16	Outside Valley Floor	5	0.23	0.23	0.23	0.23
5-17	Outside Valley Floor	14	0.12	1.33	0.70	5.03
5-18	Outside Valley Floor	5	1.04	1.76	1.94	2.16
5-19	Outside Valley Floor	13	0.12	0.56	0.23	2.46
5-25	Outside Valley Floor	115	0.06	3.16	1.65	21.92
5-27	Outside Valley Floor	35	0.23	4.37	3.92	9.97

Table B - 6. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Nitrate Concentration Statistics

		Average Well Nitrate Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
5-28	Outside Valley Floor	51	0.21	6.10	5.48	19.09
5-29	Outside Valley Floor	8	1.94	3.47	3.91	4.36
5-30	Outside Valley Floor	7	0.23	1.58	0.34	4.08
5-12.01	Outside Valley Floor	44	0.03	0.54	0.23	4.66
5-12.02	Outside Valley Floor	6	0.22	0.95	0.33	2.39
5-2.01	Outside Valley Floor	43	0.06	0.76	0.50	2.85
5-2.02	Outside Valley Floor	19	0.23	0.60	0.39	3.35
Outside B118 Basins	Outside Valley Floor	4018	0.00	1.92	0.30	646.63
	Lower Zone	11	0.23	1.77	0.81	6.78
	Below Production Zone	2	0.23	4.49	4.49	8.76
	Unknown	4	3.28	4.25	3.77	6.17
	Upper Zone	14	0.23	60.41	1.00	452.82

Table B - 7. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins TDS Concentration Statistics

		Average Well TDS Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
2-3	Upper Zone	4	550	1,062	717	2,264
	Lower Zone	9	327	555	634	790
	Unknown	4	349	896	667	1,901
2-4	Lower Zone	2	722	722	722	723
	Below Production Zone	3	686	739	714	816
	Outside Valley Floor	2	971	1,047	1,047	1,123
5-21.50	Upper Zone	24	155	627	229	8,904
	Upper and Lower Zone	19	117	207	200	425
	Lower Zone	135	81	217	183	679
	Below Production Zone	5	118	201	198	356
	Unknown	11	145	233	179	403
5-21.51	Upper Zone	112	123	343	300	987
	Upper and Lower Zone	11	165	235	217	332
	Lower Zone	25	94	226	214	381
	Unknown	17	130	307	265	535
5-21.52	Upper Zone	145	154	516	370	4,855
	Upper and Lower Zone	28	179	344	319	794
	Lower Zone	139	45	461	361	3,274
	Unknown	42	129	425	359	998
5-21.53	Lower Zone	32	82	333	300	652
5-21.54	Upper Zone	6	200	283	269	413
	Upper and Lower Zone	3	167	284	326	361
	Lower Zone	12	86	271	266	577
	Unknown	30	123	316	323	608
5-21.55	Upper Zone	2	253	323	323	394
	Upper and Lower Zone	2	168	193	193	219
	Lower Zone	37	100	211	203	395
5-21.56	Upper and Lower Zone	3	176	191	193	206
	Lower Zone	50	90	206	206	340
5-21.57	Upper Zone	17	119	216	201	418
	Upper and Lower Zone	15	146	201	191	275
	Lower Zone	59	59	206	189	464
	Below Production Zone	2	151	222	222	292
	Unknown	5	102	269	220	495
5-21.58	Upper Zone	33	133	473	403	1,410
	Upper and Lower Zone	9	172	233	217	402
	Lower Zone	51	63	238	199	1,450
	Unknown	21	192	366	344	893
5-21.59	Upper Zone	64	74	339	242	1,600
	Upper and Lower Zone	17	105	211	222	375
	Lower Zone	46	112	281	223	1,444
	Unknown	7	120	312	210	682
	Outside Valley Floor	2	60	175	175	291
5-21.60	Upper Zone	41	142	351	320	822
	Upper and Lower Zone	2	264	302	302	339
	Lower Zone	18	42	246	216	486
	Unknown	14	111	269	227	550
	Outside Valley Floor	26	141	318	229	1,210
5-21.61	Upper Zone	74	88	529	330	5,720
	Upper and Lower Zone	11	149	360	260	1,548
	Lower Zone	57	35	339	272	2,402
	Below Production Zone	3	344	360	364	371
	Unknown	27	126	345	268	1,525
	Outside Valley Floor	9	209	300	299	367
	Upper Zone	50	121	849	521	8,282

Table B - 7. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins TDS Concentration Statistics

		Average Well TDS Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
5-21.62	Upper and Lower Zone	24	204	527	432	1,366
	Lower Zone	54	115	766	519	8,579
	Unknown	18	159	864	437	5,726
5-21.64	Upper Zone	177	93	957	410	10,240
5-21.64	Upper and Lower Zone	103	80	249	231	667
	Lower Zone	239	58	256	234	691
	Below Production Zone	5	175	372	333	678
	Unknown	20	106	268	260	449
5-21.65	Upper Zone	175	76	646	405	27,276
	Upper and Lower Zone	88	77	217	179	670
	Lower Zone	149	80	211	172	867
	Below Production Zone	13	129	151	150	192
	Unknown	3	169	186	169	220
5-21.66	Upper Zone	169	164	1,868	765	56,500
	Upper and Lower Zone	24	138	394	385	954
	Lower Zone	94	54	508	425	1,600
	Below Production Zone	6	284	335	303	423
	Unknown	8	290	1,170	562	5,387
5-21.67	Upper Zone	194	100	1,488	1,050	6,657
	Upper and Lower Zone	17	262	528	461	1,510
	Lower Zone	87	110	539	543	1,510
	Below Production Zone	8	313	421	346	841
	Unknown	11	184	465	505	720
5-22.01	Upper Zone	451	74	2,418	740	178,909
	Upper and Lower Zone	175	83	335	292	1,230
	Lower Zone	232	35	304	249	1,911
	Below CC Zone	14	186	343	297	718
	Below Production Zone	6	132	1,045	594	3,406
	Unknown	41	92	308	214	957
5-22.02	Upper Zone	186	81	602	489	3,811
	Upper and Lower Zone	94	67	312	270	1,121
	Lower Zone	79	67	273	206	1,700
	Below CC Zone	108	92	465	323	5,974
	Below Production Zone	2	160	178	178	196
5-22.03	Upper Zone	117	37	506	488	1,758
	Upper and Lower Zone	26	74	394	393	1,176
	Lower Zone	53	74	285	225	1,136
	Below CC Zone	104	144	377	260	1,819
5-22.04	Upper Zone	80	111	498	392	1,951
	Upper and Lower Zone	13	125	249	246	354
	Lower Zone	62	111	289	211	2,005
	Below CC Zone	74	90	268	224	1,035
	Below Production Zone	2	246	280	280	314
5-22.05	Upper Zone	21	117	625	623	1,117
	Lower Zone	5	165	370	208	841
	Below CC Zone	45	132	412	198	3,923
5-22.06	Upper Zone	22	94	500	518	1,049
	Upper and Lower Zone	26	62	207	189	380
	Lower Zone	126	51	234	194	1,048
	Below CC Zone	5	125	333	282	621
	Outside Valley Floor	2	163	164	164	164
5-22.07	Upper Zone	241	207	1,234	1,080	4,462
	Upper and Lower Zone	34	194	833	793	3,255
	Lower Zone	76	185	922	809	3,242
	Below CC Zone	46	387	1,165	1,015	4,314

Table B - 7. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins TDS Concentration Statistics

		Average Well TDS Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
	Unknown	21	276	989	1,033	2,665
5-22.08	Upper Zone	260	69	637	504	5,266
	Upper and Lower Zone	181	74	286	231	1,916
	Lower Zone	654	10	267	214	9,268
	Below CC Zone	8	125	321	323	601
	Below Production Zone	20	109	588	186	8,096
	Outside Valley Floor	5	319	472	411	703
5-22.09	Upper Zone	2	313	1,305	1,305	2,297
	Upper and Lower Zone	4	849	1,036	968	1,360
	Lower Zone	19	305	1,058	894	2,980
	Below CC Zone	4	563	923	939	1,249
5-22.09	Unknown	75	279	1,917	906	8,816
5-22.10	Upper Zone	9	2,666	4,056	3,200	6,900
	Lower Zone	2	753	934	934	1,114
	Outside Valley Floor	2	6,788	7,061	7,061	7,333
5-22.11	Upper Zone	124	97	936	672	6,663
	Upper and Lower Zone	99	91	254	204	1,572
	Lower Zone	141	63	365	306	1,221
	Below CC Zone	93	86	180	148	608
	Outside Valley Floor	11	158	337	314	677
5-22.12	Upper Zone	57	76	4,006	1,196	36,000
	Upper and Lower Zone	9	158	476	358	905
	Lower Zone	28	61	423	280	1,083
	Below CC Zone	38	151	392	377	922
5-22.13	Upper Zone	86	111	708	500	5,550
	Upper and Lower Zone	53	117	274	261	617
	Lower Zone	90	130	330	302	742
	Below CC Zone	48	124	228	191	704
	Below Production Zone	3	342	477	371	717
5-22.14	Upper Zone	171	142	2,418	710	26,500
	Upper and Lower Zone	126	10	372	236	3,154
	Lower Zone	341	10	388	259	3,213
	Below CC Zone	114	132	519	351	9,475
	Below Production Zone	3	144	353	393	522
	Outside Valley Floor	15	210	4,360	780	32,283
5-22.15	Upper Zone	288	226	1,714	1,260	18,456
	Upper and Lower Zone	25	90	938	837	4,222
	Lower Zone	86	10	801	720	4,272
	Below CC Zone	50	62	911	741	3,690
	Unknown	11	615	5,099	1,112	25,684
	Outside Valley Floor	2	18,560	18,560	18,560	18,560
5-22.16	Upper Zone	35	83	380	167	5,088
	Upper and Lower Zone	15	105	195	204	262
	Lower Zone	53	34	218	166	1,760
	Unknown	24	105	182	166	434
5-6.01	Upper Zone	7	116	164	134	262
	Upper and Lower Zone	9	107	145	144	189
	Lower Zone	74	118	199	184	961
5-6.02	Lower Zone	2	207	215	215	222
5-6.03	Upper Zone	22	93	169	172	229
	Upper and Lower Zone	10	128	145	137	180
	Lower Zone	45	91	143	139	235
	Below Production Zone	2	110	141	141	173
	Unknown	5	95	146	148	195
	Upper Zone	11	141	667	172	2,564
	Upper and Lower Zone	7	98	139	145	164

Table B - 7. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins TDS Concentration Statistics

		Average Well TDS Concentration Statistics				
DWR B118 Groundwater Basin Code	Aquifer Zone	Number of Wells	Minimum	Average	Median	Maximum
5-6.04	Lower Zone	21	90	169	161	307
	Below Production Zone	4	161	192	190	227
	Unknown	5	126	151	161	166
5-6.05	Upper and Lower Zone	2	124	128	128	133
	Lower Zone	4	126	176	175	227
	Unknown	4	143	206	205	270
5-6.06	Lower Zone	4	157	282	221	528
5-35	Outside Valley Floor	3	36	42	39	49
5-50	Outside Valley Floor	3	95	112	100	139
5-60	Outside Valley Floor	12	69	140	155	210
5-63	Outside Valley Floor	4	237	258	256	282
5-66	Outside Valley Floor	4	215	280	271	363
5-68	Outside Valley Floor	2	567	568	568	569
5-69	Outside Valley Floor	5	30	33	32	38
5-80	Outside Valley Floor	8	54	325	346	451
5-82	Outside Valley Floor	8	540	664	705	743
5-83	Outside Valley Floor	9	292	632	675	928
5-84	Outside Valley Floor	13	295	470	410	877
5-85	Outside Valley Floor	9	399	528	552	680
5-87	Outside Valley Floor	3	150	167	175	177
5-4	Outside Valley Floor	8	144	234	193	560
5-5	Outside Valley Floor	4	128	184	153	302
5-7	Outside Valley Floor	11	74	93	89	128
5-9	Outside Valley Floor	17	27	129	132	240
5-10	Outside Valley Floor	20	61	107	80	361
5-11	Outside Valley Floor	6	93	178	188	244
5-13	Outside Valley Floor	9	115	207	163	421
5-14	Outside Valley Floor	7	124	165	139	227
5-15	Outside Valley Floor	22	172	394	365	816
5-16	Outside Valley Floor	4	478	621	665	675
5-17	Outside Valley Floor	4	198	327	311	489
5-18	Outside Valley Floor	5	231	299	318	375
5-19	Outside Valley Floor	40	62	1,084	384	7,361
5-25	Outside Valley Floor	106	10	325	326	686
5-27	Outside Valley Floor	39	185	381	356	626
5-28	Outside Valley Floor	50	245	393	330	935
5-29	Outside Valley Floor	6	539	577	570	624
5-30	Outside Valley Floor	6	298	408	442	500
5-12.01	Outside Valley Floor	25	132	254	170	724
5-2.01	Outside Valley Floor	14	174	310	250	772
5-2.02	Outside Valley Floor	12	200	252	234	350
Outside B118 Basins	Outside Valley Floor	2439	5	560	206	120,000
	Lower Zone	10	153	512	532	1,091
	Unknown	4	447	713	734	939
	Upper Zone	28	228	2,029	336	12,522
	Upper and Lower Zone	1	777	777	777	777

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
SUISUN-FAIRFIELD VALLEY (B118 Code: 2-3)	25	4	21
Upper	5	2	3
CDPH	2	2	0
Domestic	1	0	1
USGS (Unknown well type)	2	0	2
Lower	16	2	14
CDPH	16	2	14
Unknown	4	0	4
#N/A	4	0	4
PITTSBURG PLAIN (B118 Code: 2-4)	10	5	5
Lower	4	1	3
CDPH	4	1	3
Too Deep	4	4	0
CDPH	4	4	0
Outside Valley Floor	2	0	2
CDPH	2	0	2
GOOSE LAKE: FANDANGO VALLEY (B118 Code: 5-1.02)	1	1	0
Outside Valley Floor	1	1	0
CDPH	1	1	0
AMERICAN VALLEY (B118 Code: 5-10)	32	12	20
Outside Valley Floor	32	12	20
CDPH	22	12	10
ENVIRONMENTAL MONITORING (WELLS)	5	0	5
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
#N/A	3	0	3
MOHAWK VALLEY (B118 Code: 5-11)	12	3	9
Outside Valley Floor	12	3	9
CDPH	10	3	7
#N/A	2	0	2
SIERRA VALLEY: SIERRA VALLEY (B118 Code: 5-12.01)	44	7	37
Outside Valley Floor	44	7	37
CDPH	16	7	9
ENVIRONMENTAL MONITORING (WELLS)	16	0	16
Unused	1	0	1
USGS (Unknown well type)	1	0	1
#N/A	10	0	10
SIERRA VALLEY: CHILCOOT (B118 Code: 5-12.02)	6	1	5

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
Outside Valley Floor	6	1	5
CDPH	6	1	5
UPPER LAKE VALLEY (B118 Code: 5-13)	15	3	12
Outside Valley Floor	15	3	12
CDPH	10	3	7
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
#N/A	3	0	3
SCOTTS VALLEY (B118 Code: 5-14)	46	6	40
Outside Valley Floor	46	6	40
CDPH	12	6	6
Domestic	1	0	1
ENVIRONMENTAL MONITORING (WELLS)	33	0	33
BIG VALLEY (B118 Code: 5-15)	26	4	22
Outside Valley Floor	26	4	22
CDPH	11	4	7
Irrigation	2	0	2
USGS (Unknown well type)	4	0	4
WATER SUPPLY (WELLS)	4	0	4
#N/A	5	0	5
HIGH VALLEY (B118 Code: 5-16)	5	0	5
Outside Valley Floor	5	0	5
CDPH	1	0	1
Irrigation	1	0	1
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
#N/A	1	0	1
BURNS VALLEY (B118 Code: 5-17)	14	0	14
Outside Valley Floor	14	0	14
ENVIRONMENTAL MONITORING (WELLS)	10	0	10
#N/A	4	0	4
COYOTE VALLEY (B118 Code: 5-18)	5	3	2
Outside Valley Floor	5	3	2
CDPH	4	3	1
Domestic	1	0	1
COLLAYOMI VALLEY (B118 Code: 5-19)	13	2	11
Outside Valley Floor	13	2	11
CDPH	5	2	3
Domestic	1	0	1
ENVIRONMENTAL MONITORING (WELLS)	2	0	2
Irrigation & Domestic	2	0	2

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
#N/A	1	0	1
ALTURAS AREA: SOUTH FORK PITT RIVER (B118 Code: 5-2.01)	43	5	38
Outside Valley Floor	43	5	38
CDPH	11	5	6
ENVIRONMENTAL MONITORING (WELLS)	25	0	25
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	2	0	2
#N/A	3	0	3
ALTURAS AREA: WARM SPRINGS VALLEY (B118 Code: 5-2.02)	19	3	16
Outside Valley Floor	19	3	16
CDPH	13	3	10
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	2	0	2
#N/A	2	0	2
SACRAMENTO VALLEY: RED BLUFF (B118 Code: 5-21.50)	277	98	179
Upper	78	40	38
CDPH	3	3	0
ENVIRONMENTAL MONITORING (WELLS)	67	35	32
Observation	2	0	2
USGS (Unknown well type)	6	2	4
UpperLower	19	19	0
CDPH	6	6	0
USGS (Unknown well type)	13	13	0
Lower	164	34	130
CDPH	71	30	41
USGS (Unknown well type)	4	4	0
WATER SUPPLY (WELLS)	89	0	89
Too Deep	5	5	0
CDPH	3	3	0
USGS (Unknown well type)	2	2	0
Unknown	11	0	11
#N/A	11	0	11
SACRAMENTO VALLEY: CORNING (B118 Code: 5-21.51)	259	50	209
Upper	181	28	153
CDPH	2	2	0
Domestic	25	0	25
ENVIRONMENTAL MONITORING (WELLS)	119	26	93
Observation	34	0	34
USGS (Unknown well type)	1	0	1
UpperLower	10	10	0
CDPH	6	6	0
ENVIRONMENTAL MONITORING (WELLS)	3	3	0

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	1	1	0
Lower	49	10	39
Agricultural	19	0	19
CDPH	21	9	12
Irrigation	2	0	2
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	6	0	6
Too Deep	2	2	0
CDPH	1	1	0
USGS (Unknown well type)	1	1	0
Unknown	17	0	17
#N/A	17	0	17
SACRAMENTO VALLEY: COLUSA (B118 Code: 5-21.52)	551	171	380
Upper	279	65	214
CDPH	9	9	0
Domestic	62	0	62
ENVIRONMENTAL MONITORING (WELLS)	98	42	56
Observation	93	0	93
USGS (Unknown well type)	17	14	3
UpperLower	26	26	0
CDPH	16	16	0
USGS (Unknown well type)	10	10	0
Lower	203	79	124
Agricultural	30	0	30
CDPH	119	70	49
Irrigation	9	0	9
USGS (Unknown well type)	9	9	0
WATER SUPPLY (WELLS)	36	0	36
Too Deep	1	1	0
USGS (Unknown well type)	1	1	0
Unknown	42	0	42
#N/A	42	0	42
SACRAMENTO VALLEY: BEND (B118 Code: 5-21.53)	37	0	37
Upper	1	0	1
USGS (Unknown well type)	1	0	1
Lower	36	0	36
WATER SUPPLY (WELLS)	36	0	36
SACRAMENTO VALLEY: ANTELOPE (B118 Code: 5-21.54)	76	12	64
Upper	6	2	4
CDPH	1	1	0
Domestic	3	0	3
ENVIRONMENTAL MONITORING (WELLS)	1	0	1
USGS (Unknown well type)	1	1	0
UpperLower	6	6	0
CDPH	5	5	0

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	1	1	0
Lower	22	4	18
CDPH	20	4	16
WATER SUPPLY (WELLS)	2	0	2
Unknown	42	0	42
#N/A	42	0	42
SACRAMENTO VALLEY: DYE CREEK (B118 Code: 5-21.55)	49	4	45
Upper	2	1	1
Domestic	1	0	1
USGS (Unknown well type)	1	1	0
UpperLower	2	2	0
CDPH	1	1	0
USGS (Unknown well type)	1	1	0
Lower	45	1	44
CDPH	5	1	4
Irrigation	1	0	1
WATER SUPPLY (WELLS)	39	0	39
SACRAMENTO VALLEY: LOS MOLINOS(B118 Code: 5-21.56)	64	6	58
Upper	1	0	1
Domestic	1	0	1
UpperLower	2	2	0
USGS (Unknown well type)	2	2	0
Lower	60	3	57
CDPH	10	3	7
WATER SUPPLY (WELLS)	50	0	50
Too Deep	1	1	0
CDPH	1	1	0
SACRAMENTO VALLEY: VINA (B118 Code: 5-21.57)	151	81	70
Upper	30	15	15
CDPH	2	2	0
Domestic	3	0	3
ENVIRONMENTAL MONITORING (WELLS)	13	13	0
Observation	11	0	11
USGS (Unknown well type)	1	0	1
UpperLower	17	17	0
CDPH	14	14	0
USGS (Unknown well type)	3	3	0
Lower	97	47	50
CDPH	61	45	16
Irrigation	1	0	1
USGS (Unknown well type)	2	2	0
WATER SUPPLY (WELLS)	33	0	33
Too Deep	2	2	0
USGS (Unknown well type)	2	2	0
Unknown	5	0	5

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
Test	1	0	1
#N/A	4	0	4
SACRAMENTO VALLEY: WEST BUTTE (B118 Code: 5-21.58)	136	46	90
Upper	41	10	31
CDPH	1	1	0
Domestic	1	0	1
ENVIRONMENTAL MONITORING (WELLS)	13	4	9
Observation	20	0	20
USGS (Unknown well type)	6	5	1
UpperLower	11	11	0
CDPH	9	9	0
USGS (Unknown well type)	2	2	0
Lower	63	25	38
CDPH	40	20	20
Irrigation	1	0	1
USGS (Unknown well type)	5	5	0
WATER SUPPLY (WELLS)	17	0	17
Unknown	21	0	21
#N/A	21	0	21
SACRAMENTO VALLEY: EAST BUTTE (B118 Code: 5-21.59)	174	47	127
Upper	96	10	86
CDPH	1	1	0
Domestic	2	0	2
ENVIRONMENTAL MONITORING (WELLS)	53	2	51
Observation	33	0	33
USGS (Unknown well type)	7	7	0
UpperLower	19	19	0
CDPH	15	15	0
ENVIRONMENTAL MONITORING (WELLS)	1	1	0
USGS (Unknown well type)	3	3	0
Lower	49	18	31
CDPH	29	15	14
Irrigation	6	0	6
Unused Irrigation	1	0	1
USGS (Unknown well type)	3	3	0
WATER SUPPLY (WELLS)	10	0	10
Outside Valley Floor	3	0	3
CDPH	3	0	3
Unknown	7	0	7
#N/A	7	0	7
SACRAMENTO VALLEY: NORTH YUBA (B118 Code: 5-21.60)	137	40	97
Upper	66	20	46
CDPH	12	12	0
ENVIRONMENTAL MONITORING (WELLS)	40	5	35
Observation	11	0	11

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	3	3	0
UpperLower	8	8	0
CDPH	4	4	0
ENVIRONMENTAL MONITORING (WELLS)	4	4	0
Lower	21	6	15
CDPH	10	6	4
WATER SUPPLY (WELLS)	11	0	11
Outside Valley Floor	28	6	22
CDPH	12	6	6
ENVIRONMENTAL MONITORING (WELLS)	11	0	11
Irrigation	1	0	1
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	1	0	1
#N/A	1	0	1
Unknown	14	0	14
#N/A	14	0	14
SACRAMENTO VALLEY: SOUTH YUBA (B118 Code: 5-21.61)	190	43	147
Upper	79	10	69
CDPH	10	10	0
Domestic	9	0	9
ENVIRONMENTAL MONITORING (WELLS)	50	0	50
Observation	9	0	9
USGS (Unknown well type)	1	0	1
UpperLower	10	10	0
CDPH	8	8	0
USGS (Unknown well type)	2	2	0
Lower	66	20	46
Agricultural	4	0	4
CDPH	35	20	15
WATER SUPPLY (WELLS)	27	0	27
Too Deep	3	3	0
CDPH	2	2	0
USGS (Unknown well type)	1	1	0
Outside Valley Floor	5	0	5
ENVIRONMENTAL MONITORING (WELLS)	5	0	5
Unknown	27	0	27
Undetermined	10	0	10
#N/A	17	0	17
SACRAMENTO VALLEY: SUTTER (B118 Code: 5-21.62)	184	59	125
Upper	66	17	49
CDPH	2	2	0
Domestic	2	0	2
ENVIRONMENTAL MONITORING (WELLS)	26	3	23
Observation	24	0	24
USGS (Unknown well type)	12	12	0
UpperLower	27	27	0
CDPH	23	23	0

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	4	4	0
Lower	73	15	58
CDPH	57	15	42
Irrigation	4	0	4
WATER SUPPLY (WELLS)	12	0	12
Unknown	18	0	18
#N/A	18	0	18
SACRAMENTO VALLEY: NORTH AMERICAN (B118 Code: 5-21.64)	624	332	292
Upper	236	92	144
CDPH	21	21	0
Domestic	4	0	4
ENVIRONMENTAL MONITORING (WELLS)	172	56	116
Observation	24	0	24
USGS (Unknown well type)	15	15	0
UpperLower	109	109	0
CDPH	93	93	0
USGS (Unknown well type)	16	16	0
Lower	252	127	125
Agricultural	1	0	1
CDPH	211	117	94
Irrigation	7	0	7
USGS (Unknown well type)	10	10	0
WATER SUPPLY (WELLS)	23	0	23
Too Deep	4	4	0
USGS (Unknown well type)	4	4	0
Outside Valley Floor	4	0	4
ENVIRONMENTAL MONITORING (WELLS)	4	0	4
Unknown	19	0	19
Undetermined	1	0	1
#N/A	18	0	18
SACRAMENTO VALLEY: SOUTH AMERICAN (B118 Code: 5-21.65)	760	382	378
Upper	440	166	274
CDPH	17	17	0
Domestic	51	0	51
ENVIRONMENTAL MONITORING (WELLS)	354	131	223
USGS (Unknown well type)	18	18	0
UpperLower	91	91	0
CDPH	84	84	0
ENVIRONMENTAL MONITORING (WELLS)	1	1	0
USGS (Unknown well type)	6	6	0
Lower	213	112	101
Agricultural	42	0	42
CDPH	162	111	51
Irrigation	1	0	1

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	7	0	7
Too Deep	13	13	0
CDPH	13	13	0
Unknown	3	0	3
Undetermined	1	0	1
#N/A	2	0	2
SACRAMENTO VALLEY: SOLANO (B118 Code: 5-21.66)	365	181	184
Upper	197	78	119
CDPH	6	6	0
Domestic	6	0	6
ENVIRONMENTAL MONITORING (WELLS)	182	72	110
Observation	3	0	3
UpperLower	25	25	0
CDPH	24	24	0
USGS (Unknown well type)	1	1	0
Lower	130	73	57
Agricultural	2	0	2
CDPH	124	72	52
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	3	0	3
Too Deep	5	5	0
CDPH	4	4	0
USGS (Unknown well type)	1	1	0
Unknown	8	0	8
#N/A	8	0	8
SACRAMENTO VALLEY: YOLO (B118 Code: 5-21.67)	591	240	351
Upper	431	143	288
CDPH	15	15	0
Domestic	10	0	10
ENVIRONMENTAL MONITORING (WELLS)	399	126	273
Irrigation & Domestic	1	0	1
Observation	3	0	3
USGS (Unknown well type)	3	2	1
UpperLower	21	21	0
CDPH	15	15	0
USGS (Unknown well type)	6	6	0
Lower	120	68	52
Agricultural	2	0	2
CDPH	104	67	37
Irrigation	2	0	2
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	11	0	11
Too Deep	8	8	0
CDPH	5	5	0
USGS (Unknown well type)	3	3	0
Unknown	11	0	11

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
#N/A	11	0	11
SACRAMENTO VALLEY: CAPAY VALLEY (B118 Code: 5-21.68)	4	1	3
Lower	3	1	2
CDPH	3	1	2
Unknown	1	0	1
#N/A	1	0	1
SAN JOAQUIN VALLEY: EASTERN SAN JOAQUIN (B118 Code: 5-22.01)	1,856	559	1,297
Upper	1,012	229	783
CDPH	24	24	0
Domestic	296	0	296
ENVIRONMENTAL MONITORING (WELLS)	656	178	478
USGS (Unknown well type)	36	27	9
UpperLower	183	183	0
CDPH	158	158	0
ENVIRONMENTAL MONITORING (WELLS)	1	1	0
USGS (Unknown well type)	24	24	0
Lower	589	132	457
Agricultural	148	0	148
CDPH	354	106	248
Irrigation	7	0	7
USGS (Unknown well type)	26	26	0
WATER SUPPLY (WELLS)	54	0	54
Below CC	24	9	15
Agricultural	4	0	4
CDPH	18	7	11
USGS (Unknown well type)	2	2	0
Too Deep	6	6	0
CDPH	2	2	0
USGS (Unknown well type)	4	4	0
Unknown	42	0	42
Undetermined	1	0	1
#N/A	41	0	41
SAN JOAQUIN VALLEY: MODESTO (B118 Code: 5-22.02)	769	409	360
Upper	440	172	268
CDPH	51	51	0
Domestic	200	0	200
ENVIRONMENTAL MONITORING (WELLS)	152	85	67
monitoring	1	0	1
USGS (Unknown well type)	36	36	0
UpperLower	96	96	0
CDPH	51	51	0
ENVIRONMENTAL MONITORING (WELLS)	8	8	0
USGS (Unknown well type)	37	37	0
Lower	109	49	60

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

		Wells With	Wells Without
Wells With Nitrate Results	20,539	6,349	14,190
Agricultural	17	0	17
CDPH	85	48	37
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	6	0	6
Below CC	123	91	32
Agricultural	12	0	12
CDPH	93	77	16
ENVIRONMENTAL MONITORING (WELLS)	1	1	0
USGS (Unknown well type)	13	13	0
WATER SUPPLY (WELLS)	4	0	4
Too Deep	1	1	0
USGS (Unknown well type)	1	1	0
SAN JOAQUIN VALLEY: TURLOCK	1,295	215	1,080
Upper	925	96	829
CDPH	30	30	0
Domestic	769	0	769
ENVIRONMENTAL MONITORING (WELLS)	71	11	60
USGS (Unknown well type)	55	55	0
UpperLower	23	23	0
CDPH	21	21	0
USGS (Unknown well type)	2	2	0
Lower	126	23	103
Agricultural	61	0	61
CDPH	61	21	40
USGS (Unknown well type)	2	2	0
WATER SUPPLY (WELLS)	2	0	2
Below CC	221	73	148
Agricultural	90	0	90
CDPH	111	65	46
USGS (Unknown well type)	8	8	0
WATER SUPPLY (WELLS)	12	0	12
SAN JOAQUIN VALLEY: MERCED	670	160	510
Upper	355	52	303
CDPH	6	6	0
Domestic	226	0	226
ENVIRONMENTAL MONITORING (WELLS)	111	36	75
USGS (Unknown well type)	12	10	2
UpperLower	15	15	0
CDPH	13	13	0
USGS (Unknown well type)	2	2	0
Lower	108	37	71
Agricultural	38	0	38
CDPH	59	34	25
USGS (Unknown well type)	3	3	0
WATER SUPPLY (WELLS)	8	0	8
Below CC	191	55	136
Agricultural	109	0	109

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
CDPH	64	44	20
ENVIRONMENTAL MONITORING (WELLS)	4	4	0
USGS (Unknown well type)	7	7	0
WATER SUPPLY (WELLS)	7	0	7
Too Deep	1	1	0
CDPH	1	1	0
SAN JOAQUIN VALLEY: CHOWCHILLA (B118 Code: 5-22.05)	270	26	244
Upper	114	0	114
Domestic	92	0	92
monitoring	22	0	22
UpperLower	1	1	0
USGS (Unknown well type)	1	1	0
Lower	14	2	12
Agricultural	8	0	8
CDPH	5	2	3
WATER SUPPLY (WELLS)	1	0	1
Below CC	141	23	118
Agricultural	92	0	92
CDPH	25	10	15
USGS (Unknown well type)	13	13	0
WATER SUPPLY (WELLS)	11	0	11
SAN JOAQUIN VALLEY: MADERA (B118 Code: 5-22.06)	247	115	132
Upper	44	9	35
CDPH	4	4	0
Domestic	9	0	9
ENVIRONMENTAL MONITORING (WELLS)	11	0	11
monitoring	12	0	12
USGS (Unknown well type)	8	5	3
UpperLower	27	27	0
CDPH	17	17	0
USGS (Unknown well type)	10	10	0
Lower	165	73	92
Agricultural	9	0	9
CDPH	127	66	61
USGS (Unknown well type)	7	7	0
WATER SUPPLY (WELLS)	22	0	22
Below CC	8	5	3
Agricultural	2	0	2
CDPH	2	1	1
USGS (Unknown well type)	4	4	0
Too Deep	1	1	0
CDPH	1	1	0
Outside Valley Floor	2	0	2
CDPH	2	0	2
SAN JOAQUIN VALLEY: DELTA-MENDOTA (B118 Code: 5-22.07)	707	204	503

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	20,539	6,349	14,190
Upper	478	118	360
CDPH	13	13	0
Domestic	209	0	209
ENVIRONMENTAL MONITORING (WELLS)	222	72	150
USGS (Unknown well type)	34	33	1
UpperLower	36	36	0
CDPH	30	30	0
USGS (Unknown well type)	6	6	0
Lower	109	17	92
Agricultural	19	0	19
CDPH	58	17	41
WATER SUPPLY (WELLS)	32	0	32
Below CC	62	33	29
Agricultural	11	0	11
CDPH	19	13	6
USGS (Unknown well type)	20	20	0
WATER SUPPLY (WELLS)	12	0	12
Outside Valley Floor	1	0	1
WATER SUPPLY (WELLS)	1	0	1
Unknown	21	0	21
Undetermined	7	0	7
#N/A	14	0	14
SAN JOAQUIN VALLEY: KINGS (B118 Code: 5-22.08)	1,386	626	760
Upper	390	171	219
CDPH	34	34	0
Domestic	107	0	107
ENVIRONMENTAL MONITORING (WELLS)	117	78	39
monitoring	71	0	71
USGS (Unknown well type)	61	59	2
UpperLower	163	163	0
CDPH	146	146	0
ENVIRONMENTAL MONITORING (WELLS)	2	2	0
USGS (Unknown well type)	15	15	0
Lower	796	272	524
Agricultural	121	0	121
CDPH	603	259	344
USGS (Unknown well type)	13	13	0
WATER SUPPLY (WELLS)	59	0	59
Below CC	14	5	9
Agricultural	9	0	9
CDPH	3	3	0
USGS (Unknown well type)	2	2	0
Too Deep	15	15	0
CDPH	14	14	0
USGS (Unknown well type)	1	1	0
Outside Valley Floor	7	0	7
CDPH	5	0	5
WATER SUPPLY (WELLS)	2	0	2

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	20,539	6,349	14,190
Unknown	1	0	1
#N/A	1	0	1
SAN JOAQUIN VALLEY: WESTSIDE(B118 Code: 5-22.09)	108	13	95
Upper	4	2	2
CDPH	2	2	0
Observation	1	0	1
USGS (Unknown well type)	1	0	1
UpperLower	4	4	0
CDPH	1	1	0
USGS (Unknown well type)	3	3	0
Lower	22	3	19
CDPH	14	3	11
WATER SUPPLY (WELLS)	8	0	8
Below CC	4	4	0
USGS (Unknown well type)	4	4	0
Unknown	74	0	74
Undetermined	44	0	44
#N/A	30	0	30
SAN JOAQUIN VALLEY: PLEASANT VALLEY (B118 Code: 5-22.10)	15	1	14
Upper	9	0	9
ENVIRONMENTAL MONITORING (WELLS)	9	0	9
UpperLower	1	1	0
USGS (Unknown well type)	1	1	0
Lower	2	0	2
WATER SUPPLY (WELLS)	2	0	2
Outside Valley Floor	2	0	2
ENVIRONMENTAL MONITORING (WELLS)	2	0	2
Unknown	1	0	1
#N/A	1	0	1
SAN JOAQUIN VALLEY: KAWEAH (B118 Code: 5-22.11)	883	248	635
Upper	329	19	310
CDPH	7	7	0
Domestic	179	0	179
ENVIRONMENTAL MONITORING (WELLS)	67	7	60
monitoring	71	0	71
USGS (Unknown well type)	5	5	0
UpperLower	103	103	0
CDPH	101	101	0
ENVIRONMENTAL MONITORING (WELLS)	1	1	0
USGS (Unknown well type)	1	1	0
Lower	304	51	253
Agricultural	146	0	146
CDPH	89	50	39
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	68	0	68

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
Below CC	136	71	65
Agricultural	35	0	35
CDPH	88	67	21
USGS (Unknown well type)	4	4	0
WATER SUPPLY (WELLS)	9	0	9
Outside Valley Floor	11	4	7
CDPH	5	4	1
WATER SUPPLY (WELLS)	6	0	6
SAN JOAQUIN VALLEY: TULARE LAKE (B118 Code: 5-22.12)	295	68	227
Upper	140	12	128
CDPH	4	4	0
Domestic	61	0	61
ENVIRONMENTAL MONITORING (WELLS)	33	3	30
monitoring	35	0	35
USGS (Unknown well type)	7	5	2
UpperLower	11	11	0
CDPH	9	9	0
USGS (Unknown well type)	2	2	0
Lower	106	13	93
Agricultural	58	0	58
CDPH	42	13	29
WATER SUPPLY (WELLS)	6	0	6
Below CC	38	32	6
Agricultural	3	0	3
CDPH	31	29	2
USGS (Unknown well type)	3	3	0
WATER SUPPLY (WELLS)	1	0	1
SAN JOAQUIN VALLEY: TULE (B118 Code: 5-22.13)	498	129	369
Upper	176	18	158
CDPH	14	14	0
Domestic	88	0	88
ENVIRONMENTAL MONITORING (WELLS)	32	0	32
monitoring	38	0	38
USGS (Unknown well type)	4	4	0
UpperLower	54	54	0
CDPH	52	52	0
USGS (Unknown well type)	2	2	0
Lower	191	31	160
Agricultural	89	0	89
CDPH	73	31	42
WATER SUPPLY (WELLS)	29	0	29
Below CC	71	23	48
Agricultural	19	0	19
CDPH	31	16	15
USGS (Unknown well type)	7	7	0
WATER SUPPLY (WELLS)	14	0	14
Too Deep	3	3	0

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

		Wells With	Wells Without
Wells With Nitrate Results	20,539	6,349	14,190
CDPH	3	3	0
Outside Valley Floor	3	0	3
CDPH	3	0	3
SAN JOAQUIN VALLEY: KERN COUNTY	828	436	392
Upper	198	24	174
CDPH	9	9	0
Domestic	26	0	26
ENVIRONMENTAL MONITORING (WELLS)	130	12	118
monitoring	29	0	29
USGS (Unknown well type)	4	3	1
UpperLower	125	125	0
CDPH	116	116	0
USGS (Unknown well type)	9	9	0
Lower	383	213	170
Agricultural	39	0	39
CDPH	325	207	118
USGS (Unknown well type)	6	6	0
WATER SUPPLY (WELLS)	13	0	13
Below CC	117	71	46
Agricultural	7	0	7
CDPH	98	62	36
ENVIRONMENTAL MONITORING (WELLS)	1	1	0
USGS (Unknown well type)	8	8	0
WATER SUPPLY (WELLS)	3	0	3
Too Deep	3	3	0
CDPH	3	3	0
Outside Valley Floor	2	0	2
CDPH	1	0	1
WATER SUPPLY (WELLS)	1	0	1
SAN JOAQUIN VALLEY: TRACY	565	205	360
Upper	331	88	243
CDPH	17	17	0
Domestic	30	0	30
ENVIRONMENTAL MONITORING (WELLS)	281	68	213
USGS (Unknown well type)	3	3	0
UpperLower	41	41	0
CDPH	38	38	0
ENVIRONMENTAL MONITORING (WELLS)	2	2	0
USGS (Unknown well type)	1	1	0
Lower	120	44	76
CDPH	118	44	74
WATER SUPPLY (WELLS)	2	0	2
Below CC	59	31	28
Agricultural	5	0	5
CDPH	48	28	20
USGS (Unknown well type)	3	3	0
WATER SUPPLY (WELLS)	3	0	3

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
Outside Valley Floor	3	1	2
CDPH	2	1	1
ENVIRONMENTAL MONITORING (WELLS)	1	0	1
Unknown	11	0	11
Undetermined	2	0	2
#N/A	9	0	9
SAN JOAQUIN VALLEY: COSUMNES (B118 Code: 5-22.16)	307	47	260
Upper	106	7	99
CDPH	4	4	0
Domestic	89	0	89
ENVIRONMENTAL MONITORING (WELLS)	12	2	10
USGS (Unknown well type)	1	1	0
UpperLower	13	13	0
CDPH	12	12	0
USGS (Unknown well type)	1	1	0
Lower	163	27	136
Agricultural	109	0	109
CDPH	52	27	25
Irrigation	2	0	2
Outside Valley Floor	1	0	1
CDPH	1	0	1
Unknown	24	0	24
#N/A	24	0	24
KERN RIVER VALLEY (B118 Code: 5-25)	115	59	56
Outside Valley Floor	115	59	56
CDPH	104	59	45
USGS (Unknown well type)	6	0	6
WATER SUPPLY (WELLS)	5	0	5
WALKER BASIN CREEK VALLEY (B118 Code: 5-26)	1	1	0
Outside Valley Floor	1	1	0
CDPH	1	1	0
CUMMINGS VALLEY (B118 Code: 5-27)	35	16	19
Outside Valley Floor	35	16	19
CDPH	23	16	7
USGS (Unknown well type)	6	0	6
WATER SUPPLY (WELLS)	6	0	6
TEHACHAPI VALLEY WEST (B118 Code: 5-28)	51	21	30
Outside Valley Floor	51	21	30
CDPH	30	21	9
ENVIRONMENTAL MONITORING (WELLS)	5	0	5
USGS (Unknown well type)	8	0	8
WATER SUPPLY (WELLS)	8	0	8

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	20,539	6,349	14,190
CASTAC LAKE VALLEY (B118 Code: 5-29)	8	6	2
Outside Valley Floor	8	6	2
CDPH	7	6	1
USGS (Unknown well type)	1	0	1
LOWER LAKE VALLEY (B118 Code: 5-30)	7	4	3
Outside Valley Floor	7	4	3
CDPH	6	4	2
#N/A	1	0	1
MCCLOUD AREA (B118 Code: 5-35)	9	0	9
Outside Valley Floor	9	0	9
CDPH	4	0	4
ENVIRONMENTAL MONITORING (WELLS)	5	0	5
BIG VALLEY (B118 Code: 5-4)	29	3	26
Outside Valley Floor	29	3	26
CDPH	12	3	9
ENVIRONMENTAL MONITORING (WELLS)	15	0	15
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
LAKE BRITTON AREA (B118 Code: 5-46)	2	1	1
Outside Valley Floor	2	1	1
CDPH	2	1	1
FALL RIVER VALLEY (B118 Code: 5-5)	8	1	7
Outside Valley Floor	8	1	7
CDPH	4	1	3
ENVIRONMENTAL MONITORING (WELLS)	4	0	4
NORTH FORK BATTLE CREEK (B118 Code: 5-50)	4	1	3
Outside Valley Floor	4	1	3
CDPH	2	1	1
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
YELLOW CREEK VALLEY (B118 Code: 5-56)	2	0	2
Outside Valley Floor	2	0	2
CDPH	2	0	2
GRIZZLY VALLEY (B118 Code: 5-59)	1	0	1
Outside Valley Floor	1	0	1
CDPH	1	0	1
REDDING AREA: BOWMAN (B118 Code: 5-6.01)	98	17	81
Upper	7	2	5

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
Domestic	1	0	1
Observation	4	0	4
USGS (Unknown well type)	2	2	0
UpperLower	10	10	0
CDPH	3	3	0
USGS (Unknown well type)	7	7	0
Lower	80	4	76
CDPH	10	3	7
USGS (Unknown well type)	1	1	0
WATER SUPPLY (WELLS)	69	0	69
Too Deep	1	1	0
USGS (Unknown well type)	1	1	0
REDDING AREA: ROSEWOOD (B118 Code: 5-6.02)	2	0	2
Lower	2	0	2
WATER SUPPLY (WELLS)	2	0	2
REDDING AREA: ANDERSON (B118 Code: 5-6.03)	202	75	127
Upper	115	44	71
CDPH	3	3	0
Domestic	2	0	2
ENVIRONMENTAL MONITORING (WELLS)	100	37	63
Observation	5	0	5
USGS (Unknown well type)	5	4	1
UpperLower	11	11	0
CDPH	8	8	0
USGS (Unknown well type)	3	3	0
Lower	67	16	51
CDPH	49	12	37
USGS (Unknown well type)	4	4	0
WATER SUPPLY (WELLS)	14	0	14
Too Deep	4	4	0
CDPH	3	3	0
USGS (Unknown well type)	1	1	0
Unknown	5	0	5
#N/A	5	0	5
REDDING AREA: ENTERPRISE (B118 Code: 5-6.04)	94	53	41
Upper	45	28	17
CDPH	7	7	0
ENVIRONMENTAL MONITORING (WELLS)	37	21	16
USGS (Unknown well type)	1	0	1
UpperLower	7	7	0
CDPH	4	4	0
USGS (Unknown well type)	3	3	0
Lower	32	13	19
CDPH	24	11	13
USGS (Unknown well type)	2	2	0

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	20,539	6,349	14,190
WATER SUPPLY (WELLS)	6	0	6
Too Deep	5	5	0
CDPH	5	5	0
Unknown	5	0	5
#N/A	5	0	5
REDDING AREA: MILLVILLE (B118 Code: 5-6.05)	15	5	10
Upper	3	3	0
CDPH	2	2	0
USGS (Unknown well type)	1	1	0
UpperLower	2	2	0
CDPH	2	2	0
Lower	6	0	6
CDPH	3	0	3
Irrigation	1	0	1
WATER SUPPLY (WELLS)	2	0	2
Unknown	4	0	4
#N/A	4	0	4
REDDING AREA: SOUTH BATTLE CREEK (B118 Code: 5-6.06)	5	1	4
UpperLower	1	1	0
USGS (Unknown well type)	1	1	0
Lower	4	0	4
WATER SUPPLY (WELLS)	4	0	4
HUMBUG VALLEY (B118 Code: 5-60)	29	4	25
Outside Valley Floor	29	4	25
CDPH	12	4	8
ENVIRONMENTAL MONITORING (WELLS)	15	0	15
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
ELK CREEK AREA	5	0	5
Outside Valley Floor	5	0	5
ENVIRONMENTAL MONITORING (WELLS)	5	0	5
STONYFORD TOWN AREA (B118 Code: 5-63)	4	1	3
Outside Valley Floor	4	1	3
CDPH	2	1	1
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
CLEAR LAKE CACHE FORMATION (B118 Code: 5-66)	3	1	2
Outside Valley Floor	3	1	2
CDPH	3	1	2
POPE VALLEY (B118 Code: 5-68)	2	0	2
Outside Valley Floor	2	0	2

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	**20,539**	**6,349**	**14,190**
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
YOSEMITE VALLEY (B118 Code: 5-69)	5	3	2
Outside Valley Floor	5	3	2
CDPH	3	3	0
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
LAKE ALMANOR VALLEY (B118 Code: 5-7)	12	3	9
Outside Valley Floor	12	3	9
CDPH	8	3	5
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	2	0	2
BRITE VALLEY (B118 Code: 5-80)	7	3	4
Outside Valley Floor	7	3	4
CDPH	7	3	4
CUDDY CANYON VALLEY (B118 Code: 5-82)	9	5	4
Outside Valley Floor	9	5	4
CDPH	6	5	1
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	1	0	1
CUDDY RANCH AREA (B118 Code: 5-83)	11	4	7
Outside Valley Floor	11	4	7
CDPH	10	4	6
USGS (Unknown well type)	1	0	1
CUDDY VALLEY (B118 Code: 5-84)	19	4	15
Outside Valley Floor	19	4	15
CDPH	14	4	10
USGS (Unknown well type)	3	0	3
WATER SUPPLY (WELLS)	2	0	2
MIL POTRERO AREA (B118 Code: 5-85)	10	5	5
Outside Valley Floor	10	5	5
CDPH	8	5	3
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
MIDDLE FORK FEATHER RIVER (B118 Code: 5-87)	9	0	9
Outside Valley Floor	9	0	9
CDPH	9	0	9
INDIAN VALLEY (B118 Code: 5-9)	31	2	29
Outside Valley Floor	31	2	29

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

	Number of Wells	Wells With Construction Information	Wells Without Construction Information
Wells With Nitrate Results	20,539	6,349	14,190
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
YOSEMITE VALLEY (B118 Code: 5-69)	5	3	2
Outside Valley Floor	5	3	2
CDPH	3	3	0
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
LAKE ALMANOR VALLEY (B118 Code: 5-7)	12	3	9
Outside Valley Floor	12	3	9
CDPH	8	3	5
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	2	0	2
BRITE VALLEY (B118 Code: 5-80)	7	3	4
Outside Valley Floor	7	3	4
CDPH	7	3	4
CUDDY CANYON VALLEY (B118 Code: 5-82)	9	5	4
Outside Valley Floor	9	5	4
CDPH	6	5	1
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	1	0	1
CUDDY RANCH AREA (B118 Code: 5-83)	11	4	7
Outside Valley Floor	11	4	7
CDPH	10	4	6
USGS (Unknown well type)	1	0	1
CUDDY VALLEY (B118 Code: 5-84)	19	4	15
Outside Valley Floor	19	4	15
CDPH	14	4	10
USGS (Unknown well type)	3	0	3
WATER SUPPLY (WELLS)	2	0	2
MIL POTRERO AREA (B118 Code: 5-85)	10	5	5
Outside Valley Floor	10	5	5
CDPH	8	5	3
USGS (Unknown well type)	1	0	1
WATER SUPPLY (WELLS)	1	0	1
MIDDLE FORK FEATHER RIVER (B118 Code: 5-87)	9	0	9
Outside Valley Floor	9	0	9
CDPH	9	0	9
INDIAN VALLEY (B118 Code: 5-9)	31	2	29
Outside Valley Floor	31	2	29

Table B - 8. Region 5: DWR Bulletin 118 Groundwater Basins/Sub-basins Wells with Nitrate Results and Statistics for Wells With or Without Construction Information

		Wells With	Wells Without
Wells With Nitrate Results	20,539	6,349	14,190
CDPH	16	2	14
ENVIRONMENTAL MONITORING (WELLS)	4	0	4
USGS (Unknown well type)	2	0	2
WATER SUPPLY (WELLS)	2	0	2
#N/A	7	0	7
MEADOW VALLEY (B118 Code: 5-95)	1	0	1
Outside Valley Floor	1	0	1
CDPH	1	0	1
Outside B118 Groundwater Sub-basins	4,050	737	3,313
Upper	14	0	14
Domestic	2	0	2
ENVIRONMENTAL MONITORING (WELLS)	11	0	11
Observation	1	0	1
UpperLower	1	1	0
USGS (Unknown well type)	1	1	0
Lower	11	2	9
CDPH	8	2	6
WATER SUPPLY (WELLS)	3	0	3
Too Deep	2	2	0
CDPH	2	2	0
Outside Valley Floor	4,018	732	3,286
CDPH	2,392	732	1,660
Domestic	2	0	2
ENVIRONMENTAL MONITORING (WELLS)	831	0	831
USGS (Unknown well type)	129	0	129
WATER SUPPLY (WELLS)	657	0	657
#N/A	7	0	7
Unknown	4	0	4
Undetermined	1	0	1
#N/A	3	0	3

Table B – 9. YOLO Sub-basin (DWR Code: 5-21.67) TDS Data

Total Dissolved Solids (TDS)	Upper Zone	Production Zone
# of Wells	194	298
Mean Concentration (mg/L)	1,488	1,156
Median Concentration (mg/L)	1,050	744
75th Percentile (mg/L)	1,680	1,304
95th Percentile (mg/L)	4,807	3,800
Maximum Concentration (mg/L)	6,657	6,657
Percent of Wells >1000 mg/L	53%	35%

Table B – 10. YOLO Sub-basin (DWR Code: 5-21.67) Summary of Available Trend Data for TDS

Groundwater Zone (# wells w/ trend data)	Decreasing Trend	Slightly Decreasing	Neutral Trend	Slightly Increasing	Increasing Trend
Upper (27)	7 (26%)	5 (19%)	4 (15%)	10 (37%)	1 (4%)
Production (1)	0	0	1	0	0
Lower (14)	0	4 (29%)	9 (64%)	0	1 (7%)

Table B – 11. YOLO Sub-basin (DWR Code: 5-21.67) Nitrate Data

NITRATE (*as N*)	Upper Zone	Production Zone
# of Wells	431	572
Mean Concentration (mg/L)	36.8	28.6
Median Concentration (mg/L)	1,9	2.4
75th Percentile (mg/L)	7.5	6.9
95th Percentile (mg/L)	186	135
Maximum Concentration (mg/L)	1,542	1,541
Percent of Wells >10 mg/L	21%	16%

Table B – 12. YOLO Sub-basin (DWR Code: 5-21.67) Summary of Available Trend Data for Nitrate

Groundwater Zone (# wells w/ trend data)	Decreasing Trend	Slightly Decreasing	Neutral Trend	Slightly Increasing	Increasing Trend
Upper (48)	13 (27%)	11 (23%)	5 (10%)	9 (19%)	10 (21%)
Production (10)	0	3 (30%)	1 (10%)	5 (50%)	1 (10%)
Lower (34)	0	8 (24%)	10 (29%)	16 (47%)	0

Figure B – 6. Average TDS Concentration for Wells in the UPPER Zone of the YOLO Sub-basin (2000-2016)

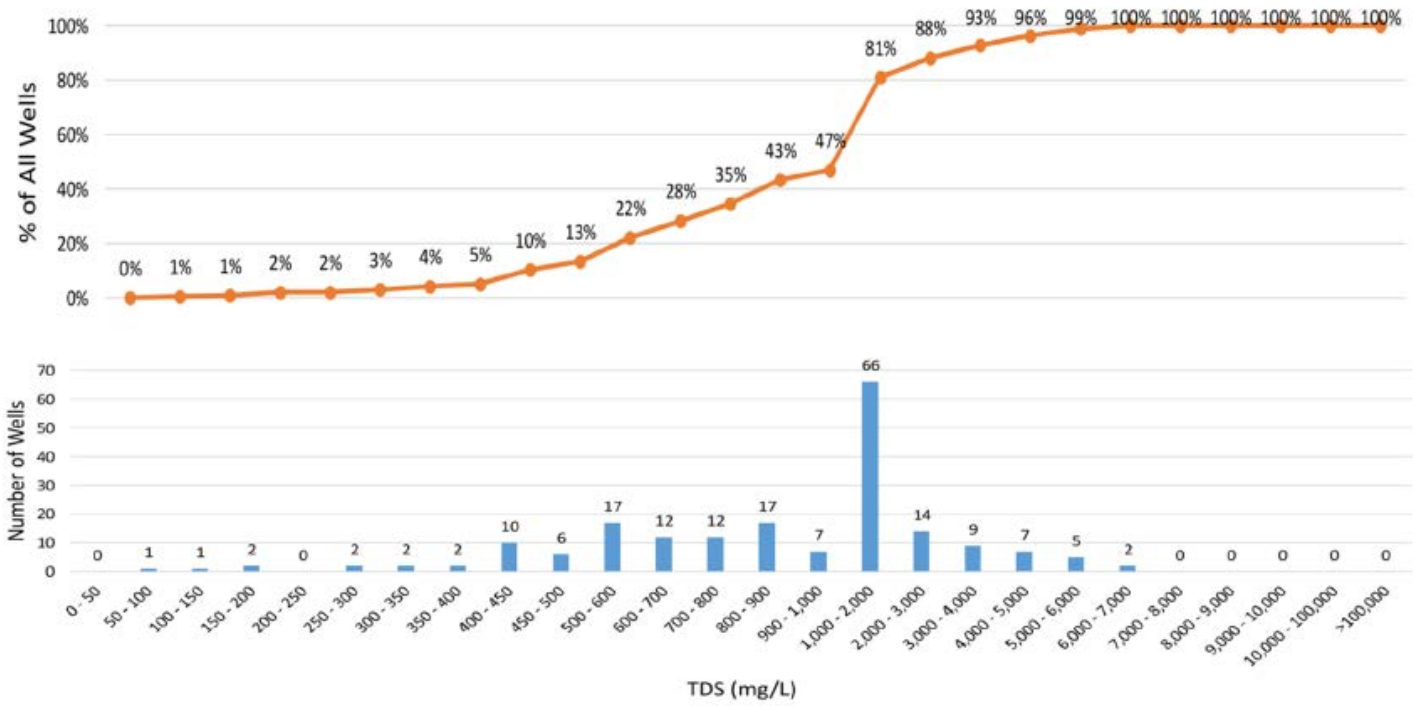


Figure B – 7. Average TDS Concentration for Wells in the PRODUCTION Zone of the YOLO Sub-basin (2000-2016)

