SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

CLIENT # S061
REPORT # 23-589

SUBMITTED BY:
CHESTER LabNet
12242 S.W. GARDEN PLACE
TIGARD, OR 97223
(503)624-2183/FAX (503)624-2653
www.ChesterLab.Net

CHESTER LabNet

12242 SW Garden Place ❖ Tigard, OR 97223-8246 ❖ USA
Telephone 503-624-2183 ❖ Fax 503-624-2653 ❖ www.chesterlab.net

Case Narrative

Date: November 30, 2023

General Information

Client:	Sacramento Metropolitan Air Quality Management District
Client Number:	S061
Report Number:	23-589
Sample Description:	47mm Teflon filters, 47mm pre-fired quartz filters
Sample Numbers:	23-T2376, 23-T2563, 23-T2564, 23-U443, 23-U473, 23-U474

Analysis

Analytes:	Particulate Mass, XRF Metals (Na – Pb), Cl, NO_3, SO_4, NH_4, K, Organic Carbon, Elemental Carbon
Analytical Protocols:	Gravimetry (PM_{10}): 40 CFR 50 Appendix J (8/7/87 version) X-Ray Fluorescence: EPA IO-3.3 (June 1999 version) Anions - EPA 300.0 (revision 2.1) Cations - ASTM D6919-17 OC/EC: Modified IMPROVE-A (revision 1, 1/25/16)
Analytical Notes:	No problems were encountered during the analyses. Results have **not** been blank corrected.
QA/QC Review:	All the data have been reviewed by the analysts performing the analyses and the project manager. All the quality control and sample-specific information in this package is complete and meets or exceeds t. minimum requirements for acceptability.
Comments:	If you have any questions or concerns regarding this analysis, please feel free to contact the project manager.
Disclaimer:	This report shall not be reproduced, except in full, without the written approval of the laboratory. The results only represent that of the samples as received into the laboratory.

Paul Duda 11/30/23

Project Manager Date
Paul Duda

Client: S061 - SMAQMD
Report Number: 23-589

Lab ID: 23-T2376
Filter ID: P7464432
Client ID: Canister SMAQMD 10_03
Site: 617Fern
Sample Date: 10/15/23
Filter Lot #: 7118468
Volume: 9.711 ± 0.486 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	81.	±	10.				8.341	±	1.111
XRF									
Na	0.9763	±	0.3164	1.205	±	0.4180	0.1005	±	0.0330
Mg	0.2249	±	0.0576	0.2776	±	0.0790	0.0232	±	0.0060
Al	0.5187	±	0.0881	0.6403	±	0.1345	0.0534	±	0.0095
Si	1.474	±	0.0757	1.819	±	0.2433	0.1517	±	0.0109
* P	0.0373	±	0.0136	0.0460	±	0.0177	0.0038	±	0.0014
S	2.394	±	0.1254	2.956	±	0.3964	0.2466	±	0.0179
* Cl	0.0780	±	0.0373	0.0963	±	0.0475	0.0080	±	0.0039
K	1.063	±	0.0554	1.313	±	0.1759	0.1095	±	0.0079
Ca	0.3593	±	0.0226	0.4436	±	0.0615	0.0370	±	0.0030
* Sc	0.0011	±	0.0124	0.0014	±	0.0153	0.0001	±	0.0013
Ti	0.0588	±	0.0102	0.0725	±	0.0154	0.0061	±	0.0011
* V	0.0000	±	0.0102	0.0000	±	0.0126	0.0000	±	0.0010
* Cr	0.0203	±	0.0090	0.0251	±	0.0116	0.0021	±	0.0009
* Mn	0.0102	±	0.0090	0.0126	±	0.0113	0.0010	±	0.0009
Fe	0.7368	±	0.0373	0.9096	±	0.1214	0.0759	±	0.0054
* Co	0.0000	±	0.0079	0.0000	±	0.0098	0.0000	±	0.0008
* Ni	0.0000	±	0.0068	0.0000	±	0.0084	0.0000	±	0.0007
* Cu	0.0136	±	0.0102	0.0167	±	0.0127	0.0014	±	0.0010
Zn	0.0836	±	0.0090	0.1032	±	0.0169	0.0086	±	0.0010
* Ga	0.0000	±	0.0068	0.0000	±	0.0084	0.0000	±	0.0007
* As	0.0000	±	0.0102	0.0000	±	0.0126	0.0000	±	0.0010
* Se	0.0045	±	0.0056	0.0056	±	0.0070	0.0005	±	0.0006
Br	0.0362	±	0.0079	0.0446	±	0.0112	0.0037	±	0.0008
* Rb	0.0011	±	0.0079	0.0014	±	0.0098	0.0001	±	0.0008
* Sr	0.0000	±	0.0079	0.0000	±	0.0098	0.0000	±	0.0008
* Y	0.0000	±	0.0158	0.0000	±	0.0195	0.0000	±	0.0016
* Zr	0.0203	±	0.0226	0.0251	±	0.0281	0.0021	±	0.0023
* Nb	0.0136	±	0.0316	0.0167	±	0.0391	0.0014	±	0.0033
* Mo	0.0090	±	0.0384	0.0112	±	0.0475	0.0009	±	0.0040
* Ag	0.0000	±	0.0316	0.0000	±	0.0391	0.0000	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0405	0.0000	±	0.0034
* In	0.0136	±	0.0418	0.0167	±	0.0517	0.0014	±	0.0043
* Sn	0.0023	±	0.0644	0.0028	±	0.0795	0.0002	±	0.0066
* Sb	0.0000	±	0.0712	0.0000	±	0.0879	0.0000	±	0.0073
* Cs	0.0000	±	0.0147	0.0000	±	0.0181	0.0000	±	0.0015
* Ba	0.0305	±	0.0170	0.0377	±	0.0214	0.0031	±	0.0018
* La	0.0090	±	0.0170	0.0112	±	0.0210	0.0009	±	0.0017
* Ce	0.0158	±	0.0136	0.0195	±	0.0169	0.0016	±	0.0014
* Sm	0.0000	±	0.0113	0.0000	±	0.0140	0.0000	±	0.0012
* Eu	0.0000	±	0.0237	0.0000	±	0.0293	0.0000	±	0.0024
* Tb	0.0000	±	0.0316	0.0000	±	0.0391	0.0000	±	0.0033
* Hf	0.0000	±	0.0113	0.0000	±	0.0140	0.0000	±	0.0012
* Ta	0.0000	±	0.0102	0.0000	±	0.0126	0.0000	±	0.0010
* W	0.0079	±	0.0079	0.0098	±	0.0098	0.0008	±	0.0008
* Ir	0.0000	±	0.0056	0.0000	±	0.0070	0.0000	±	0.0006
* Au	0.0000	±	0.0079	0.0000	±	0.0098	0.0000	±	0.0008
* Hg	0.0000	±	0.0124	0.0000	±	0.0153	0.0000	±	0.0013
* Pb	0.0113	±	0.0079	0.0140	±	0.0099	0.0012	±	0.0008

