

**Appendix 5.10 - Summary of Treated Water Quality
Morena Reservoir 2011-2015**

Parameters	Units	DLR*/MD L	Drinking Water Standards ¹		No. of Samples	Raw Water Quality**			
			MCL	SMCL		Min	Max	Mean	Median
General Physical									
Alkalinity, (Total) (as CaCO ₃ equivalents)	MG/L	10			20	115	395	268	241
Calcium Hardness (CaCO ₃)	MG/L	10			20	53.4	122	94.7	94.4
Color, Apparent (Unfiltered)	COLOR	3		15	20	10	113	43.4	29.3
Corrosivity ²	.				12	0.64	1.42	1.05	1.07
Hydroxide Alkalinity	MG/L				12	0	0	0	0
pH	PH				21	7.86	9.12	8.47	8.5
Specific Conductance (E.C.)	UMHO/CM			1600	20	681	1510	1030	941
Total Filterable Residue @ 180 C (TDS)	MG/L	10		1000	20	338	975	618	571
Total Hardness (CaCO ₃)	MG/L	10			20	217	409	278	254
Turbidity, Laboratory	NTU	0.07		5	20	1.12	26.4	9.41	6.15
			MCL	SMCL		Min	Max	Mean	Median
Metals									
Aluminum (Al)	UG/L	50	1000	200	20	ND	1630	390	148
Antimony	UG/L	6	6		20	ND	ND	ND	ND
Arsenic	UG/L	2	10		20	2.49	9.71	4.27	3.86
Barium (Ba)	UG/L	100	1000		20	ND	144	ND	ND
Beryllium	UG/L	1	4		18	ND	ND	ND	ND
Boron	UG/L	100			20	111	275	177	150
Cadmium (Cd)	UG/L	1	5		20	ND	ND	ND	ND
Calcium (Ca)	MG/L				13	31.4	48.8	40.4	37.9
Chromium (Total Cr)	UG/L	10	50		20	ND	ND	ND	ND
Chromium, Hexavalent	UG/L	1			2	ND	ND	ND	ND
Copper (Cu)	UG/L	50	1300	1000	20	ND	ND	ND	ND
Iron (Fe)	UG/L	100		300	19	ND	1080	255	125
Lead (Pb)	UG/L	5	15		20	ND	ND	ND	ND
Magnesium (Mg)	MG/L				13	29.3	69.1	45.6	39.8
Manganese (Mn)	UG/L	20		50	20	ND	163	65.9	71.1
Mercury (Hg)	UG/L	1	2		8	ND	ND	ND	ND
Nickel	UG/L	10	100		20	ND	ND	ND	ND
Potassium (K)	MG/L	0.5			19	5.98	14.8	9.49	9.13
Selenium (Se)	UG/L	5	50		20	ND	ND	ND	ND
Silver	UG/L	10		100	20	ND	ND	ND	ND
Sodium (Na)	MG/L	20			19	84	186	126	124
Thallium	UG/L	1	2		20	ND	ND	ND	ND
Vanadium	UG/L	3			20	6.41	44.8	16.5	12
Zinc (Zn)	UG/L	50		5000	20	ND	ND	ND	ND
			MCL	SMCL		Min	Max	Mean	Median
Inorganic Constituents									
Ammonia-N	MG/L	0.031			20	ND	1.6	0.294	0.153
Bicarbonate (as HCO ₃)	MG/L				13	94	481	315	294
Bromide	MG/L	0.1			21	ND	0.919	0.458	0.442
Carbonate (as CO ₃)	MG/L				13	0	23	8.62	6.79
Chloride	MG/L	0.5		500	21	87.3	206	127	121
Cyanide	UG/L	100	150		2	ND	ND	ND	ND
Fluoride	MG/L	0.1	2		21	0.428	0.753	0.578	0.547
Nitrate (as NO ₃)	MG/L	2	45		20	ND	3.78	ND	ND
Nitrite (NO ₂)	MG/L	1.31	3.28		20	ND	ND	ND	ND
Perchlorate	UG/L	4	6		38	ND	1.61	ND	ND
Phosphate, Ortho (as PO ₄)	MG/L	0.2			19	ND	0.43	ND	ND
Phosphorus	MG/L	0.078			19	ND	0.254	0.11	0.127
Silica	MG/L	0.625			20	ND	14.9	3.71	1.79
Sulfate (SO ₄)	MG/L	0.5		500	21	54.6	152	78.7	63.8
Total Nitrogen	MG/L	0.156			20	0.212	2.24	0.752	0.65
			MCL	SMCL		Min	Max	Mean	Median
Organic Constituents, Regulated									
1,1,1-Trichloroethane (1,1,1-TCA)	UG/L	0.5	0.4	200	18	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	UG/L	0.5	0.4	1	18	ND	ND	ND	ND
1,1,2-Trichloroethane (1,1,2-TCA)	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
1,1-Dichloroethane (1,1-DCA)	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
1,1-Dichloroethylene (1,1-DCE)	UG/L	0.5	0.4	6	18	ND	ND	ND	ND
1,2,4-Trichlorobenzene	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
1,2-Dichlorobenzene (o-DCB)	UG/L	0.5	0.4	600	18	ND	ND	ND	ND
1,2-Dichloroethane (1,2-DCA)	UG/L	0.5	0.4	0.5	18	ND	ND	ND	ND
1,2-Dichloropropane	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
1,4-Dichlorobenzene (p-DCB)	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
2,4,5-TP (SILVEX)	UG/L	1	1	50	18	ND	ND	ND	ND
2,4-D	UG/L	10	3	70	18	ND	ND	ND	ND

