



Magruder Fertilizer Proficiency Testing

ANALYTE Summary Statistics

260611 (Calcium Nitrate)



Issue Date: 8/31/2026

Code	Analyte (Guarantees in green)	¹ Trueness (Lab Value)					² Thompson Horwitz %RSD		³ Precision (range)	
		Robust Mean	n used	Robust Uncert.	Robust StDev	Robust %RSD		² IA %RSD	Robust Mean	n used
001	Ammoniacal N (%)	1.153	24	0.0275	0.1078	9.35	3.91		0.0234	22
002	Nitrate N (%)	14.28	23	0.1351	0.5184	3.63	2.65		0.1679	23
005	Urea N (%)	0.6108	2		0.4926				0.0186	2
009	Ammoniacal Plus Nitrate N (%)	15.53	3	0.0146	0.0202	0.13	2.54		0.1233	3
010	Total N (15.5%)	15.05	61	0.0996	0.6225	4.14	2.58	1.86	0.1577	56
020	Total P2O5 (%)	0.1118	2		0.1529				0.0002	1
041	Direct Available P2O5 (%)	0.0182	2		0.0046				0.0095	2
048	Water Soluble P2O5 (%)	0.01	1							
050	Soluble K2O (%)	0.02	3	0.0099	0.0137	68.3	7.2			
060	Water (Free) (%)	1.845	1						0.03	1
101	Acid Soluble Ca (19%)	18.94	62	0.1012	0.6377	3.37	2.3	2.27	0.2259	60
121	Acid Soluble Mg (%)	0.028	6	0.0036	0.0071	25.4	6.85		0.0044	4
148	Total S (%)	0.13	1							

Code	Analyte (Guarantees in green)	¹ Trueness (Lab Value)					² Thompson Horwitz %RSD	² IA %RSD	³ Precision (range)	
		Robust Mean	n used	Robust Uncert.	Robust StDev	Robust %RSD			Robust Mean	n used
149	S - HNO3 soluble (%)	0.001	1						0.0003	1
151	Acid Soluble As (ppm)	0.1143	2		0.1565				0.0007	1
165	Acid Soluble B (%)	0.02	3	0	0	0	7.21			
181	Acid Soluble Cd (ppm)	0.1609	3	0.0876	0.1213	75.4	21.1			
191	Acid Soluble Cr (ppm)	0.6563	7	0.3767	0.7974	121	17		0.2107	5
202	Acid Soluble Co (ppm)	1.633	4	1.427	2.283	140	14.9		0.2317	4
221	Acid Soluble Cu (%)	0.0008	6	0.0002	0.0004	50.1	11.8			
241	Acid Soluble Fe (%)	0.0053	2		0.0066				0.0001	1
251	Acid Soluble Pb (ppm)	1.284	6	0.9977	1.955	152	15.4		0.2934	4
261	Acid Soluble Mn (%)	0.0002	2		0.0001					
289	Acid Soluble Mo (ppm)	1.005	3	0.7072	0.9799	97.5	16		0.1453	3
291	Acid Soluble Ni (ppm)	2.585	8	1.398	3.162	122	13.9		0.457	7
301	Acid Soluble Se (ppm)	8.694	5	6.189	11.07	127	11.6		0.6261	5
311	Sodium (%)	0.095	1						0.01	1
321	Acid Soluble Zn (%)	0.0007	4	0.0004	0.0006	94.3	12			

1. Trueness Parameters: Statistical parameters defining the distribution of lab values which are used to evaluate how close a Lab Value is to the mean. Parameters are shown for number of observations used (n used). Analyte All Tests report identifies data not used. Robust statistics was employed to determine mean and standard deviation (StDev) if number of observations used (n used) ≥ 6 (blue background). Classical statistics was employed if number of observations used (n used) < 6 (no color background). %RSD is the relative standard deviation with respect to the mean ($\text{StDev}/\text{Mean} \times 100$). Uncertainty (Uncert.) is a measure to estimate where the true mean lies.

2. Thompson-Horwitz %RSD and IA %RSD: These are benchmark values that can be used to compare to actual variability of Lab Values (Robust %RSD). Thompson-Horwitz %RSD is a benchmark on variability from proficiency testing programs. IA %RSD is variability expected from AAPFCO investigational allowance (IA).

3. Precision Parameters: Lab's precision is estimated by the difference in 2 results reported by the lab (range). Mean of ranges are shown for number of observations used (n used). Analyte All Tests report identifies data not used. Robust statistics was employed to determine mean if number of observations used (n used) ≥ 6 (green background). Classical statistics was employed if number of observations used (n used) < 6 (no color background).

Appendix

Content Description of Analyte Summary Statistics Report

The Analyte Summary Statistics Report provides trueness and precision parameters from determination of an analyte regardless of method. Determination of summary statistics followed protocols in ISO 13528:2015(E) using Algorithm A robust analysis (Statistical methods for use in proficiency testing by interlaboratory comparison). Robust statistics was used to determine statistical parameters for sets with 6 or more observations. Classical statistics was used for sets with 3, 4, or 5 observations. Robust statistics has an advantage of removing undesired influence of outlying data on the mean and standard deviation without removing data from the statistical analysis.

For trueness, the mean and standard deviation (StDev) are presented for the number of observations (n used). The uncertainty (Uncert.) is a measure of where the “real” value for the concentration lies around the mean with a 68% certainty (Mean $\pm$ Uncert.). The larger the number of observations, the smaller the uncertainty. The relative standard deviation (%RSD) is a percentage of the standard deviation divided by the mean. Standard deviation from Lab Values is determined by robust statistics for n used ≥ 6 or classical statistics for n used < 6 . The Thompson-Horwitz %RSD is a standard benchmark on inter-laboratory variability (Thompson, DOI: 10.1039/b000282h) that can be used to compare %RSD from Lab Values variability with Thompson-Horwitz expectation. The IA %RSD is a measure of variability expected from the AAPFCO investigational allowance (IA) where standard deviation is IA/2.33.