Lab ID: 23-T2376
Client ID: Canister SMAQMD 10_03

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	0.160	0.100	0.1975	0.1235	0.016	0.010
NO3	2.360	0.100	2.914	0.1235	0.243	0.010
SO4	6.060	0.200	7.481	0.2469	0.624	0.021
Na	0.960	0.100	1.185	0.1235	0.099	0.010
NH4	2.140	0.100	2.642	0.1235	0.220	0.010
K	0.780	0.100	0.9630	0.1235	0.080	0.010

* - XRF Concentration is less than three times the uncertainty

Client: S061 - SMAQMD
Report Number: 23-589

Lab ID: 23-T2563
Filter ID: P7464869
Client ID: Canister SMAQMD 01_04
Site: 617Fern
Sample Date: 10/21/23
Filter Lot #: 7118468
Volume: 9.700 ± 0.485 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	43.	±	10.				4.433	±	1.054
XRF									
Na	2.517	±	0.3526	5.852	±	1.589	0.2594	±	0.0386
Mg	0.2915	±	0.0622	0.6780	±	0.2139	0.0301	±	0.0066
Al	0.2904	±	0.0825	0.6754	±	0.2479	0.0299	±	0.0086
Si	0.4226	±	0.0271	0.9828	±	0.2371	0.0436	±	0.0035
* P	0.0192	±	0.0147	0.0447	±	0.0357	0.0020	±	0.0015
S	2.809	±	0.1458	6.533	±	1.557	0.2896	±	0.0209
* Cl	0.1119	±	0.0384	0.2602	±	0.1079	0.0115	±	0.0040
K	0.1706	±	0.0181	0.3968	±	0.1014	0.0176	±	0.0021
Ca	0.1638	±	0.0170	0.3810	±	0.0970	0.0169	±	0.0019
* Sc	0.0000	±	0.0124	0.0000	±	0.0289	0.0000	±	0.0013
* Ti	0.0136	±	0.0102	0.0315	±	0.0248	0.0014	±	0.0011
* V	0.0000	±	0.0102	0.0000	±	0.0237	0.0000	±	0.0010
* Cr	0.0192	±	0.0090	0.0447	±	0.0235	0.0020	±	0.0009
* Mn	0.0000	±	0.0090	0.0000	±	0.0210	0.0000	±	0.0009
Fe	0.2000	±	0.0136	0.4651	±	0.1127	0.0206	±	0.0017
* Co	0.0000	±	0.0079	0.0000	±	0.0184	0.0000	±	0.0008
* Ni	0.0023	±	0.0068	0.0053	±	0.0158	0.0002	±	0.0007
* Cu	0.0113	±	0.0102	0.0263	±	0.0244	0.0012	±	0.0011
* Zn	0.0113	±	0.0079	0.0263	±	0.0194	0.0012	±	0.0008
* Ga	0.0000	±	0.0068	0.0000	±	0.0158	0.0000	±	0.0007
* As	0.0000	±	0.0102	0.0000	±	0.0237	0.0000	±	0.0010
* Se	0.0034	±	0.0056	0.0079	±	0.0133	0.0003	±	0.0006
* Br	0.0170	±	0.0079	0.0394	±	0.0206	0.0017	±	0.0008
* Rb	0.0045	±	0.0079	0.0105	±	0.0186	0.0005	±	0.0008
* Sr	0.0011	±	0.0090	0.0026	±	0.0210	0.0001	±	0.0009
* Y	0.0056	±	0.0158	0.0131	±	0.0369	0.0006	±	0.0016
* Zr	0.0023	±	0.0237	0.0053	±	0.0552	0.0002	±	0.0024
* Nb	0.0000	±	0.0316	0.0000	±	0.0736	0.0000	±	0.0033
* Mo	0.0147	±	0.0384	0.0342	±	0.0897	0.0015	±	0.0040
* Ag	0.0000	±	0.0316	0.0000	±	0.0736	0.0000	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0762	0.0000	±	0.0034
* In	0.0226	±	0.0475	0.0526	±	0.1110	0.0023	±	0.0049
* Sn	0.0000	±	0.0644	0.0000	±	0.1498	0.0000	±	0.0066
* Sb	0.0000	±	0.0780	0.0000	±	0.1813	0.0000	±	0.0080
* Cs	0.0000	±	0.0158	0.0000	±	0.0368	0.0000	±	0.0016
* Ba	0.0000	±	0.0158	0.0000	±	0.0368	0.0000	±	0.0016
* La	0.0000	±	0.0170	0.0000	±	0.0394	0.0000	±	0.0017
* Ce	0.0000	±	0.0136	0.0000	±	0.0315	0.0000	±	0.0014
* Sm	0.0000	±	0.0136	0.0000	±	0.0315	0.0000	±	0.0014
* Eu	0.0000	±	0.0271	0.0000	±	0.0631	0.0000	±	0.0028
* Tb	0.0000	±	0.0226	0.0000	±	0.0526	0.0000	±	0.0023
* Hf	0.0000	±	0.0113	0.0000	±	0.0263	0.0000	±	0.0012
* Ta	0.0000	±	0.0102	0.0000	±	0.0237	0.0000	±	0.0010
* W	0.0056	±	0.0090	0.0131	±	0.0212	0.0006	±	0.0009
* Ir	0.0000	±	0.0056	0.0000	±	0.0131	0.0000	±	0.0006
* Au	0.0000	±	0.0079	0.0000	±	0.0184	0.0000	±	0.0008
* Hg	0.0056	±	0.0136	0.0131	±	0.0317	0.0006	±	0.0014
* Pb	0.0000	±	0.0079	0.0000	±	0.0184	0.0000	±	0.0008

