

2023 Water Quality Report to SDCWA member agencies -- San Diego County Water Authority

Parameter	Units	State or Federal MCL [MRDL]	PHG (MCLG) [MRDLG]	State DLR	Range Average	Treatment Plant Effluent	Major Sources in Drinking Water
						Twin Oaks Valley Water Treatment Plant	
PRIMARY STANDARDS--Mandatory Health-Related Standards							
CLARITY							
Combined Filter	NTU	0.1	NA	NA	Range	0.013 -0.081	
Effluent Turbidity	NTU	0.1	NA	NA	Average	0.019	Soil runoff
	%	95 (a)	NA	NA	%≤ 0.1	100.0%	
MICROBIOLOGICAL							
Total Coliform					Range	ND	
Bacteria in Distribution System	%	5.0 (b)	0	NA	Average	ND	Naturally present in the environment
Total Coliform					Range	ND	
Bacteria in Treatment Plant effluent	%	5.0 (b)	0	NA	Average	ND	Naturally present in the environment
E. coli					Range	ND	
Bacteria in Treatment Plant effluent	(c)	(c)	0	NA	Average	ND	Human and animal fecal waste
ORGANIC CHEMICALS							
Pesticides/PCBs							
Alachlor	ppb	2	4	1	Single Sample	ND	Runoff from herbicide used on row crops
Atrazine	ppb	1	0.15	0.5	Single Sample	ND	Runoff from herbicide used on row crops and along highways
Bentazon	ppb	18	200	2	Single Sample	ND	Runoff/leaching from herbicide used on rice, alfalfa, and grapes
Carbofuran	ppb	18	0.7	5	Single Sample	ND	Leaching of soil fumigant used on rice, alfalfa, and grapes
Chlordane	ppt	100	30	100	Single Sample	ND	Residue of banned insecticide
2,4-D	ppb	70	20	10	Single Sample	ND	Runoff from herbicide used on row crops, range land, lawns and aquatic weeds
Dalapon	ppb	200	790	10	Single Sample	ND	Runoff from herbicide used on rights-of-way, crops, and landscapes
Dibromochloropropane (DBCP)	ppt	200	3	10	Single Sample	ND	Banned nematocide that may still be present in soils
Dinoseb	ppb	7	14	2	Single Sample	ND	Runoff from herbicide used on soybeans, vegetables, and fruits
Diquat	ppb	20	6	4	Single Sample	ND	Runoff from herbicide used for terrestrial and aquatic weeds
Endothall	ppb	100	94	45	Single Sample	ND	Runoff from herbicide used for terrestrial and aquatic weeds
Endrin	ppb	2	0.3	0.1	Single Sample	ND	Residue of banned insecticide and rodenticide
Ethylene Dibromide (EDB)	ppt	50	10	20	Single Sample	ND	Petroleum refinery discharges; underground gas tank leaks
Glyphosate	ppb	700	900	25	Single Sample	ND	Runoff from herbicide use
Heptachlor	ppt	10	8	10	Single Sample	ND	Residue of banned insecticide
Heptachlor Epoxide	ppt	10	6	10	Single Sample	ND	Breakdown product of heptachlor
					Single		Runoff/leaching from insecticide used on cattle,