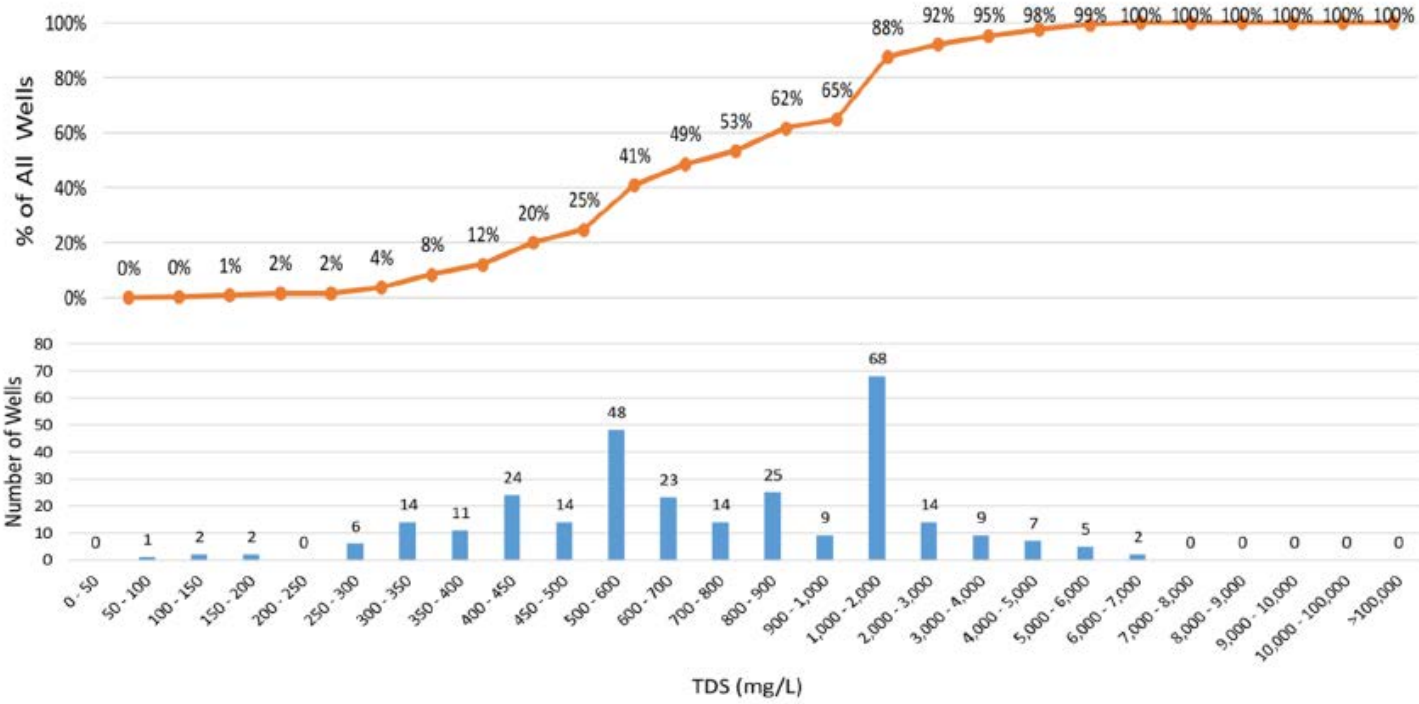


Figure B – 8. Average Nitrate Concentration for Wells in the UPPER Zone of the YOLO Sub-basin (2000-2016)

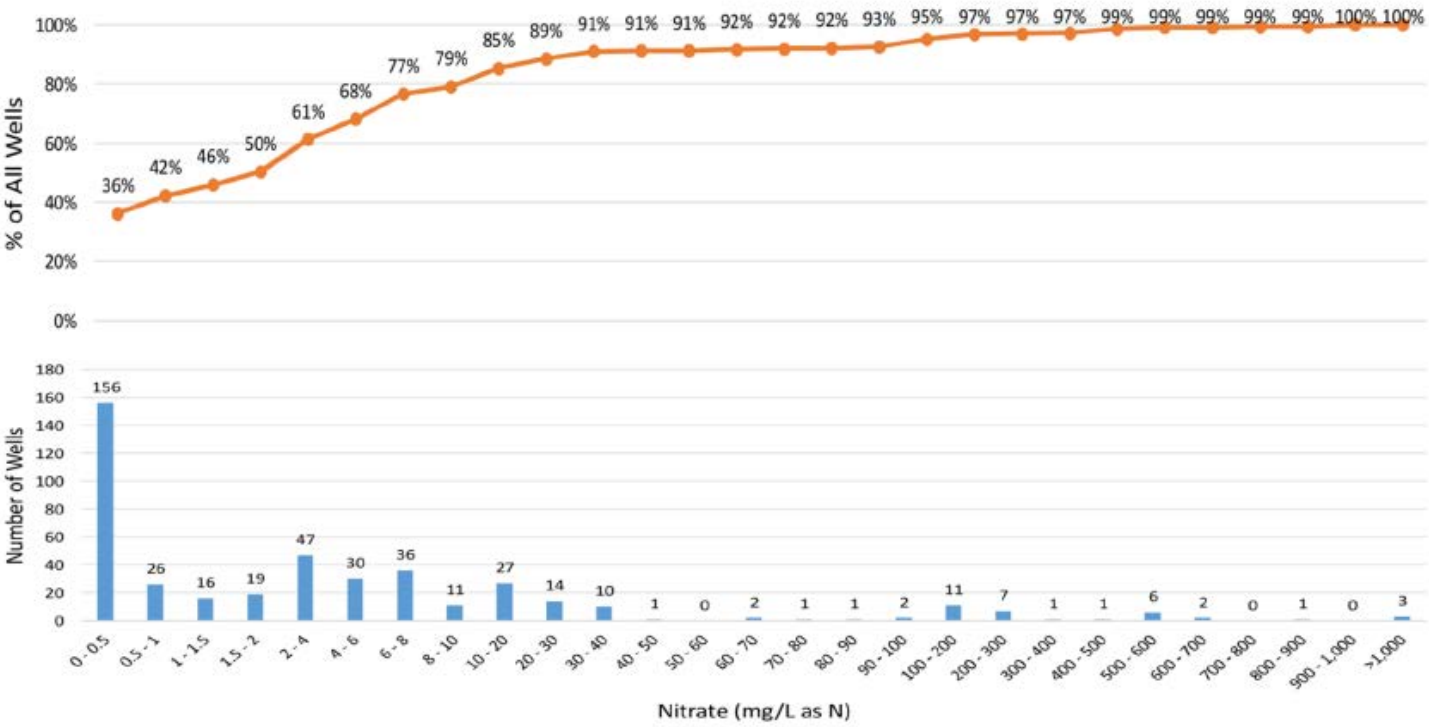


Figure B – 9. Average Nitrate Concentration for Wells in the PRODUCTION Zone of the YOLO Sub-basin (2000-2016)

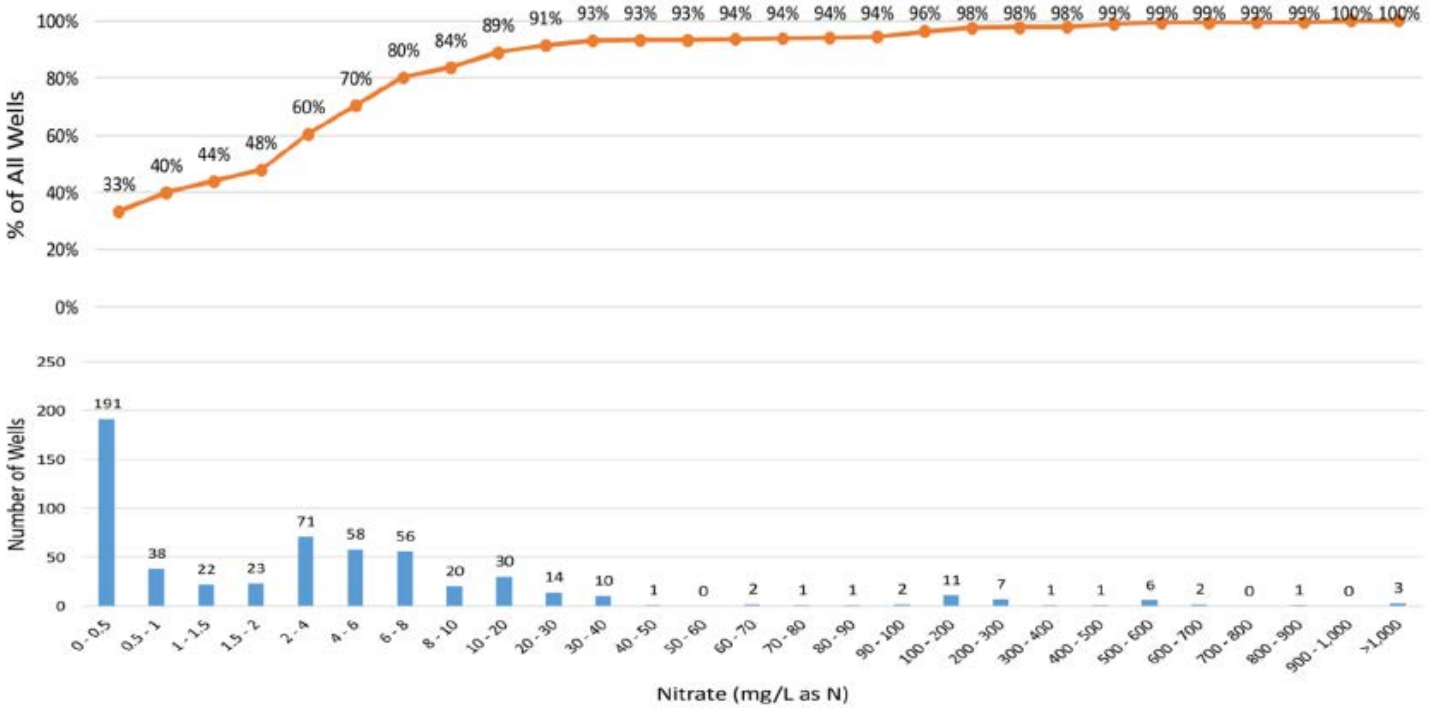


Table B - 13. Estimated Assimilative Capacity for Nitrate and TDS in the Lower, Upper, and Production Zones in Central Valley Groundwater Basins/Sub-basins.

Area	DWR B118 Groundwater Basin Code	Nitrate (mg/L as N) (Based on 10 mg/L as N)			TDS (mg/L) (Based on 1,000 mg/L)		
		Lower Zone*	Upper Zone	Production Zone	Lower Zone*	Upper Zone	Production Zone
Northern Central Valley	**5-6.01**	8.95	8.96	8.95	822	836	828
	5-6.02	8.64	9.05	8.84	798	851	824
	5-6.03	8.79	8.97	8.88	853	810	832
	5-6.04	8.55	9.01	8.78	841	742	802
	5-6.05	8.24	9.08	8.72	840	852	846
	5-6.06	9.11	9.15	9.13	808	838	824
	5-21.50	8.12	8.63	8.33	762	762	762
	5-21.51	7.66	8.22	7.84	736	711	728
	5-21.52	7.13	6.71	6.94	528	387	467
	5-21.53	7.80	8.77	8.23	738	766	750
	5-21.54	6.94	8.08	7.34	703	639	680
	5-21.55	8.09	8.41	8.20	777	774	776
	5-21.56	8.64	7.58	8.33	819	800	814
	5-21.57	7.92	7.17	7.72	808	796	805
	5-21.58	8.62	7.38	8.20	687	597	657
	5-21.59	9.01	8.07	8.69	690	662	680
	5-21.60	7.65	7.81	7.72	705	651	683
	5-21.61	8.10	7.09	7.70	635	570	609
	5-21.62	8.85	7.63	8.33	82	8	50
	5-21.64	8.42	6.33	7.63	702	554	647
	5-21.67	6.41	0.00	2.37	477	210	353
	5-21.68	3.97	7.34	5.42	365	0	177
Middle Central Valley	**2-3**	6.53	6.52	6.53	436	0	100
	2-4	8.93	5.18	7.32	329	0	0
	5-21.65	8.45	7.87	8.22	778	657	730
	5-21.66	7.32	5.54	6.64	496	65	331
	5-22.01	6.31	3.93	5.28	707	494	615
	5-22.02	6.26	2.42	4.47	783	648	720
	5-22.03	5.37	0.00	2.26	789	561	678
	5-22.04	6.54	3.52	5.15	739	582	666
	5-22.05	3.36	1.12	1.79	460	126	226
	5-22.06	6.22	5.35	5.91	725	583	675
	5-22.07	6.68	4.16	4.99	72	0	0
	5-22.15	7.70	6.36	6.96	110	0	0
	5-22.16	8.52	7.35	8.13	773	794	780
Southern Central Valley	**5-22.08**	3.38	2.88	3.16	609	440	536
	5-22.09	7.14	8.74	8.20	0	0	0
	5-22.10	9.57	7.68	8.63	154	0	0
	5-22.11	0.00	0.00	0.00	581	486	535
	5-22.12	8.64	4.67	6.77	260	0	0
	5-22.13	1.71	1.69	1.70	618	412	535
	5-22.14	6.71	4.46	6.24	439	0	0

* Above the Corcoran Clay where present.

Figure B - 10. Estimated Assimilative Capacity for Nitrate (mg/L as N) in the Upper Zone of Central Valley Floor Groundwater Basins/Sub-basins.

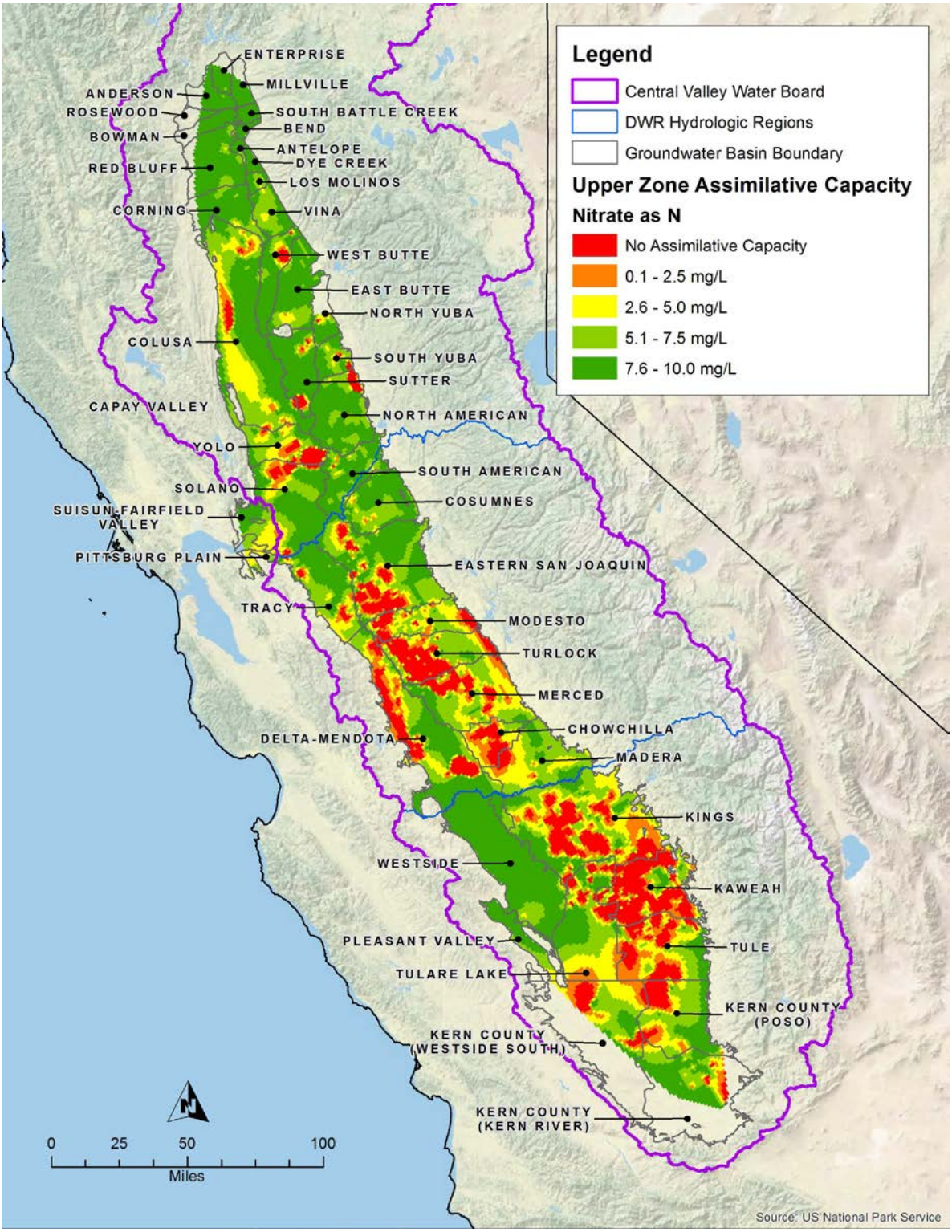


Figure B - 11. Estimated Assimilative Capacity for Nitrate (mg/L as N) in the Production Zone of Central Valley Floor Groundwater Basins/Sub-basins (above Corcoran Clay where present).

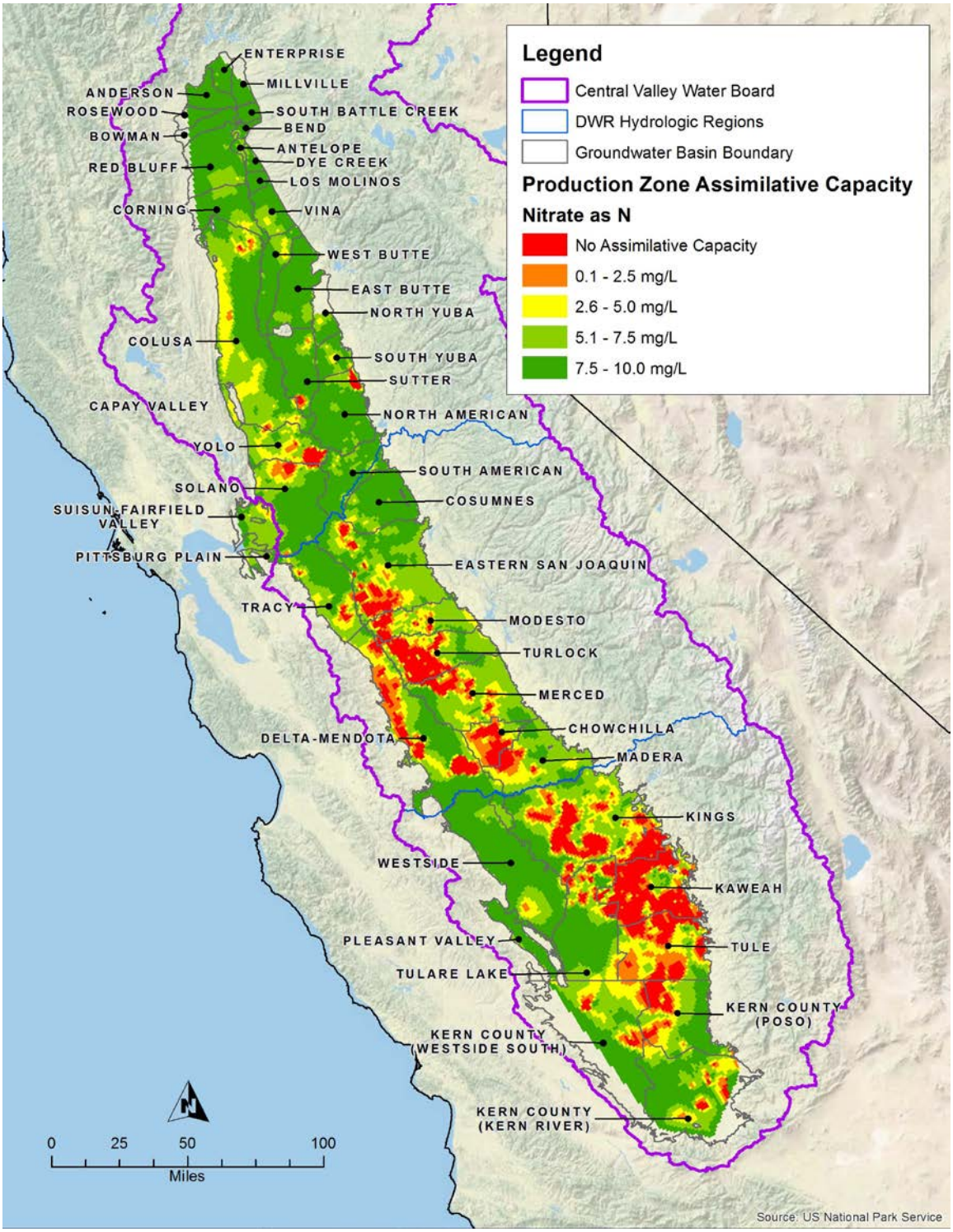


Figure B - 12. Estimated Assimilative Capacity for TDS (mg/L) in the Upper Zone of Central Valley Floor Groundwater Basins/Sub-basins

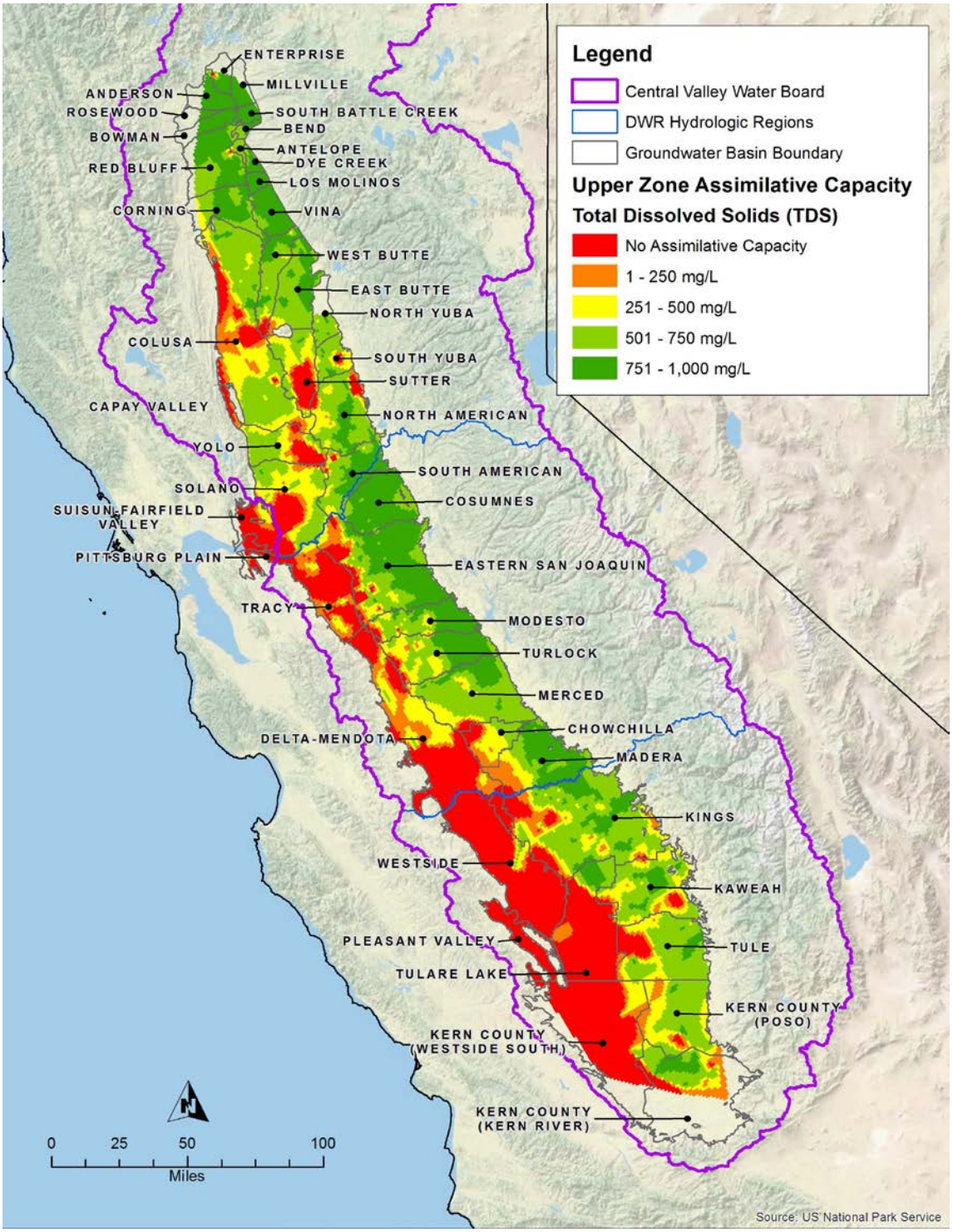


Figure B - 13. Estimated Assimilative Capacity for TDS (mg/L) in the Production Zone of Central Valley Floor Groundwater Basins/Sub-basins (above Corcoran Clay where present).

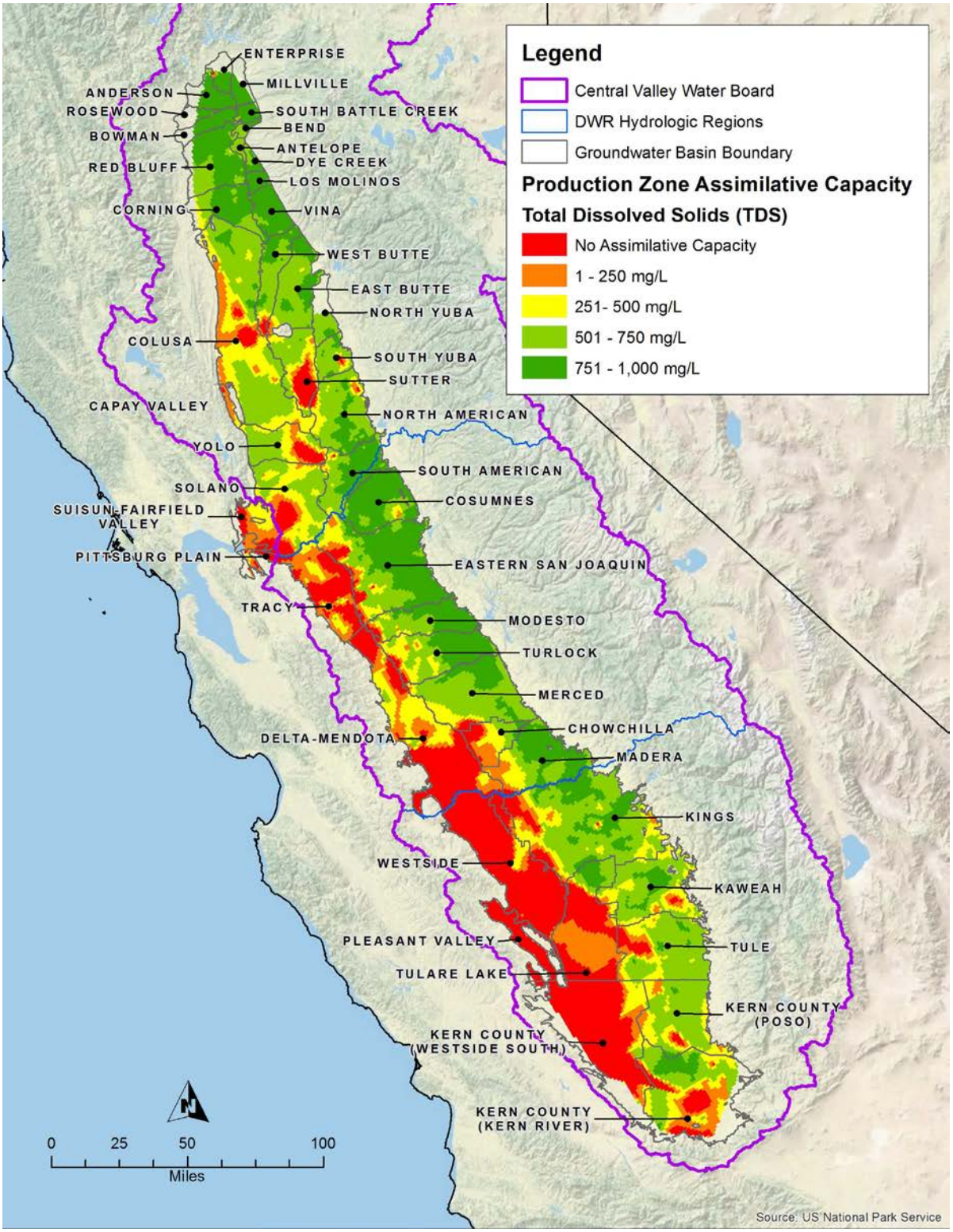


Figure B – 14. IAZ Map of Initial Analysis Zones (IAZs) in the Central Valley

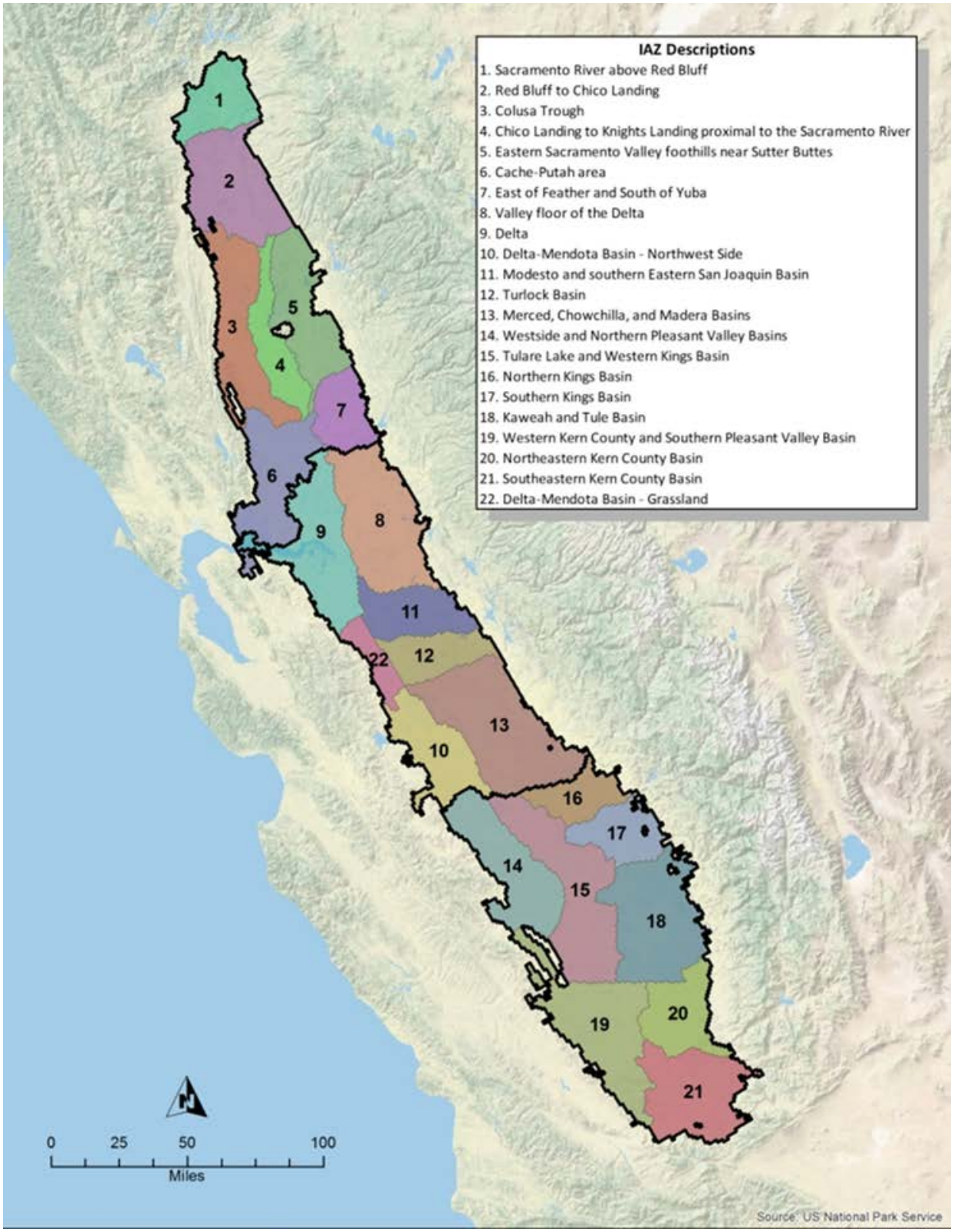


Table B – 14. Ambient Nitrate Concentrations in Northern Central Valley IAZs

	Ambient Nitrate Concentrations - Northern Central Valley									
	Percent of CVHM Grid Cells Containing A Well Over 10 mg/L (NO_3-N) Within an IAZ				Shallow Concentrations (2003-2012)			Deep Concentrations (1980-2012)		
IAZ	Before 1960	1960-1979	1980-1999	2000-2012	25th Percentile	Shallow Median (mg/L NO_3-N)	75th Percentile	Lower 95% Confidence Interval	Estimated 2003 Deep Concentration (mg/L NO_3-N)	Upper 95% Confidence Interval
1	2%	0%	0%	1%	0.1	0.1	0.4	0.7	0.8	0.8
2	5%	5%	11%	12%	0.1	0.6	2.0	1.4	1.4	1.5
3	1%	2%	7%	13%	0.4	0.9	1.9	1.3	1.5	1.6
4	0%	2%	4%	4%	0.2	2.8	27.0	0.2	0.2	0.2
5	7%	9%	12%	16%	0.1	0.4	1.5	0.8	0.9	0.9
6	6%	10%	13%	29%	0.1	0.6	2.8	1.9	2.0	2.2
7	3%	0%	1%	4%	0.1	0.7	1.6	1.1	1.1	1.2

Table B - 15. Ambient TDS Concentrations in Northern Central Valley IAZs

	Ambient TDS Concentrations - Northern Central Valley									
	Percent of CVHM Grid Cells Containing A Well Over 500 mg/L (TDS) Within an IAZ				Shallow Concentrations (2003-2012)			Deep Concentrations (1980-2012)		
IAZ	Before 1960	1960-1979	1980-1999	2000-2012	25th Percentile	Shallow Median (mg/L)	75th Percentile	Lower 95% Confidence Interval	Estimated 2003 Deep Concentration (mg/L)	Upper 95% Confidence Interval
1	13%	3%	1%	3%	200	370	1095	153	158	164
2	5%	4%	5%	6%	164	201	323	218	223	227
3	31%	25%	36%	38%	497	583	1843	347	381	418
4	24%	28%	29%	36%	545	761	2548	322	363	410
5	7%	15%	20%	26%	253	329	495	269	281	293
6	59%	59%	58%	57%	835	1060	1398	449	461	473
7	4%	9%	10%	21%	292	398	743	236	241	247

Table B - 16. Ambient Nitrate Concentrations in Middle Central Valley IAZs

	Ambient Nitrate Concentrations - Middle Central Valley									
	Percent of CVHM Grid Cells Containing A Well Over 10 mg/L (NO_3-N) Within an IAZ				Shallow Concentrations (2003-2012)			Deep Concentrations (1980-2012)		
IAZ	Before 1960	1960-1979	1980-1999	2000-2012	25th Percentile	Shallow Median (mg/L NO_3-N)	75th Percentile	Lower 95% Confidence Interval	Estimated 2003 Deep Concentration (mg/L NO_3-N)	Upper 95% Confidence Interval
8	1%	3%	3%	24%	0.3	1.2	3.4	1.1	1.1	1.2
9	8%	18%	24%	22%	0.1	0.4	3.0	0.4	0.5	0.5
10	6%	11%	30%	40%	1.2	2.7	7.6	3.8	4.2	4.6
11	4%	10%	21%	46%	1.8	4.9	9.6	3.1	3.2	3.3
12	5%	13%	32%	62%	2.7	10.4	22.6	2.8	3.0	3.2
13	2%	4%	7%	33%	2.5	6.1	10.2	2.1	2.2	2.3
22	3%	9%	43%	38%	1.8	7.4	12.4	1.6	1.9	2.2

Table B - 17. Ambient TDS Concentrations in Middle Central Valley IAZs

	Ambient TDS Concentrations - Middle Central Valley									
	Percent of CVHM Grid Cells Containing A Well Over 500 mg/L (TDS) Within an IAZ				Shallow Concentrations (2003-2012)			Deep Concentrations (1980-2012)		
IAZ	Before 1960	1960-1979	1980-1999	2000-2012	25th Percentile	Shallow Median (mg/L)	75th Percentile	Lower 95% Confidence Interval	Estimated 2003 Deep Concentration (mg/L)	Upper 95% Confidence Interval
8	10%	6%	6%	25%	200	438	620	222	226	231
9	78%	84%	69%	80%	590	961	1375	539	560	583
10	81%	91%	95%	90%	538	842	1140	853	911	972
11	17%	20%	23%	33%	495	565	888	266	273	282
12	30%	31%	27%	29%	432	825	900	255	267	280
13	12%	18%	11%	20%	383	648	785	230	236	242
22	87%	90%	92%	88%	810	1160	1508	591	645	705

Table B - 18. Ambient Nitrate Concentrations in Southern Central Valley IAZs

	Ambient Nitrate Concentrations - Southern Central Valley									
	Percent of CVHM Grid Cells Containing A Well Over 10 mg/L (NO_3-N) Within an IAZ				Shallow Concentrations (2003-2012)			Deep Concentrations (1980-2012)		
IAZ	Before 1960	1960-1979	1980-1999	2000-2012	25th Percentile	Shallow Median (mg/L NO_3-N)	75th Percentile	Lower 95% Confidence Interval	Estimated 2003 Deep Concentration (mg/L NO_3-N)	Upper 95% Confidence Interval
14	4%	4%	59%	6%	0.2	0.4	1.0	0.7	1.0	1.4
15	1%	2%	21%	38%	0.5	3.0	10.2	0.4	0.4	0.5
16	1%	10%	17%	25%	1.4	11.1	19.5	3.0	3.1	3.2
17	0%	23%	26%	35%	2.3	8.5	19.4	2.7	2.9	3.1
18	8%	24%	28%	55%	4.7	10.7	19.2	2.9	3.0	3.2
19	8%	7%	24%	30%	0.1	3.3	7.5	0.9	1.1	1.3
20	8%	27%	27%	39%	0.1	3.4	11.3	1.8	2.0	2.2
21	8%	21%	18%	23%	0.1	0.2	0.5	1.4	1.5	1.6

Table B - 19. Ambient TDS Concentrations in Southern Central Valley IAZs

	Ambient TDS Concentrations - Southern Central Valley									
	Percent of CVHM Grid Cells Containing A Well Over 500 mg/L (TDS) Within an IAZ				Shallow Concentrations (2003-2012)			Deep Concentrations (1980-2012)		
IAZ	Before 1960	1960-1979	1980-1999	2000-2012	25th Percentile	Shallow Median (mg/L)	75th Percentile	Lower 95% Confidence Interval	Estimated 2003 Deep Concentration (mg/L)	Upper 95% Confidence Interval
14	100%	99%	95%	95%	3150	3375	5700	786	966	1187
15	53%	46%	61%	48%	523	1000	1350	314	337	361
16	5%	18%	9%	19%	438	575	771	214	218	223
17	2%	16%	23%	25%	305	520	755	190	199	208
18	15%	25%	20%	31%	479	598	937	207	213	219
19	58%	54%	71%	65%	5075	11300	14500	331	397	475
20	27%	43%	32%	45%	816	870	975	293	309	327
21	44%	51%	40%	34%	240	335	598	254	262	271

Table B - 20. Trends in Ambient Nitrate Concentrations in Central Valley IAZs

(Value count refers to the number of values the calculated median concentration is based on; colors are used to show relative differences in concentration from low [green] to high [red])

Shallow Nitrate Median Concentration (mg/L NO3-N) Through Time														
		1910-1964		1965-1970		1971-1979		1980-1989		1990-2002		2003-2012		Trend
	IAZ	Median	Value Count	Median	Value Count	Median	Value Count	Median	Value Count	Median	Value Count	Median	Value Count	
Nothern Central Valley	1					0.1	1					0.1	41	No apparent trend
	2	1.1	29	1.3	13	2.2	86	3.0	30	2.4	12	0.6	75	No apparent trend
	3	2.3	6	1.2	6	1.3	34	1.3	7	0.7	22	0.9	62	No apparent trend
	4			0.2	7	0.2	11	0.0	2	0.1	7	2.8	17	No apparent trend
	5	1.1	8	1.2	4	1.4	48	2.5	7	0.8	13	0.4	80	No apparent trend
	6			1.8	8	3.6	14	3.4	17	0.2	3	0.6	106	Slightly decreasing
	7	0.8	8	1.2	2	1.5	5	1.8	4	1.7	9	0.7	76	No apparent trend
Middle Central Valley	8	1.1	24	2.5	9	1.9	13	2.4	12	1.5	11	1.2	345	No apparent trend
	9	4.9	8	2.9	4	0.1	7	0.1	7	0.1	10	0.4	218	No apparent trend
	10	3.4	4					2.7	7	2.2	4	2.7	65	No apparent trend
	11			3.2	3	7.5	4	12.6	8	8.1	4	4.9	254	Increasing to decreasing?
	12							0.1	1	3.4	11	10.4	220	Increasing
	13			7.9	3			4.4	8	5.4	21	6.1	195	Slightly increasing
	22	3.4	1					13.1	18	17.5	17	7.4	83	Slightly decreasing
Southern Central Valley	14	3.4	1	2.5	1			23.0	75			0.4	14	No apparent trend
	15							1.2	67	11.3	26	3.0	192	Increasing to decreasing?
	16	5.7	1					8.2	6	7.9	19	11.1	36	Slightly increasing
	17	6.0	2			8.1	1	8.0	10	10.1	33	8.5	100	Slightly increasing
	18							14.5	8	15.0	21	10.7	362	No apparent trend
	19	3.6	3					4.9	40			3.3	42	No apparent trend
	20	0.6	6					1.6	1			3.4	14	Slightly increasing
	21	0.7	8			8.6	1	8.6	23	0.3	5	0.2	45	Increasing to decreasing?

Table B - 21. Trends in Ambient TDS Concentrations in Central Valley IAZs

(Value count refers to the number of values the calculated median concentration is based on; colors are used to show relative differences in concentration from low [green] to high [red])

Shallow TDS Concentrations (mg/L)														
		1910-1964		1965-1970		1971-1979		1980-1989		1990-2002		2003-2012		Trend
	IAZ	Median	Value Count	Median	Value Count	Median	Value Count	Median	Value Count	Median	Value Count	Median	Value Count	
Nothern Central Valley	1					158	39	149.75	52			370	9	Slightly increasing
	2	179.2	33	145.06	16	269.54	92	230	25	195	9	200.5	26	No apparent trend
	3	1022.8	12	571.52	9	347.26	44	398.26	24	588.25	20	583	21	Slightly increasing
	4			852.5	10	486.5	14	806.4	7	625	8	760.5	6	No apparent trend
	5	164	8	183	9	215.5	52	219	12	435	14	329	59	Slightly increasing
	6			381	7	407.68	63	423.04	99	528	5	1060	55	Increasing
	7	167.5	8	177	5	186.24	14	221.44	24	506.25	8	397.5	52	Slightly increasing
Middle Central Valley	8	162.56	27	164	13	187	73	165.76	57	335.5	8	438	231	Increasing
	9	953.5	12	995.2	12	736	31	702.85	24	713.5	5	960.5	147	No apparent trend
	10	473	8	870.4	1	869.5	2	1960	7	838	4	841.5	47	No apparent trend
	11	315	31	173	7	256.64	18	227.24	16	640	4	565	93	Increasing
	12	80	3	895	3			82.75	12	201.25	12	825	7	Increasing
	13	235	5	423	10	180	3	203.5	27	257.5	23	647.5	49	Increasing
	22	962	13	5630	4			2575	22	2410	17	1160	6	No apparent trend
Southern Central Valley	14	942	3	836	1			4310	74			3375	15	Increasing
	15	335.5	10	475	3	315	2	6490	67	782.5	18	1000	63	Increasing
	16	419	4	124	1	303	3	378	7	496.75	15	575.375	8	Slightly increasing
	17	383	5			351.5	6	413	9	393.75	28	520	63	Slightly increasing
	18	160	3			356	1	1555	8	648	18	597.75	82	No apparent trend
	19	1270	5					3370	39			11300	37	Increasing
	20	518	7					290	1			870	9	No apparent trend
	21	359	10			352.5	2	3420	23	419.5	4	335	32	No apparent trend

Table B - 22. Central Valley Floor; Initial Analysis Zones, Nitrate Concentration Statistics

				Well Nitrate (mg/L as N) Concentration Statistics				
		IAZ	Aquifer Zone	Number of Wells	Minimum	Mean	Median	Maximum
Nitrate Results	Northern Central Valley	1	*Upper Zone*	170	0.00	0.83	0.31	5.87
			Upper and Lower Zone	31	0.23	1.20	1.13	2.58
			Lower Zone	204	0.07	1.23	0.85	7.00
			Below Production Zone	10	0.23	0.64	0.45	1.76
			Unknown	15	0.16	1.75	1.37	5.39
		2	*Upper Zone*	324	0.00	2.95	1.08	94.28
			Upper and Lower Zone	58	0.19	1.78	1.14	6.49
			Lower Zone	498	0.12	2.46	1.58	20.81
			Below Production Zone	10	0.23	0.67	0.39	2.35
			Unknown	75	0.09	4.70	3.44	21.83
		3	*Upper Zone*	210	0.02	3.85	1.03	78.27
			Upper and Lower Zone	19	0.23	3.10	2.00	9.94
			Lower Zone	134	0.03	3.40	1.79	22.00
			Unknown	39	0.11	3.85	2.28	19.19
		4	*Upper Zone*	83	0.02	4.57	0.23	97.29
			Upper and Lower Zone	9	0.09	0.38	0.23	0.82
			Lower Zone	47	0.04	0.62	0.23	6.11
			Unknown	23	0.02	1.59	0.18	11.07
		5	*Upper Zone*	314	0.02	2.94	0.79	55.40
			Upper and Lower Zone	71	0.22	2.10	1.07	10.81
			Lower Zone	257	0.09	2.45	0.89	19.20
			Below Production Zone	3	0.23	0.23	0.23	0.23
			Unknown	66	0.01	2.43	0.82	22.42
		6	*Upper Zone*	396	0.10	10.73	3.68	218.39
			Upper and Lower Zone	37	0.22	3.42	3.00	9.21
			Lower Zone	209	0.09	3.75	2.74	18.91
			Below Production Zone	14	0.23	1.24	0.45	8.76
			Unknown	22	0.23	3.39	3.46	14.02
		7	*Upper Zone*	235	0.02	13.89	1.37	1219.84
			Upper and Lower Zone	99	0.23	1.69	1.53	5.88
			Lower Zone	248	0.07	1.58	1.34	7.03
			Below Production Zone	4	0.23	0.99	0.23	3.27
			Unknown	20	0.17	1.74	1.01	8.59

Table B - 23. Central Valley Floor; Initial Analysis Zones, Nitrate Concentration Statistics

				Well Nitrate (mg/L as N) Concentration Statistics				
		IAZ	Aquifer Zone	Number of Wells	Minimum	Mean	Median	Maximum
Nitrate Results	Middle Central Valley	8	*Upper Zone*	825	0.07	6.05	2.02	320.21
			Upper and Lower Zone	229	0.02	2.17	1.65	12.31
			Lower Zone	739	0.05	3.44	1.77	67.30
			Below Production Zone	16	0.21	0.39	0.23	2.32
			Unknown	65	0.15	3.14	1.94	18.75
		9	*Upper Zone*	938	0.05	26.83	0.72	1541.75
			Upper and Lower Zone	82	0.16	1.60	0.23	13.99
			Lower Zone	257	0.11	2.22	0.25	64.00
			Below CC Zone	57	0.17	2.32	1.26	18.50
			Below Production Zone	8	0.23	1.75	0.23	6.32
			Unknown	15	0.14	3.50	0.23	14.62
		10	*Upper Zone*	180	0.13	9.23	8.58	37.48
			Upper and Lower Zone	10	2.98	7.92	7.03	14.15
			Lower Zone	38	0.23	6.25	4.64	45.90
			Below CC Zone	33	0.23	7.41	4.96	20.35
			Unknown	2	3.26	4.18	4.18	5.10
		11	*Upper Zone*	810	0.06	19.40	5.86	1920.68
			Upper and Lower Zone	131	0.23	4.68	3.89	40.90
			Lower Zone	273	0.21	6.20	4.04	62.80
			Below CC Zone	138	0.23	5.84	3.82	54.20
			Unknown	4	2.07	5.16	3.07	12.45
		12	*Upper Zone*	919	0.08	17.87	11.57	282.28
			Upper and Lower Zone	22	1.24	7.55	6.49	30.34
			Lower Zone	127	0.23	7.94	3.80	59.40
			Below CC Zone	227	0.20	12.93	5.98	127.30
		13	*Upper Zone*	495	0.10	10.76	5.98	179.61
			Upper and Lower Zone	43	0.23	3.92	2.95	12.66
			Lower Zone	274	0.22	4.51	2.91	43.30
			Below CC Zone	338	0.10	7.85	3.58	71.00
			Below Production Zone	2	1.03	1.10	1.10	1.17
		22	*Upper Zone*	308	0.03	16.17	5.80	602.30
			Upper and Lower Zone	24	0.23	4.12	4.63	9.20
			Lower Zone	61	0.19	4.45	2.01	49.00
			Below CC Zone	34	0.03	4.59	2.03	24.19
			Unknown	18	0.07	7.49	6.44	18.98

Table B - 24. Central Valley Floor; Initial Analysis Zones, Nitrate Concentration Statistics

				Well Nitrate (mg/L as N) Concentration Statistics				
		IAZ	Aquifer Zone	Number of Wells	Minimum	Mean	Median	Maximum
Nitrate Results	Southern Central Valley	14	*Upper Zone*	17	0.23	49.81	0.91	452.82
			Upper and Lower Zone	5	0.05	2.53	0.23	7.16
			Lower Zone	20	0.05	6.11	0.29	79.06
			Below CC Zone	4	0.23	2.41	0.35	8.69
			Unknown	77	0.02	22.99	0.77	284.63
		15	*Upper Zone*	285	0.03	11.89	4.50	269.38
			Upper and Lower Zone	31	0.12	1.40	0.23	13.22
			Lower Zone	222	0.10	7.45	2.30	63.20
			Below CC Zone	49	0.21	3.41	0.23	57.10
		16	*Upper Zone*	132	0.13	6.98	3.84	37.70
			Upper and Lower Zone	93	0.32	4.40	3.92	13.94
			Lower Zone	454	0.23	4.59	3.44	56.00
			Below Production Zone	12	1.33	2.96	2.31	7.34
		17	*Upper Zone*	126	0.04	17.33	10.23	111.46
			Upper and Lower Zone	54	0.23	4.89	5.11	10.39
			Lower Zone	253	0.11	9.05	4.09	63.05
			Below CC Zone	7	8.50	25.61	22.55	59.60
			Below Production Zone	3	0.23	2.14	2.54	3.66
		18	*Upper Zone*	501	0.10	14.13	9.94	96.30
			Upper and Lower Zone	159	0.21	4.94	3.56	28.58
			Lower Zone	497	0.15	12.27	9.00	74.50
			Below CC Zone	209	0.22	7.11	3.28	55.85
			Below Production Zone	3	0.32	3.54	2.98	7.32
		19	*Upper Zone*	49	0.23	26.91	5.65	556.46
			Upper and Lower Zone	5	0.45	2.51	1.11	7.88
			Lower Zone	21	0.23	4.05	1.70	19.30
			Below CC Zone	12	0.23	3.34	2.50	13.68
		20	*Upper Zone*	34	0.21	6.97	0.81	56.21
			Upper and Lower Zone	15	0.23	5.01	2.13	17.65
			Lower Zone	82	0.22	4.08	1.80	19.39
			Below CC Zone	44	0.81	6.26	5.57	13.17
		21	*Upper Zone*	119	0.04	3.18	0.50	64.04
			Upper and Lower Zone	104	0.16	2.68	1.87	14.32
			Lower Zone	280	0.07	2.37	1.35	29.55
			Below CC Zone	56	0.23	5.12	3.13	29.40
			Below Production Zone	2	0.21	0.22	0.22	0.22

Table B - 25. Central Valley Floor; Initial Analysis Zones, TDS Concentration Statistics

				Well TDS (mg/L) Concentration Statistics				
		IAZ	Aquifer Zone	Number of Wells	Minimum	Mean	Median	Maximum
TDS Results	Northern Central Valley	1	*Upper Zone*	41	93	301	171	2,564
			Upper and Lower Zone	29	98	142	140	189
			Lower Zone	163	82	178	168	961
			Below Production Zone	7	110	170	161	227
			Unknown	15	95	166	162	270
		2	*Upper Zone*	175	119	367	292	8,904
			Upper and Lower Zone	55	117	221	206	425
			Lower Zone	362	59	233	208	679
			Below Production Zone	9	118	209	200	356
			Unknown	63	102	297	273	608
		3	*Upper Zone*	90	154	562	429	3,306
			Upper and Lower Zone	21	196	366	336	794
			Lower Zone	92	45	502	413	3,274
			Unknown	39	129	408	346	968
		4	*Upper Zone*	76	121	627	379	8,282
			Upper and Lower Zone	9	179	287	274	428
			Lower Zone	37	164	670	338	8,579
			Unknown	23	159	461	373	998
		5	*Upper Zone*	248	74	468	321	5,720
			Upper and Lower Zone	59	105	363	260	1,548
			Lower Zone	213	35	355	254	4,288
			Below Production Zone	3	344	360	364	371
			Unknown	66	111	448	246	5,726
		6	*Upper Zone*	307	114	1,676	871	56,500
			Upper and Lower Zone	33	228	494	443	1,510
			Lower Zone	152	54	501	452	1,510
			Below Production Zone	12	284	344	327	507
			Unknown	22	184	593	510	1,901
		7	*Upper Zone*	171	76	952	394	10,240
			Upper and Lower Zone	97	80	251	232	667
			Lower Zone	236	58	256	234	691
			Below Production Zone	5	175	372	333	678
			Unknown	21	106	283	261	584

Table B - 26. Central Valley Floor; Initial Analysis Zones, TDS Concentration Statistics

				Well TDS (mg/L) Concentration Statistics				
		IAZ	Aquifer Zone	Number of Wells	Minimum	Mean	Median	Maximum
TDS Results	Middle Central Valley	8	*Upper Zone*	375	74	639	460	27,276
			Upper and Lower Zone	224	77	255	229	1,230
			Lower Zone	339	34	235	188	1,760
			Below Production Zone	17	129	192	150	773
			Unknown	64	92	256	175	957
		9	*Upper Zone*	511	99	1,547	1,153	18,456
			Upper and Lower Zone	61	90	624	527	4,222
			Lower Zone	176	10	655	587	4,272
			Below CC Zone	45	62	912	737	3,690
			Below Production Zone	8	410	1,072	765	3,406
			Unknown	15	481	4,223	998	25,684
		10	*Upper Zone*	178	207	1,076	972	4,073
			Upper and Lower Zone	8	194	726	676	1,485
			Lower Zone	27	293	956	930	2,196
			Below CC Zone	25	387	1,046	940	4,314
			Unknown	2	417	516	516	615
		11	*Upper Zone*	308	81	2,863	545	178,909
			Upper and Lower Zone	126	67	320	302	1,121
			Lower Zone	134	35	282	221	1,700
			Below CC Zone	119	92	448	311	5,974
			Below Production Zone	2	160	178	178	196
			Unknown	4	180	290	303	373
		12	*Upper Zone*	112	37	541	517	2,143
			Upper and Lower Zone	25	74	402	403	1,176
			Lower Zone	51	74	297	232	1,136
			Below CC Zone	108	144	399	266	1,859
		13	*Upper Zone*	120	94	516	418	1,951
			Upper and Lower Zone	41	62	304	211	3,738
			Lower Zone	182	72	250	202	1,048
			Below CC Zone	124	90	323	220	3,923
			Below Production Zone	2	246	280	280	314
		22	*Upper Zone*	72	269	1,527	1,400	4,210
			Upper and Lower Zone	24	231	827	787	3,255
			Lower Zone	40	185	947	778	3,242
			Below CC Zone	23	440	1,195	1,054	2,536

Table B - 27. Central Valley Floor; Initial Analysis Zones, TDS Concentration Statistics

				Well TDS (mg/L) Concentration Statistics				
		IAZ	Aquifer Zone	Number of Wells	Minimum	Mean	Median	Maximum
TDS Results	Southern Central Valley	14	*Upper Zone*	15	313	4,264	3,233	12,522
			Upper and Lower Zone	5	849	1,053	1,012	1,360
			Lower Zone	17	554	1,176	1,006	2,980
			Below CC Zone	4	563	923	939	1,249
			Unknown	78	279	1,881	906	8,816
		15	*Upper Zone*	126	76	2,295	812	36,000
			Upper and Lower Zone	32	114	599	471	1,916
			Lower Zone	79	61	498	436	1,809
			Below CC Zone	46	140	423	383	1,612
		16	*Upper Zone*	77	69	472	466	1,550
			Upper and Lower Zone	111	74	245	219	570
			Lower Zone	442	10	231	208	1,322
			Below Production Zone	15	132	198	187	354
		17	*Upper Zone*	112	72	557	487	1,600
			Upper and Lower Zone	50	77	284	265	1,184
			Lower Zone	187	68	307	214	9,268
			Below Production Zone	5	109	1,759	177	8,096
		18	*Upper Zone*	219	97	860	601	6,663
			Upper and Lower Zone	153	91	261	223	1,572
			Lower Zone	230	63	354	302	1,221
			Below CC Zone	146	86	201	165	744
			Below Production Zone	3	342	477	371	717
		19	*Upper Zone*	43	800	8,355	6,400	26,500
			Upper and Lower Zone	7	306	1,157	1,254	3,154
			Lower Zone	20	181	859	675	2,758
			Below CC Zone	17	171	1,345	531	9,475
		20	*Upper Zone*	28	167	927	836	3,069
			Upper and Lower Zone	14	135	553	368	1,562
			Lower Zone	73	115	433	366	1,562
			Below CC Zone	40	132	317	290	569
		21	*Upper Zone*	104	142	506	363	1,851
			Upper and Lower Zone	105	10	300	223	1,340
			Lower Zone	250	10	339	234	3,213
			Below CC Zone	52	151	421	380	1,080
			Below Production Zone	2	393	457	457	522

Table B - 28. Central Valley Floor, Initial Analysis Zones Aggregate (Volume Weighted) Ambient Conditions for Nitrate (as N) and TDS

		Nitrate (mg/L as N}			TDS (mg/L}		
	IAZs	Upper	Lower Zone*	Production Zone	Upper Zone	Lower Zone*	Production Zone
Northern Central Valley	1	1.01	1.23	1.12	180	169	159
	2	1.92	2.15	2.07	250	236	240
	3	3.77	3.17	3.42	645	486	551
	4	1.49	0.96	1.20	747	657	698
	5	2.48	1.44	1.81	433	360	386
	6	6.06	3.60	4.58	914	524	682
	7	3.76	1.60	2.40	431	289	342
Middle Central Valley	8	3.29	2.38	2.71	249	222	232
	9	5.23	1.53	3.36	1091	627	858
	10	6.90	6.69	6.82	1087	767	966
	11	9.24	4.71	6.87	479	241	354
	12	10.9	4.61	7.72	446	212	328
	13	6.06	3.78	4.78	505	297	388
	22	6.12	2.36	4.94	1357	984	1240
Southern Central Valley	14	1.26	2.71	1.76	2077	1148	1761
	15	4.96	2.40	3.65	1442	717	1071
	16	6.49	5.46	5.88	373	254	302
	17	10.0	9.36	9.63	413	318	357
	18	9.97	10.51	10.26	569	398	475
	19	6.27	1.43	3.21	3988	841	2573
	20	4.93	4.41	4.54	502	412	436
	21	3.18	2.88	2.93	668	564	593

*Above Corcoran Clay where present.

