

TABLE 2. 2008 TREATED WATER QUALITY BELOW JAPAN GULCH PLANT

PARAMETER		2008 ANALYTICAL RESULTS				2008 CANADIAN GUIDELINES	TEN YEAR RESULTS (1999-2008)			
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range Min. Max.		≤ = Less than or equal to	Ten Year Median	Samples Analyzed	Range Min.-Max.	Sampling Frequency
mg/L = parts per million ug/L = parts per billion ng/L = parts per trillion										
Physical Parameters (< means less than instrument can detect)										
Alkalinity, Total	mg/L	12.2	12	11.3	13.3		13.8	196	6.7 - 16.1	12/yr
Carbon, Dissolved Organic	mg/L	2.4	10	2.3	3.8		2.4	95	1.7 - 6.0	10/yr
Carbon, Total Organic	mg/L	2.4	10	2.2	2.5	Guideline Archived	2.5	98	1.7 - 9.5	10/yr
Colour, True	TCU	4.6	60	2.9	7.2	≤ 15 AO	5.4	455	1.4 - 14	52/yr
Conductivity @ 25 C	uS/cm	42.6	51	39.8	45.1		43.8	417	31.6 - 48.9	52/yr
Hardness as CaCO ₃	mg/L	16.6	10	14.8	18	Guideline Archived	17.1	111	9.5 - 30.7	12/yr
Odour	Flavour Profile	Trace	249	Odour free	Strong	Inoffensive	Weak	1,980	Odour free - Strong	250/yr
pH	pH units	7.13	51	6.74	7.42	6.5 - 8.5 AO	7.12	415	6.68 - 7.52	52/yr
Taste	Flavour Profile	Trace	248	Trace	Moderate	Inoffensive	Weak	1,975	Taste free - Strong	250/yr
Total Dissolved Solids	mg/L	26.9	15	24.5	30.4	≤500 AO	26	211	13.2 - 33	12/yr
Total Suspended Solids	mg/L	0.4	15	<0.2	5		0.5	211	<0.03 - 10	12/yr
Total Solids	mg/L	27	15	24	31		27	210	14 - 41	12/yr
Turbidity, Grab Samples	NTU	0.40	259	0.25	38.1	1 MAC and ≤ 5 AO	0.39	1,909	0.16 - 38.1	250/yr
Water Temperature, Grab Samples	degrees C	9.7	251	3.3	17.7	≤ 15 AO	9.8	2,009	2.5 - 22.1	250/yr
Non-Metallic Inorganic Chemicals (< means less than instrument can detect)										
Ammonia, Total	ug/L as N	140	10	88	264	Guideline Under Review	173	93	<0.61 - 581	12/yr
Bromide	mg/L as Br	0.005	9	0.002	0.028		0.003	73	<0.0002 - 0.028	12/yr
Chloride	mg/L as Cl	3.66	2	3.26	4.07	≤ 250 AO	3.74	16	1.64 - 6.57	2/yr
Cyanide	mg/L as Cn	<0.015	2			0.2 MAC	<0.015	17	<0.002 - <0.015	2/yr
Fluoride	mg/L as F	<0.007	2			1.5 MAC	0.008	16	<0.007 - 0.042	2/yr
Nitrate, Total	ug/L as N	23.2	10	8.7	36.2	10000 MAC	17.6	93	<0.3 - 105	12/yr
Nitrite, Total	ug/L as N	<0.3	10			3.2 MAC	<0.3	91	<0.16 - 3.6	12/yr
Nitrogen, Total	ug/L as N	289	10	214	406		271	91	135 - 534	12/yr
Phosphate, Ortho, Dissolved	ug/L as P	0.87	10	0.42	1.87		0.93	93	<0.04 - 2.93	12/yr
Phosphate, Total, Dissolved	ug/L as P	2.77	10	1.68	3.7		3.26	91	<1.15 - 8.99	12/yr
Phosphate, Total	ug/L as P	4.94	10	3.32	6.21		5.3	93	2.17 - 10.7	12/yr
Silica	mg/L as SiO ₂	3.36	10	2.69	4.30		3.82	36	1.31 - 5.9	12/yr
Silicon	mg/L as Si	1.64	9	1.33	1.91		1.82	52	1.09 - 19.3	10/yr
Sulphate	mg/L as SO ₄	1.84	10	1.40	2.18	≤ 500 AO	1.58	93	<0.86 - 3.97	12/yr
Sulphide	mg/L as H ₂ S	<0.006	2	<0.005	<0.007	≤ 0.05 AO	<0.05	18	<0.005 - <0.062	2/yr
Sulfur	mg/L as S	<3.0	9				0.6	67	<0.5 - <3	12/yr