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Lindane	ppt	200	32	200	Sample	ND	lumber, and gardens
Methoxychlor	ppb	30	0.09	10	Single	ND	Runoff/leaching from insecticide uses
Molinate (Ordram)	ppb	20	1	2	Sample	ND	Runoff/leaching from herbicide used on rice
Oxamyl (Vydate)	ppb	50	26	20	Single	ND	Runoff/leaching from insecticide uses
Pentachlorophenol	ppb	1	0.3	0.2	Sample	ND	Discharge from wood preserving factories other insecticidal and herbicidal uses
Picloram	ppb	500	166	1	Single	ND	Herbicide runoff
Polychlorinated Biphenyls (PCBs)	ppt	500	90	500	Sample	ND	Runoff from landfills; discharge of waste chemicals
Simazine	ppb	4	4	1	Sample	ND	Herbicide runoff
Thiobencarb (d)	ppb	70	42	1	Single	ND	Runoff leaching from rice herbicide
2,4,5-TP (Silvex)	ppb	50	3	1	Sample	ND	Residue of banned herbicide
Toxaphene	ppb	3	0.03	1	Single	ND	Runoff/leaching from insecticide used on cotton and cattle
Semi-Volatile Organic Compounds							
Acrylamide	NA	TT	(0)	NA	Sample	ND	Water treatment chemical impurities
Benzo(a)pyrene	ppt	200	7	100	Single	ND	Leaching from water storage tank linings and distribution lines
Di(2-ethylhexyl)adipate	ppb	400	200	5	Sample	ND	Discharge from chemical factories
Di(2-ethylhexyl)phthalate	ppb	4	12	3	Single	ND	Chemical factory discharge; inert ingredient in pesticides
Epichlorohydrin	NA	TT	(0)	NA	Sample	ND	Water treatment chemical impurities
Hexachlorobenzene	ppb	1	0.03	0.5	Single	ND	Discharge from metal refineries & agrichemicals factories; wastewater chlorination reaction by-product
Hexachlorocyclopentadiene	ppb	50	2	1	Sample	ND	Discharge from chemical factories
2,3,7,8-TCDD (Dioxin)	ppq	30	0.05	5	Single	ND	Waste incineration emissions; chemical factory discharge
Volatile Organic Compounds							
Benzene	ppb	1	0.15	0.5	Sample	ND	Plastics factory discharge; gas tanks and landfill leaching
Carbon Tetrachloride	ppt	500	100	500	Single	ND	Discharge from chemical plants and other industrial waste
1,2-Dichlorobenzene	ppb	600	600	0.5	Sample	ND	Discharge from industrial chemical factories
1,4-Dichlorobenzene	ppb	5	6	0.5	Single	ND	Discharge from industrial chemical factories

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1,1-Dichloroethane	ppb	5	3	0.5	Sample Single	ND	Extraction and degreasing solvent; fumigant
1,2-Dichloroethane	ppt	500	400	500	Sample Single	ND	Discharge from industrial chemical factories
1,1-Dichloroethylene	ppb	6	10	0.5	Sample Single	ND	Discharge from industrial chemical factories
<i>cis</i> -1,2-Dichloroethylene	ppb	6	13	0.5	Sample Single	ND	Industrial chemical factory discharge; by-product of TCE and PCE biodegradation
<i>trans</i> -1,2-Dichloroethylene	ppb	10	50	0.5	Sample Single	ND	Industrial chemical factory discharge; by-product of TCE and PCE biodegradation
Dichloromethane (Methylene Chloride)	ppb	5	4	0.5	Sample Single	ND	Discharge from pharmaceutical and chemical factories
1,2-Dichloropropane	ppb	5	0.5	0.5	Sample Single	ND	Industrial chemical factory discharge; primary component of some fumigants
1,3-Dichloropropene	ppt	500	200	500	Sample Single	ND	Runoff/leaching from nematocide used on croplands
Ethylbenzene	ppb	300	300	0.5	Sample Single	ND	Petroleum refinery discharge; industrial chemical factories
Methyl <i>tert</i> -butyl ether (MTBE) (d,e)	ppb	13	13	3	Sample Single	ND	Gasoline discharge from watercraft engines
Monochlorobenzene	ppb	70	70	0.5	Sample Single	ND	Discharge from industrial, agricultural, and chemical factories, and dry cleaners
Styrene	ppb	100	0.5	0.5	Sample Single	ND	Rubber and plastics factories discharge; landfill leaching
1,1,2,2-Tetrachloroethane	ppb	1	0.1	0.5	Sample Single	ND	Discharge from industrial, agricultural, and chemical factories; solvent uses
Tetrachloroethylene (PCE)	ppb	5	0.06	0.5	Sample Single	ND	Discharge from factories, dry cleaners, and auto shops
Toluene	ppb	150	150	0.5	Sample Single	ND	Discharge from petroleum and chemical refineries
1,2,4-Trichlorobenzene	ppb	5	5	0.5	Sample Single	ND	Discharge from textile-finishing factories
1,1,1-Trichloroethane	ppb	200	1000	0.5	Sample Single	ND	Metal degreasing site discharge; manufacture of food wrappings
1,1,2-Trichloroethane	ppb	5	0.3	0.5	Sample Single	ND	Discharge from industrial chemical factories
1,2,3-Trichloropropane	ppt	5	0.7	5	Sample Single	ND	Cleaning and degreasing solvent, also associated with pesticide products
Trichloroethylene (TCE)	ppb	5	1.7	0.5	Sample Single	ND	Discharge from metal degreasing sites and other factories
Trichlorofluoromethane (Freon-11)	ppb	150	1300	5	Sample Single	ND	Industrial factory discharge; degreasing solvent; propellant
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ppm	1.2	4	0.01	Sample Single	ND	Discharge from metal degreasing sites and other factories; dry cleaning solvent; refrigerant
Vinyl Chloride	ppt	500	50	500	Sample Single	ND	Leaching from PVC piping; plastic factory discharge; by-product of TCE and PCE biodegradation
Xylenes	ppm	1.750	1.8	0.0005	Sample	ND	Discharge from petroleum and chemical refineries; fuel solvent

