



Magruder Fertilizer Proficiency Testing

ANALYTE Summary Statistics

251111 (16-16-16, Regular Scheme)



Issue Date: 12/31/2025

Code	Analyte (Guarantees in green)	Trueness (Lab Value)							Precision (range)	
		Robust Mean	# Obs	Robust StDev	Robust Uncert.	Robust %RSD	Horwitz %RSD	IA ratio	Robust Mean	# Obs
001	Ammoniacal N (%)	6.038	20	0.4427	0.1237	7.33	3.05		0.1069	19
005	Urea N (%)	9.589	13	0.3515	0.1218	3.67	2.84		0.0933	13
010	Total N (16%)	15.7	74	0.3581	0.052	2.28	2.52	1.26	0.1787	71
020	Total P2O5 (%)	15.61	37	0.5115	0.1051	3.28	2.53		0.1813	36
041	Direct Available P2O5 (16%)	15.56	49	0.444	0.0793	2.85	2.53	1.48	0.1852	47
048	Water Soluble P2O5 (%)	13.33	3	0.3206	0.2314	2.4	2.71		0.12	3
050	Soluble K2O (16%)	15.73	79	0.5505	0.0774	3.5	2.52	1.38	0.2625	76
101	Acid Soluble Ca (%)	4.505	6	0.1776	0.0906	3.94	3.18		0.1911	5
121	Acid Soluble Mg (%)	2.987	7	0.1025	0.0484	3.43	3.39		0.1577	6
148	Total S (%)	0.4556	7	0.0579	0.0274	12.7	4.49		0.0213	6
151	Acid Soluble As (ppm)	6.893	12	1.556	0.5614	22.6	11.89		0.389	11
181	Acid Soluble Cd (ppm)	2.686	14	0.3381	0.113	12.6	13.7		0.1527	10
191	Acid Soluble Cr (ppm)	84.41	18	12.26	3.611	14.5	8.17		3.09	16

Code	Analyte (Guarantees in green)	Trueness (Lab Value)						Precision (range)		
		Robust Mean	# Obs	Robust StDev	Robust Uncert.	Robust %RSD	Horwitz %RSD	IA ratio	Robust Mean	# Obs
202	Acid Soluble Co (ppm)	3.934	11	1.557	0.5867	39.6	12.94		0.2103	10
241	Acid Soluble Fe (%)	0.3675	5	0.0213	0.0119	5.78	4.64		0.0108	4
251	Acid Soluble Pb (ppm)	1.254	8	0.0307	0.0136	2.45	15.36		0.1595	8
289	Acid Soluble Mo (ppm)	7.177	14	0.8534	0.2851	11.9	11.82		0.397	12
291	Acid Soluble Ni (ppm)	25.2	18	5.828	1.717	23.1	9.79		1.034	17
311	Sodium (%)	0.3981	4	0.0164	0.0103	4.13	4.58		0.0098	4
321	Acid Soluble Zn (%)	0.0053	16	0.0014	0.0004	25.9	8.75		0.0007	13

Statistical parameters of the population: Parameters shown for number of observations (# Obs) > 2. Robust statistics was used if number of observations >=6 for estimate of trueness (blue background) and precision (green background). Classical statistics was used if number of observations = 3, 4, or 5 (no color background).

Horwitz %RSD and IA ratio: These values are benchmarks that can be used to evaluate the variability of a population of data in the round. Horwitz %RSD is a standard benchmark on variability from proficiency testing programs. IA ratio is population variability divided by variability expected from AAPFCO investigational allowance. IA ratios greater than 1 indicate population variability is greater than that expected from the IA.

Appendix

Content Description of Analyte Summary Statistics Report

Data collected from all the labs provides an estimate of trueness and precision for determination of an analyte regardless of method on the Analyte Summary Statistics report. Determination of summary statistics followed protocols in ISO 13528:2015(E) (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 are presented for the number of observations in the population. The uncertainty (Uncert.) is a measure of where the “real” value for the concentration lies around the mean with a 68% certainty. 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. The Horwitz %RSD is a standard benchmark on variability developed by Horwitz (https://www.rsc.org/images/horwitz-function-technical-brief-17_tcm18-214859.pdf) that can be used to compare program results with Horwitz expectation. The IA ratio is a measure of how disperse the data is in a population compared to dispersion expected by the AAPFCO investigational allowance (IA). The ratio is the data dispersion in the population divided by IA expected data dispersion. Values greater than 1 indicate data dispersion was greater than IA expected dispersion.

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. Any duplicate results that are exactly the same are removed in the determination of the mean to remove undo influence of entries from labs reporting one result twice.



Magruder Fertilizer Proficiency Testing

ANALYTE All Tests Report

251111 (16-16-16, Regular Scheme)



Issue Date: 12/31/2025

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
Ammoniacal N (%)											
001.99	Ammoniacal N (%)	Other	394	5.363	5.409	5.386	-1.47	6.038	0.4427	20	
001.10	Ammoniacal N (%)	Magnesium Oxide Method	389	5.28	5.6	5.44	-1.35	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	368	5.484	5.397	5.44	-1.35	6.038	0.4427	20	
001.10	Ammoniacal N (%)	Magnesium Oxide Method	498	5.6	5.4	5.5	-1.22	6.038	0.4427	20	
001.10	Ammoniacal N (%)	Magnesium Oxide Method	27	5.656	5.495	5.576	-1.05	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	136	5.73	5.82	5.775	-0.60	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	517	5.97	6.01	5.99	-0.11	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	605	6	6.01	6.005	-0.08	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	423	6.16	5.97	6.065	0.06	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	536	6.11	6.19	6.15	0.25	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	220	6.25	6.13	6.19	0.34	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	553	6.22	6.2	6.21	0.39	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	538	6.22	6.28	6.25	0.48	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	539	6.26	6.27	6.265	0.51	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	481	6.16	6.39	6.275	0.53	6.038	0.4427	20	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
001.99	Ammoniacal N (%)	Other	551	6.3	6.28	6.29	0.57	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	647	6.204	6.486	6.345	0.69	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	559	6.39	6.38	6.385	0.78	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	405	6.53	6.53	6.53	1.11	6.038	0.4427	20	
001.99	Ammoniacal N (%)	Other	255	7.01	6.86	6.935	2.02	6.038	0.4427	20	
001.10	Ammoniacal N (%)	Magnesium Oxide Method	117	7.67	8.76	8.215	4.92	6.038	0.4427	20	1
001.99	Ammoniacal N (%)	Other	371	14.8	15	14.9	20.02	6.038	0.4427	20	2

Urea N (%)

