

# magruder fertilizer

## check sample program



STRIVING FOR EXCELLENCE IN ANALYSIS

Analyte Proficiency From All Labs

Sample # 201112

Potash

### Statistical Summary

# Analytes: 30

# Labs Reporting: 88

Issue Date : 12/31/2020

Analyte Code	Analyte Sample # 201112	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Analyte Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Analyte IA Ratio	Average Range (R-bar)	Horwitz %RSD
001	Ammoniacal N (%)	1		0.0008									
002	Nitrate N (%)	1		0.0020									
005	Urea N (%)	1		0.0148									
010	Total N (%)	6	5	12.31	27.33	12.31	0.6131	27.33	15.28	221.91%	103.85	0.0101	2.74%
020	Total P2O5 (%)	3	2	0.0011	0.0010	0.0011		0.0010	0.0009	95.38%		0.0004	11.19%
041	Direct Available P2O5 (%)	5	2	30.90	43.67	30.90	0.7545	43.67	38.60	141.32%	134.86	0.1405	2.39%
050	Soluble K2O (62%)	89	86	61.66	2.257	61.87	1.7987	1.195	0.1611	1.93%	1.55	0.4695	2.15%
060	Water (Free) (%)	10	8	0.0869	0.0790	0.0723		0.0508	0.0225	70.22%		0.0229	5.94%
101	Acid Soluble Ca (%)	4	4	0.0941	0.1509	0.0941	0.2047	0.1509	0.0943	160.31%	1.72	0.0000	5.71%
121	Acid Soluble Mg (%)	7	5	0.0792	0.0997	0.0792	0.2040	0.0997	0.0558	125.91%	1.14	0.0461	5.86%
143	Elemental S (%)	1		0.0060									
145	Sulfate S, HCl soluble (%)	1		0.0213									
148	Total S (%)	2	1	0.0369									
149	S - HNO3 soluble (%)	1		0.0031									
151	Acid Soluble As (ppm)	9	2	0.0636	0.0833	0.0636		0.0833	0.0736	130.97%		0.0076	24.22%
165	Acid Soluble B (%)	6	4	0.0245	0.0468	0.0245	0.0067	0.0468	0.0293	191.05%	16.34	0.0113	6.99%
181	Acid Soluble Cd (ppm)	10	4	12.79	14.75	12.79		14.75	9.222	115.34%		2.249	10.90%
190	Water Soluble Cl (%)	22	21	46.93	0.6676	46.91	1.0000	0.7021	0.1915	1.50%	1.64	0.2564	2.24%
191	Acid Soluble Cr (ppm)	8	5	2.574	4.983	2.574		4.983	2.785	193.55%		2.776	13.87%
202	Acid Soluble Co (ppm)	8	5	2.757	5.981	2.757	1.8270	5.981	3.344	216.98%	7.63	0.2619	13.73%
221	Acid Soluble Cu (%)	12	3	1.023	1.761	1.023	0.1073	1.761	1.271	172.18%	38.25	0.2024	3.99%
241	Acid Soluble Fe (%)	7	4	0.0349	0.0463	0.0349	0.0085	0.0463	0.0289	132.61%	12.70	0.0162	6.63%
251	Acid Soluble Pb (ppm)	9	2	0.0713	0.0033	0.0713		0.0033	0.0029	4.56%		0.0236	23.80%
261	Acid Soluble Mn (%)	5	3	0.0442	0.0395	0.0442	0.0094	0.0395	0.0285	89.36%	9.77	0.0580	6.40%
281	Acid Soluble Hg (ppm)	6	2	0.1259	0.1367	0.1259		0.1367	0.1208	108.61%		0.0158	21.85%
289	Acid Soluble Mo (ppm)	8	3	0.5164	0.5195	0.5164	1.1549	0.5195	0.3749	100.61%	1.05	0.2456	17.67%
291	Acid Soluble Ni (ppm)	9	3	8.330	14.05	8.330		14.05	10.14	168.68%		0.8926	11.63%
301	Acid Soluble Se (ppm)	6	2	1.017	1.429	1.017		1.429	1.263	140.52%		0.1650	15.96%
311	Sodium (%)	22	21	0.4574	0.2996	0.3757	0.0426	0.0644	0.0176	17.14%	3.53	0.0102	4.63%
321	Acid Soluble Zn (%)	13	6	0.0066	0.0094	0.0047	0.0055	0.0057	0.0029	122.53%	2.44	0.0027	8.97%

The Analyte IA Ratio = 2.33 \* Robust SD / IA at the Analyte 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.

