

Appendix 5.11 - Summary of Raw Water Quality Otay Reservoir 2011-2015

Parameters	Units	DLR*/MDL	Drinking Water Standards ¹		No. of Samples	Raw Water Quality**			
			MCL	SMCL		Min	Max	Mean	Median
General Physical									
Alkalinity, (Total) (as CaCO3 equivalents)	MG/L	10			20	124	184	150	141
Calcium Hardness (CaCO3)	MG/L	10			20	39.6	142	117	123
Color, Apparent (Unfiltered)	COLOR	1		15	20	5	12	7.55	7
Corrosivity ²	.				20	-0.04	1.01	0.437	0.43
Hydroxide Alkalinity	MG/L				19	0	0	0	0
MBAS (Foaming Agents)	MG/L	0.05		0.5	5	ND	ND	ND	ND
pH	PH				20	7.51	8.59	8.07	8.09
Specific Conductance (E.C.)	UMHO/CM			1600	20	798	1330	957	931
Total Filterable Residue @ 180 C (TDS)	MG/L	10		1000	20	519	713	589	570
Total Hardness (CaCO3)	MG/L	10			20	224	280	248	244
Turbidity, Laboratory	NTU	0.07		5	20	0.32	3.74	0.772	0.505
			MCL	SMCL		Min	Max	Mean	Median
Microbiological									
Enterococcus	/100 ML				494	<1	2000	37.6	6
Escherichia Coli	/100 ML	1			494	<1	4600	71	20
Total Coliform	/100 ML	1			494	<1	>24000	4410	1200
Total Crypto Oocyst Count	/ L	0.1			11	0	0	0	0
Total Giardia Cyst Count	/ L	0.1			11	0	0	0	0
			MCL	SMCL		Min	Max	Mean	Median
Metals									
Aluminum (Al)	UG/L	50	1000	200	20	ND	ND	ND	ND
Antimony	UG/L	6	6		20	ND	ND	ND	ND
Arsenic	UG/L	2	10		20	ND	2.39	ND	ND
Barium (Ba)	UG/L	100	1000		20	ND	ND	ND	ND
Beryllium	UG/L	1	4		18	ND	ND	ND	ND
Boron	UG/L	100			20	119	155	136	135
Cadmium (Cd)	UG/L	1	5		20	ND	ND	ND	ND
Calcium (Ca)	MG/L				20	15.8	56.8	46.7	49.2
Chromium (Total Cr)	UG/L	10	50		20	ND	ND	ND	ND
Chromium, Hexavalent	UG/L	1			6	ND	ND	ND	ND
Copper (Cu)	UG/L	50	1300	1000	20	ND	ND	ND	ND
Iron (Fe)	UG/L	100		300	19	ND	ND	ND	ND
Lead (Pb)	UG/L	5	15		20	ND	ND	ND	ND
Magnesium (Mg)	MG/L				21	26.6	48.5	31.5	30
Manganese (Mn)	UG/L	20		50	20	ND	136	22.4	ND
Mercury (Hg)	UG/L	1	2		20	ND	ND	ND	ND
Nickel	UG/L	10	100		20	ND	ND	ND	ND
Potassium (K)	MG/L	0.5			19	3.94	6.57	5.19	5.12
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	90.3	119	105	106
Thallium	UG/L	1	2		20	ND	ND	ND	ND
Vanadium	UG/L	3			20	ND	ND	ND	ND
Zinc (Zn)	UG/L	50		5000	20	ND	ND	ND	ND
			MCL	SMCL		Min	Max	Mean	Median
Radiologicals									
Gross Alpha	PCI/L	3	15		2	ND	ND	ND	ND
Gross Beta	PCI/L	4	50		1	ND	ND	ND	ND
Uranium	PCI/L	1	20		1	1.5	1.5	1.5	1.5
			MCL	SMCL		Min	Max	Mean	Median
Inorganic Constituents									
Ammonia-N	MG/L	0.031			25	ND	0.313	0.031	ND
Asbestos Chrysotile Fibers >10 microns	MFL	0.2	7		1	ND	ND	ND	ND
Bicarbonate (as HCO3)	MG/L				20	149	217	178	171
Bromide	MG/L	0.1			21	ND	0.361	0.225	0.285
Carbonate (as CO3)	MG/L				20	0	9.38	1.78	0
Chloride	MG/L	0.5		500	21	124	160	140	136