005.00	Urea N (%)	Urease (as N)	136	9.07	8.99	9.03	-1.59	9.589	0.3515	13	
005.99	Urea N (%)	Other	405	9.17	9.25	9.21	-1.08	9.589	0.3515	13	
005.99	Urea N (%)	Other	29	9.17	9.37	9.27	-0.91	9.589	0.3515	13	
005.00	Urea N (%)	Urease (as N)	368	9.2867	9.2754	9.281	-0.88	9.589	0.3515	13	
005.99	Urea N (%)	Other	605	9.52	9.48	9.5	-0.25	9.589	0.3515	13	
005.10	Urea N (%)	HPLC (as N), H2O mobile phase	394	9.52	9.5	9.51	-0.23	9.589	0.3515	13	
005.99	Urea N (%)	Other	539	9.71	9.74	9.725	0.39	9.589	0.3515	13	
005.99	Urea N (%)	Other	647	9.588	9.87	9.729	0.40	9.589	0.3515	13	
005.99	Urea N (%)	Other	538	9.7	9.77	9.735	0.41	9.589	0.3515	13	
005.99	Urea N (%)	Other	551	9.81	9.78	9.795	0.58	9.589	0.3515	13	
005.99	Urea N (%)	Other	559	9.81	9.8	9.805	0.61	9.589	0.3515	13	
005.00	Urea N (%)	Urease (as N)	389	10.08	9.92	10	1.17	9.589	0.3515	13	
005.99	Urea N (%)	Other	27	10.18	9.9	10.04	1.28	9.589	0.3515	13	
005.99	Urea N (%)	Other	638	16.18	15.98	16.08	18.47	9.589	0.3515	13	2

Urea (%)

007.20	Urea (%)	HPLC, 85% acetonitrile mobile phase	220	9.56	9.59	9.575					
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Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
007.99	Urea (%)	Other	536	9.68	9.63	9.655					
Total N (16 %)											
010.99	Total N (%)	Other	394	14.883	14.909	14.9 †	-2.25	15.7	0.3581	74	
010.99	Total N (%)	Other	371	14.8	15	14.9 †	-2.24	15.7	0.3581	74	
010.99	Total N (%)	Other	556	14.9	15.1	15 †	-1.96	15.7	0.3581	74	
010.60	Total N (%)	Combustion	95	15.19	14.97	15.08	-1.73	15.7	0.3581	74	
010.60	Total N (%)	Combustion	43	15.3	15.01	15.16	-1.52	15.7	0.3581	74	
010.60	Total N (%)	Combustion	390	14.9	15.42	15.16	-1.51	15.7	0.3581	74	
010.60	Total N (%)	Combustion	523	15.402	15.007	15.2	-1.39	15.7	0.3581	74	
010.99	Total N (%)	Other	513	15.3	15.38	15.34	-1.01	15.7	0.3581	74	
010.60	Total N (%)	Combustion	389	15.46	15.23	15.34	-0.99	15.7	0.3581	74	
010.60	Total N (%)	Combustion	35	15.5	15.2	15.35	-0.98	15.7	0.3581	74	
010.12	Total N (%)	Salicylic	498	15.4	15.3	15.35	-0.98	15.7	0.3581	74	
010.60	Total N (%)	Combustion	542	15.3	15.5	15.4	-0.84	15.7	0.3581	74	
010.60	Total N (%)	Combustion	485	14.9	15.9	15.4	-0.84	15.7	0.3581	74	
010.60	Total N (%)	Combustion	131	15.407	15.404	15.41	-0.82	15.7	0.3581	74	
010.60	Total N (%)	Combustion	494	15.41	15.47	15.44	-0.73	15.7	0.3581	74	
010.60	Total N (%)	Combustion	40	15.6	15.3	15.45	-0.70	15.7	0.3581	74	
010.60	Total N (%)	Combustion	136	15.3	15.6	15.45	-0.70	15.7	0.3581	74	
010.60	Total N (%)	Combustion	102	15.56	15.34	15.45	-0.70	15.7	0.3581	74	
010.60	Total N (%)	Combustion	23	15.454	15.497	15.48	-0.63	15.7	0.3581	74	
010.60	Total N (%)	Combustion	307	15.3	15.7	15.5	-0.56	15.7	0.3581	74	
010.99	Total N (%)	Other	605	15.52	15.48	15.5	-0.56	15.7	0.3581	74	
010.99	Total N (%)	Other	517	15.5	15.55	15.52	-0.49	15.7	0.3581	74	
010.60	Total N (%)	Combustion	29	15.48	15.58	15.53	-0.48	15.7	0.3581	74	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
010.60	Total N (%)	Combustion	481	15.64	15.45	15.54	-0.43	15.7	0.3581	74	
010.99	Total N (%)	Other	602	15.5	15.6	15.55	-0.42	15.7	0.3581	74	
010.60	Total N (%)	Combustion	405	15.58	15.52	15.55	-0.42	15.7	0.3581	74	
010.60	Total N (%)	Combustion	42	15.3	15.8	15.55	-0.42	15.7	0.3581	74	
010.12	Total N (%)	Salicylic	602	15.5	15.6	15.55	-0.42	15.7	0.3581	74	
010.60	Total N (%)	Combustion	360	15.62	15.48	15.55	-0.42	15.7	0.3581	74	
010.12	Total N (%)	Salicylic	572	15.69	15.46	15.58	-0.35	15.7	0.3581	74	
010.60	Total N (%)	Combustion	292	15.57	15.6	15.58	-0.32	15.7	0.3581	74	
010.99	Total N (%)	Other	476	15.44	15.7566	15.6	-0.29	15.7	0.3581	74	
010.60	Total N (%)	Combustion	588	15.5	15.7	15.6	-0.28	15.7	0.3581	74	
010.60	Total N (%)	Combustion	86	15.584	15.621	15.6	-0.27	15.7	0.3581	74	
010.60	Total N (%)	Combustion	451	15.71	15.5	15.6	-0.27	15.7	0.3581	74	
010.60	Total N (%)	Combustion	368	15.655	15.654	15.65	-0.13	15.7	0.3581	74	
010.60	Total N (%)	Combustion	73	15.63	15.69	15.66	-0.11	15.7	0.3581	74	
010.99	Total N (%)	Other	481	15.66	15.66	15.66	-0.11	15.7	0.3581	74	
010.60	Total N (%)	Combustion	291	15.65	15.67	15.66	-0.11	15.7	0.3581	74	
010.60	Total N (%)	Combustion	231	15.66	15.67	15.66	-0.10	15.7	0.3581	74	
010.60	Total N (%)	Combustion	354	15.664	15.729	15.7	-0.01	15.7	0.3581	74	
010.60	Total N (%)	Combustion	260	16.5	14.9	15.7	0.00	15.7	0.3581	74	1
010.60	Total N (%)	Combustion	55	15.705	15.695	15.7	0.00	15.7	0.3581	74	
010.60	Total N (%)	Combustion	106	15.79	15.65	15.72	0.05	15.7	0.3581	74	
010.60	Total N (%)	Combustion	422	15.76	15.75	15.76	0.15	15.7	0.3581	74	
010.60	Total N (%)	Combustion	234	15.71	15.86	15.78	0.24	15.7	0.3581	74	
010.60	Total N (%)	Combustion	536	15.79	15.82	15.8	0.29	15.7	0.3581	74	
010.60	Total N (%)	Combustion	377	16.22	15.46	15.84	0.39	15.7	0.3581	74	
010.12	Total N (%)	Salicylic	117	16	15.7	15.85	0.42	15.7	0.3581	74	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
010.60	Total N (%)	Combustion	324	16	15.7	15.85	0.42	15.7	0.3581	74	