Horwitz %RSD	
Average Range (R-bar)	
Analyte IA Ratio	
Robust % RSD	
Robust Uncertainty (U)	
Robust sd	
IA at Analyte Value	
Assigned Value Robust Mean	
Raw SD	
Raw Mean	
# Tests in Robust Calculations	
# Tests Submitted	
Analyte Sample # 201112	
Analyte Code	

# magruder fertilizer

## check sample program



STRIVING FOR EXCELLENCE IN ANALYSIS

Analyte Proficiency From All Labs

Sample # 201112

Potash

Lab Values

# Analytes: 30

# Labs Reporting: 88

Issue Date : 12/31/2020

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
001	Ammoniacal N (%)	0553	< 0.0008					0	001.99	5	
002	Nitrate N (%)	0553	< 0.002					0	002.99	5	
005	Urea N (%)	0524	0.0148	0.0000				1	005.99	0	
010	Total N (%)	0568	0.0085	0.0017	12.31	27.33	0.0101	5	-0.39	010.12	0
010	Total N (%)	0524	0.0611	0.0069	12.31	27.33	0.0101	5	-0.39	010.99	0
010	Total N (%)	0354	0.0750	0.0420	12.31	27.33	0.0101	5	-0.39	010.60	0
010	Total N (%)	0521	0.2291	0.0000	12.31	27.33	0.0101	5	-0.39	010.60	0
010	Total N (%)	0042	61.20	0.0000	12.31	27.33	0.0101	5	1.56	010.60	0
010	Total N (%)	0325	0.0000	0.0000	12.31	27.33	0.0101	5		010.60	4
020	Total P2O5 (%)	0524	0.0004	0.0001				2		020.50	0
020	Total P2O5 (%)	0515	0.0018	0.0006				2		020.99	0
020	Total P2O5 (%)	0552	0.0000	0.0000				2		020.50	4
041	Direct Available P2O5 (%)	0354	0.0225	0.0010				2		041.21	0
041	Direct Available P2O5 (%)	0494	61.78	0.2800				2		041.51	0
041	Direct Available P2O5 (%)	0325	0.0000	0.0000				2		041.50	4
041	Direct Available P2O5 (%)	0568	0.0050	0.0100				2		041.21	4
041	Direct Available P2O5 (%)	0553	< 0.007					2		041.20	5
050	Soluble K2O (62%)	0450	47.37†	0.5000	61.87	1.195	0.4695	86	-12.14	050.99	0
050	Soluble K2O (62%)	0402	55.40†	0.6100	61.87	1.195	0.4695	86	-5.42	050.99	0
050	Soluble K2O (62%)	0419	57.00†	0.3200	61.87	1.195	0.4695	86	-4.08	050.50	0
050	Soluble K2O (62%)	0451	57.63†	0.4200	61.87	1.195	0.4695	86	-3.55	050.99	0
050	Soluble K2O (62%)	0486	58.83†	0.6000	61.87	1.195	0.4695	86	-2.55	050.52	0
050	Soluble K2O (62%)	0472	58.93†	1.950	61.87	1.195	0.4695	86	-2.47	050.31	0
050	Soluble K2O (62%)	0025	59.50†	0.2000	61.87	1.195	0.4695	86	-1.99	050.52	0
050	Soluble K2O (62%)	0524	59.59†	0.8980	61.87	1.195	0.4695	86	-1.91	050.99	0
050	Soluble K2O (62%)	0521	59.81†	0.0000	61.87	1.195	0.4695	86	-1.73	050.99	0
050	Soluble K2O (62%)	0309	60.07†	0.1900	61.87	1.195	0.4695	86	-1.51	050.30	0
050	Soluble K2O (62%)	0547	60.40	0.4300	61.87	1.195	0.4695	86	-1.24	050.52	0
050	Soluble K2O (62%)	0325	60.40	0.0000	61.87	1.195	0.4695	86	-1.23	050.99	0
050	Soluble K2O (62%)	0136	60.45	3.100	61.87	1.195	0.4695	86	-1.19	050.52	0
050	Soluble K2O (62%)	0485	60.60	0.4290	61.87	1.195	0.4695	86	-1.07	050.52	0
050	Soluble K2O (62%)	0456	60.75	0.1000	61.87	1.195	0.4695	86	-0.94	050.61	0
050	Soluble K2O (62%)	0538	61.00	0.5000	61.87	1.195	0.4695	86	-0.73	050.99	0
050	Soluble K2O (62%)	0562	61.00	0.3000	61.87	1.195	0.4695	86	-0.73	050.99	0
050	Soluble K2O (62%)	0537	61.03	0.5500	61.87	1.195	0.4695	86	-0.71	050.99	0
050	Soluble K2O (62%)	0551	61.15	0.3000	61.87	1.195	0.4695	86	-0.61	050.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
050	Soluble K2O (62%)	0043	61.21	0.1000	61.87	1.195	0.4695	86	-0.56	050.52	0
050	Soluble K2O (62%)	0494	61.23	1.190	61.87	1.195	0.4695	86	-0.54	050.00	0
050	Soluble K2O (62%)	0421	61.26	0.0131	61.87	1.195	0.4695	86	-0.51	050.99	0
050	Soluble K2O (62%)	0389	61.28	0.5900	61.87	1.195	0.4695	86	-0.50	050.99	0