Cyanide	UG/L	100	150		4	ND	ND	ND	ND

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Fluoride	MG/L	0.1	2	21	0.317	0.564	0.435	0.438
Nitrate (as NO3)	MG/L	2	45	26	ND	ND	ND	ND
Nitrite (NO2)	MG/L	1.31	3.28	25	ND	ND	ND	ND
Perchlorate	UG/L	4	6	40	ND	ND	ND	ND
Phosphate, Ortho (as PO4)	MG/L	0.2		20	ND	0.317	ND	ND
Phosphorus	MG/L	0.078		76	ND	0.089	ND	ND
Silica	MG/L	0.625		20	4.51	10.8	7.32	7.37
Sulfate (SO4)	MG/L	0.5	500	21	105	149	120	116
Total Nitrogen	MG/L	0.156		79	ND	0.401	0.125	0.157
Organic Constituents, Regulated			MCL	SMCL	Min	Max	Mean	Median
1,1,1-Trichloroethane (1,1,1-TCA)	UG/L	0.5	200	21	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	UG/L	0.5	1	21	ND	ND	ND	ND
1,1,2-Trichloroethane (1,1,2-TCA)	UG/L	0.5	5	21	ND	ND	ND	ND
1,1-Dichloroethane (1,1-DCA)	UG/L	0.5	5	21	ND	ND	ND	ND
1,1-Dichloroethylene (1,1-DCE)	UG/L	0.5	6	21	ND	ND	ND	ND
1,2,4-Trichlorobenzene	UG/L	0.5	5	21	ND	ND	ND	ND
1,2-Dichlorobenzene (o-DCB)	UG/L	0.5	600	21	ND	ND	ND	ND
1,2-Dichloroethane (1,2-DCA)	UG/L	0.5	0.5	21	ND	ND	ND	ND
1,2-Dichloropropane	UG/L	0.5	5	21	ND	ND	ND	ND
1,4-Dichlorobenzene (p-DCB)	UG/L	0.5	5	21	ND	ND	ND	ND
2,3,7,8-tetra CDD	UG/L	0	0.00003	1	ND	ND	ND	ND
2,4,5-TP (SILVEX)	UG/L	1	50	20	ND	ND	ND	ND
2,4-D	UG/L	10	70	20	ND	ND	ND	ND
Alachlor (ALANEX)	UG/L	1	2	18	ND	ND	ND	ND
Atrazine (AATREX)	UG/L	0.5	1	18	ND	ND	ND	ND
Bentazon (BASAGRAN)	UG/L	2	18	20	ND	ND	ND	ND
Benzene	UG/L	0.5	1	21	ND	ND	ND	ND
Benzo(a)pyrene	UG/L	0.1	0.2	16	ND	ND	ND	ND
Bromodichloromethane	UG/L	1		21	ND	ND	ND	ND
Bromoform	UG/L	1		21	ND	ND	ND	ND
Carbofuran (FURADAN)	UG/L	5	18	20	ND	ND	ND	ND
Carbon Tetrachloride	UG/L	0.5	0.5	21	ND	ND	ND	ND
Chlordane	UG/L	0.1	0.1	3	ND	ND	ND	ND
Chlorodibromomethane	UG/L	1		21	ND	ND	ND	ND
Chloroform (Trichloromethane)	UG/L	1		21	ND	ND	ND	ND
cis-1,2-Dichloroethylene (c-1,2-DCE)	UG/L	0.5	6	21	ND	ND	ND	ND
Dalapon	UG/L	10	200	1	ND	ND	ND	ND
Di(2-ethylhexyl) Adipate	UG/L	5	400	18	ND	ND	ND	ND
Di(2-ethylhexyl)phthalate (DEHP)	UG/L	3	4	18	ND	ND	ND	ND
Dibromoacetic Acid (DBAA)	UG/L	1		1	ND	ND	ND	ND
Dibromochloropropane (DBCP)	UG/L	0.01	0.2	24	ND	ND	ND	ND
Dichloroacetic Acid (DCAA)	UG/L	1		1	ND	ND	ND	ND
Dichloromethane (Methylene Chloride)	UG/L	0.5	5	21	ND	ND	ND	ND
Dinoseb (DNBP)	UG/L	2	7	20	ND	ND	ND	ND
Diquat	UG/L	4	20	1	ND	ND	ND	ND
Endothall	UG/L	45	100	2	ND	ND	ND	ND
Endrin	UG/L	0.1	2	21	ND	ND	ND	ND
Ethyl Benzene	UG/L	0.5	300	21	ND	ND	ND	ND
Ethylene Dibromide (EDB)	UG/L	0.02	0.05	24	ND	ND	ND	ND
Glyphosate	UG/L	25	700	16	ND	ND	ND	ND
Haloacetic Acids (five) (HAA5)	UG/L	1	60	1	ND	ND	ND	ND
Heptachlor	UG/L	0.01	0.01	3	ND	ND	ND	ND
Heptachlor Epoxide	UG/L	0.01	0.01	3	ND	ND	ND	ND
