



Method PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Methods: 90

Sample # 240511

Regular PT Scheme

Labs Reporting: 58

Mg thiosulfate

Statistical Summary

Issue Date : 06/30/2024

Method Code	Analyte & Method Sample # 240511	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Method Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Method IA Ratio	Average Range (R-bar)	Horwitz %RSD
001.99	Ammoniacal N, Other (%)	1		0.0044									
005.99	Urea N, Other (%)	1		0.0069									
010.60	Total N, Combustion (%)	3	3	0.0717	0.0574	0.0717	0.4900	0.0574	0.0414	80.13%	0.27	0.0180	5.95%
010.99	Total N, Other (%)	1		0.0220									
020.50	Total P2O5, ICP (%)	3	2	0.0346	0.0567	0.0019		0.0024	0.0022	130.11%		0.0015	10.29%
041.21	Direct Available P2O5, Spectrophotometric, Citrate-EDTA Ext.	1		0.0100									
050.50	Soluble K2O, ICP (Oxalate) (%)	1		0.0107									
050.52	Soluble K2O, ICP (Citrate-EDTA) (%)	1		0.0095									
050.99	Soluble K2O, Other (%)	2	1	0.0538	0.0653								
101.30	Acid Soluble Ca, ICP, test portion inorganic 965.09 (%)	3	3	0.1328	0.0333	0.1328	0.2066	0.0333	0.0241	25.11%	0.38	0.0006	5.42%
121.00	Acid Soluble Mg, AA, inorganic 965.09 (4%)	4	4	4.079	0.3266	4.079	0.4040	0.3266	0.2041	8.01%	1.88	0.0978	3.24%
121.03	Acid Soluble Mg, AA, 965.09, test portion 2006.03A-C w/dual z	1		4.150									
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	13	13	4.129	0.2753	4.091	0.4045	0.2023	0.0701	4.95%	1.17	0.1171	3.24%
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	5	5	3.900	0.1293	3.900	0.3950	0.1293	0.0723	3.32%	0.76	0.1142	3.26%
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	15	14	4.255	0.3673	4.241	0.4120	0.3744	0.1251	8.83%	2.12	0.0734	3.22%
121.99	Acid Soluble Mg, Other (4%)	9	9	4.198	0.3882	4.165	0.4082	0.3593	0.1497	8.63%	2.05	0.0783	3.23%
131.00	Water Soluble Mg, AA (%)	2	2	3.937	0.0382								
131.30	Water Soluble Mg, ICP (%)	6	6	4.234	0.1737	4.207		0.1284	0.0655	3.05%		0.0348	3.22%
131.70	Water Soluble Mg, Titrimetric (EDTA) (%)	2	2	4.277	0.4573								
131.99	Water Soluble Mg, Other (%)	2	2	4.090	0.0000								
143.99	Elemental S, Other (%)	4	4	10.35	0.1346	10.35		0.1346	0.0841	1.30%		0.0736	2.81%
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	3	3	10.32	0.2534	10.32		0.2534	0.1829	2.46%		0.1150	2.82%
145.99	Sulfate S, HCl soluble, Other (%)	2	2	10.14	0.3677								
146.00	Total S in Liquid, Gravimetric - sulfate, sulfite, thiosulfate, a... (4	4	10.30	0.2741	10.30	0.7152	0.2741	0.1713	2.66%	0.89	0.0458	2.82%
146.99	Total S in Liquid, Other (10%)	1		10.17									
148.00	Total S, Combustion (10%)	5	5	9.543	0.4120	9.543	0.6772	0.4120	0.2303	4.32%	1.42	0.2022	2.85%
148.01	Total S, Gravimetric - sulfate and elemental (10%)	7	7	10.05	0.5569	10.08	0.7038	0.5623	0.2657	5.58%	1.86	0.3000	2.83%
148.07	Total S, ICP, test portion as in 2017.02 (10%)	12	11	11.54	3.167	10.58	0.7288	0.7194	0.2711	6.80%	2.30	0.1865	2.80%
148.99	Total S, Other (10%)	10	10	10.27	0.6314	10.34	0.7171	0.5250	0.2075	5.08%	1.71	0.3010	2.81%