Precision in the data populations is estimated by the range of duplicate results reported. The robust or classical mean is presented along with the number of observations used. Any duplicate results that are exactly the same are removed in the determination of the mean range to remove undue influence of entries that may be from labs reporting one result twice.



Magruder Fertilizer Proficiency Testing

ANALYTE All Labs Report

260611 (Calcium Nitrate)



Issue Date: 8/31/2026

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
Ammoniacal N (%)											
001.99	Ammoniacal N (%)	Other	0671	0.9	0.85	0.875	-2.58	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0562	1	0.99	0.995	-1.47	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0577	1.02	1.03	1.025	-1.19	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0602	1	1.05	1.025	-1.19	1.153	0.1078	24	
001.10	Ammoniacal N (%)	Magnesium Oxide Method	0498	1.1	1	1.05	-0.96	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0553	1.09	1.08	1.085	-0.63	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0220	1.11	1.12	1.115	-0.36	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0231	1.13	1.1	1.115	-0.36	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0368	1.128	1.124	1.126	-0.25	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0027	1.14	1.13	1.135	-0.17	1.153	0.1078	24	
001.10	Ammoniacal N (%)	Magnesium Oxide Method	0389	1.13	1.14	1.135	-0.17	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0584	1.21	1.09	1.15	-0.03	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0517	1.15	1.17	1.16	0.06	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0255	1.18	1.17	1.175	0.20	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0513	1.19	1.17	1.18	0.25	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0540	1.187	1.179	1.183	0.27	1.153	0.1078	24	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
001.99	Ammoniacal N (%)	Other	0169	1.19	1.2	1.195	0.39	1.153	0.1078	24	7
001.99	Ammoniacal N (%)	Other	0136	1.2	1.2	1.2	0.43	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0472	1.21	1.2	1.205	0.48	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0605	1.25	1.23	1.24	0.80	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0371	1.3	1.2	1.25	0.90	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0394	1.364	1.142	1.253	0.92	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0405	1.32	1.36	1.34	1.73	1.153	0.1078	24	
001.99	Ammoniacal N (%)	Other	0524	1.369	1.369	1.369	2.00	1.153	0.1078	24	7
001.99	Ammoniacal N (%)	Other	0564	1.45	1.47	1.46	2.84	1.153	0.1078	24	2
001.99	Ammoniacal N (%)	Other	0423	14.4	14.46	14.43	>100	1.153	0.1078	24	

Nitrate N (%)

002.99	Nitrate N (%)	Other	0423	0.97	1.18	1.075	-25.47	14.28	0.5184	23	2
002.99	Nitrate N (%)	Other	0368	10.913	11.349	11.13	-6.08	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0553	13.18	12.94	13.06	-2.36	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0029	13.46	13.42	13.44	-1.62	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0394	13.681	13.795	13.74	-1.05	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0513	13.94	13.99	13.96	-0.61	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0517	13.97	14.01	13.99	-0.56	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0136	14.1	13.9	14	-0.54	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0371	14.1	14.2	14.15	-0.25	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0472	14.5	14	14.25	-0.06	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0564	14.25	14.28	14.26	-0.03	14.28	0.5184	23	
002.20	Nitrate N (%)	Jones Modified	0602	14.25	14.3	14.28	-0.01	14.28	0.5184	23	
002.99	Nitrate N (%)	Other	0602	14.25	14.3	14.28	-0.01	14.28	0.5184	23	
002.10	Nitrate N (%)	Robertson	0602	14.25	14.3	14.28	-0.01	14.28	0.5184	23	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats		
								Mean	StDev	n used ⁴ Flag
002.99	Nitrate N (%)	Other	0498	14.3	14.5	14.4	0.23	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0584	14.25	14.61	14.43	0.29	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0577	14.4	14.5	14.45	0.32	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0605	14.22	14.69	14.46	0.33	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0562	14.65	14.5	14.58	0.57	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0671	14.7	14.65	14.68	0.76	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0540	14.669	14.725	14.7	0.80	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0027	14.93	15.03	14.98	1.35	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0231	15.26	15	15.13	1.64	14.28	0.5184	23
002.99	Nitrate N (%)	Other	0547	15.2	16	15.6	2.54	14.28	0.5184	23

Urea N (%)

005.99	Urea N (%)	Other	0524	0.258	0.267	0.2625				
005.99	Urea N (%)	Other	0540	0.9732	0.945	0.9591				

Ammoniacal Plus Nitrate N (%)

009.10	Ammoniacal Plus Nitrate N (Devarda		0562	15.55	15.47	15.51	-0.91	15.53	0.0202	3
009.99	Ammoniacal Plus Nitrate N (Other		0635	15.62	15.43	15.52	-0.16	15.53	0.0202	3
009.10	Ammoniacal Plus Nitrate N (Devarda		0671	15.6	15.5	15.55	1.07	15.53	0.0202	3

Total N (15.5 %)

010.60	Total N (%)	Combustion	0542	7.09	6.99	7.04 †	-12.87	15.05	0.6225	61
010.60	Total N (%)	Combustion	0422	8.28	7.88	8.08 †	-11.19	15.05	0.6225	61
010.60	Total N (%)	Combustion	0588	11.5	11.6	11.55 †	-5.62	15.05	0.6225	61
010.60	Total N (%)	Combustion	0086	12.04	12.061	12.05 †	-4.82	15.05	0.6225	61
010.60	Total N (%)	Combustion	0360	12.49	12.61	12.55 †	-4.01	15.05	0.6225	61
010.60	Total N (%)	Combustion	0292	13.03	12.82	12.92 †	-3.41	15.05	0.6225	61