010.60	Total N (%)	Combustion	521	15.87	15.87	15.87	0.47	15.7	0.3581	74	
010.60	Total N (%)	Combustion	612	15.62	16.13	15.88	0.49	15.7	0.3581	74	
010.60	Total N (%)	Combustion	255	15.72	16.033	15.88	0.49	15.7	0.3581	74	
010.60	Total N (%)	Combustion	49	15.83	15.97	15.9	0.56	15.7	0.3581	74	
010.60	Total N (%)	Combustion	27	15.57	16.27	15.92	0.61	15.7	0.3581	74	
010.60	Total N (%)	Combustion	177	15.921	15.928	15.92	0.62	15.7	0.3581	74	
010.60	Total N (%)	Combustion	233	16.05	15.8	15.92	0.63	15.7	0.3581	74	
010.60	Total N (%)	Combustion	543	15.86	16.03	15.94	0.68	15.7	0.3581	74	
010.60	Total N (%)	Combustion	527	15.683	16.25	15.97	0.74	15.7	0.3581	74	
010.99	Total N (%)	Other	538	15.92	16.05	15.98	0.79	15.7	0.3581	74	
010.11	Total N (%)	Modified Comprehensive	539	15.97	16.01	15.99	0.81	15.7	0.3581	74	
010.60	Total N (%)	Combustion	220	15.99	16	16	0.82	15.7	0.3581	74	
010.99	Total N (%)	Other	615	15.8	16.2	16	0.84	15.7	0.3581	74	
010.99	Total N (%)	Other	600	15.9	16.25	16.08	1.05	15.7	0.3581	74	
010.60	Total N (%)	Combustion	25	16.11	16.22	16.16	1.30	15.7	0.3581	74	
010.99	Total N (%)	Other	584	16.06	16.3	16.18	1.34	15.7	0.3581	74	
010.99	Total N (%)	Other	518	16.1	16.3	16.2	1.39	15.7	0.3581	74	
010.99	Total N (%)	Other	551	16.21	16.19	16.2	1.39	15.7	0.3581	74	
010.60	Total N (%)	Combustion	472	16.1	16.32	16.21	1.42	15.7	0.3581	74	
010.99	Total N (%)	Other	559	16.21	16.22	16.22	1.44	15.7	0.3581	74	
010.60	Total N (%)	Combustion	624	16.117	16.33	16.22	1.46	15.7	0.3581	74	
010.12	Total N (%)	Salicylic	455	16.24	16.3	16.27	1.59	15.7	0.3581	74	
010.11	Total N (%)	Modified Comprehensive	309	16.32	16.33	16.32	1.74	15.7	0.3581	74	
010.60	Total N (%)	Combustion	423	16.96	16.08	16.52 †	2.29	15.7	0.3581	74	
010.12	Total N (%)	Salicylic	568	16.6	16.6	16.6 †	2.51	15.7	0.3581	74	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
Total P2O5 (%)											
020.99	Total P2O5 (%)	Other	515	13.66	11.82	12.74	-5.62	15.61	0.5115	37	1
020.50	Total P2O5 (%)	ICP	390	13.3	13.2	13.25	-4.62	15.61	0.5115	37	
020.99	Total P2O5 (%)	Other	558	14.03	14.85	14.44	-2.29	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	389	14.63	14.95	14.79	-1.61	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	542	14.79	14.92	14.86	-1.48	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	472	14.89	14.83	14.86	-1.47	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	455	15.05	15	15.02	-1.15	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	433	15.13	15.27	15.2	-0.81	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	169	15.13	15.32	15.22	-0.76	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	481	15.52	15.13	15.32	-0.56	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	291	15.4	15.41	15.4	-0.41	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	324	15.3	15.6	15.45	-0.32	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	498	15.7	15.2	15.45	-0.32	15.61	0.5115	37	
020.99	Total P2O5 (%)	Other	602	15.4	15.5	15.45	-0.32	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	602	15.4	15.5	15.45	-0.32	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	394	15.481	15.509	15.5	-0.23	15.61	0.5115	37	
020.99	Total P2O5 (%)	Other	638	15.58	15.5	15.54	-0.14	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	543	15.535	15.582	15.56	-0.11	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	405	15.61	15.6	15.6	-0.02	15.61	0.5115	37	
020.99	Total P2O5 (%)	Other	513	15.6	15.65	15.62	0.02	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	231	15.62	15.65	15.64	0.04	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	615	15.4	15.9	15.65	0.07	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	292	15.67	15.67	15.67	0.11	15.61	0.5115	37	
020.99	Total P2O5 (%)	Other	647	15.759	15.8208	15.79	0.35	15.61	0.5115	37	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
020.50	Total P2O5 (%)	ICP	527	15.7541	15.8613	15.81	0.38	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	255	15.88	15.747	15.81	0.39	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	309	15.81	15.83	15.82	0.41	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	612	15.68	16.09	15.88	0.53	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	476	15.9474	15.8418	15.89	0.55	15.61	0.5115	37	
020.10	Total P2O5 (%)	Gravimetric Quinolinium MolybdoP	157	16	15.8	15.9	0.56	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	523	16.223	15.805	16.01	0.78	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	451	16.19	15.84	16.02	0.79	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	234	16.2	16	16.1	0.95	15.61	0.5115	37	
020.20	Total P2O5 (%)	Spectrophotometric	371	16.3	16.2	16.25	1.25	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	422	16.281	16.322	16.3	1.35	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	368	16.7023	15.9788	16.34	1.42	15.61	0.5115	37	
020.40	Total P2O5 (%)	Automated	35	16.4	16.3	16.35	1.44	15.61	0.5115	37	
020.50	Total P2O5 (%)	ICP	588	16.91	16.53	16.72	2.16	15.61	0.5115	37	