Method Code	Analyte & Method Sample # 240511	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Method Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Method IA Ratio	Average Range (R-bar)	Horwitz %RSD
149.04	S - HNO3 soluble, ICP (%)	3	3	8.932	1.293	8.932		1.293	0.9332	14.48%		0.0609	2.88%
149.99	S - HNO3 soluble, Other (%)	2	2	10.23	0.2475								
151.30	Acid Soluble As, ICP (ppm)	3	1	2.067	3.579	10.23		0.2475	0.3094	2.42%		0.2000	11.27%
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	3	1	1.187	1.585	10.23		0.2475	0.3094	2.42%		0.2000	11.27%
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	2	1	2.614	2.282								
151.34	Acid Soluble As, ICP, EPA 3050B/6010C (ppm)	2	0	0.2930	0.1513								
151.99	Acid Soluble As, Other (ppm)	1		0.5000									
165.30	Acid Soluble B, ICP, test portion in 982.01 (%)	2	1	0.0053	0.0066								
165.99	Acid Soluble B, Other (%)	3	3	0.0015	0.0007	0.0015	0.0032	0.0007	0.0005	46.39%	0.49	0.0007	10.70%
181.30	Acid Soluble Cd, ICP (ppm)	2	1	2.220	0.5233								
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	2	1	0.5200	0.6788								
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	2	1	1.165	0.2326								
181.34	Acid Soluble Cd, ICP, EPA 3050B/6010C (ppm)	2	0	0.1165	0.0233								
181.99	Acid Soluble Cd, Other (ppm)	1		0.0400									
191.30	Acid Soluble Cr, ICP (ppm)	2	1	0.6084	0.8367								
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	2	1	0.5500	0.6364								
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	2	1	1.362	1.855								
191.34	Acid Soluble Cr, ICP, EPA 3050B/6010C (ppm)	2	1	1.871	2.446								
202.30	Acid Soluble Co, ICP (ppm)	1		0.1465									
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	2	0	0.5500	0.6364								
202.33	Acid Soluble Co, ICP, 2017.02 (ppm)	2	1	0.7368	0.9712								
202.34	Acid Soluble Co, ICP, EPA 3050B/6010C (ppm)	2	0	0.1195	0.0276								
202.99	Acid Soluble Co, Other (ppm)	2	1	13.21	18.54								
221.03	Acid Soluble Cu, AA, 965.09, test portion 2006.03A-C w/dual ε	1		0.0020									
221.30	Acid Soluble Cu, ICP, test portion inorganic 965.09 (%)	4	1	0.0027	0.0049	0.0015	0.0051	0.0007	0.0008	46.39%	0.30	0.0000	10.70%
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	1		0.0002									
221.33	Acid Soluble Cu, ICP, 2017.02 (%)	4	1	0.0002	0.0002	0.0015	0.0051	0.0007	0.0008	46.39%	0.30	0.0000	10.70%
221.99	Acid Soluble Cu, Other (%)	3	2	0.0008	0.0010	0.0002	0.0050	0.0001	0.0001	35.36%	0.03	0.0001	14.41%
241.30	Acid Soluble Fe, ICP, test portion inorganic 965.09 (%)	3	3	0.0087	0.0142	0.0087	0.0059	0.0142	0.0102	163.72%	5.63	0.0053	8.18%
241.33	Acid Soluble Fe, ICP, 2017.02 (%)	1		0.0017									
251.30	Acid Soluble Pb, ICP (ppm)	3	1	1.737	2.828	0.0087		0.0142	0.0177	163.72%		0.0003	22.00%
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	2	0	2.350	2.333								
251.33	Acid Soluble Pb, ICP, 2017.02 (ppm)	2	1	2.316	0.9670								
251.34	Acid Soluble Pb, ICP, EPA 3050B/6010C (ppm)	2	0	0.4580	0.3422								
251.99	Acid Soluble Pb, Other (ppm)	1		0.7000									
261.30	Acid Soluble Mn, ICP, test portion 972.02a (%)	2	1	0.0051	0.0070								
261.35	Acid Soluble Mn, ICP, 2017.02 (%)	1		0.0114									
261.99	Acid Soluble Mn, Other (%)	2	1	0.0006	0.0007								
281.30	Acid Soluble Hg, ICP (ppm)	3	0	1.117	0.9570	0.0087		0.0142		163.72%		0.0003	22.00%
281.99	Acid Soluble Hg, Other (ppm)	3	1	0.0068	0.0055	0.0087		0.0142	0.0177	163.72%		0.0003	22.00%

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289.30	Acid Soluble Mo, ICP (ppm)	2	0	0.0010	0.0014								
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	2	1	0.5750	0.6010								
289.33	Acid Soluble Mo, ICP, 2017.02 (ppm)	3	1	0.9275	1.563	0.0087	1.0026	0.0142	0.0177	163.72%	0.03	0.0003	22.00%
289.34	Acid Soluble Mo, ICP, EPA 3050B/6010C (ppm)	2	1	0.2890	0.1570								
291.30	Acid Soluble Ni, ICP (ppm)	2	1	1.216	1.674								
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	1		1.000									
291.33	Acid Soluble Ni, ICP, 2017.02 (ppm)	2	1	0.8265	1.098								
291.34	Acid Soluble Ni, ICP, EPA 3050B/6010C (ppm)	2	1	0.9900	1.146								
291.99	Acid Soluble Ni, Other (ppm)	1		38.89									
301.30	Acid Soluble Se, ICP (ppm)	2	1	0.8346	1.153								
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	3	2	3.445	5.678	0.1675		0.1875	0.1657	111.95%		0.0068	20.93%
301.33	Acid Soluble Se, ICP, 2017.02 (ppm)	1		3.352									
301.34	Acid Soluble Se, ICP, EPA 3050B/6010C (ppm)	2	0	0.7630	0.7594								
301.99	Acid Soluble Se, Other (ppm)	2	1	0.1500	0.2121								
311.32	Sodium, ICP, 2006.03 test portion (%)	1		0.0104									
311.33	Sodium, ICP, test portion as in 2017.02 (%)	2	2	0.0165	0.0042								
311.99	Sodium, Other (%)	1		0.0450									
321.30	Acid Soluble Zn, ICP, test portion inorganic 965.09 (%)	4	1	0.0026	0.0049	0.0165	0.0067	0.0042	0.0053	25.71%	1.49	0.0010	7.42%
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	1		0.0003									
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	4	1	0.0002	0.0002	0.0165	0.0067	0.0042	0.0053	25.71%	1.49	0.0010	7.42%
321.99	Acid Soluble Zn, Other (%)	2	0	0.0010	0.0014								

