

**CHEMICAL ANALYSIS COMPILED FROM LABORATORY REPORTS  
SUBMITTED FOR RECOVERED WELL STIMULATION FLUIDS IN  
DOGGR'S WELL STIMULATION PUBLIC DISCLOSURE REPORT.**

Chemical	Units	AVG	MAX	MIN	MCL	PHG	Prop 65	Exceeded MCL or PHG (293 records)
Benzene	ug/l	703	7700	2	1	0.15	✓	99% > MCL & PHG. 80%, 100 to 1000x > MCL.
Ethylbenzene	ug/l	193	1200	1.9	300	300	✓	19% of records > MCL & PHG
Toluene	ug/l	1113	11000	2.4	150	150	✓	83% of records > MCL & PHG
Total Xylenes	ug/l	926	7600	11	1750	1800		12% of records > MCL & PHG
p- & m-Xylenes	ug/l	593	5500	6.6				
o-Xylene	ug/l	336	2100	2.8				
Acenaphthene	ug/l	111	24000	0.07				
Acenaphthylene	ug/l	46	7400	0.059				
Anthracene	ug/l	8	29	1.3				
Benzo[a]anthracene	ug/l	3	17	0.099			✓	
Benzo[b]fluoranthene	ug/l	1	3.3	0.3			✓	
Benzo[k]fluoranthene	ug/l	3	4.9	1.2			✓	
Benzo[a]pyrene	ug/l	7	35	0.14	0.2	0.007	✓	17 records (6%) > MCL & PHG
Benzo[g,h,i]perylene	ug/l	1	1.4	0.21				
Chrysene	ug/l	53	4500	0.16			✓	
Dibenzo[a,h]anthracene	ug/l	23	23	23				
Fluoranthene	ug/l	48	2500	0.19				
Fluorene	ug/l	283	66000	0.27				
Indeno[1,2,3-cd]pyrene	ug/l	8	22	0.4				
Naphthalene	ug/l	461	99000	0.3			✓	
Phenanthrene	ug/l	299	76000	0.15				
Pyrene	ug/l	43	3800	0.041				
TPH - Crude Oil	ug/l	4108522	990000000	8800				
Methane	mg/L	1	15	0.0012				
Electrical Conductivity @ 25 C (Field)	umhos/cm	25140	110000	240				
pH (Field Test)	pH	7	9.43	3.59				
Temperature (Field Test)	F	95	133	64				
Total Calcium	mg/L	16484	170000	10				
Total Magnesium	mg/L	888	8800	0.88				
Total Sodium	mg/L	4937	130000	84				
Total Potassium	mg/L	1604	66000	1.3				

Chemical	Units	AVG	MAX	MIN	MCL	PHG	Prop 65	Exceeded MCL or PHG (293 records)
Bicarbonate Alkalinity as CaCO3	mg/L	656	3100	17				
Carbonate Alkalinity as CaCO3	mg/L	132	470	7.6				
Hydroxide Alkalinity as CaCO3	mg/L	0	0	0				
Total Alkalinity as CaCO3	mg/L	660	3100	17				
Bromide	mg/L	55	310	0.44				
Chloride	mg/L	46972	380,000	110	500*			90% of records > MCL
Fluoride	mg/L	8	100	0.07	2	1		47 records > PHG (16%). 12% > MCL
Nitrate as NO3	mg/L	23	270	0.29	45	45		8 records > MCL & PHG
Sulfate	mg/L	149	2200	8.2	500*			12 records > MCL
pH	pH	7	9.26	4.25				
Electrical Conductivity @ 25 C	umhos/cm	26592	97700	667	1600*			95% of records > MCL
Total Dissolved Solids @ 180 C	mg/L	120050	1,400,000	360	1000*			97% of records > MCL. 73% > 10x MCL
Fixed Dissolved Solids	mg/L	65035	960000	270				
Volatile Dissolved Solids	mg/L	76049	640000	90				
Hexavalent Chromium	ug/L	8	54	0.71	10	0.02	✓	37% of records > PHG
Total Antimony	ug/L	996	8200	19	6	20		24% of records > MCL
Total Arsenic	ug/L	1094	15000	9	10	0.004	✓	45% of records > MCL
Total Barium**	ug/L	5120	160000	33	1000	2000		78% of records > MCL
Total Beryllium	ug/L	47	290	0.51	4	1		20 records (7%) > PHG
Total Boron	mg/L	38	110	0.26				
Total Cadmium	ug/L	38	600	2.2	5	0.04	✓	25 records (9%) > PHG and 18 records > MCL
Total Chromium	ug/L	15	160	1.3	50			4 records > MCL
Total Cobalt	ug/L	139	1200	1.7				
Total Copper	ug/L	138	1900	2.9	1000*	300		21 records (7%) > PHG
Total Lead	ug/L	520	5800	6.5	15	0.2	✓	43% of records > MCL
Total Lithium	mg/L	51	520	0.0095				
Total Mercury	ug/L	0	0.85	0.025	2		✓	
Total Molybdenum	ug/L	696	11000	1.7				
Total Nickel	ug/L	35	280	4.4	100	12	✓	34% of records > PHG
Total Selenium	ug/L	1892	16000	29	50	30		35% of records > MCL
Total Silver	ug/L	310	2000	4.1	100*			18 records over (6%) MCL
Total Strontium	mg/L	306	3200	0.25				

Chemical	Units	AVG	MAX	MIN	MCL	PHG	Prop 65	Exceeded MCL or PHG (293 records)
Total Thallium	ug/L	3081	10000	63	2	0.1		10 samples > MCL, up to 5000x
Total Vanadium	ug/L	29	730	2.2				
Total Zinc	ug/L	526	9400	12	5000*			7 records > MCL
Total Carbohydrates	ug/L	369679	5000000	0				
Gross Alpha	pCi/L	283	3040	0	15			26% of records > MCL
Radium 226	pCi/L	73	1152	0		0.05		94% of records > MCL
Radium 228	pCi/L	56	959	0		0.019		89% of records > MCL
Total Recoverable Uranium	pCi/L	3	95	0.17	20	0.43		62% > PHG, 6 records > MCL

Data were compiled from 293 total records submitted by Aera Energy for 2014. The 167 records with miss data or no sample taken were not considered in the total.

MCL (Maximum Contaminant Level): Legal limit allowed in drinking water by state law.

\*Secondary MCL: Advisory-only guideline based on taste/smell/color for chemicals with no negative health effects.

PHG (Public Health Goal): Level the state says poses "no significant health risk if consumed for a lifetime."

Prop. 65: CA State registry of chemicals known to cause cancer or birth defects.

pCi/L: Intensity of radioactivity in a sample of material.

\*\* The California MCL for barium was set in 1977 at 1,000 ppb. In 1991 U.S. EPA recalculated its MCL at 2,000 ppb, and California adopted that same level as a PHG, but has not updated the state MCL.

Source: Environmental Working Group, from California DOGGR Well Stimulation Public Disclosure Report accessed January 5, 2015