Citrate Insoluble P2O5 (%)

030.20	Citrate Insoluble P2O5 (%)	Spectrophotometric	405	0.05	0.05	0.05	-0.59	5.525	9.289	3	
030.99	Citrate Insoluble P2O5 (%)	Other	602	0.25	0.3	0.275	-0.57	5.525	9.289	3	
030.99	Citrate Insoluble P2O5 (%)	Other	556	16.23	16.27	16.25	1.15	5.525	9.289	3	

Indirect Available P2O5 (16 %)

040.99	Indirect Available P2O5 (%)	Other	405	15.56	15.55	15.56					
040.99	Indirect Available P2O5 (%)	Other	572	16.21	16.01	16.11					

Direct Available P2O5 (16 %)

041.50	Direct Available P2O5 (%)	ICP	624	14.23	14.08	14.16 †	-3.17	15.56	0.444	49	
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Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	472	14.91	14.66	14.78 †	-1.75	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	106	14.91	14.87	14.89	-1.51	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	377	15.2	14.85	15.02	-1.21	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	40	14.9	15.2	15.05	-1.15	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	95	14.88	15.23	15.06	-1.14	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	602	15.15	15.2	15.18	-0.87	15.56	0.444	49	
041.20	Direct Available P2O5 (%)	Spectrophotometric	602	15.15	15.2	15.18	-0.87	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	185	15.07	15.34	15.2	-0.81	15.56	0.444	49	
041.10	Direct Available P2O5 (%)	Gravimetric Quinolinium	494	15.03	15.38	15.2	-0.81	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	220	15.15	15.27	15.21	-0.79	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	231	15.21	15.22	15.22	-0.78	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	55	15.31	15.15	15.23	-0.75	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	55	15.065	15.4	15.23	-0.74	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	72	15.085	15.525	15.3	-0.58	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	27	14.99	15.69	15.34	-0.50	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	485	15.3	15.4	15.35	-0.48	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	49	15.46	15.3	15.38	-0.41	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	394	15.507	15.276	15.39	-0.39	15.56	0.444	49	
041.20	Direct Available P2O5 (%)	Spectrophotometric	498	15.7	15.2	15.45	-0.25	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	405	15.46	15.5	15.48	-0.19	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	136	15.6	15.4	15.5	-0.14	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	513	15.53	15.47	15.5	-0.14	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	25	15.2	15.9	15.55	-0.03	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	494	15.21	15.9	15.56	-0.02	15.56	0.444	49	
041.40	Direct Available P2O5 (%)	Automated	29	15.87	15.27	15.57	0.02	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	568	15.57	15.57	15.57	0.02	15.56	0.444	49	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	517	15.55	15.6	15.58	0.03	15.56	0.444	49	
041.50	Direct Available P2O5 (%)	ICP	605	15.59	15.57	15.58	0.04	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	177	15.538	15.6224	15.58	0.04	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	177	15.5688	15.6234	15.6	0.08	15.56	0.444	49	
041.21	Direct Available P2O5 (%)	Spectrophotometric, Citrate-EDTA	354	15.5	15.7	15.6	0.08	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	360	15.82	15.66	15.74	0.40	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	43	15.78	15.75	15.76	0.46	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	536	15.77	15.81	15.79	0.51	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	518	15.9	15.8	15.85	0.65	15.56	0.444	49	
041.11	Direct Available P2O5 (%)	Gravimetric Quinolinium, Citrate-	73	15.81	15.95	15.88	0.72	15.56	0.444	49	
041.50	Direct Available P2O5 (%)	ICP	521	15.8861	15.8861	15.89	0.73	15.56	0.444	49	
041.20	Direct Available P2O5 (%)	Spectrophotometric	553	15.76	16.08	15.92	0.81	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	423	15.85	16.12	15.98	0.95	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	538	15.96	16.04	16	0.99	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	539	16.02	16.09	16.06	1.11	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	23	16.175	16.107	16.14	1.30	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	600	16.1	16.2	16.15	1.32	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	551	16.19	16.16	16.18	1.38	15.56	0.444	49	
041.10	Direct Available P2O5 (%)	Gravimetric Quinolinium	102	15.76	16.64	16.2	1.44	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	559	16.28	16.27	16.28 †	1.60	15.56	0.444	49	
041.99	Direct Available P2O5 (%)	Other	584	16.25	16.43	16.34 †	1.75	15.56	0.444	49	
041.51	Direct Available P2O5 (%)	ICP, Citrate-EDTA Ext.	233	15.59	17.25	16.42 †	1.93	15.56	0.444	49	1
041.50	Direct Available P2O5 (%)	ICP	131	17.05	17.17	17.11 †	3.48	15.56	0.444	49	

Water Soluble P2O5 (%)

048.20	Water Soluble P2O5 (%)	Spectrophotometric	472	13.01	13.26	13.14	-0.61	13.33	0.3206	3	
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Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
048.99	Water Soluble P2O5 (%)	Other	513	13.16	13.15	13.16	-0.55	13.33	0.3206	3	
048.20	Water Soluble P2O5 (%)	Spectrophotometric	602	13.65	13.75	13.7	1.15	13.33	0.3206	3	

Soluble K2O (16 %)

050.99	Soluble K2O (%)	Other	515	11.24	12.95	12.1 †	-6.61	15.73	0.5505	79	1
050.50	Soluble K2O (%)	ICP (Oxalate)	390	14	13.8	13.9 †	-3.33	15.73	0.5505	79	
050.32	Soluble K2O (%)	AA (Citrate-EDTA)	472	14.07	14.6	14.34 †	-2.54	15.73	0.5505	79	
050.51	Soluble K2O (%)	ICP (Citrate)	521	14.4103	14.4103	14.41 †	-2.40	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	559	14.57	14.58	14.58 †	-2.10	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	624	14.48	14.86	14.67 †	-1.93	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	377	14.49	14.96	14.72 †	-1.83	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	177	14.6725	14.9693	14.82	-1.66	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	543	14.792	15.101	14.95	-1.43	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	371	14.8	15.1	14.95	-1.42	15.73	0.5505	79	
050.60	Soluble K2O (%)	Flame Photometric (Oxalate)	169	15.02	14.92	14.97	-1.39	15.73	0.5505	79	
050.50	Soluble K2O (%)	ICP (Oxalate)	55	14.69	15.58	15.14	-1.09	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	43	15.16	15.17	15.16	-1.03	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	102	15.07	15.31	15.19	-0.99	15.73	0.5505	79	
050.30	Soluble K2O (%)	AA (Oxalate)	157	15.3	15.2	15.25	-0.88	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	602	15.2	15.3	15.25	-0.88	15.73	0.5505	79	
050.60	Soluble K2O (%)	Flame Photometric (Oxalate)	602	15.2	15.3	15.25	-0.88	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	27	15.33	15.25	15.29	-0.80	15.73	0.5505	79	
050.30	Soluble K2O (%)	AA (Oxalate)	558	15.1	15.5	15.3	-0.79	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	389	15.35	15.26	15.3	-0.78	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	49	15.21	15.41	15.31	-0.77	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	481	15.38	15.28	15.33	-0.73	15.73	0.5505	79	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
050.50	Soluble K2O (%)	ICP (Oxalate)	106	15.11	15.59	15.35	-0.70	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	542	15.09	15.62	15.36	-0.69	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	255	15.098	15.712	15.4	-0.60	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	523	15.544	15.288	15.42	-0.58	15.73	0.5505	79	
050.60	Soluble K2O (%)	Flame Photometric (Oxalate)	455	15.48	15.46	15.47	-0.48	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	231	15.53	15.47	15.5	-0.42	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	354	15.5	15.6	15.55	-0.33	15.73	0.5505	79	
050.30	Soluble K2O (%)	AA (Oxalate)	309	15.51	15.62	15.56	-0.31	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	647	15.48	15.689	15.58	-0.27	15.73	0.5505	79	
050.51	Soluble K2O (%)	ICP (Citrate)	568	15.59	15.59	15.59	-0.26	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	513	15.63	15.57	15.6	-0.24	15.73	0.5505	79	
050.62	Soluble K2O (%)	Flame Photometric (Citrate-EDTA)	517	15.6	15.65	15.62	-0.20	15.73	0.5505	79	
050.60	Soluble K2O (%)	Flame Photometric (Oxalate)	476	15.6171	15.653	15.64	-0.18	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	136	15.8	15.5	15.65	-0.15	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	25	15.1	16.3	15.7	-0.06	15.73	0.5505	79	
050.50	Soluble K2O (%)	ICP (Oxalate)	292	15.42	16.06	15.74	0.01	15.73	0.5505	79	
050.30	Soluble K2O (%)	AA (Oxalate)	40	15.7	15.9	15.8	0.12	15.73	0.5505	79	
050.51	Soluble K2O (%)	ICP (Citrate)	73	16.18	15.43	15.8	0.13	15.73	0.5505	79	
050.32	Soluble K2O (%)	AA (Citrate-EDTA)	185	15.66	16.09	15.88	0.26	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	220	15.86	15.89	15.88	0.26	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	494	15.69	16.08	15.88	0.28	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	615	15.8	16	15.9	0.30	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	572	15.95	15.87	15.91	0.32	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	638	15.62	16.2	15.91	0.32	15.73	0.5505	79	
050.50	Soluble K2O (%)	ICP (Oxalate)	324	15.8	16.1	15.95	0.39	15.73	0.5505	79	
050.61	Soluble K2O (%)	Flame Photometric (Citrate)	35	16	15.9	15.95	0.39	15.73	0.5505	79	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
050.99	Soluble K2O (%)	Other	553	15.94	15.97	15.96	0.40	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	451	16.09	15.82	15.96	0.40	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	233	15.43	16.55	15.99	0.47	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	538	15.94	16.05	16	0.48	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	539	15.98	16.02	16	0.49	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	423	15.921	16.081	16	0.49	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	55	16.29	15.77	16.03	0.54	15.73	0.5505	79	
050.51	Soluble K2O (%)	ICP (Citrate)	291	16.04	16.02	16.03	0.54	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	612	15.62	16.44	16.03	0.54	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	498	15.8	16.3	16.05	0.58	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	551	16.06	16.04	16.05	0.58	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	600	15.95	16.15	16.05	0.58	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	394	15.941	16.179	16.06	0.59	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	556	15.98	16.2	16.09	0.65	15.73	0.5505	79	
050.62	Soluble K2O (%)	Flame Photometric (Citrate-EDTA)	95	15.88	16.35	16.12	0.69	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	527	16.1544	16.0814	16.12	0.70	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	584	15.9	16.38	16.14	0.74	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	234	16.2	16.1	16.15	0.76	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	23	16.2	16.145	16.17	0.80	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	433	16.13	16.25	16.19	0.83	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	485	16.7	15.8	16.25	0.94	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	518	16.4	16.2	16.3	1.03	15.73	0.5505	79	
050.50	Soluble K2O (%)	ICP (Oxalate)	231	16.31	16.31	16.31	1.05	15.73	0.5505	79	
050.00	Soluble K2O (%)	STPB Oxalate	405	16.32	16.3	16.31	1.05	15.73	0.5505	79	
050.62	Soluble K2O (%)	Flame Photometric (Citrate-EDTA)	29	16.11	16.62	16.36	1.15	15.73	0.5505	79	
050.51	Soluble K2O (%)	ICP (Citrate)	131	16.509	16.255	16.38	1.18	15.73	0.5505	79	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
050.99	Soluble K2O (%)	Other	605	16.39	16.53	16.46	1.32	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	494	16.18	16.9	16.54	1.47	15.73	0.5505	79	
050.52	Soluble K2O (%)	ICP (Citrate-EDTA)	360	16.67	16.43	16.55	1.48	15.73	0.5505	79	
050.99	Soluble K2O (%)	Other	588	16.21	16.92	16.56	1.51	15.73	0.5505	79	
050.50	Soluble K2O (%)	ICP (Oxalate)	422	16.998	17.083	17.04 †	2.38	15.73	0.5505	79	
050.51	Soluble K2O (%)	ICP (Citrate)	368	17.431	17.2014	17.32 †	2.88	15.73	0.5505	79	