Figure B - 15. Average Nitrate Mass (Tons) Present for Northern Central Valley IAZs

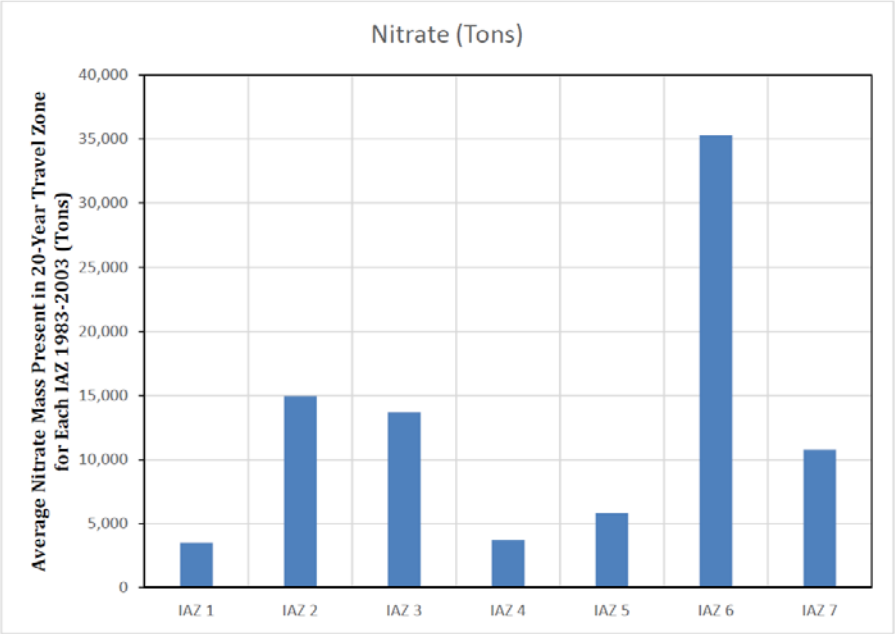


Figure B - 16. Average TDS Mass (Tons) Present for Northern Central Valley IAZs

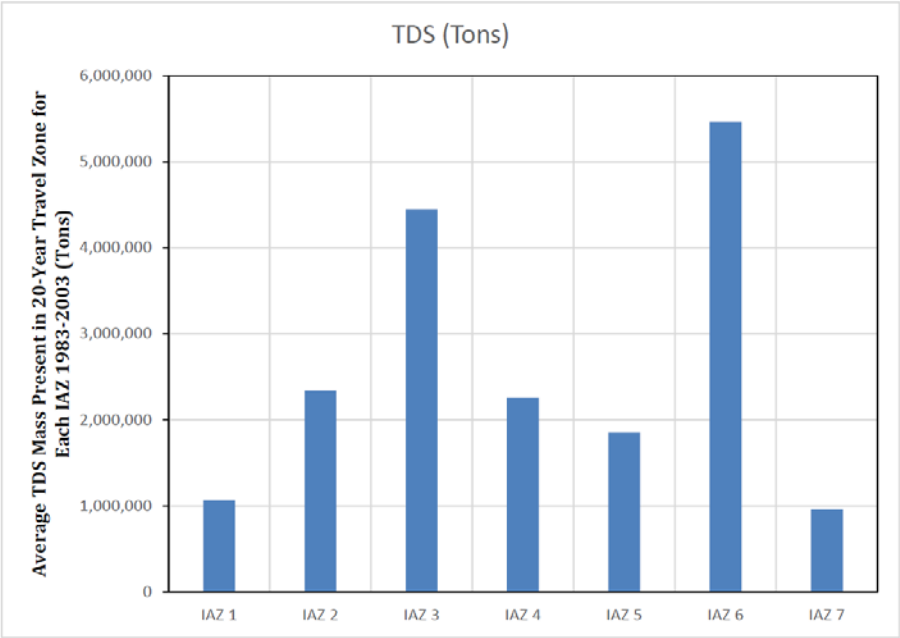


Figure B – 17. Starting, Net Change, and Final Nitrate Mass (Tons) in the 20-Year Travel Zone for Northern Central Valley IAZs (1983-2003)

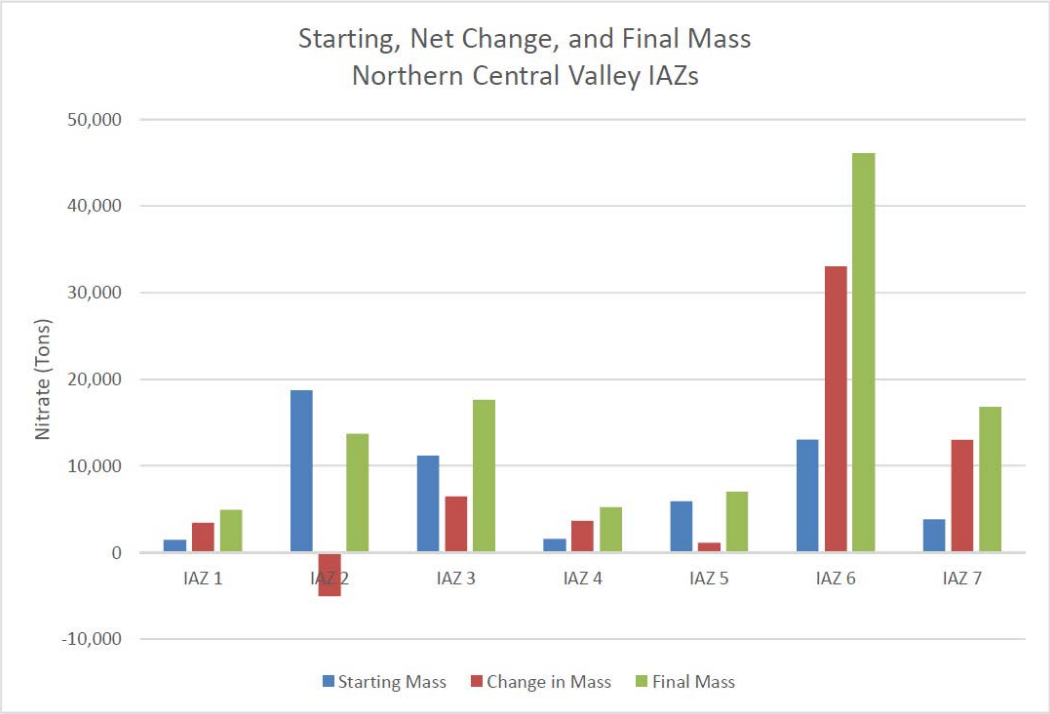


Figure B – 18. Starting, Net Change, and Final TDS Mass (Tons) in the 20-Year Travel Zone for Northern Central Valley IAZs (1983-2003)

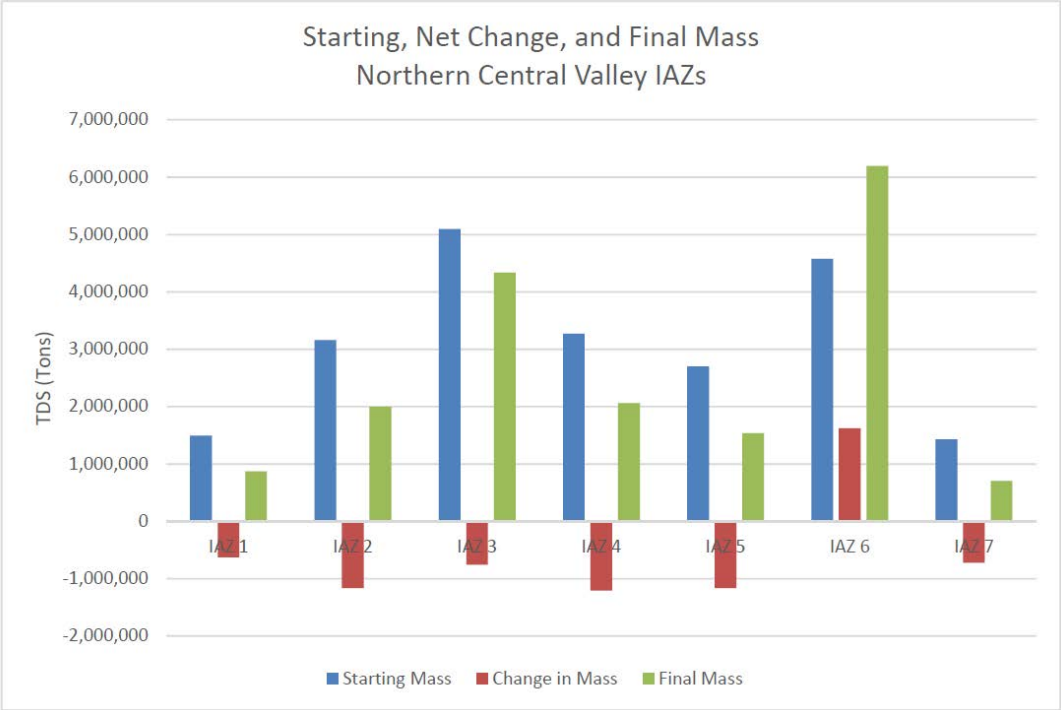


Figure B – 19. Average Nitrate Mass (Tons) Present for Middle Central Valley IAZs

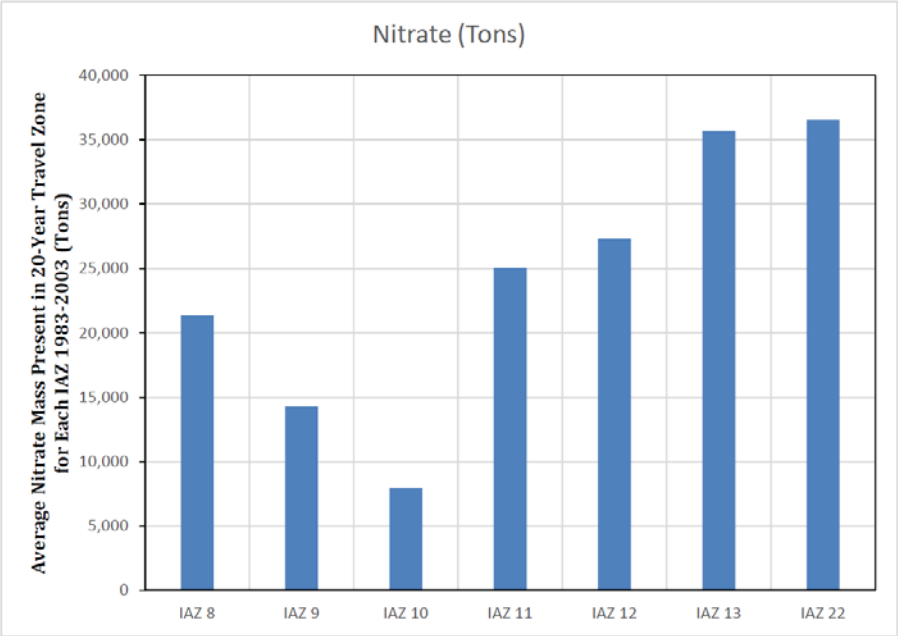


Figure B – 20. Average TDS Mass (Tons) Present for Middle Central Valley IAZs

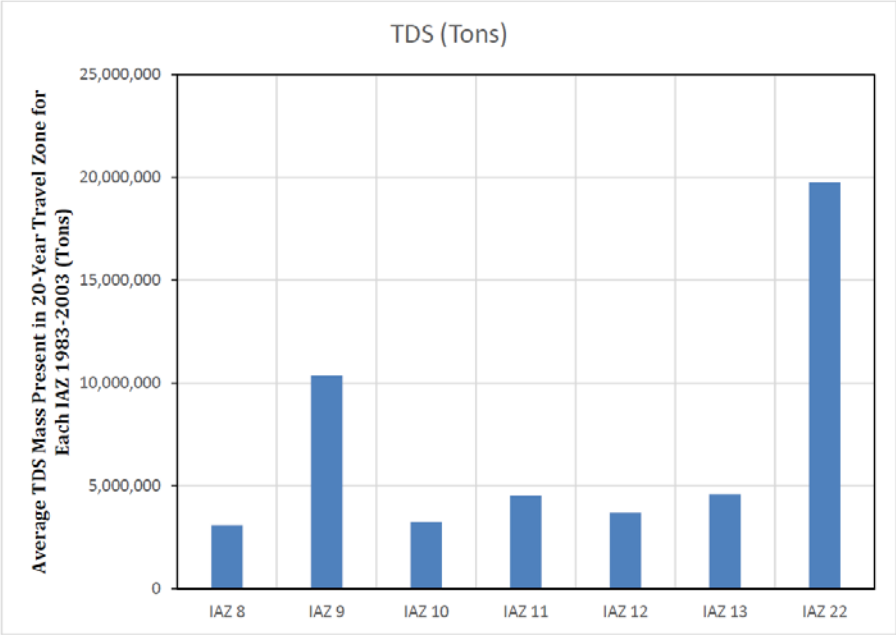


Figure B – 21. Starting, Net Change, and Final Nitrate Mass (Tons) in the 20-Year Travel Zone for Middle Central Valley IAZs (1983-2003)

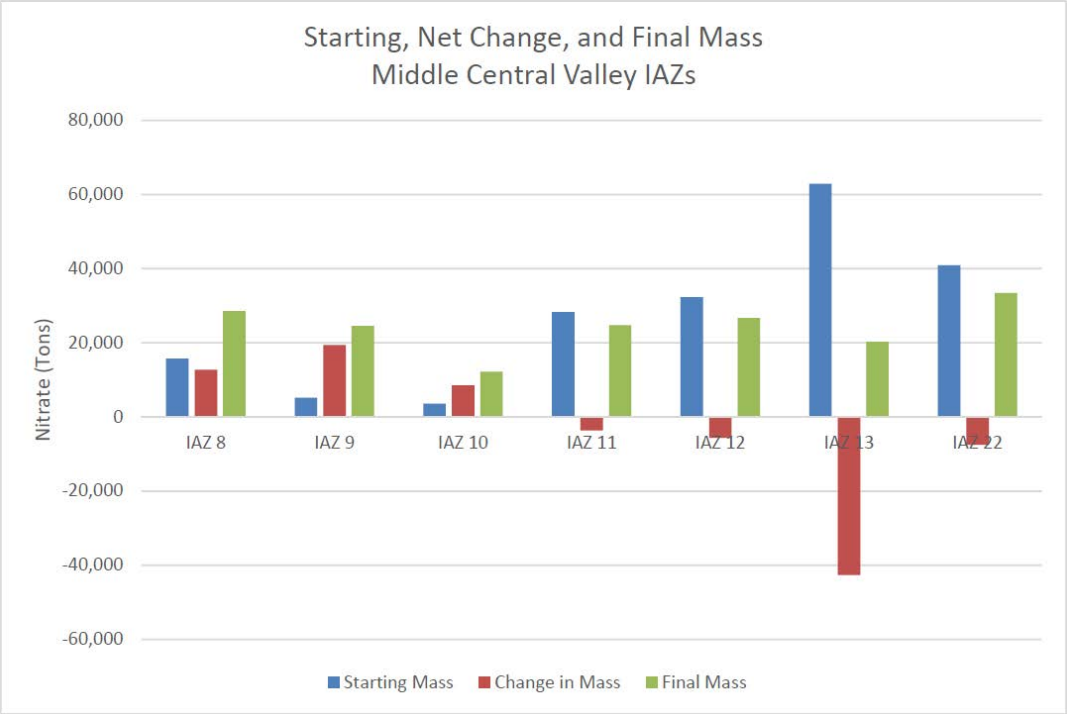


Figure B – 22. Starting, Net Change, and Final TDS Mass (Tons) in the 20-Year Travel Zone for Middle Central Valley IAZs (1983-2003)

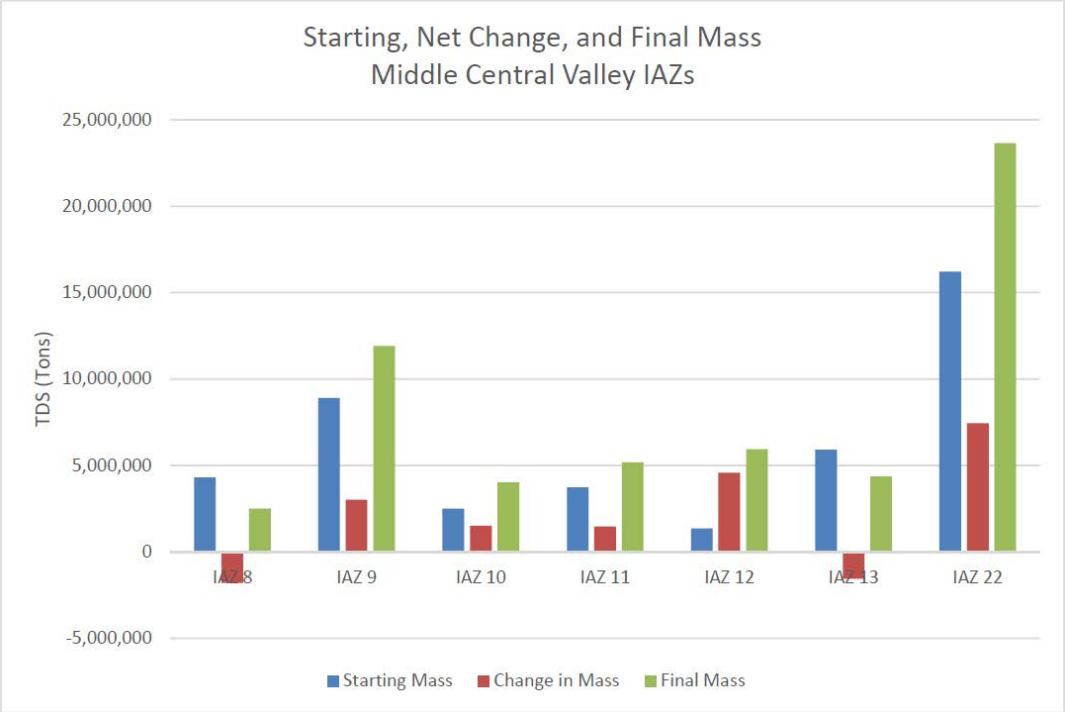


Figure B – 23. Average Nitrate Mass (Tons) Present for Southern Central Valley IAZs

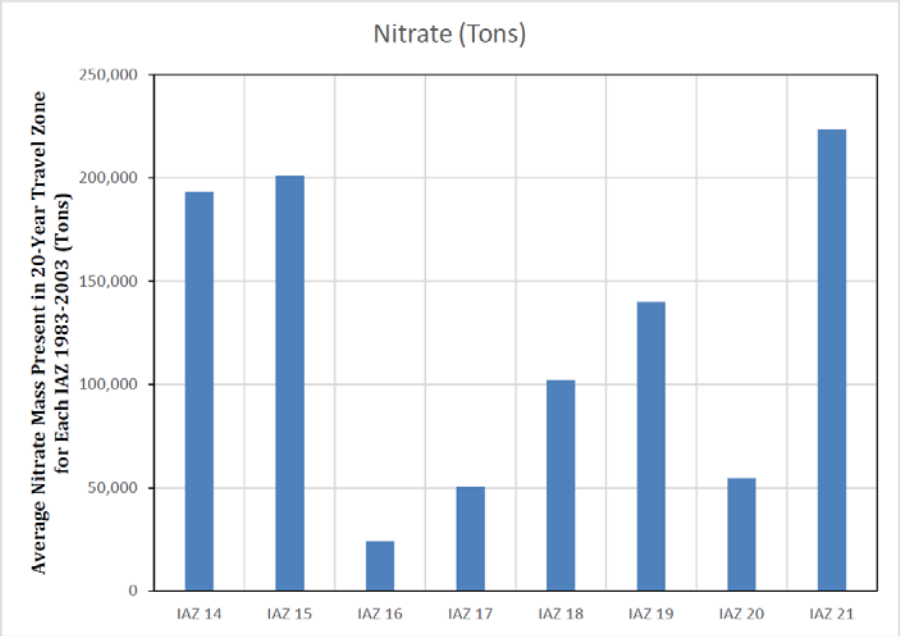


Figure B – 24. Average TDS Mass (Tons) Present for Southern Central Valley IAZs

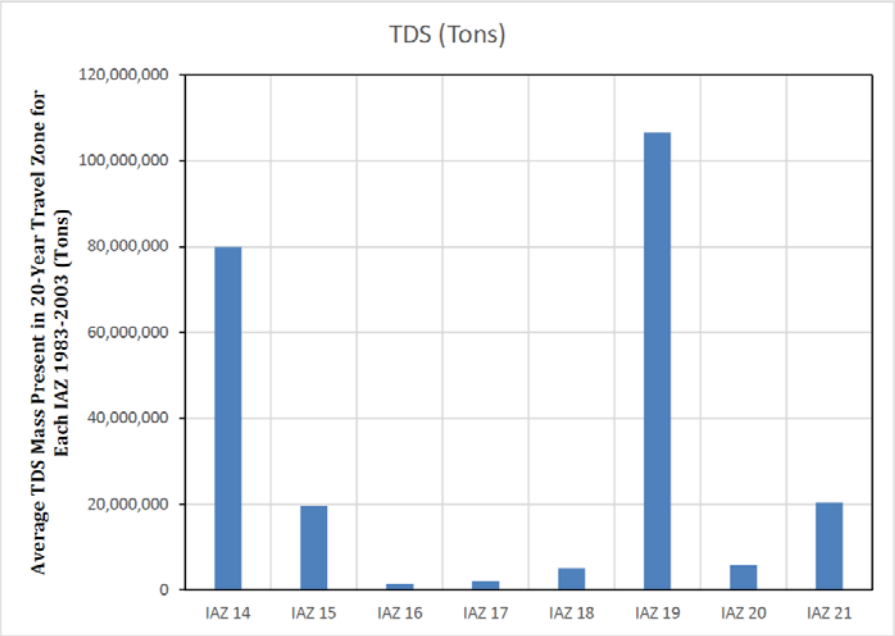


Figure B – 25. Starting, Net Change, and Final Nitrate Mass (Tons) in the 20-Year Travel Zone for Southern Central Valley IAZs (1983-2003)

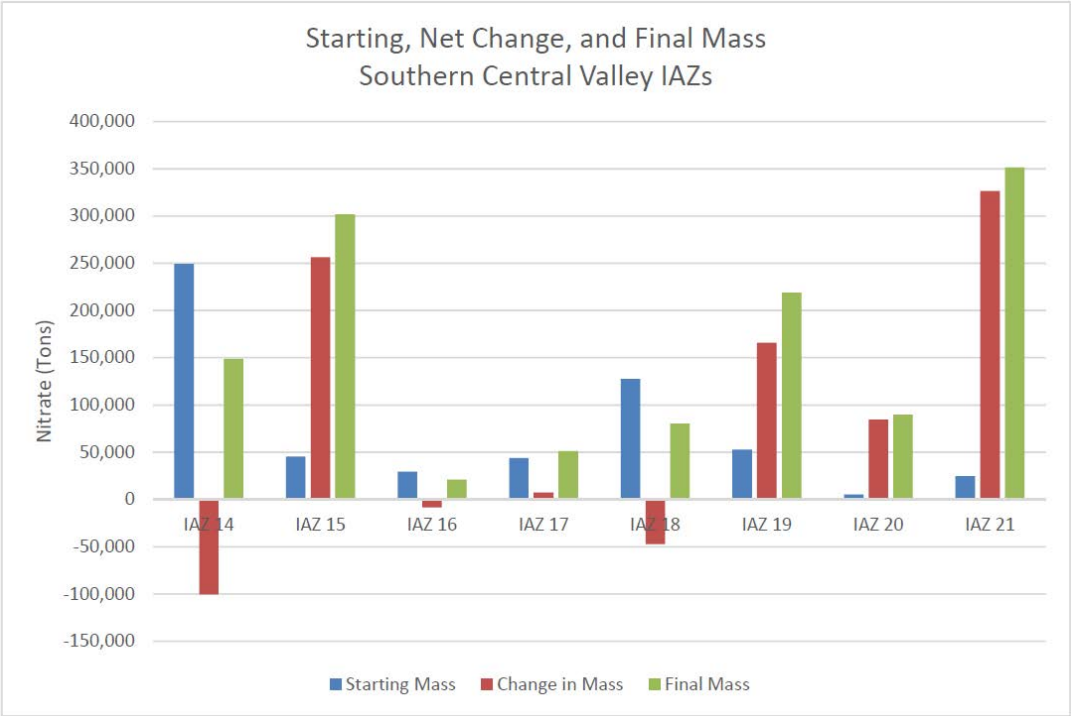
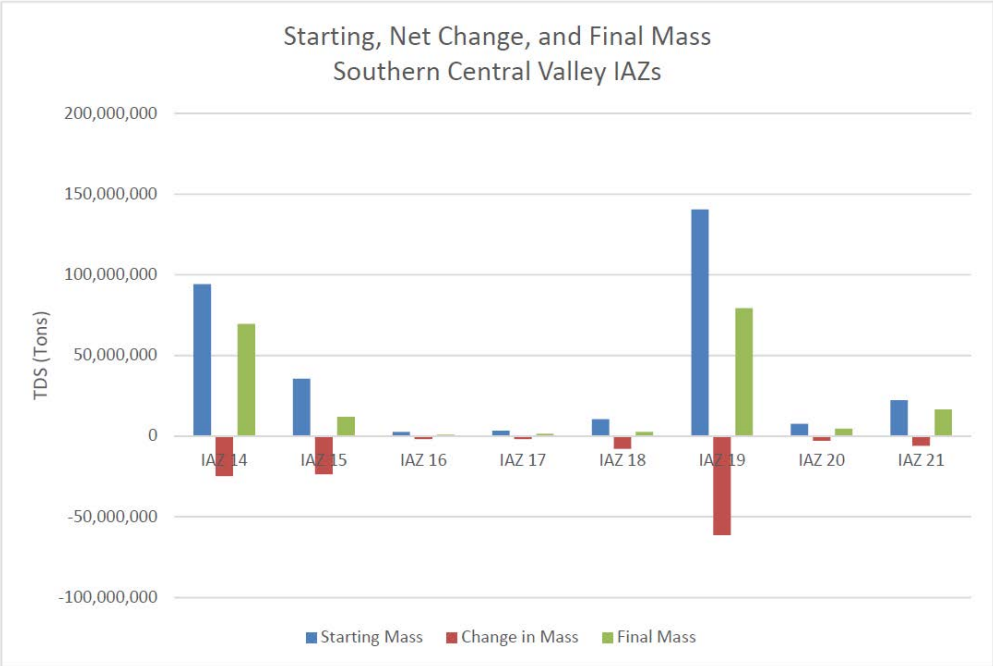


Figure B – 26. Starting, Net Change, and Final TDS Mass (Tons) in the 20-Year Travel Zone for Southern Central Valley IAZs (1983-2003)



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APPENDIX C

Regulation of Waste Discharges in the Central Valley

Based on the definitions and requirements of the California Water Code and the CWA, discharges can be generally divided into the discharge of pollutants to surface waters or other types of discharges (i.e. waste discharges to land or discharges that affect groundwater). Discharges to surface waters subject to federal regulation are regulated by permits issued under the NPDES program while discharges of other types are permitted through WDRs or waivers to WDRs issued under the Porter-Cologne Act.

In the Central Valley, as in other regions of California, regulated waste discharges include:

- municipal and industrial wastewater;
- municipal and industrial storm water; and
- agricultural runoff from irrigated lands and from dairies/confined animal feeding operations.

The elements of the regulatory programs associated with these waste discharges to surface water and to land/groundwater were evaluated based on a review of recent permits to assess practices that result in the current conditions in receiving water as discussed below.

Surface Water

Point source discharges to surface waters that are waters of the United States are controlled through regulations described in both WDRs and NPDES permits. The requirements of section 402 of the CWA apply in addition to requirements under the Water Code section 13260 and section 13263. Current quality of surface water in the Central Valley is the result of dischargers generally complying with the effluent limitations established in NPDES permits (wastewater and stormwater) and discharges from nonpoint sources regulated under WDRs. The current approach to implementation of state and federal requirements for wastewater, storm water and agricultural discharges to surface water is discussed below.

Wastewater

Wastewater discharges are regulated to control the impacts to receiving waters from municipal and industrial wastewater. Wastewater from municipalities is primarily domestic wastewater with some commercial/industrial discharges. Industrial wastewater discharges vary depending on the industry. This discussion is focused on industrial activities with the potential to discharge salts and nitrate.

Municipal

Municipal wastewater NPDES permits are used to regulate discharges to protect beneficial uses by including discharge prohibitions, effluent limitations, receiving water limitations, monitoring and reporting requirements, and special provisions. NPDES permits are subject to disapproval by U.S. EPA and are subject to renewal every five years. The Central Valley Water Board uses a standardized NPDES template to organize and describe the requirements that are applicable to

each permitted discharger as described below. A subset of recently adopted permits was reviewed to determine typical current permit provisions.[1]

Discharge Prohibitions

Discharge prohibitions that are common to all NPDES permits include prohibiting bypass of treatment operations, creation of a nuisance, discharge of pollutant-free wastewater (e.g., rainwater, groundwater) or any discharge in a manner different than described in the permit. In addition, site-specific prohibitions may include restrictions on discharging under conditions of low receiving water flow or discharges that may not meet other regulatory requirements.

Effluent Limitations

Effluent limitations are the primary mechanism used to protect water quality and beneficial uses. Effluent limitations may be technology-based or water quality-based. Technology-based effluent limitations ensure that treatment processes are operating properly and address biochemical oxygen demand, total suspended solids, bacteria, and pH. Standard limitations for biochemical oxygen demand and total suspended solids are established based on the type of treatment that is required by the NPDES permit (i.e., secondary or tertiary treatment standards). Technology-based effluent limitations also include flow, chlorine residual and percent removal. WQBELs are established to provide reasonable protection of beneficial uses. Water quality standards are established in the California Toxics Rule and the Basin Plans, as described previously. Effluent limitations are assigned for constituents that are determined to have a reasonable potential to cause or contribute to an exceedance of an applicable water quality standard in the receiving water.

In cases where a discharger shows that they cannot consistently comply with a WQBEL, the discharger can be granted a compliance schedule with interim performance-based limitations. This discharger must provide a plan and schedule to come into compliance with final effluent limitations that becomes part of the compliance schedule order. Site-specific objectives that consider conditions unique to the receiving water may also be developed.

Receiving Water Limitations

In addition to meeting effluent limitations, the discharges must not cause or contribute to an exceedance of water quality objectives in receiving waters.

[1] The municipal wastewater NPDES permits that were reviewed include: City of Lodi (R5-2013-0125-1), City of Manteca (R5-2015-0026), City of Stockton (R5-2014-0070-02), Mountain House Community Services District (R5- 2013-0004-01), Cities of Turlock/Modesto (R5-2016-0010), and Sacramento Regional County Sanitation District (R5-2016-0020).

Monitoring and Reporting Requirements

To verify that effluent and receiving water limitations are being met, every NPDES permit includes a monitoring and reporting program that outlines constituents to be monitored in effluent and receiving water, and describes the frequency, location and analytical methods to be used. In addition to monitoring for constituents with effluent limitations, monitoring of priority pollutants and other parameters are required to more completely characterize the discharge. Characterization monitoring is required one or more times during each permit term. For dischargers to the Delta, receiving water monitoring requirements may be met by participating in the Central Valley Water Board's Delta Regional Monitoring Program.

Special Provisions

Special studies and other provisions are included for topics that may include the development of management practices or plans, specialized monitoring, or special studies to evaluate site-specific conditions (e.g., mixing zone/dilution, translators or water-effect ratios).

Specific Requirements Regarding Salinity, Nitrate and Secondary MCL Parameters

Most Central Valley wastewater NPDES permit includes an effluent limitation for EC. The EC limitation is typically an annual average based on current performance. Water conservation and recent drought have led to reduced flows to municipal wastewater treatment plants, which in some cases have resulted in increasing concentrations of salinity-related parameters, such as EC. However, in many cases, the total load of salts discharged remains relatively constant. Therefore, performance-based limitations may increase without resulting in any increase in load to the receiving water.

Municipalities also have a provision in their permit to develop and implement a salinity minimization and evaluation plan or salinity source control program to minimize salinity in effluent discharges.

Effluent limitations are also included for nitrate in some permits. Discharges found to have reasonable potential to cause or contribute to the exceedance of the primary MCL for nitrate in a receiving water designated as supporting the MUN beneficial use will be given an effluent limitation for nitrate set equal to the MCL of 10 mg/L-N, particularly where water bodies are considered impaired for nutrients.

In addition, non-salinity secondary MCL parameters (e.g., manganese, iron, and aluminum) that may be found at levels of concern in municipal wastewater also will be assigned effluent limitations. Turbidity is usually controlled through operational specifications or through a receiving water limit.

There are TMDLs for salt and boron applicable to the Lower San Joaquin River that also contain requirements for managing salts.

Industrial

Industrial discharges to surface water are regulated in much the same way as municipal wastewater discharges with the same NPDES permit elements and requirements. The specific effluent limitations assigned depend on the nature of the discharge. The industrial activities most likely to discharge significant levels of salt and nitrate are food processors and wineries. Regulation and impacts to receiving waters of these activities are discussed in Section 3.2.4.2, Groundwater.

Hatchery discharges to surface water were also reviewed for current permitting of salts and nitrate. Hatchery discharges to surface water (and groundwater) are regulated by the General Order for Cold Water Concentrated Aquatic Animal Production (Order No. R5-2014-0161) with effluent limitations for formaldehyde, copper and chlorine. Surface water limitations are included for EC and TDS based on each Basin Plan and groundwater limitations are specified for nitrate (10 mg/L-N) and TDS (500 mg/L).

Storm Water

Municipal (Phase I and Phase II)

The Central Valley Water Board Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4). MS4 permits were issued in two phases.[2]

- Under Phase I (starting in 1990), the Central Valley Water Board adopted NPDES storm water permits for medium (population between 100,000 and 250,000) and large (population greater than 250,000) municipalities. Most of these permits are issued to groups of co-permittees encompassing large metropolitan areas (examples include East Contra Costa County, Sacramento County, and City of Stockton/San Joaquin County).

- On April 30, 2003, as part of Phase II, the State Water Board issued a General Permit for the Discharge of Storm Water from Small MS4s (Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities (population less than 100,000), including non-traditional small MS4s (e.g., military bases, public campuses, prisons and hospital complexes). The Phase II Small MS4 General Permit covers Phase II permittees statewide. On February 5, 2013, the Phase II Small MS4 General Permit was renewed and became effective on July 1, 2013.[3]

The Central Valley Water Board adopted a region-wide MS4 NPDES permit (Order No. R5-2016-0040[4]) in June 2016 (effective October 1, 2016). While the primary focus is on enrolling Phase I MS4 permittees as their current permits expire, Phase II MS4 permittees have the option to enroll under this general permit and terminate coverage under the State Water Board's Phase II Small MS4 General Permit.

[2] http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

[3] http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

[4] http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016- 0040_ms4.pdf

The Phase I and Phase II permits are structured very similarly and are used to regulate discharges to protect beneficial uses by including discharge prohibitions, effluent limitations, receiving water limitations, monitoring and reporting requirements, and special provisions. The Central Valley Water Board and State Water Board use a similar approach to organize and describe the requirements that are applicable to each permitted discharger. These requirements, as included within the Central Valley Water Board region-wide MS4 permit (Order No. R5-2016-0040) and State Water Board Phase II general permit (Order No. 2013-0001-DWQ), are briefly described below.

Discharge Prohibitions

The NPDES permits include storm water and non-storm water discharge prohibitions.

- The storm water discharge prohibitions incorporate applicable water quality control plan prohibitions as well as a prohibition on creating a condition of pollution, contamination or nuisance.

- Non-storm water discharges into the MS4 must be effectively prohibited, where such discharges are not authorized by a separate NPDES permit or conditionally authorized within the MS4 permit.[5]

The primary compliance approach (pollutant prioritization) allows the permittee to develop a customized storm water management plan.[6] The objective of the storm water management plan is to describe a storm water management program that identifies and addresses MS4 discharge impacts so that such discharges do not cause or contribute to exceedances of water quality standards in waters of the United States (as defined in 40 C.F.R. § 230.3). The storm water
management plan includes milestones, strategies and activities, and corresponding schedules for implementation. In general, the permittee's full compliance with the requirements in the NPDES permit, including timely implementation of the storm water management program, constitutes compliance with the discharge prohibitions.

Effluent Limitations

Within the context of NPDES permits for MS4s, the CWA does not explicitly reference a requirement to meeting technology-based effluent limitations or water quality standards. MS4s must effectively prohibit non-storm water discharges and reduce pollutants in the discharge to the maximum extent practicable. However, requiring strict compliance with water quality standards by imposing numeric effluent limitations is at the discretion of the permitting agency. The permits include technology-based effluent limitations and WQBELs (while the Central Valley Water Board general permit uses these terms, the State Water Board Phase II general permit does not).

[5] Conditionally authorized pursuant to 40 Code of Federal Regulations section 122.26(d)(2)(iv)(B)(1), require the implementation of BMPs, or is a discharge associated with emergency containment or cleanup.

[6] The secondary compliance approach (prescriptive) is reserved for permittees that are unsuccessful in complying with the requirements under the pollutant prioritization approach.

- Maximum extent practicable is the technology-based standard.[7] Meeting maximum extent practicable requires the continual assessment and modification of the storm water management program to ensure that the program is effectively addressing the pollutants of concern.

- NPDES permits must incorporate WQBELs that are consistent with the assumptions and requirements of applicable waste load allocations.[8] In the context of MS4 discharges, WQBELs may be expressed in the form of either numeric limitations or, where authorized by the Basin Plan, BMPs.[9] With the exception of certain WQBELs based on applicable TMDLs, the general permits do not contain numeric effluent limitations and, instead, include requirements to reduce pollutants in storm water discharges to the maximum extent practicable.[10]

In general, the permittee's full compliance with the requirements in the NPDES, permit, including timely implementation of the storm water management program, constitutes compliance with the effluent limitations.

Receiving Water Limitations

The general NPDES permits include receiving water limitations, which provide that the storm water discharges from the MS4 shall not cause or contribute to exceedances of water quality standards in the receiving waters. The general permits incorporate/refer to applicable water quality control plan water quality standards. If exceedances persist, notwithstanding implementation of the storm water management program, the permittee must follow a process to identify if any modifications to the storm water management plan are necessary.

In general, the permittee's full compliance with the requirements in the NPDES permit, including timely implementation of the storm water management program, constitutes compliance with the receiving water limitations. Final attainment of a water quality standard is demonstrated when the permittee's MS4 discharges are no longer causing or contributing to exceedances of that water quality standard within the applicable receiving water or that receiving water is meeting water quality standards. Final attainment is verified through monitoring and reporting results.

Monitoring and Reporting Requirements

The Central Valley Water Board general permit requires the development and implementation of a monitoring program.[11] The goal of the monitoring program is to inform the permittee, to the extent feasible, about the nexus between the implementation of the storm water program, the quality of the discharges from the MS4, and the resulting impact, if any, on the receiving water.

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[7] CWA section 402(p)(3)(B)(iii).

[8] 40 C.F.R. § 122.44(d)(1)(vii)(B).

[9] 40 C.F.R. § 122.44(k).

[10] The applicable WQBELs and TMDL requirements are contained within Attachment G of both general permits.

[11] Under the Phase II general permit some permittees may be exempt from the requirement to develop a monitoring program.

The monitoring program may include receiving water monitoring, source characterization, urban discharge monitoring, special studies, and/or TMDL monitoring. Certain permittees may participate in the Central Valley Water Board's Delta Regional Monitoring Program to address all or part of the local water quality monitoring requirements.

As applicable, the Phase II general permit requires permittees to develop and implement monitoring programs for discharges to areas of special biological significance, to support TMDLs, for discharges to CWA section 303(d) listed water bodies to evaluate receiving water quality, or to evaluate the effectiveness of water quality projects or the storm water program.

Special Provisions

While the general permits do not include any requirements to conduct special studies, they recognize the use of these types of studies as a part of monitoring program; receiving water assessment; or effectiveness assessments.

Specific Requirements for Salinity, Nitrate and Secondary MCL Parameters

The primary location for parameter-specific requirements is within the TMDL portion of the general permits. The permits include TMDLs that have been adopted by the Central Valley Water Board or USEPA for pollutant specific issues within water bodies or segments of water bodies in Region 5. All permittees that are assigned a waste load allocation or identified as a responsible party where urban runoff is listed as the source must comply with the requirements as specified within the permit. Currently, there are no adopted TMDLs for salinity, nitrate or secondary MCL parameters that are applicable to MS4s in the Central Valley. The Lower San Joaquin River Salt and Boron TMDL concluded that stormwater contributes negligible salinity loads to the Lower San Joaquin River; less than one quarter of one percent of the river's total salt load as measured at the Airport Way Bridge near Vernalis (Central Valley Regional Water Quality Control Board 2004).

Industrial

The State Water Board first issued an NPDES Industrial General Permit (IGP) to regulate discharge of storm water associated with industrial activity in 1997 and subsequently reissued it 2014.[12] The IGP regulates industrial storm water discharges and authorized non-storm water discharges from specific categories of industrial facilities. The IGP requires the development of a
site-specific storm water pollution prevention plan, which must include the information necessary to demonstrate compliance with permit requirements. The IGP is used to regulate discharges to protect beneficial uses by including discharge prohibitions, effluent limitations, receiving water limitations, monitoring and reporting requirements, and special requirements and provisions. These requirements, as included within the IGP, are briefly described below.

Discharge Prohibitions

The IGP includes storm water and non-storm water discharge prohibitions.

[12] http://www.swrcb.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0057_dwq_rev_mar2015.pdf

- Storm water discharges to waters of the United States are prohibited, except as explicitly authorized by the IGP or another NPDES permit. The storm water discharge prohibitions also incorporate applicable water quality control plan prohibitions as well as a prohibition on creating a condition of pollution, contamination or nuisance.

- With the exception of certain authorized non-storm water discharges, non-storm water discharges are prohibited.

Effluent Limitations

In the 2014 update of the IGP, the State Water Board determined that it is not feasible to establish numeric technology-based effluent limitations. However, the IGP requires dischargers to implement BMPs that comply with Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) requirements to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. The IGP's requirements constitute BCT for discharges of industrial storm water and authorized non- storm water discharges.

The USEPA established Effluent Limitation Guidelines and New Source Performance Standards (ELGs) for storm water discharges from facilities in eleven industrial categories. Storm water discharges from facilities subject to ELGs shall not exceed those storm water ELGs. For facilities where ELGs have been developed, compliance with the BAT/BCT and ELG requirements constitutes compliance with the IGP technology-based requirements.

The IGP includes annual and instantaneous maximum Numeric Action Levels. The Numeric Action Levels are not intended to serve as technology-based effluent limitations or WQBELs, and exceedance of these levels is not considered a violation of the IGP.

Dischargers must comply with TMDL-specific requirements, which may not be limited by the BAT/BCT technology-based requirements. The TMDL requirements are coordinated by each regional water quality control board. The State Water Board is in the process of amending the IGP to incorporate TMDL specific requirements.

In general, a discharger must implement minimum and advanced BMPs as necessary to achieve compliance with the effluent limitations.

Receiving Water Limitations

The IGP includes receiving water limitations, which require that the storm water discharges and authorized non-storm water discharges do not cause or contribute to exceedances of applicable water quality standards in the receiving waters, adversely affect human health or the environment, or contain pollutants in quantities that threaten to cause pollution or a public nuisance. If a discharge causes or contributes to an exceedance of a water quality standard, the discharger must implement additional BMPs or other control measures in order to attain compliance with the receiving water limitations. Compliance with water quality standards may, in some cases, require dischargers to implement controls that are more protective than controls implemented solely to comply with the technology-based requirements within the IGP. In general, the discharger must implement minimum and advanced BMPs as necessary to achieve compliance with the receiving water limitations.

Monitoring and Reporting Requirements

The IGP contains monitoring requirements that are necessary to determine whether pollutants are being discharged and whether response actions are necessary. Data and information resulting from the monitoring assist in the evaluations of BMP effectiveness, ability to meet Numeric Action Levels and ELGs, and compliance with the IGP.

Special Requirements and Provisions

While the IGP does not include any requirements to conduct special studies, it does have special requirements for plastic materials.

Specific Requirements for Salinity, Nitrate and Secondary MCL Parameters

While the IGP monitoring program includes some salinity, nitrate, or secondary MCL-related analytical parameters based on the type of industrial facility, the IGP does not contain specific programs or studies directed at these parameters. The following IGP requirements would trigger monitoring for salinity, nitrate, or secondary MCL-related analytical parameters:

- Facilities subject to additional analytical parameters identified in IGP Table 1;
- Facilities that identify these parameters on a facility-specific basis that serve as indicators of the presence of all industrial pollutants identified in the pollutant source assessment;
- Facilities that identify these parameters associated with the industrial source assessment related to receiving waters with CWA section 303(d) listed impairments or approved TMDLs; and
- Additional parameters required by the Central Valley Water Board.

These parameters may also be identified within the TMDL portion of the IGP. The IGP includes TMDLs that have been adopted by the applicable regional water quality control board or USEPA for pollutant specific issues within water bodies or segments of water bodies throughout the state that are applicable to industrial dischargers. Currently, there are no TMDLs listed for Region 5. The State Water Board is in the process of amending the IGP to incorporate TMDL-specific requirements.

Agriculture

Agriculture is not regulated through the NPDES program. WDRs have been adopted that do have requirements for surface water discharges from agriculture, as described below.

Irrigated Agriculture

Irrigated agriculture discharges are regulated by WDRs under the ILRP. Specific elements of the irrigated agriculture WDRs are described in Section 3.2.4.2. WDRs for irrigation agriculture contain surface water limitations to address potential impacts to surface waters. In addition, the WDRs require that erosion and sediment control plans be developed and implemented to address potential impacts to surface water.

Receiving water limitations are applied to surface water as narrative objectives stating that wastes discharged from coalition member operations shall not cause or contribute to an

exceedance of a water quality objective. Trigger limits are established for constituents of concern. If the trigger is exceeded two or more times in a three-year period at a given sampling location, then a surface water quality management plan must be developed and implemented. A time schedule for addressing the water quality problem is required to be included in the surface water quality management plan and may not exceed ten years.

Dairies

Dairies are regulated by a General Order WDRs R5-2013-0122. The general order prohibits discharges of wastes or wastewater to surface waters unless authorized separately by an NPDES permit.

Groundwater

Current quality of groundwater in the Central Valley is influenced by discharges that generally comply with the effluent limitations and other requirements established in WDRs. The elements of WDRs and how they are designed to maintain and protect beneficial uses are described below.

Wastewater

WDRs for domestic and industrial wastewater follow the same general framework with certain differences associated with aspects that are unique to either municipal or industrial systems.

Municipal

Municipal wastewater WDRs are used to regulate discharges to protect beneficial uses of groundwater by including discharge prohibitions, effluent limitations, groundwater limitations, monitoring and reporting requirements, and other provisions. A subset of recently adopted WDRs was reviewed to determine typical current provisions.[13]

Discharge Prohibitions

Discharge prohibitions that are common to Central Valley WDRs for municipal wastewater discharges include prohibiting discharge to surface water, bypass of treatment operations, discharge of hazardous waste, toxic substances that would disrupt the treatment process, discharge of pollutant-free wastewater, or any discharge in a manner different than described in the WDRs.

Effluent Limitations

Effluent limitations are the primary mechanism used to protect water quality and beneficial uses, and are established for flow and specific constituents. Flow limitations are established for average dry weather flow. The need for effluent limitations is discussed in the antidegradation findings in most WDRs. In cases where a discharger shows it they cannot consistently comply with a WQBEL, interim performance-based limitations are established along with a plan and schedule for the discharger to come into compliance with final effluent

[13] The WDRs that were reviewed include: City of Lathrop (R5-2016-0028), Tesoro Viejo Mutual Water Company (R5-2016-0057), City of Fresno (R5-2014-0162), City of Sanger (R5-2014-0004), City of Tulare (R5-2013-0019)

limitations.

Groundwater Limitations

In addition to meeting effluent limitations, groundwater limitations are established to protect beneficial uses. Limitations are established for salts (EC or TDS) and nitrate. The WDRs require that the discharge does not cause an exceedance of applicable water quality objectives.

Monitoring and Reporting Requirements

To verify that effluent and receiving water limitations are being met, each WDRs order includes a monitoring and reporting program that outlines constituents to be monitored in effluent and receiving water and describes the frequency, location and analytical methods to be used. In addition to monitoring for constituents with effluent limitations, monitoring of other parameters may be required to more completely characterize the discharge. Characterization monitoring is required one or more times during the term of the WDRs.

Provisions

Provisions may include compliance schedules and operational requirements. For WDRs for facilities that produced recycled water, provisions related to operation of the UV disinfection system or other elements of the Recycled Water Program may be included in the provisions. Other provisions or discharge specifications may be related to storage pond management or solids disposal.

Specific Requirements Regarding Salinity, Nitrate and Secondary MCL Parameters

Central Valley WDRs include effluent limitations for TDS or EC, and nitrate. In addition, if necessary, effluent limitations are established for other constituents with secondary MCLs. Groundwater limitations are also established such that effluent will not cause an exceedance of a water quality objective or MCL in the groundwater. If the constituent concentration in the groundwater is greater than the water quality objective, then the groundwater limitation may be set equal to the current groundwater quality. In addition, specific wells may be designated for determining compliance with groundwater limitations.

Effluent limitations are also included for nitrate or total nitrogen and are set equal to the MCL of 10 mg/L-N. In the Tulare Lake Basin, effluent limitations for EC are set equal to 1,000 µmhos/cm or set equal to source water EC concentration plus 500 µmhos/cm, whichever is more stringent.

Effluent limitations may also be set for secondary MCLs to support the MUN beneficial use. In addition, effluent limitations for salts (e.g., sodium, chloride, boron) may be established to protect the AGR beneficial use. In these cases, the SNMP is referred to as being used to set effluent limitations for these constituents in the future.

Industrial

Industrial wastewater WDRs for food processors and wineries, similar to municipal wastewater WDRs, are used to regulate discharges to protect beneficial of groundwater by including discharge prohibitions, effluent limitations, groundwater limitations, monitoring and

reporting requirements, and other provisions. These WDRs elements are described below based on a review of WDRs adopted in 2014–2015.[14]

In addition to the food processors and wineries, WDRs for oil fields and mines were also reviewed. The WDRs that were reviewed were primarily associated with requirements to close these facilities and cease wastewater discharges. Oil field WDRs include limitations for EC, chloride and boron based on Basin Plan objectives as well as limits to prevent groundwater degradation.

Discharge Prohibitions

Discharge prohibitions that are common to Central Valley WDRs include prohibiting discharge to surface water, bypass of treatment operations, discharge of hazardous waste, toxic substances that would disrupt the treatment process, discharge of pollutant-free wastewater, or any discharge in a manner different than described in the WDRs. In addition, food processors and wineries discharge to land application areas. As a result discharge prohibitions are established for residual solids and other wastes that may be produced that cannot be disposed of to the land application areas to prevent odors and/or nuisance. Many industrial WDRs also contain prohibitions against discharging domestic wastewater to the industrial disposal sites.

Effluent Limitations

Effluent limitations are the primary mechanism used to protect water quality and beneficial uses and are established for flow and specific constituents. Flow limitations are established for average dry weather flow. Constituents requiring effluent limitations include biochemical oxygen demand and, depending on the discharger, TDS or fixed dissolved solids and nitrate or total nitrogen. The need for effluent limitations is discussed in the antidegradation findings. In general, effluent limitations are expressed as mass loading to the land application areas.

Discharge Specifications

In addition to effluent limitations, discharge specifications for the land application areas and for handling of solids are included in industrial WDRs. These specifications are associated with applying wastewater at agronomic rates and managing solids to minimizing leaching.

Groundwater Limitations

In addition to meeting effluent limitations, groundwater limitations are established to protect beneficial uses. Limitations are established for salts (EC or TDS), nitrate, and other constituents identified in Title 22. The WDRs require that the discharge does not cause an exceedance of an applicable water quality objective. In cases where the groundwater exceeds the objective, the groundwater limitation states that the discharge cannot cause a “statistically significant increase.” Compliance with these effluent limitations is determined at specific wells

[14] The WDRs that were reviewed for this summary include: Edison Grape Processing (R5-2015-xxxx), Sutter Home Winery (R5-2015-0085), Del Monte Foods (R5-2014-0116), Reedley Winery (R5-2014-0045), Morning Star Tomato Packing (R5-2013-0144), ConAgra Tomato Processing (R5-2014-0106), Oil Fields (R5-2013-0061), Zenda Mine (R5-2014-0138).

identified in the monitoring and reporting plan.

Monitoring and Reporting Requirements

To verify that effluent and receiving water limitations are being met, each WDRs order includes a monitoring and reporting program that outlines constituents to be monitored in effluent and groundwater and describes the frequency, location and analytical methods to be used. Monitoring is required for constituents with effluent or groundwater limitations, general minerals and other constituents identified in Title 22. Monitoring of source water is also required in many industrial WDRs.

Provisions

Provisions may include time schedule orders and operational requirements. Work plans to develop or modify a groundwater monitoring network may be included in the provisions. In addition, requirements to develop Solids, Salinity and/or Nitrogen Management Plans may be included.

Specific Requirements Regarding Salinity, Nitrate and Secondary MCL Parameters

Effluent limitations for TDS are established as performance-based annual average limitations. For dischargers with levels of nitrogen that are a concern, nitrogen limitations are expressed as the nitrogen mass loadings that will not exceed the agronomic rate when applied to land application areas. Groundwater limitations are set depending on the ambient groundwater quality for nitrogen, secondary MCLs, and TDS or fixed dissolved solids. Solids, salinity or nitrogen management plans may be required. Other forms of requiring assessments of salt and nitrate include biochemical oxygen demand and nitrogen application and irrigation management reports and/or groundwater limitation compliance assessment plans. Monitoring for TDS, nitrate, MCLs and standard minerals in effluent and groundwater is also required.

Storm Water

Municipal (Phase I and Phase II)

The Central Valley Water Board region-wide general permit and State Water Board Phase II permit are both NPDES permits and WDRs. While they are primarily focused on surface water, they do include a requirement to protect groundwater quality when implementing infiltration BMPs so that the pollutants of concern are not transferred to groundwater. The permits also support improved groundwater recharge.

Industrial

While the IGP is an NPDES permit, and not a WDR, it does include requirements to protect groundwater quality when implementing infiltration BMPs so that the industrial pollutants are not transferred to groundwater.

Agriculture

Regulation of irrigated agriculture and dairies is implemented through WDRs as described below. WDRs for the Sacramento River Watershed, East San Joaquin and Tulare Lake Basin were reviewed to assess requirements for irrigated agriculture that contribute to current

receiving water quality conditions. The General Order for Milk Cow Dairies was reviewed to assess requirements for dairies that contribute to current receiving water conditions.

Irrigated Agriculture

The Central Valley Water Board has adopted WDRs for discharges from irrigated lands to protect both surface water and groundwater throughout the Central Valley. The Central Valley Water Board's ILRP implements the WDRs, which have been adopted for discrete regions within the Central Valley. The WDRs allow for a third party or coalition to coordinate efforts by growers within a discrete region to comply with the regulatory requirements. WDRs have been adopted for growers within the following coalitions:

- Eastern San Joaquin Watershed
- Grassland Drainage Area
- Rice Growers within the Sacramento Valley
- Sacramento River Watershed
- San Joaquin County and Delta Area
- Tulare Lake Basin Area
- Western San Joaquin River
- Western Tulare Lake Basin Area

The WDRs include discharge prohibitions, receiving water limitations, provisions, and monitoring and reporting requirements, as described below, and specify the responsibilities of both the coalition and the individual growers. The WDRs for the Sacramento River Watershed (Order No. R5-2014-0030-R1), Tulare Lake Basin Area (Order No. R5-2013-0120) and the Eastern San Joaquin Watershed (Order No. R5-2012-0116-R3) were specifically reviewed for this assessment. The Eastern San Joaquin Watershed WDR was reviewed by the State Water Board with an order adopted on February 7, 2018. The WDRs in place prior to the 2018 adoption were assumed to be representative of current practices and used to evaluate baseline conditions.

Discharge Prohibitions

Discharges of hazardous waste are prohibited and discharges of wastes (e.g., fertilizers, fumigants, pesticides) to groundwater via backflow into a water supply well or down a groundwater well casing are prohibited.

Receiving Water Limitations

Receiving water limitations are applied to surface water and groundwater, and are narrative stating that wastes discharged from coalition member operations shall not cause or contribute to an exceedance of a water quality objective. Triggers are established for constituents of concern. If the trigger is exceeded two or more times in a three-year period at a given sampling location, then a surface water quality management plan or groundwater quality management plan must be developed and implemented. A time schedule for addressing the water quality problem is included in the surface water quality management plan or groundwater quality management plan and may not exceed ten years. The proposed time schedule must be supported with appropriate technical or economic justification as to why the proposed schedule is as short as practicable.

Provisions

General provisions outline the responsibilities of the coalition and its members (i.e., growers). Provisions require individual growers to participate in coalition outreach events, implement water quality management practices, and develop and implement a sediment and erosion control plan, management practice evaluation program, farm evaluation plan, and nitrogen management plan. The coalition develops and implements a plan to track and evaluate the effectiveness of water quality management practices, conducts water quality monitoring and assessment, and prepare and submit annual reports on these activities. The coalition is required to conduct education and outreach to inform growers of program requirements and water quality problems.