050	Soluble K2O (62%)	0073	61.29	0.9900	61.87	1.195	0.4695	86	-0.49	050.30	0
050	Soluble K2O (62%)	0029	61.36	0.1800	61.87	1.195	0.4695	86	-0.43	050.62	0
050	Soluble K2O (62%)	0550	61.39	0.1000	61.87	1.195	0.4695	86	-0.40	050.00	0
050	Soluble K2O (62%)	0564	61.42	0.0800	61.87	1.195	0.4695	86	-0.38	050.99	0
050	Soluble K2O (62%)	0394	61.46	0.3900	61.87	1.195	0.4695	86	-0.35	050.99	0
050	Soluble K2O (62%)	0532	61.50	0.2000	61.87	1.195	0.4695	86	-0.31	050.99	0
050	Soluble K2O (62%)	0444	61.51	0.0500	61.87	1.195	0.4695	86	-0.31	050.50	0
050	Soluble K2O (62%)	0539	61.52	0.1900	61.87	1.195	0.4695	86	-0.30	050.99	0
050	Soluble K2O (62%)	0536	61.55	0.3000	61.87	1.195	0.4695	86	-0.27	050.99	0
050	Soluble K2O (62%)	0535	61.60	0.2000	61.87	1.195	0.4695	86	-0.23	050.99	0
050	Soluble K2O (62%)	0055	61.63	0.9800	61.87	1.195	0.4695	86	-0.20	050.00	0
050	Soluble K2O (62%)	0513	61.68	0.0900	61.87	1.195	0.4695	86	-0.17	050.62	0
050	Soluble K2O (62%)	0549	61.68	0.0500	61.87	1.195	0.4695	86	-0.17	050.99	0
050	Soluble K2O (62%)	0371	61.75	0.3000	61.87	1.195	0.4695	86	-0.10	050.99	0
050	Soluble K2O (62%)	0531	61.75	0.5000	61.87	1.195	0.4695	86	-0.10	050.99	0
050	Soluble K2O (62%)	0377	61.76	1.190	61.87	1.195	0.4695	86	-0.10	050.52	0
050	Soluble K2O (62%)	0518	61.80	0.0000	61.87	1.195	0.4695	86	-0.06	050.99	0
050	Soluble K2O (62%)	0558	61.85	0.1000	61.87	1.195	0.4695	86	-0.02	050.99	0
050	Soluble K2O (62%)	0556	61.85	0.0200	61.87	1.195	0.4695	86	-0.02	050.99	0
050	Soluble K2O (62%)	0230	61.90	0.6000	61.87	1.195	0.4695	86	0.02	050.50	0
050	Soluble K2O (62%)	0535	61.95	0.1000	61.87	1.195	0.4695	86	0.06	050.61	0
050	Soluble K2O (62%)	0535	61.95	0.1000	61.87	1.195	0.4695	86	0.06	050.62	0
050	Soluble K2O (62%)	0423	61.98	0.6500	61.87	1.195	0.4695	86	0.08	050.52	0
050	Soluble K2O (62%)	0552	61.99	0.0000	61.87	1.195	0.4695	86	0.10	050.99	0
050	Soluble K2O (62%)	0498	62.00	0.6000	61.87	1.195	0.4695	86	0.11	050.99	0
050	Soluble K2O (62%)	0040	62.05	0.9000	61.87	1.195	0.4695	86	0.15	050.30	0
050	Soluble K2O (62%)	0023	62.05	0.1000	61.87	1.195	0.4695	86	0.15	050.52	0
050	Soluble K2O (62%)	0506	62.05	0.7000	61.87	1.195	0.4695	86	0.15	050.99	0
050	Soluble K2O (62%)	0560	62.05	0.7000	61.87	1.195	0.4695	86	0.15	050.99	0
050	Soluble K2O (62%)	0055	62.15	0.4100	61.87	1.195	0.4695	86	0.23	050.50	0
050	Soluble K2O (62%)	0106	62.16	2.200	61.87	1.195	0.4695	86	0.24	050.50	0
050	Soluble K2O (62%)	0231	62.22	0.1100	61.87	1.195	0.4695	86	0.29	050.00	0
050	Soluble K2O (62%)	0540	62.22	0.3600	61.87	1.195	0.4695	86	0.29	050.99	0
050	Soluble K2O (62%)	0510	62.23	0.0151	61.87	1.195	0.4695	86	0.30	050.60	0
050	Soluble K2O (62%)	0234	62.26	0.1200	61.87	1.195	0.4695	86	0.32	050.99	0
050	Soluble K2O (62%)	0356	62.26	0.7560	61.87	1.195	0.4695	86	0.32	050.30	0
050	Soluble K2O (62%)	0568	62.29	1.100	61.87	1.195	0.4695	86	0.35	050.51	0
050	Soluble K2O (62%)	0405	62.30	0.0700	61.87	1.195	0.4695	86	0.35	050.00	0
050	Soluble K2O (62%)	0291	62.36	0.1000	61.87	1.195	0.4695	86	0.41	050.51	0
050	Soluble K2O (62%)	0200	62.42	0.1300	61.87	1.195	0.4695	86	0.45	050.60	0
050	Soluble K2O (62%)	0561	62.44	0.1100	61.87	1.195	0.4695	86	0.47	050.99	0
050	Soluble K2O (62%)	0444	62.52	0.2000	61.87	1.195	0.4695	86	0.54	050.00	0
050	Soluble K2O (62%)	0354	62.60	0.2000	61.87	1.195	0.4695	86	0.61	050.52	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
050	Soluble K2O (62%)	0545	62.65	0.1000	61.87	1.195	0.4695	86	0.65	050.99	0