The Method IA Ratio = 2.33 * Robust SD / IA at the Method Assigned Value. IA ratios of 1 and less indicate participant data dispersion is as good or less than the IA. Red indicates the IA ratio is significantly greater than 1, Orange indicates marginally greater than 1, Green indicates IA ratio is not significantly greater than 1 and Grey indicates < 6 labs reporting. The Horwitz %RSD is calculated using the Thompson Modification, Analyst,2000,125,385-386.



Method PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Sample # 240511

Regular PT Scheme

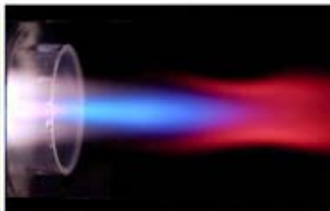
Mg thiosulfate

Method Precision Report

Issue Date : 06/30/2024

Method Code	Analyte & Method	# Tests Submitted	# Tests Used in Precision Calcs	Mean	SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	13	12	4.066	0.1602	0.1419	0.1051	0.1766	3.49%	2.58%	4.34%	1.680
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	5	5	3.900	0.1293	0.1091	0.0981	0.1467	2.80%	2.51%	3.76%	1.496
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	15	13	4.211	0.3319	0.3296	0.0545	0.3341	7.83%	1.29%	7.93%	6.131
121.99	Acid Soluble Mg, Other (4%)	9	9	4.198	0.3882	0.3737	0.1487	0.4022	8.90%	3.54%	9.58%	2.705
148.01	Total S, Gravimetric - sulfate and elemental (10%)	7	7	10.05	0.5569	0.5297	0.2432	0.5829	5.27%	2.42%	5.80%	2.396
148.07	Total S, ICP, test portion as in 2017.02 (10%)	12	10	10.47	0.5521	0.5420	0.1491	0.5621	5.18%	1.42%	5.37%	3.770
148.99	Total S, Other (10%)	10	8	10.38	0.3939	0.3672	0.2016	0.4189	3.54%	1.94%	4.03%	2.078

Notes: Precision data calculated when 5 or more Tests included.



Method PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Methods: 90

Sample # 240511

Regular PT Scheme

Labs Reporting: 58

Mg thiosulfate

Lab Values

Issue Date : 06/30/2024

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
001.99	Ammoniacal N, Other (%)	0524	0.0044	0.0000				1			0
005.99	Urea N, Other (%)	0524	0.0069	0.0000				1			0
010.60	Total N, Combustion (%)	0422	0.0200	0.0000	0.0717	0.0574	0.0180	3	-0.90		0
010.60	Total N, Combustion (%)	0354	0.0615	0.0050	0.0717	0.0574	0.0180	3	-0.18		0
010.60	Total N, Combustion (%)	0588	0.1335	0.0310	0.0717	0.0574	0.0180	3	1.08		0
010.99	Total N, Other (%)	0524	0.0220	0.0100				1			0
020.50	Total P2O5, ICP (%)	0524	0.0002	0.0001				2			0
020.50	Total P2O5, ICP (%)	0422	0.0036	0.0028				2			0
020.50	Total P2O5, ICP (%)	0588	< 0.1					2			5
041.21	Direct Available P2O5, Spectrophotometric, Citrate-EDTA Ext. (0354	< 0.01					0			5
050.50	Soluble K2O, ICP (Oxalate) (%)	0422	0.0107	0.0023				1			0
050.52	Soluble K2O, ICP (Citrate-EDTA) (%)	0354	0.0095	0.0010				1			0
050.99	Soluble K2O, Other (%)	0524	0.0076	0.0006				1			0
050.99	Soluble K2O, Other (%)	0588	< 0.1					1			5
101.30	Acid Soluble Ca, ICP, test portion inorganic 965.09 (%)	0422	0.1058	0.0001	0.1328	0.0333	0.0006	3	-0.81		0
101.30	Acid Soluble Ca, ICP, test portion inorganic 965.09 (%)	0035	0.1225	0.0010	0.1328	0.0333	0.0006	3	-0.31		0
101.30	Acid Soluble Ca, ICP, test portion inorganic 965.09 (%)	0354	0.1700	0.0000	0.1328	0.0333	0.0006	3	1.12		0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (4%)	0485	3.795	0.0700	4.079	0.3266	0.0978	4	-0.87		0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (4%)	0553	3.835	0.0100	4.079	0.3266	0.0978	4	-0.75		0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (4%)	0029	4.202	0.2810	4.079	0.3266	0.0978	4	0.37		0
121.00	Acid Soluble Mg, AA, inorganic 965.09 (4%)	0534	4.485	0.0300	4.079	0.3266	0.0978	4	1.24		0
121.03	Acid Soluble Mg, AA, 965.09, test portion 2006.03A-C w/dual a	0498	4.150	0.1000				1			0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0451	3.889	0.2580	4.091	0.2023	0.1171	13	-1.00	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0433	3.905	0.0900	4.091	0.2023	0.1171	13	-0.92	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0377	3.940	0.2600	4.091	0.2023	0.1171	13	-0.75	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0049	3.950	0.2200	4.091	0.2023	0.1171	13	-0.70	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0324	3.955	0.0900	4.091	0.2023	0.1171	13	-0.67	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0231	3.980	0.0000	4.091	0.2023	0.1171	13	-0.55	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0354	4.060	0.0400	4.091	0.2023	0.1171	13	-0.15	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0255	4.070	0.0380	4.091	0.2023	0.1171	13	-0.10	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0291	4.155	0.0100	4.091	0.2023	0.1171	13	0.32	OK	0