Water (Free) (%)

060.99	Water (Free) (%)	Other	9	19.8	18.6	19.2					
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Acid Soluble Ca (%)

101.33	Acid Soluble Ca (%)	ICP, 2017.02	494	4.16	4.38	4.27	-1.18	4.505	0.1776	6	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	354	4.29	4.53	4.41	-0.47	4.505	0.1776	6	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	35	4.7	4.32	4.51	0.03	4.505	0.1776	6	
101.30	Acid Soluble Ca (%)	ICP, test portion inorganic 965.09	568	4.54	4.54	4.54	0.18	4.505	0.1776	6	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	472	4.54	4.58	4.56	0.28	4.505	0.1776	6	
101.33	Acid Soluble Ca (%)	ICP, 2017.02	527	4.7754	4.6997	4.738	1.17	4.505	0.1776	6	

Acid Soluble Mg (%)

121.33	Acid Soluble Mg (%)	ICP, 2017.02	494	2.731	2.815	2.773	-1.89	2.987	0.1025	7	
121.30	Acid Soluble Mg (%)	ICP, test portion inorganic 965.09	371	2.7	3.1	2.9	-0.77	2.987	0.1025	7	
121.30	Acid Soluble Mg (%)	ICP, test portion inorganic 965.09	354	2.95	3.02	2.985	-0.02	2.987	0.1025	7	
121.33	Acid Soluble Mg (%)	ICP, 2017.02	472	3.04	3.01	3.025	0.34	2.987	0.1025	7	
121.33	Acid Soluble Mg (%)	ICP, 2017.02	527	2.9684	3.091	3.03	0.38	2.987	0.1025	7	
121.30	Acid Soluble Mg (%)	ICP, test portion inorganic 965.09	568	3.04	3.04	3.04	0.47	2.987	0.1025	7	
121.30	Acid Soluble Mg (%)	ICP, test portion inorganic 965.09	35	3.22	2.97	3.095	0.95	2.987	0.1025	7	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
Sulfate S, HCl soluble (%)											
145.00	Sulfate S, HCl soluble (%)	Gravimetric Sulfur - sulfate form	494	0.467	0.49	0.4785					
Total S (%)											
148.07	Total S (%)	ICP, test portion as in 2017.02	515	0.3643	0.3547	0.3595	-1.50	0.4556	0.0579	7	
148.99	Total S (%)	Other	558	0.39	0.42	0.405	-0.79	0.4556	0.0579	7	
148.99	Total S (%)	Other	35	0.448	0.458	0.453	-0.04	0.4556	0.0579	7	
148.07	Total S (%)	ICP, test portion as in 2017.02	494	0.4672	0.4905	0.4788	0.36	0.4556	0.0579	7	
148.99	Total S (%)	Other	354	0.51	0.45	0.48	0.38	0.4556	0.0579	7	
148.99	Total S (%)	Other	422	0.492	0.495	0.4935	0.59	0.4556	0.0579	7	
148.07	Total S (%)	ICP, test portion as in 2017.02	472	0.51	0.51	0.51	0.85	0.4556	0.0579	7	
Acid Soluble As (ppm)											
151.30	Acid Soluble As (ppm)	ICP	605	<6.25	<6.25	<6.25		6.893	1.556	12	6
151.30	Acid Soluble As (ppm)	ICP	255	0	0	0		6.893	1.556	12	5
151.99	Acid Soluble As (ppm)	Other	220	5.6	2.6	4.1	-1.80	6.893	1.556	12	
151.33	Acid Soluble As (ppm)	ICP, 2017.02	515	5.38	4.69	5.035	-1.19	6.893	1.556	12	
151.32	Acid Soluble As (ppm)	ICP, 2006.03	220	5.9	5.8	5.85	-0.67	6.893	1.556	12	
151.99	Acid Soluble As (ppm)	Other	481	6.05	6.78	6.415	-0.31	6.893	1.556	12	
151.33	Acid Soluble As (ppm)	ICP, 2017.02	136	6.4	6.5	6.45	-0.29	6.893	1.556	12	
151.30	Acid Soluble As (ppm)	ICP	523	6.685	6.818	6.752	-0.09	6.893	1.556	12	
151.00	Acid Soluble As (ppm)	AA, test portion 2006.03 modified	498	7.2	7.1	7.15	0.16	6.893	1.556	12	
151.99	Acid Soluble As (ppm)	Other	572	7.33	7.08	7.205	0.20	6.893	1.556	12	
151.33	Acid Soluble As (ppm)	ICP, 2017.02	494	7.79	7.31	7.55	0.42	6.893	1.556	12	
151.33	Acid Soluble As (ppm)	ICP, 2017.02	527	7.8037	7.7532	7.778	0.57	6.893	1.556	12	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
151.34	Acid Soluble As (ppm)	ICP, EPA 3050B/6010C	368	8.4	9.1	8.75	1.19	6.893	1.556	12	
151.34	Acid Soluble As (ppm)	ICP, EPA 3050B/6010C	515	13.4	5.04	9.22	1.50	6.893	1.556	12	1
151.32	Acid Soluble As (ppm)	ICP, 2006.03	405	10	10	10	2.00	6.893	1.556	12	