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Alachlor (ALANEX)	UG/L	1	0.5	2	17	ND	ND	ND	ND
Atrazine (AATREX)	UG/L	0.5	0.4	1	17	ND	ND	ND	ND
Bentazon (BASAGRAN)	UG/L	2	2	18	18	ND	ND	ND	ND
Benzene	UG/L	0.5	0.4	1	18	ND	ND	ND	ND
Benzo(a)pyrene	UG/L	0.1	0.1	0.2	15	ND	ND	ND	ND
Bromodichloromethane	UG/L	1	0.4		18	ND	ND	ND	ND
Bromoform	UG/L	1	0.4		18	ND	ND	ND	ND
Carbofuran (FURADAN)	UG/L	5	0.4	18	16	ND	ND	ND	ND
Carbon Tetrachloride	UG/L	0.5	0.4	0.5	18	ND	ND	ND	ND
Chlordane	UG/L	0.1	0.1	0.1	1	ND	ND	ND	ND
Chlorodibromomethane	UG/L	1	0.4		18	ND	ND	ND	ND
Chloroform (Trichloromethane)	UG/L	1	0.4		18	ND	ND	ND	ND
cis-1,2-Dichloroethylene (c-1,2-DCE)	UG/L	0.5	0.4	6	18	ND	ND	ND	ND
Di(2-ethylhexyl) Adipate	UG/L	5	2	400	17	ND	ND	ND	ND
Di(2-ethylhexyl)phthalate (DEHP)	UG/L	3	3	4	17	ND	ND	ND	ND
Dibromochloropropane (DBCP)	UG/L	0.01	0.4	0.2	19	ND	ND	ND	ND
Dichloromethane (Methylene Chloride)	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
Dinoseb (DNBP)	UG/L	2	2	7	18	ND	ND	ND	ND
Endrin	UG/L	0.1	0.1	2	18	ND	ND	ND	ND
Ethyl Benzene	UG/L	0.5	0.4	300	18	ND	ND	ND	ND
Ethylene Dibromide (EDB)	UG/L	0.02	0.4	0.05	19	ND	ND	ND	ND
Glyphosate	UG/L	25	10	700	18	ND	ND	ND	ND
Heptachlor	UG/L	0.01	0.01	0.01	1	ND	ND	ND	ND
Heptachlor Epoxide	UG/L	0.01	0.01	0.01	1	ND	ND	ND	ND
Hexachlorobenzene	UG/L	0.5	0.5	1	18	ND	ND	ND	ND
Hexachlorocyclopentadiene	UG/L	1	0.5	50	18	ND	ND	ND	ND
Lindane (gamma-BHC)	UG/L	0.2	0.2	0.2	1	ND	ND	ND	ND
meta,para xylenes	UG/L	0.5	0.4		18	ND	ND	ND	ND
Methoxychlor	UG/L	10	0.5	30	18	ND	ND	ND	ND
Methyl tert-Butyl Ether (MTBE)	UG/L	3	0.4	13	18	ND	ND	ND	ND
Molinate (ORDRAM)	UG/L	2	0.5	20	17	ND	ND	ND	ND
Monochlorobenzene (Chlorobenzene)	UG/L	0.5	0.4	70	18	ND	ND	ND	ND
Oxamyl (Vydate)	UG/L	20	0.4	50	18	ND	ND	ND	ND