050	Soluble K2O (62%)	0533	62.66	0.3000	61.87	1.195	0.4695	86	0.66	050.99	0
050	Soluble K2O (62%)	0360	62.72	0.4300	61.87	1.195	0.4695	86	0.70	050.52	0
050	Soluble K2O (62%)	0368	62.72	0.0971	61.87	1.195	0.4695	86	0.71	050.51	0
050	Soluble K2O (62%)	0522	62.87	0.1100	61.87	1.195	0.4695	86	0.83	050.00	0
050	Soluble K2O (62%)	0035	62.98	0.5500	61.87	1.195	0.4695	86	0.92	050.61	0
050	Soluble K2O (62%)	0095	63.07	3.780	61.87	1.195	0.4695	86	1.00	050.62	0
050	Soluble K2O (62%)	0169	63.18	0.0600	61.87	1.195	0.4695	86	1.09	050.60	0
050	Soluble K2O (62%)	0546	63.26	0.2889	61.87	1.195	0.4695	86	1.16	050.99	0
050	Soluble K2O (62%)	0114	63.42	0.7100	61.87	1.195	0.4695	86	1.29	050.00	0
050	Soluble K2O (62%)	0177	63.44	0.1997	61.87	1.195	0.4695	86	1.31	050.99	0
050	Soluble K2O (62%)	0476	63.62	0.2142	61.87	1.195	0.4695	86	1.46	050.60	0
050	Soluble K2O (62%)	0433	63.73‡	0.4200	61.87	1.195	0.4695	86	1.55	050.99	0
050	Soluble K2O (62%)	0553	63.80‡	0.4000	61.87	1.195	0.4695	86	1.61	050.99	0
050	Soluble K2O (62%)	0324	63.90‡	0.2000	61.87	1.195	0.4695	86	1.70	050.50	0
050	Soluble K2O (62%)	0300	64.33‡	0.7300	61.87	1.195	0.4695	86	2.05	050.99	0
050	Soluble K2O (62%)	0422	64.38‡	0.0900	61.87	1.195	0.4695	86	2.09	050.50	0
050	Soluble K2O (62%)	0086	65.34‡	1.428	61.87	1.195	0.4695	86	2.90	050.50	0
050	Soluble K2O (62%)	0527	65.50‡	0.0049	61.87	1.195	0.4695	86	3.04	050.99	0
050	Soluble K2O (62%)	0027	66.51‡	0.7360	61.87	1.195	0.4695	86	3.88	050.99	0
050	Soluble K2O (62%)	0255	64.59‡	6.752	61.87	1.195	0.4695	86	2.28	050.99	1
050	Soluble K2O (62%)	0515	70.46‡	6.304	61.87	1.195	0.4695	86	7.19	050.99	1
050	Soluble K2O (62%)	0516	79.55‡	2.700	61.87	1.195	0.4695	86	14.79	050.99	2
060	Water (Free) (%)	0419	0.0100	0.0000	0.0723	0.0508	0.0229	8	-1.12	060.10	0
060	Water (Free) (%)	0394	0.0275	0.0090	0.0723	0.0508	0.0229	8	-0.81	060.30	0
060	Water (Free) (%)	0518	0.0500	0.0200	0.0723	0.0508	0.0229	8	-0.40	060.99	0
060	Water (Free) (%)	0394	0.0640	0.0540	0.0723	0.0508	0.0229	8	-0.15	060.20	0
060	Water (Free) (%)	0405	0.0785	0.0030	0.0723	0.0508	0.0229	8	0.11	060.99	0
060	Water (Free) (%)	0476	0.0902	0.0470	0.0723	0.0508	0.0229	8	0.32	060.99	0
060	Water (Free) (%)	0513	0.1100	0.0200	0.0723	0.0508	0.0229	8	0.68	060.20	0
060	Water (Free) (%)	0456	0.2650	0.0300	0.0723	0.0508	0.0229	8	3.47	060.00	0
060	Water (Free) (%)	0510	0.0000	0.0000	0.0723	0.0508	0.0229	8		060.99	4
060	Water (Free) (%)	0550	< 0.1		0.0723	0.0508	0.0229	8		060.99	5
101	Acid Soluble Ca (%)	0553	0.0065	0.0000	0.0941	0.1509	0.0000	4	-0.58	101.00	0
101	Acid Soluble Ca (%)	0568	0.0200	0.0000	0.0941	0.1509	0.0000	4	-0.49	101.30	0
101	Acid Soluble Ca (%)	0354	0.0300	0.0000	0.0941	0.1509	0.0000	4	-0.42	101.30	0
101	Acid Soluble Ca (%)	0552	0.3200	0.0000	0.0941	0.1509	0.0000	4	1.50	101.99	0
121	Acid Soluble Mg (%)	0524	0.0022	0.0001	0.0792	0.0997	0.0461	5	-0.67	121.99	0
121	Acid Soluble Mg (%)	0553	0.0028	0.0001	0.0792	0.0997	0.0461	5	-0.67	121.00	0
121	Acid Soluble Mg (%)	0552	0.0550	0.0100	0.0792	0.0997	0.0461	5	-0.21	121.99	0
121	Acid Soluble Mg (%)	0515	0.0919	0.0029	0.0792	0.0997	0.0461	5	0.11	121.99	0
121	Acid Soluble Mg (%)	0515	0.2443	0.2172	0.0792	0.0997	0.0461	5	1.44	121.33	0
121	Acid Soluble Mg (%)	0354	< 0.01		0.0792	0.0997	0.0461	5		121.30	5
121	Acid Soluble Mg (%)	0568	< 0.05		0.0792	0.0997	0.0461	5		121.30	5
143	Elemental S (%)	0389	0.0060	0.0020				1		143.99	0
145	Sulfate S, HCl soluble (%)	0553	0.0213	0.0006				1		145.99	0