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Metallic Inorganic Chemicals (< means less than instrument can detect)										
Aluminum	mg/L as Al	0.015	9	0.013	0.024	0.1 AO and 0.2 Operational	0.020	72	<0.001 - 0.17	10/yr
Antimony	mg/L as Sb	<0.0005	9			0.006 MAC	<0.001	73	<0.000005 - <0.06	10/yr
Arsenic	mg/L as As	<0.0001	9	<0.0001	0.0002	0.01 MAC	<0.001	74	<0.00003 - <0.06	10/yr
Barium	mg/L as Ba	0.004	9	0.003	0.005	1.0 MAC	0.004	75	<0.002 - 0.012	10/yr
Beryllium	mg/L as Be	<0.0001	9				<0.0002	73	<0.0001 - <0.003	10/yr
Bismuth	mg/L as Bi	<0.001	9				<0.05	66	<0.001 - <0.05	10/yr
Boron	mg/L as B	<0.05	9	0.007	<0.05	5 MAC	<0.008	75	<0.004 - 0.24	10/yr
Cadmium	mg/L as Cd	<0.00001	9	<0.00001	0.00029	0.005 MAC	<0.0001	73	<0.00001 - <1.0	10/yr
Calcium	mg/L as Ca	4.80	9	4.32	5.12	No Guideline Required	5.00	75	2.84 - 8.98	10/yr
Cerium	ug/L as Ce	Not analyzed in 2008					0.005	2	0.000003 - 0.01	Irregular
Cesium	ug/L as Cs	Not analyzed in 2008					<0.03	2		Irregular
Chromium	mg/L as Cr	<0.001	9			0.05 MAC	<0.005	72	<0.0003 - 0.019	10/yr
Cobalt	mg/L as Co	<0.0005	9				<0.0005	73	<0.00002 - 0.02	10/yr
Copper	mg/L as Cu	0.022	9	<0.01	0.036	≤ 1.0 AO	0.013	71	0.003 - 0.044	10/yr
Dysprosium	ug/L as Dy	Not analyzed in 2008					0.005	2	0.0006 - <0.01	Irregular
Erbium	ug/L as Er	Not analyzed in 2008					<0.0006	2		Irregular
Europium	ug/L as Eu	Not analyzed in 2008					0.002	2	0.00001 - <0.003	Irregular
Gallium	ug/L as Ga	Not analyzed in 2008					<0.05	2		Irregular
Gadolinium	ug/L as Gd	Not analyzed in 2008					<0.002	2		Irregular
Germanium	ug/L as Ge	Not analyzed in 2008					<0.001	2		Irregular
Gold	mg/L as Au	Not analyzed in 2008					<0.04	8	<0.0000001 - <0.04	Irregular
Hafnium	ug/L as Hf	Not analyzed in 2008					<0.005	2		Irregular
Holmium	ug/L as Ho	Not analyzed in 2008					0.002	2	0.0009 - <0.003	Irregular
Iron	mg/L as Fe	0.039	9	0.019	0.073	≤ 0.3 AO	0.039	75	0.014 - 0.102	10/yr
Lanthanum	mg/L as La	Not analyzed in 2008					<0.02	8	<0.000001 - <0.02	Irregular
Lead	ug/L as Pb	0.3	9	<0.2	0.9	10 MAC	<0.5	73	0.03 - <60	10/yr
Lithium	ug/L as Li	<5.0	9				<2	30	<0.06 - <5	Irregular
Lutetium	ug/L as Lu	Not analyzed in 2008					0.0700	2	0.0006 - <0.14	Irregular
Magnesium	mg/L as Mg	1.15	9	0.98	1.26	No Guideline Required	1.18	75	0.59 - 2.0	10/yr
Manganese	mg/L as Mn	0.007	9	0.003	0.011	≤ 0.05 AO	0.007	75	<0.003 - 0.035	10/yr
Mercury, Methyl	ng/L as Hg	<0.01	1				0.020	50	<0.01 - 0.065	Special
Mercury, Total	ug/L as Hg	<0.02	10	0.00097	<0.02	1000 MAC	0.0009	75	<0.00005 - 0.04	10/yr
Molybdenum	mg/L as Mo	<0.001	9				<0.005	75	<0.00003 - 0.026	10/yr
Neodymium	ug/L as Nd	Not analyzed in 2008					<0.004	2		Irregular
Nickel	mg/L as Ni	<0.001	9				<0.008	75	0.0002 - <0.05	10/yr
Phosphorus	mg/L as P	Not analyzed in 2008					<0.1	65	0.02 - 0.2	10/yr
Potassium	mg/L as K	0.2	9	0.15	0.2	Guideline Under Review	<1	78	0.006 - 1.05	10/yr
Praseodymium	ug/L as Pr	Not analyzed in 2008					0.003	2	0.002 - 0.004	Irregular
Rubidium	ug/L as Rb	Not analyzed in 2008					0.21	2		Irregular
Samarium	ug/L as Sm	Not analyzed in 2008					<0.006	2	<0.003 - <0.01	Irregular
Scandium	mg/L as Sc	Not analyzed in 2008					<0.05	8	0.001 - <0.05	Irregular