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INORGANIC CHEMICALS							
Aluminum (d)	ppm	1	0.6	0.05	Range Average	ND - 0.17 ND	Natural deposits erosion; Residue from water treatment process.
Antimony	ppb	6	1	6	Single Sample	ND	Petroleum refinery discharges; fire retardants; solder; electronics
Arsenic	ppb	10	0.004	2	Single Sample	2.1	Natural deposits erosion, glass and electronics production wastes
Asbestos	MFL	7	7	0.2	Single Sample	ND	Asbestos cement pipes internal corrosion; natural deposits erosion
Barium	ppb	1000	2000	100	Range Average	58.5-91.3 ND	Natural deposits erosion; Oil and metal refineries discharge.
Beryllium	ppb	4	1	1	Single Sample	ND	Discharge from metal refineries, aerospace, and defense industries
Cadmium	ppb	5	0.04	1	Single Sample	ND	Internal corrosion of galvanized pipes; natural deposits erosion
Chromium	ppb	50	NA	10	Single Sample	ND	Discharge from steel and pulp mills; natural deposits erosion
Chromium VI	ppb	NA	0.02	NA	Range Average	ND - 0.18 0.08	Runoff/leaching from natural deposits; discharge from industrial waste factories
Copper (d,f)	ppm	1.3	0.3	0.05	Single Sample	ND	Internal corrosion of household pipes; natural deposits erosion
Cyanide	ppb	150	150	100	Single Sample	ND	Discharge from steel/metal, plastic, and fertilizer factories
					Control Range Optimal Fluoride Level	0.6-1.2 0.7	
Fluoride (g) Treatment-related	ppm	2	1	0.1	Range Average	0.6-0.63 0.6	Erosion of natural deposits; water additive that promotes strong teeth
Lead (f)	ppb	15	0.2	5	Single Sample	ND	House pipes internal corrosion; erosion of natural deposits
Mercury	ppb	2	1.2	1	Single Sample	ND	Erosion of natural deposits; factory discharge; landfill runoff
Nickel	ppb	100	12	10	Single Sample	ND	Erosion of natural deposits; discharge from metal factories
Nitrate (as N) (h)	ppm	10	10	0.4	Single Sample	ND	Runoff and leaching from fertilizer use; septic tank and sewage; natural deposits erosion
Nitrite (as N)	ppm	1	1	0.4	Single Sample	ND	Runoff and leaching from fertilizer use; septic tank and sewage; natural deposits erosion
Perchlorate (i)	ppb	6	1	2	Single Sample	ND	Industrial waste discharge
Selenium	ppb	50	30	5	Single Sample	ND	Refineries, mines, and chemical waste discharge; runoff from livestock lots
Thallium	ppb	2	0.1	1	Single Sample	ND	Leaching from ore processing; electronics factory discharge
DISINFECTION BY-PRODUCTS, DISINFECTANT RESIDUALS, AND DISINFECTION BY-PRODUCTS PRECURSORS (m)							
Total Trihalomethanes (TTHM) (n)	ppb	80	NA	1	Range Highest TTHM	18-116 116	By-product of drinking water chlorination
Haloacetic Acids (five) (HAA5) (o)	ppb	60	NA	1	Range Highest HAA5	ND-45 45	By-product of drinking water chlorination