148	Total S (%)	0515	0.0369	0.0142				1		148.07	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
148	Total S (%)	0354	< 0.01					1		148.99	5
149	S - HNO3 soluble (%)	0524	0.0031	0.0004				1		149.04	0
151	Acid Soluble As (ppm)	0524	0.0047	0.0002				2		151.99	0
151	Acid Soluble As (ppm)	0255	0.1225	0.0150				2		151.30	0
151	Acid Soluble As (ppm)	0515	0.0000	0.0000				2		151.33	4
151	Acid Soluble As (ppm)	0515	0.0000	0.0000				2		151.34	4
151	Acid Soluble As (ppm)	0550	< 0.08					2		151.00	5
151	Acid Soluble As (ppm)	0498	< 0.2					2		151.00	5
151	Acid Soluble As (ppm)	0368	< 0.4					2		151.34	5
151	Acid Soluble As (ppm)	0136	< 1					2		151.33	5
151	Acid Soluble As (ppm)	0117	< 10					2		151.33	5
165	Acid Soluble B (%)	0389	0.0003	0.0001	0.0245	0.0468	0.0113	4	-0.44	165.30	0
165	Acid Soluble B (%)	0524	0.0010	0.0001	0.0245	0.0468	0.0113	4	-0.43	165.99	0
165	Acid Soluble B (%)	0553	0.0021	0.0000	0.0245	0.0468	0.0113	4	-0.41	165.00	0
165	Acid Soluble B (%)	0515	0.0948	0.0449	0.0245	0.0468	0.0113	4	1.27	165.99	0
165	Acid Soluble B (%)	0552	0.0000	0.0000	0.0245	0.0468	0.0113	4		165.99	4
165	Acid Soluble B (%)	0354	< 0.01		0.0245	0.0468	0.0113	4		165.30	5
181	Acid Soluble Cd (ppm)	0524	0.0005	0.0000	12.79	14.75	2.249	4	-0.74	181.99	0
181	Acid Soluble Cd (ppm)	0255	0.0305	0.0410	12.79	14.75	2.249	4	-0.73	181.30	0
181	Acid Soluble Cd (ppm)	0515	25.30	8.508	12.79	14.75	2.249	4	0.72	181.33	0
181	Acid Soluble Cd (ppm)	0515	25.84	0.4480	12.79	14.75	2.249	4	0.75	181.34	0
181	Acid Soluble Cd (ppm)	0550	< 0.08		12.79	14.75	2.249	4		181.00	5
181	Acid Soluble Cd (ppm)	0368	< 0.1		12.79	14.75	2.249	4		181.34	5
181	Acid Soluble Cd (ppm)	0394	< 0.14		12.79	14.75	2.249	4		181.30	5
181	Acid Soluble Cd (ppm)	0450	< 0.5		12.79	14.75	2.249	4		181.30	5
181	Acid Soluble Cd (ppm)	0136	< 1		12.79	14.75	2.249	4		181.33	5
181	Acid Soluble Cd (ppm)	0117	< 5		12.79	14.75	2.249	4		181.33	5
190	Water Soluble Cl (%)	0536	45.90	0.2000	46.91	0.7021	0.2564	21	-1.44	190.00	0
190	Water Soluble Cl (%)	0029	46.02	0.0800	46.91	0.7021	0.2564	21	-1.27	190.00	0
190	Water Soluble Cl (%)	0533	46.03	0.0300	46.91	0.7021	0.2564	21	-1.26	190.00	0
190	Water Soluble Cl (%)	0532	46.25	0.1400	46.91	0.7021	0.2564	21	-0.94	190.00	0
190	Water Soluble Cl (%)	0117	46.32	0.5606	46.91	0.7021	0.2564	21	-0.84	190.00	0
190	Water Soluble Cl (%)	0538	46.55	0.3000	46.91	0.7021	0.2564	21	-0.51	190.00	0
190	Water Soluble Cl (%)	0539	46.55	0.1000	46.91	0.7021	0.2564	21	-0.51	190.00	0
190	Water Soluble Cl (%)	0535	46.60	0.2000	46.91	0.7021	0.2564	21	-0.44	190.00	0
190	Water Soluble Cl (%)	0551	46.70	0.4000	46.91	0.7021	0.2564	21	-0.30	190.00	0
190	Water Soluble Cl (%)	0531	46.75	0.5000	46.91	0.7021	0.2564	21	-0.23	190.00	0
190	Water Soluble Cl (%)	0506	46.90	0.0000	46.91	0.7021	0.2564	21	-0.02	190.00	0
190	Water Soluble Cl (%)	0029	47.05	0.6200	46.91	0.7021	0.2564	21	0.20	190.99	0
190	Water Soluble Cl (%)	0546	47.14	0.2840	46.91	0.7021	0.2564	21	0.32	190.00	0
190	Water Soluble Cl (%)	0513	47.18	0.1900	46.91	0.7021	0.2564	21	0.38	190.00	0
190	Water Soluble Cl (%)	0550	47.25	0.1000	46.91	0.7021	0.2564	21	0.48	190.00	0
190	Water Soluble Cl (%)	0444	47.43	0.3800	46.91	0.7021	0.2564	21	0.74	190.00	0
190	Water Soluble Cl (%)	0444	47.43	0.3800	46.91	0.7021	0.2564	21	0.74	190.99	0
190	Water Soluble Cl (%)	0394	47.59	0.1100	46.91	0.7021	0.2564	21	0.96	190.00	0
190	Water Soluble Cl (%)	0405	47.70	0.0100	46.91	0.7021	0.2564	21	1.12	190.00	0