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			⁴ Flag
								Mean	StDev	n used	
010.60	Total N (%)	Combustion	0324	13.2	13	13.1 †	-3.13	15.05	0.6225	61	
010.12	Total N (%)	Salicylic	0117	12.73	13.6	13.16 †	-3.03	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0354	13.4	13.5	13.45 †	-2.57	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0023	13.559	13.76	13.66 †	-2.23	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0035	13.9	14	13.95 †	-1.76	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0102	14.22	14.1	14.16 †	-1.43	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0472	14.61	14.35	14.48	-0.91	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0106	14.74	14.37	14.56	-0.79	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0377	14.45	14.92	14.68	-0.58	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0389	14.8	14.73	14.76	-0.46	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0029	14.85	14.86	14.86	-0.31	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0543	14.96	14.76	14.86	-0.30	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0131	14.711	15.01	14.86	-0.30	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0368	14.788	14.945	14.87	-0.29	15.05	0.6225	61	
010.99	Total N (%)	Other	0524	14.875	15.0546	14.96	-0.13	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0234	14.94	15.02	14.98	-0.11	15.05	0.6225	61	
010.99	Total N (%)	Other	0394	15.045	14.937	14.99	-0.09	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0527	14.924	15.101	15.01	-0.06	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0049	15.2822	14.8785	15.08	0.05	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0025	15.13	15.09	15.11	0.10	15.05	0.6225	61	
010.99	Total N (%)	Other	0517	15.12	15.17	15.14	0.15	15.05	0.6225	61	
010.99	Total N (%)	Other	0513	15.13	15.16	15.14	0.15	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0233	15.15	15.17	15.16	0.18	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0521	15.194	15.194	15.19	0.23	15.05	0.6225	61	7
010.60	Total N (%)	Combustion	0040	15.2	15.2	15.2	0.24	15.05	0.6225	61	7
010.60	Total N (%)	Combustion	0452	15.22	15.22	15.22	0.28	15.05	0.6225	61	7