Acid Soluble B (%)

165.30	Acid Soluble B (%)	ICP, test portion in 982.01	354	<0.01	<0.01	<0.01					6
165.99	Acid Soluble B (%)	Other	527	<0.01	<0.01	<0.01					6
165.30	Acid Soluble B (%)	ICP, test portion in 982.01	371	0	0	0					5

Acid Soluble Cd (ppm)

181.30	Acid Soluble Cd (ppm)	ICP	394	<0.1	<0.1	<0.1		2.686	0.3381	14	6
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	515	<0.19	<0.19	<0.19		2.686	0.3381	14	6
181.34	Acid Soluble Cd (ppm)	ICP, EPA 3050B/6010C	515	<0.333	<0.333	<0.333		2.686	0.3381	14	6
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	494	2.21	2.08	2.145	-1.60	2.686	0.3381	14	
181.32	Acid Soluble Cd (ppm)	ICP, 2006.03	220	2.4	2.4	2.4	-0.85	2.686	0.3381	14	
181.99	Acid Soluble Cd (ppm)	Other	220	2.4	2.4	2.4	-0.85	2.686	0.3381	14	
181.99	Acid Soluble Cd (ppm)	Other	481	2.64	2.4	2.52	-0.49	2.686	0.3381	14	
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	136	2.6	2.5	2.55	-0.40	2.686	0.3381	14	
181.30	Acid Soluble Cd (ppm)	ICP	605	2.6	2.59	2.595	-0.27	2.686	0.3381	14	
181.34	Acid Soluble Cd (ppm)	ICP, EPA 3050B/6010C	368	2.6	2.6	2.6	-0.25	2.686	0.3381	14	
181.30	Acid Soluble Cd (ppm)	ICP	35	2.52	2.71	2.615	-0.21	2.686	0.3381	14	
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	527	2.6676	2.6493	2.658	-0.08	2.686	0.3381	14	
181.99	Acid Soluble Cd (ppm)	Other	572	2.97	2.69	2.83	0.43	2.686	0.3381	14	
181.30	Acid Soluble Cd (ppm)	ICP	523	2.925	2.814	2.87	0.54	2.686	0.3381	14	
181.32	Acid Soluble Cd (ppm)	ICP, 2006.03	405	3	3	3	0.93	2.686	0.3381	14	
181.00	Acid Soluble Cd (ppm)	AA, test portion 2006.03 modified	498	3.6	3.4	3.5	2.41	2.686	0.3381	14	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
181.30	Acid Soluble Cd (ppm)	ICP	255	4.01	3.262	3.636	2.81	2.686	0.3381	14	1
181.33	Acid Soluble Cd (ppm)	ICP, 2017.02	86	4.3062	4.0585	4.182	4.43	2.686	0.3381	14	

Acid Soluble Cr (ppm)

191.30	Acid Soluble Cr (ppm)	ICP	394	<2	<2	<2		84.41	12.26	18	6
191.99	Acid Soluble Cr (ppm)	Other	558	0.09	0.09	0.09	-6.88	84.41	12.26	18	
191.34	Acid Soluble Cr (ppm)	ICP, EPA 3050B/6010C	515	35.5	35	35.25	-4.01	84.41	12.26	18	
191.30	Acid Soluble Cr (ppm)	ICP	35	67.5	67.5	67.5	-1.38	84.41	12.26	18	
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	515	69.9	76.5	73.2	-0.91	84.41	12.26	18	
191.00	Acid Soluble Cr (ppm)	AA, test portion 2006.03 modified	498	78	75	76.5	-0.65	84.41	12.26	18	
191.30	Acid Soluble Cr (ppm)	ICP	605	77.11	76.2	76.66	-0.63	84.41	12.26	18	
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	136	84.9	84.4	84.65	0.02	84.41	12.26	18	
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	86	87.416	81.922	84.67	0.02	84.41	12.26	18	
191.99	Acid Soluble Cr (ppm)	Other	572	84.42	89.92	87.17	0.23	84.41	12.26	18	
191.34	Acid Soluble Cr (ppm)	ICP, EPA 3050B/6010C	368	88.6	89.3	88.95	0.37	84.41	12.26	18	
191.32	Acid Soluble Cr (ppm)	ICP, 2006.03	405	91	90	90.5	0.50	84.41	12.26	18	
191.99	Acid Soluble Cr (ppm)	Other	220	92.2	89	90.6	0.50	84.41	12.26	18	
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	494	94.3	88.4	91.35	0.57	84.41	12.26	18	
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	527	91.7286	92.8951	92.31	0.64	84.41	12.26	18	
191.30	Acid Soluble Cr (ppm)	ICP	523	93.286	91.721	92.5	0.66	84.41	12.26	18	
191.32	Acid Soluble Cr (ppm)	ICP, 2006.03	220	95	92.8	93.9	0.77	84.41	12.26	18	
191.33	Acid Soluble Cr (ppm)	ICP, 2017.02	102	93.7	98.4	96.05	0.95	84.41	12.26	18	
191.99	Acid Soluble Cr (ppm)	Other	481	97.6	104.1	100.8	1.34	84.41	12.26	18	

Acid Soluble Co (ppm)