o-Xylene	UG/L	0.5	0.4		18	ND	ND	ND	ND
Pentachlorophenol (PCP)	UG/L	0.2	0.2	1	18	ND	ND	ND	ND
Picloram	UG/L	1	1	500	18	ND	ND	ND	ND
Polychlorinated Biphenyls, Total, as DCB	UG/L	0.5	0.5	0.5	14	ND	ND	ND	ND
Simazine (PRINCEP)	UG/L	1	0.5	4	16	ND	ND	ND	ND
Styrene	UG/L	0.5	0.4	100	18	ND	ND	ND	ND
Tetrachloroethylene (PCE)	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
Thiobencarb (BOLERO)	UG/L	1	0.5	70	17	ND	ND	ND	ND
Toluene	UG/L	0.5	0.4	150	18	ND	ND	ND	ND
Total Toxaphene	UG/L	1	1	3	1	ND	ND	ND	ND
Total Trihalomethanes (TTHMs)	UG/L	0.5	0.4	80	1	ND	ND	ND	ND
trans-1,2-Dichloroethylene (t-1,2-DCE)	UG/L	0.5	0.4	10	18	ND	ND	ND	ND
Trichloroethylene (TCE)	UG/L	0.5	0.4	5	18	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	UG/L	5	0.4	150	18	ND	ND	ND	ND
Trichlorotrifluoroethane (FREON 113)	UG/L	10	0.4	1200	18	ND	ND	ND	ND
Vinyl Chloride (VC)	UG/L	0.5	0.4	0.5	18	ND	ND	ND	ND
Organic Constituents, Unregulated			MCL	SMCL		Min	Max	Mean	Median
1,1,1,2-Tetrachloroethane	UG/L	0.5			18	ND	ND	ND	ND
1,1-Dichloropropene	UG/L	0.5			18	ND	ND	ND	ND
1,2,3-Trichlorobenzene	UG/L	0.5			18	ND	ND	ND	ND
1,2,4-Trimethylbenzene	UG/L	0.4			18	ND	ND	ND	ND
1,3,5-Trimethylbenzene	UG/L	0.5			18	ND	ND	ND	ND
1,3-Dichlorobenzene (m-DCB)	UG/L	0.5			18	ND	ND	ND	ND
1,3-Dichloropropane	UG/L	0.5			18	ND	ND	ND	ND
2,2-Dichloropropane	UG/L	0.5			18	ND	ND	ND	ND
2,4,5-T	UG/L	3			18	ND	ND	ND	ND
2,4-DB	UG/L	3			18	ND	ND	ND	ND
2-Chlorotoluene	UG/L	0.5			18	ND	ND	ND	ND
3,5-Dichlorobenzoic Acid	UG/L	3			18	ND	ND	ND	ND
3-Hydroxycarbofuran	UG/L	3			17	ND	ND	ND	ND
4-Chlorotoluene	UG/L	0.5			18	ND	ND	ND	ND
4-Nitrophenol	UG/L	5			18	ND	ND	ND	ND
Acenaphthylene	UG/L	5			16	ND	ND	ND	ND
Acifluorfen	UG/L	3			18	ND	ND	ND	ND