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
010.60	Total N (%)	Combustion	0405	15.22	15.24	15.23	0.29	15.05	0.6225	61	7
010.60	Total N (%)	Combustion	0231	15.25	15.25	15.25	0.32	15.05	0.6225	61	
010.99	Total N (%)	Other	0556	15.4	15.2	15.3	0.40	15.05	0.6225	61	
010.12	Total N (%)	Salicylic	0602	15.25	15.35	15.3	0.40	15.05	0.6225	61	
010.99	Total N (%)	Other	0602	15.25	15.35	15.3	0.40	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0043	15.29	15.38	15.34	0.46	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0451	15.37	15.33	15.35	0.48	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0027	15.32	15.43	15.38	0.52	15.05	0.6225	61	7
010.60	Total N (%)	Combustion	0073	15.63	15.16	15.4	0.56	15.05	0.6225	61	
010.99	Total N (%)	Other	0371	15.4	15.4	15.4	0.56	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0523	15.392	15.422	15.41	0.58	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0612	15.13	15.75	15.44	0.63	15.05	0.6225	61	
010.12	Total N (%)	Salicylic	0498	15.4	15.5	15.45	0.64	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0055	15.4	15.59	15.5	0.72	15.05	0.6225	61	
010.99	Total N (%)	Other	0562	15.51	15.48	15.5	0.72	15.05	0.6225	61	7
010.60	Total N (%)	Combustion	0136	15.4	15.6	15.5	0.73	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0423	15.41	15.65	15.53	0.77	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0220	15.58	15.49	15.54	0.78	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0169	15.53	15.55	15.54	0.79	15.05	0.6225	61	
010.99	Total N (%)	Other	0671	15.6	15.5	15.55	0.81	15.05	0.6225	61	
010.99	Total N (%)	Other	0577	15.51	15.62	15.56	0.83	15.05	0.6225	61	
010.99	Total N (%)	Other	0584	15.46	15.7	15.58	0.85	15.05	0.6225	61	7
010.60	Total N (%)	Combustion	0177	15.804	15.364	15.58	0.86	15.05	0.6225	61	
010.12	Total N (%)	Salicylic	0540	15.64	15.67	15.66	0.97	15.05	0.6225	61	
010.99	Total N (%)	Other	0605	15.47	15.92	15.7	1.04	15.05	0.6225	61	
010.99	Total N (%)	Other	0564	15.72	15.7	15.71 ‡	1.06	15.05	0.6225	61	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
010.60	Total N (%)	Combustion	0291	15.71	15.72	15.72 ‡	1.07	15.05	0.6225	61	
010.99	Total N (%)	Other	0558	16.03	15.46	15.74 ‡	1.12	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0255	16.057	16.279	16.17 ‡	1.80	15.05	0.6225	61	
010.60	Total N (%)	Combustion	0260	20.4	14.8	17.6 ‡	4.10	15.05	0.6225	61	1
Total P2O5 (%)											
020.50	Total P2O5 (%)	ICP	0524	0.0036	0.0038	0.0037					
020.50	Total P2O5 (%)	ICP	0588	0.117	0.181	0.149					1
020.50	Total P2O5 (%)	ICP	0472	0.22	0.22	0.22					7
Direct Available P2O5 (%)											
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	0472	0.01	0.02	0.015					
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	0354	0.026	0.017	0.0215					
Water Soluble P2O5 (%)											
048.20	Water Soluble P2O5 (%)	Spectrophotometric	0472	0.01	0.01	0.01					7
Soluble K2O (%)											
050.32	Soluble K2O (%)	AA (Citrate-EDTA)	0472	0.01	0.01	0.01	-0.73	0.02	0.0137	3	7
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	0354	0.01	0.019	0.0145	-0.41	0.02	0.0137	3	
050.99	Soluble K2O (%)	Other	0524	0.0351	0.0362	0.0356	1.14	0.02	0.0137	3	
Water (Free) (%)											
060.99	Water (Free) (%)	Other	0513	1.83	1.86	1.845					
Acid Soluble Ca (19 %)											
101.70	Acid Soluble Ca (%)	Titrimetric	0602	13.7	13.9	13.8 †	-8.06	18.94	0.6377	62	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			⁴ Flag
								Mean	StDev	n used	
101.99	Acid Soluble Ca (%)	Other	0602	13.7	13.9	13.8 †	-8.06	18.94	0.6377	62	1
101.99	Acid Soluble Ca (%)	Other	0542	16.71	16.95	16.83 †	-3.31	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0086	18.5405	15.598	17.07 †	-2.93	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0117	17.5756	17.4898	17.53 †	-2.20	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0040	17.91	17.76	17.84 †	-1.73	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0049	18.14	17.99	18.06	-1.37	18.94	0.6377	62	7
101.00	Acid Soluble Ca (%)	AA, inorganic 965.09	0485	18.1	18.2	18.15	-1.24	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0177	18.1059	18.2836	18.19	-1.17	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0055	18.24	18.16	18.2	-1.16	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0233	17.11	19.36	18.24	-1.10	18.94	0.6377	62	
101.00	Acid Soluble Ca (%)	AA, inorganic 965.09	0553	18.26	18.34	18.3	-1.00	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0394	18.17	18.59	18.38	-0.88	18.94	0.6377	62	
101.32	Acid Soluble Ca (%)	ICP, test portion 2006.03A-C	0405	18.4	18.4	18.4	-0.84	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0389	18.46	18.5	18.48	-0.72	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0377	18.77	18.24	18.5	-0.68	18.94	0.6377	62	
101.32	Acid Soluble Ca (%)	ICP, test portion 2006.03A-C	0220	18.66	18.39	18.52	-0.65	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0043	18.64	18.42	18.53	-0.64	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0513	18.56	18.52	18.54	-0.62	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0106	18.6108	18.5528	18.58	-0.56	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0517	18.57	18.61	18.59	-0.55	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0035	18.9	18.4	18.65	-0.45	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0260	19.145	18.181	18.66	-0.43	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0136	18.5	18.9	18.7	-0.37	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0231	18.74	18.75	18.74	-0.30	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0371	18.6	18.9	18.75	-0.30	18.94	0.6377	62	
101.70	Acid Soluble Ca (%)	Titrimetric	0564	18.9	18.78	18.84	-0.15	18.94	0.6377	62	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			⁴ Flag
								Mean	StDev	n used	
101.00	Acid Soluble Ca (%)	AA, inorganic 965.09	0498	18.9	18.8	18.85	-0.14	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0540	18.9	18.8	18.85	-0.14	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0451	18.85	19.03	18.94	0.00	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0169	18.93	18.95	18.94	0.00	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0027	18.69	19.24	18.96	0.04	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0671	18.95	19.02	18.98	0.07	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0292	18.96	19.05	19	0.10	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0543	18.959	19.065	19.01	0.12	18.94	0.6377	62	
101.32	Acid Soluble Ca (%)	ICP, test portion 2006.03A-C	0423	19.09	18.95	19.02	0.13	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0584	18.88	19.19	19.04	0.15	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0023	19.1	19.2	19.15	0.33	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0029	19.08	19.23	19.16	0.34	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0255	19.21	19.1	19.16	0.34	18.94	0.6377	62	
101.00	Acid Soluble Ca (%)	AA, inorganic 965.09	0029	19.69	18.65	19.17	0.36	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0073	19.28	19.13	19.2	0.42	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0234	19.25	19.3	19.28	0.53	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0102	19.51	19.15	19.33	0.61	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0402	19.246	19.424	19.34	0.62	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0354	19.4	19.3	19.35	0.65	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0521	19.37	19.37	19.37	0.68	18.94	0.6377	62	7
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0452	19.43	19.46	19.44	0.79	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0307	19.8	19.1	19.45	0.80	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0324	20.1	18.9	19.5	0.88	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0605	19.56	19.46	19.51	0.90	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0422	19.62	19.42	19.52	0.91	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0612	19.08	19.97	19.52	0.92	18.94	0.6377	62	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			⁴ Flag
								Mean	StDev	n used	
101.99	Acid Soluble Ca (%)	Other	0562	19.95	19.11	19.53	0.93	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0635	19.65	19.43	19.54	0.94	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0368	19.7812	19.3238	19.55	0.96	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0472	19.62	19.59	19.6	1.05	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0527	19.6984	19.5649	19.63	1.09	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0523	19.594	20.012	19.8	1.36	18.94	0.6377	62	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0291	19.87	19.85	19.86	1.45	18.94	0.6377	62	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	0588	18.65	22.72	20.68 ‡	2.74	18.94	0.6377	62	1
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	0360	20.68	21.3	20.99 ‡	3.22	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0515	20.9	21.1	21 ‡	3.23	18.94	0.6377	62	
101.99	Acid Soluble Ca (%)	Other	0558	21.7	22	21.85 ‡	4.57	18.94	0.6377	62	

Acid Soluble Mg (%)

121.33	Acid Soluble Mg (%)	ICP, 2017.02	0588	0.019	0.025	0.022	-0.84	0.028	0.0071	6	
121.99	Acid Soluble Mg (%)	Other	0524	0.0227	0.0233	0.023	-0.70	0.028	0.0071	6	
121.33	Acid Soluble Mg (%)	ICP, 2017.02	0527	0.0237	0.0247	0.0242	-0.53	0.028	0.0071	6	
121.30	Acid Soluble Mg (%)	ICP, test portion inorganic 965.09	0371	0.03	0.03	0.03	0.28	0.028	0.0071	6	7
121.33	Acid Soluble Mg (%)	ICP, 2017.02	0472	0.03	0.03	0.03	0.28	0.028	0.0071	6	7
121.30	Acid Soluble Mg (%)	ICP, test portion inorganic 965.09	0354	0.05	0.04	0.045	2.39	0.028	0.0071	6	

Total S (%)