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Selenium	mg/L as Se	0.0001	9			0.01 MAC	0.0010	77	<0.00005 - <0.5	10/yr
Silver	mg/L as Ag	<0.00002	9			No Guideline Required	<0.01	73	0.00001 - <1.0	10/yr
Sodium	mg/L as Na	1.69	9	1.50	1.77	≤ 200 AO	1.7	78	<0.05 - 2.8	10/yr
Strontium	mg/L as Sr	0.015	9	0.014	0.018		0.015	75	0.011 - 0.028	10/yr
Tantalum	ug/L as Ta	Not analyzed in 2008					<0.71	2		Irregular
Tellurium	mg/L as Te	Not analyzed in 2008					<0.05	23		Irregular
Thallium	ug/L as Tl	<0.05	9				<0.1	66	0.02 - <30	10/yr
Thorium	ug/L as Th	Not analyzed in 2008					<0.001	2		Irregular
Thulium	ug/L as Tm	Not analyzed in 2008					<0.0001	2		Irregular
Tin	mg/L as Sn	<0.005	9				<0.02	69	<0.00002 - <0.06	10/yr
Titanium	mg/L as Ti	<0.005	9				<0.003	75	0.0007 - <0.021	10/yr
Tungsten	mg/L as W	Not analyzed in 2008					<0.05	8	<0.000005 - <0.05	Irregular
Uranium	ug/L as U	<0.1	9			20 MAC	<0.1	37	<0.005 - <0.1	10/yr
Vanadium	mg/L as V	<0.005	9				<0.005	75	0.0002 - <0.01	10/yr
Yttrium	ug/L as Y	Not analyzed in 2008					0.022	2	0.005 - 0.04	Irregular
Ytterbium	ug/L as Yb	Not analyzed in 2008					0.0007	2	0.0004 - <0.001	Irregular
Zinc	mg/L as Zn	<0.005	9	<0.005	0.008	≤5.0 AO	<0.005	75	0.0006 - 0.049	10/yr
Zirconium	ug/L as Zr	<0.5	9				<5	68	0.0004 - <5	10/yr

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Microbial Parameters (< means less than method or instrument can detect)										
Coliform Bacteria										
Coliform, Total	CFU/100 mL	0	258	0	1	0 MAC	0	2,022	0 - 16	250/yr
Coliform, Fecal	CFU/100 mL	Discontinued in April 2006				0 MAC	0	1,332		Discontinued
<i>E. coli</i>	CFU/100 mL	0	258			0 MAC	0	690		250/yr
Coliform, Background	CFU/100 mL	Discontinued in July 2006				No Guideline Required	0	1,403	0 - 3,200	Discontinued
Heterotrophic Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	0	245	0	1,230	No Guideline Required	10	1,978	0 - 9,400	250/yr
Hetero. Plate Count, 35C (2 day)	CFU/1 mL	Discontinued in 2005					1	994	0 - 300	Discontinued
<i>Aeromonas</i> species	CFU/100 mL	0	244	0	20	No Guideline Required	0	1,218	0 - 44	Special
Disinfectants (< means less than instrument can detect)										
Disinfectants										
Chlorine, Total Residual	mg/L as Cl ₂	1.18	264	0.66	1.76	3.0 MAC (chloramines)	1.23	2,072	0 - 1.79	250/yr
Dichloramine	mg/L as Cl ₂	0.13	244	<0.01	1.09		0.12	1194	<0.01 - 1.09	250/yr
Monochloramine	mg/L as Cl ₂	1.01	244	<0.03	1.46		0.99	1195	0.03 - 1.70	250/yr
Biological Toxins (< means less than instrument can detect)										
Cyanobacterial Toxins										
Anatoxin A	ug/L	Not analyzed in 2008					<0.16	9		Special
Microcystin-LR	ug/L	Not analyzed in 2008				1.5 MAC	<0.16	10		Special
Other Microcystins	ug/L	Not analyzed in 2008					<0.16	10		Special