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0234	4.245	0.2500	4.091	0.2023	0.1171	13	0.76	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0422	4.259	0.0120	4.091	0.2023	0.1171	13	0.83	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0035	4.380	0.0200	4.091	0.2023	0.1171	13	1.43	OK	0
121.30	Acid Soluble Mg, ICP, test portion inorganic 965.09 (4%)	0513	4.890	0.0000	4.091	0.2023	0.1171	13	3.95	High	0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	0220	3.700	0.1400	3.900	0.1293	0.1142	5	-1.54		0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	0095	3.855	0.2500	3.900	0.1293	0.1142	5	-0.34		0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	0073	3.930	0.1000	3.900	0.1293	0.1142	5	0.24		0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	0405	3.980	0.0600	3.900	0.1293	0.1142	5	0.62		0
121.32	Acid Soluble Mg, ICP, test portion 2006.03A-C (4%)	0423	4.033	0.0210	3.900	0.1293	0.1142	5	1.03		0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0055	3.698	0.1850	4.241	0.3744	0.0734	14	-1.45	Low	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0136	3.885	0.0300	4.241	0.3744	0.0734	14	-0.95	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0177	3.945	0.1386	4.241	0.3744	0.0734	14	-0.79	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0040	3.975	0.0300	4.241	0.3744	0.0734	14	-0.71	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0561	4.120	0.0000	4.241	0.3744	0.0734	14	-0.32	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0494	4.129	0.0756	4.241	0.3744	0.0734	14	-0.30	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0169	4.235	0.0300	4.241	0.3744	0.0734	14	-0.02	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0527	4.257	0.0076	4.241	0.3744	0.0734	14	0.04	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0521	4.267	0.0000	4.241	0.3744	0.0734	14	0.07	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0102	4.300	0.0600	4.241	0.3744	0.0734	14	0.16	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0260	4.300	0.1000	4.241	0.3744	0.0734	14	0.16	OK	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0452	4.655	0.0100	4.241	0.3744	0.0734	14	1.11	High	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0515	4.975	0.4710	4.241	0.3744	0.0734	14	1.96	High	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0472	4.980	0.0400	4.241	0.3744	0.0734	14	1.97	High	0
121.33	Acid Soluble Mg, ICP, 2017.02 (4%)	0106	4.099	0.6384	4.241	0.3744	0.0734	14	-0.38	OK	1
121.99	Acid Soluble Mg, Other (4%)	0368	3.703	0.0747	4.165	0.3593	0.0783	9	-1.19	Low	0
121.99	Acid Soluble Mg, Other (4%)	0389	3.925	0.0030	4.165	0.3593	0.0783	9	-0.62	OK	0
121.99	Acid Soluble Mg, Other (4%)	0042	3.930	0.4800	4.165	0.3593	0.0783	9	-0.60	OK	0
121.99	Acid Soluble Mg, Other (4%)	0023	4.062	0.0170	4.165	0.3593	0.0783	9	-0.26	OK	0
121.99	Acid Soluble Mg, Other (4%)	0562	4.125	0.0500	4.165	0.3593	0.0783	9	-0.10	OK	0
121.99	Acid Soluble Mg, Other (4%)	0600	4.125	0.0500	4.165	0.3593	0.0783	9	-0.10	OK	0
121.99	Acid Soluble Mg, Other (4%)	0523	4.406	0.0190	4.165	0.3593	0.0783	9	0.62	OK	0
121.99	Acid Soluble Mg, Other (4%)	0524	4.504	0.0521	4.165	0.3593	0.0783	9	0.87	OK	0
121.99	Acid Soluble Mg, Other (4%)	0515	5.003	0.3920	4.165	0.3593	0.0783	9	2.15	High	0
131.00	Water Soluble Mg, AA (%)	0485	3.910	0.1200				2			0
131.00	Water Soluble Mg, AA (%)	0029	3.964	0.0640				2			0
131.30	Water Soluble Mg, ICP (%)	0405	4.055	0.0300	4.207	0.1284	0.0348	6	-1.05	NA	0
131.30	Water Soluble Mg, ICP (%)	0605	4.160	0.0200	4.207	0.1284	0.0348	6	-0.32	NA	0
131.30	Water Soluble Mg, ICP (%)	0394	4.175	0.0465	4.207	0.1284	0.0348	6	-0.22	NA	0
131.30	Water Soluble Mg, ICP (%)	0444	4.215	0.1300	4.207	0.1284	0.0348	6	0.06	NA	0
131.30	Water Soluble Mg, ICP (%)	0619	4.235	0.0300	4.207	0.1284	0.0348	6	0.20	NA	0
131.30	Water Soluble Mg, ICP (%)	0452	4.565	0.0100	4.207	0.1284	0.0348	6	2.49	NA	0
131.70	Water Soluble Mg, Titrimetric (EDTA) (%)	0510	3.953	0.0433				2			0
131.70	Water Soluble Mg, Titrimetric (EDTA) (%)	0518	4.600	0.2000				2			0