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Bromate (p)	ppb	10	0.1	5	Range Average	ND - 7.4 ND	By-product of drinking water ozonation
Total Chlorine Residual	ppm	[4.0]	[4.0]	NA	Range Average	1.6 -3.6 3.0	Drinking water disinfectant added for treatment
Total Organic Carbon (TOC)	ppm	TT	NA	0.30	Range Average	2.0 -2.5 2.2	Various natural and man-made sources; TOC is a precursor for the formation of disinfection byproducts
SECONDARY STANDARDS--Aesthetic Standards							
Aluminum (d)	ppm	2	NA	.05	Range Average	ND - 0.17 ND	Residue from water treatment process; natural deposits erosion
Chloride	ppm	250	NA	NA	Sample	100	Runoff/leaching from natural deposits; seawater influence
Color	Color Units	15	NA	NA	Range Average	ND - 5 1	Naturally occurring organic materials
Copper (d)	ppm	1.0	NA	0.05	Single	ND	Internal corrosion of household pipes; natural deposits erosion; wood preservatives leaching
Foaming Agents (MBAS)	ppb	500	NA	NA	Sample	ND	Municipal and industrial waste discharges
Iron	ppb	300	NA	100	Range Average	ND ND	Leaching from natural deposits; industrial wastes
Manganese	ppb	50	NL = 500	20	Single	ND	Leaching from natural deposits
MTBE (d,e)	ppb	5	NA	3	Sample	ND	Gasoline discharge from watercraft engines
Odor Threshold	TON	3	NA	1	Single	ND	Naturally-occurring organic materials
Silver	ppb	100	NA	10	Sample	ND	Industrial discharges
Sulfate	ppm	250	NA	0.5	Range Average	122 - 210 166	Runoff/leaching from natural deposits; industrial wastes
Thiobencarb (d)	ppb	1	NA	1	Range	ND	Runoff/leaching from rice herbicide
Total Dissolved Solids (TDS)	ppm	500	NA	NA	Single	570	Runoff/leaching from natural deposits; seawater influence
Turbidity (a)	NTU	5	NA	0.1	Range Average	ND ND	Soil runoff
Zinc	ppm	5.0	NA	0.05	Single	ND	Runoff/leaching from natural deposits; industrial wastes
OTHER PARAMETERS							
CHEMICAL							
Acetochlor	ppb	NA	NA	2	Single	ND	Herbicide runoff
Alachlor	ppb	NA	NA	2	Sample	ND	Herbicide runoff
Boron	ppb	NL = 1000	NA	100	Single	140	Runoff/leaching from natural deposits; industrial wastes
Calcium	ppm	NA	NA	NA	Sample	61	

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Chlorate	ppb	NL = 800	NA	20	Range Average	270-420 336	By-product of drinking water chlorination; industrial processes
Dimethoate	ppb	NA	NA	0.7	Single Sample	ND	Runoff from insecticide used on crops and residential uses
Magnesium	ppm	NA	NA	NA	Single Sample	24	
Metolachlor	ppb	NA	NA	1	Single Sample	ND	Herbicide runoff
pH	pH Units	NA	NA	NA	Range Average	7.8 - 8.7 8.3	
Potassium	ppm	NA	NA	NA	Single Sample	4.8	
Sodium	ppm	NA	NA	NA	Single Sample	99	
Vanadium	ppb	NL = 50	NA	3	Single Sample	3	Naturally-occurring; industrial waste discharge
N-Nitrosodiethylamine (NDEA)(u)	ppt	NL=10	NA	5	Single Sample	ND	By-product of drinking water chloramination; industrial processes
N-Nitrosodimethylamine (NDMA)(u)	ppt	NL=10	3	2	Single Sample	ND	By-product of drinking water chloramination; industrial processes
N-Nitroso-di-n-butylamine (NDBA)(u)	ppt	NA	NA	4	Single Sample	ND	By-product of drinking water chloramination; industrial processes
N-Nitroso-di-n-propylamine (NDPA)(u)	ppt	NL=10	NA	7	Single Sample	ND	By-product of drinking water chloramination; industrial processes
N-Nitrosomethylethylamine (NMEA)(u)	ppt	NA	NA	3	Single Sample	ND	By-product of drinking water chloramination; industrial processes
N-Nitrosopyrrolidine (NPYR)(u)	ppt	NA	NA	2	Single Sample	ND	By-product of drinking water chloramination; industrial processes
Dichlorodifluoromethane (Freon 12)	ppb	NL = 1000	NA	0.5	Single Sample	ND	Industrial waste discharge
Ethyl- <i>tert</i> -butylether (ETBE)	ppb	NA	NA	3	Single Sample	ND	Used as gasoline additive
<i>tert</i> -Amyl-methylether (TAME)	ppb	NA	NA	3	Single Sample	ND	Used as gasoline additive
OTHER PARAMETERS - VOLUNTARY SAMPLING							
Perfluorooctanoic Acid					Single		
PFOA	ppt	NL=5.1	NA	NA	Sample	ND	
Perfluorooctanesulfonic Acid					Single		
PFOS	ppt	NL=6.5	NA	NA	Sample	ND	
Perfluorohexanoic acid					Single		
PFHxA	ppt	NA	NA	NA	Sample	1.1	