Monitoring and Reporting

The WDRs require both surface water and groundwater monitoring. Surface water monitoring sites in the Sacramento River Watershed are categorized as representative sites, integration sites and special studies sites. Representative monitoring sites are representative of all areas and all types of irrigated agricultural waste discharge within the coalition's area. Surface water monitoring sites are selected to allow characterization of water flow, quality, and irrigated agricultural waste discharges. Integration sites are used for identifying cumulative effects and long-term trends in water quality. Sites may also be designated for special studies, if needed, for a surface water quality management plan to evaluate commodity or management practice-specific effects on identified water quality problems, to evaluate sources, and to track the status of the identified water quality problems. Constituents that are required to be monitored include *E. coli*, EC, nitrogen compounds, total suspended solids, turbidity, and hardness.

In Eastern San Joaquin Watershed, surface water monitoring is linked to exceedances of trigger limits. Core monitoring sites are monitored on a rotating schedule and if a trigger limit is exceeded, then representative site monitoring and/or special studies sites are added. Constituents to be monitored are similar to those in the Sacramento River Watershed.

Groundwater monitoring requirements include preparing a groundwater quality assessment report, implementing a management practice evaluation program and conducting groundwater quality trend monitoring. Annual monitoring is conducted for EC, pH, dissolved oxygen, temperature and nitrate. In addition, monitoring wells are sampled once every five years for TDS and general minerals.

Specific Requirements Regarding Salinity, Nitrate and Secondary MCL Parameters

The WDRs require each member to develop and annually submit a farm-specific irrigation and nitrogen management plan. Members who do not have existing sampling data are also required to sample on-farm drinking water supply wells annually for at least three years; some members may be required to provide notification of high nitrate levels. There are no specific requirements for salts or other constituents regulated by secondary MCLs. The WDRs also require the third party to summarize member reported data and submit it to the Central Valley Water Board annually, and, over time, to develop appropriate Nitrogen removal coefficients (N removed) by crop, Applied Nitrogen over Removed Nitrogen ratios (A/R) and Applied Nitrogen minus Removed Nitrogen (A-R) values by crop and multi-year A/R ratios and A-R values by crop. These values will be utilized to identify member outliers who are outside of

the appropriate range of acceptable A/R Ratios or A-R values for specific crops. These outlier members will be required to attend additional training regarding irrigation and nitrogen management. Triggers have been established for TDS (450 mg/L for the East San Joaquin Watershed Coalition and 125 mg/L for the Sacramento River Watershed Coalition) and nitrate (10 mg/L-N for the East San Joaquin Watershed Coalition) as stated in the monitoring and reporting program. If the trigger is exceeded, then a surface water quality management plan or groundwater quality management plan (GQMP) must be developed. Members within areas with a GQMP must submit a Management Practices Implementation Report annually, which identifies what management practices are being implemented to address the exceedance. Depending on the location or region, triggers are also established for other constituents with secondary MCLs. The WDRs also note that actions associated with achieving compliance with water quality objectives for salts and nitrate should be coordinated with the policies and actions of CV-SALTS.

Dairies

Dairies in the Central Valley are regulated by General Order R5-2013-0122 that include requirements for testing wells, applying fertilizer and manure to crops at agronomic rates, and meeting standards for properly storing and handling manure to minimize leaching and runoff. Requirements cover the facilities where animals are housed, waste facilities, and associated croplands.

Discharge Prohibitions

Discharge prohibitions for dairies include the following:

- Hazardous waste;
- Pollution, nuisance;
- Dead animals to ponds;
- Storm water to surface water; and
- Land application of wastes if not for nutrient recycling.

Groundwater Limitations

The General Order does not include a section on effluent limitations. Groundwater limitations are narrative and state that the discharge of waste at existing milk cow dairies shall not cause the underlying groundwater to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance. This section refers generally to Basin Plan water quality objectives.

Provisions

Provisions include requirements associated with management of wastewater retention ponds, production areas, and land application areas. Provisions specify practices to minimize leaching from solids disposal and to apply fertilizers at agronomic rates. In addition, nutrient and waste management plans and a salinity report are required.

Monitoring and Reporting

Monitoring of groundwater is required and may be conducted on an individual basis or through

a representative monitoring program. Most dairies perform this monitoring through membership in a representative monitoring program. All supply wells (irrigation wells and domestic wells) must be tested annually and results reported to the Central Valley Water Board. In addition, dairies are further required to install dedicated monitoring wells to sample "first-encountered" (shallowest) groundwater.

About 1,143 Central Valley dairies are members (95 percent plus of Central Valley dairies) of the representative monitoring program, paying monthly fees to support ongoing monitoring and research into improved management practices. The representative monitoring program includes 443 wells on 42 dairies from Orland to Bakersfield, representing the range of soil, climate and cropping conditions of Central Valley dairies. Wells are monitored monthly, including quarterly water quality analysis for nine constituents (including nitrate), annual testing for 22 constituents, providing 16,000 raw data points annually. The representative monitoring program evaluates all aspects of dairies that have potential to impact groundwater, including ponds, croplands and animal housing areas, with management practices for all of these areas being evaluated.

Specific Requirements Regarding Salinity, Nitrate and Secondary MCL Parameters

As noted above, the General Order contains requirements associated with the management of nutrients, solids and salinity. There are no specific requirements related to salinity, nitrate, and secondary MCL parameters in the General Order for dairies, other than how they may be addressed through the nutrient management plan, waste management plan, and salinity report.

Nutrient management plan. All dairies of any size must follow a nutrient management plan prepared by a certified agronomist. The plan requires sampling of manure, irrigation water and harvested plant tissue so that an application/removal ratio can be calculated field by field. Any manure exported from the dairy must be recorded and accounted for. Complete records must be kept on farm and an annual report submitted to the Central Valley Water Board.

Waste management plan. All dairies must have a waste management plan prepared by a licensed engineer. The plan must affirm that animal housing and manure storage areas are designed to prevent flooding and runoff, drain properly during normal operation and rain events, and are designed with sufficient capacity to safely handle and manage the manure generated until it can be safely applied to crops at the dairy or exported off site.

Salinity Report. A report must be prepared that identifies sources of salt in waste generated at the dairy, evaluates measures that can be taken to minimize salt in the dairy waste, and certifies that they will implement the approved measures identified to minimize salt in the dairy waste.

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APPENDIX D

Alternative Matrices for Programs and Policies

*The tables below contain the No Action Alternative, SNMP Recommendations, Stakeholder Alternatives, and the Preferred Alternatives. The Preferred Alternatives are in bold.

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Table D - 1. Program to Control and Permit Salt Discharges to Surface and Groundwater

	Basin Plan Element	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
General – Salt Control Program	1. Goals	Sac R/SJR Basin Plan: Discharges must meet WQO to protect beneficial uses. Tulare Lake Basin Plan: Establishes a policy to allow for controlling the rate of increase of salinity ("managed degradation"). Both basin plans must meet antidegradation requirements.	Goals: 1. Control the rate of degradation ("managed degradation") 2. Achieve long-term sustainability (salt balance) where feasible, practicable and reasonable. 3. Protect beneficial uses by meeting applicable WQOs and applying appropriate Antideg. concerns.	Add clarification to SNMP recommendations.
	2. Timeline	No phases	3-Phased Salinity Control Program with a duration of 10-15 years for each phase. Completion date for any phase may be changed by Executive Officer.	
	3. Compliance	Individual Permit – Source Control	A) Salinity Compliance Pathways: Participate in Central Valley-wide Salinity Management Effort 1. Participate in P&O Study ("Alternative Pathway"): compliance through implementation of specific requirements during one or more phases. 2. Opt out of P&O Study ("Compliance Pathway"): compliance through implementation of existing regulatory structure that focuses on source control.	
		Not Applicable	B) Salinity Compliance Selection: Default pathway would be to participate in P&O Study ("Alternative Pathway"), but dischargers can opt out ("Conservative Pathway").	<u>Alternative:</u> Default pathway would be to participate in Conservative Pathway, but dischargers can opt into Alternative Pathway.
			Pathway Selection Changes: SNMP is "silent" on whether the discharger can switch pathways once a decision is made.	<u>Alternative:</u> Permittees can switch pathways <u>in between</u> phases. Failure to comply with making a pathway selection may result in an enforcement action.
				<u>Alternative:</u> Permittees can move to a different pathway in between <u>and during</u> phases if meet specific requirements

	Basin Plan Element	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
General – Salt Control Program	Compliance	Not Applicable	C) Notification and timeline to determine method of compliance: Specific deliverables and timelines were not described in SNMP.	Alternative: *Notice to Comply* – Issued by Regional Board within one year of effective date *Decision to Board* - Within 6 months, existing permittees shall notify the Board of its decision on Conservative or Alternative approach. Permittees who do not respond within 6 months are subject to enforcement for failure to respond to the NOC may still select the Alternative approach. Permittees selecting the Alternative approach after the originally allocated six-month period will need to obtain approval from the lead entity conducting the P&O Study to join late and will be subject to the lead entity's requirements in addition to providing the minimum required level of financial support. **Conservative Pathway:** Discharger will submit to Regional Board an assessment of how their existing discharge will comply with conservative requirements along with the confirmation of their pathway decision. If Regional Board does not concur with the findings in the assessment, it may request additional technical and/or monitoring information with a deadline for submittal. New or modified discharges subject to the same stipulations at the time of application. **Alternative Pathway:** Discharger will submit to Regional Board documentation of required financial or in-kind support of the P&O study along with confirmation of their pathway selection. New or modified discharges subject to the same stipulations. Failure to meet the minimum level of financial or in-kind support may result in requirements for the discharger to comply with the Conservative Permitting Approach. New or modified discharges subject to the same stipulations at the time of application.

	Basin Plan Element	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
				Specification to above Alternative Recommendation: Under Conservative Pathway: permittee may use historic water quality information when conducting assessment if the information adequately represents the character of the current discharger and/or receiving water and is approved by Regional Water Board Executive Officer.
General – Salt Control Program				Alternative/Specification to above Recommendation: Under Alternative Pathway: Remove "in-kind" support. Add: Permittees that chose pathway after the allocated 6 month period will need to obtain approval from lead entity of P&O Study to join late, and joining late will be subject to policies related to payment of fees and collection costs.
	4. Prioritization	Individual permits – no prioritization	All Central Valley permitted dischargers of salt	Alternative: Phase I focus on Valley Floor
				Alternative: Phase I focus on groundwater basins with elevated salinity.
	5. Discharges to water body subject to beneficial use de-designation	No permit limitations based on de-designated use.	No recommendation	Permittee(s) that discharge to a surface/groundwater basin where one or more beneficial uses were de-designated shall participate in P&O Study and long-term Central Valley Salinity Management. Permittee(s) that requests the de-designation of one or more beneficial use based on salinity concentrations shall participate in P&O Study and long-term Central Valley Salinity Management.
				Specification to above Recommendation: The P&O Study shall evaluate all areas de-designated based on salinity for suitability as salt management areas.

	Basin Plan Element	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
General – Salt Control Program	6. Managed Degradation	Tulare Lake Basin Plan: "Managed degradation" by regulating both maximum increase concentration attributable to consumptive use and maximum average annual increase in groundwater salinity on a basin-specific basis. Maximum EC shall not exceed quality of source water plus 500 umhos/cm.	Remove "managed degradation" limitations in Tulare Lake Basin Plan.	
	7. Interim Permitting Approach	Revise/renew existing WDRs/Conditional Waivers, and NPDES permits. Set permitting approach for 15 years for Conservative or Alternative.		
Phase 1—Conservative Pathway/Opting out of P&O Study	1. Salinity Management under each compliance pathway	Permits required to have Salt Minimization Plans which may include pretreatment, source control and pollution prevention practices in addition to meeting discharge limits to protect beneficial uses.	• Conservative limits for protection of AGR and MUN • No new allocation/expansion of assimilative capacity • Limited Time Schedules • NPDES permittees demonstrate no reasonable potential in discharges • Not eligible for exception/variance	Modification to SNMP recommendation: • Limit new allocation/expansion of assimilative capacity
	2. Interpreting Narrative and Numeric Water Quality Objectives	Narrative WQOs have generally been interpreted if SSOs do not exist. AGR and MUN are usually the most broadly impacted beneficial uses from elevated salt concentrations. AGR protection relies on a narrative WQO. Title 22 SMCLs tables (with numeric ranges provided for salinity) are incorporated into the Basin Plans for the protection of MUN. Explicit references to applying a 700 EC as conservative interpretation of the narrative AGR WQO and the Recommended SMCL of 900 EC for MUN are NOT included in existing basin plan language.	Where site specific objectives (SSOs) do not exist, the following conservative interpretation of WQOs will be used. 700 µS/cm EC for AGR 900 µS/cm EC for MUN	Additional clarification to SNMP recommendation: The following numeric values will be considered protective of the associated beneficial use. For non-NPDES surface water / Groundwater: 700 µS/cm EC for AGR – 30 day running average 900 µS/cm for MUN – annual average For NPDES surface water: 700 µS/cm EC for AGR – monthly average 900 µS/cm for MUN – annual average

Basin Plan Element	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
3. Setting Permit Provisions	Continued implementation of current permit provision practices/policies. Measure compliance in effluent and/or surface receiving water or groundwater.	1) Define shallow groundwater 2) Apply in effluent 3) Apply in effluent and/or receiving water as is current practice—re-evaluate under P&O Study.	<u>Alternative:</u> Continue current implementation provisions to determine where to measure compliance. <u>Alternative:</u> For surface water and groundwater: limitations based on WQO that protects the most sensitive beneficial use and is consistent with the Antidegradation Policy.
4. Assimilative Capacity	Allocation of Assimilative Capacity will continue to be considered per current regulatory practices/policies.	No new or expanded allocation of Assimilative Capacity. However, if discharger has previously received allocation of Assimilative Capacity, Board may continue it if still appropriate.	<u>Modification to SNMP Recommendation:</u> Limit new or expanded allocation of Assimilative Capacity. However, if discharger has previously received allocation of Assimilative Capacity, Board may continue it if still appropriate. Board may continue previously-approved mixing zone subject to provisions under Assimilative Capacity.

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
Phase 1 – Conservative Pathway/Opting out of P&O Study	5. Eligibility of Variances/ Exceptions	There will be no new or renewed salinity exceptions/variances after 30 June 2019.	Permittees will NOT be eligible for a variance or exception	Specification to SNMP Recommendation: For, groundwater and non-NPDES surface water discharges, permittees will not be eligible for an exception. For NPDES surface water discharges, permittees will not be eligible for a variance.
	6. Time Schedules	Time Schedule Orders will continue to be considered per current regulatory practices/policies.	Limited use of Time Schedules and for minimal time periods, subject to Board discretion. Discharger should be allowed no more than 5 years for meeting a restrictive salinity limitation.	Alternative: Remove 5 years specification from SNMP recommendation.
Phase 1 – Alternative Pathway/ Participating in P&O Study	1. Salinity Management under each compliance choice	Permits required to have Salt Minimization Plans which may include pretreatment, source control and pollution prevention practices.	Participate in Central Valley-wide Salinity P&O Study.	
	2. Funding and Oversight	Not Applicable	All (or almost all) dischargers of salinity help fund the P&O Study. Others that benefit from the control of Central Valley salinity should also assist in funding. Lead entity (i.e., Central Valley Salinity Coalition [CVSC]) will oversee the appropriate level of financial participation of dischargers and others.	

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
Phase 1 Alternative Pathway/ Participating in P&O Study	3. Setting Permit Provisions		• Confirmed participation in P&O study is required. Using performance-based limits, maintenance of existing salinity concentration or load will be considered in compliance and eligible for salinity exception/variance. • Continuation of reasonable, feasible and practicable efforts to control salinity such as pollution prevention practices and watershed and/or salt reduction plans. • Monitor for salinity in surface and groundwater as part of existing monitoring programs or through regional monitoring programs. • For NPDES dischargers, when permits are renewed on their normal 5-year cycle, the Board consider approval of a salinity variance per Salinity Variance Policy.	Additional Clarification to SNMP Recommendation: Participation in and progress of the P&O Study satisfies requirements for a conditional exception to salinity limits.
	4. Assimilative Capacity	Allocation of Assimilative Capacity will continue to be considered per current regulatory practices/policies.	SNMP is "silent" on this component.	The Board may consider granting use of assimilative capacity by allowing for a mixing zone and dilution credits.
	5. Eligibility of Variances/ Exceptions	There will be no new or renewed salinity exceptions/variances after 30 June 2019.	Participants may be eligible for exception/variance per the requirements of the Exception and Variance Policies.	Specification to SNMP recommendation: Groundwater and non-NPDES surface water discharges are eligible for exception. NPDES surface water discharges are eligible for variance.
	6. Time Schedules / Compliance Schedules	Time Schedule Orders will continue to be considered per current regulatory practices/policies.	SNMP is "silent" on this component.	Alternative: If permittee has TSO that expires prior to completion of Phase I, the Board may use discretion to extend.

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
Phase 1 Alternative Pathway/ Participating in P&O Study	7. Key milestones outline for P&O Study	Not Applicable	• Stakeholder Coordination • Strategic Planning • Governance • Funding • Prioritization & Salinity Management Analyses • Conceptual Design of Salt Management Project • Special Studies Milestones will take approximately 10 years. Extensions subject to EO discretion.	Specification to SNMP recommendation: Schedule from Notice of Comply (note that bold = new addition): • **Phase I Workplan – 6 months** • Phase I Funding & Governance Plan – **within 12 months** • Special Studies – per workplan • **Annual Progress Report – 12 months from workplan approval and annually thereafter** • Interim Project Report – 5 years • Long-term Governance Plan for Phase II & III – **9 years** • Long-term Funding Plan for Phase II and III – **9 years** • **Basin Plan Amendment Recommendations – 9 years** **Final Project Report – 10 years**
				Specification to SNMP recommendation: Same as above, but change "Annual Progress Reports" to "Periodic Reports"
				Specification to SNMP recommendation: Same as above, but remove "annual progress"

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
Phase 2 & 3 Conservative Pathway/Opting out of P&O Study	1. Permitting Approach	Not Applicable	To be determined- Based on Phase 1 and 2 findings, respectively.	Additional clarification to SNMP Recommendation: Board will use findings and results from Phase I to re-evaluate the Conservative and Alternative Approaches. Based on the re-evaluation, the Board may modify Phase I permitting requirements prior to initiation of Phase II. Board will notify permittees of Phase II. Permittees have 180 days to submit a change in compliance approaches. - Change from Conservative to Alternative will submit and comply with requirements of Alternative Approach. - Continuation of same approach but Board revised approach: submit assessment of compliance with revised requirements Alternative: Remove 180 day specification and process after notification.

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
Phase 2 & 3 –Alternative Pathway / Participating in P&O Study	1. Permitting Approach	Not Applicable	Phase 2: Continued participation via Project Development and Acquisition of Funds for projects identified in P&O study Phase 3: Continued participation via support of project implementation.	Additional clarification to SNMP Recommendation: Board will use findings and results from Phase I to re-evaluate the Conservative and Alternative Approaches. Based on the re-evaluation, the Board may modify Phase I permitting requirements prior to initiation of Phase II. Board will notify permittees of Phase II. Permittees have 180 days to submit a change in compliance approaches. - Change from Alternative to Conservative will submit and comply with requirements of the Conservative Approach. Continuation of same approach shall demonstrate that it has provided minimum required Phase II level of financial or in-kind support.
				Additional clarification to SNMP Recommendation: Same as above but remove "in-kind support"
				Alternative: Remove 180 day specification and process after notification

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations
Recommendations to Other Agencies			Recommends State Water Board to revise and implement the Bay-Delta Plan in a manner consistent with SNMP and Salinity Management Strategy. Amendment to Basin Plan to recognize impact of other local, state, and federal agency actions. Recommendations for how these agencies should interact and be part of the Salinity Management Strategy.	

Table D - 2. Program to Control and Permit Nitrate Discharges to Groundwater

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations	Notes
General Overview Establishment of a Region-wide, Long-term, and Sustainable Nitrate Control Program for groundwater in the Central Valley	Goals	Meet WQOs to protect beneficial uses	Prioritized Management Goals: - Ensure Safe Drinking Water Supply - Establish a Nitrate Balance - Develop/Implement long-term plan for restoration to meet Nitrate WQOs	Alternative: Do not prioritize goals – begin restoration immediately Alternative: Include a goal to achieve balance and restore aquifer within 50 years	
	Priorities/Timelines	No priorities or timelines – regulate individual discharges on a case-by-case basis	Program applies to all groundwater throughout the Central Valley Region. Areas are prioritized to first address drinking water health risks due to elevated nitrate levels in groundwater • Priority 1 Basins – within 1 year after effective date • Priority 2 Basins – within 2-4 years after effective date • Non-prioritized Basins – phased as resources allow and as determined necessary by the Executive Officer (EO) Timelines are initiated upon receipt of a Notice to Comply (NOC). Initial prioritization was conducted as part of the Salt and Nitrate Management Plan based on 2000-2016 well data on nitrate concentrations. Nitrate Control Program does not prevent the Board or interested persons from requesting areas be re-prioritized. Additional factors for prioritizing areas can be considered on an ongoing basis by the Board: 1. Degree to which areas with known drinking water contamination are addressed in a timely manner. 2. Additional data demonstrating nitrate concerns have or will be addressed. 3. Additional data demonstrating that initial prioritization is not representative of groundwater conditions and there is no risk for nitrate contamination to drinking water supplies. 4. Degree to which area actually has impacted drinking water users	Addition to SNMP Recommendation as a fourth priority level: • Areas that are not part of a Basin – as determined necessary by the EO Modification to SNMP Recommendation: 1. Degree to which areas with known drinking water which exceeds nitrate water quality objectives are addressed in a timely manner Alternative: Only prioritize and address groundwater basins that are part of the Central Valley Floor Alternative: No phased approach to ensure safe drinking water and restore all groundwater basins.	

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations	Notes
			5. Changes in groundwater basin boundaries by DWR		
General Overview Establishment of a Region-wide, Long-term, and Sustainable Nitrate Control Program for groundwater in the Central Valley	Permitting Approach	Individual or General Orders and Source control (Cleanup and Abatement Orders to mitigate contamination and/or Prohibition of Discharge)	1. Two compliance pathways: A. Individual Approach (default) B. Groundwater Management Zone Approach (optional but encouraged)	Alternative: Include a third compliance pathway or procedure for permittees outside the Valley Floor Alternative: Only include the Individual Approach pathway in the Control Program (No Management Zone, only a permit-by-permit approach)	
			2. Pathway Selection - Permittees must select one of the two possible compliance pathways. SNMP is silent on whether or not a permittee can switch pathways after the initial selection.	Addition to SNMP Recommendation: Permittees can switch pathways in between phases. Failure to comply with making a pathway selection may result in an enforcement action.	
			3. Both pathways must ensure safe drinking water by: - Assessing nitrate levels to groundwater - Identifying impacted groundwater users - Requiring an Early Action Plan for discharges causing or contributing to the impact	Modification to SNMP Recommendation: 3. Both pathways must ensure safe drinking water by: - Assessing nitrate levels to groundwater - Identifying impacted groundwater users - Requiring an Early Action Plan for discharges causing the impact	
			4. Priority for Implementation – requirements of the control program apply to all discharges of nitrate to groundwater. Existing permits will receive a timeline based on which priority area they fall under. New or expanding permits will have requirements immediately incorporated.		

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations	Notes
Path A - Individual Approach	1. Nitrate Discharge Categories	Not applicable	Permittees will be categorized into 1 of the 5 Nitrate Discharge Categories below based in impacts to "Shallow Zone". Discharges in Categories 4 and 5 will require implementation of an Alternative Compliance Project. Nitrate Discharge Categories: Category 1 – No degradation Category 2 – De Minimis Category 3 – Degradation below Trigger Level (75% of WQO) Category 4 – Degradation above Trigger Level (75% of WQO) Category 5 – Discharge Above the Objective and No Available Assimilative Capacity	Alternative: Permittees will be categorized into 1 of 3 categories: Nitrate Discharge Categories: Category 1 – No degradation (baseline 1968) Category 2 – Degradation up to Trigger Level (75% of WQO) Category 3 – Pollution if above the Trigger Level (75% of WQO)	
	2. Compliance Components and Timelines	Not applicable	Compliance will be met via the following components:	Modification to SNMP Recommendation: Compliance will be met via the following components, unless otherwise approved by the Regional Water Board Executive Officer.	
			a. *Initial Assessment/NOI* – 60 days within posting of Preliminary Management Zone Proposals (see Path B)	Modification to SNMP Recommendation: Priority 1 Basins – 330 days after Notice to Comply Priority 2 Basins & Non-Prioritized – 425 days after Notice to Comply New or Expanded Permittees – With Report of Waste Discharge	
			b. *Early Action Plan (EAP),* required if permittee is causing any public water supply or domestic well to be contaminated by nitrate – to be submitted with NOI	Modification to SNMP Recommendation: b. *Early Action Plan (EAP)*, required if permittee is causing any public water supply or domestic well to exceed nitrate water quality objective – to be submitted with NOI	
			c. *Alternative Compliance Project (ACP),* if needed for categories 4&5 – To be submitted with NOI		
			d. *Revised permits* – No clearly defined timelines provided in the SNMP for the Regional Board to revise permits	Alternative: Regional Board will revise permits within one year of NOI, as resources permit	

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations	Notes
Path A - Individual Approach	3. Allocation of Assimilative Capacity	No change in the way assimilative capacity is currently allocated. Compliance is typically based on the WQO being met near the top of the saturated zone.	Use will be limited and implemented through permit requirements based on 5 categories of discharge as applicable: Category 1 – No Assimilative Capacity needed Category 2 – Discharges will use less than 10% available Assimilative Capacity over a 20-year period Category 3 – Using available Assimilative Capacity will not cause exceedance of trigger over a 20-year period. May require extra monitoring and trend evaluations. Category 4 – Use of Assimilative Capacity will exceed trigger over a 20-year period or receiving water is already at 50% of the WQO and volume-weighted average of the upper zone exceeds an acceptable annual increase in concentration. Requires an ACP. Category 5 – Discharge Above the Objective and No Available Assimilative Capacity. Will need to seek an exception. Requires an ACP. • Determination of Assimilative Capacity will consider receiving waters to be the "Shallow Zone" as defined in the SNMP: *"The shallowest portion within the upper zone (e.g., uppermost 10% of the upper zone)"* • When discharge is in an area that is covered by a Preliminary Management Zone Proposal, consideration must be given to the impact granting Assimilative Capacity to an individual has on those who are part of the management zone	Alternative: Degradation above Trigger Level should require an Exception and not be granted any Assimilative Capacity Modification to SNMP Recommendation: • Category 4 – Remove reference to the 50% of the WQO in the receiving water • Definition of "Shallow Zone" - several options are available: • *Use readily available data and information to calculate ambient nitrate concentrations for the shallowest ten percent (10%) of the domestic water supply wells in the Upper Zone of a groundwater basin/sub-basin as defined and established in Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan (June 2016);* • *Conduct a site (or area) specific evaluation based on various types of available data and information, including but not limited to, depth and age of domestic wells in the area of contribution, groundwater table, well completion report data, and other available and relevant information; or,* • *An equivalent alternative approved by the Regional Water Board Executive Officer.*	Tracking 10% over a 20 year period may be very difficult Exceptions used for WQO exceedance. Requiring 75% of the WQO creates a default objective.
	4. Eligibility of Exceptions	No exceptions for nitrate	Use will be limited in Path A unless there is no feasible, practicable or reasonable means to meet WQO and it is not feasible, practicable or reasonable to prohibit discharge. Permittees must meet applicable WDR requirements and implement an Alternative Compliance Project to mitigate impacts.		

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations	Notes
Path B - Management Zone Approach	1. Compliance Components and Timelines	Not applicable	Management Zones compliance will be met via the following components:	Alternative: Do not authorize use of the Management Zones	
				Alternative: Compliance timelines are not fixed, but at the discretion of the Board	
				Modification to SNMP Recommendation: Management Zones compliance will be met via the following components unless otherwise approved by the Regional Water Board Executive Officer	
			a. *Preliminary Management Zone Proposal (PMZP)* – 270 days of receiving NOC	Modification to SNMP Recommendation for: Priority 1 Basins – 270 days after Notice to Comply Priority 2 Basins & Non-Prioritized – 1 year after Notice to Comply New or Expanded Permittees – With Report of Waste Discharge	
			b. *Notice of Intent (NOI)* – 60 days within posting of the PMZPs	Modification to SNMP Recommendation: Priority 1 Basins – 330 days after Notice to Comply Priority 2 Basins & Non-Prioritized – 425 days after Notice to Comply New or Expanded Permittees – With Report of Waste Discharge	
			c. *Early Action Plan (EAP)* – To be submitted with PMZP. Implemented no later than 60 days after submittal unless the Regional Water Board deems the EAP incomplete. A revised EAP must be resubmitted and implemented within the time period directed by the Regional Water Board Executive Officer.	Alternative: Extend the timeline for implementation to be greater than 60 days after submittal.	
			d. *Final Management Zone Proposal (FMZP)* – submit within 180 days after PMZP submittal	Modification to SNMP Recommendation: Due 180 days after receiving comments from Regional Board on PMZP	
			e. *Management Zone Implementation Plan* (equivalent to Alternative Compliance Project) – developed based on the schedule identified in the Final Management Zone Proposal.	Modification to SNMP Recommendation: Due six months after FMZP is accepted by EO	

Basin Plan Element		No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendations	Notes
			f. Revised permits – No clearly defined timelines provided in the SNMP for the Regional Board to revise permits	Alternative: Regional Board will revise permits, as needed, in conjunction with the public hearing process for revising or adopting permits to incorporate the Management Zone Implementation Plan.	
Path B - Management Zone Approach	2. Allocation of Assimilative Capacity	No change in the way assimilative capacity is currently allocated. Compliance is typically based on the WQO being met near the top of the saturated zone.	May request Regional Board for allocation of assimilative capacity. May be based on the volume-weighted average of groundwater quality within the upper zone for nitrates within the boundary of proposed Management Zone. Must be consistent with the Antidegradation Policy, including implementation of BPTCs. Must ensure that users within the zone have safe short and long term drinking water supplies.	Alternative: No Allocation of Assimilative Capacity for Management Zones. Use Exceptions if compliance cannot be met in shallow groundwater.	Concern with potential impact on Assimilative Capacity in /outside the MZ.
	3. Eligibility of Exceptions	No exceptions for nitrate	May be granted when it is not feasible or reasonable to meet the WQO. Will be considered for the Management Zone as a whole. Requires a Management Zone Implementation Plan, which serves as an Alternate Compliance Project.	Alternative: Exceptions should not be granted if it is feasible for a permittee to comply. Recommend deleting consideration related to "reasonable".	
	4. Issuance of new/revised WDRs		Changes to WDRs occur after submittal of Management Zone Implementation Plan. Components of the Management Zone Implementation Plan will be incorporated into WDRs. This may be made individually or through a resolution that amends all applicable permits.		

Table D - 3. Minimum Requirements for Alternate Compliance Plans/Management Zone Implementation Plans

Updates to Initial Assessments and Preliminary Management Zone Proposals

Options: a) Incorporate as Part of Basin Plan Language

b) Incorporate as Guidance in Staff Report

SNMP Recommendation	Modified Recommendations
Proposed preliminary boundary areas that include: • Anticipated zone of influence of the individual discharger (or third party group subject to a general order), or group of dischargers under a management zone, over a 20-year planning horizon	**Modifications to SNMP Recommendations:** • Anticipated zone of contribution of the individual discharger (or third party group subject to a general order), or group of dischargers under a management zone, over a 20-year planning horizon
• Stakeholders that may be affected within the zone of influence.	• Stakeholders that may be affected within the zone of contribution over a 20-year planning horizon;
• Initial assessment of water quality conditions based on existing data and information. For groundwater, dischargers should use default information in, or referenced by, the Central Valley SNMP or provide supplemental information that includes water quality conditions in the upper, lower and production zones over the anticipated zone of influence.	• Further assessment of water quality conditions based on additional data and information.
• Any constituents of concern the individual discharger/group of dischargers intends to address besides nitrate (not required but is an optional available); and	• No change
• Identification of current best efforts/Best Practicable Treatment and Control (BPTC) and need for assimilative capacity or an approved exception from meeting the nitrate water quality standard.	• No change

Components of a Proposed Alternative Compliance Project

SNMP Recommendation	Modified Recommendations
• Be consistent with the management goals of the Central Valley SNMP, including addressing short-term and long-term drinking water needs affected by nitrates (Management Goal 1), plan for achieving balanced nitrate loadings within the proposed boundaries of the project, where reasonable and feasible (Management Goal 2), and a plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent reasonable and feasible (Management Goal 3).	• No change
• Prioritize assurance that drinking water that meets drinking water standards is available to all drinking water users within the zone of influence where there are significant nitrate water quality concerns in groundwater. This component may be met through the development and implementation of an Early Action Plan, as may be required by the SNMP (see SNMP Groundwater Management Zone Policy, Attachment A-1; SNMP Nitrate Permitting Strategy, Attachment A-2; and SNMP Section 4.3.2.2).	• Include a process to ensure that drinking water that meets drinking water standards is available to all drinking water users utilizing groundwater within the zone of contribution. This component may be met through the development and implementation of an Early Action Plan, as may be required by the SNMP Nitrate Permitting Strategy, payment into a mitigation fund, and/or other mechanisms geared toward providing emergency, interim and permanent solutions.
• Describe the outreach that will occur to insure that stakeholders or affected communities within the zone of influence are informed of, and given opportunity to participate in, the development of any ACP proposal as well as ongoing activities designed to resolve their drinking water concerns.	• Describe the outreach that has occurred and that will continue to occur to ensure that stakeholders or affected communities within the zone of influence are informed of, and given opportunity to participate in, the development of any ACP proposal as well as ongoing activities designed to resolve their drinking water concerns.

• For a management zone, contain a governance framework that, at a minimum, establishes the following: (a) roles and responsibilities of all participants; (b) involvement of an entity with authority to manage water use within the zone of influence, if applicable or as necessary; (c) funding or cost-share agreements to implement the ACP, and short and long-term nitrate management projects/activities; and (d) a mechanism to resolve disputes among participating dischargers.	• For a management zone, contain a governance framework that, at a minimum, establishes the following: (a) roles and responsibilities of all participants; (b) involvement of an entity with authority to manage water use within the zone of influence <u>including any identified SGMA management agency</u>, if applicable or as necessary; (c) <u>involvement of representative(s) of stakeholders and/or communities within the zone of influence that utilize the groundwater as a drinking water supply</u>; (d) funding or cost-share agreements to implement the ACP, and short and long-term nitrate management projects/activities; and (e) a mechanism to resolve disputes among participating dischargers.
• Identify how nitrate conditions will be characterized for use as the basis for demonstrating how nitrate will be managed over short and long-term periods to meet the nitrate management goals established in the Central Valley Region SNMP.	• No change
• As needed, prioritize management activities based on factors identified in the Central Valley SNMP and the results of the characterization of nitrate conditions. Prioritization provides the basis for allocating resources with resources directed to the highest water quality priorities first.	• Remove this bullet
• Identify short (≤ 20 years) and long-term (> 20 years) projects and/or planning activities that will be implemented as part of the ACP to make progress towards attaining each of the water quality-related management goals established by the Central Valley SNMP within the zone of influence. For management zones, projects/planning activities may be prioritized to better allocate resources. Over time as water quality improves in prioritized areas, updates to the ACP may shift the priorities.	• Identify short (≤ 20 years) and long-term (> 20 years) projects and/or planning activities that will be implemented as part of the ACP to make progress towards attaining each of the water quality- related management goals established by the Central Valley SNMP within the zone of influence. <u>Projects/planning activities must first prioritize provision of safe drinking water</u> but individual activities may be further prioritized to better allocate resources. Over time, as water quality improves in prioritized areas, updates to the ACP may shift the priorities.

• Identify mechanism(s) to support achievement of the overall Central Valley SNMP's long-term strategy to achieve balanced nitrate loadings and managed aquifer restoration, where reasonable and feasible. Mechanisms may include, but not be limited to: o Use of offsets to help mitigate potential localized impacts, while improving overall basin or sub-basin-wide water quality o Implementation of management practices that will reduce current nitrate loading to groundwater; and	• Identify mechanism(s) to support achievement of the overall Central Valley SNMP's long-term strategy to achieve balanced nitrate loadings and managed aquifer restoration, where reasonable and feasible. Mechanisms may include, but not be limited to: o Use of offsets to help mitigate potential localized impacts, while improving overall basin or sub-basin-wide water quality (see SNMP Offsets Policy, Attachment A-7); o Implementation of management practices that will reduce current nitrate loading to groundwater; o Managed groundwater recharge; o Pump and utilize and/or treat and distribute; and o Payment into a mitigation fund established to meet development and implementation of long term drinking water solutions, balance and restoration.
• Include a short and long-term schedule for implementation of nitrate management activities with interim milestones and performance measures to assess progress.	• Include a short and long-term schedule for implementation of nitrate management activities with interim milestones and performance measures to assess progress every 5 years during the first 20 year planning horizon and every 10 years thereafter.
• Identification of triggers for the implementation of alternative procedures or measures to be implemented if the interim milestones are not met.	• No change
• A water quality surveillance and monitoring program that is adequate to assure that the ACP when implemented is achieving the expected progress towards attainment of water quality-related management goals (coordination with the SNMP's surveillance and monitoring program may be considered as part of efforts to comply with this element).	• A water quality surveillance and monitoring program that is adequate to ensure that the ACP when implemented is achieving the expected progress towards attainment of water quality- related management goals (coordination with the SNMP's surveillance and monitoring program may be considered as part of efforts to comply with this element).
• The ACP may be modified periodically to incorporate changes that will benefit water quality. Any modifications to an ACP that impact or change timelines, milestones or deliverables	• The ACP may be modified periodically to incorporate changes that will benefit water quality. Any modifications to an ACP that impact or change timelines, milestones or deliverables identified must be approved by the Central Valley Water Board through a public process.

identified must be approved by the Central Valley Water Board.	
• The ACP shall identify the responsibilities of each regulated discharger, or groups of regulated dischargers if participating in a management zone, to manage nitrate within the zone. The Central Valley Water Board shall incorporate the responsibilities of each discharger, or groups of dischargers if within a management zone, into their respective Individual or General WDRs.	• No change
• Before the Central Valley Water Board may modify any WDRs to incorporate the use of assimilative capacity on a management zone basis or to adopt an exception to meeting a water quality standard in a WDR for a discharger participating in the management zone, the Central Valley Water Board's Executive Officer must approve the establishment of the management zone and its ACP after providing public notice and opportunity to comment. Executive Officer approval of the management zone in no way changes the requirement that any modifications to WDRs must be approved by the Central Valley Water Board after public notice and hearing.	• Before the Central Valley Water Board may modify any WDRs to incorporate the use of assimilative capacity on a management zone basis or to adopt an exception to meeting a water quality standard in a WDR for a discharger participating in the management zone, the Central Valley Water Board's Executive Officer must approve the establishment of the management zone and its ACP after providing public notice and opportunity to comment. <u>Should a stakeholder that is in the zone of influence of the proposed management zone contest the proposed ACP, the ACP must be approved by the Central Valley Water Board after public notice and hearing</u>. Executive Officer approval of the management zone in no way changes the requirement that any modifications to WDRs must be approved by the Central Valley Water Board after public notice and hearing.
	Additional guidance: • Implementation plans must ensure that groundwater basins are restored within 50 years.
	• Identification of stakeholders within the zone of contribution who are not included within the ACP boundaries and why;
	• Identification of areas within the zone of influence that overlap with other management areas/activities and the process to ensure coordination;

	• Identifications of geologic and hydrologic features that limit or promote groundwater movement.
	• Process to identify affected residents and the outreach utilized to ensure that stakeholders are informed of and given the opportunity to participate in the development of any ACP proposal;
	• The triggers for determining the need for an ACP are identified in the Nitrate Permitting Strategy and based in part on the nitrate concentration in the effluent, the concentration in the receiving water, and the rate of degradation.
	• Progress on the milestones and performance measures of the ACP must be provided to the Central Valley Water Board at a minimum of every five years during the first 20-year planning horizon and every 10-years thereafter.

Table D - 4. Surveillance And Monitoring Program Requirements For Salt And Nitrate Control Program

Basin Plan Elements	No Action Alternative	SNMP Recommendations	Alternative Recommendations
Program Goals	No language provided	1. Utilize statistically-representative approach for evaluating Ambient Water Quality (AWQ) determinations and water quality trends across Central Valley. 2. Establish a cost-effective program that relies on existing monitoring programs and data collection efforts to maximum extent possible.	Alternative: 1. Periodically assess effectiveness of Salinity and Nitrate Control Program, support efforts to re-evaluate requirements of the program. 2. Develop statistically-defensible ambient water quality determinations and trend analyses for TDS/EC and Nitrate. 3. Maximize use of existing monitoring programs to provide needed data and avoid duplication of efforts.
			Modifications to above Alternative: Replace "defensible" with representative for AWQ determinations and trend analyses for TDS/EC and Nitrate.
			Modifications to above Alternative: Change effectiveness to progress
Questions	No language provided	No language provided	Alternative: Information gathered will be consolidated and evaluated by lead entity of P&O Study in summary report answering the following: • Ambient conditions and trends of salinity in surface waters • Ambient conditions and trends of salinity and nitrate in groundwater zones: shallow, upper, lower, and production. • The extent the Nitrate Control Program has facilitated provision of safe drinking water supply to both municipal and domestic users.
			Alternative: Remove the last management question: The extent the Nitrate Control Program has facilitated provision of safe drinking water supply to both municipal and domestic users.
			Modification to above Alternative: Change summary report to Program Assessment Report.
Area of Assessment	No language provided	No language provided	Alternative: Surface Water Assess ambient conditions and trends of salinity in surface waters throughout the Central Valley Groundwater Evaluate ambient water quality and trends in groundwater basins in floor of Central Valley, including all sub-basins within DWR defined basins: Redding Area (#5-6), Sacramento Valley (#5-21) and San Joaquin Valley

Basin Plan Elements	No Action Alternative	SNMP Recommendations	Alternative Recommendations
			(#5-22). Remaining groundwater basins will be incorporated after the first phase.
Frequency of Assessment	No language provided	For groundwater assessment: Recommend re-computation of ambient TDS and nitrate every 5 years, using a moving 10 year average of well concentration data.	Alternative: Assessment of ambient water quality and trends shall be completed for both surface and groundwater at least once every five years.
Time Requirement of Plan Submissions	No language provided	No language provided	Alternative: Within one year of the effective date of Salinity and Nitrate Control Program, lead entity will submit Work Plan and QAPP for approval.
			Alternative: Change time requirement from one year to two years.
			Specification to Alternative: Add specification that EO has the ability to allow additional time for plan submissions if justified.

Basin Plan Elements	No Action Alternative	SNMP Recommendations	Alternative Recommendations
Plan Submissions	No language provided	Should establish a common: • Sampling Analysis Plan (SAP) ▪ Background, data quality objectives, sampling rationale, request for analyese, field methods/procedures, sample containers, preservatives, packaging, investigation-derived waste, sample documentation, COC, shipment. • Quality Assurance Project Plan (QAPP) ▪ Data quality objectives, criteria for data, documentation/records, certification and training, sample handling and COC, QC, instrument/equipment testing, inspection, maintenance, assessment and oversight, data validation/usability, data reporting protocols. • Health and Safety Plan (HASP) ▪ Known hazards, evaluation of risks, key personnel/alternates, response operations, protection of public health, personnel protection levels, control site access, decontamination for personnel and equipment, site emergency, heat stress prevention, slip trip and fall hazards, safe driving.	Alternative: Must submit the following: Surface Water Requirements **Work Plan** to describe how lead entity will utilize data (ambient conditions—monthly and annual average concentrations for salinity and other secondary MCLs; trends for salinity and other secondary MCLs) collected by existing monitoring and assessment programs to evaluate major water bodies (Sac R, Feather R, SJR, Delta and major tributaries). Groundwater Requirements **Work Plan** To include monitoring program goals, entities responsible for collection and reporting, identification of monitoring wells, governance and funding mechanisms and agreements, procedures for review and revision of Groundwater Monitoring Program. **QAPP** To include characteristics of each well, sample collection requirements, data reporting and management requirements. Specification to above Alterative: Add specification that Work Plan includes QAPP. Alternative to Surface Water Requirements Recommendations: **Work Plan** • Description of how the lead entity will utilize data collected by existing monitoring and assessment programs to evaluate ambient conditions and trends in major water bodies. • Identification of the monitoring programs and associated monitoring locations that will be utilized. • Approach that will be used to compile data from existing surface water quality databases and other sources for use in the assessment • Approach to assess ambient water quality conditions and trends for selected SMCLs. Identification of specific SMCLs to be assessed by SAMP will be included in Work Plan.

Basin Plan Elements	No Action Alternative	SNMP Recommendations	Alternative Recommendations
			Alternative: Remove monthly and annual average concentrations along with secondary MCLs references under Surface Water Requirements.
Program Assessment Report	No language provided	No language provided	Alternative: Surface Water Provide ambient and trend information for major water bodies Groundwater Provide current ambient water quality conditions and water quality trends for TDS/EC and Nitrate as Nitrogen in Upper, Lower, and Production Zones for each required groundwater basin/sub-basin.
			Alternative: Groundwater Remove requirement of providing conditions and trends in the Lower Zone.
Utilization of Existing Monitoring Programs	No language provided	Only provided for Groundwater: Existing monitoring programs that can provide data needed for the program will be identified and evaluated for incorporation into the program including: ILRP Groundwater Trend Monitoring, GAMA shallow domestic well monitoring program, Central Valley Dairy Representative Monitoring Program, Title 22 sampling program, WDR sampling programs, and other identified programs.	Alternative: Groundwater Requirements ILRP Groundwater Trend Monitoring provide foundation for development of the monitoring program. Supplemental data include GAMA shallow domestic well monitoring program, Central Valley Dairy Representative Monitoring Program, Oil and Gas Regional Groundwater Monitoring Program, Title 22 sampling program, WDRs/Conditional Waivers monitoring programs and monitoring program established as part of approval of management zone under nitrate control program.
			Alternative: Remove Central Valley Dairy Representative Monitoring Program as a source of supplemental data.

Table D - 5. Definitions and Terminology

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
ALTERNATIVE COMPLIANCE PROGRAM	Project(s) designed to provide the same or higher level of intended protection to water users that may be adversely affected by the discharge. For example, where a discharge is unable to comply with water quality objectives for nitrate, the discharger may seek an exception and offer to provide a safe and reliable alternative water supply for nearby drinking water wells that exceed or threaten to exceed the primary MCL for nitrate. Alternative Compliance Programs may be used in conjunction with other non traditional regulatory options (including variances, exceptions, offsets, management zones and assimilative capacity allocations) to mitigate the adverse effects from a discharge until a feasible, practicable and reasonable means for meeting water quality objectives becomes available.			Alternative: Project(s) designed to provide the same or higher level of intended protection to water users that may be adversely affected by the discharge. For example, where a discharge is unable to comply with water quality objectives for nitrate, the discharger may seek an exception and offer to provide a safe and reliable alternative water supply for nearby drinking water wells that exceed or threaten to exceed the primary MCL for nitrate. Alternative Compliance Programs may be used in conjunction with other ~~non traditional~~ regulatory options (including variances, exceptions, offsets, management zones and assimilative capacity allocations) to mitigate the adverse effects from a discharge until a feasible, practicable and reasonable means for meeting water quality objectives becomes available. Alternative: "…to mitigate the adverse effects from a discharge until a *reasonable,* feasible, *and* practicable ~~and reasonable~~ means for meeting water quality objectives becomes available."
AREA OF INFLUENCE/ CONTRIBUTION	Undefined	The portion(s) of Basin or Sub-basin where a discharge or discharges will co-mingle with the receiving water and where the presence of such discharge(s) could be detected.	Alternative: "…where the presence of such discharge(s) could *reasonably* be detected *and differentiated from background conditions or other sources*." Modification to term: Change term to "area of contribution"	Alternative: "…where the presence of such discharge(s) could reasonably be detected and differentiated from background conditions or other sources."

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
ASSIMILATIVE CAPACITY	(Groundwater): The positive difference between the current volume- weighted average concentration of a chemical constituent in a given groundwater basin, sub-basin, or management zone and the relevant water quality objective for the same chemical constituent when the Average Concentration is less than the objective. When the Average Concentration is greater than the objective, no assimilative capacity exists. For the purpose of calculating available assimilative capacity, and in accordance with §9(c)(1) of the Recycled Water Policy (Resolution No. 2009-0011, as amended by Resolution No. 2013-0003), the most recent 5 years of available data should be used unless a different data set is approved by the Central Valley Water Board's Executive Officer. (See also State Water Board's Water Quality (WQ) Order No. 73-04). The SNMP generally relies on the most recent 10 years of available data to calculate available assimilative capacity.	The capacity of a high-quality receiving water to absorb discharges of chemical constituents and still meet applicable water quality objectives that are protective of beneficial uses. State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*State Antidegradation Policy*) requires a consideration, to the extent feasible, of the degree to which a discharge will affect the available assimilative capacity of a high-quality water relative to baseline water quality when the Regional Board is authorizing degradation. For the purposes of the Nitrate Control Program, available assimilative capacity may be calculated based on the average groundwater concentration of nitrate in the receiving water.	Alternative: "….of the degree to which a discharge will affect the available assimilative capacity of a high-quality water relative to *existing* water quality when the Regional Board is authorizing degradation…" Alternative: Capacity of a natural body of water to receive a) wastewaters without deleterious effect, b) toxic materials without damage to aquatic life or humans, c) BOD within prescribed dissolved oxygen levels.	Alternative: "…of the degree to which a discharge will affect the available assimilative capacity of a high-quality water relative to ~~baseline~~ *existing* water quality when the Regional Board is authorizing degradation…"

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
AVERAGE GROUNDWATER CONCENTRATION	The mathematical mean concentration of a chemical constituent computed using the reasonably available, representative and reliable well data collected in a given basin, sub-basin, or management zone during the most recent 10-year period.	The mean, volume-weighted concentration of a chemical constituent computed using the reasonably available, representative and reliable well data collected in a given Basin or Sub-basin during the most recent 10-year sampling period. The Regional Board may authorize longer or shorter averaging periods where necessary and appropriate. Statistical tools and transformations or other QA/QC data may be used to identify and disqualify outliers, to normalize data, or to spatially and temporally de-cluster well data to reduce the potential for sampling bias when estimating a mean concentration. See SNMP Attachment B2.2 for a more detailed description and examples of some technical methods previously accepted for use in estimating average chemical concentrations in groundwater.	Alternative: The mean, volume-weighted concentration of a chemical constituent computed using the reasonably available, representative and reliable well data collected in a given Basin or Sub-basin during the most recent 10-year ~~sampling~~ period. Alternative: The mean, volume-weighted concentration of a chemical constituent computed using the reasonably available, representative and reliable well data collected in a given Basin or Sub-basin during the most recent 10-year sampling period. The Regional Board may authorize longer or shorter averaging periods where necessary and appropriate. Statistical tools and transformations or other QA/QC data may be used to identify and disqualify outliers, to normalize data, or to spatially and temporally de-cluster well data to reduce the potential for sampling bias when estimating a mean concentration.	Alternative: The mean, volume-weighted concentration of a chemical constituent computed using the reasonably available, representative and reliable well data collected in a given Basin or Sub-basin during the most recent 10-year sampling period. The Regional Board may authorize longer or shorter averaging periods where necessary and appropriate. Statistical tools and transformations or other *quality assurance/quality control (*QA/QC*)* data may be used to identify and disqualify outliers, to normalize data, or to spatially and temporally de-cluster well data to reduce the potential for sampling bias when estimating a mean concentration. ~~See SNMP Attachment B2.2 for a more detailed description and examples of some technical methods previously accepted for use in estimating average chemical concentrations in groundwater.~~

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
GROUNDWATER BASIN	An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom as defined by DWR Bulletin 118	A groundwater basin is an alluvial aquifer comprised of soils and sediments that are sufficiently porous and permeable to store, transmit and yield significant or economic quantifies of water to wells or springs. Groundwater basins have a definable bottom and well-defined lateral boundaries that are usually characterized by impermeable formations of rock or clay or by subsurface gradients that physically constrain subsurface flows to a limited direction. The California DWR has identified 126 groundwater basins or sub-basins in the Central Valley Region (see SNMP Attachment B2.2).	Alternative: Suggest use DWRs definition. Suggest not referring to a specific number of basins/sub-basins as that number is changing with the basin boundary modifications that DWR has allowed and is allowing again in the first half of 2018. Groundwater Basin – SGMA, Department of Water Resources Bulletin 118, should be the sole arbiter of boundaries for basins, sub-basins and units thereof. Alternative: A groundwater basin is an alluvial aquifer comprised of soils and sediments that are sufficiently porous and permeable to store, transmit and yield significant or economic quantifies of water to wells or springs. Groundwater basins have a definable bottom and well-defined lateral boundaries that are usually characterized by impermeable formations of rock or clay or by subsurface gradients that physically constrain subsurface flows to a limited direction. The California DWR has identified 126 groundwater basins or sub-basins in the Central Valley Region.	

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
BASELINE WATER QUALITY	(Groundwater): The lowest volume-weighted average (mean) concentration of a chemical constituent consistently attained in a given groundwater basin or sub-basin since the relevant water quality objective for that same constituent was established or since October 28, 1968, whichever is later, unless the Central Valley Water Board has subsequently authorized a different water quality baseline consistent with the State Antidegradation Policy (Resolution No. 68-16). The phrase "baseline groundwater quality" is synonymous with the phrase "existing quality" as the latter term is used in Resolution No. 68- 16.	The lowest concentration of a chemical constituent in a receiving water since the relevant water quality objective for the constituent was established or since October 28, 1968, whichever is later, unless the Regional Board has subsequently authorized degradation of that groundwater consistent with the *State Antidegradation Policy*.	Alternative: The lowest concentration best quality of a chemical constituent in a receiving water on a constituent basis, representative of the water body, accounting for temporal and spatial variability, since the relevant water quality objective for the constituent was established or since October 28, 1968, whichever is later, based on use of reasonably available, representative and reliable well data, unless the Regional Board has subsequently authorized degradation of that groundwater consistent with the State Antidegradation Policy (Resolution No. 68-16). To determine baseline, the regional water board or a permittee may conduct a general assessment of the existing water quality data that is reasonably available. Statistical tools and transformations or other QA/QC data may be used to identify and disqualify outliers, to normalize data, or to spatially and temporally de-cluster well data to reduce the potential for sampling bias when estimating a mean concentration. See SNMP Attachment B2.2 for a more detailed description and examples of some technical methods previously accepted for use in estimating average chemical concentrations in groundwater.	Alternative: The lowest concentration of a chemical constituent in a receiving water since the relevant water quality objective for the constituent was established or since October 28, 1968, whichever is later, unless the Regional Board has subsequently authorized degradation of that groundwater consistent with the *State Antidegradation Policy*. *The baseline water quality should be representative of the water body, accounting for temporal and spatial variability.*

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
			Alternative: Remove term from Definitions and Terminology List	Alternative: The lowest concentration of a chemical constituent in a receiving water ~~since~~ *at the time* the relevant water quality objective for the constituent was established or since October 28, 1968, whichever is later, unless the Regional Board has subsequently authorized degradation of that groundwater consistent with the *State Antidegradation Policy*.
BASIN PLAN		A Water Quality Control Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, and local water quality conditions and problems, and provides the basis for the Regional Board's regulatory programs. The Basin Plan designates beneficial uses, establishes water quality objectives to ensure the reasonable protection of those beneficial uses and the prevention of nuisance, and establishes programs of implementation for achieving water quality objectives.		Alternative: Remove term from Definitions and Terminology List

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
BEST EFFORTS	However, unlike the phrase BPTC, use of the term Best Efforts is not restricted to situations where **receiving** water quality is better than relevant water quality objectives	The applicable standard that must be met by a discharger when the Regional Board is authorizing waste discharges that may impact waters that are not considered "high quality waters." The Best Efforts approach involves making a showing that the constituent is in need of control and establishing limitations which the discharger can be expected to achieve using reasonable control methods. Factors that should be considered include: the water supply available to the discharger; the past effluent quality of the discharger; the effluent quality achieved by other similarly situated dischargers; the good-faith efforts of the discharger to limit the discharge of the constituent; and the measures necessary to achieve compliance.	Alternative: The highest level of pollution control water quality that is feasible, practicable and reasonable consistent with common practices by other similarly situated dischargers with consideration for the level of water quality and beneficial use protection provided.	

Term	SNMP Recommendation	January 19, 2018 Board Workshop	Alternative/Modified Recommendations	February 15, 2018 Executive Committee Proposals
BEST MANAGEMENT PRACTICES (BMP)	Structural or non-structural (operational) control techniques designed to reduce the discharge of pollutants into receiving waters, especially for non-point sources where conventional wastewater treatment technologies are not a feasible or practicable compliance option.		Alternative: A practice which is determined to be the most effective and practicable method of preventing or reducing the amount of pollution generated by a pollutant source. Determination is made after public participation and review of all other alternatives.	
BEST PRACTICABLE TREATMENT OR CONTROL (BPTC)	A widely-used or industry accepted method that is proven, cost-effective and reliable for reducing the mass or concentration of potential pollutants discharged to the receiving water to assure that pollution or nuisance will not occur, and the highest water quality consistent with the maximum benefit to the people of the State will be maintained. The phrase BPTC applies exclusively to situations where receiving water quality is better than relevant water quality objectives and an Antidegradation Analysis is being performed as required by Resolution No. 68-16 (See also Questions and Answers About State Water Board Resolution No. 68-16; Feb. 16, 1995: http://www.waterboards.ca.gov/water_issues/ programs/dept_of_defense/docs/5g.pdf	The applicable standard that must be met by a discharger when the Regional Board is authorizing the degradation of high-quality waters pursuant to the *State Antidegradation Policy*. BPTC is conceptually comparable (but not legally synonymous) with other similar phrases commonly used to proscribe the most effective, efficient and affordable means for minimizing pollution, such as: Best Available Technology Economically Achievable (BATEA), Best Practicable Control Technology (BPT), Best Conventional Pollution Control Technology (BCT), and Best Management Practices (BMP).	Alternative: A widely used or industry accepted method that is proven, cost-effective and reliable for reducing the mass or concentration of pollutants discharged to the receiving water to assure that pollution or nuisance will not occur and that the highest water quality consistent with the maximum benefit to the people of the State will be maintained.	