148.99	Total S (%)	Other	0354	<0.01	<0.01	<0.01					6
148.07	Total S (%)	ICP, test portion as in 2017.02	0472	0.13	0.13	0.13					7

S - HNO3 soluble (%)

149.04	S - HNO3 soluble (%)	ICP	0524	0.0008	0.0011	0.001					
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Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
Acid Soluble As (ppm)											
151.34	Acid Soluble As (ppm)	ICP, EPA 3050B/6010C	0368	<0.3	<0.2	<0.3					6
151.34	Acid Soluble As (ppm)	ICP, EPA 3050B/6010C	0515	<0.406	<0.406	<0.406					6
151.32	Acid Soluble As (ppm)	ICP, 2006.03	0220	<0.5	<0.5	<0.5					6
151.99	Acid Soluble As (ppm)	Other	0220	<0.5	<0.5	<0.5					6
151.33	Acid Soluble As (ppm)	ICP, 2017.02	0136	<1	<1	<1					6
151.32	Acid Soluble As (ppm)	ICP, 2006.03	0405	<3	<3	<3					6
151.30	Acid Soluble As (ppm)	ICP	0605	<6.25	<6.25	<6.25					6
151.30	Acid Soluble As (ppm)	ICP	0255	0	0	0					5
151.30	Acid Soluble As (ppm)	ICP	0524	0.0033	0.004	0.0036					
151.30	Acid Soluble As (ppm)	ICP	0523	0.225	0.225	0.225					7
151.33	Acid Soluble As (ppm)	ICP, 2017.02	0515	18.8	20.2	19.5					1
Acid Soluble B (%)											
165.99	Acid Soluble B (%)	Other	0524	0.0178	0.0187	0.0182		0.02	0	3	3
165.30	Acid Soluble B (%)	ICP, test portion in 982.01	0371	0.02	0.02	0.02		0.02	0	3	7
165.30	Acid Soluble B (%)	ICP, test portion in 982.01	0354	0.02	0.02	0.02		0.02	0	3	7
165.99	Acid Soluble B (%)	Other	0472	0.02	0.02	0.02		0.02	0	3	7
Acid Soluble Cd (ppm)											
181.99	Acid Soluble Cd (ppm)	Other	0220	<0.1	<0.1	<0.1		0.1609	0.1213	3	6
181.32	Acid Soluble Cd (ppm)	ICP, 2006.03	0220	<0.1	<0.1	<0.1		0.1609	0.1213	3	6
181.30	Acid Soluble Cd (ppm)	ICP	0394	<0.1	<0.1	<0.1		0.1609	0.1213	3	6
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	0515	<0.19	<0.19	<0.19		0.1609	0.1213	3	6
181.30	Acid Soluble Cd (ppm)	ICP	0605	<0.25	<0.25	<0.25		0.1609	0.1213	3	6
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	0086	<0.5	<0.5	<0.5		0.1609	0.1213	3	6

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	0136	<1	<1	<1		0.1609	0.1213	3	6
181.32	Acid Soluble Cd (ppm)	ICP, 2006.03	0405	<1	<1	<1		0.1609	0.1213	3	6
181.30	Acid Soluble Cd (ppm)	ICP	0255	0	0	0		0.1609	0.1213	3	5
181.30	Acid Soluble Cd (ppm)	ICP	0524	0.0763	0.0772	0.0768	-0.69	0.1609	0.1213	3	
181.30	Acid Soluble Cd (ppm)	ICP	0523	0.105	0.107	0.106	-0.45	0.1609	0.1213	3	
181.34	Acid Soluble Cd (ppm)	ICP, EPA 3050B/6010C	0368	0.3	0.3	0.3	1.15	0.1609	0.1213	3	7
181.34	Acid Soluble Cd (ppm)	ICP, EPA 3050B/6010C	0515	3.69	3.35	3.52	27.68	0.1609	0.1213	3	1

Acid Soluble Cr (ppm)

191.30	Acid Soluble Cr (ppm)	ICP	0394	<1	<1	<1		0.6563	0.7974	7	6
191.32	Acid Soluble Cr (ppm)	ICP, 2006.03	0405	<1	<1	<1		0.6563	0.7974	7	6
191.30	Acid Soluble Cr (ppm)	ICP	0605	<1.25	<1.25	<1.25		0.6563	0.7974	7	6
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	0086	<10	<10	<10		0.6563	0.7974	7	6
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	0136	<2.5	<2.5	<2.5		0.6563	0.7974	7	6
191.32	Acid Soluble Cr (ppm)	ICP, 2006.03	0220	0.1	0.1	0.1	-0.70	0.6563	0.7974	7	7
191.30	Acid Soluble Cr (ppm)	ICP	0524	0.1171	0.1387	0.1279	-0.66	0.6563	0.7974	7	
191.30	Acid Soluble Cr (ppm)	ICP	0523	0.153	0.155	0.154	-0.63	0.6563	0.7974	7	
191.99	Acid Soluble Cr (ppm)	Other	0220	0.3	0.3	0.3	-0.45	0.6563	0.7974	7	7
191.34	Acid Soluble Cr (ppm)	ICP, EPA 3050B/6010C	0368	0.5	0.8	0.65	-0.01	0.6563	0.7974	7	
191.30	Acid Soluble Cr (ppm)	ICP	0035	1.5	1.32	1.41	0.95	0.6563	0.7974	7	
191.34	Acid Soluble Cr (ppm)	ICP, EPA 3050B/6010C	0515	5.87	0.394	3.132	3.10	0.6563	0.7974	7	1
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	0515	8.31	8.86	8.585	9.94	0.6563	0.7974	7	

Acid Soluble Co (ppm)

202.99	Acid Soluble Co (ppm)	Other	0220	<0.1	<0.1	<0.1		1.633	2.283	4	6
202.32	Acid Soluble Co (ppm)	ICP, 2006.03	0220	<0.1	<0.1	<0.1		1.633	2.283	4	6