190	Water Soluble Cl (%)	0553	47.85	0.3000	46.91	0.7021	0.2564	21	1.34	190.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
190	Water Soluble Cl (%)	0498	48.45	0.5000	46.91	0.7021	0.2564	21	2.19	190.00	0
190	Water Soluble Cl (%)	0136	47.30	1.400	46.91	0.7021	0.2564	21	0.55	190.99	1
191	Acid Soluble Cr (ppm)	0524	0.0873	0.0204	2.574	4.983	2.776	5	-0.44	191.30	0
191	Acid Soluble Cr (ppm)	0368	0.1193	0.0405	2.574	4.983	2.776	5	-0.43	191.34	0
191	Acid Soluble Cr (ppm)	0394	0.1200	0.0120	2.574	4.983	2.776	5	-0.43	191.30	0
191	Acid Soluble Cr (ppm)	0035	1.090	0.1200	2.574	4.983	2.776	5	-0.26	191.30	0
191	Acid Soluble Cr (ppm)	0515	11.46	13.69	2.574	4.983	2.776	5	1.56	191.34	0
191	Acid Soluble Cr (ppm)	0515	54.20	78.15	2.574	4.983	2.776	5	9.04	191.33	1
191	Acid Soluble Cr (ppm)	0550	< 0.25		2.574	4.983	2.776	5		191.00	5
191	Acid Soluble Cr (ppm)	0136	< 5		2.574	4.983	2.776	5		191.33	5
202	Acid Soluble Co (ppm)	0255	0.0385	0.0050	2.757	5.981	0.2619	5	-0.40	202.99	0
202	Acid Soluble Co (ppm)	0389	0.0600	0.0000	2.757	5.981	0.2619	5	-0.39	202.30	0
202	Acid Soluble Co (ppm)	0524	0.0653	0.0085	2.757	5.981	0.2619	5	-0.39	202.30	0
202	Acid Soluble Co (ppm)	0368	0.1635	0.0370	2.757	5.981	0.2619	5	-0.38	202.34	0
202	Acid Soluble Co (ppm)	0515	13.46	1.259	2.757	5.981	0.2619	5	1.56	202.33	0
202	Acid Soluble Co (ppm)	0515	18.20	13.51	2.757	5.981	0.2619	5	2.25	202.34	1
202	Acid Soluble Co (ppm)	0550	< 0.09		2.757	5.981	0.2619	5		202.33	5
202	Acid Soluble Co (ppm)	0136	< 5		2.757	5.981	0.2619	5		202.33	5
221	Acid Soluble Cu (%)	0515	0.0060	0.0009	1.023	1.761	0.2024	3	-0.58	221.33	0
221	Acid Soluble Cu (%)	0515	0.0062	0.0012	1.023	1.761	0.2024	3	-0.58	221.99	0
221	Acid Soluble Cu (%)	0368	3.057	0.6050	1.023	1.761	0.2024	3	1.15	221.33	0
221	Acid Soluble Cu (%)	0255	0.0000	0.0000	1.023	1.761	0.2024	3		221.30	4
221	Acid Soluble Cu (%)	0552	0.0000	0.0000	1.023	1.761	0.2024	3		221.30	4
221	Acid Soluble Cu (%)	0106	0.0000	0.0000	1.023	1.761	0.2024	3		221.33	4
221	Acid Soluble Cu (%)	0550	< 0.0001		1.023	1.761	0.2024	3		221.00	5
221	Acid Soluble Cu (%)	0394	< 0.0002		1.023	1.761	0.2024	3		221.32	5
221	Acid Soluble Cu (%)	0421	< 0.0015		1.023	1.761	0.2024	3		221.33	5
221	Acid Soluble Cu (%)	0136	< 0.0025		1.023	1.761	0.2024	3		221.33	5
221	Acid Soluble Cu (%)	0553	< 0.005		1.023	1.761	0.2024	3		221.00	5
221	Acid Soluble Cu (%)	0354	< 0.01		1.023	1.761	0.2024	3		221.30	5
241	Acid Soluble Fe (%)	0524	0.0006	0.0001	0.0349	0.0463	0.0162	4	-0.63	241.99	0
241	Acid Soluble Fe (%)	0035	0.0037	0.0028	0.0349	0.0463	0.0162	4	-0.57	241.30	0
241	Acid Soluble Fe (%)	0515	0.0351	0.0164	0.0349	0.0463	0.0162	4	0.00	241.33	0
241	Acid Soluble Fe (%)	0515	0.1003	0.0456	0.0349	0.0463	0.0162	4	1.20	241.99	0
241	Acid Soluble Fe (%)	0552	0.0000	0.0000	0.0349	0.0463	0.0162	4		241.30	4
241	Acid Soluble Fe (%)	0553	< 0.005		0.0349	0.0463	0.0162	4		241.00	5
241	Acid Soluble Fe (%)	0354	< 0.01		0.0349	0.0463	0.0162	4		241.30	5
251	Acid Soluble Pb (ppm)	0255	0.0690	0.0460				2		251.30	0
251	Acid Soluble Pb (ppm)	0524	0.0736	0.0012				2		251.99	0
251	Acid Soluble Pb (ppm)	0515	0.0000	0.0000				2		251.34	4
251	Acid Soluble Pb (ppm)	0515	14.54	29.08				2		251.33	4
251	Acid Soluble Pb (ppm)	0394	< 0.7					2		251.30	5
251	Acid Soluble Pb (ppm)	0368	< 0.7					2		251.34	5
251	Acid Soluble Pb (ppm)	0550	< 1.5					2		251.00	5
251	Acid Soluble Pb (ppm)	0136	< 3					2		251.33	5
251	Acid Soluble Pb (ppm)	0117	< 5					2		251.33	5
