



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804
Phone: (510) 620-2911 Fax: (510) 620-2940

FINAL Analysis Results Report for Task ID. 13-0276

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0276-01	Sample ID: First Qtr 2013 Sample Type: Air Composite	Time Collected: 2/7/2013 13:24	Sampling Point: Eureka	
Beryllium-7	HASL Ga-01-R	0.0581 +/- 0.00187	0.00277	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00349 +/- 0.000652	0.00318	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000362 +/- 0.000131	0.000373	pCi/m3
Niobium-95	HASL Ga-01-R	0.000145 +/- 0.000150	0.000439	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.000118 +/- 0.000112	0.000339	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000202 +/- 0.000351	0.00100	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000549 +/- 0.0000375	0.0000979	pCi/m3
Cerium-141	HASL Ga-01-R	0.000174 +/- 0.000185	0.000606	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000564 +/- 0.000241	0.000589	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0277

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0277-01	Sample ID: First Qtr 2013	Time Collected: 2/11/2013 15:20	Sampling Point: Humboldt Bay	
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0605 +/- 0.00171	0.00202	pCi/m3
Potassium-40	HASL Ga-01-R	0.00201 +/- 0.000448	0.00200	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000663 +/- 0.000118	0.000339	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000235 +/- 0.000125	0.000302	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000952 +/- 0.000101	0.000248	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000105 +/- 0.000305	0.000795	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000277 +/- 0.0000254	0.0000803	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000301 +/- 0.000157	0.000435	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000142 +/- 0.000166	0.000450	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0279

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0279-01	Sample ID: First Qtr 2013 Sample Type: Air Composite	Time Collected: 2/12/2013 09:30	Sampling Point: Richmond	
Beryllium-7	HASL Ga-01-R	0.103 +/- 0.00311	0.00344	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00417 +/- 0.000654	0.00321	pCi/m3
Niobium-95	HASL Ga-01-R	0.000102 +/- 0.000159	0.000458	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000326 +/- 0.000166	0.000391	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.000123 +/- 0.000116	0.000349	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000134 +/- 0.000379	0.00104	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000194 +/- 0.0000373	0.000106	pCi/m3
Cerium-141	HASL Ga-01-R	0.000197 +/- 0.000209	0.000680	pCi/m3
Cerium-144	HASL Ga-01-R	0.00000196 +/- 0.000263	0.000632	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0278

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0278-01	Sample ID: First Qtr 2013 Sample Type: Air Composite	Time Collected: 2/5/2013 10:16	Sampling Point: Livermore	
Beryllium-7	HASL Ga-01-R	0.130 +/- 0.00355	0.00300	pCi/m3
Potassium-40	HASL Ga-01-R	0.00113 +/- 0.000632	0.00291	pCi/m3
Niobium-95	HASL Ga-01-R	0.000299 +/- 0.000166	0.000511	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000130 +/- 0.000192	0.000446	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.000272 +/- 0.000122	0.000384	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.00000114 +/- 0.000396	0.00111	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000643 +/- 0.0000378	0.000114	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000150 +/- 0.000227	0.00106	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000267 +/- 0.000168	0.000450	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0281

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0281-01 Sample ID: First Qtr 2013 Time Collected: 2/8/2013 16:30 Sampling Point: San Luis Obispo Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.119 +/- 0.00319	0.00230	pCi/m3
Potassium-40	HASL Ga-01-R	0.000253 +/- 0.000460	0.00216	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000506 +/- 0.000133	0.000377	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000817 +/- 0.000154	0.000349	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.000160 +/- 0.000112	0.000293	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000533 +/- 0.000312	0.000929	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000302 +/- 0.0000330	0.0000906	pCi/m3
Cerium-141	HASL Ga-01-R	0.000277 +/- 0.000185	0.000485	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000221 +/- 0.000196	0.000485	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0275

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0275-01	Sample ID: First qtr 2013	Time Collected: 2/8/2013	14:30	Sampling Point: Diablo Canyon
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0805 +/- 0.00222	0.00190	pCi/m3
Potassium-40	HASL Ga-01-R	0.000971 +/- 0.000455	0.00208	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000665 +/- 0.000127	0.000362	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000767 +/- 0.000140	0.000317	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.00000447 +/- 0.000102	0.000283	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000306 +/- 0.000307	0.000811	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000387 +/- 0.0000337	0.0000886	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000322 +/- 0.000181	0.000442	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000839 +/- 0.000174	0.000449	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0282

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0282-01 Sample ID: First Qtr 2013 Time Collected: 2/7/2013 16:00 Sampling Point: San Onofre Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.137 +/- 0.00365	0.00296	pCi/m3
Potassium-40	HASL Ga-01-R	0.00155 +/- 0.000527	0.00240	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000639 +/- 0.000165	0.000387	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000111 +/- 0.000129	0.000330	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000144 +/- 0.000372	0.000969	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000257 +/- 0.0000322	0.000100	pCi/m3
Cerium-141	HASL Ga-01-R	0.000344 +/- 0.000216	0.000615	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000570 +/- 0.000210	0.000578	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0280

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0280-01				
Sample ID: First Qtr 2013 Time Collected: 2/5/2013 14:05 Sampling Point: San Diego				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.128 +/- 0.00354	0.00359	pCi/m3
Potassium-40	HASL Ga-01-R	0.00170 +/- 0.000696	0.00318	pCi/m3
Niobium-95	HASL Ga-01-R	0.000233 +/- 0.000185	0.000551	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000309 +/- 0.000227	0.000473	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.000196 +/- 0.000141	0.000389	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000315 +/- 0.000444	0.00124	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000648 +/- 0.0000426	0.000128	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000726 +/- 0.000260	0.000624	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000779 +/- 0.000170	0.000489	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.