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131.99	Water Soluble Mg, Other (%)	0562	4.090	0.0600				2			0
131.99	Water Soluble Mg, Other (%)	0600	4.090	0.0600				2			0
143.99	Elemental S, Other (%)	0291	10.20	0.0100	10.35	0.1346	0.0736	4	-1.11		0
143.99	Elemental S, Other (%)	0368	10.29	0.0544	10.35	0.1346	0.0736	4	-0.41		0
143.99	Elemental S, Other (%)	0255	10.39	0.1100	10.35	0.1346	0.0736	4	0.30		0
143.99	Elemental S, Other (%)	0389	10.51	0.1200	10.35	0.1346	0.0736	4	1.23		0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0537	10.03	0.1800	10.32	0.2534	0.1150	3	-1.12		0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0485	10.40	0.0000	10.32	0.2534	0.1150	3	0.34		0
145.00	Sulfate S, HCl soluble, Gravimetric Sulfur - sulfate form (%)	0561	10.52	0.0500	10.32	0.2534	0.1150	3	0.79		0
145.99	Sulfate S, HCl soluble, Other (%)	0444	9.880	0.1400				2			0
145.99	Sulfate S, HCl soluble, Other (%)	0619	10.40	0.2000				2			0
146.00	Total S in Liquid, Gravimetric - sulfate, sulfite, thiosulfate, a... (1	0102	10.11	0.0200	10.30	0.2741	0.0458	4	-0.71		0
146.00	Total S in Liquid, Gravimetric - sulfate, sulfite, thiosulfate, a... (1	0177	10.13	0.0575	10.30	0.2741	0.0458	4	-0.64		0
146.00	Total S in Liquid, Gravimetric - sulfate, sulfite, thiosulfate, a... (1	0537	10.28	0.0600	10.30	0.2741	0.0458	4	-0.09		0
146.00	Total S in Liquid, Gravimetric - sulfate, sulfite, thiosulfate, a... (1	0324	10.70	0.0000	10.30	0.2741	0.0458	4	1.44		0
146.99	Total S in Liquid, Other (10%)	0023	10.17	0.0410				1			0
148.00	Total S, Combustion (10%)	0157	8.905	0.6100	9.543	0.4120	0.2022	5	-1.55		0
148.00	Total S, Combustion (10%)	0049	9.450	0.0200	9.543	0.4120	0.2022	5	-0.23		0
148.00	Total S, Combustion (10%)	0451	9.550	0.0800	9.543	0.4120	0.2022	5	0.02		0
148.00	Total S, Combustion (10%)	0029	9.897	0.1110	9.543	0.4120	0.2022	5	0.86		0
148.00	Total S, Combustion (10%)	0136	9.915	0.1900	9.543	0.4120	0.2022	5	0.90		0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0157	9.025	0.3700	10.08	0.5623	0.3000	7	-1.69	Low	0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0095	9.610	0.2400	10.08	0.5623	0.3000	7	-0.75	OK	0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0498	10.11	0.1600	10.08	0.5623	0.3000	7	0.06	OK	0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0028	10.16	0.2800	10.08	0.5623	0.3000	7	0.14	OK	0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0073	10.27	0.6000	10.08	0.5623	0.3000	7	0.31	OK	0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0534	10.52	0.4100	10.08	0.5623	0.3000	7	0.71	OK	0
148.01	Total S, Gravimetric - sulfate and elemental (10%)	0220	10.63	0.0400	10.08	0.5623	0.3000	7	0.89	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0472	9.820	0.0600	10.58	0.7194	0.1865	11	-1.05	Low	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0106	9.975	0.1700	10.58	0.7194	0.1865	11	-0.84	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0521	10.05	0.0000	10.58	0.7194	0.1865	11	-0.73	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0177	10.06	0.1062	10.58	0.7194	0.1865	11	-0.72	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0040	10.20	0.0000	10.58	0.7194	0.1865	11	-0.52	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0494	10.42	0.3812	10.58	0.7194	0.1865	11	-0.21	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0169	10.68	0.0600	10.58	0.7194	0.1865	11	0.14	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0260	10.85	0.3100	10.58	0.7194	0.1865	11	0.37	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0527	11.19	0.3946	10.58	0.7194	0.1865	11	0.85	OK	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0513	11.45	0.0100	10.58	0.7194	0.1865	11	1.21	High	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0619	21.30	0.0000	10.58	0.7194	0.1865	11	14.91	High	0
148.07	Total S, ICP, test portion as in 2017.02 (10%)	0515	12.47	1.740	10.58	0.7194	0.1865	11	2.63	High	1
148.99	Total S, Other (10%)	0433	8.815	0.3100	10.34	0.5250	0.3010	10	-2.71	Low	0
148.99	Total S, Other (10%)	0605	9.800	0.0400	10.34	0.5250	0.3010	10	-0.96	OK	0
148.99	Total S, Other (10%)	0523	10.04	0.2940	10.34	0.5250	0.3010	10	-0.54	OK	0