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CONDITIONAL PROHIBITION	Undefined	Conditional prohibitions of discharge can be established in the Basin Plan for any type of discharge. (Wat. Code § 13243) A conditional prohibition may specify conditions or areas where the discharge of waste, or the discharge of certain types of waste, will not be permitted. A conditional prohibition established in the Basin Plan is directly enforceable by the Regional Board even in the absence of WDRs or a waiver regulating the discharge or discharger.	Alternative: "A conditional prohibition may specify conditions or areas where the discharge of waste, or the discharge of certain types of waste, will not be permitted *unless specific conditions are met*…"	Alternative: "…A conditional prohibition may specify conditions or areas where the discharge of waste, or the discharge of certain types of waste, will not be permitted *unless specific conditions are met*…"
CURRENT GROUNDWATER QUALITY	The volume-weighted Average Concentration of a chemical constituent in a given basin, sub-basin or management zone (See also State Water Board WQ Order No. 73-4 and Resolution No. 2009-0011).	For the purposes of the nitrate and salinity control plans, "current groundwater quality" is defined as the volume-weighted Average Concentration of a chemical constituent in a given Basin or Sub-basin. Current water quality can be computed separately for the Production Zone, Upper Zone, Lower Zone, Shallow Zone and Management Zone.	Alternative: 1. Suggest deleting this definition altogether as it varies between the programs and the permitting pathways. 2. For the purposes of the nitrate and salinity control plans, "current groundwater quality" is defined as the volume-weighted Average Concentration of a chemical constituent in a given Basin or Sub-basin. Current water quality can be computed separately for the Upper Zone, Lower Zone, Shallow Zone and Management Zone. The Production Zone water quality is based on the volume-weighted average of the Upper Zone and Lower Zone water quality. 3. The data in the given year based on sampling, or the most recent 5 years.	Alternative: Remove term from the definitions list since it varies between the programs and permitting pathways.
DE MINIMIS DISCHARGE		A discharge that will not cause any significant effect on groundwater quality. *De minimis* discharges of nitrate are specifically defined in the Regional Board's Nitrate Control Program.		Alternative: A discharge that will not cause a~~ny~~ significant effect on groundwater quality. *De minimis* discharges of nitrate are specifically defined in the Regional Board's Nitrate Control Program.

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EXCEPTION TO A WATER QUALITY OBJECTIVE	A special authorization, adopted by the Central Valley Water Board through the normal public review and approval process, that allows a discharge or group of discharges to groundwater, subject to various conditions, without an obligation to comply with certain water quality objectives that would normally apply to the given discharge for the period of the exception.	A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows a discharge or group of discharges to groundwater, subject to various conditions, without an obligation to comply with certain water quality objectives that would normally apply to the given discharge for the period of the exception. Exceptions are limited to a specific term that is determined by the Regional Board. (See also the SNMP Exceptions Policy).	Alternative: "…that allows a discharge or group of discharges to groundwater *or non-NPDES discharges to surface water*,…"	Alternative: A special authorization, adopted by the Central Valley Water Board through the normal public review and approval process, that allows a discharge or group of discharges to groundwater *or non-NPDES discharges to surface water*, subject to various conditions, without an obligation to comply with certain water quality objectives that would normally apply to the given discharge for the period of the exception. "Exceptions are limited to a specific term that is determined by the Regional Board. (See also the SNMP Exceptions Policy)." Alternative: A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows a discharge or group of discharges to groundwater, *or the groundwater*, subject to various conditions, ~~without an obligation to comply with~~ *to be exempt from* certain water quality objectives that would normally apply to the given discharge for the period of the exception. Exceptions are limited to a specific term ~~that is~~ determined by the Regional Board. (See also the SNMP Exceptions Policy).

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~~FEASIBLE, PRACTICABLE AND REASONABLE~~ REASONABLE, FEASIBLE AND PRACTICABLE	Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. "In a successful manner" means avoiding significant and unacceptable adverse impacts.		Alternative: Remove term from Definitions and Terminology List	Alternative: Change term to "Reasonable, Feasible and Practicable" to reflect usage in Executive Summary Alternative: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors, *including costs commensurate with benefits to water quality and beneficial use protection*. "In a successful manner" means avoiding significant and unacceptable adverse impacts.
GROUNDWATER	Undefined	Water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. Groundwater originates from rain and from melting snow and ice and is the source of water for aquifers, springs, and wells.	Alternative: Water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels. Alternative: Water that collects or flows beneath the Earth's surface within the zone below the water table in which soil is completely saturated with water. Alternative: Remove term from Definitions and Terminology List	Alternative: Water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels. Ref: CWC 10721(g)

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~~INFEASIBLE, IMPRACTICABLE OR UNREASONABLE~~ UNREASONABLE, INFEASIBLE OR IMPRACTICABLE	Not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. "In a successful manner" means avoiding significant and unacceptable adverse impacts.		Alternative: "…taking into account economic, environmental, legal, social and technological factors, *including costs commensurate with benefits to water quality and beneficial use protection.* "In a successful manner" means avoiding significant and unacceptable adverse *environmental and economic* impacts." Alternative: Remove term from Definitions and Terminology List	Alternative: Not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors*, including costs commensurate with benefits to water quality and beneficial use protection*. "In a successful manner" means avoiding significant and unacceptable adverse impacts.
LOWER ZONE	The remaining portion of a groundwater basin or sub-basin's Production Zone excluding the Upper Zone. Wells constructed in the Lower Zone are generally used for municipal supply and/or crop irrigation purposes. The upper boundary of the Lower Zone varies based on well construction information for a given basin or sub-basin (see reference citation in the definition of Upper Zone). Where the Corcoran Clay layer exists, and a significant proportion of domestic wells rely on water above the Corcoran Clay layer, the Corcoran Clay layer may define the lower boundary of the Upper Zone or the Lower zone, pending the available well construction and groundwater use information. The groundwater beneath the Corcoran Clay is referred to as the lower aquifer system (See also SNMP Section 3.3.1.1).		Alternative: Wells located in the Lower Zone are generally used for crop irrigation although some wells in the lower zone are also used for municipal supply *or other uses.* Alternative: The remaining portion of a groundwater basin or sub-basin's Production Zone excluding the Upper Zone. Wells constructed in the Lower Zone are generally used for some municipal supply and/or agricultural purposes. The upper boundary of the Lower Zone varies based on well construction information for a given basin or sub-basin (see reference citation in the definition of Upper Zone). Where the Corcoran Clay layer exists, the Corcoran Clay layer may define the lower boundary of the Upper Zone or the Lower Zone, pending the available well construction and groundwater use information. The groundwater beneath the Corcoran Clay is referred to as the lower aquifer system.	

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MANAGEMENT ZONE	A discrete and generally hydrologically contiguous area of groundwater for which permitted discharger(s) participating in the management zone collectively work to meet the goals of the SNMP and for which compliance with water quality objectives is regulated and evaluated as a subdivision of a larger groundwater basin(s) or sub-basin(s). Where management zones cross groundwater basin or sub-basin boundaries, water quality conditions and compliance with water quality standards are assessed separately for each basin or sub-basin. Management zones must be approved by the Central Valley Water Board (See also SNMP Groundwater Management Zone Policy, Attachment A-1).	A discrete and generally hydrologically contiguous area for which permitted discharger(s) participating in the management zone collectively work to meet the goals of the SNMP and for which regulatory compliance is evaluated based on the discharger(s) collective impact, including any alternative compliance programs, on a defined portion of the aquifer. Where Management Zones cross groundwater basin or sub-basin boundaries, regulatory compliance is assessed separately for each basin or sub-basin. Management Zones must be approved by the Regional Board. (See also SNMP Management Zone Policy).	Alternative: "A discrete and generally ~~hydrologically~~ contiguous area for which permitted discharger(s) participating in the management zone collectively work to meet the goals of the SNMP…"	Alternative: "A discrete and generally ~~hydrologically~~ contiguous area for which permitted discharger(s) participating in the management zone collectively work to meet the goals of the SNMP…" Alternative: A discrete and generally hydrologically contiguous area for which permitted discharger(s) participating in the ~~m~~Management ~~z~~Zone *work* collectively ~~work~~ to meet the goals of the SNMP…
NATURALLY-OCCURING BACKGROUND CONCENTRATION	The average concentration of a chemical constituent that is likely to be present a given groundwater basin or sub-basin without the influence of anthropogenic activities that may have occurred over time, accounting for temporal and spatial variability.	The concentration of a chemical constituent that is likely to be present a given groundwater Basin or Sub-basin without the influence of anthropogenic activities that may have occurred over time, accounting for temporal and spatial variability.		Alternative: The *average* concentration of a chemical constituent that is likely to be present *in* a given groundwater Basin or Sub-basin without the influence of anthropogenic activities that may have occurred over time, accounting for temporal and spatial variability.
PUBLIC NUISANCE	Per CWC §13050 (m), anything which meets all of the following requirements: 1] Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property; 2] affects at the same time an entire community	As applied to adverse water quality problems resulting from the treatment or disposal of wastes, any condition that: • is injurious to health, indecent or offensive to the senses, or an	Alternative: Since this is defined in statute, we don't think it is necessary to include the definition here	Alternative: Remove term from Definitions List. Defined in statute- not necessary to be included in Definitions List

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	or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individual may be unequal; 3] Occurs during, or as the result of, the treatment or disposal of wastes.	obstruction to the free use of property, and • affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individual may be unequal. (Wat. Code, § 13050, subd. (m).)	Alternative: Remove term from Definitions and Terminology List	
OFFSET PROJECT	Project(s) implemented in conjunction with, but separately from, a discharge that are designed to demonstrate that the combined cumulative net impact of both on the receiving water quality is better than what is expected to occur if the discharge complied with the WDRs that would normally be imposed in the absence of any Offset Program (See also the SNMP Offsets Policy, Attachment A-7).	Project(s) implemented in conjunction with, but separately from, a discharge where the net impact of both on receiving water quality is better than what would be expected to occur if the discharge was required to comply with waste discharge requirements prescribed in the absence of any offset. (See also the SNMP Offsets Policy)		Alternative: Project(s) implemented in conjunction with, but separately from, a discharge where the net impact of both on receiving water quality is better than what would be expected to occur if the discharge was required to comply with waste discharge requirements prescribed in the absence of any offset. ~~(See also the SNMP Offsets Policy)~~
PRODUCTION ZONE	The portion of a basin, sub-basin or management zone from which the vast majority (≈90%) of groundwater is being pumped and utilized. The production zone is comprised of both an upper production and a lower production zone (See also SNMP Section 3.3.1.1).	The portion of a basin or sub- basin from which the vast majority (≈90%) of groundwater being pumped and utilized. The Production Zone generally extends from the top of the saturated zone to the bottom of the lowest screened production well. The Production Zone may be further subdivided into the Upper Zone and the Lower Zone. Groundwater in storage below the Lower Zone is not included when describing or characterizing the Production Zone.	Alternative: The portion of a basin or sub- basin from which the majority of groundwater is being pumped and utilized. The Production Zone includes the Upper Zone and the Lower Zone.	
RECEIVING WATER(S)	A Water of the State into which pollutants are discharged.	A surface waterbody (lake or stream) or a groundwater Basin or Sub-basin into which pollutants are discharged.		Alternative: A surface waterbody (lake*, river,* or stream) or a groundwater Basin or Sub-basin into which pollutants are discharged.

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SALINITY	For purposes of implementing the Salinity and Nitrate Control Plan, the definition of "salinity" includes only: electrical conductivity, total dissolved solids, chloride, sulfate, and sodium.			Alternative: For purposes of implementing the Salinity ~~and Nitrate~~ Control Plan, the definition of "salinity" includes only: electrical conductivity, total dissolved solids, chloride, sulfate, and sodium. Alternative: For purposes of implementing the Salinity and Nitrate Control Plan, the definition of "salinity" includes only: electrical conductivity, total dissolved solids, *fixed dissolved solids,* chloride, sulfate, and sodium. Alternative: For purposes of implementing the Salinity and Nitrate Control Plan, the definition of "salinity" includes only: *E*~~e~~lectrical *C*~~c~~onductivity *(EC)*, *T*~~t~~otal *D*~~d~~issolved *S*~~s~~olids *(TDS)*, chloride, sulfate, and sodium.
SATURATED ZONE	The area, below the land surface, in which all pore space between soil, sand and rock particles is filled with water. The saturated zone is below the unsaturated zone and excludes areas of soil moisture where water is held by capillary action in the upper unsaturated soil or rock.		Alternative: An underground zone in which all openings in and between natural geologic material are filled with water. The zone in which voids in the rock and soil are filled with water at a pressure greater than atmospheric.	

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SHALLOW ZONE	<u>SNMP Section 4:</u> The shallowest portion within the upper zone (e.g. uppermost 10% of the upper zone) and where groundwater would be considered to constitute an aquifer (which is defined as a "body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs" [DWR, 2003]0. In all cases, relevant groundwater does not include perched water. <u>SNMP Attachment D1:</u> The uppermost portion of the upper zone that generally encompasses the shallowest 10% of the domestic water supply wells in a given basin or sub-basin. For regulatory purposes, the term "shallow zone" should be used in lieu of the phrase "first-encountered groundwater."	The 10% uppermost portion of the Upper Zone. For regulatory purposes, the term "Shallow Zone" should be used in lieu of the phrase "First-Encountered Groundwater."	<u>Alternative:</u> The 10% uppermost portion of the Upper Zone that generally encompasses the shallowest (10%) of the domestic water supply wells in a given basin or sub-basin. <u>Alternative:</u> The shallowest portion within the upper zone where groundwater would be considered to constitute an aquifer (which is defined as a "body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs" [DWR, 2003]). In all cases, relevant groundwater does not include perched water. For example, this may be the upper portion of the upper zone that generally encompasses the shallowest 10% of the domestic water supply wells in a given basin or sub-basin. When determining the upper portion of the upper zone based on the shallowest 10% of the domestic wells in a given area, variations in well depth across the basin or sub-basin due to hydrogeologic conditions or other factors should be considered.	

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SUB-BASIN	A subdivision of a groundwater basin created by dividing the basin using geologic and hydrologic or institutional boundaries. The California DWR has identified the groundwater basins or sub-basins of the Central Valley Region in Bulletin 118 (See also SNMP Section 2.4).	A sub-basin is a smaller, but contiguous, area of the aquifer within a larger groundwater basin. The sub-basin boundaries can be defined both vertically and horizontally by a number of factors including, but not limited to: mineral or chemical concentrations, pumping practices, porosity, ownership, overlying land uses, jurisdictional oversight, flow gradients, tributary relationships, or other variables that merit the sub-basin be managed differently from adjacent areas in the same larger groundwater basin. The California DWR has identified 126 groundwater basins or sub- basins in the Central Valley Region; 41 of these aquifers are located on the valley floor, and the remainder are located in the surrounding foothills and mountains (see SNMP ATTACHMENT b2.2).	Alternative: A subdivision of a groundwater basin created by dividing the basin using geologic and hydrologic or institutional boundaries. (see SNMP ATTACHMENT b2.2).	Alternative: A sub-basin is a smaller, but contiguous, area of the aquifer within a larger groundwater basin. The sub-basin boundaries can be defined both vertically and horizontally by a number of factors including, but not limited to: mineral or chemical concentrations, pumping practices, porosity, ownership, overlying land uses, jurisdictional oversight, flow gradients, tributary relationships, or other variables that merit the sub-basin be managed differently from adjacent areas in the same larger groundwater basin. The California DWR has identified 126 groundwater basins or sub- basins in the Central Valley Region; 41 of these aquifers are located on the valley floor, and the remainder are located in the surrounding foothills and mountains ~~(see SNMP ATTACHMENT b2.2).~~
TRIGGER(s)	A concentration or level for a specific constituent (e.g. Nitrate, TDS) or parameter (e.g., electrical conductivity, pH) which, when equaled or exceeded, may require some dischargers to initiate certain actions or implement certain measures.	A concentration or level for a specific constituent (e.g. TDS) or parameter (e.g. Electrical Conductivity) which, when equaled or exceeded, may require some dischargers to initiate certain actions or implement certain measures.	Alternative: A concentration or level for a specific constituent (e.g. TDS) or parameter (e.g. Electrical Conductivity) which, when equaled or exceeded, may require ~~some~~ a discharger(s), *under specified circumstances*, to initiate certain actions or implement certain measures.	Alternative: A concentration or level for a specific constituent (e.g. TDS) or parameter (e.g. Electrical Conductivity) which, when equaled or exceeded, may require some dischargers to initiate certain actions or implement certain measures. *A trigger is not a Water Quality Objective.* Alternative: A concentration or level for a specific constituent (e.g. TDS) or parameter (e.g. Electrical Conductivity) which, when equaled or exceeded, may require ~~some~~ *a* discharger*(s), under specified circumstances,* to initiate certain actions or implement certain measures.

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UNSATURATED ZONE	(see Figure D1-1): The area, below the land surface, in which the pore space between soil, sand and rock particles contains varying degrees of both air and water in ratios that inhibit extraction of significant or economic quantities of groundwater extraction. The term "unsaturated zone" is generally considered to be synonymous with the term "vadose zone."	The area below the land surface in which the pore space between soil, sand and rock particles contains varying degrees of both air and water in ratios that inhibit extraction of significant or economic quantities of groundwater extraction. The term "unsaturated zone" is generally considered to be synonymous with the term "vadose zone."	Alternative: The zone below the land surface and above the groundwater table in which pore space contains both water and air. The term "Unsaturated Zone" is generally considered to be synonymous with the term "Vadose Zone." Alternative: The zone between ground surface and regional water table or in cases where the uppermost aquifer is confined, the zone between the ground surface and the top of the saturated portion of the aquifer's confining layer.	
UPPER ZONE	(Groundwater, see Figure D1-1): The portion of a groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the upper zone or the lower zone, pending the available well construction and groundwater use information. The groundwater beneath the Corcoran Clay is referred to as the lower aquifer system (See also Luhdorff & Scalmanini Consulting Engineers	The portion of a groundwater basin or sub- basin from which most domestic wells draw water (40% Domestic well depth weighted, 10% virtual farm wells (Irrigation modeled), 20% urban public water supply wells, 20% rural public water supply wells and 10% DDW systems). It generally extends from the top of the saturated zone to the bottom of the lowest screened domestic wells. In areas where the Corcoran Clay layer exists, and a significant portion of domestic wells draw water from above the Corcoran Clay layer, the upper zone will extend to the top of the Corcoran Clay layer. The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin (as described in Section 2 of LWA/LSCE; Region 5: Updated	Alternative: The portion of a groundwater basin or sub- basin from which most domestic wells draw water. It generally extends from the top of the saturated zone to the bottom of the lowest screened domestic wells, *but can be a calculated using perforation depths of other supply wells.* Alternative: The portion of the groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened). The lower boundary of the Upper Zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay	Alternative: The portion of the groundwater basin, sub-basin or management zone from which most domestic wells draw water. It generally extends from the top of the saturated zone to the depth to which domestic wells are generally constructed (screened)*, but can be calculated using the perforation depths of other supply wells.* The lower boundary of the Upper Zone varies based on well construction information for a given basin or sub-basin. The Corcoran Clay layer may define the lower boundary of the Upper Zone or the Lower Zone, pending the available well construction and groundwater use information. ~~(as described in Section 2 of LWA/LSCE; Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan; June, 2016).~~

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	and Larry Walker Associates [2016a] and SNMP Section 3.3.1.1).	Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan; June, 2016).	layer may define the lower boundary of the Upper Zone or the Lower Zone, pending the available well construction and groundwater use information. (as described in Section 2 of LWA/LSCE; Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan; June, 2016).	Alternative: "The portion of the groundwater basin, sub-basin or *M*~~m~~anagement *Z*~~z~~one from which most domestic wells draw water. ~~It~~ *The Upper Zone* generally extends from the top of the saturated zone…"
VADOSE ZONE	Undefined	Undefined		Alternative: See definition of Unsaturated Zone.
VARIANCE TO WATER QUALITY STANDARD	A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows an NPDES-permitted discharge(s) to surface waters or a waterbody, subject to various conditions, without an obligation to comply with certain water quality standards that would normally apply to the given discharge(s) or waterbody. Variances are limited to specific terms governed by federal law and must also be approved by U.S. EPA. Variances apply solely to surface waterbodies or discharges to those surface waters. (See also Res. No. R5-2014-0074).		Alternative: A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows an NPDES-permitted discharge(s) to surface waters or a waterbody, subject to various conditions, without an obligation to comply with certain water quality standards that would normally apply to the given discharge(s) or waterbody. Variances are limited to specific terms governed by federal law and must also be approved by U.S. EPA. Variances apply solely to surface waterbodies or discharges to those surface waters.	Alternative: A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows an NPDES-permitted discharge(s) to surface waters or a waterbody, subject to various conditions, without an obligation to comply with certain water quality standards that would normally apply to the given discharge(s) or waterbody. Variances are limited to specific terms governed by federal law *and regulations* and must also be approved by U.S. EPA. Variances apply solely to surface waterbodies or discharges to those surface waters. ~~(See also Res. No. R5-2014-0074).~~ Alternative: "…subject to various conditions, ~~without an obligation to comply with~~ *to be exempt from* certain water quality standards…"

Table D - 6. Salinity Variance Program Policy

Basin Plan Element		No Action Alternative	SNMP Recommendations	Alternative Recommendations
Chapter IV Implementation	1. Complete Variance Application Requirements	C. (7) A detailed discussion of a proposed interim discharge limitation(s) that represent the highest level of treatment that the permittee can consistently achieve during the term of the variance.	No recommendation	Modifications to No Action Alternative: C. (7) A detailed discussion of a proposed interim discharge limitation(s) that represent the highest level of ~~treatment~~ constituent reduction that the permittee can consistently achieve during the term of the variance.
		F. Within a reasonable time period…requirement on variance application may be conducted in conjunction with the Regional Water Board's process for the renewal of NPDES permit.		Additional Clarifications to No Action Alternative: F. Within a reasonable time period…requirement on variance application may be conducted in conjunction with the Regional Water Board's process for the renewal or amendment of NPDES permit.
		I. Permit limitations for a constituent(s)…shall remain in effect during the consideration of a variance application for that particular constituent(s).		Addition Clarifications to No Action Alternative: I. Permit limitations for a constituent(s)…shall remain in effect during the consideration of a variance application for that particular constituent(s), unless a stay is granted by the State Water Resources Control Board under Water Code section 13321.
	2. Prohibition authorizing salinity variances	No salinity variances shall be approved after 30 June 2019.	Delete 30 June 2019 and extend the timeframe to 15 years from effective date of the SNMP amendments.	
	3. Application of Salinity Variance Program to salinity WQBELS	Applies to salinity water quality standards to protect the AGR beneficial use.	Extend the application to include MUN beneficial use.	Apply to all beneficial uses. "…will not adversely affect beneficial uses…"
	4. Eligibility for variance	Requires participation in development and initial implementation of SNMP through CV-SALTS initiative	Revise Salinity Variance Program to require participation in Prioritization and Optimization Study.	

Chapter IV Implementation	5. Approach of Salinity Variance Program	No variances after 30 June 2019. Until then only applies to WQOs to protect AGR beneficial use.	Amend to make clear that salinity variances are intended to facilitate implementation of the phased Salinity Management Strategy. Not available to permittees that wish to opt out of participating in Phase I of Salinity Management Strategy. Application of salinity variances for Phases II and III will be considered based on findings. Requirements of Phase II and III may be adjusted based on findings from previous phases.	Specification to SNMP recommendation: Phase I consists of developing a P&O Study for long-term salinity management which is intended to be a feasibility study that identifies appropriate regional and sub-regional projects, including location, routing and implementation and operations of salt management projects. Phase II will consist of environmental permitting, obtaining funding, and engineering and design. Phase III would then consist of construction of physical projects as identified in the previous phases. Because the salinity management strategy is phased over time, there is a need for an interim salinity permitting approach to be implemented during Phase 1 and while transitioning from Phase I to Phase II. The interim salinity permitting approach is anticipated to require 15 years and will be re-evaluated prior to implementation of Phase II
	6. Joint applications	No language provided	No language provided	For dischargers that are participating in the same prioritization and optimization study, i.e. a study that covers their watershed or their groundwater basin, the dischargers may submit a joint application as long as the joint application contains all the information identified in paragraph C

Table D - 7. Exceptions Policy for Waste Discharges to Groundwater and/or Non-NPDES Surface Waters

Basin Plan Elements		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
General	1. Goal/Purpose	Exception Policy allows for an exception to meeting salinity WQOs while the Salt and Nitrate Control Program is being developed. Board shall consider including interim performance-based effluent limitations or groundwater limitations that provide reasonable protection of receiving water or groundwater.	• Exception Policy allows for an exception to meeting WQOs for salinity and nitrate where it is infeasible, impracticable or unreasonable to prohibit discharge or it is preferable to have a discharger and/or area specific and time-limited exception rather than a more lasting water quality standard revision • Exceptions are intended to facilitate long-term attainment of water quality objectives under the Salt and/or Nitrate Control Program or to provide the time needed to revise an inappropriate or inapplicable water quality objective or beneficial use designation	Modifications to the SNMP Recommendation: • It is reasonable to grant exceptions to the discharge requirements related to the implementation of water quality objectives for salinity, nitrate and boron if the permittee is actively participating in the implementation of the long-term Salinity and Nitrate Control Programs and it is infeasible, impracticable or unreasonable to prohibit the discharge or it is preferable to have a discharger and/or area specific and time-limited exception rather than a more lasting water quality standard revision. • Exceptions are intended to facilitate long-term attainment of water quality objectives under the Salt and/or Nitrate Control Program or to provide the time needed to revise an inappropriate or inapplicable water quality objective or beneficial use designation • The Regional Board will set interim performance-based requirements when the exception is authorized Modification to Alternative above: Change actively participating to fully participating	
	2. Permit types	Applies to non-NPDES dischargers of surface water and discharges to groundwater	No change, but clarify that an exception may be requested by individual dischargers or collective dischargers through a management zone, by a third party group on behalf of its members or other forms of collective groups of dischargers recognized by the Board	Alternative: No change, but clarify that an exception may only be applied on a permit-by-permit basis, not to a management zone.	

Basin Plan Elements		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
	3. Constituents that apply	Salinity – which includes EC, TDS, chloride, sulfate and sodium	Nitrate which includes total inorganic nitrogen (TIN), total kjeldahl nitrogen (TKN), etc. Recognize that policy does not prevent considering authorization of exception for boron.	Alternative: Specifically include boron in the Exception Policy along with salinity and nitrate as recommended by the SNMP Alternative: Include Nitrate plus Nitrate as part of the Nitrate constituents	CEQA required as part of the boron applica-tion process
General	4. Term	Term not to exceed 10 years	Terms generally shall not exceed 10 years, however the Board can adopt an exception longer than 10 years given demonstration of achieving management goal. The Board has authority to reauthorize (renew) an exception. Length shall be determined by the Regional Board. The Regional Board may terminate an exception when the applicant(s) are not complying with the terms and conditions that are part of the exception. Any rescission of an exception may only occur after notice and hearing.	Modification to the SNMP Recommendation: Term not to exceed 50 years unless the Board finds that management practices implemented under the exception has resulted in significant and measureable improvements in water quality. Terms for exceptions shall generally not exceed 10 years, however, the Regional Water Board shall have the discretion to adopt an exception for longer than 10 years if the applicant(s) can demonstrate that it is necessary to further the management goals of the Salt or Nitrate Control Programs. The Regional Water Board has the authority to reauthorize (renew) an exception for one or more additional terms, the length of which shall be determined by the Regional Water Board but may only exceed 50 years if the management practices under the exception is resulting in significant and measurable improvements in water quality. The Regional Board may terminate an exception when the applicant(s) are not complying with the terms and conditions that are part of the exception. Any rescission of an exception may only occur after notice and hearing.	

Basin Plan Elements	No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
			Alternative Term not to exceed 50 years Alternative: Retain existing 10-year limit for exception term but allow exceptions to be renewed at 10-year intervals with no end date Alternative Term not to exceed 10-years with up to three renewals	
5. General Expectations for applicants	Permittee must be actively participating in CV-SALTS	• Requirements associated with seeking and approving an exception shall include, but are not limited to: eligibility criteria, mitigation responsibilities, monitoring/reporting obligations, and expectations relevant to implementing the SNMP Management Goas • Dischargers are expected to continue making "best efforts" to comply with applicable WDRs • Dischargers will be required to periodically reassess BMPs and survey available treatment technologies to determine if feasible, practicable and reasonable compliance options have become available • Where exceptions are sought to provide time to develop and approve a	Modifications to SNMP Recommendations Keep all of the bulleted recommendations except the second one pertaining to "best efforts" Alternative: • Participation in a mitigation fund or other mitigation program that fully mitigates impacts to drinking water. • Participation in a program that restores the aquifer to meet water quality objectives within 50 years.	

			new WQ standard (uses and/or objectives), there must be a well-defined work plan and commitment by dischargers to provide the needed resources • Where existing WQ standards are unlikely to change, dischargers must explain how exception facilitates the larger long-term strategy designed to ultimately attain those standards while allocating resources to address more urgent water quality priorities		
	6. Status Report	No language provided	Board will require dischargers to prepare a status report every 5 years summarizing compliance		
	7. Sunset Date	No new exceptions or reauthorizing previously approved exceptions after **June 30, 2019**	Remove the June 30, 2019 sunset date		

Table D – 7. Exceptions Policy for Waste Discharges to Groundwater and/or Non-NPDES Surface Waters

Basin Plan Elements		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations
Exception Application Provisions Specific to Salinity	1. Salinity Reduction	Salinity Reduction Study Work Plan: • Data on current influent and effluent concentrations • Identification of sources • Description of current plans to reduce/eliminate sources • Preliminary identification of other potential sources • Proposed schedule for evaluating sources • Proposed schedule for identifying and evaluating potential reduction, elimination and prevention methods	Exceptions Policy should be modified to match the requirements relevant to implementing the SNMP management goals	Modification to SNMP Recommendation: 1. When granting and exception to the implementation of water quality objectives for salinity under this Program, the Regional Water Board shall require the discharger to demonstrate active participation in the Alternative Salinity Permitting Approach as specified under the Salinity Control Program 2. A person seeking consideration of drought, water conservation and water recycling as part of an exception to the implementation of water quality objectives for salinity under this Program must include the following in the application to the Regional Board: a. A description of any drought impacts, irrigation, water conservation, and water recycling efforts that may be causing or cause the concentration of salinity to increase in effluent, discharges to receiving waters, or in receiving waters.
	2. Watershed Management	Salinity-based Watershed Management Plan: • Physical conditions that affect surface water or groundwater • Management plan strategy to reduce or control known sources • Monitoring methods • Data evaluation • Schedule for reporting management plan progress		
	3. CEQA documents	Regional Board may require applicant to prepare CEQA documents or may use documents prepared and certified by another state or local agency that addresses the potential environmental impacts associated with the project and the granting of an exception		Modification to SNMP Recommendation: Under Phase I of the Salt Control Program, permittees that are in compliance with the conditions for the Alternative Permitting Approach are in compliance with their salinity limits. Additional conditions for

	4. Application requirements	Application must include: • Explanation/justification of why exception is necessary and why limitations cannot be met • Description of reduction/elimination measures taken to date or description of salinity-based watershed management plan and progress of implementation • Description of drought impacts, irrigation, water conservation and/or water recycling efforts that may be causing or cause the concentration of salinity to increase in effluent, discharges to receiving waters, or in receiving waters. • Copies of any documents related to Public Resources Code section 21080 et seq. • Documentation of the applicants active participation in CV-SALTS • A detailed plan of how applicant will continue to participate in CV-SALTS and contribute to the development and implementation of SNMPs		exceptions to water quality objectives for salinity under Phase II and Phase III of the Salt Control Program may be incorporated in the future.

Basin Plan Elements		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations
Exception Application Provisions Specific to Nitrate	1. Safe, Clean Drinking Water	No language provided	Exceptions Policy should be modified to match the requirements relevant to implementing the SNMP management goals Exceptions for nitrate will not be considered unless an adequate supply of clean, safe, reliable and affordable drinking water is available for those living in the area adversely affected by the non-compliant discharge(s). Said availability must take the form of a detailed work plan, schedule of milestones, and financial commitments to provide interim and permanent alternative water supplies. Performance bonds may be required to assure timely implementation.	<u>Modification to SNMP Recommendation:</u> Exceptions for nitrate will not be considered unless an adequate supply of clean, safe, reliable and affordable drinking water is available for those who have been adversely affected by the non-compliant discharge(s).
	2. Application requirements	No language provided		Application must include: • Explanation/justification of why exception is necessary and why limitations cannot be met • Description of alternative compliance project(s), Early Action Plan or other implementation measures that applicant will implement or participate in consistent with the Nitrate Permitting Strategy. • Copies of any documents related to Public Resources Code section 21080 et seq. • A work plan to provide an interim and permanent water supply for any person living in the area adversely affected by the discharge under the requested nitrate exception. The water supply work plan shall include a schedule of milestones and a description of financial commitments to assure completion of the interim and permanent water supply. Performance bonds may be required to assure timely implementation. • Documentation of the applicants active participation in CV-SALTS • A detailed plan of how applicant will continue to participate in CV-SALTS and contribute to the development and implementation of SNMPs
				Alternative: For obtaining an initial exception: • Long-term management plans show improved water quality trends over a 10 and 20 year horizon. • Long-term management plans show salt/nitrate balance and restoration of aquifer to meet water quality objectives in a short a time as practicable, but not to exceed 50 years. For obtaining renewal of exceptions:
				• Demonstration that short-term drinking water solutions were effectively implemented. • Demonstration that mitigation fund / alternative drinking water projects have been effective and identification of additional actions, if needed. • Demonstration that aquifer restoration / mitigation projects have been effective and identification of additional actions, if needed.
				• Long-term management plans show improved water quality trends over: 1) a 10 and 20 year horizon at first and second renewal; 2) a 20 year horizon at third and fourth renewals. • Long-term management plans show salt/nitrate balance and restoration of aquifer to meet water quality objectives in as short a time as practicable, but not to exceed: 1) 40 years at first renewal, 2) 30 years at second renewal, 3) 20 years at third renewal, 4) 10 years at fourth renewal.

Table D – 7. Exceptions Policy for Waste Discharges to Groundwater and/or Non-NPDES Surface Waters

Basin Plan Elements		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations
Exception Application Provisions Specific to Boron	1. Boron Reduction	No language provided	No boron-specific language provided	<u>Modification to SNMP Recommendation:</u> Boron Reduction Study Work Plan: • Data on current influent and effluent concentrations • Identification of sources • Description of current plans to reduce/eliminate sources • Preliminary identification of other potential sources • Proposed schedule for evaluating sources • Proposed schedule for identifying and evaluating potential reduction, elimination and prevention methods
	2. Watershed Management	No language provided	No boron-specific language provided	Boron-based Watershed Management Plan: • Physical conditions that affect surface water or groundwater • Management plan strategy to reduce or control known sources • Monitoring methods • Data evaluation • Schedule for reporting management plan progress
	3. CEQA documents	No language provided	No boron-specific language provided	Regional Board may require applicant to prepare CEQA documents or may use documents prepared and certified by another state or local agency that addresses the potential environmental impacts associated with the project and the granting of an exception
	4. Application requirements	No language provided	No boron-specific language provided	Application must include: • Explanation/justification of why exception is necessary and why limitations cannot be met • Description of reduction/elimination measures taken to date or description of boron-based watershed management plan and progress of implementation • Description of drought impacts, irrigation, water conservation and/or water recycling efforts that may be causing or cause the concentration of salinity to increase in effluent, discharges to receiving waters, or in receiving waters. • Copies of any documents related to Public Resources Code section 21080 et seq. • Documentation of the applicant's active participation in CV-SALTS • A detailed plan of how applicant will continue to participate in CV-SALTS and contribute to the development and implementation of SNMPs

Table D - 8. Drought and Conservation Policy

Basin Plan Elements	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendation
Addition of a Drought and Conservation Policy for Salinity into the Basin Plans	No Drought and Conservation Plan for Salinity in the Basin Plans	Adopt a Drought and Conservation Policy for Salinity into the Basin Plans as part of the current amendment process.	Alternative: Further develop the Drought and Conservation Plan during Phase 1 of the Salinity Control Program as part of the Prioritization and Optimization Study and consider adopting the policy as part of Phase 2 of the program.
			Alternative: Also include Boron in the Drought and Conservation Policy.
Long term waste discharge requirements and limitations for groundwater		For groundwater discharges; provide potential to calculate compliance with the applicable narrative or numeric salinity objectives using long-term (10+ year) flow-weighted average to calculate compliance with effluent and/or groundwater limitations when it can be demonstrated using recharge models and long-term precipitation estimates. Also consider the expected recharge and potential dilution from natural precipitation and streambed percolation.	Modification to SNMP Recommendation Dischargers to groundwater with long-term commitment (20 years) to water conservation and/or recycling efforts may be eligible to use long-term (10+ year) flow-weighted average to calculate compliance with effluent and/or groundwater limitations when it can be demonstrated using recharge models and long-term precipitation estimate. Conduct periodic reassessments based on best available data every 5 years unless otherwise directed in the waste discharge requirements
			Alternative: Conduct periodic reassessments based on best available data every 10 years unless otherwise directed in the waste discharge requirements
Offsets Credits		Allow offset projects consistent with the CV-SALTS Offsets Policy, particularly increased stormwater capture and recharge. Allow offset credits to be created and banked over at least 20 years.	Alternative: Proposed Basin Plan Amendment language to implement offset credits may be developed during the P&O Study

Basin Plan Elements	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendation
Water Quality Objective Adjustment for Drought	No Drought and Conservation Plan for Salinity in the Basin Plans	Establish a temporary variance/exception from salinity-related standards during drought conditions. Variance/exception would be automatically activated with one of the following: a. A drought emergency is declared by an authorized federal or state authority, as defined by the California Emergency Services Act; b. during an extended dry period in Reach 83 of the Lower San Joaquin River (Merced to Vernalis) as defined by the SRSJR Basin Plans; or c. declaration of a local emergency consistent with the California Emergency Services Act. At such times, more appropriate interim WDRs or effluent limits, such as the short term MCL of 2,200 µs/cm EC would apply.	<u>Alternative:</u> Policy will implement interim permit limits based on one of the following: a. A drought emergency is declared by an authorized federal or state authority, as defined by the California Emergency Services Act. ~~b. during an extended dry period in Reach 83 of the Lower San Joaquin River (Merced to Vernalis) as defined by the SRSJR Basin Plans; or~~ c. Declaration of a local drought emergency consistent with the California Emergency Services Act Interim effluent and/or groundwater/surface water limitations based on historic salinity load and shall not exceed an EC concentration of 2,200 us/cm as a 30-day running average. An EC to TDS ratio of 0.64 shall be used unless a discharge-specific ration can be demonstrated. <u>Alternative:</u> Similar to the above Alternative Recommendation, but removes “drought” from letter c. to account for other local emergencies that could lead to conservation mandates. e.g. levy failures

Basin Plan Elements	No Action Alternative	SNMP Recommendation	Alternative/Modified Recommendation
Water Quality Objective adjustment for Conservation and Recycling Efforts	No Drought and Conservation Plan for Salinity in the Basin Plans No Drought and Conservation Plan for Salinity in the Basin Plans	Establish a temporary variance/exception from salinity-related standards where the TDS/EC concentrations in the permitted discharge is better (lower) than the TDS/EC concentration in the receiving water and will improve receiving water quality (even when the receiving water quality is higher than the SMCL) when conservation practices are in place.	<u>Alternative:</u> Establish interim salinity permit limits for permittees who have documented that conservation or recycling is causing increased salinity in their discharge may be based on one of the following: a. Limits that do not exceed the receiving water concentration, provided that there are no unreasonable impacts to downstream/downgradient water quality; or b. Limits that reflect those for emergency conditions: limitations based on historic salinity load with maximums based either on an EC concentration of 2,200 uS/cm as a 30-day running average or as a load. An EC to TDS ratio of 0.64 shall be used unless a discharge-specific ration can be demonstrated.
			<u>Alternative:</u> Discharge shall not exceed 1,600 µS/cm EC (no timeline provided)
Assimilative Capacity		Pre-authorize automatic allocation of assimilative capacity to accommodate higher TDS concentrations during drought conditions.	<u>Alternative:</u> Do not include this component in Drought and Conservation Policy at this time.

Table D - 9. Offsets Policy

Basin Plan Elements	No Action Alternative	SNMP Recommendations	Alternative Recommendations
1. Requirements to be eligible for Offsets Policy	No Offsets Policy	1. Proposed by discharger as an Alternative Compliance Project (ACP) 2. Approved by Central Valley Water Board 3. Enforceable through WDR or other Board orders	
2. Offsets Application		Applicable to only groundwater, but an Offset Policy for surface water may be considered for potential inclusion in the Basin Plans through a future Basin Plan amendment process during the Phase 1 P&O Study Applicable to both salt and nitrate	
Implementation Requirements 3. Offsets Project location		Must be located within the same groundwater basin/sub-basin or management zone as the regulated discharge. Offsets may be used to incentivize implementation of some large-scale projects such as a regional brine line or establish mitigation fund to provide safe drinking water	Alternative: Offset only within area of discharge contribution Alternative: Clarification to SNMP Recommendation: "Offsets may be used to incentivize implementation of some large-scale projects such as a regional brine line or establish mitigation fund to provide safe drinking water, *provided that the offsets still result in a positive net effect on receiving water quality.*"
4. No available assimilative capacity in receiving water		Must result in net improvement in existing water quality (e.g., offset ratio must be >1:1). Offset ratio may be <1:1 in accordance with 88-63, unless exception is granted	
5. Offset for cross-pollutant trading		Offsets shall be for substantially the same pollutant. Cross-pollutant trading may be more appropriate for a short-term effort with long-term efforts focused on the original pollutant of concern.	Alternative: Offsets shall be for substantially the same pollutant. Cross-pollutant trading to address nitrate impairments is not authorized under this Policy.
6. Unmitigated localized impairments (e.g., "hotspots")		Discharge + Offset project cannot result in "hotspots" to sensitive areas (e.g., drinking water supply wells) or have disproportionate impact on a disadvantaged community in the sub-basin.	

Implementation Requirements	7. Approval Process		1-step process: Board may elect to pre-approve specific offset projects OR 2-step process: Board may authorize the general use of offsets within a given order and then approve individual offset projects in subsequent board actions	Alternative: 1-step process: Board may elect to approve a specific offset project through the issuance of a permit OR 2-step process: Board may generally authorize the use of offsets in a permit and subsequently approve individual offset projects in subsequent Board actions
	8. Compliance Period		Period will be defined and shall apply to a specific discharge when the offset is approved. Offsets can be renewed but must be periodically reviewed and reauthorized by the Central Valley Water Board.	
	9. Offset project failure		Terms and conditions should specify the remedial actions the discharger must undertake	
	10. Monitoring and Surveillance Program		Offset project must include a M/S program sufficient to verify pollution reduction credits are generated as projected and the credits are adequate to offset the discharge loads in the approved ratio	

Table D - 10. Application of Secondary Maximum Contaminant Levels to Protect Municipal and Domestic Supply

	Basin Plan Element	No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
Chapter III Water Quality Objectives	1. Prospective language	Includes Prospective Language	Same as No Action Alternative	Alternative: Remove prospective language.	May be revisited during a Triennial Review.
	2. Natural background	Considers natural background for all constituents not covered by SIP (CTR constituents under NPDES and storm water)	Consider cases where natural background concentrations of a particular chemical constituent exceeds the SMCLs specified in Table 644449-A and B. In such cases, water body shall not exceed natural background.	Alternative: Consider natural background for constituents only in Table 64449-B.	Consideration of natural background is a basin plan requirement when setting permit limits for all WQOs, not just those protective of MUN
	3. Salinity vs non-salinity constituents	References both Table 64449-A and B constituents in basin plans.	Same as No Action Alternative	Alternative: Only reference salinity related SMCLs (Table 64449-B) since the SNMP addresses salt and nitrate only.	
	4. Referenced Title 22 language	No language provided	• Include a reference to the full section of Title 22's Section 64449 and not just the tables. • Table 64449-A: Constituents shall not exceed MCL • Table 64449-B: Constituents shall not exceed "Upper" (1600 EC) level unless otherwise authorized by the Board. • Constituents levels ranging up to "Upper" level are acceptable if it is neither reasonable/feasible to provide more suitable water. • Constituents levels ranging up to "Short Term" (2200 EC) level may be authorized on a temporary basis consistent with 64449(d)(3).	Alternative: • Remove Table 64449-A language. • Table 64449-B: Constituents ranging up to "Recommended" (900 EC) level is acceptable whereas an "Upper" (1600 EC) level is acceptable during extended dry periods. • "Short Term" may be authorized on a temporary basis pending construction of treatment facilities or development of acceptable new water sources. • Any recycling or conservation should continue to protect the "Recommended" level. Modification to SNMP Recommendation: "Short Term" level may be authorized on a temporary basis consistent with 64449(d)(d3) and/or consistent with the Drought and Conservation Policy. Additional Clarification to SNMP Recommendations: "Short Term" may be authorized on a temporary basis pending construction of treatment facilities or development of acceptable new water sources.	

Basin Plan Element		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
Chapter III Water Quality Objectives	5. Limits to protect beneficial use	No language provided	No language provided	Alternative: Regional Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations. To protect all beneficial uses, Board may apply limits more stringent than MCLs. Provisions do not supersede or modify requirements of CTR and SIP.	
	6. Treatment Requirements by State and Federal Regulations	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	No language provided	Additional Clarification to No Action Alternative: Some MCLs may not be appropriate as an untreated surface water objective without filtration or consideration of site-specific factors.	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
Chapter IV Implementation	1. Sample type for compliance	No language provided	(a) Compliance with the chemical constituent water quality objective shall be determined from a filtered water sample for the following constituents identified in 22 CCR 64449 (Table A): Aluminum, Color, Copper, Iron, Manganese, Silver, Turbidity and Zinc. (b) Compliance with the chemical constituent water quality objective shall be determined from and unfiltered water sample for the following constituents identified in 22 CCR 64449 (Table A): Foaming Agents (MBAs), Methyl-tert-Butyl Ether (MTBE), Odor-Threshold and Thiobencarb. For receiving waters exempt from filtration requirements, unfiltered water samples used for Table 64449-A and B.	Modification to SNMP Recommendation: For receiving waters that have been deemed exempt from surface water filtration requirements, compliance with chemical constituents in Table 64449-A shall be determined using an unfiltered water sample. For receiving water that are not exempt from surface water filtration requirements, compliance with chemical constituents in Table 64449-A shall be based on the techniques in (a) and (b) below. (a) Compliance with the chemical constituent water quality objective may be determined using tests other than for "total", such as methods using variations of filtered samples, where such methods have been analyzed for their appropriateness, for the following constituents identified in Title 22, section 64449 (Table A): Aluminum, Color, Copper, Iron, Manganese, Silver, Turbidity and Zinc. (b) No change	
				Modification to (a) above: Compliance with the chemical constituent water quality objective may be determined using tests other than for "total", such as methods using variations of filtered samples, where such methods have been analyzed for their appropriateness in representing the quality of treated drinking water…"	
				Modification to (a) above: Use 1 micron filtration for all filtered water samples.	
				Alternative: Use total (unfiltered) samples for all analyses. Clarification should be provided in Basin Plan and guidance.	
				Alternative: Use filtered samples instead of unfiltered samples for MBAs and Odor	

Chapter IV Implementation				Alternative: For receiving waters that are not exempt from surface water treatment requirements (i.e. 40 CFR Part 141, Subparts H, P, T & W), compliance with the Secondary Maximum Contaminant Levels for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[1]; metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Methods[2] as appropriate, or other methods approved by the Regional Board. Because this approach is intended to approximate the level of treatment normally applied to raw surface water sources before such water can be distributed to the public as drinking water, the Regional Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. This provision applies solely to evaluating compliance with Secondary Maximum Contaminant Levels for certain metals and does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same metals (e.g. as Primary MCLs, California Toxics Rule or National Toxic Rule constituents, or constituents with specific objectives listed in this Basin Plan). For groundwaters, compliance with the Secondary Maximum Contaminant Levels for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[1]; metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Methods[2] as appropriate, or other methods approved by the Regional Board. Because this approach is intended to account for "removal of waste constituents as the water percolates through the ground to the aquifer," as described in WQ Order No. 73-04 and Water Quality Order No. 81-05, the Regional Board may adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
				comment. This provision applies solely to evaluating compliance with Secondary Maximum Contaminant Levels for certain metals and does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same metals (e.g. Primary MCLs or constituents with specific objectives listed in this Basin Plan). The Regional Board may require unfiltered samples be analyzed concurrently to assess general trends in receiving water quality, implement the state's Antidegradation Policy (Res. No. 68-16), and evaluate potential downstream impacts.	
	2. Compliance period	No language provided	Compliance with any chemical constituent in Tables 64449-A or 64449-B shall be determined from the annual average of sample results	Alternative: Remove compliance period from Implementation Chapter and put in the WQO Chapter of Basin Plan. Use a long-term averaging period for groundwater and an annual average for surface water.	
	3. Table 64449-B "Recommended" value	No language provided	Lower concentrations such as "Recommended" values in Table 64449-B are not water quality objectives per se, but should be considered for management goals.	Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
Chapter IV Implement	4. Consideration of site-specific factors for WDRs: Assimilative capacity	No language provided	"The availability of assimilative capacity in the receiving water and compliance with the antidegradation policies"	Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	

[1] Filter size recommended in EPA Approved Methods 30 CFR Part 136 for Total Dissolved Solids and Total Suspended Solids and is used for removing suspended solids from a solid prior to analysis. Filtering the sample will remove suspended solids that may contribute to turbidity and color in samples that may negatively impact analytical results for metal concentrations while better representing the dissolved solids that may pass through a water treatment plant's filtration system.

[2] Currently EPA Approved Methods are 200.7 and 200.8 for metals, Method 180.1 for turbidity and SM 2120 F-2011 for color. EPA methods are periodically updated and future approved methods may be applicable.

Basin Plan Components	No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
5. Consideration of site-specific factors for WDRs: Natural background	Permit limits not to be more stringent than natural background for all objectives except permits required to meet CTRs under SIP (NPDES permits)	"Naturally occurring background concentrations"	Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	Unclear if and how SIP for NPDES discharges may apply
6. Consideration of site-specific factors for WDRs: Anthropogenic background	No language provided	"Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past dischargers"	Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
7. Consideration of site-specific factors for WDRs: Net effect	No language provided	"The net effect of discharges that improve receiving water quality"	Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
8. Consideration of site-specific factors for WDRs: Presence/absence of minerals	No language provided	"The presence or absence of other minerals (e.g, anion-cation balance) that may mitigate or aggravate aesthetic acceptability"	Alternative: Do not include presence/absence of minerals language.	
			Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
Chapter IV Implementation	9. Consideration of site-specific factors for WDRs: Application of long-term averaging periods	No language provided	"The application of appropriate long-term averaging periods to evaluate compliance with WDR monitoring requirements"	Alternative: Only include annual running average instead of long-term averaging periods. Alternative: Remove SNMP recommended language from the Basin Plan Language and discuss in staff report –may be reviewed further during the P&O study as an option for groundwater compliance	
	10. Consideration of site-specific factors for WDRs: Potential impact on downstream beneficial uses	No language provided	"Potential impact on downstream beneficial uses (MUN-designated surface water and groundwater), including potential to impact water quality at nearest downstream intakes for a community water system."	Alternative: "Potential impact on downstream water quality and beneficial uses (MUN-designated surface water and groundwater) for current and future use." Modification to SNMP recommendation: "Potential impact on downstream beneficial uses (MUN-designated surface water and groundwater), including potential to impact water quality at ~~nearest~~ downstream intakes for a community water system." Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
	11. Consideration of site-specific factors for WDRs: Waiver under 22CCR §64449.2 and provisions of §64449.4	No language provided	"Evaluation of downstream or down-gradient community water system(s) to determine if waiver under 22 CCR §64449.2 has been obtained or if the provisions of §64449.4 are being met."	Alternative: Do not include this language Alternative: Remove SNMP recommended language from Basin Plan Language and include as guidance in staff report. Alternative: Include a consultation with DDW and Potentially Impacted Community Water Systems with this recommendation	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
	12. Consideration of site-specific factors for WDRs: Economic factors	No language provided	"Economic factors including the practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of cost for achieving compliance, the availability of alternative water supplies for drinking water, ability to pay, and cost of non-compliance)."	Modification to SNMP recommendation: Remove "at the point-of-discharge" in SNMP recommendation. Modification to SNMP recommendation: "The practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge (including consideration of source control and pollution prevention programs, treatment alternatives, the cost for achieving compliance, the availability of alternative water supplies for drinking water, ability to pay, and other economic factors including the cost of non-compliance)." Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
Chapter IV Implementation				Modification to SNMP recommendation: "The practicality and feasibility of achieving compliance with the SMCLs at the point-of-discharge, as well as the potential benefits to water quality to be obtained." Alternative: Include a consultation with DDW and Potentially Impacted Community Water Systems with this recommendation	
	13. Consideration of site-specific factors for WDRS: Water treatment process and cost to others	No language provided	"The ability of drinking water treatment processes to remove contaminants and the potential effect on drinking water treatment costs for downstream and down-gradient community water systems."	Alternative: Remove SNMP recommendation language and include as guidance in staff report Alternative: Include a consultation with DDW and Potentially Impacted Community Water Systems with this recommendation	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
Chapter IV Implementation	14. Consideration of site-specific factors for WDRs: Waiver under 22CCR §64449.2 and provisions of §64449.4	No language provided	"Consideration of other regional salinity management requirements, including the ability to meet existing downstream salinity-related water quality objectives in the SRSJR and TLB Basin Plans and Bay Delta Plan and policies, recommendations or regulations resulting from implementation of CV-SALTS Salinity Management Strategy"	Alternative: Remove SNMP recommendation language and include as guidance in staff report	
	15. Consideration of site-specific factors for WDRs: Potential effect on constituents	No language provided	"Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Tables 64449-A and B at downstream and downgradient community water systems to ensure a safe drinking water supply for users."	Modification to SNMP Recommendation: "Potential for the permitted discharge to affect the concentration of constituents identified in 22 CCR Table~~s~~ ~~64449-A~~ 64449-B downstream and downgradient MUN water bodies and groundwater basins to ensure a safe drinking water supply for current and future MUN users." Modification to SNMP Recommendation: "Potential for the permitted discharge to affect the concentration of constituents identified in ~~22 CCR~~ Tables 64449-A and 64449-B at downstream and downgradient community water systems to ensure a safe drinking water supply for users." Modification to SNMP Recommendation: "Potential for the permitted discharge to affect the concentration of constituents identified in ~~22 CCR~~ Tables 64449-A and 64449-B at downstream and downgradient MUN designated water bodies to ensure a safe drinking water supply for users." Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
	16. Consideration of site-specific factors for WDRs: Additional monitoring	No language provided	"Need for additional monitoring to track the net effect of permitted discharges at locations upgradient of downgradient well locations where groundwater is extracted for water supply and to determine the need for additional management requirements to protect the supply."	Modification to SNMP Recommendation: "Need for additional monitoring to track the net effect of permitted discharges on downstream or downgradient MUN water bodies and to determine the need for additional management requirements to protect the MUN supply." Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
Chapter IV Implementation	17. Consideration of site-specific factors for WDRs: Drought and conservation	No language provided	"The State Water Board's Recycled Water Policy and the Central Valley SNMP's goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to increase drought protection."		
	18. Consideration of site-specific factors for WDRs: Cumulative impact	No language provided	"The long-term cumulative impact of all discharges to the same receiving water"	Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
	19. Consideration of site-specific factors for WDRs: Dilution and soil absorption	No language provided	"Modeling and any reduction in contaminants due to factors such as dilution and soil absorption."	Modification to SNMP Recommendation "Modeling and any changes in contaminant concentrations due to fate and transport factors."	
				Modification to SNMP Recommendation "Modeling and any changes in contaminant due to fate and transport factors such as dilution and soil adsorption."	
				Alternative: Compliance with MCLs must be achieved at the point of discharge (no mixing zone or dilution credits)	
				Alternative: Remove this SNMP language from the Basin Plan language and include as guidance in staff report	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
	20. Consideration of site-specific factors for WDRs: Other environmental considerations	No language provided	"Other environmental considerations"	<u>Alternative:</u> Remove other environmental considerations language. <u>Modification to SNMP recommendation:</u> "Other environmental considerations <u>including, but not limited to: habitat preservation, support for recreational uses."</u> <u>Alternative:</u> Remove this SNMP language from the Basin Plan language and include as guidance in staff report	
	21. Consideration of site-specific factors for WDRs: Waiver under 22CCR §64449.2 and provisions of §64449.4	No language provided	No language provided	<u>Additional bullet for the Implementation Section:</u> "The existing processes to reduce, to the maximum extent practicable, the discharge of the pollutant through pretreatment, source control, and/or pollution prevention" "List of possible methods for removing or reducing the concentrations and loadings of the pollutants from the discharge, including an assessment of technical effectiveness and costs of these methods."	This discussion occurs in the staff report. No need to formalize these bullets in Basin Plan Language
Chapter IV Implementation	22. Consideration of site-specific factors for WDRs: DDW consultation	No language provided	No language provided	<u>Additional bullet for the Implementation Section:</u> "Consultation with the Division of Drinking Water to assess impacts to downstream or downgradient community water systems, including: o Economic factors including the practicality and feasibility of achieving compliance with the salinity SMCLs (including consideration of cost for achieving compliance, the availability of alternate water supplies for drinking water, ability to pay, and cost of non-compliance) o The ability of drinking water treatment processes to remove contaminants and the potential effect of drinking water treatment costs for downstream and downgradient community water systems. o Drinking water regulatory and human health information from USEPA, the Division of Drinking Water, and OEHHA."	