202.34	Acid Soluble Co (ppm)	ICP, EPA 3050B/6010C	515	<0.324	<0.324	<0.324		3.934	1.557	11	6
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Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	86	<10	<10	<10		3.934	1.557	11	6
202.99	Acid Soluble Co (ppm)	Other	481	<20	<20	<20		3.934	1.557	11	6
202.99	Acid Soluble Co (ppm)	Other	255	1.968	1.735	1.852	-1.34	3.934	1.557	11	
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	515	2.14	1.9	2.02	-1.23	3.934	1.557	11	
202.34	Acid Soluble Co (ppm)	ICP, EPA 3050B/6010C	368	2	3	2.5	-0.92	3.934	1.557	11	1
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	136	3	2.6	2.8	-0.73	3.934	1.557	11	
202.30	Acid Soluble Co (ppm)	ICP	35	3.27	3.25	3.26	-0.43	3.934	1.557	11	
202.99	Acid Soluble Co (ppm)	Other	572	3.34	3.95	3.645	-0.19	3.934	1.557	11	
202.99	Acid Soluble Co (ppm)	Other	220	3.8	4	3.9	-0.02	3.934	1.557	11	
202.33	Acid Soluble Co (ppm)	ICP, 2017.02	527	4.6169	4.564	4.59	0.42	3.934	1.557	11	
202.32	Acid Soluble Co (ppm)	ICP, 2006.03	220	4.8	4.4	4.6	0.43	3.934	1.557	11	
202.30	Acid Soluble Co (ppm)	ICP	605	5.06	5.03	5.045	0.71	3.934	1.557	11	
202.30	Acid Soluble Co (ppm)	ICP	523	5.56	5.559	5.56	1.04	3.934	1.557	11	
202.32	Acid Soluble Co (ppm)	ICP, 2006.03	405	6	6	6	1.33	3.934	1.557	11	

Acid Soluble Cu (%)

221.32	Acid Soluble Cu (%)	ICP, test portion 2006.03A-C	405	<0.0002	<0.0002	<0.0002		0.0005	0.0004	4	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	136	<0.0002	<0.0002	<0.0002		0.0005	0.0004	4	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	394	<0.0002	<0.0002	<0.0002		0.0005	0.0004	4	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	515	<0.0003	<0.0003	<0.0003		0.0005	0.0004	4	6
221.99	Acid Soluble Cu (%)	Other	515	<0.0003	<0.0003	<0.0003		0.0005	0.0004	4	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	27	<0.001	<0.001	<0.001		0.0005	0.0004	4	6
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	354	<0.01	<0.01	<0.01		0.0005	0.0004	4	6
221.99	Acid Soluble Cu (%)	Other	481	<0.01	<0.01	<0.01		0.0005	0.0004	4	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	86	<10	<10	<10		0.0005	0.0004	4	6
221.33	Acid Soluble Cu (%)	ICP, 2017.02	106	0	0	0		0.0005	0.0004	4	5

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	255	0	0	0		0.0005	0.0004	4	5
221.30	Acid Soluble Cu (%)	ICP, test portion inorganic 965.09	371	0	0	0		0.0005	0.0004	4	5
221.33	Acid Soluble Cu (%)	ICP, 2017.02	527	0.0002	0.0002	0.0002	-0.78	0.0005	0.0004	4	
221.99	Acid Soluble Cu (%)	Other	572	0.0003	0.0001	0.0002	-0.78	0.0005	0.0004	4	
221.99	Acid Soluble Cu (%)	Other	368	0.0006	0.0006	0.0006	0.26	0.0005	0.0004	4	
221.99	Acid Soluble Cu (%)	Other	523	0.001	0.001	0.001	1.31	0.0005	0.0004	4	

Acid Soluble Fe (%)

241.30	Acid Soluble Fe (%)	ICP, test portion inorganic 965.09	35	0.336	0.343	0.3395	-1.15	0.3675	0.0213	5	
241.30	Acid Soluble Fe (%)	ICP, test portion inorganic 965.09	371	0.3	0.4	0.35	-0.72	0.3675	0.0213	5	1
241.33	Acid Soluble Fe (%)	ICP, 2017.02	472	0.36	0.36	0.36	-0.31	0.3675	0.0213	5	
241.33	Acid Soluble Fe (%)	ICP, 2017.02	494	0.3602	0.3704	0.3653	-0.09	0.3675	0.0213	5	
241.30	Acid Soluble Fe (%)	ICP, test portion inorganic 965.09	354	0.38	0.37	0.375	0.31	0.3675	0.0213	5	
241.33	Acid Soluble Fe (%)	ICP, 2017.02	527	0.4055	0.3897	0.3976	1.24	0.3675	0.0213	5	

Acid Soluble Pb (ppm)

251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	515	<0.21	<0.21	<0.21		1.254	0.0307	8	6
251.34	Acid Soluble Pb (ppm)	ICP, EPA 3050B/6010C	515	<0.496	<0.496	<0.496		1.254	0.0307	8	6
251.30	Acid Soluble Pb (ppm)	ICP	394	<1	<1	<1		1.254	0.0307	8	6
251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	136	<3	<3	<3		1.254	0.0307	8	6
251.32	Acid Soluble Pb (ppm)	ICP, 2006.03	405	<4	<4	<4		1.254	0.0307	8	6
251.30	Acid Soluble Pb (ppm)	ICP	605	<6.25	<6.25	<6.25		1.254	0.0307	8	6
251.30	Acid Soluble Pb (ppm)	ICP	255	0	0	0		1.254	0.0307	8	5
251.00	Acid Soluble Pb (ppm)	AA, test portion 2006.03 modified	498	0.8	0.9	0.85	-13.18	1.254	0.0307	8	
251.99	Acid Soluble Pb (ppm)	Other	572	1.37	1.1	1.235	-0.63	1.254	0.0307	8	
251.32	Acid Soluble Pb (ppm)	ICP, 2006.03	220	1.1	1.4	1.25	-0.14	1.254	0.0307	8	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
251.99	Acid Soluble Pb (ppm)	Other	220	1.3	1.2	1.25	-0.14	1.254	0.0307	8	
251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	527	1.2252	1.2789	1.252	-0.08	1.254	0.0307	8	
251.33	Acid Soluble Pb (ppm)	ICP, 2017.02	86	1.1487	1.3841	1.266	0.39	1.254	0.0307	8	
251.30	Acid Soluble Pb (ppm)	ICP	523	1.265	1.282	1.274	0.62	1.254	0.0307	8	
251.99	Acid Soluble Pb (ppm)	Other	481	1.2	1.4	1.3	1.49	1.254	0.0307	8	
251.34	Acid Soluble Pb (ppm)	ICP, EPA 3050B/6010C	368	7.8	7.1	7.45	>100	1.254	0.0307	8	1

Acid Soluble Mn (%)

261.32	Acid Soluble Mn (%)	ICP, test portion inorganic 965.09	371	0	0	0		0.0105	0.0006	4	5
261.35	Acid Soluble Mn (%)	ICP, 2017.02	472	0.01	0.01	0.01	-0.87	0.0105	0.0006	4	
261.30	Acid Soluble Mn (%)	ICP, test portion 972.02a	354	0.01	0.01	0.01	-0.87	0.0105	0.0006	4	
261.30	Acid Soluble Mn (%)	ICP, test portion 972.02a	35	0.011	0.011	0.011	0.82	0.0105	0.0006	4	
261.35	Acid Soluble Mn (%)	ICP, 2017.02	527	0.011	0.0111	0.011	0.91	0.0105	0.0006	4	

Acid Soluble Hg (ppm)