Lab ID: 23-T2563
Client ID: Canister SMAQMD 01_04

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	0.230	0.100	0.5349	0.2326	0.024	0.010
NO3	3.500	0.100	8.140	0.2326	0.361	0.010
SO4	5.990	0.200	13.93	0.4651	0.618	0.021
Na	1.620	0.100	3.767	0.2326	0.167	0.010
NH4	2.060	0.100	4.791	0.2326	0.212	0.010
K	0.140	0.100	0.3256	0.2326	0.014	0.010

* - XRF Concentration is less than three times the uncertainty

Client: S061 - SMAQMD
Report Number: 23-589

Lab ID: 23-T2564
Filter ID: P7464870
Client ID: Canister SMAQMD 02_04
Site: 617Fern
Sample Date: 10/27/23
Filter Lot #: 7118468
Volume: 9.679 ± 0.484 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	77.	±	10.				7.955	±	1.107
XRF									
* Na	0.9221	±	0.3232	1.198	±	0.4476	0.0953	±	0.0337
Mg	0.2226	±	0.0610	0.2891	±	0.0877	0.0230	±	0.0064
Al	0.5413	±	0.0893	0.7029	±	0.1476	0.0559	±	0.0096
Si	1.486	±	0.0768	1.930	±	0.2698	0.1535	±	0.0110
* P	0.0260	±	0.0136	0.0338	±	0.0181	0.0027	±	0.0014
S	1.902	±	0.1017	2.470	±	0.3469	0.1965	±	0.0144
* Cl	0.0542	±	0.0373	0.0704	±	0.0493	0.0056	±	0.0039
K	0.4701	±	0.0282	0.6105	±	0.0874	0.0486	±	0.0038
Ca	0.3650	±	0.0237	0.4740	±	0.0688	0.0377	±	0.0031
* Sc	0.0000	±	0.0124	0.0000	±	0.0161	0.0000	±	0.0013
Ti	0.0576	±	0.0102	0.0748	±	0.0164	0.0060	±	0.0011
* V	0.0011	±	0.0102	0.0015	±	0.0132	0.0001	±	0.0011
* Cr	0.0170	±	0.0090	0.0220	±	0.0121	0.0018	±	0.0009
* Mn	0.0203	±	0.0090	0.0264	±	0.0122	0.0021	±	0.0009
Fe	1.009	±	0.0508	1.311	±	0.1826	0.1043	±	0.0074
* Co	0.0000	±	0.0079	0.0000	±	0.0103	0.0000	±	0.0008
* Ni	0.0023	±	0.0068	0.0029	±	0.0088	0.0002	±	0.0007
* Cu	0.0237	±	0.0102	0.0308	±	0.0138	0.0025	±	0.0011
Zn	0.0701	±	0.0090	0.0910	±	0.0167	0.0072	±	0.0010
* Ga	0.0034	±	0.0068	0.0044	±	0.0088	0.0004	±	0.0007
* As	0.0000	±	0.0102	0.0000	±	0.0132	0.0000	±	0.0011
* Se	0.0056	±	0.0056	0.0073	±	0.0074	0.0006	±	0.0006
Br	0.0237	±	0.0079	0.0308	±	0.0110	0.0025	±	0.0008
* Rb	0.0000	±	0.0079	0.0000	±	0.0103	0.0000	±	0.0008
* Sr	0.0102	±	0.0079	0.0132	±	0.0104	0.0011	±	0.0008
* Y	0.0000	±	0.0158	0.0000	±	0.0205	0.0000	±	0.0016
* Zr	0.0215	±	0.0226	0.0279	±	0.0296	0.0022	±	0.0023
* Nb	0.0000	±	0.0316	0.0000	±	0.0411	0.0000	±	0.0033
* Mo	0.0124	±	0.0384	0.0161	±	0.0499	0.0013	±	0.0040
* Ag	0.0316	±	0.0316	0.0411	±	0.0414	0.0033	±	0.0033
* Cd	0.0328	±	0.0328	0.0426	±	0.0429	0.0034	±	0.0034
* In	0.0000	±	0.0418	0.0000	±	0.0543	0.0000	±	0.0043
* Sn	0.0000	±	0.0644	0.0000	±	0.0836	0.0000	±	0.0067
* Sb	0.2102	±	0.0723	0.2730	±	0.1004	0.0217	±	0.0076
* Cs	0.0000	±	0.0147	0.0000	±	0.0191	0.0000	±	0.0015
Ba	0.0960	±	0.0170	0.1247	±	0.0273	0.0099	±	0.0018
* La	0.0170	±	0.0170	0.0220	±	0.0222	0.0018	±	0.0018
* Ce	0.0000	±	0.0136	0.0000	±	0.0176	0.0000	±	0.0014
* Sm	0.0000	±	0.0124	0.0000	±	0.0161	0.0000	±	0.0013
* Eu	0.0113	±	0.0271	0.0147	±	0.0353	0.0012	±	0.0028
* Tb	0.0000	±	0.0373	0.0000	±	0.0484	0.0000	±	0.0039
* Hf	0.0000	±	0.0113	0.0000	±	0.0147	0.0000	±	0.0012
* Ta	0.0000	±	0.0113	0.0000	±	0.0147	0.0000	±	0.0012
* W	0.0113	±	0.0079	0.0147	±	0.0104	0.0012	±	0.0008
* Ir	0.0000	±	0.0056	0.0000	±	0.0073	0.0000	±	0.0006
* Au	0.0000	±	0.0079	0.0000	±	0.0103	0.0000	±	0.0008
* Hg	0.0000	±	0.0124	0.0000	±	0.0161	0.0000	±	0.0013
Pb	0.0350	±	0.0079	0.0455	±	0.0119	0.0036	±	0.0008