Basin Plan Components		No Action Alternative	SNMP Recommendations	Alternative/Modified Recommendations	Notes
	23. Consideration of site-specific factors for WDRs: Human health information or regulatory threshold	No existing language	No language provided	Additional bullet for the Implementation Section: "The potential for an SMCL to have existing, new or pending human health information or regulatory threshold." Include consultation with DDW and potentially impacted Community Water System	
Chapter V or VI Monitoring and Surveillance	24. Monitoring and Surveillance	No language provided	No language provided	Alternative as an Addition to Monitoring and Surveillance Chapter: "Monitoring and assessment programs are essential to evaluate the existing conditions and changes in both surface and groundwater quality caused by dischargers. Where it is reasonable and feasible to do so, WDRs should consider development of a monitoring program and/or assessment of existing programs. Considering limited resources in certain areas of the Basin, a monitoring program is not a strict requirement by this water quality control program, but it is desirable and should be implemented as available resources allow." Alternative as an Addition to Monitoring and Surveillance Chapter: A monitoring program for surface waters shall be required to characterize natural background and existing conditions with respect to secondary MCLs where available data is deemed to be insufficient. Alternative as an Addition to Monitoring and Surveillance Chapter: If concentrations within a water body or groundwater basin reach 80 percent of the secondary MCL at the point of a water supply intake or well, a study will be conducted to evaluate actions to reduce the concentration of the constituent.	The monitoring and surveillance program is a separate component of the proposed Basin Plan Amendments. See discussion in Staff Report.

Table D - 11. Options to Require Early Participation in P&O and Early Actions to Address Nitrates

Assuming Certified Mail for notification under all alternatives. Currently identifying all dischargers that must be notified.

Approach	Concept	Pros	Cons
1. General Amendment to Existing WDRs	Board would amend all existing WDRs in one single permitting action. (Action would be a General WDR Amendment with an attachment that would describe all of the WDRs that the amendment would apply to.) General Amendment would replace existing salt and nitrate requirements with new provisions. New salinity provisions would require dischargers to either comply with strict[3] salinity limits or start participating in the P&O Study. New nitrate provisions would require dischargers to either comply with strict nitrate limits or implement early actions.	• Would have clearly-enforceable WDR provisions for every discharger after General Amendment issued. • Could tier off of CEQA work done for the Basin Plan Amendments.	• WDRs set many, many different types of salt and nitrate provisions. General Amendment would require consideration of all of those different limits. • Would likely need additional CEQA work. • Could potentially require revision of Anti-deg provisions, time schedules, and other findings in existing permits (salt and nitrate limitations lie at the core of many WDRs).
2. Global Time Schedule Order (TSO)	Board would issue a Time Schedule Order that would cover every permittee. TSO would provide a time schedule that would set interim compliance requirements in lieu of compliance with existing permit limits. Interim compliance requirements would require participation in early phases of P&O study and/or implementation of early actions to address nitrate.	• Since Board has delegated authority to issue TSOs to the Executive Officer, no Board hearing would be required. • As an enforcement order, the TSOs would be exempt from CEQA. • Could discriminate between priority areas and non-priority areas. (TSO would not need to apply in areas where early action isn't required.)	• WDRs must have a provision that is being violated in order for the Board to have authority to issue the TSO (i.e., the discharger would need to be violating whatever salt/nitrate limits are in their permit). Some permits have flexible requirements that are currently being met. • TSO would probably need to have an attachment reciting each permit term in each permit that the TSO would address. • Dischargers might be required to disclose that they are subject to "enforcement" on financial disclosures.

[3] It is acknowledged that what is meant by “strict” salinity or nitrate limits is still the subject of debate.

Approach	Concept	Pros	Cons
3. Conditional Prohibition	The Basin Plan Amendments would establish conditional prohibitions for salt and nitrate discharges. The prohibitions would prohibit any discharges of salt or nitrates unless the discharge was consistent with the implementation provisions in the proposed Basin Plan Amendments. (The salinity implementation provisions require dischargers to either comply with strict salinity limits or start participating in the P&O Study. The nitrate implementation provisions require dischargers to either comply with strict nitrate limit or implement early actions.)	• Doesn’t require modifying individual permits to be enforceable. • Would require additional CEQA work, which would need to be incorporated into Staff Report/Env. Analysis before the Basin Plan Amendments are approved.	• "Conditional Prohibition" is a term that could alienate many dischargers, particularly in ag community (avoiding a "prohibition" is why many are participating in CV-SALTS). Could be overcome by messaging, but probably not enough time to communicate the nuances of what this prohibition actually would do in the time remaining. • Difficult to craft language (including off-ramps) that addresses situations faced by a wide variety of dischargers. • Tracking participation is difficult.
4. Hybrid Approach: Revise ILRP General Orders (perhaps Dairy, too) and Establish Conditional Prohibition for All Others	ILRP WDRs would be amended in one single action as per Option 1. Conditional Prohibition described in Option 3 would apply to all other dischargers.	• By addressing ILRP General Orders separately, messaging regarding the conditional prohibition becomes much easier. • Doesn't require modifying non-ILRP WDRs in order to establish enforceable requirements on remaining dischargers. • Modification of ILRP General Orders likely falls within scope of ILRP Programmatic EIR, minimizing the amount of additional CEQA work.	• Although the revisions to the ILRP General Orders would only target salt and nitrate provisions, this is still not an easy task. • Additional CEQA work required for conditional prohibition.
5. "Elective" General Order that could Replace Nitrate/Salinity Terms in existing WDRs	The Board would adopt a General Order that would replace WDR provisions relating to salt and nitrate for any discharger that chose to enroll in the General Order. After adopting the General Order, the Board would mail out 13260 notices to all dischargers - the notices would tell the dischargers that they would either need to sign up for the General Order or submit a ROWD to the Board to have their WDRs amended to incorporate strict salt and nitrate limits.	• Only need to update permits that don’t apply for GO. • Could tier off of CEQA work done for the Basin Plan Amendments. • Would have clearly-enforceable WDR provisions after General Amendment Order issued and dischargers signed up or have their WDRs modified.	• Tracking who has enrolled in the General Order and who has not is difficult. • GO would likely need additional CEQA work separate from the Basin Plan Amendment.

APPENDIX E

List of Non-Prioritized Groundwater Basins

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
2-4	Pittsburgh Plain	Listed as Non-Prioritized in Table D4-2 of SNMP
5.21.66	Solano	Listed as Non-Prioritized in Table D4-2 of SNMP
5.22.15	Tracy	Listed as Non-Prioritized in Table D4-2 of SNMP
2-3	Suisun-Fairfield Valley	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.52	Solusa	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.14	Kern County (Southeastern)	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.61	South Yuba	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.64	North American	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.57	Vina	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.16	Cosumnes	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.58	West Butte	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.68	Capay Valley	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.62	Sutter	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.56	Los Molinos	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.10	Pleasant Valley	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.60	North Yuba	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.65	South American	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.54	Antelope	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.59	East Butte	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.51	Corning	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.50	Red Bluff	Listed as Non-Prioritized in Table D4-2 of SNMP

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
5-21.55	Dye Creek	Listed as Non-Prioritized in Table D4-2 of SNMP
5-22.09	Westside	Listed as Non-Prioritized in Table D4-2 of SNMP
5-21.53	Bend	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.04	Enterprise	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.03	Anderson	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.01	Bowman	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.06	South Battle Creek	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.05	Millville	Listed as Non-Prioritized in Table D4-2 of SNMP
5-6.02	Rosewood	Listed as Non-Prioritized in Table D4-2 of SNMP
5-1.01	Lower Goose Lake Valley	Outside of Valley Floor
5-1.02	Fandango Valley	Outside of Valley Floor
5-3	Jess Valley	Outside of Valley Floor
5-8	Mountain Meadows Valley	Outside of Valley Floor
5-20	Berryessa Valley	Outside of Valley Floor
5-23	Panoche Valley	Outside of Valley Floor
5-26	Walker Basin Creek Valley	Outside of Valley Floor
5-31	Long Valley	Outside of Valley Floor
5-35	McCloud Area	Outside of Valley Floor
5-36	Round Valley	Outside of Valley Floor
5-37	Toad Well Area	Outside of Valley Floor
5-38	Pondosa Town Area	Outside of Valley Floor
5-40	Hot Springs Valley	Outside of Valley Floor
5-41	Egg Lake Valley	Outside of Valley Floor
5-43	Rock Prairie Valley	Outside of Valley Floor
5-44	Long Valley	Outside of Valley Floor
5-45	Cayton Valley	Outside of Valley Floor
5-46	Lake Britton Area	Outside of Valley Floor
5-47	Goose Valley	Outside of Valley Floor
5-48	Burney Creek Valley	Outside of Valley Floor
5-49	Dry Burney Creek Valley	Outside of Valley Floor
5-50	North Fork Battle Creek	Outside of Valley Floor
5-51	Butte Creek Valley	Outside of Valley Floor
5-52	Grays Valley	Outside of Valley Floor

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
5-53	Dixie Valley	Outside of Valley Floor
5-54	Ash Valley	Outside of Valley Floor
5-56	Yellow Creek Valley	Outside of Valley Floor
5-57	Last Chance Creek Valley	Outside of Valley Floor
5-58	Clover Valley	Outside of Valley Floor
5-59	Grizzly Valley	Outside of Valley Floor
5-60	Humbug Valley	Outside of Valley Floor
5-61	Chrome Town Area	Outside of Valley Floor
5-62	Elk Creek Area	Outside of Valley Floor
5-63	Stonyford Town Area	Outside of Valley Floor
5-64	Bear Valley	Outside of Valley Floor
5-65	Little Indian Valley	Outside of Valley Floor
5-66	Clear Lake Cache Formation	Outside of Valley Floor
5-68	Joseph Creek	Outside of Valley Floor
5-69	Squaw Flat	Outside of Valley Floor
5-70	Los Banos Creek Valley	Outside of Valley Floor
5-71	Vallecitos Creek Valley	Outside of Valley Floor
5-80	Brite Valley	Outside of Valley Floor
5-82	Cuddy Canyon Valley	Outside of Valley Floor
5-83	Cuddy Ranch Area	Outside of Valley Floor
5-84	Cuddy Valley	Outside of Valley Floor
5-85	Mil Potrero Area	Outside of Valley Floor
5-86	Joseph Creek	Outside of Valley Floor
5-87	Middle Fork Feather River	Outside of Valley Floor
5-88	Stony Gorge Reservoir	Outside of Valley Floor
5-89	Squaw Flat	Outside of Valley Floor
5-90	Funks Creek	Outside of Valley Floor
5-91	Antelope Creek	Outside of Valley Floor
5-92	Blanchard Valley	Outside of Valley Floor
5-93	North Fork Cache Creek	Outside of Valley Floor
5-94	Middle Creek	Outside of Valley Floor
5-95	Meadow Valley	Outside of Valley Floor
5-4	Big Valley	Outside of Valley Floor
5-5	Fall River Valley	Outside of Valley Floor
5-7	Lake Almanor Valley	Outside of Valley Floor
5-9	Indian Valley	Outside of Valley Floor
5-10	American Valley	Outside of Valley Floor
5-11	Mohawk Valley	Outside of Valley Floor
5-13	Upper Lake Valley	Outside of Valley Floor
5-14	Scotts Valley	Outside of Valley Floor
5-15	Big Valley	Outside of Valley Floor

Non-Prioritized Basins		
Basin/Sub-basin Number (DWR Bulletin 118)	**Name**	**Notes**
5-16	High Valley	Outside of Valley Floor
5-17	Burns Valley	Outside of Valley Floor
5-18	Coyote Valley	Outside of Valley Floor
5-19	Collayomi Valley	Outside of Valley Floor
5-25	Kern River Valley	Outside of Valley Floor
5-27	Cummings Valley	Outside of Valley Floor
5-28	Tehachapi Valley Area	Outside of Valley Floor
5-29	Castac Lake Valley	Outside of Valley Floor
5-30	Lower Lake Valley	Outside of Valley Floor
5-12.01	Sierra Valley	Outside of Valley Floor
5-12.02	Chilcoot	Outside of Valley Floor
5-2.01	South Fork Pitt River	Outside of Valley Floor
5-2.02	Warm Springs Valley	Outside of Valley Floor

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APPENDIX F

Full Text – Title 22 §64449

Title 22. Social Security
Division 4. Environmental Health
Chapter 15. Domestic Water Quality and Monitoring Regulations

Article 16. Secondary Drinking Water Standards

§64449. Secondary Maximum Contaminant Levels and Compliance.

(a) The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.

Table 64449-A
Secondary Maximum Contaminant Levels
"Consumer Acceptance Contaminant Levels"

Constituents	Maximum Contaminant Levels/Units
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl-*tert*-butyl ether (MTBE)	0.005 mg/L
Odor – Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

Table 64449-B
Secondary Maximum Contaminant Levels
"Consumer Acceptance Contaminant Level Ranges"

Constituents, Units	Recommended	Upper	Short Term
Total Dissolved Solids, mg/L or	500	1,000	1,500
Specific Conductance, µS/cm	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

(b) Each community water system shall monitor its groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually for the following:

(1) Secondary MCLs listed in Tables 64449-A and 64449-B; and

(2) Bicarbonate, carbonate, and hydroxide alkalinity, calcium, magnesium, sodium, pH, and total hardness.

(c) If the level of any constituent in Table 64449-A exceeds an MCL, the community water system shall proceed as follows:

(1) If monitoring quarterly, determine compliance by a running annual average of four quarterly samples;

(2) If monitoring less than quarterly, initiate quarterly monitoring and determine compliance on the basis of an average of the initial sample and the next three consecutive quarterly samples collected;

(3) If a violation has occurred (average of four consecutive quarterly samples exceeds an MCL), inform the State Board when reporting pursuant to Section 64469;

(4) After one year of quarterly monitoring during which all the results are below the MCL and the results do not indicate any trend toward exceeding the MCL, the system may request the State Board to allow a reduced monitoring frequency.

(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.

(1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.

(2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.

(3) Constituent concentrations ranging to the Short Term contaminant level are acceptable only for existing community water systems on a temporary basis pending construction of treatment facilities or development of acceptable new water sources.

(e) New services from community water systems serving water which carries constituent concentrations between the Upper and Short Term contaminant levels shall be approved only:

(1) If adequate progress is being demonstrated toward providing water of improved mineral quality.

(2) For other compelling reasons approved by the State Board.

(f) A community water system may apply to the State Board for a waiver from the monitoring frequencies specified in subsection (b), if the system has conducted at least three rounds of monitoring (three periods for groundwater sources or three years for approved surface water sources) and these analytical results are less than the MCLs. The water system shall specify the basis for its request. A system with a waiver shall collect a minimum of one sample per source while the waiver is in effect and the term of the waiver shall not exceed one compliance cycle (i.e., nine years).

(g) Nontransient-noncommunity and transient-noncommunity water systems shall monitor their sources or distribution system entry points representative of the effluent of source treatment for bicarbonate, carbonate, and hydroxide alkalinity, calcium, iron, magnesium,

manganese, pH, specific conductance, sodium, and total hardness at least once. In addition, nontransient-noncommunity water systems shall monitor for the constituents in Tables 64449-A and B at least once.

§64449.2. Waivers for Secondary MCL Compliance.

(a) If the average of four consecutive quarters of sample results for a constituent that does not have a primary MCL is not greater than three times the secondary MCL or greater than the State Notification Level, an existing community water system is eligible to apply for a nine-year waiver of a secondary MCL in Table 64449-A, for the following:

(1) An existing source; or

(2) A new source that is being added to the existing water system, as long as:

(A) The source is not being added to expand system capacity for further development; and

(B) The concentration of the constituent of concern in the new source would not cause the average value of the constituent's concentration at any point in the water delivered by the system to increase by more than 20%.

(b) To apply for a waiver of a secondary MCL, the community water system shall conduct and submit a study to the State Board within one year of violating the MCL that includes the following:

(1) The water system complaint log, maintained pursuant to section 64470(a), along with any other evidence of customer dissatisfaction, such as a log of calls to the county health department;

(2) An engineering report, prepared by an engineer registered in California with experience in drinking water treatment, that evaluates all reasonable alternatives and costs for bringing the water system into MCL compliance and includes a recommendation for the most cost-effective and feasible approach;

(3) The results of a customer survey distributed to all the water system's billed customers that has first been approved by the State Board based on whether it includes:

(A) Estimated costs to individual customers of the most cost-effective alternatives presented in the engineering report that are acceptable to the State Board based on its review of their effectiveness and feasibility;

(B) The query: "Are you willing to pay for (identify constituent) reduction treatment?";

(C) The query: "Do you prefer to avoid the cost of treatment and live with the current water quality situation?"

(D) The statement: "If you do not respond to this survey, (insert system name) will assume that you are in support of the reduction treatment recommended by the engineering report."

(4) A brief report (agenda, list of attendees, and transcript) of a public meeting held by the water system to which customers were invited, and at which both the tabulated results of

the customer survey and the engineering report were presented with a request for input from the public.

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APPENDIX G

Guidance When Developing Waste Discharge Requirements (WDRs) that Utilize Secondary Maximum Contaminant Levels (SMCLs) as Water Quality Objectives

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To implement the SMCLs in the Chemical Constituents section of the surface water and groundwater quality objectives, the Regional Water Board should consider, as appropriate, a number of site-specific factors when developing WDRs, including, but not limited to:

- The availability of assimilative capacity in the receiving water and compliance with the antidegradation and mixing zone policies where those policies apply;
- Naturally occurring background concentrations;
- Background concentrations due to prior anthropogenic activities where it is not feasible or practicable to remediate the effect of these past discharges;
- The net effect of discharges on receiving water quality;
- The potential impact on downstream beneficial uses (MUN-designated surface water and groundwater), including potential to impact water quality at the downstream intakes for a community water system and resulting costs;
- The practicality and feasibility for wastewater dischargers to achieve compliance with SMCLs that could be expressed as discharge limitations and/or receiving water limitations in their permits or orders (including consideration of source control and pollution prevention programs, treatment alternatives, the cost for achieving compliance, the availability of alternative water supplies for drinking water, ability to pay, and other economic factors including the cost of non-compliance);
- Potential for the permitted discharge to affect the concentration of constituents identified in Tables 64449-A and 64449-B at downstream and downgradient community water systems to ensure a safe drinking water supply for users, including ability of drinking water treatment processes to remove contaminants and the potential effect on drinking water treatment costs for downstream and down-gradient community water systems;
- Evaluation of downstream or down-gradient community water system(s) to determine if a waiver under Title 22, section 64449.2 has been obtained or if the provisions of Title 22, section 64449.4 are being met;
- The State Water Board's Recycled Water Policy and the Central Valley SNMP's goals to increase the use of recycled water, increase stormwater use, and increase water conservation as mechanisms to enhance drought protection;
- Where necessary and appropriate, analytical modeling to understand the fate and transport of SMCL constituents and effect of factors such as mixing, dilution, dispersion and soil adsorption;
- The long-term cumulative and collective impact of all discharges to the same receiving water;
- Other environmental considerations including, but not limited to: habitat preservation, support for recreational uses; and,

- Evaluation of other beneficial uses and their applicable water quality objectives that may apply to constituents assigned secondary MCLs for the protection of public welfare.

APPENDIX H

Guidelines for Proposing an Acceptable Alternative Compliance Project

When an individual or group of dischargers is unable to demonstrate that their discharge is not causing nitrate degradation above the triggers identified in the Nitrate Control Program, they have an opportunity to request either allocation of available assimilative capacity on a volume-weighted basis, above trigger levels, or request an exception. The request for the granting of assimilative capacity or an exception in these circumstances is considered to be Alternative Compliance, and must be accompanied by sufficient documentation to verify that the proposed approach is reasonable, feasible, and practicable and meets the goals of the Central Valley Nitrate Control Program. To authorize Alternative Compliance, the Regional Water Board will evaluate whether the request is supported with an Alternative Compliance Project (ACP). An ACP may be proposed by an individual discharger (which includes a third party group subject to a general order) or dischargers working collaboratively as part of a management zone. Under Path B of the Nitrate Control Program, the preparation of a Management Zone Implementation Plan is considered the equivalent of an ACP. While the Regional Water Board has the discretion to deny such a request, any proposed Alternative Compliance Project(s) should contain the following components in order to be considered.

(a) As needed: updates to Initial Assessments and Preliminary Management Zone Proposals that include:

- Anticipated area of contribution of the individual discharger (or third party group subject to a general order), or group of dischargers under a management zone, over a 20-year planning horizon;
- Stakeholders that may be affected within the area of contribution over a 20-year planning horizon;
- Identification of stakeholders within the area of contribution who are not included within the ACP boundaries and why;
- Identification of areas within the area of contribution that overlap with other management areas/activities and the process to ensure coordination;
- Identifications of geologic and hydrologic features that limit or promote groundwater movement.
- Further assessment of water quality conditions based on additional data and information.
- Process to identify affected residents and the outreach utilized to ensure that stakeholders are informed of and given the opportunity to participate in the development of any ACP proposal;
- Any constituents of concern the individual discharger/group of dischargers intends to address besides nitrate (not required but is an optional available); and
- Identification of current best efforts/Best Practicable Treatment and Control (BPTC) and need for assimilative capacity or an approved exception from meeting the nitrate water quality standard.

(b) Components of a Proposed Alternative Compliance Project(s)

- Be consistent with the management goals of the Nitrate Control Program, including addressing short- term and long-term drinking water needs affected by nitrates (Management Goal 1), plan for achieving balanced nitrate loadings within the proposed boundaries of the project, where reasonable and feasible (Management Goal 2), and a plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent reasonable, practicable and feasible (Management Goal 3).
- Include a process to ensure that drinking water that meets drinking water standards is available to all drinking water users utilizing groundwater within the area of contribution. This component may be met through the development and implementation of an Early Action Plan, as may be required by the Nitrate Control Program, payment into a mitigation fund, and/or other mechanisms geared toward providing emergency, interim and permanent solutions.
- Describe the outreach that has occurred and that will continue to occur to ensure that stakeholders or affected communities within the zone of influence are informed of, and given opportunity to participate in, the development of any ACP proposal as well as ongoing activities designed to resolve their drinking water concerns.
- For a management zone, contain a governance framework that, at a minimum, establishes the following: (a) roles and responsibilities of all participants; (b) involvement of an entity with authority to manage water use within the zone of influence including any identified SGMA[1] management agency, if applicable or as necessary; (c) involvement of representative(s) of stakeholders and/or communities within the zone of influence that utilize the groundwater as a drinking water supply; (d) funding or cost-share agreements to implement the ACP, and short and long-term nitrate management projects/activities; and (e) a mechanism to resolve disputes among participating dischargers.
- Identify how nitrate conditions will be characterized for use as the basis for demonstrating how nitrate will be managed over short and long-term periods to meet the nitrate management goals established in the Central Valley Region SNMP.
- Identify short (≤ 20 years) and long-term (> 20 years) projects and/or planning activities that will be implemented as part of the ACP to make progress towards attaining each of the water quality- related management goals established by the Central Valley SNMP within the zone of influence. Projects/planning activities must first prioritize provision of safe drinking water but individual activities may be further prioritized to better allocate resources. Over time, as water quality improves in prioritized areas, updates to the ACP may shift the priorities.
- Identify mechanism(s) to support achievement of the overall Central Valley SNMP's long-term strategy to achieve balanced nitrate loadings and managed aquifer restoration, where reasonable and feasible. Mechanisms may include, but not be limited to:
    - Implementation of management practices that will reduce current nitrate loading to groundwater;
    - Use of offsets to help mitigate potential localized impacts, while improving overall basin or sub-basin-wide water quality (see Offsets Policy);

[1] Sustainable Groundwater Management Agency

  - Managed groundwater recharge;
  - Pump and utilize and/or treat and distribute; and
  - Payment into a mitigation fund established to meet development and implementation of long term drinking water solutions, balance and restoration.
- Include a short and long-term schedule for implementation of nitrate management activities with interim milestones and performance measures to assess progress every 5 years during the first 20 year planning horizon and every 10 years thereafter.
- Identification of alternative procedures or measures to be implemented if the interim milestones or performance measures are not met.
- A water quality surveillance and monitoring program that is adequate to ensure that the ACP when implemented is achieving the expected progress towards attainment of water quality- related management goals (coordination with the SNMP's surveillance and monitoring program may be considered as part of efforts to comply with this element).

The ACP may be modified periodically to incorporate changes that will benefit water quality. Any modifications to an ACP that impact or change timelines, milestones or deliverables identified must be approved by the Central Valley Water Board through a public process.

The ACP shall identify the responsibilities of each regulated discharger, or groups of regulated dischargers if participating in a management zone, to manage nitrate within the zone. The Central Valley Water Board shall incorporate the responsibilities of each discharger, or groups of dischargers if within a management zone, into their respective Individual or General WDRs.

Prior to modifying any WDRs to incorporate the use of assimilative capacity on a management zone basis or adopting an exception to meeting a water quality standard for a discharger or dischargers participating in the management zone, Board staff will review the Management Zone Proposal and ACP to determine whether the Proposal and ACP meet all applicable criteria. Should the Board's review determine that the Management Zone Proposal and ACP meet all applicable criteria, the Executive Officer will issue a letter deeming the Proposal and ACP complete and will calendar the matter for the Board's consideration. The Board may then establish the management zone and its ACP after providing public notice and opportunity to comment consistent with laws and regulations applicable to the adoption or modification of WDRs. The triggers for determining the need for an ACP are identified in the Nitrate Permitting Strategy and based in part on the nitrate concentration in the effluent, the concentration in the receiving water, and the rate of degradation.

Progress on the milestones and performance measures of the ACP must be provided to the Central Valley Water Board at a minimum of every five years during the first 20-year planning horizon and every 10-years thereafter.

Notes:

(a) In determining available assimilative capacity, the Regional Water Board shall consider the quality of the discharge as it enters the receiving water, accounting for reductions in nitrate

mass or concentration as the discharge percolates to groundwater through the soil. To make this determination, the Regional Water Board may consider information provided by the discharger that demonstrates that the level of nitrate entering shallow groundwater is different than the level of nitrate in the discharge due to naturally occurring groundwater recharge, nitrogen transformation and losses, and nitrogen uptake by plants.

(b) In determining if the discharge will cause an exceedance of the nitrate water quality objective or the trigger levels, the Regional Water Board shall consider the impact over a 20-year planning horizon.

APPENDIX I

Summary Salt Control Program with Examples

The Salt Control Program ("Program") establishes new regulations for the control and permitting of salt discharges to surface water and groundwater. All permitted dischargers (permittees) in the Central Valley Region that discharge salt are subject to this Program, which will be implemented in three phases, each lasting ten to fifteen years.

- Phase I is the Prioritization and Optimization Study (P&O Study), which will facilitate development of a long-term Program that includes identification of salinity control projects for implementation. The Phase I P&O Study will be funded through the collection and administration of fees by the Central Valley Salinity Coalition (CVSC) or other lead entity (the entity may accept technical or other support in lieu of fees);
- Phase II (Project Development and Acquisition of Funds); and,
- Phase III (Project Construction)

Phase II and III will implement the findings from Phases I. The overall approach is summarized in Figure K-1.

During Phase 1 of the Program, a Conditional Prohibition shall apply to all permittees discharging salt pursuant to Board-issued waste discharge requirements and conditional waivers that are not regulated under the Irrigated Lands Regulatory Program (ILRP). The Conditional Prohibition shall apply from the time permittees receive a Notice to Comply from the Central Valley Water Board until such time that permits are updated to reflect the requirements of the Salt Control Program. Permittees regulated under an ILRP General Order will comply with Phase I of the Program as required by the General Order, which will be amended to incorporate the Program.

In general, the timing and nature of the Notice to Comply will depend on whether the permitted discharge is to groundwater or surface water and the type of permit, e.g., if the permittee discharges to surface water under the NPDES Program and is subject to federal requirements. The Notice to Comply will require permittees to select from one of two compliance pathways to comply with the Program:

- *Conservative Permitting Approach* –The permittee will achieve compliance through source control and application of conservative salinity permit limits. The permittee will have limited ability to use assimilative capacity or make use of regulatory tools such as a variance/exception or a compliance or time schedule.
- *Alternative Permitting Approach* – The permittee will achieve compliance by participating in the Phase I P&O Study and continuing implementation of performance based measures and the permittee's existing salinity management program(s)/best management practices.

Within six months of receiving a Notice to Comply, permittees must submit a Notice of Intent that either provides documentation on how they will meet conservative salinity limits or confirms that they have elected to and are fully participating in the alternative permitting approach (i.e. the P&O Study). Permittees that do not provide the Notice of Intent are subject to enforcement

actions that may include prohibition of discharge. The Notice of Intent must include the necessary supporting documentation as described below for each pathway.

Documentation to Support Selection of the Conservative Permitting Approach

The permittee must submit an assessment of how its discharge to groundwater or surface water will comply with the requirements of this permitting approach. The assessment should include or consider the following:

- Characterization of the discharge to groundwater or surface water for electrical conductivity (measured as uS/cm). Data from at least two years prior to the date of the Notice to Comply should be utilized for the assessment. Historical (within the past 5-7 years) and/or regional data may be used if local and/or current data is not available and if the data is representative of current discharge and receiving water conditions. Data from a longer period may be necessary if the salinity characteristics of the discharge are highly variable.
- Evaluation of the beneficial use(s) applicable to the receiving water(s) named in the permit. In most situations, this evaluation will require, at a minimum, an evaluation of the MUN and AGR beneficial uses. Unless the receiving water has a site-specific numeric water quality objective that is more stringent, the evaluation should rely on the following numeric values:
    - AGR Beneficial Use - 700 µS/cm electrical conductivity (EC), as a monthly average
    - MUN Beneficial Use – 900 µS/cm EC, as an annual average
- Evaluation to determine if the discharge causes or contributes to an exceedance of the applicable numeric values in the receiving water or an overall increase in salinity concentrations in the receiving water.
- Limitations on the authorization of new or expanded allocations of assimilative capacity by the Regional Water Board or the use of other regulatory tools to achieve compliance with water quality objectives or numeric values. Therefore,
    - The assessment should assume that water quality objectives or numeric values shall be met at the point of discharge, that is, without an allocation of assimilative capacity in groundwater or use of a mixing zone in surface water or does not cause or contribute to a significant salt increase in the receiving water. If the permittee's existing permit already has an approved allocation of assimilative capacity or mixing zone, supported by a previously accepted antidegradation study or analysis, the Regional Water Board may consider continuing the previously approved assimilative capacity allocation.
    - The use of a time or compliance schedule to come into compliance with water quality objectives or numeric values will be limited.
    - The permittee will not be able to apply for an exception from the implementation of a water quality objective for groundwater or a variance from a surface water quality standard.

Documentation to Support Selection of the Alternative Permitting Approach

Participation in the P&O Study requires the permittee meet the requirements of the Study's lead entity including any minimum level of financial support. Needed level of participation as well as governance procedures and stakeholder participation elements will be established by the lead

entity. The level of participation may vary based on salinity in the discharge, local conditions or other factors. The permittee should contact the lead entity (as identified in the Notice to Comply) to determine the requirements to participate in the P&O Study initially and throughout the duration of Phase I. To respond to the Notice to Comply, the permittee shall submit documentation to the Regional Water Board that the permittee is fully participating in the P&O Study. In addition, throughout the duration of Phase I the permittee shall:

- Continue to contribute support to the P&O Study, as required to remain a participant in the Study;
- Consider actively participating in the ongoing activities of the P&O Study through the opportunities provided, and
- Continue to implement the existing salinity management program/best management practices incorporated into the permit to discharge.

The following examples are intended provide an illustration of how permittees will be responsible for compliance with the Salt Control Program. For all the examples and the Program in general, the selected compliance pathway (conservative or alternative permitting approach) shall remain valid throughout the duration of Phase I of the Program as long as the permittee is in compliance with that permitting approach. Prior to the initiation of Phase II of the Program, the permittee will receive a new NTC that describes permitting options available under Phase II of the Program. Permittees are encouraged to contact the lead entity for the P&O Study soon after receipt of the Notice to Comply to understand their options under the Alternative Permitting Approach.

Some examples are provided below.

Permittees regulated under a WDR/NPDES Permit

Publicly Owned Treatment Works (POTW) - The City of Trees wastewater treatment plant is authorized to discharge treated wastewater to the Merced River. The facility will receive a Notice to Comply with the Program within one year after the surface water components of the Program become effective. The permittee will need to evaluate its existing permit requirements to select the Conservative or Alternative Permitting Approach during Phase I.

The applicable beneficial uses on the Merced River include MUN and AGR. Using the past five years of data that has been collected as part of the POTW's NPDES permit, the POTW calculates the monthly and annual average EC characteristics of (a) its treated effluent at the point of discharge and (b) the receiving water. The evaluation of the treated effluent shows that the monthly average EC ranges from 475 to 650 µS/cm; the annual average is 500 µS/cm. For the Merced River near the point of discharge, the monthly average EC is ranges from 125 to 350 µS/cm; the annual average is 200 µS/cm. The EC of the treated effluent is less than the AGR and MUN threshold values of 700 µS/cm and 900 µS/cm, respectively. However, the EC of the treated effluent is higher than the receiving water quality; thus, the discharge will cause some level of degradation in the Merced River and the permittee must be granted use of available assimilative capacity within the river to be considered in compliance. This POTW must be able to demonstrate to the Central Valley Water Board that use of assimilative capacity within the Merced River provides a better benefit to the people of the State than reducing salt concentrations in the discharge or participating in the alternative salinity permitting approach (i.e. participation in the P&O Study). The permittee submits documentation of the findings from its assessment to the Regional Water Board within six months of receiving the Notice to Comply and provides its Notice of Intent for the Conservative Permitting Approach. In its considerations

the Board will evaluate justification for any previous allocation of assimilative capacity as well as overall local and valley-wide salt impacts from the discharge. Should the Board find that granting of assimilative capacity does not provide maximum benefit to the people of the State, then the POTW will either need to implement actions to reduce the EC of its treated effluent (e.g., through implementation of additional source control or treatment) or seek to be permitted under the Alternative Permitting Approach.

Municipal Stormwater Phase I (this example is also applicable to Phase II and Caltrans) – The City of Big Trees is the owner/operator of a large municipal separate storm sewer system (MS4) subject to the Central Valley Region-wide Municipal Stormwater General Permit (Order No. R5-2016-0040, or its replacement). The municipality will receive a Notice to Comply with the Program after the surface water components of the Program specific to NPDES permittees become effective (i.e. after USEPA approval). Upon receipt of the Notice to Comply, the municipality will need to conduct an evaluation to determine if its discharges cause an exceedance of the conservative EC-based salinity values to protect AGR or MUN beneficial uses. To conduct this evaluation, the municipality should, ideally, evaluate local, paired outfall/receiving water data from the past two to five years. However, if that data is not readily available, the municipality may use historical data (within the past 5-7 years) and/or other similar, regional data to conduct the evaluation if the data utilized represents current conditions in the discharge and receiving water. The analysis of dry and wet weather water quality data from the MS4 shows that the EC of the discharge has never exceeded 300 µS/cm, which is well below the conservative threshold values for protection of the AGR and MUN beneficial uses and of higher quality than the receiving water. The City is able to be permitted under the Conservative Permitting Approach and must provide its Notice of Intent within six months of receiving the Notice to Comply.

In contrast, when the City of Short Hops conducted its analyses, the monthly average EC of the discharge ranged from 400 uS/cm to 900 uS/cm which was above the background receiving water quality of 150 to 350 uS/cm. Similar to the situation with the City of Trees, The City of Short Hops will need to either request an allocation of assimilative capacity or pursue compliance under the Alternative Permitting Approach. Compliance under the Alternative Permitting Approach would require the City to contact the lead entity managing the P&O Study and complete requirements necessary to be documented as fully participating. The City's permit would be amended to incorporate provisions related to the P&O Study and identify that the permittee is in compliance with salinity effluent limits as long as they continue to fully participate in the P&O Study.

Industrial Stormwater - The IndusTree facility is an industrial facility subject to the Statewide Industrial General Permit (Order No. 2014-0057-DWQ, or its replacement). The facility will receive a Notice to Comply with the Program after the surface water components of the Program become effective. Upon receipt of the Notice to Comply, the facility will need to conduct an evaluation to determine a) if EC is identified as a parameter that is associated with potential industrial pollutant sources at the facility and exposed to stormwater or authorized Non-Stormwater Discharge; AND b) the facility's discharge causes an exceedance of the conservative EC-based salinity values to protect AGR or MUN beneficial uses. To conduct this evaluation, the facility should, ideally, evaluate data from the facility and/or the receiving water from the past two to five years. However, if that data is not readily available, the facility may use

historical data (within the past 5-7 years) and/or other similar, regional data to conduct the evaluation if that data adequately represents current conditions. See the previous stormwater example for evaluation of effluent related to receiving water.

Permittees regulated under an Individual WDR for discharge to groundwater

Ripe Tomatoes, Inc. is a food processor in Merced County and has a WDR that authorizes the facility to discharge treated effluent to a nearby pasture owned and operated by Ripe Tomatoes. The facility will receive a Notice to Comply with the Program within one year after the groundwater components of the Program become effective (i.e. after approval by the Office of Administrative Law). The permittee will need to evaluate its existing permit requirements to select the Conservative or Alternative Permitting Approach during Phase I. The facility assesses the quality of the groundwater within its area of contribution to the underlying groundwater sub-basin to determine background EC levels. The assessment must make best efforts to project the area of contribution over a 20-year horizon. The assessment finds that the monthly and annual average EC varies closely around 500 µS/cm. The land applied effluent has a monthly average EC of 575 µS/cm. Through various processes the EC increases as it percolates to the underlying groundwater and is typically around 800 µS/cm when it enters the groundwater. The treated effluent that enters the groundwater is above the AGR threshold of 700 µS/cm and the facility cannot be permitted under the Conservative Permitting Approach without an allocation of assimilative capacity. The Regional Water Board is limiting new salinity-related allocations of assimilative capacity and may not authorize an allocation. While the facility could potentially upgrade its treatment capabilities to reduce the EC of its treated effluent, the facility may also consider seeking compliance under the Alternative Permitting Approach. The permittee's selected permitting approach and the required supporting documentation must be submitted to the Regional Water Board within six months of receiving the Notice to Comply.

Permittees regulated by a General Order under the Irrigated Lands Regulatory Program

The Regional Water Board will amend ILRP General Orders within 18 months of the effective date of the Program. Following the amendment, the Tulare Lake Basin Area Coalition receives a Notice to Comply with the Salt Control Program. The Coalition will evaluate how its members can best comply with the Program's requirements – either through the Conservative or Alternative Permitting Approach. The Coalition will inform its member of the requirements and work with its members to determine a compliance pathway decision through established Coalition notification processes. Required documentation will be provided to the Regional Water Board within the required deadline demonstrating how the growers in the Coalition will comply with the Program's requirements. If the Coalition selects the Conservative Permitting Approach, the Coalition will work with the growers to implement the salt management practices necessary to ensure compliance with the conservative salinity values (see the "Permittees regulated under an individual WDR for discharge to groundwater" example above of the type of analyses required). If the Coalition selects the Alternative Permitting Approach, it will provide documentation of full participation in the P&O Study, as determined by the entity leading the P&O Study.

John Apple owns a farm in the Tuolumne River Basin and is a member of the East San Joaquin Water Quality Coalition. As a member of this Third-Party Group, this farm is authorized to discharge to groundwater under the WDRs General Order for Growers Within the Eastern San

Joaquin River Watershed. The Regional Water Board will amend this General Order within 18 months of the effective date of the Program. Once the Coalition receives a Notice to Comply, based on the General Order amendment, the Coalition will notify Mr. Apple to inform him of how the Coalition plans to respond to the NTC. Mr. Apple will work directly with the Coalition to support the Coalition's efforts to comply with the Program throughout the duration of Phase I.

Happy Fields, Inc. farms in Yolo County and is not a member of a Third-Party Group under the ILRP Program. Instead, this permittee is authorized to discharge to groundwater under the WDR General Order for Discharges from Irrigated Lands Within the Central Valley Region for Dischargers Not Participating in a Third-Party Group (Order No. R5-2013-0100). The permittee will receive a Notice to Comply with the Program based on the requirements established by the amendment to the ILRP General Orders. After receiving the Notice to Comply, the permittee will need to evaluate the amended General Order requirements to select either the Conservative Permitting Approach by providing documentation to show that conservative salinity values are being met or select the Alternative Permitting Approach by providing documentation of full participation in the P&O Study. See above example for type of analyses required for permittees discharging to groundwater. The permittee's selected permitting approach (conservative or alternative permitting approach) and the required supporting documentation must be submitted to the Regional Water Board within six months of receiving the Notice to Comply.

APPENDIX J

Implementation of the Recommended Alternative for the Nitrate Control Program

The Recommended Alternative for the Nitrate Control Program (Recommended Nitrate Control Program) establishes a comprehensive, long-term management strategy for addressing nitrate in Central Valley groundwater basins/sub-basins and in areas within the Central Valley Water Board's jurisdictional boundaries that are not in a designated groundwater basin/sub-basin. To implement this long-term strategy, the Central Valley Water Board needs additional flexibility in how it permits persons[1] that discharge nitrate to groundwater. Under the Recommended Nitrate Control Program, the Central Valley Water Board may utilize alternative permitting approaches as long as certain requirements are met. These requirements include the need to make sure that those relying on groundwater as a source of drinking water have access to safe drinking water. In other words, where there are public or domestic drinking water wells with water that exceeds the nitrate drinking water standard of 10 milligrams/liter (mg/l), they must have access to drinking water that complies with the nitrate drinking water standard.

The purpose of this appendix is to further explain implementation of the Recommended Nitrate Control Program, including the alternative permitting approaches, as it applies to permitted discharges of nitrate to groundwater that are subject to the Central Valley Water Board's authorities under the Porter-Cologne Water Quality Control Act (Porter-Cologne).

Timing for Implementation

Timing for implementation of the Recommended Nitrate Control Program will vary across the Central Valley based on concerns related to nitrate in groundwater. Specifically, the Recommended Nitrate Control Program includes identification of priority areas that are considered to be of the highest priorities based on existing, ambient water quality conditions. Application of the Recommended Nitrate Control Program to permittees would occur once a permittee is notified by the Central Valley Water Board of their need to comply with the Recommended Nitrate Control Program based on the established priority order. This notification is referred to as a "Notice to Comply."

Existing Dischargers

Once a permittee receives a Notice to Comply, the permittee has a certain amount of time to notify the Central Valley Water Board of their intent to either comply with the Nitrate Control Program as an individual discharger/third party (hereafter referred to as "Individual Permittee"), or as part of a groundwater management zone (hereafter referred to as "Management Zone Participant").[2] For Priority 1 areas, the time allowed for notification back to

[1] "'Person' includes any city, county, district, the state and the United States, to the extent authorized by federal law." (California Water Code, Section 13050(c).)

[2] For purposes of this notification, individual dischargers that are subject to General Orders that cover a specified geographic area or are commodity based, and that are administered by a Third Party (e.g., Third Party Orders for Irrigated Agriculture), the Third Party may provide notice as required in this step on behalf of its members. For individual dischargers that are subject to a General Order that is not administered by a Third Party (e.g., Dairy General Order), the individual must provide the necessary notice as indicated in this step.

the Central Valley Water Board is 330 days from receiving the Notice to Comply, and for all others it is 425 days after receiving the Notice to Comply. Additional details regarding notification to the Central Valley Water Board are provided below.

New or Expanding Dischargers

For new or expanding permittees located in a groundwater basin/sub-basin (regardless of priority), or those with a material change to their operation that increases the level of nitrate discharged to groundwater, the Central Valley Water Board will require compliance with the Nitrate Control Program at the time of permit issuance, or at the time of permit modification. This provision does not apply to new or expanding permittees in areas that are not part of a designated basin/sub-basin unless the Executive Officer of the Central Valley Water Board determines that based on the specific facts of the discharge that such compliance is required and notifies the discharger accordingly.

Permitting Options

The Recommended Nitrate Control Program includes two separate approaches for permitting nitrate discharges to groundwater:

1) *Individual Approach (Path A)* is the standard permitting approach when an individual discharger (or third party group subject to a general order wishing to proceed under Path A) decides to comply with the nitrate components of the Nitrate Control Program as an Individual Permittee, or in circumstances when a management zone is not an option; and,
2) *Management Zone Approach (Path B)* is an alternative permitting approach when multiple dischargers/permittees elect to participate in a management zone to comply with the Recommended Nitrate Control Program.

Process for Notification to the Central Valley Water Board

With two permitting options being available, it is necessary for permittees to notify the Central Valley Water Board of their selected pathway (Path A or Path B). Prior to notifying the Central Valley Water Board of their selected permitting pathway, permittees must:

1) Conduct an initial assessment of their discharge(s) and groundwater conditions in the vicinity of the discharge(s); *or*,
2) Participate in development of a Preliminary Management Zone Proposal with other permittees.

By conducting an initial assessment, permittees will be better informed to determine if they prefer to comply with the Recommended Nitrate Control Program pursuant to Path A or Path B. Or, in the alternative, some permittees may know early on based on their circumstances that development and participation in a Management Zone (i.e., Path B) is their preferred option. In such cases, permittees may decide that is more efficient and advantageous to work with other permittees to develop a Preliminary Management Zone Proposal rather than spending time and resources on an initial assessment.

Under the Recommended Nitrate Control Program, it is anticipated that key permittees in high priority areas will take the lead in developing Preliminary Management Zone Proposals, which will then be made available to others for 60-days for review and consideration. For those permittees that are not actively participating in the development of a Preliminary Management Zone Proposal, they will have the opportunity to join an available management zone. Notice

and information regarding available Preliminary Management Zone Proposals will be posted on the Central Valley Water Board's website, and all reasonable efforts will be made to notify permittees of the availability of such proposals.

For Priority I areas, Preliminary Management Zone Proposals need to be submitted to the Central Valley Water Board within 270 days of receiving a Notice to Comply, and for all other areas they need to be submitted within 1 year of receiving a Notice to Comply. Permittee notification to the Central Valley Water Board regarding which permitting path a permittee intends to elect must then occur 60 days afterwards, or 330 and 425 days respectively, after receiving a Notice to Comply.

Path A Notification

For permittees electing Path A, their notification to the Central Valley Water Board must include the initial assessment as outlined in section x of the Recommended Nitrate Control Program (which is explained below), and a Notice of Intent. The Notice of Intent needs to convey to the Central Valley Water Board the permittees election for Path A compliance.

Path B Notification

For permittees electing Path B, their notification to the Central Valley Water Board needs to consist of a Notice of Intent to comply via Path B, and identification of the Management Zone in which they intend to join. As indicated previously, for those permittees actively participating in development of the Preliminary Management Zone Proposal, submittal of the Preliminary Management Zone Proposal with their names identified constitutes submittal of a Notice of Intent.

For new permittees, or those seeking an expansion related to the discharge of nitrate, they must provide the Central Valley Water Board with the same data and information that is otherwise required by existing permitted dischargers as part of an initial assessment at the time that they submit their discharge application (i.e., Report of Waste Discharge) to the Central Valley Water Board. Such permittees may have the option to join a Management Zone if one is in existence for their area.

Path A Permittees - Initial Assessment and Categorization of the Discharge

A key step in implementation of the Recommended Nitrate Control Program is preparation of an initial assessment by all permittees, except those that actively participate in development of a Preliminary Management Zone Proposal (See Path B). The initial assessment serves several purposes. First, it assists the permittee in evaluating the impact of their discharge of nitrate to groundwater to better determine which permitting pathway works best for their discharge scenario. Second, for those permittees that then elect Path A, it provides the Central Valley Water Board with critical information to categorize the impact of nitrate being discharged to groundwater, and to determine nitrate permitting conditions for the discharge in question. Notably, unless a permittee is actively participating in development of a Preliminary Management Zone Proposal, the permittee needs to conduct an initial assessment. However, only those permittees selecting Path A are obligated to submit the initial assessment to the Central Valley Water Board with their Notice of Intent.

Initial Assessment

In general, the initial assessment is designed to have permittees assess their nitrate discharge impacts to groundwater in the Shallow Zone underlying the area of the discharge. The essential components of an initial assessment are explained here.

Part 1 – Assess Water Quality Conditions in the Shallow Zone

First, all permittees (unless actively participating in development of a Preliminary Management Zone Proposal) need to estimate the impact of nitrate in their discharge on groundwater in the Shallow Zone over a 20-year planning horizon. The Recommended Nitrate Control Program includes options for defining the Shallow Zone as applicable to the discharge (or discharges). In general, however, the Shallow Zone is the portion of the aquifer whose areal extent is defined by the boundaries of the discharge area and whose vertical extent is defined by the depth of the shallowest 10% of the domestic water supply wells near the discharge. Or, alternatively, a permittee may propose an equivalent alternative for approval by the Central Valley Water Board's Executive Officer.

Further, when evaluating such impacts, permittees should be looking to determine the impact of their nitrate discharges on average nitrate concentrations in the Shallow Zone. It its simplest form, permittees may conduct such assessments by using simple mass balance calculations that assume 20 years of nitrate loading as it reaches the water table, and by using readily available data and information. Or, in the alternative, permittees may collect data and information, to model their nitrate discharge impacts on groundwater in the applicable Shallow Zone.

The Recommended Nitrate Control Program does not require permittees to develop expensive, high resolution models. However, a permittee maintains the option to conduct a more sophisticated analysis should they so desire. Further, permittees are encouraged to use existing assessments that may already exist. For example, irrigated lands coalitions in the Central Valley prepared extensive Groundwater Assessment Reports as part of Waste Discharge Requirements issued in 2012 and 2013. Such assessments may already contain the information identified for an initial assessment. Or, in another example, a permittee may have prepared an antidegradation analysis to support issuance of a permit or permit amendment. This antidegradation analysis may satisfy all or part of the initial assessment requirements in the Recommended Nitrate Control Program.

Part 2 – Determine if Discharge of Nitrate is Causing Any Public Water Supply Well or Domestic Well to Exceed the Nitrate Drinking Water Standard

Permittees must conduct a survey of the area where the discharge (or discharges) occurs to identify if there are public water supply or domestic wells that have nitrate levels in exceedance of the drinking water standard, and determine if their discharge (or discharges) are the cause of the nitrate exceedance in the drinking water well in question. To identify drinking water wells that may exceed the nitrate drinking water standard, permittees may use google earth to identify location of domestic wells, the State Water Board's GeoTracker database, State Water Board Division of Drinking Water information, local County Public Health Department information, and other data sources.

Part 3 – Develop Early Action Plan (based on conclusions in Part 2)

If a permittee has determined that it has caused a public water supply well or domestic well to exceed the nitrate drinking water standard, then the permittee must prepare and submit an Early Action Plan with its initial assessment and Notice of Intent to the Central Valley Water Board. The Early Action Plan must include specific actions and a schedule of implementation to address immediate needs of those drinking groundwater that exceeds the drinking water standard for nitrate that is caused by the permittee. The permittee is required to implement the Early Action Plan as soon as reasonably feasible, but no later than 60 days after submittal.

Part 4 - Categorize the Discharge

To assist the Central Valley Water Board in determining appropriate permit requirements and conditions for discharges of nitrate, the Recommended Nitrate Control Program requires the permittee to categorize its impact for nitrate in the Shallow Zone. The Recommended Nitrate Control Program identifies five (5) categories. Categories one (1) through three (3) represent permitted discharges of nitrate that generally will have minimal or limited impacts to nitrate levels in the Shallow Zone. Discharges that fall within categories four (4) and five (5), likely impact nitrate levels in the Shallow Zone more significantly.

Typically, discharges that have more significant impacts on groundwater are subject to more restrictive permit requirements that are costly, and in some cases, unreasonable, infeasible and/or impractical to implement. However, rather than forcing permittees to meet a conservative discharge limit or prohibiting the discharge of nitrate, the Recommended Nitrate Control Program provides the Central Valley Water Board with the authority to adopt (on a permit-by-permit basis under Path A) an alternative permitting approach that would allow the nitrate discharge to continue, as long as certain requirements are met. In short, these requirements include the need to make sure that those that rely on groundwater have access to safe drinking water that complies with the nitrate drinking water standard, and that there are long-term plans for restoring impacted groundwater in the Shallow Zone in question through various management actions.

When the Central Valley Water Board implements an alternative permitting approach, or otherwise permits a nitrate discharge that under typical circumstances would not be permitted, the Central Valley Water Board will require the permittee to implement an Alternative Compliance Project as part of exercising an alternative permitting approach. This use/applicability of this authority is explained below with respect to each category of discharge, as well as in the Examples provided at the end of this Appendix.

An explanation of each category is provided here:

- Category 1 – Under category 1, the nitrate discharge as it reaches the Shallow Zone must be better than the applicable nitrate water quality objective (e.g., <10 mg/L-N), and be better than the average nitrate concentration in the Shallow Zone. Notably, under this scenario, the average nitrate concentration in the Shallow Zone may be less than, equal to, or greater than the applicable water quality standard. However, since the discharge itself is less than the objective, and less than the average concentration in the Shallow Zone, it will improve water quality conditions. Ultimately, this category is titled the “No Degradation” category because the discharge does not cause degradation to nitrate ambient water quality conditions in the Shallow Zone. As such, nitrate discharges in this

category are considered to not impact nitrate levels in groundwater, and such discharges comply with the Recommended Nitrate Control Program with no further actions. Under this scenario, the Central Valley Water Board does not need to rely on alternative permitting authorities. Thus, an Alternative Compliance Project is not necessary.

- Category 2 – Discharges of nitrate that fall under category 2 are those that are considered *de minimis*. Meaning that such discharges in combination with other nitrate discharges to the same Shallow Zone will not cause the average concentration of nitrate in the Shallow Zone to exceed a nitrate trigger of 75% of the applicable water quality objective. Under this scenario, the nitrate discharge itself may be above the applicable water quality objective (e.g., >10 mg/L-N) but the discharge will use less than 10% of available assimilative capacity, *and*, the discharge along with other discharges of nitrate to the Shallow Zone (over a 20-year planning horizon) will not cause the Shallow Zone to exceed 75% of the applicable water quality objective.

  When a permittee seeks to use assimilative capacity, even if the amount is *de minimis*, it must be supported with an antidegradation analysis. Such analysis needs to be part of the initial assessment, unless the Central Valley Water Board previously granted the use and if the previously granted use of assimilative capacity was supported with an antidegradation analysis.

  In general, the purpose of Category 2 is to recognize that there are some nitrate discharges that are truly *de minimis*, and have little impact on groundwater quality in the Shallow Zone. In such instances, the Central Valley Water Board will likely find that the discharge or discharges in question comply with the Recommended Nitrate Control Program with no further actions necessary. In other words, an Alternative Compliance Project will not be necessary. However, some form of groundwater monitoring may be required to continue to monitor nitrate impacts on the Shallow Zone. In most cases, existing monitoring requirements are probably sufficient for this purpose.

- Category 3 – Category 3 applies to discharges that may be greater than the applicable water quality objective (>10 mg/L-N), and when the impact of these discharges of nitrate are more than *de minimis* (i.e., use more than 10% of available assimilative capacity). Further, to fall within Category 3, the discharge or discharges in question cannot cause the average nitrate concentration in the Shallow Zone to exceed 75% of the applicable water quality objective over a 20-year planning horizon.

  As with Category 2 discharges, use of assimilative capacity must be supported with an antidegradation analysis. Such analysis needs to be part of the initial assessment, unless the Central Valley Water Board previously granted the use and if the previously granted use of assimilative capacity was supported with an antidegradation analysis.

  Discharges that fall within Category 3 will generally be determined by the Central Valley Water Board to be consistent with the Recommended Nitrate Control Program, and alternative permitting approaches do not need to be employed. With respect to further actions, permittees will likely be required to conduct additional monitoring to ensure that the trigger level of 75% of the applicable water quality objective is not being exceeded.

- Category 4 – Discharges categorized under this Category are those where the average concentration of nitrate in the Shallow Zone is better than the applicable water quality objective (e.g., < 10 mg/L-N), but it is reasonably anticipated that discharge will cause the average nitrate concentration in the Shallow Zone to exceed the 75% trigger but not the applicable water quality objective over the 20 year planning horizon (e.g., Shallow Zone will be between 7.5 mg/L and 10 mg/L in 20 years).

  Discharges that fall within Category 4 must be supported with an antidegradation analysis. Such analysis needs to be part of the initial assessment, unless the Central Valley Water Board previously granted the use and if the previously granted use of assimilative capacity was supported with an antidegradation analysis.

  Authorizing use of assimilative capacity above the trigger level under the Recommended Nitrate Control Program will trigger the need for an Alternative Compliance Project. Although technically the Central Valley Water Board has the existing legal authority to authorize use of assimilative capacity up to the applicable water quality objective, the Recommended Nitrate Control Program includes triggers to provide for a margin of safety in protecting water quality. By allowing a discharge to encroach into this margin of safety, the Recommended Nitrate Control Program finds it appropriate for there to be an Alternative Compliance Project that accompanies any such request for use of assimilative capacity. The requirements for an Alternative Compliance Project are discussed further in Part 5.

- Category 5 – If a nitrate discharge exceeds the applicable water quality objective (e.g., > 10mg/L-N) as it reaches the Shallow Zone and the Shallow Zone has no assimilative capacity, or if the discharge causes the Shallow Zone to exceed the applicable water quality, then the Central Valley Water Board must grant an Exception to permit the discharge.

  The granting of an Exception is an alternative permitting approach that must be accompanied with an Alternative Compliance Project. To obtain an Exception, the nitrate discharger must submit an application that meets the requirements as set forth in the Exceptions Policy.

Part 5 – Propose Alternative Compliance Project

For permittees under Path A that seek the use of assimilative capacity above the trigger level (i.e., Category 4), or need an Exception, the initial assessment must include a proposal for an Alternative Compliance Project. At a minimum, an Alternative Compliance Project must include the following:

(1) Identification of public water supply and domestic wells that are contaminated by nitrate and that are in the discharge areas zone of concern;

(2) A schedule, with identified milestones for addressing those nitrate-related drinking water issues; and,

(3) Identification of steps that will be taken to meet the management goals of the Salt and Nitrate Management program, which may be phased in over time.

The Central Valley Water Board has developed *Guidelines for Developing Alternative Compliance Projects*, which may be used by permittees as they develop their Alternative Compliance Project.