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Aldicarb (TEMIK)	UG/L	3	16	ND	ND	ND	ND
Aldicarb Sulfone	UG/L	4	18	ND	ND	ND	ND
Aldicarb Sulfoxide	UG/L	3	18	ND	ND	ND	ND
Aldrin	UG/L	0.075	1	ND	ND	ND	ND
Anthracene	UG/L	5	15	ND	ND	ND	ND
Baygon	UG/L	0.4	16	ND	ND	ND	ND
Benzo (a) Anthracene	UG/L	10	17	ND	ND	ND	ND
Benzo (b) Fluoranthene	UG/L	10	15	ND	ND	ND	ND
Benzo (ghi) Perylene	UG/L	10	15	ND	ND	ND	ND
Benzo (k) Fluoranthene	UG/L	10	15	ND	ND	ND	ND
Benzyl Butyl Phthalate	UG/L	10	17	ND	ND	ND	ND
Bromobenzene	UG/L	0.5	18	ND	ND	ND	ND
Bromochloromethane	UG/L	0.5	18	ND	ND	ND	ND
Bromomethane (Methyl Bromide)	UG/L	0.5	18	ND	ND	ND	ND
Carbaryl (Sevin)	UG/L	5	16	ND	ND	ND	ND
Chloramben	UG/L	3	18	ND	ND	ND	ND
Chloroethane	UG/L	0.5	18	ND	ND	ND	ND
Chloromethane (Methyl Chloride)	UG/L	0.5	18	ND	ND	ND	ND
Chrysene	UG/L	5	17	ND	ND	ND	ND
cis-1,3-dichloropropene	UG/L	0.5	18	ND	ND	ND	ND
Dibenzo (a,h) anthracene	UG/L	5	15	ND	ND	ND	ND
Dibromomethane	UG/L	0.5	18	ND	ND	ND	ND
Dicamba (BANVEL)	UG/L	1.5	18	ND	ND	ND	ND
Dichlorodifluoromethane (Freon 12)	UG/L	0.5	18	ND	ND	ND	ND
Dichlorprop	UG/L	3	18	ND	ND	ND	ND
Dieldrin	UG/L	0.02	1	ND	ND	ND	ND
Diethylphthalate	UG/L	5	17	ND	ND	ND	ND
Diisopropyl Ether (DIPE)	UG/L	3	18	ND	ND	ND	ND
Dimethyl phthalate	UG/L	5	16	ND	ND	ND	ND
di-n-Butylphthalate	UG/L	5	17	ND	ND	ND	ND
Ethyl-tert-Butyl Ether (ETBE)	UG/L	3	18	ND	ND	ND	ND
Fluorene	UG/L	5	17	ND	ND	ND	ND
Hexachlorobutadiene	UG/L	0.5	18	ND	ND	ND	ND
Indeno (1,2,3-cd) Pyrene	UG/L	10	15	ND	ND	ND	ND
Isopropylbenzene (Cumene)	UG/L	0.5	18	ND	ND	ND	ND
MCPA	UG/L	3	18	ND	ND	ND	ND
MCPP	UG/L	3	18	ND	ND	ND	ND
Methiocarb	UG/L	0.4	18	ND	ND	ND	ND
Methomyl	UG/L	2	18	ND	ND	ND	ND
Naphthalene	UG/L	0.5	35	ND	ND	ND	ND
n-Butylbenzene	UG/L	0.5	18	ND	ND	ND	ND
n-Propylbenzene	UG/L	0.5	18	ND	ND	ND	ND
PCB-1016 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
PCB-1221 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
PCB-1232 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
PCB-1242 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
PCB-1248 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
PCB-1254 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
PCB-1260 (as DCB)	UG/L	0.5	0.5	17	ND	ND	ND
Phenanthrene	UG/L	5	17	ND	ND	ND	ND
p-Isopropyltoluene	UG/L	0.4	18	ND	ND	ND	ND
Propachlor	UG/L	0.5	18	ND	ND	ND	ND
Pyrene	UG/L	0.5	17	ND	ND	ND	ND
sec-Butylbenzene	UG/L	0.5	18	ND	ND	ND	ND
tert-Amyl Methyl Ether (TAME)	UG/L	3	18	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)	UG/L	2	18	ND	ND	ND	ND
tert-Butylbenzene	UG/L	0.5	18	ND	ND	ND	ND
trans-1,3-dichloropropene	UG/L	0.5	18	ND	ND	ND	ND
Trifluralin	UG/L	0.5	17	ND	ND	ND	ND

NOTES:

* The State of California DLR values are used when available. Parameters without DLR values were reported as MDL levels.

** The acceptance criteria in this table apply to finished, potable water, and are for reference only.

(1) State MCL and MCLG values may be more stringent than federal standards for treated water.

(2) Based on the Langelier index. A positive value indicates non-corrosive tendencies. A negative value indicates corrosive tendencies.

ND: not detected