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Disinfection By-Products (< means less than instrument can detect)										
Trihalomethanes (THMs)										
Bromodichloromethane (BDCM)	ug/L	1.656	6	0.9	2.6	16 MAC	1	55	<0.3 - 2.1	6/yr
Bromoform (BRFM)	ug/L	<0.6	6	<0.1	<0.6		<0.6	55	<0.2 - <2.0	6/yr
Chloroform (CHLF)	ug/L	13.7	6	12.9	19.4		11.3	55	2.1 - 19.4	6/yr
Dibromochloromethane (DBCM)	ug/L	<0.5	6	<0.1	<0.5		<0.5	55	<0.1 - <1.0	6/yr
Total Trihalomethanes (TTHM)	ug/L	15.4	6	14.3	21.9	100 MAC	12.2	56	2.1 - 21.9	6/yr
Haloacetic Acids (HAAs)										
Bromochloroacetic Acid (BCAA)	ug/L	0.64	6	0.43	0.68		0.42	46	0.21 - <1.0	6/yr
Bromodichloroacetic Acid (BDCAA)	ug/L	<0.2	6				<0.2	46	<0.2 - <1.0	6/yr
Chlorodibromoacetic Acid (CDBAA)	ug/L	<0.5	6				<0.5	45	<0.5 - <2.0	6/yr
Dibromoacetic Acid* (DBAA)	ug/L	<0.2	6	<0.2	0.23		<0.2	45	<0.2 - <1.0	6/yr
Dichloroacetic Acid* (DCAA)	ug/L	11.0	6	7.78	15.1		8.84	46	<1.0 - 22.2	6/yr
Monobromoacetic Acid* (MBAA)	ug/L	<0.2	6				<0.2	46	<0.2 - <1.0	6/yr
Monochloroacetic Acid* (MCAA)	ug/L	<0.5	6				<0.5	46	<0.5 - <2.0	6/yr
Tribromoacetic Acid (TBAA)	ug/L	<1.0	6				<1.0	45	<1.0 - <4.0	6/yr
Trichloroacetic Acid* (TCAA)	ug/L	4.14	6	1.54	7.15		4.92	46	<1.0 - 8.49	6/yr
Haloacetic Acids (*5 Total, HAA5)	ug/L	16.5	6	9.3	19.8	80 MAC	14.7	46	<1.0 - 30.2	6/yr
Haloacetic Acids (9 Total, HAA9)	ug/L	17.1	6	10.0	20.5		15.0	46	<4.0 - 31.0	6/yr
Other Disinfection By-Products										
1,1,1-Trichloro-2-propanone	ug/L	Not analyzed in 2008					0.8	4	<0.5 - 1.6	Special
1,1,-Dichloropropanone	ug/L	Not analyzed in 2008					1.1	4	0.9 - 1.2	Special
Bromate	ug/L	<0.09	2	<0.03	<0.15	10 MAC	<0.03	5	<0.03 - <0.6	2/yr
Bromochloroacetonitrile	ug/L	Not analyzed in 2008					<0.5	4		Special
Chloral Hydrate	ug/L	Not analyzed in 2008					0.9	3	<0.5 - 1.4	Special
Cyanogen Chloride	ug/L	Not analyzed in 2008					<0.5	3		Special
Chloropicrin	ug/L	Not analyzed in 2008					<0.5	4		Special
Dibromoacetonitrile	ug/L	Not analyzed in 2008					<0.5	4		Special
Dichloroacetonitrile	ug/L	Not analyzed in 2008					<0.5	4	<0.5 - 0.5	Special
N-nitrosodimethylamine (NDMA)	ug/L	<0.002	1				<0.002	2	<0.001 - <0.002	Special
Trichloroacetonitrile	ug/L	Not analyzed in 2008					0.55	4	<0.5 - 0.8	Special

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