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148.99	Total S, Other (10%)	0377	10.07	0.6400	10.34	0.5250	0.3010	10	-0.48	OK	0
148.99	Total S, Other (10%)	0562	10.45	0.2000	10.34	0.5250	0.3010	10	0.19	OK	0
148.99	Total S, Other (10%)	0600	10.45	0.2000	10.34	0.5250	0.3010	10	0.19	OK	0
148.99	Total S, Other (10%)	0354	10.55	0.1000	10.34	0.5250	0.3010	10	0.37	OK	0
148.99	Total S, Other (10%)	0452	10.72	0.2500	10.34	0.5250	0.3010	10	0.66	OK	0
148.99	Total S, Other (10%)	0035	10.80	1.000	10.34	0.5250	0.3010	10	0.81	OK	0
148.99	Total S, Other (10%)	0422	11.00	0.0000	10.34	0.5250	0.3010	10	1.16	OK	0
149.04	S - HNO3 soluble, ICP (%)	0524	7.456	0.1576	8.932	1.293	0.0609	3	-1.14		0
149.04	S - HNO3 soluble, ICP (%)	0231	9.475	0.0100	8.932	1.293	0.0609	3	0.42		0
149.04	S - HNO3 soluble, ICP (%)	0423	9.866	0.0150	8.932	1.293	0.0609	3	0.72		0
149.99	S - HNO3 soluble, Other (%)	0518	10.05	0.5000				2			0
149.99	S - HNO3 soluble, Other (%)	0619	10.40	0.2000				2			0
151.30	Acid Soluble As, ICP (ppm)	0524	0.0014	0.0006				1			0
151.30	Acid Soluble As, ICP (ppm)	0255	0.0000	0.0000				1			4
151.30	Acid Soluble As, ICP (ppm)	0605	< 6.2					1			5
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	0086	0.0616	0.0400				1			0
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	0220	< 0.5					1			5
151.32	Acid Soluble As, ICP, 2006.03 (ppm)	0405	< 3					1			5
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	0515	4.227	0.6080				1			0
151.33	Acid Soluble As, ICP, 2017.02 (ppm)	0136	< 1					1			5
151.34	Acid Soluble As, ICP, EPA 3050B/6010C (ppm)	0515	< 0.186					0			5
151.34	Acid Soluble As, ICP, EPA 3050B/6010C (ppm)	0368	< 0.4					0			5
151.99	Acid Soluble As, Other (ppm)	0220	< 0.5					0			5
165.30	Acid Soluble B, ICP, test portion in 982.01 (%)	0422	0.0006	0.0000				1			0
165.30	Acid Soluble B, ICP, test portion in 982.01 (%)	0354	< 0.01					1			5
165.99	Acid Soluble B, Other (%)	0524	0.0007	0.0000	0.0015	0.0007	0.0007	3	-1.11		0
165.99	Acid Soluble B, Other (%)	0515	0.0017	0.0007	0.0015	0.0007	0.0007	3	0.30		0
165.99	Acid Soluble B, Other (%)	0423	0.0020	0.0000	0.0015	0.0007	0.0007	3	0.82		0
181.30	Acid Soluble Cd, ICP (ppm)	0255	2.590	4.002				1			0
181.30	Acid Soluble Cd, ICP (ppm)	0605	< 1.85					1			5
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0220	0.0400	0.0000				1			0
181.32	Acid Soluble Cd, ICP, 2006.03 (ppm)	0405	< 1					1			5
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	0515	1.329	0.0180				1			0
181.33	Acid Soluble Cd, ICP, 2017.02 (ppm)	0136	< 1					1			5
181.34	Acid Soluble Cd, ICP, EPA 3050B/6010C (ppm)	0368	< 0.1					0			5
181.34	Acid Soluble Cd, ICP, EPA 3050B/6010C (ppm)	0515	< 0.133					0			5
181.99	Acid Soluble Cd, Other (ppm)	0220	0.0400	0.0000				1			0
191.30	Acid Soluble Cr, ICP (ppm)	0524	0.0168	0.0019				1			0
191.30	Acid Soluble Cr, ICP (ppm)	0605	< 1.2					1			5
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0220	0.1000	0.0000				1			0
191.32	Acid Soluble Cr, ICP, 2006.03 (ppm)	0405	< 1					1			5
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	0515	2.673	0.2360				1			0
191.33	Acid Soluble Cr, ICP, 2017.02 (ppm)	0136	< 0.05					1			5