Path B Permittees – Preparation and Participation in a Management Zone

The Recommended Nitrate Control Program includes an alternative permitting approach for that allows permittees to work collectively in a Management Zone. The first step in developing a Management Zone is development and submission of a Preliminary Management Zone Proposal to the Central Valley Water Board according to the requirements and timeline specified in the Recommended Nitrate Control Program. The purpose for preparing a Preliminary Management Zone Proposal is to provide all permittees within the specified area for that management zone with enough information to make an election for complying Recommended Nitrate Control Program via Path A (as an individual permittee/third party group), or via Path B (participant in a management zone).

Upon receiving a Preliminary Management Zone Proposal, Central Valley Water Board staff will make the proposal available on the Board's website and will review the proposal for consistency with the Recommended Nitrate Control Program and provide feedback to the initiating permittees. From the feedback received, the initiating permittees, and additional permittees that have decided to join the Management Zone, will work cooperatively to develop a Final Management Zone Proposal. In its development of the Preliminary Proposal as well as the Final Proposal, permittees are required to seek out input and cooperation from other stakeholders in developing the Management Zone from a governance structure, and in developing the Management Zone Implementation Plan. As detailed in the Recommended Nitrate Control Program, the Management Zone Implementation Plan must address nitrate drinking water issues within the Management Zone as well as include a plan that addresses nitrate in groundwater over the long-term. For example, the long-term plan may include, but is not limited to, management practices identified by irrigated agricultural coalitions through the Management Practices Effectiveness Program that growers will need to implement to address nitrate loading to groundwater. It may also include groundwater recharge projects in coordination with groundwater sustainability agency efforts, and other long-term efforts that are designed to address nitrate levels in groundwater over many years.

Because Management Zones are designed to address nitrate in groundwater from a long-term, comprehensive stand point, the Central Valley Water Board has additional flexibility for permitting discharges of nitrate to groundwater. This includes allocating assimilative capacity to permittees participating in the Management Zone based on a volume-weighted average in the Upper Zone, or by granting an Exception to all permittees in the Management Zone. Further, the comprehensive Management Zone Implementation Plan is the equivalent of an Alternative Compliance Project. Under a Management Zone approach, participating permittees are not required to submit individual applications for an Exception, or an initial assessment. Rather, the Management Zone submittals are designed to provide the necessary information for permittee participants.

Once a Management Zone Implementation Plan is submitted to the Central Valley Water Board, the Central Valley Water Board will amend permits for the participating permittees within the Management Zone. The revised permits would incorporate requirements for implementing the Management Zone Implementation Plan, and would allow for nitrate discharges to groundwater either through the use of volume-weighted assimilative capacity or

through granting of an Exception. Such permit amendments, and the Management Zone Implementation Plan, will be subject to notice, comment and hearing before the Central Valley Water Board.

Examples of Various Permitting Scenarios

Publicly Owned Treatment Works/Point Source Industrial Discharge

POTW A is located in a high priority basin for nitrate and receives a Notice to Comply from the Central Valley Water Board on July 1, 2019. POTW A's effluent has an average nitrate concentration of 12 mg/L-N, and POTW A applies the treated effluent to alfalfa fields owned and operated by POTW A. After receiving the Notice to Comply, POTW A decides that it does not want to participate in a Management Zone but would rather continue to be an individual permittee under Path A. Accordingly, POTW A conducts an initial assessment.

In conducting the initial assessment, POTW A evaluates existing groundwater data to determine background levels for nitrate in the Shallow Zone, and finds that the average nitrate concentration in the Shallow Zone is 8 mg/L-N. Also through its initial assessment, POTW A determines that after plant uptake, the reasonable, average amount of nitrate that enters the Shallow Zone is 6 mg/L-N. Under this scenario, because the discharge is it enters the Shallow Zone is below the water quality objective of 10 mg/L, and less than the average nitrate concentration in the Shallow Zone (8 mg/L-N), the discharge does not cause degradation. As a result, POTW A will indicate in its initial assessment that the discharge falls within Category 1. Further, POTW A finds that its discharge of 6 mg/L-N as it enters the Shallow Zone is not causing any domestic or public supply well to exceed the nitrate drinking water standard of 10 mg/L, and no Early Action Plan is necessary. Here, in this example, no special consideration is necessary because the discharge complies with the applicable water quality objective, does not impact the applicable beneficial use, and does not cause water quality degradation. Similarly, where the discharge has a nitrate concentration of 10 mg/L or less as it enters the Shallow Zone, and where the underlying Shallow Groundwater is above 10 mg/L, the discharge is not causing degradation because it is equal to or better than the water quality objective and it is better than the ambient condition in the Shallow Groundwater Zone.

At the other end of the spectrum, POTW A finds in its initial assessment that it discharges to a Shallow Zone where the average nitrate concentration exceeds the applicable water quality objective (> 10mg/L-N), and the discharge as it reaches the Shallow Zone also exceeds the objective (e.g., > 10 mg/L-N). Further, across the road and down gradient from POTW A is domestic drinking water well, and nitrate in the domestic well exceeds the nitrate drinking water standard of 10 mg/L-N. In this example, POTW A is in an area where no Management Zone has formed, thus joining a Management Zone is not an option. Accordingly, POTW A will need to either decide to upgrade its treatment process to lower nitrate levels in the effluent as it reaches the Shallow Zone, or apply for an Exception pursuant to the Exceptions Policy. For the Central Valley Water Board to grant an Exception, the permittee will need to submit an application that meets the requirements of the Exception Policy and propose an Alternative

Compliance Project. Also, POTW A will need to prepare an Early Action Plan that identifies how it intends to work with the owner/user of the domestic well to ensure that the user of groundwater has compliant drinking water. Options for POTW A to consider may include: providing assistance to dig a deeper well, installing a Point of Use Treatment device in the home, providing assistance for the domestic well to connect to a nearby public water supply, or, as an interim step, provide bottled water.

For the other three categories in between, the level of degradation to the Shallow Zone is the deciding factor with respect to the need for and level of additional actions that may be imposed by the Central Valley Water Board under the Recommended Nitrate Control Program. As explained previously, minimal or limited degradation may require some additional level of monitoring, depending on the amount of degradation. For degradation above the trigger level, an Alternative Compliance Project will need to be proposed and implemented.

Based on its findings in the initial assessment, POTW A decides to remain under Path A even though a Management Zone has formed for its area. POTW A must then submit its initial assessment, Notice of Intent and Early Action Plan (if applicable) to the Central Valley Water Board no later than May 27, 2020. Sixty days later, POTW A must start implementing the applicable Early Action Plan. The Central Valley Water Board will review POTW A's initial assessment and determine if permit revisions are necessary as compared to POTW A's existing permit. If changes to POTW A's permit are necessary, the Central Valley Water Board will amend POTW A's permit according to applicable amendment procedures, which includes notice, public comment, and hearing before the Central Valley Water Board.

Irrigated Lands – Third Party Programs

EXAMPLE 1 – PATH A

Irrigated lands Coalition A is a commodity specific coalition that is subject to General Waste Discharge Requirements (Coalition General Order) issued by the Central Valley Water Board. The commodity members subject to the Coalition General Order grow the specified commodity in areas that are largely considered to be non-priority basins. Thus, Notices to Comply may not be issued in the near future. However, let's assume that Notices to Comply have been issued, or that Coalition A has decided to determine compliance with the Nitrate Control Program prior to receiving any Notices to Comply.

As with any other permittee, Coalition A must select a permitting option pathway for the areas covered by the Coalition General Order. In this example, because the commodity is largely grown in non-priority areas, Coalition A has decided to follow the Individual Approach (i.e., Path A) rather than the Management Zone Approach for the entirety of the areas covered by the Coalition General Order. This means that Coalition A must conduct an initial assessment of groundwater conditions for the commodity specific areas covered by its Coalition General Order, categorize discharges for its members and determine if discharges from its members are causing nitrate concentrations to exceed 10 mg/L nitrate as nitrogen in groundwater utilized as a drinking water source. Notably, it is not expected, anticipated, or practical for Coalition A to categorize discharges on a member-by-member basis, or on a field-by-field basis. Rather, Coalition A is to take reasonable efforts to categorize the various geographic areas that are covered by the Coalition General Order.

As part of the Coalition General Order adoption process, Coalition A prepared, and the Central Valley Water Board approved, a Groundwater Assessment Report (GAR). As part of the Groundwater Assessment Report process, Coalition A evaluated groundwater conditions throughout the commodity area in question, including in shallow groundwater. Coalition A found that due to a variety of factors, the specific commodity covered by the Coalition General Order does not transport nitrate to shallow groundwater. Using this information and the previously prepared GAR, supplemented with additional information as appropriate and necessary, Coalition A first identifies the Shallow Zone for evaluating nitrate ambient conditions, which in this case may be an equivalent alternative that is approved by the Central Valley Water Board's executive officer. Coalition A then categorizes discharges from the commodity in question for the generally identified geographic areas covered by the Coalition General Order. Based on the available information, Coalition A determines that for this commodity, nitrate discharges fall either within category 1 or category 2.

Coalition A also determines that based on the estimated level of nitrate in the discharge from this commodity as it leaves the root zone, such discharges do not cause public water supply wells or domestic wells to be contaminated by nitrate. Further, there are no management zones adjacent to the areas in question.

For the discharges covered by this Coalition General Order, and that are also covered by this initial assessment, alternative compliance is not necessary. Like with all other permittees, the Central Valley Water Board will review the initial assessment submitted by Coalition A. In this case, assuming that the Central Valley Water Board agrees with the Coalition A's findings in the initial assessment, the Central Valley Water Board may find that the Coalition General Order as it currently stands complies with the Recommended Nitrate Control Program and no further actions are necessary.

EXAMPLE 2 – PATH B

Irrigated lands Coalition B covers a large geographic area, and almost all land within Coalition B's boundaries are located in a non-priority basin, except for a portion of Coalition B that is located in one specified priority groundwater sub-basin. Coalition B receives a Notice to Comply for its members that are within the priority groundwater sub-basin. Coalition B decides that for this specified area, it wishes to develop a Management Zone and prepare a Preliminary Management Zone Proposal. Coalition B then works with the Central Valley Water Board to identify other permittees in the defined area that also discharge nitrate, and Coalition B and the Central Valley Water Board take efforts to reach out to these other permittees and other entities (such as the county, any local Groundwater Sustainability Agency, local communities, etc.) to determine if they too are interested in developing and participating in a Management Zone. Simultaneously, Coalition B is notifying and communicating with its members in the defined groundwater sub-basin of the sub-basin's priority status and Coalition B's efforts to develop of a Preliminary Management Zone Proposal.

Coalition B then works with other permittees and local entities to develop a Preliminary Management Zone Proposal. The group preparing the Preliminary Management Zone Proposal morphs from Coalition B to Management Zone Group 1. As part of developing the Preliminary Management Zone Proposal, the group also evaluates all readily available data and information to determine if there are public supply wells or domestic wells within the

Management Zone boundaries that exceed nitrate water quality objectives. (The evaluation should include a review of potential impacts based on available groundwater information if specific well information is not available.) If drinking water supply wells exceed nitrate objectives or demonstrate a high probability of exceeding nitrate objectives, Management Zone Group 1 must prepare an Early Action Plan for submittal along with the Preliminary Management Zone Proposal. The Early Action Plan must begin to be implemented 60 days after submittal and may include as a first step verification of impacted supply wells.

Between submittal of the Preliminary Management Zone Proposal and the Final Management Zone Proposal, the Central Valley Water Board informs Management Zone Group 1 of the additional permittees that indicated on their Notice of Intent their selection of Path B for complying with the Recommended Nitrate Control Program. Through a governance and financing structure developed by Management Zone Group 1, the collective permittees in concert with other participating local entities then prepare a Final Management Zone Proposal and Management Zone Implementation Plan. Further, based on its evaluation of data and information related to groundwater conditions in the Upper Zone of the Management Zone area, Management Zone Group 1 decides that there is sufficient assimilative capacity on volume-weighted bases to assimilate the nitrate discharges from the permittees covered by the Management Zone, as well as other nitrate contributions to the Upper Zone. Accordingly, as part of the Management Zone Implementation Plan, Management Zone Group 1 provides the Central Valley Water Board with an antidegradation analysis to support use of the assimilative capacity. Or, in the alternative, Management Zone Group 1 decides that there is not sufficient capacity and requests that the Central Valley Water Board adopt an Exception for nitrate discharges for permittees participating in Management Zone Group 1, which includes members of Coalition B. The Final Management Zone Implementation Plan would be utilized as supporting documentation for either request.

Within a reasonable time frame, but no longer than six months after the Management Zone Implementation Plan is complete, the Central Valley Water Board will provide notice and opportunity for public comment on the Implementation Plan and hold a hearing to consider adoption. Simultaneously, the Central Valley Water Board will consider amending permits for participating permittees, including Coalition B's General Order, to incorporate requirements associated with implementing the Management Zone Implementation as well as to allow for nitrate discharges to groundwater from participating permittees. For Coalition B, the requirements for implementation of this Management Zone would be limited to those members that are within the Management Zone boundary area rather than being applied broadly to all Coalition B members.

EXAMPLE 3 – PATH B

Irrigated lands Coalition C covers a large geographic area, and most of the area within Coalition C's boundaries are considered to be priority sub-basins for nitrate. In all, there are four different priority sub-basins within the area subject to Coalition C's General Waste Discharge Requirements (Coalition General Order). Coalition C receives Notices to Comply for its members that are within four priority sub-basins. Similar to Coalition B in Example 2, Coalition C determines that alternative compliance for all its members is necessary and thus decides that Path B, i.e., Management Zones, are the most appropriate pathway forward. However, rather than initiating actions for four different entities to develop Management Zone

proposals and Management Zone Implementation Plans, Coalition C looks to organize one broad Management Zone entity for the watershed. Within the broad entity, there are then four sub-groups to address the four different priority sub-basins.

Besides irrigated agricultural members from Coalition C, the broad entity as well as the sub-groups need to be open to and include other permittees such as dairies, POTWs and others that discharge nitrate within the same geographic area as well as other entities such as counties with land use authority, Groundwater Sustainability Agencies, and communities that draw their drinking water supply from groundwater within the proposed Management Zones.

Each sub-group would be responsible for development of Preliminary and Final Management Zone proposals. However, for the governance and financing structure components, there would be coordination amongst the broad entity and the sub-groups for efficiencies in administration of the Management Zones. Each sub-group would also responsible for development of a Management Zone Implementation Plan for the specific area in question. All other Path B requirements would also apply, e.g., Early Action Plans, alternative compliance requirements, etc. Upon approval of the Management Zone Implementation Plans, which may occur simultaneously but is not necessary, the Central Valley Water Board would then revise the Coalition General Order as well as other permits for other permittees participating in the Management Zones to incorporate requirements for compliance with the Recommended Nitrate Control Program.

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APPENDIX K

Environmental Checklist

California Environmental Quality Act Requirements

The Central Valley Water Board, as a Lead Agency under CEQA (Pub. Res. Code, § 21000 et seq.), is responsible for evaluating all the potential environmental impacts that may occur due to changes made to the Basin Plans. The Secretary of Resources has determined that the Central Valley Water Board's basin planning process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Central Valley Water Board is exempt from the requirement to prepare an environmental impact report for basin planning activities. Instead, this Staff Report and the Environmental Checklist (Appendix K) satisfy the applicable CEQA requirements.

1. Project title:

Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, and the Water Quality Control Plan for the Tulare Lake Basin.

2. Lead agency name and address:

California Regional Water Quality Control Board, Central Valley Region

11020 Sun Center Drive, #200, Rancho Cordova, CA 95670

3. Contact person and phone number:

Jeanne Chilcott, Environmental Program Manager, (916) 464-4788

4. Project location:

The project is located within the Sacramento River, San Joaquin River and Tulare Lake Basins, in the Central Valley.

5. Description of project:

The proposed project consists of a suite of policies and guidance that will be integrated into the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin (Basin Plans) as amendments that would establish a Central Valley-wide Salt and Nitrate Control Program. The Salt and Nitrate Control Program would establish a regulatory framework to achieve long-term improvements in ambient water quality conditions in surface waters and groundwater in the Central Valley.

EVALUATION OF THE ENVIRONMENTAL IMPACTS IN THE CHECKLIST

1. The board must complete an environmental checklist prior to the adoption of plans or policies for the Basin/208 Planning program as certified by the Secretary for Natural

Resources. The checklist becomes a part of the Substitute Environmental Documentation (SED).

2. For each environmental category in the checklist, the board must determine whether the project will cause any adverse impact. If there are potential impacts that are not included in the sample checklist, those impacts should be added to the checklist.

3. If the board determines that a particular adverse impact may occur as a result of the project, then the checklist boxes must indicate whether the impact is “Potentially Significant,” “Less than Significant with Mitigation Incorporated,” or “Less than Significant.”

    a. “Potentially Significant Impact” applies if there is substantial evidence that an impact may be significant. If there are one or more “Potentially Significant Impact” entries on the checklist, the SED must include an examination of feasible alternatives and mitigation measures for each such impact, similar to the requirements for preparing an environmental impact report.

    b. “Less than Significant with Mitigation Incorporated” applies if the board or another agency incorporates mitigation measures into the SED that will reduce an impact that is “Potentially Significant” to a “Less than Significant Impact.” If the board does not require the specific mitigation measures itself, then the board must be certain that the other agency will in fact incorporate those measures.

    c. “Less than Significant” applies if the impact will not be significant, and mitigation is therefore not required.

    d. If there will be no impact, check the box under “No Impact.”

4. The board must provide a brief explanation for each “Potentially Significant,” “Less than Significant with Mitigation Incorporated,” “Less than Significant,” or “No Impact” determination in the checklist. The explanation may be included in the written report described in section 3777(a)(1) or in the checklist itself. The explanation of each issue should identify: (a) the significance criteria or threshold, if any, used to evaluate each question; and (b) the specific mitigation measure(s) identified, if any, to reduce the impact to less than significant. The board may determine the significance of the impact by considering factual evidence, agency standards, or thresholds. If the “No Impact” box is checked, the board should briefly provide the basis for that answer. If there are types of impacts that are not listed in the checklist, those impacts should be added to the checklist.

5. The board must include mandatory findings of significance if required by CEQA Guidelines section 15065.

6. The board should provide references used to identify potential impacts, including a list of information sources and individuals contacted.

The following sections provide the assessment of the impacts of the Proposed Project on the environmental resources of the Central Valley Region. The assessment utilizes the CEQA Appendix G Checklist as the basis for identifying environmental impacts.

Aesthetics

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

Discussion

The discussion below for Aesthetics describes direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within the Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. Consequently, the Proposed Project would not directly result in adverse effects on any scenic vista within the region.

   However, the Proposed Project will likely indirectly result in the construction of Implementation Projects. Insufficient information pertaining to the setting, size, design, and aesthetic aspects of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on aesthetics. Although it is not anticipated that any future Implementation Projects would adversely affect any scenic vista, because the specific locations of such projects are unknown, there is some potential for impacts to scenic vistas to occur, since the scope of the Implementation Projects could be quite large. Consequently, due to the potential for indirect impacts to scenic vistas to occur, the adoption and implementation of the Proposed Project by the Central Valley Water Board is considered to have a **potentially significant impact** to a scenic vista.

b) For the reasons described above for “a,” and because future Implementation Projects can be sited and constructed in a manner that would avoid substantial damage to scenic resources within a state scenic highway, adoption and implementation of the Proposed

Project by the Central Valley Water Board would have a **less-than-significant impact** to scenic resources within a state scenic highway.

c) For the reasons described above for "a," adoption and implementation of the Proposed Project by the Central Valley Water Board would have **a potentially significant impact** on the existing visual character of the Central Valley region.

d) For the reasons described above for "a," adoption and implementation of the Proposed Project by the Central Valley Water Board would have **a potentially significant impact** on day or nighttime views in the areas affected.

Because separate project-specific environmental review would be performed prior to the construction of specific Implementation Projects for salt and nitrate management to identify project-specific environmental impacts and to incorporate measures to avoid, reduce, or mitigate any identified significant environmental impacts, and because parties other than the State of California may serve as the project proponents and thus be responsible for mitigation measures, should they be necessary, no mitigation measures are proposed here. Although not anticipated to be substantial, decisions makers should recognize the potential for such indirect effects to aesthetics from implementation of the Proposed Project, and that mitigation introduced for such impacts, should mitigation be identified under separate, future project-specific environmental review, may or may not mitigate aesthetic impacts to a less-than-significant level. Hence, although not anticipated, there is some potential for a significant and unavoidable impact to aesthetic resources.

Agricultural and Forestry Resources

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURAL AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forestry resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☒	☐	☐	☐
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Discussion

The discussion below for Agricultural and Forestry Resources describes direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board that would directly convert agricultural land to another use. Further, there would be no change to the agricultural beneficial use (AGR) designation applied to surface water and groundwater within the Central Valley Region as a result of adopting the Proposed Project. Consequently, the Proposed Project would not directly result in adverse effects on farmland by conversion to a non-agricultural use.

   Implementation Projects will likely result in indirect effects to Agricultural and Forestry Resources. Such projects may result in the conversion of limited areas of farmland required for siting facilities or recharge areas to non-agricultural use. Such projects are not expected to be sited in forest lands. However, along with conversion of farmland to non-agricultural use would be improved conditions for farmland with implementation of the Proposed Project, in the long-term, for salinity in water and soils. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on the conversion of farmland to non-agricultural use. Although it is expected that future discharger-specific project(s) would not result in substantial conversion of existing farmland to non-agricultural use, some such conversion due to these projects could occur, particularly on a local scale. Consequently, due to the potential for an indirect impact to occur, the adoption and implementation of the Proposed Project by the Central Valley Water Board is considered

to have a **potentially significant impact** to conversion of farmland to non-agricultural use.

Because separate project-specific environmental review would be performed prior to the construction of Implementation Projects to identify project-specific environmental impacts and to incorporate measures to avoid, mitigate, or reduce any identified significant environmental impacts, and because parties other than the State of California may serve as the project proponents and thus be responsible for mitigation measures, should they be necessary, no mitigation measures are proposed here. Although not anticipated to be substantial, decisions makers should recognize the potential for such indirect effects to agricultural lands from implementation of the Proposed Project, and that mitigation introduced for such impacts, should mitigation be identified under separate, future project-specific environmental review, may or may not mitigate the impacts to a less-than-significant level. Hence, although not anticipated, there is some potential for a significant and unavoidable impact to agricultural lands due to conversion of farmland to non-agricultural use in local areas.

b) The Proposed Project would have **no impact** on existing agricultural use zoning of a Williamson Act contract.

c) The Proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land or timberland. Therefore, the Proposed Project would have **no impact** on existing zoning of forest land or timberland.

d) The Proposed Project would not directly or indirectly result in the loss of forest land or conversion of forest land to non-forest use because the projects for salt and nitrate management that may be implemented in the future are expected to be sited primarily in agricultural areas and are not expected to be sited in forested areas. Any projects that are sited in areas that would result in conversion of forest land to non-forest use would be expected to affect a negligible percentage of the region's forest lands. Therefore, the Proposed Project would have a **less-than-significant impact** on the loss or conversion of forest land to a non-forest use.

e) As stated under "c" and "d" above, the Proposed Project is not expected to directly or indirectly affect forest lands. As described above for "a," there would be no change to the relevant agricultural beneficial use (AGR) designation of any water bodies within the Central Valley Region. In addition, the Proposed Project would have no impact on existing zoning of forest land or timberland, nor would the actions under the Proposed Project result in the substantial loss or conversion of forest land to a non-forest use. There would be period of time (approximately 10 to 20 years) between when the Proposed Project is adopted by the Central Valley Water Board and projects are implemented to manage salt loading in the Central Valley during which salts would continue to accumulate in underlying groundwater (see assessment in Section IX, Hydrology and Water Quality) and, thus, in overlying soils. The degree to which salts would accumulate in Central Valley would vary by region and depend on source water quality and water application timing and rates. The continued salt accumulation in the Central Valley during this period is not expected to result in a substantial conversion of farmland to non-agricultural use, but reduced crop yields and shifts to salt tolerant crops within certain localized areas of the valley is a potential outcome of continued salt accumulation. Therefore, the Proposed Project would result in a **less-than-significant impact** on farmland and forest land related to changes in the existing environment.

Air Quality

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the Project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion

The discussion below for Air Quality describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a,e) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would have no direct adverse effects on air quality. Therefore, the Proposed Project would not directly conflict with or obstruct implementation of the applicable air quality plan or create objectionable odors affecting a substantial number of people.

Implementation Projects are not be expected to conflict with or obstruct implementation of an applicable air quality plan because the Board has no evidence that such projects would create substantial, long-term increases in air quality pollutants. Likewise, these projects would not result in substantial, long-term air quality degradation that would produce objectionable odors. Therefore, the Proposed Project would have **no impact** on applicable air quality plans or objectionable odors.

b,c,d) As described above under “a,” the Proposed Project would not directly result in adverse effect to air quality. Also, as described above, implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate

management. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on air quality. Nevertheless, the use of heavy machinery in the construction of these projects could potentially, on a short-term basis, contribute to an existing or projected air quality violation, increase a criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, or expose sensitive receptors to substantial pollutant concentrations. However, any such effects, should they occur, would be temporary in nature during construction. The projects constructed would not produce air quality pollutants of concern on a long-term operational basis. Moreover, standard construction best management practices would be implemented by project proponents to minimize adverse construction-related effects on air quality. Hence, the Proposed Project would not indirectly result in substantial, long-term adverse effects to air quality or sensitive receptors.

Therefore, the Proposed Project would result in a **less-than-significant impact** on air quality and sensitive receptors.

Biological Resources

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Discussion

The discussion below for Biological Resources describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board that would change the landscape. As such, the Proposed Project would have no direct adverse effects on terrestrial biological resources.

The Proposed Project would make no changes to biological resource-related beneficial uses (e.g., WARM, COLD, WILD, BIOL, RARE, MIGR, SPWN) or associated water quality objectives, or implementation programs related to these beneficial uses or objectives. The potential changes to surface water quality, which can affect aquatic life beneficial uses, are addressed below in Section IX, Hydrology and Water Quality. The constituents that are addressed by the Proposed Project include salts (i.e., TDS, EC, chloride, and sulfate), nitrate, and constituents with secondary MCLs. Some of these constituents (e.g., chloride, copper, silver, zinc) also have aquatic life criteria, the regulation of which would be unchanged by the Proposed Project. Further, as described in the water quality assessment, no substantial degradation for these aquatic life constituents would occur with the Proposed Project. Thus, the Proposed Project would not contribute to adverse chemical conditions to aquatic life. Also, as stated above, the Proposed Project does not directly involve the construction of new physical facilities by the Central Valley Water Board and thus would not adversely modify aquatic habitats.

Based on these findings, the Proposed Project would not implement actions that would directly result in substantial adverse effects to aquatic or terrestrial biological resources, including on any species identified as a candidate, sensitive, or special status species.

In the long term, Implementation Projects could theoretically cause impacts to biological resources. However, insufficient information pertaining to the setting, size, and design aspects of such projects was available at the time this documentation was prepared to enable an assessment of reasonably foreseeable indirect effects of such projects on biological resources. For example, the largest of the potential Implementation Projects is the construction of a regional network of desalter facilities and a regulated brine line. Though this project would be expected to potentially have adverse impacts on biological resources, such impacts are purely speculative. Before any major elements of such a project are built, the Board would first be required to reopen and amend the Basin Plans, which would require subsequent environmental review. Upon adoption of the Basin Plan Amendments currently under consideration, the Board would not be committed to any particular implementation project and would not be precluded from considering any alternatives or mitigation measures associated with such projects – such considerations will instead occur after Phase I of the Salt Control Program is complete. These considerations would also include project-specific environmental impacts and to incorporate measures to avoid, mitigate, or reduce any identified significant environmental impacts.

Furthermore, should future projects include use of federal funds, require a Clean Water Act 404 permit issued by the U.S. Army Corps of Engineers or in another way involve a federal agency, then federal agency consultation under Section 7 of the federal endangered species act (ESA) would be required prior to implementation of projects. This ESA consultation would further ensure that substantial adverse effects to ESA-listed species would not result from project implementation.

Because the only adverse direct or indirect impacts to biological resources are purely speculative, the adoption of the Proposed Project is therefore considered to have a **less-than-significant impact** to species identified as a candidate, sensitive, or special status species.

b) As described above for “a,” the Proposed Project does not directly involve construction of new buildings, or other facilities by the Central Valley Water Board that would remove or adversely modify riparian habitat or any other sensitive natural community identified in local or regional plans, policies, or regulations. Consequently, the Proposed Project would not directly result in substantial adverse effects on riparian habitats or other natural biological communities.

As described above under “a,” implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on riparian habitat or other sensitive natural communities at specific sites. However, proper siting of projects, implementation of appropriate impact avoidance measures, and construction best management practices are expected to minimize any potential adverse effects to riparian habitat or other sensitive natural communities from project construction and long-term operation.

Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board is considered to have a **less-than-significant impact** to any riparian habitat and other sensitive natural biological communities.

c) As described above for "a,b" the Proposed Project does not directly involve construction of new buildings, or other facilities by the Central Valley Water Board. The Proposed Project would not result in the direct removal, filling, or hydrological interruption of wetlands. Consequently, the Proposed Project would not directly result in substantial adverse effects on federally protected wetlands.

   As described above under "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on federally protected wetlands at specific sites. Nevertheless, construction and operation of specific projects for salt and nitrate management are not expected to result in removal, filling, or hydrological interruption of marsh, vernal pool, coastal, or other wetland habitats because the majority of such projects are expected to be constructed in agricultural and urban areas of the Central Valley. However, project proponents would be required to obtain a Clean Water Act 404 permit and mitigate for any impacts to or loss of federally protected wetlands.

   Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board is considered to have a **less-than-significant impact** to any federally protected wetlands.

d) As described above for "a," the Proposed Project does not directly involve construction of new buildings, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly modify terrestrial or aquatic habitats and thus would not directly result in substantial adverse effects on biological resources or their habitats. Consequently, the Proposed Project would not directly interfere substantially with the movement of any native resident or migratory fish or wildlife species, with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

   As described above under "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on fish and wildlife movement and use of native nursery sites. However, proper siting of projects, implementation of appropriate impact avoidance measures, and construction best management practices are expected to minimize any potential adverse effects to fish and wildlife movement and use of nursery sites. Moreover, most projects are anticipated to be constructed in agricultural and urban areas and are also expected to have minimal effects on surface water quality and habitat.

   Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board is considered to have a **less-than-significant impact** to the

movement of any native resident or migratory fish or wildlife species and use of native wildlife nursery sites.

e,f) As described above for "a," the Proposed Project does not directly involve construction of new buildings, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly modify terrestrial or aquatic habitats and thus would not directly result in substantial adverse effects on biological resources or their habitats. The Proposed Project would make no changes to biological resource-related beneficial uses (e.g., WARM, COLD, WILD, BIOL, RARE, MIGR, SPWN) or associated water quality objectives, or implementation programs related to these beneficial uses or objectives. Hence, the Proposed Project would not directly conflict with any local policies or ordinances protecting biological resources, conflict with the provisions of an adopted Habitat Conservation Plan; Natural Community Conservation Plan; or any other approved local, regional, or state habitat conservation plan.

As described above under "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Construction and operation of such projects would not conflict with any local policies or ordinances protecting biological resources or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan; or any other habitat conservation plan. This is primarily due to the size, nature, and anticipated siting of these projects (primarily in agricultural and urban areas) and the fact that each project would be required to undergo separate, project-specific environmental review and permitting before it can be constructed and operated. Project refinement, development of impact avoidance and minimization measures, and mitigation, where warranted, would prevent potential effects to biological resources from reaching levels that would conflict with provisions of adopted plans.

Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board would have **a less-than-significant impact** to local policies or ordinances protecting biological resources and to local, regional, or state Habitat Conservation Plan or Natural Community Conservation Plan.

Cultural Resources

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Discussion

a,b) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not change or affect historical or archaeological resources.

Implementation Projects may result in ground excavations for facility construction or placement of facilities or pipelines in areas of historical or archaeological significance. Because separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts, these projects themselves are not expected to change or adversely affect historical or archaeological resources. Proponents of future salt and nitrate management projects would be expected to site projects and conduct construction monitoring in a manner that would avoid adverse effects to historical or archaeological resources.

Therefore, adoption and implementation of the Proposed Project by the Central Valley Water Board would have **no impact** on the significance of a historical or archaeological resource.

Geology, Soils, and Seismicity

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS. Would the Project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Discussion

The discussion below for Geology, Soils, and Seismicity describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, houses, services, or other facilities by the Central Valley Water Board and thus does not directly locate, re-locate, or concentrate people in areas different from where people occur under existing conditions. As such, the Proposed Project would not directly expose people or structures to earthquake fault lines, seismic ground shaking, ground liquefaction, or landslides.

   Implementation Projects may result in ground excavations for facility construction or placement of facilities or pipelines in areas that may be in the vicinity of a fault or subject to future strong seismic shaking, or soils of unknown quality at this time. Insufficient information pertaining to the siting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on the expose people or structures to earthquake fault lines, seismic ground shaking, ground liquefaction, or landslides. Nevertheless, construction and operation of specific projects for salt and nitrate management would undergo separate project-specific environmental review and permitting. Through these processes, these projects are expected to be sited and constructed in a manner that would avoid or minimize exposure of people and property to loss, injury, or death as a result of fault lines, seismic ground shaking, ground liquefaction, or landslides.

   Therefore, approval and implementation of the Proposed Project by the Central Valley Water Board would have a **less-than-significant impact** on the exposure of people or structures to adverse effects involving fault lines, seismic-related ground shaking and failure, and landslides.

b) As discussed above under “a,” the Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly result in ground excavations for facility construction that could result in soil erosion or the loss of topsoil. Thus, the Proposed Project would not directly result in soil erosion or the loss of topsoil.

   As also described above under “a,” implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on soils. Construction and operation of these projects for salt and nitrate management would undergo separate project-specific environmental review and permitting. Through these processes, proper siting of projects, implementation of appropriate impact avoidance measures, and construction best management practices are expected to occur when these projects are constructed, which would both avoid and minimize the potential for soil erosion or the loss of topsoil at construction sites. Through these actions, soil

erosion and the loss of topsoil would be minimized and is not expected to occur at levels of concern.

Therefore, adoption and implementation of the Proposed Project by the Central Valley Water Board would result in a **less-than-significant impact** to soil erosion and the loss of topsoil.

c,d) For the reasons described above for "a,b," the Proposed Project would have **no impact** on the potential for landslides, lateral spreading, subsidence, liquefaction, or collapse to occur; or for facilities to be located on expansive soil creating substantial risks to life or property.

e) For the reasons described above for "a,b," the Proposed Project would not directly result in the placement of structures that would generate wastewater requiring disposal to land, nor would the Proposed Project affect soils in a manner that would cause soils to be incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems. Consequently, the Proposed Project would have **no impact** on soils or their ability to support septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Greenhouse Gas Emissions

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS. Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Discussion

The discussion below for Greenhouse Gas Emissions describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a,b) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. Nitrate in soil can be converted to nitrous oxide, a greenhouse gas. Nitrous oxide is a byproduct of the conversion of ammonia to nitrate and ultimately to nitrogen gas (Natural Resources Conservation

Service 2009). Nitrogen fertilization practices contribute significantly to nitrous oxide production; nitrous oxide emissions increase dramatically when fertilization exceeds crop usage (University of California, 2018).

The existing practices that contribute to existing nitrate concentrations in soils, such as application of fertilizers on agricultural lands and wastewater discharge quality, would be expected to remain similar to existing conditions with the Proposed Project. Wastewater discharge quality is a function of the treatment processes in place, which will continue to be utilized into the future. The Proposed Project does not specifically authorize expanded wastewater treatment plant discharges. Regarding agriculture, no region-wide changes in agricultural production are expected, though there may be near-term localized shifts to salt tolerant crops due to interim salt accumulations in soils before salt management projects needed under the Proposed Project are implemented (see Section II, Agricultural and Forestry Resources). Further, WDRs issued through the Central Valley Water Board's Irrigated Lands Regulatory Program require the preparation and implementation of farm-specific nitrogen management plans to optimize application of nitrogen for crop production. Thus, fertilizer application rates in the future would be expected to be no greater than under existing conditions. Because the rate at which nitrate is applied to soils with the Proposed Project is expected to be no greater than existing conditions, the generation of nitrous oxide with the Proposed Project is expected to be no greater than existing conditions.

Implementation Projects could indirectly contribute to greenhouse gas emissions from construction and operation of the projects/facilities. Separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts. The amount of additional greenhouse gas emissions that could potentially occur from constructing and operating these projects is not expected to be substantial because construction would be temporary and the projects themselves are not projects that would produce substantial greenhouse gas emissions.

Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board would have **a less-than-significant impact** on generation of greenhouse gas emissions and **no impact** in regard to conflicts with any applicable plan, policy, or regulation related to greenhouse gas emissions.

Hazards and Hazardous Materials

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through	☐	☐	☒	☐

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
f) For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion

The discussion below for Hazards and Hazardous Materials describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The proposed surface water and groundwater regulatory policies that constitute the Proposed Project do not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board, nor does the project directly involve the transport, use, or disposal of hazardous materials. Consequently, the Proposed Project would have no direct effect on hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials.

The construction and operation of Implementation Projects could involve the transport, use, or disposal of hazardous materials such as petroleum fuels, concrete, and chemicals uses in treatment of water supplies at water treatment plants. These types of materials are not highly hazardous when used and transported properly. Separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts related to the transport, use, or disposal of hazardous materials. Consequently, hazards associated with the construction and operation of salt and nitrate management projects are expected to be low.

Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board would result in **a less-than-significant impact** to the transport, use, or disposal of hazardous materials.

b,c) As discussed above for “a,” the Proposed Project does not directly involve the transport, use, or disposal of hazardous materials. Hence, the Proposed Project would have no direct effect on the transport, use, or disposal of hazardous materials; release of hazardous materials into the environment; or exposure of a school to hazardous materials or emissions.

As also discussed above under “a,” the Proposed Project would indirectly result in the need to construct and operate projects across the Central Valley for salt and nitrate management. However, as concluded above under “a,” hazards associated with the construction and operation of salt and nitrate management projects are expected to be low, and the risk to the public or the environment would be primarily from the transport of hazardous materials to the project site. Insufficient information pertaining to the siting of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of the transport and use of hazardous materials within one-quarter mile of an existing or proposed school location. However, these projects would undergo separate project-specific environmental review and permitting where the issue of transporting or using hazardous materials within one-quarter mile of an existing or proposed school location would be addressed. Through these environmental review processes, proper siting of projects (including the consideration of school locations), implementation of appropriate impact avoidance measures, and construction and transport best management practices are expected to occur when these projects are constructed and operated, which would both avoid and minimize the potential for hazards to the public, including schools, or the environment from the transport, use, or disposal of hazardous materials.

Based on these findings, the adoption and implementation of the Proposed Project by the Central Valley Water Board would result in **a less-than-significant impact** regarding hazards to the public, including schools, or the environment from the transport, use, or disposal of hazardous materials.

d) For the reasons described above for "a,b,c," the Proposed Project would have no direct effect on the exposure of the public or the environment to a significant hazard associated with hazardous materials located on a site. Any indirect effect of the Proposed Project on the exposure of the public or the environment to a significant hazard associated with hazardous materials located on a site, through the construction of projects by dischargers, would undergo separate project-specific environmental review and permitting. Through these processes, it is not expected that a project for the management of salt or nitrate would be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would itself create a significant hazard to the public or the environment. Consequently, the Proposed Project would have **no impact** on the exposure of the public or the environment to a significant hazard associated with hazardous materials located on a site.

e,f) For the reasons described for "a,b,c," the Proposed Project would have no direct effect on the exposure of people residing or working within two miles of a public airport or private airstrip to a safety hazard. Any indirect effect of the Proposed Project on the exposure of people to a safety hazard through the construction and operation of projects for salt and nitrate management would undergo separate project-specific environmental review and permitting. Through these processes, impact avoidance and mitigation measures would be introduced to projects, if needed to avoid substantial safety hazards to people. Moreover, the types of projects that may be constructed and operated for salt and nitrate management would not be of the nature that would expose people residing or working within two miles of a public airport or private airstrip to a safety hazard. Therefore, the Proposed Project would have **no impact** on the exposure of people residing or working within two miles of a public airport or private airstrip to a safety hazard.

g) For the reasons described for "a,b,c,d," the Proposed Project would have **no impact** on an adopted emergency response plan or emergency evacuation plan.

h) For the reasons described for "a,b,c,d," the Proposed Project would have no direct effect on the exposure of people or structures to a significant risk or loss, injury or death involving wildland fires.

As discussed above under "a," the Proposed Project is expected to indirectly result in the construction and operation of Implementation Projects for salt and nitrate management. The construction and operation of these projects could involve use of hazardous materials such as petroleum fuels, concrete, and chemicals uses in treatment of water supplies at water treatment plants. These types of materials would not cause or contribute to wildland fires when used and transported properly. Separate project-specific environmental review and permitting would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts related to exposure of people or structures to wildland fires. This would involve proper siting of facilities, use of fire breaks around facilities, and proper storage and transport of flammable materials.

Therefore, the adoption and implementation of the Proposed Project by the Central Valley Water Board would result in **a less-than-significant impact** to the exposure of people or structures to a significant risk or loss, injury or death involving wildland fires.

Hydrology and Water Quality

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY. Would the Project:				
a) Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that results in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☒	☐	☐	☐

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

Discussion

The discussion below describes the direct and indirect impacts to Hydrology that would occur from adoption and implementation of the Proposed Project.

a,f) The Proposed Project is an action of the Central Valley Water Board to establish new and revised policies for the regulation of discharges to surface waters and groundwater within the Central Valley Region. Because the Central Valley Water Board's Basin Plans are not self-implementing, the Proposed Project itself would not itself directly result in violation of water quality standards or waste discharge requirements, nor would it directly otherwise substantially degrade water quality. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. Further, the Proposed Project does not permit POTWs additional discharge capacity that would induce growth nor directly require changes to agricultural operations.

However, it is reasonably foreseeable that the construction and operation of Implementation Projects designed to comply with elements of the Proposed Project will have adverse impacts on groundwater and surface waters, at least during the next 10 years, and that those impacts may not be fully mitigated in all circumstances. Though these projects would undergo separate environmental review to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts, currently-regulated discharges will be allowed, subject to certain conditions, to discharge wastes at levels that will continue to have an adverse effects on beneficial uses in both surface waters and groundwater. Though the conditions placed on these discharges will mitigate adverse impacts to a substantial degree by mitigating impacts to those who use the water, the Proposed Project may nonetheless reasonably be expected to cause potentially significant impacts due to exceedances of applicable water quality standards and due to water quality degradation. This degradation will primarily occur because the

Proposed Project will involve extending compliance timelines under which discharges that are not fully compliant with pre-Amendment regulatory requirements will be allowed to persist.

The following is a discussion of the areas of the Proposed Project where potentially significant impacts due to exceedances of applicable water quality standards and due to water quality degradation may occur.

Salt Control Program

The Salinity Management Strategy involves a three-phased approach of study and implementation to control salt accumulation in the Central Valley. Each of the three phases has a duration of ten to fifteen years. Phase I consists of developing a Prioritization and Optimization (P&O) Study to facilitate the development of a long-term Salinity Management Strategy. Phase II would involve environmental permitting, securing funds for implementation projects, and engineering design and environmental permitting of preferred projects. Phase III would involve actual construction of preferred implementation projects.

Phase I includes the identification of the suite of regional and sub-regional projects to be implemented to manage salinity, the conceptual design of regional and sub-regional projects, the development and implementation of a funding plan and financing strategy for the identified projects, the establishment of a governance plan, strategic planning to address regulatory and policy issues, and stakeholder coordination. Phase I also includes a proposed Interim Salinity Permitting Approach for salinity discharges. Under this approach, permittees may select to be regulated under conservative limits or opt into participating in the funding and development of the P&O Study. (For the purposes of this analysis, the effects beyond Phase I are not reasonably foreseeable.)

Salts (i.e., TDS, EC, chloride, sulfate, and sodium) are extremely difficult to control in discharges, hence the ongoing work by CV-SALTS and the development of the Central Valley SNMP and the proposed Salt and Nitrate Control Program. Most wastewater, agricultural, and storm water discharges do not have processes in place to remove TDS, EC, chloride, sulfate, and sodium, though entities with wastewater treatment plants have made efforts to control salt loading to their facilities through limiting chemical usage (e.g., using ultraviolet disinfection rather than chlorine) or through service area controls (e.g., alternative municipal water supplies having lower salinity, water softener control/removal ordinances). Storm water and agricultural BMPs are typically concerned with reducing particulates in discharges, not salts. Requiring dischargers to continue reasonable, feasible and practicable efforts to implement current salinity management practices and/or source control efforts during the Phase I would essentially result in no change in discharge quality for these parameters, relative to existing conditions.

The continuation of discharges from wastewater, storm water, and agriculture to surface waters in the Central Valley Region at current levels is not anticipated to result in substantial degradation for salinity constituents relative to existing conditions. As described above, the quality of discharges would be regulated through modifications to WDRs to maintain existing salinity levels to the extent reasonable, feasible, and practicable. However, the proposed Basin Plan Amendments would extend the Salinity Variance Program by extending the existing sunset date of June 30, 2019 to 15 years after the date of adoption of the Salt Control Program. Facilities would therefore not necessarily need to meet water quality objectives for the protection of beneficial uses,

provided that they met the stringent criteria for granting a water quality variance. In addition, the proposed Salinity Variance Revisions would extend application of the existing Salinity Variance Program to include salinity water quality objectives related to the MUN beneficial use in addition to the AGR beneficial use. Though the Salt Control Program will likely have the indirect effect of allowing limited surface water degradation to occur, water quality degradation would be minimized through the application of variance criteria. Therefore, the impact to surface water quality degradation as result of implementation of Phase I of the Salinity Management Strategy would be expected to be **less than significant**.

For groundwater, water quality degradation with regard to salinity constituents is not anticipated in relation to storm water discharges, as storm water is a result of precipitation, which is generally not a high salinity source. However, wastewater and agricultural discharges have the potential to have high salinity levels relative to receiving waters. In groundwater basins or portions of basins where levels of salinity constituents are near or above applicable objectives and the discharge levels are above groundwater levels, there is the potential for water quality degradation to occur, and this degradation may result in groundwater concentrations being increased above applicable objectives, or result in groundwater quality that is already exceeding objectives being further degraded. Furthermore, although salinity offsets authorized under the Offsets Policy would result in a net benefit to water quality, salinity offsets will still result in degradation (including potential exceedances of water quality objectives) in localized areas. Over the Phase I of the Salt Control Program, this degradation could be substantial in some areas of the Central Valley and thus, for the degradation scenarios described above, could result in an adverse effect to MUN and AGR uses. This is considered a **potentially significant** impact with regard to water quality degradation in groundwater for salinity.

Lastly, the Proposed Project would establish the Drought and Conservation Policy, which would establish of interim salinity permit limits during emergencies when high quality water supplies diminish such as during droughts or through conservation and recycling – all of which are anticipated to increase as a result of climate change. The interim permit limits during statewide or local emergencies include interim effluent and/or groundwater/surface water limitations based on historic salinity load (with consideration given to reasonable increment of use or changes in source water salinity concentration). The interim limit will not exceed and EC concentration of 2,200 µS/cm as a 30-day running average. Though the limit may be established in terms of concentration or TDS load, concentration and loading limits shall not apply at the same time.

Interim salinity permit limits for permittees who have documented that conservation or recycling is causing increased salinity in their discharge may be based on one of the following:

- Limits that do not exceed the receiving water concentration, provided that there are no unreasonable impacts to downstream/downgradient water quality; or

- Limits that reflect those for emergency conditions: limitations based on historic salinity load with maximums based either on an EC concentration of 2,200 µS/cm as a 30-day running average or as a load.

Dischargers to groundwater who document long-term commitment (20+ years) to water conservation and/or water recycling efforts may be eligible to use a long-term (10+ year)

flow-weighted average to calculate compliance with effluent and or groundwater limitations.

Based on the above considerations, the Drought and Water Conservation Policy would have a **less-than-significant** impact to water quality degradation for salinity parameters.

Nitrate Control Program

The Nitrate Control Program will establish new permitting authorities that are designed to rectify nitrate pollution where it is reasonably feasible to do so. While the Nitrate Control Program's strategies are developed and implemented, adverse groundwater quality impacts will be mitigated through programs designed to provide drinking water to individuals and communities whose wells have been rendered unusable as a drinking water supply because of nitrate pollution.

The Nitrate Control Program differentiates between those individual dischargers that threaten to degrade groundwater in a significant manner or that are projected to occur in a heavily-impacted area (Categories 4 and 5) from those that don't threaten to cause degradation that would potentially impair beneficial uses (Categories 1, 2 and 3). For those dischargers that represent a negligible threat of degradation, the Nitrate Control Program sets a margin of safety by establishing triggers at 75% of the objective, further ensuring that present or probable future beneficial uses will be protected.

However, permittees that cannot meet the requirements of Categories 1, 2 or 3, or permittees participating in management zones that have little to no assimilative capacity, will likely continue to degrade groundwater. However, these permittees would need to obtain an exception, which is conditioned on the implementation of Alternative Compliance Projects under Path A and Management Zone Implementation Plans under Path B. This will have the effect of mitigating impacts through the development of long-term plans to achieve the goals of the SNMP. For example, a minimum requirement of a management zone implementation plan is identification of short (≤ 20 years) and long-term (≥ 20 years) projects and/or planning activities that will be implemented within the management zone, and in particular within prioritized areas (if such areas are identified in the implementation plan), to make progress towards aquifer restoration such that present or probable future beneficial uses are protected. Following the long-term implementation of the Nitrate Control Program, groundwater throughout Management Zones that have been established throughout the priority basis and groundwater in areas where Alternate Compliance Projects have been authorized is expected to meet the drinking water MCL or the highest quality water technically and economically achievable.

During the period in which the management zone is formed and the required proposals and plans are prepared and submitted, and the plans are implemented, there could be degradation of nitrate relative to existing conditions. If this degradation occurs in areas where groundwater nitrate is near or already above the 10 mg/L-N objective, this degradation would have the potential to adversely affect the MUN beneficial use. The duration of the degraded nitrate conditions would depend on the sources and amount of nitrate loading to the affected aquifer, and type of short-term and long-term project(s) implemented to reduce groundwater nitrate concentrations, but is estimated to be multiple years, if not decades, in some areas of substantial impairment.

On a basin/sub-basin volume-weighted average basis, which is the proposed management structure for controlling and restoring nitrate, an improvement in

groundwater quality is expected to improve relative to existing conditions. Consequently, based on the above discussion, the Nitrate Permitting Strategy could result in potentially significant impacts to water quality degradation in regard to nitrate in the coming years and potentially decades, but would be expected to ultimately improve nitrate concentrations within the Central Valley Region. Due to the fact that it is likely that implementation of the Nitrate Control Program will result in water quality degradation, at least in the coming decades, the impact with regard to water quality degradation would be **potentially significant**.

Secondary MCL Revisions

Secondary MCLs have two existing regulatory applications in the Central Valley Region:

- The State Water Resources Control Board's Division of Drinking Water regulates drinking water systems to ensure that the water delivered by these systems is, "pure, wholesome, and potable drinking water." (Health & Saf. Code, § 116270.) The Division is responsible for establishing regulatory standards necessary to protect the public welfare. Secondary MCLs may apply to any contaminant in drinking water that may adversely affect the odor or appearance of the water, cause a substantial number of persons served by the public water system to discontinue its use, or otherwise adversely affect the public welfare. (Health & Saf. Code, § 116275, subd. (d).) Secondary MCLs shall not be exceeded in the water supplied to the public by community water system. For drinking water suppliers, compliance with the Secondary MCLs is measured in the groundwater source or at distribution system entry points. Groundwater undergoes some natural filtration as that water moves through the vadose zone. Nearly all surface water sources require filtration of the drinking water prior to entering the distribution system. Therefore, in most cases, the water used to demonstrate compliance with the SMCLs has been filtered before the compliance samples are collected.

- The Central Valley Water Board regulates discharges of waste to protect beneficial uses in both surface waters and groundwaters. The Central Valley Water Board has incorporated by reference the Secondary MCLs into its Basin Plans as part of the Chemical Constituents water quality objective. When establishing permit limitations to protect the MUN beneficial use, the Board must ensure compliance with the Chemical Constituents water quality objective. In this way, the Secondary MCLs are used to interpret when the quality of water is sufficient for the protection of public welfare. When considered by the Central Valley Water Board, compliance with the Secondary MCLs is measured in the ambient surface or ground water, such as a river, or at the discharge point from a treatment facility prior to entering a water body. This means the Central Valley Water Board has historically implemented conservative practices when determining compliance with the Secondary MCLs for its regulatory programs when compared to the Division of Drinking Water's regulation of drinking water systems.

Implementing a conservative methodology to develop permit limits for Secondary MCLs has caused concerns by the Central Valley Water Board and the regulated community subject to the Board's requirements. The conservative approach may result in the need for wastewater dischargers to implement costly treatment or control measures that are not necessary to fully protect water quality and ensure safe drinking water supplies. The Salt and Nitrate Control Program proposes to incorporate guidance into the Basin Plans

to clarify how compliance with secondary MCLs will be determined by the Central Valley Water Board. These recommendations include:

Under Chapter 3 Water Quality Objectives: incorporate guidance from Title 22 for utilizing the applicable "Recommended", "Upper", or "Short Term" concentrations included in Table 64449-B; clarify consideration of natural background concentrations; and specify annual averaging for surface water and appropriate long-term averaging for groundwater.

Under Chapter 4 Implementation:

- Consider "Recommended" concentrations as goals and allow concentrations ranging to the "Upper" level if it is demonstrated that it is neither reasonable nor feasible to achieve lower levels. "Short Term" level may be authorized on a temporary basis consistent with Title 22 or with the Drought and Conservation Policy

- Clarify use of dissolved samples to measure compliance for aluminum, color, copper, iron, manganese, silver, turbidity and zinc in Table 64449-A until translators are developed to better represent filtration capabilities from water treatment facilities. Allot 10-years to complete studies for translators.

Secondary MCL revisions pertaining to TDS, EC, Chloride, and Sulfate

For TDS, EC, chloride, and sulfate, the secondary MCLs in Table 64449-B consist of three values: recommended, upper, and short-term. The Board currently requires that permittees that discharge salinity comply with water quality objectives specified in this table to protect designated MUN uses. The proposed Basin Plan Amendments incorporate language that would clarify the use of the recommended, upper and short-term values when issuing waste discharge permits, thereby acknowledging that there is a range of TDS, EC, chloride, and sulfate concentrations within which MUN uses are protected. Clarifying the Board's authority to establish effluent limitations or receiving water limits within these ranges is significant because salts are extremely difficult to control in discharges, especially during an extended drought or when water recycling and conservation practices are implemented. Most wastewater, agricultural, and storm water discharges do not have specific treatment processes in place to remove TDS, EC, chloride, and sulfate. Wastewater treatment plant owners and operators in the Central Valley have implemented actions to control salt loading to their facilities over approximately the last ten years, through limiting chemical usage (e.g., using ultraviolet disinfection rather than chlorine) or through service area controls (e.g., water softener control/removal ordinances) resulting from salinity minimization plans/pollution prevention plans, in compliance with NPDES permit provisions. Storm water and agricultural BMPs (e.g., sediment basins, filter strips) are typically concerned with reducing particulates in discharges, not salts, and implementation of these BMPs and resulting water quality are not expected to substantially change due to these clarifications of the secondary MCLs for EC, TDS, chloride, and sulfate, because regulatory requirements related to control of particulates (e.g., turbidity objectives, suspended sediment objectives) would be unchanged. In establishing permit limitations, the Board would continue to ensure that no pollution or nuisance will occur. Thus, the proposed SMCL revisions reflect the Board's current permitting approach for salinity constituents and would not cause a substantial degradation of water quality.

Secondary MCL revisions pertaining to aluminum, color, copper, iron, manganese, silver, turbidity and zinc

The Secondary MCL revisions recommends that for receiving waters that are not exempt from surface water treatment requirements (i.e. 40 CFR Part 141, Subparts H, P, T & W) and for groundwater, compliance with the Secondary MCLs for aluminum, copper, iron, manganese, silver, zinc, color and turbidity in Table 64449-A will be determined from samples that have been passed through a 1.5-micron filter to reduce filterable residue[1]. Metal constituents will then be analyzed using the acid-soluble procedure described in EPA Approved Methods[2], as appropriate, or by other methods approved by the Central Valley Water Board. The proposed alternative modifies the current practice of utilizing dissolved measurements of SMCL constituents when determining need for limitations to implement Secondary MCLs in Board-issued orders. Dissolved measurements require water samples to be filtered through a 0.45-micron filter prior to analysis[3]. A 0.45-micron filter may not represent the level of filtration utilized by water treatment facilities drawing from the source water (Figure 4–10). Filtering the sample will remove suspended solids that may contribute to turbidity and color in samples that may negatively impact analytical results for metal concentrations while better representing the dissolved solids that may pass through a water treatment plant's filtration system. The proposed amendments allow the Board to adjust the filter size where necessary to more accurately represent site-specific conditions based on scientific evidence submitted for their consideration and after consultation with Division of Drinking Water and public comment. The proposed amendment also clarifies that these proposed provisions apply solely to evaluate compliance with constituents identified with Secondary MCLs. The amendment does not affect or alter the methods used to evaluate compliance with other water quality objectives that have been established for those same constituents (e.g. as Primary MCLs, California Toxics Rule or National Toxic Rule constituents, or constituents with specific objectives listed in the Basin Plans).

- *Copper, Silver, and Zinc:* The proposed compliance approach (i.e., assessing compliance from a filtered water sample) is not expected to result in substantial water quality changes for these constituents in surface waters and groundwater relative to existing conditions. For copper, silver, and zinc, there are aquatic life criteria established in the California Toxics Rule that are more restrictive than the secondary MCLs, thus permits for surface water discharges from wastewater, agriculture, and storm water would continue to be required to comply with the more restrictive aquatic life criteria. As such, the quality of discharges to surface waters for these metals is not expected to change following adoption and implementation of the Secondary MCL revisions. For discharges to groundwater, this may result in a less restrictive compliance approach relative to existing conditions, but it will not likely result in a significant increased loading of these constituents because degradation will still be limited by the State and Federal Antidegradation Policies. However, groundwater quality, as affected by wastewater, storm water, and agricultural

[1] Filter size recommended in EPA Approved Methods 30 CFR Part 136 for Total Dissolved Solids and Total Suspended Solids and is used for removing suspended solids from a solid prior to analysis. Filtering the sample will remove suspended solids that may contribute to turbidity and color in samples that may negatively impact analytical results for metal concentrations while better representing the dissolved solids that may pass through a water treatment plant's filtration system.