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
202.34	Acid Soluble Co (ppm)	ICP, EPA 3050B/6010C	0368	0.2	<0.1	<0.1		1.633	2.283	4	6
202.34	Acid Soluble Co (ppm)	ICP, EPA 3050B/6010C	0515	<0.324	<0.324	<0.324		1.633	2.283	4	6
202.32	Acid Soluble Co (ppm)	ICP, 2006.03	0405	<1	<1	<1		1.633	2.283	4	6
202.30	Acid Soluble Co (ppm)	ICP	0605	<1.25	<1.25	<1.25		1.633	2.283	4	6
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	0086	<10	<10	<10		1.633	2.283	4	6
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	0136	<2.5	<2.5	<2.5		1.633	2.283	4	6
202.30	Acid Soluble Co (ppm)	ICP	0523	0.092	0.091	0.0915	-0.67	1.633	2.283	4	
202.30	Acid Soluble Co (ppm)	ICP	0542	0.37	0.626	0.498	-0.50	1.633	2.283	4	
202.30	Acid Soluble Co (ppm)	ICP	0524	0.8468	0.9966	0.9217	-0.31	1.633	2.283	4	
202.99	Acid Soluble Co (ppm)	Other	0255	2.321	1.282	1.802	0.07	1.633	2.283	4	1
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	0515	4.76	5.28	5.02	1.48	1.633	2.283	4	

Acid Soluble Cu (%)

221.33	Acid Soluble Cu (%)	ICP, 2017.02	0394	<0.0001	<0.0001	<0.0001		0.0008	0.0004	6	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	0136	<0.0002	<0.0002	<0.0002		0.0008	0.0004	6	6
221.32	Acid Soluble Cu (%)	ICP, test portion 2006.03A-C	0405	<0.0002	<0.0002	<0.0002		0.0008	0.0004	6	6
221.00	Acid Soluble Cu (%)	AA, inorganic 965.09	0485	<0.01	<0.01	<0.01		0.0008	0.0004	6	6
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	0354	<0.01	<0.01	<0.01		0.0008	0.0004	6	6
221.99	Acid Soluble Cu (%)	Other	0542	<0.015	<0.015	<0.015		0.0008	0.0004	6	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	0086	<10	<10	<10		0.0008	0.0004	6	6
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	0371	0	0	0		0.0008	0.0004	6	5
221.33	Acid Soluble Cu (%)	ICP, 2017.02	0106	0	0	0		0.0008	0.0004	6	5
221.99	Acid Soluble Cu (%)	Other	0524	0.0002	0.0002	0.0002	-1.48	0.0008	0.0004	6	7
221.99	Acid Soluble Cu (%)	Other	0515	0.0008	0.0002	0.0005	-0.69	0.0008	0.0004	6	
221.33	Acid Soluble Cu (%)	ICP, 2017.02	0515	0.0009	0.0009	0.0009	0.35	0.0008	0.0004	6	7
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	0402	0.0009	0.0011	0.001	0.61	0.0008	0.0004	6	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	0255	0.001	0.001	0.001	0.61	0.0008	0.0004	6	7
221.99	Acid Soluble Cu (%)	Other	0523	0.001	0.001	0.001	0.61	0.0008	0.0004	6	7
221.99	Acid Soluble Cu (%)	Other	0368	1.3	1.1	1.2	>100	0.0008	0.0004	6	1

Acid Soluble Fe (%)

241.30	Acid Soluble Fe (%)	ICP, test portion inorganic 965.09	0371	0	0	0					5
241.99	Acid Soluble Fe (%)	Other	0524	0.0006	0.0007	0.0006					
241.30	Acid Soluble Fe (%)	ICP, test portion inorganic 965.09	0354	0.01	0.01	0.01					7

Acid Soluble Pb (ppm)

251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	0086	<1	<1	<1		1.284	1.955	6	6
251.30	Acid Soluble Pb (ppm)	ICP	0394	<1	<1	<1		1.284	1.955	6	6
251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	0136	<3	<3	<3		1.284	1.955	6	6
251.32	Acid Soluble Pb (ppm)	ICP, 2006.03	0405	<4	<4	<4		1.284	1.955	6	6
251.30	Acid Soluble Pb (ppm)	ICP	0605	<6.25	<6.25	<6.25		1.284	1.955	6	6
251.30	Acid Soluble Pb (ppm)	ICP	0255	0	0	0		1.284	1.955	6	5
251.30	Acid Soluble Pb (ppm)	ICP	0523	0.131	0.129	0.13	-0.59	1.284	1.955	6	
251.32	Acid Soluble Pb (ppm)	ICP, 2006.03	0220	0.2	0.2	0.2	-0.55	1.284	1.955	6	7
251.30	Acid Soluble Pb (ppm)	ICP	0524	0.2496	0.2713	0.2604	-0.52	1.284	1.955	6	
251.99	Acid Soluble Pb (ppm)	Other	0220	0.3	0.29	0.295	-0.51	1.284	1.955	6	
251.34	Acid Soluble Pb (ppm)	ICP, EPA 3050B/6010C	0368	2.6	2.6	2.6	0.67	1.284	1.955	6	7
251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	0515	9.76	10.9	10.33	4.63	1.284	1.955	6	
251.34	Acid Soluble Pb (ppm)	ICP, EPA 3050B/6010C	0515	21.7	17.6	19.65	9.39	1.284	1.955	6	1

Acid Soluble Mn (%)

261.30	Acid Soluble Mn (%)	ICP, test portion 972.02a	0354	<0.01	<0.01	<0.01					6
261.32	Acid Soluble Mn (%)	ICP, test portion inorganic 965.09	0371	0	0	0					5