261	Acid Soluble Mn (%)	0515	0.0101	0.0138	0.0442	0.0395	0.0580	3	-0.86	261.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
261	Acid Soluble Mn (%)	0552	0.0350	0.0100	0.0442	0.0395	0.0580	3	-0.23	261.32	0
261	Acid Soluble Mn (%)	0515	0.0875	0.1501	0.0442	0.0395	0.0580	3	1.10	261.35	0
261	Acid Soluble Mn (%)	0553	< 0.005		0.0442	0.0395	0.0580	3		261.11	5
261	Acid Soluble Mn (%)	0354	< 0.01		0.0442	0.0395	0.0580	3		261.30	5
281	Acid Soluble Hg (ppm)	0550	0.0292	0.0272				2		281.00	0
281	Acid Soluble Hg (ppm)	0524	0.2226	0.0043				2		281.99	0
281	Acid Soluble Hg (ppm)	0515	0.0000	0.0000				2		281.30	4
281	Acid Soluble Hg (ppm)	0368	< 0.01					2		281.99	5
281	Acid Soluble Hg (ppm)	0117	< 0.2					2		281.00	5
281	Acid Soluble Hg (ppm)	0450	< 0.5					2		281.30	5
289	Acid Soluble Mo (ppm)	0524	0.0105	0.0020	0.5164	0.5195	0.2456	3	-0.79	289.99	0
289	Acid Soluble Mo (ppm)	0368	0.4901	0.0518	0.5164	0.5195	0.2456	3	-0.04	289.34	0
289	Acid Soluble Mo (ppm)	0550	1.049	0.6830	0.5164	0.5195	0.2456	3	0.83	289.00	0
289	Acid Soluble Mo (ppm)	0255	0.0000	0.0000	0.5164	0.5195	0.2456	3		289.30	4
289	Acid Soluble Mo (ppm)	0106	0.0000	0.0000	0.5164	0.5195	0.2456	3		289.33	4
289	Acid Soluble Mo (ppm)	0515	0.0000	0.0000	0.5164	0.5195	0.2456	3		289.33	4
289	Acid Soluble Mo (ppm)	0515	0.0000	0.0000	0.5164	0.5195	0.2456	3		289.34	4
289	Acid Soluble Mo (ppm)	0136	< 5		0.5164	0.5195	0.2456	3		289.33	5
291	Acid Soluble Ni (ppm)	0524	0.1658	0.0109	8.330	14.05	0.8926	3	-0.47	291.99	0
291	Acid Soluble Ni (ppm)	0255	0.2695	0.2210	8.330	14.05	0.8926	3	-0.47	291.99	0
291	Acid Soluble Ni (ppm)	0515	24.56	2.446	8.330	14.05	0.8926	3	0.94	291.33	0
291	Acid Soluble Ni (ppm)	0515	0.0000	0.0000	8.330	14.05	0.8926	3		291.34	4
291	Acid Soluble Ni (ppm)	0368	< 0.2		8.330	14.05	0.8926	3		291.34	5
291	Acid Soluble Ni (ppm)	0394	< 0.4		8.330	14.05	0.8926	3		291.30	5
291	Acid Soluble Ni (ppm)	0550	< 0.6		8.330	14.05	0.8926	3		291.00	5
291	Acid Soluble Ni (ppm)	0117	< 5		8.330	14.05	0.8926	3		291.33	5
291	Acid Soluble Ni (ppm)	0136	< 5		8.330	14.05	0.8926	3		291.33	5
301	Acid Soluble Se (ppm)	0524	0.0065	0.0020				2		301.99	0
301	Acid Soluble Se (ppm)	0255	2.027	0.3280				2		301.99	0
301	Acid Soluble Se (ppm)	0515	0.0000	0.0000				2		301.33	4
301	Acid Soluble Se (ppm)	0515	0.0000	0.0000				2		301.34	4
301	Acid Soluble Se (ppm)	0550	< 0.08					2		301.00	5
301	Acid Soluble Se (ppm)	0368	< 1.2					2		301.34	5
311	Sodium (%)	0419	0.1136	0.0065	0.3757	0.0644	0.0102	21	-4.07	311.33	0
311	Sodium (%)	0444	0.2900	0.0000	0.3757	0.0644	0.0102	21	-1.33	311.33	0
311	Sodium (%)	0136	0.3400	0.0400	0.3757	0.0644	0.0102	21	-0.55	311.33	0
311	Sodium (%)	0534	0.3400	0.0000	0.3757	0.0644	0.0102	21	-0.55	311.00	0
311	Sodium (%)	0231	0.3400	0.0000	0.3757	0.0644	0.0102	21	-0.55	311.33	0
311	Sodium (%)	0498	0.3450	0.0100	0.3757	0.0644	0.0102	21	-0.48	311.00	0
311	Sodium (%)	0521	0.3450	0.0000	0.3757	0.0644	0.0102	21	-0.48	311.32	0
311	Sodium (%)	0405	0.3480	0.0020	0.3757	0.0644	0.0102	21	-0.43	311.00	0
311	Sodium (%)	0368	0.3556	0.0045	0.3757	0.0644	0.0102	21	-0.31	311.33	0
311	Sodium (%)	0476	0.3565	0.0037	0.3757	0.0644	0.0102	21	-0.30	311.30	0
311	Sodium (%)	0527	0.3565	0.0007	0.3757	0.0644	0.0102	21	-0.30	311.33	0
311	Sodium (%)	0394	0.3590	0.0094	0.3757	0.0644	0.0102	21	-0.26	311.33	0
311	Sodium (%)	0513	0.3600	0.0000	0.3757	0.0644	0.0102	21	-0.24	311.30	0
311	Sodium (%)	0553	0.3630	0.0020	0.3757	0.0644	0.0102	21	-0.20	311.00	0



Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
311	Sodium (%)	0117	0.3959	0.0036	0.3757	0.0644	0.0102	21	0.31	311.33	0
311	Sodium (%)	0354	0.4050	0.0100	0.3757	0.0644	0.0102	21	0.46	311.99	0
311	Sodium (%)	0506	0.4400	0.0000	0.3757	0.0644	0.0102	21	1.00	311.00	0
311	Sodium (%)	0550	0.4540	0.0480	0.3757	0.0644	0.0102	21	1.22	311.00	0
311	Sodium (%)	0043	0.6800	0.0000	0.3757	0.0644	0.0102	21	4.73	311.33	0
311	Sodium (%)	0510	1.274	0.0228	0.3757	0.0644	0.0102	21	13.95	311.30	0
311	Sodium (%)	0532	1.345	0.0500	0.3757	0.0644	0.0102	21	15.05	311.30	0
311	Sodium (%)	0255	0.3500	0.0720	0.3757	0.0644	0.0102	21	-0.40	311.99	1
321	Acid Soluble Zn (%)	0550	0.0003	0.0001	0.0047	0.0057	0.0027	6	-0.77	321.00	0
321	Acid Soluble Zn (%)	0394	0.0003	0.0001	0.0047	0.0057	0.0027	6	-0.77	321.32	0
321	Acid Soluble Zn (%)	0043	0.0017	0.0027	0.0047	0.0057	0.0027	6	-0.53	321.33	0
321	Acid Soluble Zn (%)	0515	0.0062	0.0012	0.0047	0.0057	0.0027	6	0.26	321.99	0
321	Acid Soluble Zn (%)	0515	0.0065	0.0021	0.0047	0.0057	0.0027	6	0.31	321.33	0
321	Acid Soluble Zn (%)	0552	0.0250	0.0100	0.0047	0.0057	0.0027	6	3.54	321.30	0
321	Acid Soluble Zn (%)	0368	4.986	1.000	0.0047	0.0057	0.0027	6	868.63	321.33	2
321	Acid Soluble Zn (%)	0255	0.0000	0.0000	0.0047	0.0057	0.0027	6		321.30	4
321	Acid Soluble Zn (%)	0106	0.0000	0.0000	0.0047	0.0057	0.0027	6		321.33	4
321	Acid Soluble Zn (%)	0421	< 0.0006		0.0047	0.0057	0.0027	6		321.33	5
321	Acid Soluble Zn (%)	0553	< 0.002		0.0047	0.0057	0.0027	6		321.00	5
321	Acid Soluble Zn (%)	0136	< 0.0025		0.0047	0.0057	0.0027	6		321.33	5
321	Acid Soluble Zn (%)	0354	< 0.01		0.0047	0.0057	0.0027	6		321.30	5

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. Robust statistics not used if < 6 labs used in calculations, in this case the Z Scores are grey and included for information only. Your offset values are higher (‡) or lower (†) than the Robust Analyte value ± Investigational Allowance. Analyte codes in light green indicate a guaranteed analyte. Individual lab values may be below detection limits but are reported solely for the purpose of this Proficiency Testing program.