Lab ID: 23-T2564
Client ID: Canister SMAQMD 02_04

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	0.210	0.100	0.2727	0.1299	0.022	0.010
NO3	2.900	0.100	3.766	0.1299	0.300	0.010
SO4	3.930	0.200	5.104	0.2597	0.406	0.021
Na	0.810	0.100	1.052	0.1299	0.084	0.010
NH4	1.450	0.100	1.883	0.1299	0.150	0.010
K	0.220	0.100	0.2857	0.1299	0.023	0.010

* - XRF Concentration is less than three times the uncertainty

Lab ID: 23-U443
Client ID: Canister SMAQMD 14_02
Site: 617Fern
Sample Date: 10/15/23
Volume: 9.698 +- 0.485 m³
Deposit Area: 11.30 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	53.45	±	3.842	5.511	±	0.4826
EC	5.198	±	1.356	0.5360	±	0.1424
TC	58.65	±	5.198	6.047	±	0.6154
Organic Carbon Fractions						
OC1	0.6780			0.0699		
OC2	12.77			1.317		
OC3	18.42			1.899		
OC4	9.831			1.014		
PC	11.86			1.223		
Elemental Carbon Fractions						
EC1	7.232			0.7457		
EC2	6.893			0.7108		
EC3	2.825			0.2913		

Lab ID: 23-U473
Client ID: Canister SMAQMD 06_03
Site: 617Fern
Sample Date: 10/21/23
Volume: 9.697 +- 0.485 m³
Deposit Area: 11.30 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	15.82	±	1.921	1.631	±	0.2142
EC	0.6780	±	1.130	0.0699	±	0.1166
TC	16.61	±	3.051	1.713	±	0.3261
Organic Carbon Fractions						
OC1	0.0000			0.0000		
OC2	3.503			0.3612		
OC3	6.441			0.6642		
OC4	3.051			0.3146		
PC	2.825			0.2913		
Elemental Carbon Fractions						
EC1	1.356			0.1398		
EC2	1.808			0.1864		
EC3	0.3390			0.0350		

OC: Organic Carbon EC: Elemental Carbon PC: Pyrolyzed Carbon TC: Total Carbon

OC = OC1 + OC2 + OC3 + OC4 + PC EC = EC1 + EC2 + EC3 - PC TC = OC + EC

Client: S061 - SMAQMD
Report Number: 23-589

Lab ID: 23-U474
Client ID: Canister SMAQMD 08_03
Site: 617Fern
Sample Date: 10/27/23
Volume: 9.686 +- 0.484 m³
Deposit Area: 11.30 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	35.26	±	2.938	3.640	±	0.3537
EC	6.667	±	1.469	0.6883	±	0.1555
TC	41.92	±	4.407	4.328	±	0.5038