Hexachlorobenzene	UG/L	0.5	1	21	ND	ND	ND	ND
Hexachlorocyclopentadiene	UG/L	1	50	21	ND	ND	ND	ND
Lindane (gamma-BHC)	UG/L	0.2	0.2	3	ND	ND	ND	ND
meta,para xylenes	UG/L	0.5		21	ND	ND	ND	ND

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Methoxychlor	UG/L	10	30		21	ND	ND	ND	ND
Methyl tert-Butyl Ether (MTBE)	UG/L	3	13	5	21	ND	ND	ND	ND
Molinate (ORDRAM)	UG/L	2	20		18	ND	ND	ND	ND
Monobromoacetic Acid (MBAA)	UG/L	1			1	ND	ND	ND	ND
Monochloroacetic Acid (MCAA)	UG/L	2			1	ND	ND	ND	ND
Monochlorobenzene (Chlorobenzene)	UG/L	0.5	70		21	ND	ND	ND	ND
Oxamyl (Vydate)	UG/L	20	50		20	ND	ND	ND	ND
o-Xylene	UG/L	0.5			21	ND	ND	ND	ND
Pentachlorophenol (PCP)	UG/L	0.2	1		20	ND	ND	ND	ND
Picloram	UG/L	1	500		20	ND	ND	ND	ND
Polychlorinated Biphenyls, Total, as DCB	UG/L	0.5	0.5		15	ND	ND	ND	ND
Simazine (PRINCEP)	UG/L	1	4		17	ND	ND	ND	ND
Styrene	UG/L	0.5	100		21	ND	ND	ND	ND
Tetrachloroethylene (PCE)	UG/L	0.5	5		21	ND	ND	ND	ND
Thiobencarb (BOLERO)	UG/L	1	70	1	18	ND	ND	ND	ND
Toluene	UG/L	0.5	150		21	ND	ND	ND	ND
Total Organic Carbon (TOC)	MG/L				59	4.61	8.42	6.42	6.26
Total Toxaphene	UG/L	1	3		3	ND	ND	ND	ND
Total Trihalomethanes (TTHMs)	UG/L	0.5	80		1	ND	ND	ND	ND
trans-1,2-Dichloroethylene (t-1,2-DCE)	UG/L	0.5	10		21	ND	ND	ND	ND
Trichloroacetic Acid (TCAA)	UG/L	1			1	ND	ND	ND	ND
Trichloroethylene (TCE)	UG/L	0.5	5		21	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	UG/L	5	150		21	ND	ND	ND	ND
Trichlorotrifluoroethane (FREON 113)	UG/L	10	1200		21	ND	ND	ND	ND
Vinyl Chloride (VC)	UG/L	0.5	0.5		21	ND	ND	ND	ND
Organic Constituents, Unregulated			MCL	SMCL		Min	Max	Mean	Median
1,1,1,2-Tetrachloroethane	UG/L	0.5			21	ND	ND	ND	ND
1,1-Dichloropropene	UG/L	0.5			21	ND	ND	ND	ND
1,2,3-Trichlorobenzene	UG/L	0.5			21	ND	ND	ND	ND
1,2,4-Trimethylbenzene	UG/L	0.4			21	ND	ND	ND	ND
1,3,5-Trimethylbenzene	UG/L	0.5			21	ND	ND	ND	ND
1,3-Dichlorobenzene (m-DCB)	UG/L	0.5			21	ND	ND	ND	ND
1,3-Dichloropropane	UG/L	0.5			21	ND	ND	ND	ND
2,2-Dichloropropane	UG/L	0.5			21	ND	ND	ND	ND
2,4,5-T	UG/L	3			20	ND	ND	ND	ND
2,4-DB	UG/L	3			20	ND	ND	ND	ND
2-Chlorotoluene	UG/L	0.5			21	ND	ND	ND	ND
2-Methylisoborneol	NG/L	5			239	ND	35.7	ND	ND
3,5-Dichlorobenzoic Acid	UG/L	3			20	ND	ND	ND	ND
3-Hydroxycarbofuran	UG/L	3			20	ND	ND	ND	ND
4-Chlorotoluene	UG/L	0.5			21	ND	ND	ND	ND
4-Nitrophenol	UG/L	5			20	ND	ND	ND	ND
Acenaphthylene	UG/L	5			17	ND	ND	ND	ND
Acifluorfen	UG/L	3			20	ND	ND	ND	ND
Aldicarb (TEMIK)	UG/L	3			20	ND	ND	ND	ND
Aldicarb Sulfone	UG/L	4			20	ND	ND	ND	ND
Aldicarb Sulfoxide	UG/L	3			20	ND	ND	ND	ND
Aldrin	UG/L	0.075			3	ND	ND	ND	ND
Anthracene	UG/L	5			16	ND	ND	ND	ND