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191.34	Acid Soluble Cr, ICP, EPA 3050B/6010C (ppm)	0368	3.600	1.600				1			0
191.34	Acid Soluble Cr, ICP, EPA 3050B/6010C (ppm)	0515	< 0.141					1			5
202.30	Acid Soluble Co, ICP (ppm)	0524	0.1465	0.0009				1			0
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	0220	< 0.1					0			5
202.32	Acid Soluble Co, ICP, 2006.03 (ppm)	0405	< 1					0			5
202.33	Acid Soluble Co, ICP, 2017.02 (ppm)	0515	1.424	0.0010				1			0
202.33	Acid Soluble Co, ICP, 2017.02 (ppm)	0136	< 0.05					1			5
202.34	Acid Soluble Co, ICP, EPA 3050B/6010C (ppm)	0368	< 0.1					0			5
202.34	Acid Soluble Co, ICP, EPA 3050B/6010C (ppm)	0515	< 0.139					0			5
202.99	Acid Soluble Co, Other (ppm)	0255	26.32	8.720				1			0
202.99	Acid Soluble Co, Other (ppm)	0220	< 0.1					1			5
221.03	Acid Soluble Cu, AA, 965.09, test portion 2006.03A-C w/dual ar	0498	< 0.002					0			5
221.30	Acid Soluble Cu, ICP, test portion inorganic 965.09 (%)	0035	0.0004	0.0002				1			0
221.30	Acid Soluble Cu, ICP, test portion inorganic 965.09 (%)	0422	0.0000	0.0000				1			4
221.30	Acid Soluble Cu, ICP, test portion inorganic 965.09 (%)	0255	0.0005	0.0010				1			4
221.30	Acid Soluble Cu, ICP, test portion inorganic 965.09 (%)	0354	< 0.01					1			5
221.32	Acid Soluble Cu, ICP, test portion 2006.03A-C (%)	0405	< 0.0002					0			5
221.33	Acid Soluble Cu, ICP, 2017.02 (%)	0515	0.0004	0.0000				1			0
221.33	Acid Soluble Cu, ICP, 2017.02 (%)	0106	0.0000	0.0000				1			4
221.33	Acid Soluble Cu, ICP, 2017.02 (%)	0472	0.0000	0.0000				1			4
221.33	Acid Soluble Cu, ICP, 2017.02 (%)	0136	< 0.0002					1			5
221.99	Acid Soluble Cu, Other (%)	0515	0.0002	0.0001				2			0
221.99	Acid Soluble Cu, Other (%)	0368	0.0003	0.0001				2			0
221.99	Acid Soluble Cu, Other (%)	0637	< 0.002					2			5
241.30	Acid Soluble Fe, ICP, test portion inorganic 965.09 (%)	0422	0.0002	0.0000	0.0087	0.0142	0.0053	3	-0.60		0
241.30	Acid Soluble Fe, ICP, test portion inorganic 965.09 (%)	0035	0.0008	0.0005	0.0087	0.0142	0.0053	3	-0.56		0
241.30	Acid Soluble Fe, ICP, test portion inorganic 965.09 (%)	0354	0.0250	0.0100	0.0087	0.0142	0.0053	3	1.15		0
241.33	Acid Soluble Fe, ICP, 2017.02 (%)	0515	< 0.0017					0			5
251.30	Acid Soluble Pb, ICP (ppm)	0524	0.2102	0.0096				1			0
251.30	Acid Soluble Pb, ICP (ppm)	0255	0.0000	0.0000				1			4
251.30	Acid Soluble Pb, ICP (ppm)	0605	< 5					1			5
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0220	< 0.7					0			5
251.32	Acid Soluble Pb, ICP, 2006.03 (ppm)	0405	< 4					0			5
251.33	Acid Soluble Pb, ICP, 2017.02 (ppm)	0515	1.633	0.0490				1			0
251.33	Acid Soluble Pb, ICP, 2017.02 (ppm)	0136	< 3					1			5
251.34	Acid Soluble Pb, ICP, EPA 3050B/6010C (ppm)	0515	< 0.216					0			5
251.34	Acid Soluble Pb, ICP, EPA 3050B/6010C (ppm)	0368	< 0.7					0			5
251.99	Acid Soluble Pb, Other (ppm)	0220	< 0.7					0			5
261.30	Acid Soluble Mn, ICP, test portion 972.02a (%)	0422	0.0001	0.0000				1			0
261.30	Acid Soluble Mn, ICP, test portion 972.02a (%)	0354	< 0.01					1			5
261.35	Acid Soluble Mn, ICP, 2017.02 (%)	0515	0.0114	0.0001				1			0
261.99	Acid Soluble Mn, Other (%)	0368	0.0001	0.0000				1			0
261.99	Acid Soluble Mn, Other (%)	0515	< 0.0011					1			5