Organic Carbon Fractions

OC1	0.5650	0.0583
OC2	10.28	1.062
OC3	10.40	1.073
OC4	6.893	0.7116
PC	7.006	0.7233

Elemental Carbon Fractions

EC1	4.181	0.4317
EC2	6.780	0.7000
EC3	2.712	0.2800

OC: Organic Carbon EC: Elemental Carbon PC: Pyrolyzed Carbon TC: Total Carbon

OC = OC1 + OC2 + OC3 + OC4 + PC EC = EC1 + EC2 + EC3 - PC TC = OC + EC

CHESTER LabNet

Quant'X 1020 **XRF Analytical Quality Assurance Report**

Client: Sacramento Metro AQMD
Report: 23-589
Analysis Period: November 7, 2023
Number of Samples: 3

1. Precision Data

Micromatter Multi-elemental Quality Control Standard: 34103

QC Standard Results

Analyte	n	micrograms per square centimeter			c.v.	%E
		Calib.	Meas.	S.D.		
Si	1	7.03	7.01	na	na	-0.29
Ti	1	10.22	10.23	na	na	0.08
Fe	1	10.59	10.56	na	na	-0.21
Se	1	5.26	5.23	na	na	-0.56
Cd	1	6.47	6.52	na	na	0.81
Pb	1	12.61	12.47	na	na	-1.11

2. Accuracy Data

NIST Standard Reference Materials: SRM 2783

Analyte/ SRM	n	Certified Value(µg/cm²)	Measured Value (µg/cm²)			% Rec.
			High	Low	Average	
K 2783	4	0.5301	0.5164	0.4632	0.4910 +/- 0.0255	92.6
Ca 2783	4	1.3253	1.1767	1.1702	1.1739 +/- 0.0027	88.6
Ti 2783	4	0.1496	0.1507	0.1483	0.1494 +/- 0.0010	99.9
Fe 2783	4	2.6606	2.6308	2.6149	2.6229 +/- 0.0065	98.6
Cu 2783	4	0.0406	0.0412	0.0392	0.0402 +/- 0.0008	98.9
Zn 2783	4	0.1797	0.2289	0.2269	0.2279 +/- 0.0010	126.8
Pb 2783	4	0.0318	0.0361	0.0342	0.0349 +/- 0.0008	109.7

3. Addendum

Micromatter Certified Reference Materials

CRM	Analytes	Certified Value(µg/cm²)	Measured Value(µg/cm²)	% Rec.
39149	Cr	53.7	54.3	101.2
39150	Cu	49.4	48.6	98.4
39151	Zn, Te	49.8	51.9	104.2
39152	Ga, As	50.9	49.9	98.0
39153	Se, Cd	47.1	46.7	99.1
39154	Pb	47.9	50.6	105.6

NIST: National Institute of Standards and Technology
% Rec: Percent Recovery = (Experimental/Given) x 100
n: Number of Observations
S.D.: Standard Deviation
c.v.: Coefficient of Variation = (S.D./Measured) x 100
% E: Percent Error = [(Measured-Calibrated)/Calibrated] x 100