Baygon	UG/L	0.4			20	ND	ND	ND	ND
Benzo (a) Anthracene	UG/L	10			18	ND	ND	ND	ND
Benzo (b) Fluoranthene	UG/L	10			16	ND	ND	ND	ND
Benzo (ghi) Perylene	UG/L	10			16	ND	ND	ND	ND
Benzo (k) Fluoranthene	UG/L	10			16	ND	ND	ND	ND
Benzyl Butyl Phthalate	UG/L	10			18	ND	ND	ND	ND
Bromobenzene	UG/L	0.5			21	ND	ND	ND	ND
Bromochloromethane	UG/L	0.5			21	ND	ND	ND	ND

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Bromomethane (Methyl Bromide)	UG/L	0.5		21	ND	ND	ND	ND
Carbaryl (Sevin)	UG/L	5		20	ND	ND	ND	ND
Chloramben	UG/L	3		20	ND	ND	ND	ND
Chloroethane	UG/L	0.5		21	ND	ND	ND	ND
Chloromethane (Methyl Chloride)	UG/L	0.5		21	ND	ND	ND	ND
Chrysene	UG/L	5		18	ND	ND	ND	ND
cis-1,3-dichloropropene	UG/L	0.5		21	ND	ND	ND	ND
Dibenzo (a,h) anthracene	UG/L	5		16	ND	ND	ND	ND
Dibromomethane	UG/L	0.5		21	ND	ND	ND	ND
Dicamba (BANVEL)	UG/L	1.5		20	ND	ND	ND	ND
Dichlorodifluoromethane (Freon 12)	UG/L	0.5		21	ND	ND	ND	ND
Dichloroprop	UG/L	3		20	ND	ND	ND	ND
Dieldrin	UG/L	0.02		3	ND	ND	ND	ND
Diethylphthalate	UG/L	5		18	ND	ND	ND	ND
Diisopropyl Ether (DIPE)	UG/L	3		21	ND	ND	ND	ND
Dimethyl phthalate	UG/L	5		17	ND	ND	ND	ND
di-n-Butylphthalate	UG/L	5		18	ND	ND	ND	ND
Ethyl-tert-Butyl Ether (ETBE)	UG/L	3		21	ND	ND	ND	ND
Fluorene	UG/L	5		18	ND	ND	ND	ND
Geosmin	NG/L	5		239	ND	8.55	ND	ND
Hexachlorobutadiene	UG/L	0.5		21	ND	ND	ND	ND
Indeno (1,2,3-cd) Pyrene	UG/L	10		16	ND	ND	ND	ND
Isopropylbenzene (Cumene)	UG/L	0.5		21	ND	ND	ND	ND
MCPA	UG/L	3		20	ND	ND	ND	ND
MCPP	UG/L	3		20	ND	ND	ND	ND
Methiocarb	UG/L	0.4		20	ND	ND	ND	ND
Methomyl	UG/L	2		20	ND	ND	ND	ND
Naphthalene	UG/L	0.5		39	ND	ND	ND	ND
n-Butylbenzene	UG/L	0.5		21	ND	ND	ND	ND
n-Propylbenzene	UG/L	0.5		21	ND	ND	ND	ND
Paraquat	UG/L	20		1	ND	ND	ND	ND
PCB-1016 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
PCB-1221 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
PCB-1232 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
PCB-1242 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
PCB-1248 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
PCB-1254 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
PCB-1260 (as DCB)	UG/L	0.5	0.5	18	ND	ND	ND	ND
Phenanthrene	UG/L	5		18	ND	ND	ND	ND
p-Isopropyltoluene	UG/L	0.4		21	ND	ND	ND	ND
Propachlor	UG/L	0.5		21	ND	ND	ND	ND
Pyrene	UG/L	0.5		18	ND	ND	ND	ND
sec-Butylbenzene	UG/L	0.5		21	ND	ND	ND	ND
tert-Amyl Methyl Ether (TAME)	UG/L	3		21	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)	UG/L	2		21	ND	ND	ND	ND
tert-Butylbenzene	UG/L	0.5		21	ND	ND	ND	ND
trans-1,3-dichloropropene	UG/L	0.5		21	ND	ND	ND	ND
Trifluralin	UG/L	0.5		18	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