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281.30	Acid Soluble Hg, ICP (ppm)	0515	< 0.1					0			5
281.30	Acid Soluble Hg, ICP (ppm)	0605	< 1.25					0			5
281.30	Acid Soluble Hg, ICP (ppm)	0405	< 2					0			5
281.99	Acid Soluble Hg, Other (ppm)	0035	0.0100	0.0040				1			0
281.99	Acid Soluble Hg, Other (ppm)	0086	0.0005	0.0010				1			4
281.99	Acid Soluble Hg, Other (ppm)	0220	< 0.01					1			5
289.30	Acid Soluble Mo, ICP (ppm)	0255	0.0000	0.0000				0			4
289.30	Acid Soluble Mo, ICP (ppm)	0637	< 0.002					0			5
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	0220	0.1500	0.1000				1			0
289.32	Acid Soluble Mo, ICP, 2006.03 (ppm)	0405	< 1					1			5
289.33	Acid Soluble Mo, ICP, 2017.02 (ppm)	0515	2.733	0.0370				1			0
289.33	Acid Soluble Mo, ICP, 2017.02 (ppm)	0106	0.0000	0.0000				1			4
289.33	Acid Soluble Mo, ICP, 2017.02 (ppm)	0136	< 0.05					1			5
289.34	Acid Soluble Mo, ICP, EPA 3050B/6010C (ppm)	0368	0.4000	0.4000				1			0
289.34	Acid Soluble Mo, ICP, EPA 3050B/6010C (ppm)	0515	< 0.178					1			5
291.30	Acid Soluble Ni, ICP (ppm)	0524	0.0321	0.0209				1			0
291.30	Acid Soluble Ni, ICP (ppm)	0605	< 2.4					1			5
291.32	Acid Soluble Ni, ICP, 2006.03 (ppm)	0405	< 1					0			5
291.33	Acid Soluble Ni, ICP, 2017.02 (ppm)	0515	1.603	0.1680				1			0
291.33	Acid Soluble Ni, ICP, 2017.02 (ppm)	0136	< 0.05					1			5
291.34	Acid Soluble Ni, ICP, EPA 3050B/6010C (ppm)	0368	1.800	0.4000				1			0
291.34	Acid Soluble Ni, ICP, EPA 3050B/6010C (ppm)	0515	< 0.18					1			5
291.99	Acid Soluble Ni, Other (ppm)	0255	38.89	11.27				1			0
301.30	Acid Soluble Se, ICP (ppm)	0524	0.0191	0.0096				1			0
301.30	Acid Soluble Se, ICP (ppm)	0605	< 1.65					1			5
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0086	0.0349	0.0068				2			0
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0220	0.3000	0.0000				2			0
301.32	Acid Soluble Se, ICP, 2006.03 (ppm)	0405	< 10					2			5
301.33	Acid Soluble Se, ICP, 2017.02 (ppm)	0515	3.352	0.2900				1			0
301.34	Acid Soluble Se, ICP, EPA 3050B/6010C (ppm)	0515	< 0.226					0			5
301.34	Acid Soluble Se, ICP, EPA 3050B/6010C (ppm)	0368	< 1.3					0			5
301.99	Acid Soluble Se, Other (ppm)	0220	0.3000	0.2000				1			0
301.99	Acid Soluble Se, Other (ppm)	0255	0.0000	0.0000				1			4
311.32	Sodium, ICP, 2006.03 test portion (%)	0422	0.0104	0.0000				1			0
311.33	Sodium, ICP, test portion as in 2017.02 (%)	0423	0.0135	0.0010				2			0
311.33	Sodium, ICP, test portion as in 2017.02 (%)	0035	0.0195	0.0070				2			0
311.99	Sodium, Other (%)	0354	0.0450	0.0100				1			0
321.30	Acid Soluble Zn, ICP, test portion inorganic 965.09 (%)	0035	0.0005	0.0002				1			0
321.30	Acid Soluble Zn, ICP, test portion inorganic 965.09 (%)	0255	0.0000	0.0000				1			4
321.30	Acid Soluble Zn, ICP, test portion inorganic 965.09 (%)	0422	0.0000	0.0000				1			4
321.30	Acid Soluble Zn, ICP, test portion inorganic 965.09 (%)	0354	< 0.01					1			5
321.32	Acid Soluble Zn, ICP, test portion 2006.03A-C (%)	0405	< 0.0003					0			5
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	0515	0.0003	0.0000				1			0

Method Code	Analyte Name and Method (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Method IA Status	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	0106	0.0000	0.0000				1			4
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	0472	0.0000	0.0000				1			4
321.33	Acid Soluble Zn, ICP, 2017.02 (%)	0136	< 0.0003					1			5
321.99	Acid Soluble Zn, Other (%)	0368	0.0001	0.0001				0			4
321.99	Acid Soluble Zn, Other (%)	0637	< 0.002					0			5

Interpreting Z Scores and Flags:

Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). Flags indicate data usage: 0 = Used, 1 = rejected for duplicates too far apart, 2 = rejected as extreme outlier, 3 = removed from stats, 4 = rejected due to 0s submitted and 5 = LOD. A 9 flag indicates a data problem - scores not calculated.

Notes:

*Robust statistics not used if < 6 labs used in calculations, in this case Values and Z Scores are grayed out and should be interpreted with extreme caution. Identical duplicates not included in calculation of Rob R-bar. IA Status describes where your result is relative to the Assigned Value ± IA. Red indicates Higher or Lower and Green indicates within the IA range about the Robust mean. Method codes in light green indicate a guaranteed analyte. Individual lab values may be below detection limits but are reported solely for