QUANT'X 1020 REPLICATE REPORT

6.86

Original ID: 23T2564

Replicate ID: RT2564

Element	Original ug/cm2			Replicate ug/cm2			Difference ug/cm2				RPD		
Na	0.0816	+-	0.0286	0.0817	+-	0.0286	0.0000	+-	0.0404				
Mg	0.0197	+-	0.0054	0.0163	+-	0.0052	0.0034	+-	0.0075	+	19.1	+-	41.6
Al	0.0479	+-	0.0079	0.0460	+-	0.0078	0.0019	+-	0.0111	+	4.1	+-	23.6
Si	0.1315	+-	0.0068	0.1301	+-	0.0067	0.0014	+-	0.0095	+	1.1	+-	7.3
P	0.0023	+-	0.0012	0.0022	+-	0.0012	0.0001	+-	0.0017				
S	0.1683	+-	0.0090	0.1656	+-	0.0089	0.0027	+-	0.0126	+	1.6	+-	7.6
Cl	0.0048	+-	0.0033	0.0057	+-	0.0033	-0.0009	+-	0.0046				
K	0.0416	+-	0.0025	0.0412	+-	0.0025	0.0004	+-	0.0035	+	0.9	+-	8.5
Ca	0.0323	+-	0.0021	0.0321	+-	0.0020	0.0002	+-	0.0029	+	0.6	+-	9.0
Sc	0.0000	+-	0.0011	0.0000	+-	0.0011	0.0000	+-	0.0015				
Ti	0.0051	+-	0.0009	0.0050	+-	0.0009	0.0002	+-	0.0013	+	3.4	+-	25.2
V	0.0001	+-	0.0009	0.0005	+-	0.0009	-0.0004	+-	0.0012				
Cr	0.0015	+-	0.0008	0.0018	+-	0.0008	-0.0003	+-	0.0012				
Mn	0.0018	+-	0.0008	0.0017	+-	0.0008	0.0001	+-	0.0011				
Fe	0.0893	+-	0.0045	0.0888	+-	0.0045	0.0005	+-	0.0064	+	0.6	+-	7.2
Co	0.0000	+-	0.0007	0.0000	+-	0.0007	0.0000	+-	0.0010				
Ni	0.0002	+-	0.0006	0.0002	+-	0.0006	0.0000	+-	0.0009				
Cu	0.0021	+-	0.0009	0.0014	+-	0.0009	0.0007	+-	0.0013				
Zn	0.0062	+-	0.0008	0.0061	+-	0.0008	0.0002	+-	0.0011	+	3.1	+-	17.9
Ga	0.0003	+-	0.0006	0.0000	+-	0.0006	0.0003	+-	0.0009				
As	0.0000	+-	0.0009	0.0000	+-	0.0009	0.0000	+-	0.0013				
Se	0.0005	+-	0.0005	0.0004	+-	0.0005	0.0001	+-	0.0007				
Br	0.0021	+-	0.0007	0.0017	+-	0.0007	0.0005	+-	0.0010				
Rb	0.0000	+-	0.0007	0.0005	+-	0.0007	-0.0005	+-	0.0010				
Sr	0.0009	+-	0.0007	0.0000	+-	0.0007	0.0009	+-	0.0011				
Y	0.0000	+-	0.0014	0.0000	+-	0.0014	0.0000	+-	0.0020				
Zr	0.0019	+-	0.0020	0.0000	+-	0.0020	0.0019	+-	0.0029				
Nb	0.0000	+-	0.0028	0.0000	+-	0.0028	0.0000	+-	0.0039				
Mo	0.0011	+-	0.0034	0.0009	+-	0.0034	0.0002	+-	0.0048				
Ag	0.0028	+-	0.0028	0.0013	+-	0.0028	0.0015	+-	0.0039				
Cd	0.0029	+-	0.0029	0.0082	+-	0.0029	-0.0053	+-	0.0041				
In	0.0000	+-	0.0037	0.0000	+-	0.0037	0.0000	+-	0.0053				
Sn	0.0000	+-	0.0057	0.0000	+-	0.0057	0.0000	+-	0.0080				
Sb	0.0186	+-	0.0064	0.0076	+-	0.0069	0.0110	+-	0.0094				
Cs	0.0000	+-	0.0013	0.0000	+-	0.0013	0.0000	+-	0.0019				
Ba	0.0085	+-	0.0015	0.0062	+-	0.0015	0.0023	+-	0.0022	0	31.3	+-	29.5
La	0.0015	+-	0.0015	0.0014	+-	0.0015	0.0001	+-	0.0021				
Ce	0.0000	+-	0.0012	0.0000	+-	0.0012	0.0000	+-	0.0017				
Sm	0.0000	+-	0.0011	0.0000	+-	0.0011	0.0000	+-	0.0015				
Eu	0.0010	+-	0.0024	0.0001	+-	0.0024	0.0009	+-	0.0034				
Tb	0.0000	+-	0.0033	0.0000	+-	0.0033	0.0000	+-	0.0047				
Hf	0.0000	+-	0.0010	0.0000	+-	0.0010	0.0000	+-	0.0015				
Ta	0.0000	+-	0.0010	0.0000	+-	0.0009	0.0000	+-	0.0013				
W	0.0010	+-	0.0007	0.0000	+-	0.0007	0.0010	+-	0.0010				
Ir	0.0000	+-	0.0005	0.0007	+-	0.0005	-0.0007	+-	0.0008				
Au	0.0000	+-	0.0007	0.0000	+-	0.0007	0.0000	+-	0.0010				
Hg	0.0000	+-	0.0011	0.0003	+-	0.0011	-0.0003	+-	0.0016				
Pb	0.0031	+-	0.0007	0.0027	+-	0.0007	0.0005	+-	0.0010	+	15.6	+-	34.0

RPD: Relative Percent Difference (X1-X2)/[(X1+X2)/2]*100. RPD is calculated when original value is greater than three times its uncertainty.

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-589

Blank Data

Analyte	Sample ID	Measured Conc. mg/L	DL Conc. mg/L
Cl	ICB	< DL	0.010
Cl	Meth_Blk	< DL	0.010
Cl	CCB	< DL	0.010
Cl	CCB	< DL	0.010
NO3	ICB	< DL	0.030
NO3	Meth_Blk	< DL	0.030
NO3	CCB	< DL	0.030
NO3	CCB	< DL	0.030
SO4	ICB	< DL	0.020
SO4	Meth_Blk	< DL	0.020
SO4	CCB	< DL	0.020
SO4	CCB	< DL	0.020
Na	ICB	< DL	0.020
Na	Meth_Blk	< DL	0.020
Na	CCB	< DL	0.020
Na	CCB	< DL	0.020
NH4	ICB	< DL	0.010
NH4	Meth_Blk	< DL	0.010
NH4	CCB	< DL	0.010
NH4	CCB	< DL	0.010
K	ICB	< DL	0.010
K	Meth_Blk	< DL	0.010
K	CCB	< DL	0.010
K	CCB	< DL	0.010

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. mg/L	Measured Conc. mg/L	Percent Recovery
Cl	ICV	0.500	0.499	99.8
Cl	LL-LCS	0.030	0.029	96.7
Cl	CCV	0.500	0.494	98.8
Cl	CCV	0.500	0.499	99.8
NO3	ICV	0.500	0.511	102.2