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			⁴ Flag
								Mean	StDev	n used	
261.35	Acid Soluble Mn (%)	ICP, 2017.02	0527	0.0001	0.0001	0.0001					7
261.99	Acid Soluble Mn (%)	Other	0524	0.0002	0.0002	0.0002					7
Acid Soluble Hg (ppm)											
281.30	Acid Soluble Hg (ppm)	ICP	0515	<0.01	<0.01	<0.01					6
281.99	Acid Soluble Hg (ppm)	Other	0220	<0.01	<0.01	<0.01					6
281.30	Acid Soluble Hg (ppm)	ICP	0605	<1.25	<1.25	<1.25					6
281.30	Acid Soluble Hg (ppm)	ICP	0405	<2	<2	<2					6
Acid Soluble Mo (ppm)											
289.34	Acid Soluble Mo (ppm)	ICP, EPA 3050B/6010C	0368	<0.1	<0.1	<0.1		1.005	0.9799	3	6
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	0515	<0.23	<0.23	<0.23		1.005	0.9799	3	6
289.34	Acid Soluble Mo (ppm)	ICP, EPA 3050B/6010C	0515	<0.255	<0.255	<0.255		1.005	0.9799	3	6
289.32	Acid Soluble Mo (ppm)	ICP, 2006.03	0220	<0.3	<0.3	<0.3		1.005	0.9799	3	6
289.99	Acid Soluble Mo (ppm)	Other	0220	<0.3	<0.3	<0.3		1.005	0.9799	3	6
289.32	Acid Soluble Mo (ppm)	ICP, 2006.03	0405	<1	<1	<1		1.005	0.9799	3	6
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	0136	<2.5	<2.5	<2.5		1.005	0.9799	3	6
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	0086	<5	<5	<5		1.005	0.9799	3	6
289.30	Acid Soluble Mo (ppm)	ICP	0255	0	0	0		1.005	0.9799	3	5
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	0106	0	0	0		1.005	0.9799	3	5
289.30	Acid Soluble Mo (ppm)	ICP	0524	0.0693	0.1873	0.1283	-0.90	1.005	0.9799	3	
289.30	Acid Soluble Mo (ppm)	ICP	0402	0.82	0.83	0.825	-0.18	1.005	0.9799	3	
289.30	Acid Soluble Mo (ppm)	ICP	0542	2.217	1.909	2.063	1.08	1.005	0.9799	3	
289.30	Acid Soluble Mo (ppm)	ICP	0523	5.824	5.188	5.506	4.59	1.005	0.9799	3	1
Acid Soluble Ni (ppm)											
291.30	Acid Soluble Ni (ppm)	ICP	0394	<1	<1	<1		2.585	3.162	8	6

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
291.30	Acid Soluble Ni (ppm)	ICP	0605	<1.25	<1.25	<1.25		2.585	3.162	8	6
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	0086	<10	<10	<10		2.585	3.162	8	6
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	0136	<2.5	<2.5	<2.5		2.585	3.162	8	6
291.34	Acid Soluble Ni (ppm)	ICP, EPA 3050B/6010C	0368	0.6	0.5	0.55	-0.64	2.585	3.162	8	
291.30	Acid Soluble Ni (ppm)	ICP	0524	0.5666	0.5877	0.5772	-0.64	2.585	3.162	8	
291.30	Acid Soluble Ni (ppm)	ICP	0523	0.582	0.579	0.5805	-0.63	2.585	3.162	8	
291.99	Acid Soluble Ni (ppm)	Other	0220	1.1	1.8	1.45	-0.36	2.585	3.162	8	
291.99	Acid Soluble Ni (ppm)	Other	0255	0.054	2.879	1.466	-0.35	2.585	3.162	8	1
291.30	Acid Soluble Ni (ppm)	ICP	0542	1.398	1.583	1.49	-0.35	2.585	3.162	8	
291.32	Acid Soluble Ni (ppm)	ICP, 2006.03	0405	2	2	2	-0.19	2.585	3.162	8	7
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	0515	6.28	7.26	6.77	1.32	2.585	3.162	8	
291.34	Acid Soluble Ni (ppm)	ICP, EPA 3050B/6010C	0515	7.87	6.66	7.265	1.48	2.585	3.162	8	

Acid Soluble Se (ppm)

301.99	Acid Soluble Se (ppm)	Other	0485	<0.02	<0.02	<0.02		8.694	11.07	5	6
301.32	Acid Soluble Se (ppm)	ICP, 2006.03	0220	<0.3	<0.3	<0.3		8.694	11.07	5	6
301.99	Acid Soluble Se (ppm)	Other	0220	<0.3	<0.3	<0.3		8.694	11.07	5	6
301.32	Acid Soluble Se (ppm)	ICP, 2006.03	0405	<10	<10	<10		8.694	11.07	5	6
301.30	Acid Soluble Se (ppm)	ICP	0605	<6.25	<6.25	<6.25		8.694	11.07	5	6
301.99	Acid Soluble Se (ppm)	Other	0255	0	0	0		8.694	11.07	5	5
301.30	Acid Soluble Se (ppm)	ICP	0523	0.112	0.1	0.106	-0.78	8.694	11.07	5	
301.30	Acid Soluble Se (ppm)	ICP	0524	0.0057	0.3241	0.1649	-0.77	8.694	11.07	5	
301.34	Acid Soluble Se (ppm)	ICP, EPA 3050B/6010C	0368	2.1	1.1	1.6	-0.64	8.694	11.07	5	
301.33	Acid Soluble Se (ppm)	ICP, 2017.02	0515	19.8	21	20.4	1.06	8.694	11.07	5	
301.34	Acid Soluble Se (ppm)	ICP, EPA 3050B/6010C	0515	21.5	20.9	21.2	1.13	8.694	11.07	5	