[2] Currently EPA Approved Methods are 200.7 and 200.8 for metals, Method 180.1 for turbidity and SM 2120 F-2011 for color. EPA methods are periodically updated and future approved methods may be applicable.

[3] Federal Regulations 40 CFR Part 136, Appendix C, Definitions

discharges is expected to be largely unaffected, because the processes currently in place to control/treat discharges would be expected to remain in place with this proposed approach. Therefore, the Secondary MCL revisions would not result in substantial degradation for copper, silver, and zinc in surface waters or groundwater.

- *Aluminum, Iron, and Manganese:* Elevated levels of these metals are associated with particulates in surface waters, and the dissolved concentrations for these constituents are typically less than the secondary MCLs. As stated above, sediment control is a typical component of storm water and agricultural management plans and BMPs, and implementation of these BMPs is expected to be unchanged as a result of the Secondary MCL Policy, because regulatory requirements related to control of particulates (e.g., turbidity objectives, suspended sediment objectives) would be unchanged. Thus, concentrations of aluminum, iron, and manganese, which are associated with particulates, in agricultural and storm water discharges is not expected to substantially change relative to existing conditions due to implementation of the Secondary MCL revisions. For wastewater discharges, the proposed compliance approach (i.e., assessing compliance from a filtered water sample) is not expected to result in different discharge quality, because the discharge quality is a function of the treatment processes in place, which will continue to be utilized into the future unaffected by this process (treatment processes are modified in response to more stringent effluent quality requirements, not less stringent effluent quality requirements). The proposed compliance approach may affect the degree by municipal wastewater operators/owners to control industrial sources of aluminum, iron, and manganese, but this assumes that industrial discharges are a large source of aluminum, iron, and manganese and that these metals are largely in the particulate form, which is not necessarily the case in many service areas. Many wastewater service areas in the Central Valley have relatively little industry compared to domestic and commercial sources of wastewater. Further, the presence of elevated aluminum, manganese, and iron in surface waters is mostly related to particulates, as most data show dissolved concentrations to be below secondary MCLs (see Section 2, Environmental Setting). Thus, surface water quality is not expected to change substantially as a result of the proposed compliance approach. Similarly, groundwater quality, as affected by wastewater, storm water, and agricultural discharges is expected to be largely unaffected, as the processes currently in place to control/treat discharges would be expected to remain in place with this proposed approach. Therefore, the secondary MCL revisions would not result in substantial degradation for aluminum, iron, and manganese in surface waters or groundwater.

- *Turbidity:* Turbidity is a measure of the relative clarity of water. While there is a secondary MCL for turbidity of 5 Nephelometric Turbidity Units (NTU), there also are surface water quality objectives for turbidity in the Basin Plans that limit increases in turbidity based on ambient levels. Also, turbidity is usually controlled in wastewater discharges to surface water through operational specifications to ensure that adequate treatment is provided. The proposed approach to assessing compliance with the secondary MCL for turbidity (i.e., assessing compliance from a filtered water sample) would not modify how compliance is assessed for receiving water quality objectives or operational specifications. Thus, the proposed amendments would not result in substantial degradation for turbidity in surface waters or groundwater.

- *Color:* Color is of concern in drinking water at the point of consumption for aesthetic reasons and can be affected by a number of factors, including the presence of other constituents that have MCLs. In addition to the secondary MCL for color, there is a surface water quality objective in the Basin Plans that states, "Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses." The proposed compliance approach (i.e., assessing compliance from a filtered water sample) would not affect this objective. There is no water quality objective for color for groundwater in the Basin Plans. The color of discharges from wastewater facilities, storm water outfall, and agricultural drains is a result of treatment for actual constituents, not color itself. For the reasons described above, levels of constituents with secondary MCLs are not expected to be substantially different from existing conditions with the proposed compliance assessment approach. Because of this consideration, as well as the fact that the surface water quality objective for color would be unaffected, there would be no substantial degradation of water quality for color with implementation of the secondary MCL revisions.

Based on the above considerations, the secondary MCL revisions would have a **less-than-significant impact** to water quality degradation.

Exceptions Policy (Including impacts due to Boron)

The existing Salinity Exceptions Policy that only applies to TDS/EC, chloride, sulfate and sodium, prohibits the Central Valley Water Board from authorizing new exceptions or reauthorizing previously approved exceptions after June 30, 2019. This Salt and Nitrate Control Program recommends revising the existing Exceptions Policy by amending the Basin Plans to (a) add nitrate to the list of chemical constituents for which the Central Valley Water Board identifies a specific process to authorize an exception; (b) expand/revise conditions or authorization of an exception to reflect the requirements of the Salt and Nitrate Control Program (no exception needed if meeting Phase I Alternative Salinity Compliance and implementation of an approved alternate nitrate compliance project, respectively); (c) remove the existing sunset provision that prohibits the granting of exceptions beyond June 30, 2019; and (d) delete the current provision limiting the term of an exception to no more than 10 years and add a new provision stating that when authorizing an exception, the Central Valley Water Board shall generally not exceed a term of 10-years and may only exceed 50-years if management practices under the exception is resulting in significant, measurable and continuing improvements in water quality. Exception application provisions specific to boron are also included.

As defined by the proposed amendments, an exception would be applied in situations where the groundwater or a non-NPDES surface water discharge concentration of a salinity, nitrate or boron parameter exceeds the applicable water quality objective and there is no assimilative capacity. In cases where the discharge concentration also exceeds the water quality concentration, degradation would occur. Because the exception allows discharges and groundwater or receiving surface water to exceed water quality objectives for salinity, nitrate or boron, there would be the potential to adversely affect beneficial uses in some areas of the Central Valley, especially the AGR and MUN beneficial uses. This is considered a **potentially significant impact** during the period in which it occurs.

Where exceptions are sought in order to provide time to develop and approve a more appropriate water quality standard (uses and/or objectives), there must be a well-defined work plan (including a schedule of milestones) and a commitment by dischargers to provide the resources needed to complete the proposed process. Where existing water quality standards are unlikely to change, dischargers must explain how the proposed exception facilitates the larger long-term strategy designed to ultimately attain those standards while, in the interim, allocating available resources to address more urgent water quality priorities, where applicable.

Under Phase I of the Salt Control Program, permittees that are in compliance with the conditions for the Alternative Permitting Approach are in compliance with their salinity limits. Permittees that opt out of participating in the P&O Study by choosing the Conservative Permitting Approach will not be eligible for a salinity exception. Additional conditions for exceptions to water quality objectives for salinity under Phase II and Phase III of the Salt Control Program may be incorporated in the future.

As a condition of obtaining the exception for nitrate, permittees would be required to assure availability of an adequate supply of clean, safe, reliable, and affordable drinking water for those who have been adversely affected by the non-compliant discharge(s). The assurance must include a credible and realistic framework to construct/install a permanent long-term solution and an immediate commitment to make available temporary replacement water in the interim.

Exceptions specific to boron mirror the provisions required for salinity in the current Exception Program. Requirements include a Boron Reduction Study Work Plan or a boron-based watershed management plan. In addition, the granting of an exception for boron under this Program by the Central Valley Water Board is a discretionary action subject to the requirements of the California Environmental Quality Act. Thus, potential environmental impacts associated with the project will need to be considered before an exception will be granted. Permittees seeking an exception for boron will also be required to participate in the Phase I P&O study.

In summary, an exception would only be granted to a permittee or management zone to facilitate the long-term attainment of water quality standards or to provide time needed to develop and approve a more appropriate water quality standard. Thus, although implementation of the Exceptions Policy would allow water quality degradation to occur for a period of time, this policy would be applied in conjunction with other actions designed to ultimately address degraded water quality conditions in groundwater and applicable surface waters (e.g., in conjunction with the Salt and Nitrate Control Program) such that there would be no adverse effects to beneficial uses in the future. Consequently, based on the above discussion, the Exceptions Policy could result in **potentially significant impacts** to water quality degradation in regard to salinity, nitrate or boron in the coming years and potentially decades, but as a regulatory tool that would be used in conjunction with other Salt and Nitrate Control Program actions, would be expected to ultimately improve salt, nitrate and boron concentrations, relative to existing conditions such that the impact with regard to water quality degradation would be **less than significant**.

Because at least some potentially significant impacts are expected to occur under the Proposed Project, impacts to a) and f) are considered **potentially significant**.

b) The Proposed Project does not directly involve the construction of housing or other facilities that would rely on extraction of groundwater supplies, or would expand impervious area or otherwise cause interference of groundwater recharge. Therefore, the Proposed Project would have no direct effect on groundwater supplies.

As discussed above under "a," the Proposed Project is anticipated to indirectly result in the construction and operation of specific projects for salt and nitrate management. Of the projects described above under "a" that the Proposed Project may indirectly result in, only new community water systems may reduce local groundwater supplies by pumping and treating local groundwater supplies to levels where it could be used for municipal supply where it was not being used under existing conditions due to high levels of salts and/or nitrate. Nevertheless, any such new use of groundwater by communities due the Proposed Project would be expected to be done on a sustainable basis, and not result in adverse levels of groundwater depletion over time. The other types of salt and nitrate management projects that may indirectly result from the Proposed Project would either not affect groundwater supplies or would increase groundwater supplies.

Therefore, the Proposed Project would have a **less-than-significant impact** on groundwater supplies.

c,d,e) As discussed above under "a," the Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly result in land modifications that would substantially alter the existing drainage pattern of the site or area or create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. Consequently, the Proposed Project have no direct effect on the drainage pattern of a site or area, the generation of additional storm water runoff, or the capacity of existing or planned storm system.

As also described above under "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Depending on the community water system source water supply, there could be an effect on instream flows within a Central Valley Region water body or water bodies. Instream flow patterns could also be altered as a result of groundwater recharge basins that rely on diversion of flows from surface waters (e.g., diversion of Kings River flood waters for on-farm recharge). These projects could alter the hydrology of surface water and groundwater bodies. Construction of new facilities also could result in the drainage pattern of a site being altered. Insufficient information pertaining to the setting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on existing drainage pattern and runoff. Nevertheless, construction and operation of these projects for salt and nitrate management would undergo separate project-specific environmental review and permitting. Through these processes, proper siting of projects, implementation of appropriate impact avoidance measures, mitigation measures, and construction best management practices are expected to occur when these projects are constructed, which would both avoid and minimize the potential for adverse changes to site hydrology, drainage and runoff. Through these required processes, changes to site drainage patterns and runoff would be minimized and designed to avoid substantial erosion or siltation on- or off-site, flooding on- or off-site,

exceedance of existing stormwater system capacity, or substantially increase polluted runoff.

Therefore, the Proposed Project would have a **less-than-significant impact** to site or area drainage patterns, runoff volume and pollutant load, or existing or planned storm water drainage systems capacity.

g,h,i,j) As discussed above under "a," the Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly result in construction of housing or structures. Consequently, the Proposed Project would have no effect on the placement of housing or structures in a 100-year flood hazard area; the exposure of people or structures to a significant risk of loss, injury, or death involving flooding; or on the inundation of areas by seiche, tsunami, or mudflow.

As also described above under "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Insufficient information pertaining to the siting, size, and design of such projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of or risks to such projects from flooding or inundation of areas by seiche, tsunami, or mudflow. Nevertheless, construction and operation of these projects for salt and nitrate management would undergo separate project-specific environmental review and permitting. Through these processes, proper siting of projects, implementation of appropriate impact avoidance measures, mitigation measures, and construction best management practices are expected to occur when these projects are constructed, which would both avoid and minimize the potential for exposure of people or structures to a significant risk of loss, injury, or death involving flooding or on the inundation of areas by seiche, tsunami, or mudflow. Although some risk minimal would exist if structures or portions of structures associated with the Proposed Project are built within a 100-year flood hazard area or near the coast (e.g., brine line to San Francisco Bay), this risk is expected to be minimal and to be addressed consistent with current best engineering practices when the projects are designed, reviewed, permitted, and constructed.

Therefore, the Proposed Project would have **no impact** on the placement of housing in a 100-year flood hazard area, and a **less-than-significant impact** to the placement of structures within a 100-year flood area, exposure of people or structures to flooding or inundation by seiche, tsunami, or mudflow.

Land Use and Planning

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING. Would the Project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?	☐	☐	☒	☐

Discussion

The discussion below for Land Use and Planning describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly physically divide an established community.

Implementation Projects would not be expected to physically divide a community, because such projects would be expected to sited adjacent to or outside of established communities, in areas which there would be available land (e.g., agricultural lands), or otherwise situated in a manner that would not create a barrier to movement through a community (e.g., extended pipelines would be placed underground). Therefore, the Proposed Project would have **no impact** on physically dividing an established community.

b,c) As described above for “a”, the Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project would not directly conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan. A potential direct effect of the Proposed Project may be elevated nitrate in the interim while projects are being developed and implemented (see Section IX), which may preclude a local

groundwater aquifer from being used as a drinking water supply. Having a limited water supply may prevent land development (e.g., new housing) from occurring according to an adopted land use plan. However, a component of the Nitrate Permitting Strategy is the requirement for an Alternative Compliance Project proposal, which may include both interim actions (e.g., bottled water) in the short-term, permanent solutions (such as well-head treatment or alternative drinking water supplies) in the intermediate term, and efforts to re-attain the water quality objective (where feasible and practicable) over the long-term. Because provisions have been included in the Proposed Project policies and permitting strategies to provide for safe drinking water alternatives, the Proposed Project would not directly result in a conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

As described above for "a," implementation of the Proposed Project is expected to indirectly result in the need for surface and groundwater dischargers to construct specific projects for salt and nitrate management. However, it is expected that these projects would be compatible with land use plans, policies, and regulations, as well as with a Habitat Conservation Plan or Natural Community Conservation Plan. This is primarily due to the size, nature, and anticipated siting of these projects (primarily in agricultural and urban areas) and the fact that each project would be required to undergo separate, project-specific environmental review and permitting before it can be constructed and operated. Project refinement, development of impact avoidance and minimization measures, and mitigation, where warranted, would prevent conflict with provisions of adopted land use and conservation plans.

Therefore, the Proposed Project would result in a **less-than-significant impact** relative to conflicts with land use plans, policies, and regulations, and Habitat Conservation Plans and Natural Community Conservation Plans.

Mineral Resources

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES. Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

The discussion below for Mineral Resources describes direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a,b) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. As such, it does not involve mineral resources. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board that would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Consequently, the Proposed Project would not be expected to directly result in any adverse effects to mineral resources.

Implementation Projects not expected to result in the loss of availability of mineral resources of importance locally or to the state because the construction of the anticipated projects would not eliminate or prevent the extraction of underlying mineral resources. Moreover, separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate, as necessary, measures to avoid, reduce, or mitigate any identified significant environmental impacts.

The Proposed Project would, therefore, have **no impact** on the availability of mineral resources.

Noise

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII.NOISE. Would the Project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☒	☐
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within	☐	☐	☐	☒

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?				
f) For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

Discussion

The discussion below for Noise describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a,b,c,d) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. Therefore, the Proposed Project would have no direct adverse effects on the exposure of persons to noise levels in excess of standards, excessive ground-borne vibration or permanent increase in ambient noise levels above existing conditions.

Insufficient information pertaining to the setting, size, and design of Implementation Projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on air quality. Nevertheless, the use of heavy machinery in the construction of these projects could potentially, on a short-term basis, contribute to exposure of persons to noise levels in excess of standards and excessive ground-borne vibration. However, any such effects, should they occur, would be temporary in nature during construction. The effects of excessive noise from construction equipment would depend on the distance between the construction activities and the sensitive receptors (e.g., residential areas). The effects can be reduced through limiting the time period and days of the week during which construction activities can occur, prohibiting use of unmuffled equipment, and limiting idle time, and notifications to residents regarding work schedule. There is the potential for some projects to produce a permanent increase in ambient noise, but noise levels from such facilities would be from the running of equipment (e.g., pumps), thus, not resulting in a substantial increase in noise above ambient levels.

Therefore, the Proposed Project would result in a **less-than-significant impact** on the exposure of persons to noise levels in excess of standards, excessive ground-borne vibration and temporary and permanent increase in ambient noise levels above existing conditions.

e,f) As described above for "a," the Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. Therefore, the Proposed Project does not directly involve development of a project near or in the vicinity of an airport or airstrip. Also, as described above for "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. These projects would not be related to development near an airport or airstrip. As described above for "c," these projects would not be expected to result in substantial increases in noise levels. Therefore, the Proposed Project would have **no impact** on excessive noise levels within an airport land use plan area, within two miles of an airport, or in the vicinity of a private airstrip.

Population and Housing

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING. Would the Project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

Discussion

The discussion below for Population and Housing describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. As such, the Proposed Project does not directly involve the construction of new housing or businesses, and does not permit additional capacity to POTW dischargers. Therefore, the Proposed Project would not directly induce population growth in an area or displace substantial numbers of existing housing.

As groundwater quality is improved and provision of a safe water supply is assured for a community, this may encourage those residing in the community to stay long-term and others not residing in the community to move there. However, these projects involving community water systems or groundwater pump and treat systems are not expected to result in substantial population growth, as they would primarily be for the purpose of

providing water supplies to existing demands, with some provision for additional capacity, as appropriate for the specific site.

Therefore, the Proposed Project would have **a less-than-significant impact** on inducement of substantial population growth.

b) For the reasons described above for "a" the Proposed Project would not directly result in new construction, thus, would not result in the displacement of existing housing. Also, as described above for "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. These projects that may indirectly result from implementing the Proposed Project would be expected to be constructed on lands currently used for similar facilities or on lands not used for housing (e.g., agricultural lands, which is addressed in Section II). Therefore, the Proposed Project would have **no impact** on the displacement of substantial numbers of existing housing.

c) The availability of a safe and reliable drinking water supply is an important factor in the ability of people to reside in a particular area. Aspects of the Proposed Project (e.g., Nitrate Permitting Strategy, Exceptions Policy) would allow for some degradation of salts and nitrate in groundwater, as described above in Section IX. Drinking water MCLs for salts (e.g., EC, TDS, chloride, sulfate) address consumer acceptance levels and the drinking water MCL for nitrate is for protection of human health.

The elevated salts in groundwater used as drinking water supplies is generally of concern relative to the palatability of water (i.e., having a salty taste) and scaling on household fixtures, which can shorten the life of appliances. Because these are consumer-acceptability concerns and not human health concerns, degradation of groundwater for salts is not expected to result in the displacement of people from their existing homes.

Because elevated nitrate is a human health concern, areas where nitrate concentration in groundwater is close to or already exceed the drinking water MCL and would be further degraded, as would be allowed by the Proposed Project, has the potential to adversely affect the use of that water as a drinking water supply, relative to existing conditions. To situations where there is little to no assimilative capacity for nitrate and the discharge concentration is greater than the MCL, the Proposed Project requires the implementation of an Alternative Compliance Project for individual dischargers or an Early Action Plan for management zones. An Alternative Compliance Project must prioritize assurance that drinking water that meets drinking water standards is available to all drinking water users within the zone of influence where there are significant nitrate water quality concerns in groundwater (Guidelines for Developing Alternative Compliance Projects for Nitrate Discharges, Appendix H). Similarly, an Early Action Plan is to include specific actions and a schedule of implementation to address the immediate drinking water needs of those initially identified within the management zone boundary that are drinking groundwater that exceeds nitrate standards.

Thus, because the Proposed Project prioritizes providing a safe and reliable drinking water supply to communities that would be affected by potential future adverse nitrate conditions in groundwater, the Proposed Project would not directly result in the displacement of substantial numbers of people that would necessitate the construction of replacement housing elsewhere.

Also, as described above for "a," implementation of the Proposed Project is expected to result in the need for surface and groundwater dischargers to construct specific projects for salt and nitrate management. These projects are not expected to displace substantial numbers of existing people, because it is anticipated they would be located in areas of low population and small communities around which there would be available land.

Therefore, the Proposed Project would result in a **less-than-significant impact** on the displacement of substantial number of people.

Public Services

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES.				
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion

The discussion below for Public Services describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board that would affect the needs for fire protection, police protection, schools, parks, or other public facilities. Consequently, the Proposed Project would not be expected to directly result in any adverse effects to public services.

   Implementation Projects are not expected to result in the need for facilities changes for fire protection, police protection, schools, parks, or other public facilities, because the construction of the anticipated projects would be public works in nature, not new housing

that would increase public demand from such facilities. Moreover separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate, as necessary, measures to avoid, reduce, or mitigate for any identified significant environmental impacts.

The Proposed Project would, therefore, have **no impact** on fire protection, police protection, schools, parks, or other public facilities.

Recreation

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. RECREATION.				
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

The discussion below for Recreation describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a-b) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, parks, recreational facilities, or other facilities by the Central Valley Water Board that would increase the demand for recreational facilities. Consequently, the Proposed Project would not be expected to directly result in any adverse effects to neighborhood or regional parks or other recreational facilities.

Implementation Projects do not involve the construction of housing that would contribute to a substantial population increase in an area that would result in increased demand for parks or other recreational facilities. Moreover, separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate, as necessary, measures to avoid, reduce, or mitigate for any identified significant environmental impacts.

The Proposed Project would, therefore, have **no impact** on the use of or demand for recreational facilities.

Transportation/Traffic

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION / TRAFFIC. Would the Project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance of safety of such facilities?	☐	☐	☐	☒

Discussion

The discussion below for Transportation/Traffic describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a,b) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in

the form of new and modified regulatory policies, to improve surface water and groundwater quality within The Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board, nor does it affect regional traffic or traffic patterns or conflict with applicable congestion management programs such as level of service standards. Further, the Proposed Project does not permit POTWs additional discharge capacity that would induce growth nor would result in changes to agricultural operations, as related to transportation/traffic generation. As such, the Proposed Project would have no direct adverse effects on transportation/traffic.

Insufficient information pertaining to the setting, size, and design of Implementation Projects was available at the time this documentation was prepared to enable making a detailed, definitive impact assessment of the indirect effects of such projects on transportation/traffic. Nevertheless, traffic generation on local roadways in the vicinity of these projects may increase during construction of these projects, however, the increase in traffic would be temporary in nature, limited to the duration of the project. Traffic generation may also increase following completion of the project, related to personnel trips necessary to operate these new projects, however, such projects are not expected to be substantial traffic generators that would reduce the level of service of nearby roadways and intersections. Hence, the Proposed Project would not indirectly result in substantial, long-term adverse effects to air quality or sensitive receptors.

Therefore, the Proposed Project would have **a less-than-significant impact** relative to conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for performance of a circulation system; and relative to conflict with an applicable congestion management program.

c) For the reasons described above for “a,b” the Proposed Project would not directly result in adverse effect to air traffic. Also, as described above, implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Nevertheless, these projects that may indirectly result from implementing the Proposed Project would not be expected to conflict with air traffic patterns, because these projects would not be related to air travel. Therefore, the Proposed Project would have **no impact** on air traffic patterns.

d) For the reasons described above for “a,b” the Proposed Project would not directly result in hazards related to a transportation design feature or incompatible uses. Also, as described above, implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Nevertheless, these projects that may indirectly result from implementing the Proposed Project would not be expected to increase transportation hazards, because these projects would not be related to transportation design or otherwise result in generation of traffic from incompatible uses. Therefore, the Proposed Project would have **no impact** on hazards due to a design feature or incompatible uses.

e) For the reasons described above for “a,b” the Proposed Project would not directly result in inadequate emergency access. Also, as described above, implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Nevertheless, these projects that may indirectly result from implementing the Proposed Project would not be expected to result in inadequate emergency access, because these projects would not be related to transportation design or modifications to

circulation systems. Therefore, the Proposed Project would have **no impact** on emergency access.

f) For the reasons described above for "a,b" the Proposed Project would not directly result in a conflict with adopted policies, plans, or programs regarding public transit or bicycle or pedestrian facilities, or their safety performance. Also, as described above, implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Nevertheless, these projects that may indirectly result from implementing the Proposed Project would not be expected to result in adverse effects to public transit or bicycle or pedestrian facilities, because these projects would not be related to transportation design or modifications to circulation systems. Therefore, the Proposed Project would have **no impact** on public transit or bicycle or pedestrian facilities.

Utilities and Service Systems

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS. Would the Project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider, which serves or may serve the Project, that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

The discussion below for Utilities and Service Systems describes the direct and indirect impacts that would occur from adoption and implementation of the Proposed Project.

a) The Proposed Project is a set of amendments to the Basin Plans to facilitate implementation of innovative salt, nitrate, and secondary MCL management strategies, in the form of new and modified regulatory policies, to improve surface water and groundwater quality within the Central Valley Region. As a regulatory action, the Proposed Project itself would not cause exceedance of wastewater treatment requirements of the Central Valley Water Board. Rather, the Proposed Project is an action of the Central Valley Water Board to establish new and revised policies for the regulation of point source discharges to surface waters and groundwater within the Central Valley Region. The Proposed Project does not directly involve the construction of new buildings, services, or other facilities by the Central Valley Water Board. Therefore, the Proposed Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

   Implementation Projects would not be expected to exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, because they would be implemented for the purpose of compliance of wastewater treatment requirements.

   Therefore, the Proposed Project would have **no impact** exceedance of wastewater treatment requirements of the applicable Regional Water Quality Control Board.

b,c) As described above for "a", the Proposed Project itself does not directly involve the construction of new buildings, services, or other facilities and, thus, would not directly result in new water or wastewater treatment, or storm water drainage needs. Also, as described above for "a," implementation of the Proposed Project is expected to indirectly result in the need for specific projects for salt and nitrate management. Some of these projects may be water or wastewater treatment, or storm water management projects. Construction of such projects may involve temporary environmental effects to other resource categories, as discussed for other sections within this checklist (e.g., air quality, transportation/traffic). However, the construction of such projects would generally be for improvement in the environmental condition, and the environmental effects that would occur during construction would be temporary in nature. Therefore, the Proposed Project would have **a less-than-significant impact** with respect to the construction of new or expanded water treatment, wastewater treatment, and storm water drainage facilities.

d,e,f,g) As described above for "a," as a regulatory action, the Proposed Project does not directly or indirectly involve construction of new housing or other buildings that would require appreciable demand for water, wastewater, or solid waste service. Projects undertaken indirectly as a result of the Proposed Project would be for the purpose of improving water and wastewater treatment conditions. Therefore, the Proposed Project would have **no impact** on the need for water supplies, wastewater treatment capacity, solid waste disposal needs, or compliance with statutes and regulations related to solid waste.

Mandatory Findings of Significance

ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the Project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☒	☐	☐	☐
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion

a) As discussed in Section IV, Biological Resources, with the Proposed Project, there would be no change to the biological resources-related beneficial use designations (e.g., WARM, COLD, WILD, BIOL, RARE, MIGR, SPWN) or associated water quality objectives, or implementation programs related to these beneficial uses or objectives. Further, the Proposed Project does not directly involve the construction of new buildings or other facilities. Thus, the Proposed Project would have **no direct impact** on the quality or quantity of habitat for any fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels; a plant or animal community; or a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. However, Implementation Projects may result in altered instream flow patterns (e.g., on-farm recharge projects) or new discharges to surface waters (e.g., brine line discharges) may result in indirect impacts to biological resources. Because separate project-specific environmental review would be performed prior to project construction and operation to identify project-specific environmental impacts and to incorporate any necessary measures to avoid, reduce, or mitigate for any identified significant environmental impacts, no impact determination is made.

b) The Environmental Checklist analysis (Sections I through XVII) concluded that the Proposed Project would have no direct impacts to aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems. As such, the Proposed Project would not directly contribute to a cumulative impact to these resource categories.

Implementation of the Proposed Project is expected to indirectly result in the need for surface and groundwater dischargers to construct specific projects for salt and nitrate management to achieve compliance with WDRs or other provisions that may result from the Board's implementation of the Proposed Project. These Implementation Projects could indirectly cause impacts at the local level from construction of the projects/facilities to air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology, noise, and transportation and traffic. However, the construction activities indirectly resulting from the Proposed Project would not contribute to any long-term adverse cumulative condition to these resources, because the construction activities would be temporary in nature.

Operation of the projects that would indirectly occur from the Proposed Project could result in indirect less-than-significant and potentially significant impacts to aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology, land use and planning, noise, population and housing, transportation and traffic, and utilities and service systems. There would be no indirect impacts to mineral resources, public services, and recreation. The specific projects and locations of the projects have not been defined to a level that allows for identifying whether the projects would occur in areas with cumulatively adverse conditions for aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology, land use and planning, noise, population and housing, transportation and traffic, and utilities and service systems. This assessment does not speculate on whether the Proposed Project would indirectly contribute considerably to a cumulative condition for these resources, because the location and scope of the future projects is unspecified or uncertain. However, decision makers should recognize that a project may be located in a non-attainment area for air quality or where cumulative traffic conditions are forecasted to be adverse, for example, and may contribute considerably to an adverse cumulative condition for one or more resources. Because separate project-specific environmental review would be performed prior to the construction and operation of specific projects for salt and nitrate management to identify project-specific environmental impacts and to incorporate measures to avoid, reduce, or mitigate any identified significant environmental impacts to the extent feasible, and because parties other than the State of California may serve as the project proponents and thus be responsible for mitigation measures, should they be necessary, no mitigation measures are proposed here.

The Environmental Checklist analysis concluded that the Proposed Project impacts to water quality degradation would be "no impact," "less than significant," or "potentially significant," depending on the particular Salt and Nitrate Control Program strategy, policy, or guidance document considered (see Section IX). The constituents of concern to water quality degradation with the Proposed Project include salts (EC, TDS, chloride, sulfate and sodium), nitrate, and additional parameters with secondary MCLs (aluminum,

color, copper, iron, manganese, silver, turbidity, and zinc). Thus, this cumulative assessment is focused on cumulative water quality conditions for these constituents of concern in surface waters and groundwaters within the Central Valley Region.

Cumulative Surface Water Quality Conditions

Past and present projects or actions affecting surface water bodies within the Central Valley Region have resulted in the existing water quality conditions for these water bodies. Aside from the Proposed Project, reasonably foreseeable future actions that could affect surface water quality for the constituents of concern to this assessment in the Central Valley Region include the Lower San Joaquin River alt and boron control program, ILRP, storm water management programs, continued implementation of the NPDES program, CVP and SWP operations in compliance with regulatory requirements, and California Water Action Plan. The salt and boron TMDL, ILRP, and storm water management programs are all aimed at making improvements to water quality in the Central Valley Region. The California Water Plan lays out actions to improve water management in the state and CVP and SWP operations in compliance with regulatory requirements including compliance with Bay-Delta WQCP objectives for the salinity parameters EC and chloride.

Salinity Parameters

Salinity (as measured by EC and/or TDS) conditions within surface waters of the Central Valley Region are variable, with some areas of the region having concentrations of these constituents that adversely affect the ability to use the water for AGR and/or MUN purposes. Portions of the Sacramento, San Joaquin River and Delta hydrologic regions have water bodies on the state's CWA section 303(d) list of impaired water bodies due to salinity, EC, and/or TDS relative to the protection of AGR and MUN beneficial uses. In the future cumulative condition, the concentrations of salts in surface waters of the Central Valley Region are not expected to be substantially worse and, in fact, are expected to remain at similar levels or improve somewhat, relative to existing conditions in many water bodies, due to implementation of the Central Valley Salt and Nitrate Control Program and other Central Valley Water Board actions, such as development and implementation of TMDLs for impaired water bodies. In the future, through implementation of the Salt and Nitrate Control Program and TMDLs, dischargers in the Central Valley Region will have implemented treatment and control measures and projects to reduce loading of salts to surface waters. A component of the proposed amendments is the Salinity Variance Policy, which proposes to amend the existing Salinity Variance Program to allow the authorization of variances up to 15 years following the effective date of the Basin Plan amendments that revise the program, and extend application of variances to salinity parameters for protection of the MUN and AGR beneficial uses. During this period, municipal wastewater dischargers could be granted variances from meeting WQBELs for salinity constituents, provided that these dischargers are their discharge situation is similar or comparable to the case studies evaluated for the current Salinity Variance Program. An additional condition for obtaining the variance is that the discharger would participate in the Salinity Prioritization and Optimization Study. Modeling of the effects of granting variances to specific municipal wastewater discharges concluded that the effects on ambient salinity levels both near the point of discharge and at downstream locations would be imperceptible (Central Valley Water Board, 2014). Further, these variances would be limited to the period during which the Salinity Management Strategy is implemented. Consequently,

implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative condition with respect to salinity parameters.

Nitrate

Within surface waters of the Sacramento River, Tulare Lake, and Delta hydrologic regions, nitrate concentrations are not impacted under existing conditions, relative to protection of MUN beneficial uses, with concentrations falling below the primary drinking water MCL of 10 mg/L-N (see Section 2, Environmental Setting). No beneficial uses, other than the MUN beneficial use, have numeric objectives or MCLs established for nitrate. Nitrate concentrations are variable across the San Joaquin River Hydrologic Region. Median concentrations in tributaries and the San Joaquin River are below 10 mg/L-N. Mud Slough and Salt Slough have historical concentrations above the 10 mg/L-N (Section 2, Environmental Setting); however, MUN is not a designated beneficial use of these water bodies. Within primary tributaries that are direct source waters for drinking water supplies (e.g., Merced River, Cosumnes River, Tuolumne River, Stanislaus River, San Joaquin River), nitrate concentrations are below 10 mg/L-N based on recent historical concentrations (Larry Walker Associates, 2016b).

The future cumulative condition assumes implementation of the Central Valley Salt and Nitrate Control Program, as well as continued implementation of other regulatory programs, including NPDES program and ILRP, to control discharges relative to applicable water quality objectives and protection of beneficial uses. Therefore, future surface water nitrate conditions within the Central Valley Region are expected to be at similar levels, or possibly be improved, relative to existing conditions. Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative condition with respect to nitrate.

Additional Secondary MCL Parameters

Additional secondary MCL parameters include aluminum, copper, iron, manganese, silver, zinc, color, and turbidity. There are no CWA section 303(d) listings for these constituents due to impairment of the MUN beneficial use, with the exception of two ephemeral creeks in the foothills above Sacramento for aluminum, iron, and manganese. Total concentrations of aluminum, iron, and manganese have been frequently measured above the respective secondary MCL levels. Elevated levels of these metals are associated with particulates (i.e., suspended sediments) in surface waters and the dissolved concentrations for these constituents are typically less than the secondary MCLs and levels of these parameters are not identified as being of concern in watershed sanitary surveys (Larry Walker Associates, 2016b). Color is a parameter typically not evaluated on drinking water, thus, data to characterize surface water conditions in the Central Valley Region is not available for this assessment; however, color is generally not recognized as a parameter of concern. All surface water bodies within the Central Valley Region have variable turbidity and high turbidity in surface waters does not preclude their use as a drinking water supply.

The future cumulative condition assumes implementation of the Central Valley Salt and Nitrate Control Program, as well as continued implementation of other regulatory programs, including the NPDES program and ILRP, to control discharges relative to applicable water quality objectives and protection of beneficial uses. The secondary MCL revisions, to be implemented as part of the Salt and Nitrate Control Program, would

clarify how secondary MCL-related water quality objectives for aluminum, copper, iron, manganese, silver, zinc, color and turbidity would be implemented in WDRs for surface water discharges. As discussed for the secondary MCL revisions in Section IX, for copper, silver, and zinc there are more stringent aquatic life criteria that apply to surface waters, therefore, the limitations in WDRs for these metals would be unaffected by the secondary MCL revisions. Also, as discussed in Section IX, turbidity and color water quality objectives would be unchanged by the secondary MCL revisions, thus, implementation of the secondary MCL revisions is not expected to result in substantial cumulative increases in turbidity or color relative to existing conditions. Aluminum, iron, and manganese are associated with particulates, and because objectives related to the control of particulates (e.g., turbidity and suspended sediment objectives) would be unchanged, the SMCL guidance is not expected to result in substantial cumulative increases in these metals concentrations in surface waters as they relate to agricultural and storm water discharges (see Section IX). Similarly, increases in aluminum, iron, and manganese concentrations in surface water as related to municipal wastewater discharges are not expected to result in substantial cumulative increases in these metals, because the discharge quality is a function of the treatment processes in place, which will continue to be utilized into the future unaffected by this process. Therefore, future aluminum, copper, iron, manganese, silver, zinc, color, and turbidity conditions within Central Valley surface waters are expected to remain at similar levels to those that occur under existing conditions.

Construction of projects and facilities in the future to achieve the control program goals could contribute suspended sediments to surface waters near the construction sites, while construction is occurring, which could load additional aluminum, iron, manganese, other metals, color, and turbidity to receiving waters. However, construction BMPs would be implemented to minimize the input of suspended sediments to surface waters from construction projects associated with the Salt and Nitrate Control Program, and any such effects would be temporary in nature and would cease upon construction ceasing and the site soils being permanently stabilized. Because construction BMPs would be implemented with any construction project associated with the Salt and Nitrate Control Program and because any sediment inputs to surface waters would be temporary in nature, such effects would not contribute considerably to the future cumulative condition for the secondary MCL parameters of aluminum, copper, iron, manganese, silver, zinc, color, and turbidity.

Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative conditions with respect to aluminum, copper, iron, manganese, silver, zinc, color, or turbidity conditions.

Cumulative Groundwater Quality Conditions

Salinity Parameters

Salinity (as measured by EC and/or TDS) conditions within groundwaters of the Central Valley Region are variable, with some areas of the region having concentrations of these constituents that adversely affect the ability to use the water for AGR and/or MUN purposes (see Section 2, Environmental Setting). Hence, in some basins or sub-basins, salts have impacted beneficial uses in some groundwaters under existing conditions.

In the future, the concentrations of salts in the groundwaters of the Central Valley Region are expected to be at similar levels or be improved, relative to existing conditions, largely due to implementation of the Central Valley Salt and Nitrate Control Program. In the future cumulative condition, through implementation of the Salt and Nitrate Control Program, dischargers in the Central Valley Region will have implemented treatment and control measures and projects to reduce loading of salts to groundwaters. There may be localized areas within the region where salts may still be above levels necessary for protection of AGR and MUN uses and stabilized at levels similar to those under existing conditions or at future levels. Finally, there may be localized areas within the region where groundwater salt degradation continues to occur into the future, and remediation back to existing conditions is not feasible. This may occur, for example, where an offset project has been used to address degradation. However, on a basin/sub-basin volume-weighted average basis, which is the proposed management structure for controlling and restoring salt, an improvement in groundwater quality is expected under the future cumulative condition from implementing the Proposed Project, relative to existing conditions. Consequently, implementation of the Proposed Project is not expected to have a considerable contribution to any adverse cumulative conditions with respect to salt conditions at the basin or sub-basin level; rather, the Proposed Project is expected to have a beneficial impact on the future cumulative salt conditions at the basin and sub-basin level. However, because the Proposed Project would allow localized areas of groundwater basins/sub-basins that are near or over the applicable water quality objective to be further degraded in the future, and because it will not be feasible to remediate all such localized areas of groundwater back to existing conditions or conditions better than existing conditions, the Proposed Project would contribute considerably to adverse future cumulative conditions of salts in some localized areas of basins/sub-basins within the Central Valley. This is considered to be a **potentially significant cumulative impact**. Because there is the potential for the degraded water quality conditions to remain over the long-term, this impact is considered potentially significant and unavoidable.

Nitrate

Nitrate conditions within groundwaters of the Central Valley Region are variable, with some areas of the region having concentrations of these constituents that adversely affect the ability to use the water for MUN purposes (see Section 2, Environmental Setting). Hence, groundwater beneficial uses are considered to be impacted by nitrates in some basins or sub-basins under existing conditions.

In the future cumulative condition, the concentrations of nitrate in the groundwaters of the Central Valley Region are expected to be at similar levels or be improved, relative to existing conditions, largely due to implementation of the Central Valley Salt and Nitrate Control Program. In the future cumulative condition, through implementation of the Salt and Nitrate Control Program, dischargers in the Central Valley Region will have implemented treatment and control measures and projects to reduce loading of nitrate to groundwaters. There may be localized areas within the region where nitrate may still be above levels necessary for protection of MUN uses and stabilized at levels similar to those under existing conditions or at future levels. Finally, there may be localized areas within the region where groundwater nitrate degradation continues to occur into the future, and remediation back to existing conditions is not feasible. This may occur, for example, where an offset project has been used to address degradation. However, on a basin/sub-basin volume-weighted average basis, which is the proposed management

structure for controlling and restoring nitrate, an improvement in groundwater quality is expected under the future cumulative condition from implementing the Proposed Project, relative to existing conditions. Consequently, implementation of the Proposed Project is not expected to have a considerable contribution to any adverse cumulative conditions with respect to nitrate conditions at the basin or sub-basin level; rather, the Proposed Project is expected to have a beneficial impact on the future cumulative nitrate conditions at the basin and sub-basin level. However, because the Proposed Project would allow localized areas of groundwater basins/sub-basins that are near or over the applicable water quality objective to be further degraded in the future, and because it will not be feasible to remediate all such localized areas of groundwater back to existing conditions or conditions better than existing conditions, the Proposed Project would contribute considerably to adverse future cumulative conditions of nitrate in some localized areas of basins/sub-basins within the Central Valley. This is considered to be a **potentially significant cumulative impact**. Because there is the potential for the degraded water quality conditions to remain over the long-term, this impact is considered potentially significant and unavoidable.

Additional Secondary MCL Parameters

Groundwater conditions for the additional secondary MCL parameters – aluminum, copper, iron, manganese, silver, zinc, color, and turbidity – are considered to not be impaired in the Central Valley Region under existing conditions. While there are localized areas where concentrations of some of these parameters have been measured above secondary MCLs, on a region-wide basis, the quality relative to these parameters, which address consumer acceptance (i.e., non-health) concerns, is considered generally suitable for MUN and AGR uses (California Department of Water Resources, 2003). The trace metals of concern relative to secondary MCLs are natural elements and their presence in groundwater is largely a function of the hydrogeological conditions of the aquifers in the region. Similarly, turbidity in groundwater is caused by natural factors and typically less than 1 NTU (State Water Board, 2004). Color of groundwater is affected by the presence of other constituents that have MCLs that may be present. The natural hydrogeological processes that are occurring under existing conditions that contribute to the existing levels of trace metals, color and turbidity also would occur for the future cumulative condition. Therefore, future cumulative conditions for these parameters within the groundwaters of the Central Valley Region are expected to be similar to existing conditions. Consequently, implementation of the Proposed Project would not have a considerable contribution to any adverse cumulative groundwater conditions with respect to the secondary MCL parameters of aluminum, copper, iron, manganese, silver, zinc, color, and turbidity.

c) For salts and nitrate, the Proposed Project would put policies, permitting and management strategies, and guidance in place to ensure that a safe, reliable drinking water supply is available to residents of the Central Valley Region. The Salt and Nitrate Control Program implementation policies and management strategies are directed at regulation of salt and nitrate discharges to restore beneficial use protection, including drinking water uses, where reasonable and feasible and minimizing or preventing further degradation of groundwater that are currently meeting water quality objectives so that they do not become impaired. As described in Section IX, Hydrology and Water Quality, the Proposed Project, there may be near-term degradation of salts and nitrate that could result in an adverse effect to MUN beneficial uses. To address near-term degradation of nitrate, which is a human health concern that could have an adverse effect on MUN

beneficial uses, the Salt and Nitrate Control Program policies require interim actions (e.g., bottled water) in the short-term, permanent solutions (such as well-head treatment or alternative drinking water supplies) in the intermediate term, and efforts to re-attain the water quality objective (where feasible and practicable) over the long-term to protect the MUN beneficial uses. Therefore, the Proposed Project would have a **less-than-significant impact** regarding environmental effects which could cause substantial adverse effects on human beings, either directly or indirectly.

References

Full text citation for the references used in Appendix K can be found in Section 9, References in the Final Staff Report.

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APPENDIX L

CV-SALTS Process and Public Participation

CV-SALTS (Central Valley Salinity Alternatives for Long-term Sustainability) is a collaborative stakeholder driven effort that was initiated in 2006 to develop a vision and plan for managing salts and nitrates throughout the Central Valley Region in a comprehensive and sustainable manner.[1] CV-SALTS includes a broad coalition of representatives from agriculture, cities, industry, state and federal regulatory agencies, Environmental Justice advocates on behalf of disadvantaged communities and populations, and the general public.

CV- SALTS includes support from the Central Valley Salinity Coalition (CVSC), a non-profit organization formed in July 2008 to organize, facilitate and fund efforts needed for the efficient management of salinity in the Central Valley. The CVSC entered into a Memorandum of Agreement with the State Water Board and the Central Valley Water Board to formalize their commitment to CV-SALTS. The CVSC is a California member benefit 501 C-6 Corporation (association). **Table L-1** provides the membership of the CVSC as of December 2016.

Table L-1. Central Valley Salinity Coalition Membership (December 2016)	
• California Association of Sanitation Districts • California Cotton Growers and Ginners • California League of Food Processors • California Resources Corporation • California Rice Commission • Central Valley Clean Water Association • City of Davis • City of Fresno • City of Manteca • City of Modesto • City of Stockton • City of Tracy • City of Vacaville • Dairy CARES	• East San Joaquin Water Quality Coalition • Northern California Water Association • Pacific Water Quality Association • Sacramento Regional County Sanitation District • San Joaquin Tributaries Authority • San Joaquin Valley Drainage Authority • South San Joaquin Valley Water Quality Coalition • Stockton East Water District • Tulare Lake Basin Water Storage District • Tulare Lake Drainage District • Valley Water Management Company • Western Plant Health Association • Westlands Water District • Wine Institute

CV-SALTS has been funded through a combination of State Water Board Cleanup & Abatement (CAA) funds and matching funds from the CVSC. The first allocation of CAA funds by the State Water Board was for $1,200,000 for the multi-year development of a multi-component basin wide SNMP. The State Water Board authorized an additional $3,800,000 in 2010 for continued work on the developing SNMP. The provided funding was matched with financial and in-kind contributions by CV-SALTS stakeholders as documented through annual progress reports to the State Water Board.

The sections below describe key elements of the CV-SALTS organizational structure and stakeholder process. Since its inception CV-SALTS has maintained an active website (www.cvsalinity.org), which serves as a repository for CV-SALTS information ranging from meeting agendas and notes to technical work products and related technical information.

Organization Structure

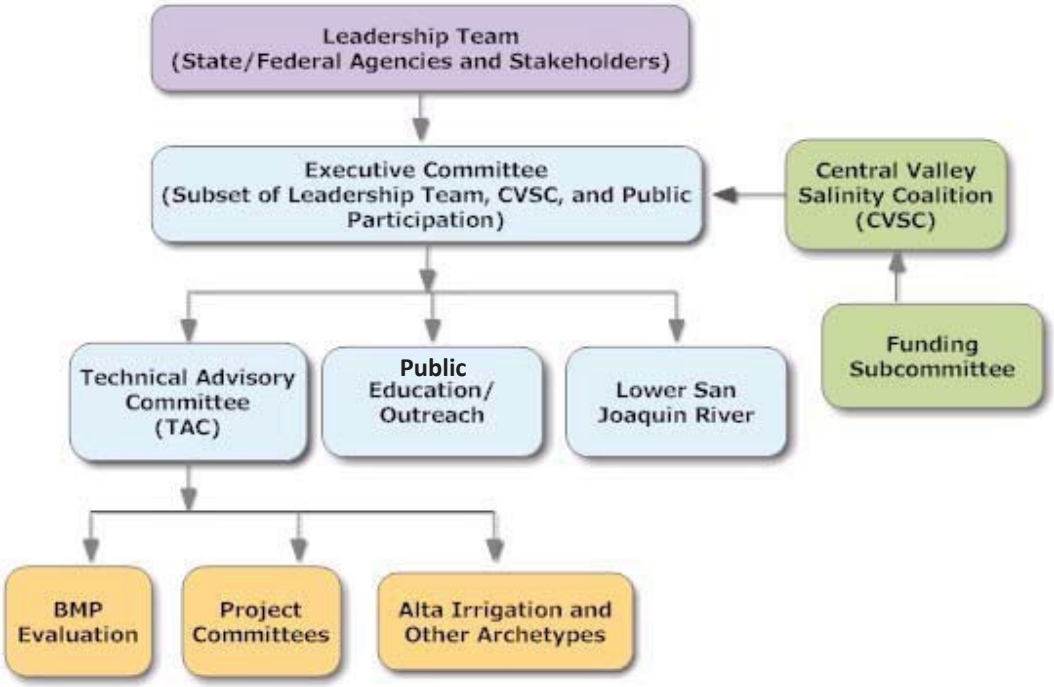
The CV-SALTS organizational structure consists of the Leadership Team, the Executive Committee, the CVSC, and several subcommittees that provide specific technical support (**Figure L-1**). The ***Leadership Team*** was critical in the initiation of the CV-SALTS process and consisted of 83 members including State Departments, Federal Agencies, Cities, Counties and Associations related to water and agriculture. In the formation process and at various times the leadership group met and included the US EPA, US Bureau of Reclamation, US Department of Agriculture Natural Resources Conservation Service, US Geological Survey and US Fish and Wildlife Serve and other federal partners as well as the State Departments of Water Resources, Food and Agriculture, Public Health and the State and Regional Water Boards. A broad group of stakeholders and public representatives were also represented at the initiation of CV-SALTS. Several of the various entities represented in the Leadership Team, became part of the CV-SALTS Executive Committee.

The ***Executive Committee*** is made up of 30 members: 6 committee chairs, 6 representing non-governmental organizations, federal and state agencies and 18 members of the CVSC. The Executive Committee provides oversight of all other committees in CV-SALTS and approves all final decisions and actions. The Executive Committee has met approximately twice monthly since it was developed. All meetings were open to the public and non- members were invited to participate and be involved in the discussions. With over **140** meetings, these meetings represented thousands of hours of stakeholder and member participation in the monthly meetings:

- *Executive Committee Policy Meetings*: The committee has held regular face-to-face, public meetings in Sacramento, California where the salt and nitrate policy and management- related elements of the SNMP were discussed and developed collaboratively if not always by consensus.

- *Executive Committee Administration Meetings*: The committee has held regular public teleconferences to discuss CV-SALTS process-related items, including selection of contractors to complete work required to support development of the SNMP, management of authorized contracts, evaluation of progress of ongoing project work, and implementation of committee procedures.

Figure L-1. CV-SALTS Organizational Structure



All Executive Committee meetings have been held in compliance with the Bagley-Keene Open Meeting Act. All meeting agendas, meeting notes and supporting materials are available to CV-SALTS participants and the public at: https://www.cvsalinity.org/docs/agendas-and-notes.html. Executive Committee meetings have been broadly attended by representatives of the following groups:

- Ag Coalitions and Ag Industry Representatives
- Ag Commodity Groups
- Dairy Cares
- Environmental Justice Community
- Federal Agencies (USBR)
- Food Processor Industry
- Municipalities
  - City of Davis
  - City of Fresno
  - City of Stockton
  - City of Tracy
  - City of Vacaville
- Oil and Gas Industry
- POTW Industry
- Sanitation Districts
- State Agencies (CDFA, CVWB, DWR and SWRCB)
- Water Districts
- Water Purveyors

The Executive Committee is supported by a variety of subcommittees that provide key support where needed to facilitate the development and implementation of the SNMP. All subcommittee meetings are held in compliance with the Bagley-Keene Open Meeting Act; meeting agendas, notes and supporting materials are available at www.cvsalinity.org. Key CV-

SALTS subcommittees include:

- The ***Technical Advisory Committee*** (TAC) is an all-volunteer committee comprised of approximately 60 to 70 stakeholders with varying interests and expertise in the technical issues associated with salt and nitrate management in the Central Valley, including representatives from the University of California and other educational institutions. The TAC meets periodically via teleconference or during face-to-face meetings in the Sacramento area to provide oversight and input on specific CV-SALTS technical issues and ongoing studies. The TAC has conducted over **50** meetings.

- The ***Public Education and Outreach Committee*** (PEOC), comprised of approximately 26 stakeholders, is responsible for preparing materials to facilitate the understanding of salt and nitrate concerns in the Central Valley and implementation of the Salt and Nitrate Control Program. The committee has been developing materials to educate dischargers and the public throughout the Central Valley Region. The PEOC has held over **45** meetings with stakeholder representatives bringing developed material to their constituents in local meetings.

- The ***Lower San Joaquin River Committee*** (LSJRC) was instrumental in the development of proposed water salinity quality objectives in Reach 83 of the Lower San Joaquin River (mouth of the Merced River to Vernalis). The outcome of this effort was a Basin Plan amendment that was adopted by the Central Valley Water Board in June 2017 (Resolution R5-2017-0088) and approved by the State Water Board in January 2018 (Resolution No. 2018-0002). The amendment identified a methodology to determine appropriate salinity levels to protect irrigated agriculture and also set interim salinity limits for extended dry period. The LSJRC conducted over **66** meetings with representatives from both the CV-SALTS Executive Committee as well as local growers, wetland managers, water agencies and reclamation districts.

- ***Project Committees*** are established on an ad hoc basis to provide stakeholder review and oversight on authorized technical projects. These committees interact closely with the contractors working on projects to ensure that the deliverables support the technical needs of CV-SALTS. Project Committees oversaw the White Papers developed on salinity impacts to beneficial uses as well as the studies on salt and nitrate management measures. Various Project Committees conducted over **52** meetings.

Completion of Technical Studies and Regulatory Evaluations

From its establishment through 2016, CV-SALTS completed numerous technical studies and regulatory evaluations to provide the foundation for the SNMP. This work covered a range of technical and regulatory needs including:

- *Conceptual Model Development* - Model development and related studies provided a technical understanding of salt, nitrate and water conditions in Central Valley groundwater basins/sub-basins.

- *Data Development* - GIS and water quality databases established for use in various projects to support policy development.

- *Beneficial Use Designation Studies* - Development of archetypes for designation

or de-designation of MUN and AGR uses in the Central Valley Region.

- *Water Quality Objective Reviews* - Evaluation of the basis for establishment of water quality objectives for salinity to protect AGR, MUN and Aquatic Life Uses.

- *Implementation Planning* - Projects to develop and evaluate management strategies for salinity and nitrate in the Central Valley.

Deliverables from projects within each of the above categories may be found at: http://www.cvsalinity.org/index.php/committees/technical-advisory.html.

CEQA Scoping Meetings

To facilitate potential changes to the Basin Plans that could result from the development of the Central Valley SNMP and future Salt and Nitrate Control Program, the Central Valley Water Board staff held four CEQA scoping sessions in October 2013 in Fresno, Modesto, Colusa and Rancho Cordova. These scoping sessions identified likely alternatives under consideration by CV-SALTS for the long-term management of salt and nitrate in the Central Valley.

Annual Progress Reports and Public Workshops

Throughout the process of developing a salt and nitrate management strategy, CV-SALTS provided both annual progress updates to the State Water Board at public hearing as well as annual Central Valley Water Board workshops to discuss major policy issues. Updates to the State Water Board were presented in December 2011, December 2012, January 2014, January 2015, and February 2016. Public workshops were conducted by the Central Valley Water Board in June 2012, July 2013, December 2013, April 2015, June 2016, March 2017 and January 2018.

Salt and Nitrate Management Plan Development

As technical studies and regulatory evaluations were completed, the CV-SALTS Executive Committee began drafting proposed salt and nitrate management strategies and policies to support the strategies. These drafts provided the basis for several of the workshops noted above. The following workshops focused on draft proposals:

- *June 2016 Central Valley Water Board Workshop* - In May 2016, the first drafts of Strategy and Policy Documents and an Executive Summary of the SNMP were released for informal public review.

- *September 2016 Draft of the SNMP* - The first draft of the proposed Central Valley SNMP was released for review on September 12, 2016.

- *November 2016 Revised Draft of the SNMP* - A Revised Draft SNMP was released for review on November 3, 2016.

- *December 2016 Final SNMP for Central Valley Water Board Consideration* - This document and all its attachments and links was released to the public for review in January 2017.
- *March 2017 Central Valley Water Board Workshop* - The Final Central Valley-wide

SNMP was discussed. The Central Valley Water Board directed staff to utilize the SNMP as appropriate and develop Basin Plan Amendments for a Salt and Nitrate Control Program. The final SNMP is available at: http://www.cvsalinity.org/index.php/docs/central-valley-snmp/final-snmp.html

Continuing Outreach

Central Valley Water Board staff has continued to work through CV-SALTS during the development of the proposed Salt and Nitrate Management Program, both through the Executive Committee and also through small stakeholder workgroups to develop the proposed Salt Control Program, Nitrate Control Program and supporting policies. The CV-SALTS Public Education and Outreach Committee (PEOC) has also increased activities to insure that stakeholder groups are aware of the Central Valley SNMP completed December 2016, and potential future salt and nitrate regulations. The PEOC developed a Draft Communications Plan in 2017 which can be found here:
https://www.cvsalinity.org/docs/committee-document/pubic-education-and-outreach-docs/3686-cv-salts-draft-comm-plan-1-8-17/file.html

The PEOC has developed several SNMP-related brochures, fact sheets and industry-specific inserts that provide information on the CV-SALT Initiative, the various strategies and policies of the SNMP and focused information on how the proposed Salt and Nitrate Control Program may affect specific industries. These fact sheets can be found here:

https://www.cvsalinity.org/committees/public-education-and-outreach.html.

In 2017, PEOC members gave over **45** outreach presentations to a variety of audiences, including Agricultural Groups, Food Processor Groups, Manufacturing Groups, Public Owned Treatment Works (POTW) Groups, Oil and Gas Organizations and Dairy Groups.

Disadvantaged Community and Local Group Outreach Grant

A Cleanup and Abatement grant from the State Water Resources Control Board was awarded in late 2017 to the Environmental Justice Group, the Community Water Center (CWC), to conduct outreach with disadvantaged communities and local groups to discuss CV-SALTS efforts related to provision of safe drinking water and opportunities for partnering on community projects. CWC has developed outreach material and is scheduling meetings with community groups, county representatives, and Groundwater Sustainability Agencies.