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-589

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. mg/L	Measured Conc. mg/L	Percent Recovery
NO3	LL-LCS	0.100	0.113	113.0
NO3	CCV	0.500	0.507	101.4
NO3	CCV	0.500	0.504	100.8
SO4	ICV	0.500	0.515	103.0
SO4	LL-LCS	0.060	0.060	100.0
SO4	CCV	0.500	0.508	101.6
SO4	CCV	0.500	0.506	101.2
Na	ICV	0.500	0.488	97.6
Na	LL-LCS	0.040	0.040	100.0
Na	CCV	0.500	0.501	100.2
Na	CCV	0.500	0.494	98.8
NH4	ICV	0.500	0.520	104.0
NH4	LL-LCS	0.030	0.032	106.7
NH4	CCV	0.500	0.530	106.0
NH4	CCV	0.500	0.529	105.8
K	ICV	0.500	0.501	100.2
K	LL-LCS	0.030	0.022	73.3
K	CCV	0.500	0.516	103.2
K	CCV	0.500	0.513	102.6

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Replicate Data

Analyte	Sample ID	Sample Conc. mg/L	Replicate Conc. mg/L	RPD
Cl	23-T2179	0.013	0.013	0.00 *
Cl	23-T2376	0.016	0.014	13.3 *
NO3	23-T2179	0.054	0.050	7.69
NO3	23-T2376	0.236	0.235	0.42
SO4	23-T2179	0.456	0.453	0.66
SO4	23-T2376	0.606	0.614	1.31
Na	23-T2181	0.271	0.269	0.74
Na	23-T2563	0.162	0.162	0.00
NH4	23-T2181	0.074	0.074	0.00

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-589

Replicate Data (continued)

Analyte	Sample ID	Sample Conc. mg/L	Replicate Conc. mg/L	RPD
NH4	23-T2563	0.206	0.207	0.48
K	23-T2181	0.013	0.014	7.41 *
K	23-T2563	0.014	0.014	0.00 *

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. mg/L	Spike Conc. mg/L	Spike Amount mg/L	Percent Recovery
Cl	LCS	< 0.01	0.487	0.500	97.4
Cl	LCS-Duplicate	< 0.01	0.495	0.500	99.0
Cl	23-T2180	0.230	0.737	0.500	101.
Cl	23-T2563	0.023	0.532	0.500	102.
NO3	LCS	< 0.03	0.517	0.500	103.
NO3	LCS-Duplicate	< 0.03	0.520	0.500	104.
NO3	23-T2180	0.512	1.01	0.500	100.
NO3	23-T2563	0.350	0.868	0.500	104.
SO4	LCS	< 0.02	0.543	0.500	109.
SO4	LCS-Duplicate	< 0.02	0.525	0.500	105.
SO4	23-T2180	0.687	1.15	0.500	92.4
SO4	23-T2563	0.599	1.08	0.500	95.8
Na	LCS	< 0.02	0.499	0.500	99.8
Na	LCS-Duplicate	< 0.02	0.502	0.500	100.
Na	23-T2354	0.162	0.692	0.500	106.
Na	23-T2564	0.081	0.609	0.500	106.
NH4	LCS	< 0.01	0.516	0.500	103.
NH4	LCS-Duplicate	< 0.01	0.529	0.500	106.
NH4	23-T2354	0.233	0.766	0.500	107.
NH4	23-T2564	0.145	0.686	0.500	108.
K	LCS	< 0.01	0.500	0.500	100.
K	LCS-Duplicate	< 0.01	0.507	0.500	101.
K	23-T2354	0.046	0.588	0.500	108.
K	23-T2564	0.022	0.563	0.500	108.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-589

LCS Duplicate Data

Analyte	Sample ID	Original Conc. mg/L	Replicate Conc. mg/L	RPD
Cl	LCS-Duplicate	0.487	0.495	1.63
NO3	LCS-Duplicate	0.517	0.520	0.58
SO4	LCS-Duplicate	0.543	0.525	3.37
Na	LCS-Duplicate	0.499	0.502	0.60
NH4	LCS-Duplicate	0.516	0.529	2.49
K	LCS-Duplicate	0.500	0.507	1.39

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Sacromento Metro
Project Number: s061
Analytical Technique: IMPROVE_A
Sample Description: 47mm Quartz
Report Number: 23-589

==========

Calibration QC

OC/EC Split*

Split ID: 11Q1121 Date run	Average %OC of 20 data points	%OC Measured	Control Limits
11/29/2023	67.61	70.64%	60.85 - 74.37%
11/29/2023	67.61	68.08%	60.85 - 74.37%

**Note: the Split is composed of a "real world" 8"x10"sample (406 cm^2 deposit area) that the laboratory has visually inspected for homogeneity of deposit. The laboratory attempts to characterize the %OC by analyzing twenty 1.5 cm^2 sample aliquots. A split may be outside of the "control limits" if the sample is not completely homogenous, but still be considered "passing" as long as the result is not significantly off from those limits.*

Sucrose Standard

Date run	Sucrose Std. Conc. µg/cm²	Measured Conc. µg/cm²	Percent Recovery
11/29/2023	28.07	30.7	109.4

Sucrose Standard Control Limits: 90 - 110% recovery

Blank Data

Date run	Analyte	Measured Conc. µg/cm²	MDL µg/cm²
11/29/2023	OC	<MDL	0.2
	EC	<MDL	0.2
11/29/2023	OC	<MDL	0.2
	EC	<MDL	0.2

Duplicate Data

Sample ID	Analyte	Sample Conc. µg/cm²	Duplicate Conc. µg/cm²	RPD
23U 443	OC	4.73	4.73	0.0
	EC	0.46	0.41	11.5
	TC	5.19	5.14	1.0