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ABBREVIATIONS AND FOOTNOTES

Abbreviations

AI	Aggressiveness Index	N	Nitrogen
AL	Action Level	NA	Not Applicable
CFE	Combined Filter Effluent	NL	Notification Level
CFU	Colony-Forming Units	ND	None Detect
LRAA	Locational Running Annual Average; highest LRAA is the highest of all Locational Running Annual Averages calculated as average of all samples collected within a 12-month period	NTU	Nephelometric Turbidity Units
		pCi/L	picoCuries per Liter
		PHG	Public Health Goal
		ppb	parts per billion or micrograms per liter (µg/L)
DBP	Disinfection By-Products	ppm	parts per million or milligrams per liter (mg/L)
DLR	Detection Limits for purposes of Reporting	ppq	parts per quadrillion or picograms per liter (pg/L)
HPC	Heterotrophic Plate Count	ppt	parts per trillion or nanograms per liter (ng/L)
MBAS	Methylene Blue Active Substances	SI	Saturation Index (Langelier)
MCL	Maximum Contaminant Level	RAA	Running Annual Average
MCLG	Maximum Contaminant Level Goal	TOC	Total Organic Carbon
MFL	Million Fibers per Liter	TON	Threshold Odor Number
MRDL	Maximum Residual Disinfectant Level	TT	Treatment Technique
MRDLG	Maximum Residual Disinfectant Level Goal	µS/cm	microSiemen per centimeter; or micromho per centimeter (µmho/cm)
		TOVWTP	Twin Oaks Valley Water Treatment Plant

Footnotes

(a)	The turbidity level from the CFE of the membranes shall be less than or equal to 0.1 NTU in 95% of the measurements taken each month and shall not exceed 1.0 NTU at any time. Turbidity is a measure of the cloudiness of the water and is an indicator of treatment performance.	(m)	TOVWTP met all provisions of the Stage 2 Disinfectants/Disinfection By-Products (D/DBP) Rule. Compliance was based on the LRAA. Average and range for the treatment plant effluent were taken from daily and monthly samples for TTHM and HAA5.
(b)	Total coliform MCLs: No more than 5.0% of the monthly samples may be total coliform-positive. In 2023, 260 samples were analyzed and 257 samples were negative for total coliforms. The MCL was not violated.	(n)	DLR = 1.0 ppb for each TTHM (bromoform, chloroform, dibromochloromethane, bromodichloromethane).
(c)	<i>E. coli</i> MCLs: The occurrence of two (2) consecutive total coliform-positive samples, one of which contains <i>E. coli</i> , constitutes an acute MCL violation. The MCL was not violated.	(o)	DLR = 1.0 ppb for each HAA5 analyte (dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid) except for monochloroacetic acid which has a DLR = 2.0 ppb.
(d)	Aluminum, copper, MTBE, and thiobencarb have both primary and secondary standards.	(p)	Running annual average was calculated from quarterly results of monthly and daily samples. Bromate reporting level is 1 ppb.
(e)	MTBE reporting level is 0.5 ppb.		
(f)	Lead and copper are regulated as a Treatment Technique under the Lead and Copper Rule. It requires systems to take water samples at the consumers' tap. The action levels, which trigger water systems into taking treatment steps if exceeded in more than 10% of the tap water samples, are 1.3 ppm for copper and 15 ppb for lead.		
(g)	TOVWTP was in compliance with all provisions of the State's Fluoridation System Requirements.		
(h)	State MCL is 45 mg/L as nitrate, which equals 10 mg/L as N.		

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(i) TOVWTP's perchlorate reporting level is 2 ppb, which is below the state DLR of 4 ppb.

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