Code	Analyte	Method	Lab Code	Result1	Result2	¹ Lab Value	² Z score	³ Robust Stats			
								Mean	StDev	n used	⁴ Flag
		Sodium (%)									
311.99	Sodium (%)	Other	0354	0.1	0.09	0.095					
		Acid Soluble Zn (%)									
321.33	Acid Soluble Zn (%)	ICP, 2017.02	0136	<0.0003	<0.0003	<0.0003		0.0007	0.0006	4	6
321.32	Acid Soluble Zn (%)	ICP, test portion 2006.03A-C	0405	<0.0003	<0.0003	<0.0003		0.0007	0.0006	4	6
321.00	Acid Soluble Zn (%)	AA, inorganic 965.09	0498	<0.001	<0.001	<0.001		0.0007	0.0006	4	6
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	0354	<0.01	<0.01	<0.01		0.0007	0.0006	4	6
321.00	Acid Soluble Zn (%)	AA, inorganic 965.09	0485	<0.01	<0.01	<0.01		0.0007	0.0006	4	6
321.99	Acid Soluble Zn (%)	Other	0542	<0.015	<0.015	<0.015		0.0007	0.0006	4	6
321.33	Acid Soluble Zn (%)	ICP, 2017.02	0515	<0.19	<0.19	<0.19		0.0007	0.0006	4	6
321.99	Acid Soluble Zn (%)	Other	0515	<0.368	<0.368	<0.368		0.0007	0.0006	4	6
321.33	Acid Soluble Zn (%)	ICP, 2017.02	0086	<20	<20	<20		0.0007	0.0006	4	6
321.33	Acid Soluble Zn (%)	ICP, 2017.02	0106	0	0	0		0.0007	0.0006	4	5
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	0371	0	0	0		0.0007	0.0006	4	5
321.99	Acid Soluble Zn (%)	Other	0368	0	0	0		0.0007	0.0006	4	5
321.99	Acid Soluble Zn (%)	Other	0524	0.0001	0.0001	0.0001	-0.91	0.0007	0.0006	4	7
321.33	Acid Soluble Zn (%)	ICP, 2017.02	0394	0.0002	0.0002	0.0002	-0.75	0.0007	0.0006	4	7
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	0255	0.001	0	0.0005		0.0007	0.0006	4	5
321.99	Acid Soluble Zn (%)	Other	0523	0.001	0.001	0.001	0.48	0.0007	0.0006	4	7
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	0402	0.0014	0.0015	0.0014	1.18	0.0007	0.0006	4	

1. Lab Value: Lab Value is the average of 2 reported lab result. † or ‡ beside Lab Value denotes the value exceeds the investigational allowance (IA) around the analyte mean. † denotes value is less than IA and ‡ denotes value is greater than IA. This is noted for guaranteed analytes with number of observations used (n used) ≥ 6. Method code and analyte name are shown in green for guaranteed analytes along with guaranteed concentration.

2. Z score: Red = Z value >3 or <-3 (action required), Orange = Z value between 2 and 3 or -2 and -3 (warning), Green = Z value between -2 and 2 (pass). Z values are shown for data sets with number of observation used (n used) ≥ 3 for Lab Values that are not an analytical limit or 0. Color ratings shown for number of observations used (n used) ≥ 6. Z values were calculated as (Lab Value - Mean)/(Standard Deviation (StDev)).

3. Statistical parameters: Robust statistics was employed to determine mean and standard deviation (StDev) if number of observations used (n used) ≥ 6 (blue background). Classical statistics was employed if number of observations used (n used) = 3, 4, or 5 (pink background). Flags identify data not used to calculate mean and standard deviation.

4. Flag: Flag number identifies why data was not used to determine statistical parameters. 1 = data rejected for dups too far apart, 2 = rejected as extreme outlier, 3 = rejected for both dups too far apart and extreme outlier, 4 = removed after manual inspection, 5 = rejected due to zero(s) submitted, 6 = rejected due to analytical limit submitted (eg "<0.1"), 7 = Lab's range rejected for determining mean range on Report Cards due to identical values reported for two results.

Appendix

Content Description of Analyte All Labs Report

The Analyte All Labs report has results listed for every lab grouped by Analyte with data in each group sorted by lab value. The reports are helpful to see where your lab result fell within the whole set of data for the Analyte by identifying your results by your lab code. Data on the right side of the report shows the mean, standard deviation, and number of observations (obs) used in the analysis of each group. An observation was a lab value for a test which was the average of reported duplicate results. Mean and standard deviation were determined using Algorithm A robust analysis in ISO 13528:2015(E) (Statistical methods for use in proficiency testing by interlaboratory comparison) for 6 or more observations. Robust statistics has an advantage of removing undesired influence of outlying data on the mean and standard deviation without removing data from the statistical analysis. Robust statistics was only used on data sets with 6 or more observations. For data sets with 3, 4, or 5 observations, classical calculation of mean and standard deviation was performed. Z scores for data sets with a small number of observations are given less importance as indicated by no color coding of Z score with less than 6 observations. No Z scores were determined for 1 or 2 observations.

Before determining mean and standard deviation for a set of data, data was removed from statistical analysis for various reasons. Mandel statistical analysis was used to identify and remove extreme outliers and lab values from duplicate results that were too far apart (ISO 5725-2:1994, Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method.). Any individual result report of zero or less than a limit resulted in lab value removed from analysis. The lab values removed from analysis are denoted with numerical flags on the far right-hand side of the report. Z scores are reported for data removed due to extreme outlier or duplicates too far apart even though data was not used in the determination of mean and standard deviation. However, Z scores are not reported for results reported as 0 or less than a limit. Also, any submission of just one lab result is removed for consideration in statistical analysis and presentation on reports.

The American Association of Plant Food Control Officials (AAPFCO) recommends limits around a nutrient guarantee that should initiate an investigation if observed nutrient concentration falls outside of the limits. These limits are referred to as Investigational Allowances (IAs). Lab Values that fall outside of the IA limits around the analyte mean are denoted with † (below limit) or ‡ (above limit). These same symbols are also used to denote Lab Values beyond IA limits on Laboratory Report Cards.