



Ag Testing - Consulting

Account No. : 43711

Water Analysis Report

PORTER, JONATHAN
 TUSTIN BREWING CO
 13011 NEWPORT AVE STE 100
 TUSTIN CA 92780

Invoice No. : 1065339
 Date Received : 03/25/2010
 Date Reported : 03/26/2010

Lab Number : 1332

Results For : TUSTIN BREWING CO

Results For : TUSTIN BREWING CO

Location :

Location :

Sample ID : A

Sample ID : B

pH	8.1	pH	8.1
Total Dissolved Solids (TDS) Est	476	Total Dissolved Solids (TDS) Est	454
Electrical Conductivity, mmho/cm	0.79	Electrical Conductivity, mmho/cm	0.76
Cations / Anions, me/L	8.1 / 8.1	Cations / Anions, me/L	7.6 / 7.5

	ppm		ppm
Sodium, Na	57	Sodium, Na	65
Potassium, K	2	Potassium, K	2
Calcium, Ca	76	Calcium, Ca	58
Magnesium, Mg	21	Magnesium, Mg	22
Total Hardness, CaCO ₃	278	Total Hardness, CaCO ₃	237
Nitrate, NO ₃ -N	6.5 (SAFE)	Nitrate, NO ₃ -N	6.3 (SAFE)
Sulfate, SO ₄ -S	30	Sulfate, SO ₄ -S	42
Chloride, Cl	105	Chloride, Cl	90
Carbonate, CO ₃	6	Carbonate, CO ₃	3
Bicarbonate, HCO ₃	156	Bicarbonate, HCO ₃	106
Total Alkalinity, CaCO ₃	138	Total Alkalinity, CaCO ₃	92

As-Received Water at Tustin

Water after boiling

Total Hardness = (Ca/40 + Mg/24)*100 (Expressed as CaCO₃)

Pre Boil = (76/40 + 21/24)*100 = 277.5

After boil = (58/40 + 22/24)*100 = 236.7

Neglects effect from Zn, Cu, Fe, Sr and other divalent cations

Reviewed By : Raymond Ward

3/26/2010

Copy : 1

Page 1 of 3

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2010 City of Newport Beach Groundwater Quality

Chemical	MCL	PHG (MCLG)	Average Amount	Range of Detections	MCL Violation?	Most Recent Sampling Date	Typical Source of Contaminant
Radiologicals							
Uranium (pCi/L)	20	0.43	6.9	1.8 – 12	No	2009	Erosion of Natural Deposits
Inorganic Chemicals							
Arsenic (ppb)	10	0.004	<2	ND – 2.6	No	2009	Erosion of Natural Deposits
Barium (ppm)	1	2	<0.1	ND – 0.11	No	2009	Erosion of Natural Deposits
Fluoride (ppm)	2	1	0.36	0.33 – 0.43	No	2009	Erosion of Natural Deposits
Nitrate (ppm as NO ₃)	45	45	6.4	ND – 14	No	2010	Fertilizers, Septic Tanks
Nitrate+Nitrite (ppm as N)	10	10	1.5	ND – 3.2	No	2010	Fertilizers, Septic Tanks
Secondary Standards*							
Chloride (ppm)	500*	n/a	55	28 – 84	No	2010	Erosion of Natural Deposits
Specific Conductance (µmho/cm)	1,600*	n/a	702	430 – 983	No	2010	Erosion of Natural Deposits
Sulfate (ppm)	500*	n/a	114	45 – 182	No	2010	Erosion of Natural Deposits
Total Dissolved Solids (ppm)	1000*	n/a	441	224 – 652	No	2010	Erosion of Natural Deposits
Turbidity (ntu)	5*	n/a	0.1	ND – 0.2	No	2009	Erosion of Natural Deposits
Unregulated Contaminants Requiring Monitoring							
Alkalinity, total (ppm as CaCO ₃)	Not Regulated	n/a	170	124 – 232	n/a	2010	Erosion of Natural Deposits
Bicarbonate (ppm as HCO ₃)	Not Regulated	n/a	215	152 – 283	n/a	2009	Erosion of Natural Deposits
Boron (ppb)	Not Regulated	n/a	<100	ND – 120	n/a	2010	Erosion of Natural Deposits
Calcium (ppm)	Not Regulated	n/a	78	34 – 130	n/a	2010	Erosion of Natural Deposits
Hardness, total (ppm as CaCO ₃)	Not Regulated	n/a	246	101 – 417	n/a	2010	Erosion of Natural Deposits
Magnesium (ppm)	Not Regulated	n/a	12	3.8 – 22	n/a	2010	Erosion of Natural Deposits
pH (units)	Not Regulated	n/a	7.9	7.8 – 8.1	n/a	2010	Acidity, Hydrogen Ions
Potassium (ppm)	Not Regulated	n/a	3.2	2.3 – 4.1	n/a	2010	Erosion of Natural Deposits
Sodium (ppm)	Not Regulated	n/a	54	51 – 58	n/a	2010	Erosion of Natural Deposits
Vanadium (ppb)	Not Regulated	n/a	<3	ND – 3.7	n/a	2009	Erosion of Natural Deposits

ppb = parts-per-billion; ppm = parts-per-million; pCi/L = picoCuries per liter; ntu = nephelometric turbidity units; ND = not detected; n/a = not applicable; < = average is less than the detection limit for reporting purposes; MCL = Maximum Contaminant Level; (MCLG) = federal MCL Goal; PHG = California Public Health Goal
µmho/cm = micromho per centimeter *Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

$$\begin{aligned} \text{Total Hardness} &= (\text{Ca}/40 + \text{Mg}/24) * 100 \\ &= (78/40 + 12/24) * 100 = 245 \end{aligned}$$

Total Alkalinity:

$$\begin{aligned} A_T &= [\text{HCO}_3^-]_T + 2[\text{CO}_3^{-2}]_T + [\text{B}(\text{OH})_4^-]_T + [\text{OH}^-]_T + 2[\text{PO}_4^{-3}]_T \\ &+ [\text{HPO}_4^{-2}]_T + [\text{SiO}(\text{OH})_3^-]_T - [\text{H}^+] - [\text{HSO}_4^-] - [\text{HF}] \end{aligned}$$

$$A_T = [\text{HCO}_3^-]_T + 2[\text{CO}_3^{-2}]_T + [\text{OH}^-]_T + [\text{SiO}(\text{OH})_3^-]_T - [\text{H}^+]$$

For cases where borate, phosphate bisulfate and fluoride are negligible