Duplicate Control Limits: ± 20% RPD
RPD = [(sample - duplicate)/(sample + duplicate)/2] x 100
Control limits do not apply where result <5x Detection Limit

CHESTER LabNet

23-589

12242 SW Garden Place ♦ Tigard, OR 97223 ♦ (503) 624-2183 ♦ www.chesterlab.net ♦ cln@chesterlab.net

CHAIN-OF-CUSTODY RECORD

For use by Lab:
Report #:

Page_1_of _1_COCs

CLIENT INFORMATION

Company Name: Sacramento Metropolitan AQMD

Contact: Levi Ford | Email: lford@airquality.org

Cell: 916-307-0505 | Office: 279-207-1122

Report To: Levi Ford_____
777 12th Street
Sacramento CA, 95814

Billing Address:_777 12th Street_____
Sacramento CA, 95814

Project Name: AB617

Contract 2022-00000024-A

Turn Around Time Requested

☑ Standard
☐ Rush (Specify)_____

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size (mm)	Gravimetry	XRF	IC	ICP	OC/EC				Sample Specific Notes:
23-T2376	Canister SMAQMD 10_03	617Fern	10/15/23	9.711	2.5	X	X	X						
23-T2563	Canister SMAQMD 01_04	617Fern	10/21/23	9.700	2.5	X	X	X						
23-T2564	Canister SMAQMD 02_04	617Fern	10/27/23	9.679	2.5	X	X	X						
23-U443	Canister SMAQMD 14_02	617Fern	10/15/23	9.698	2.5					X				
23-U473	Canister SMAQMD 06_03	617Fern	10/21/23	9.697	2.5					X				
23-U474	Canister SMAQMD 08_03	617Fern	10/27/23	9.686	2.5					X				

Do the samples pose any potential hazards? ☐ Yes ☑ No
If yes please explain:

Are samples for compliance? ☐ Yes ☑ No

Special Instructions/QC Requirements & Comments:

Sample Load: G.Rico	Date/Time: 10/11/23 13:00	Sample Removal: G.Rico	Date/Time: 11/01/23 13:00
Relinquished by: G.Rico	Date/Time: 11/02/23 12:00	Received By:	Date/Time: 11/3/23 9:25

2.6°C

Laboratory Receipt Comments:

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 10/15/2023**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2376	23-U443
	Field ID	Canister SMAQMD 10_03	Canister SMAQMD 14_02
	Sample Date	10/15/2023	10/15/2023
	Start Date/Time	10/15/2023 0:00	10/15/2023 0:00
	End Date/Time	10/16/2023 0:00	10/16/2023 0:00
	Retrieval Date/Time	10/17/2023 13:00	10/17/2023 13:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.711	9.698
	Avg CV (%)	0.7	0.8
	Avg. Flow (l/min)	6.74	6.73
	Avg Ambient T (°C)	20.9	20.9
	Max Ambient T (°C)	28.3	28.3
	Min Ambient T (°C)	12.1	12.1
	Avg Filter T (°C)	20.7	20.7
	Max Filter T (°C)	31.1	31.1
	Min Filter T (°C)	12.6	12.6
	Avg. BP (mmHg)	763.0	763.0
	Max BP (mm Hg)	765.0	765.0
	Min BP (mmHg)	762.0	762.0

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 10/21/2023**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2563	23-U473
	Field ID	Canister SMAQMD 01_04	Canister SMAQMD 06_03
	Sample Date	10/21/2023	10/21/2023
	Start Date/Time	10/21/2023 0:00	10/21/2023 0:00
	End Date/Time	10/22/2023 0:00	10/22/2023 0:00
	Retrieval Date/Time	10/23/2023 13:00	10/23/2023 13:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.700	9.697
	Avg CV (%)	0.8	0.8
	Avg. Flow (l/min)	6.73	6.73
	Avg Ambient T (°C)	18.2	18.2
	Max Ambient T (°C)	22.4	22.4
	Min Ambient T (°C)	13.0	13.0
	Avg Filter T (°C)	19.1	19.1
	Max Filter T (°C)	24.0	24.0
	Min Filter T (°C)	13.7	13.7
	Avg. BP (mmHg)	758.0	758.0
	Max BP (mm Hg)	759.0	759.0
	Min BP (mmHg)	757.0	757.0

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 10/27/2023**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2564	23-U474
	Field ID	Canister SMAQMD 02_04	Canister SMAQMD 08_03
	Sample Date	10/27/2023	10/27/2023
	Start Date/Time	10/27/2023 0:00	10/27/2023 0:00
	End Date/Time	10/28/2023 0:00	10/28/2023 0:00
	Retrieval Date/Time	11/1/2023 13:00	11/1/2023 13:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.679	9.686
	Avg CV (%)	0.9	0.9
	Avg. Flow (l/min)	6.72	6.72
	Avg Ambient T (°C)	15.5	15.5
	Max Ambient T (°C)	18.9	18.9
	Min Ambient T (°C)	4.9	4.9
	Avg Filter T (°C)	15.8	15.8
	Max Filter T (°C)	21.6	21.6
	Min Filter T (°C)	4.9	4.9
	Avg. BP (mmHg)	764.0	764.0
	Max BP (mm Hg)	765.0	765.0
	Min BP (mmHg)	763.0	763.0

RAW DATA

Available upon request