281.30	Acid Soluble Hg (ppm)	ICP	527	<0.001	<0.001	<0.001					6
281.99	Acid Soluble Hg (ppm)	Other	572	<0.009	<0.009	<0.009					6
281.30	Acid Soluble Hg (ppm)	ICP	515	<0.01	<0.01	<0.01					6
281.00	Acid Soluble Hg (ppm)	AA	481	<0.5	<0.5	<0.5					6
281.30	Acid Soluble Hg (ppm)	ICP	605	<1.25	<1.25	<1.25					6
281.30	Acid Soluble Hg (ppm)	ICP	405	<2	<2	<2					6
281.99	Acid Soluble Hg (ppm)	Other	220	0.01	0.01	0.01					

Acid Soluble Mo (ppm)

289.34	Acid Soluble Mo (ppm)	ICP, EPA 3050B/6010C	515	<0.255	<0.255	<0.255		7.177	0.8534	14	6
289.99	Acid Soluble Mo (ppm)	Other	481	<100	<100	<100		7.177	0.8534	14	6

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	515	1.75	1.34	1.545	-6.60	7.177	0.8534	14	
289.30	Acid Soluble Mo (ppm)	ICP	35	5.78	5.62	5.7	-1.73	7.177	0.8534	14	
289.30	Acid Soluble Mo (ppm)	ICP	605	6.24	6.62	6.43	-0.88	7.177	0.8534	14	
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	136	6.9	6.2	6.55	-0.73	7.177	0.8534	14	
289.34	Acid Soluble Mo (ppm)	ICP, EPA 3050B/6010C	368	7.1	7	7.05	-0.15	7.177	0.8534	14	
289.99	Acid Soluble Mo (ppm)	Other	220	7.1	7.1	7.1	-0.09	7.177	0.8534	14	
289.30	Acid Soluble Mo (ppm)	ICP	255	7.37	7.16	7.265	0.10	7.177	0.8534	14	
289.32	Acid Soluble Mo (ppm)	ICP, 2006.03	220	7.6	7.3	7.45	0.32	7.177	0.8534	14	
289.30	Acid Soluble Mo (ppm)	ICP	523	6.377	8.611	7.494	0.37	7.177	0.8534	14	1
289.32	Acid Soluble Mo (ppm)	ICP, 2006.03	405	8	7	7.5	0.38	7.177	0.8534	14	
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	106	7.5	7.5	7.5	0.38	7.177	0.8534	14	
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	527	7.7656	7.5419	7.654	0.56	7.177	0.8534	14	
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	86	8.3751	7.2127	7.794	0.72	7.177	0.8534	14	
289.99	Acid Soluble Mo (ppm)	Other	572	7.83	8.04	7.935	0.89	7.177	0.8534	14	
289.33	Acid Soluble Mo (ppm)	ICP, 2017.02	494	9.41	9.01	9.21	2.38	7.177	0.8534	14	

Acid Soluble Ni (ppm)

291.30	Acid Soluble Ni (ppm)	ICP	394	<2	<2	<2		25.2	5.828	18	6
291.99	Acid Soluble Ni (ppm)	Other	558	0.02	0.03	0.025	-4.32	25.2	5.828	18	
291.30	Acid Soluble Ni (ppm)	ICP	35	17.4	17.2	17.3	-1.36	25.2	5.828	18	
291.34	Acid Soluble Ni (ppm)	ICP, EPA 3050B/6010C	515	15.3	19.4	17.35	-1.35	25.2	5.828	18	
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	515	19	18.8	18.9	-1.08	25.2	5.828	18	
291.30	Acid Soluble Ni (ppm)	ICP	605	21.48	22.13	21.8	-0.58	25.2	5.828	18	
291.99	Acid Soluble Ni (ppm)	Other	481	25.6	23.9	24.75	-0.08	25.2	5.828	18	
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	86	26.074	24.296	25.18	0.00	25.2	5.828	18	
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	102	24.9	25.5	25.2	0.00	25.2	5.828	18	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
291.00	Acid Soluble Ni (ppm)	AA, test portion 2006.03 modified	498	26	25	25.5	0.05	25.2	5.828	18	
291.34	Acid Soluble Ni (ppm)	ICP, EPA 3050B/6010C	368	25.5	26	25.75	0.09	25.2	5.828	18	
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	136	26.6	26.1	26.35	0.20	25.2	5.828	18	
291.30	Acid Soluble Ni (ppm)	ICP	523	26.869	26.296	26.58	0.24	25.2	5.828	18	
291.99	Acid Soluble Ni (ppm)	Other	572	26.19	29.38	27.78	0.44	25.2	5.828	18	
291.99	Acid Soluble Ni (ppm)	Other	220	29	28	28.5	0.57	25.2	5.828	18	
291.32	Acid Soluble Ni (ppm)	ICP, 2006.03	220	30	29	29.5	0.74	25.2	5.828	18	
291.33	Acid Soluble Ni (ppm)	ICP, 2017.02	527	28.9308	30.8821	29.91	0.81	25.2	5.828	18	
291.99	Acid Soluble Ni (ppm)	Other	255	33.55	32.2	32.88	1.32	25.2	5.828	18	
291.32	Acid Soluble Ni (ppm)	ICP, 2006.03	405	36	36	36	1.85	25.2	5.828	18	

Acid Soluble Se (ppm)

301.33	Acid Soluble Se (ppm)	ICP, 2017.02	527	<0.001	<0.001	<0.001					6
301.99	Acid Soluble Se (ppm)	Other	220	<0.3	<0.3	<0.3					6
301.32	Acid Soluble Se (ppm)	ICP, 2006.03	220	<0.3	<0.3	<0.3					6
301.99	Acid Soluble Se (ppm)	Other	481	<0.5	<0.5	<0.5					6
301.34	Acid Soluble Se (ppm)	ICP, EPA 3050B/6010C	515	<0.554	<0.554	<0.554					6
301.99	Acid Soluble Se (ppm)	Other	572	<0.68	<0.7	<0.7					6
301.34	Acid Soluble Se (ppm)	ICP, EPA 3050B/6010C	368	<1.5	<1.4	<1.5					6
301.32	Acid Soluble Se (ppm)	ICP, 2006.03	405	<10	<10	<10					6
301.30	Acid Soluble Se (ppm)	ICP	605	<6.25	<6.25	<6.25					6
301.99	Acid Soluble Se (ppm)	Other	255	0	0	0					5
301.30	Acid Soluble Se (ppm)	ICP	523	0.614	0.608	0.611					
301.33	Acid Soluble Se (ppm)	ICP, 2017.02	515	2.99	2.21	2.6					

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
Sodium (%)											
311.99	Sodium (%)	Other	35	0.369	0.384	0.3765	-1.31	0.3981	0.0164	4	
311.33	Sodium (%)	ICP, test portion as in 2017.02	494	0.393	0.398	0.3955	-0.16	0.3981	0.0164	4	
311.33	Sodium (%)	ICP, test portion as in 2017.02	527	0.41	0.4007	0.4054	0.44	0.3981	0.0164	4	
311.99	Sodium (%)	Other	354	0.42	0.41	0.415	1.03	0.3981	0.0164	4	

Acid Soluble Zn (%)											
321.33	Acid Soluble Zn (%)	ICP, 2017.02	394	<0.0002	<0.0002	<0.0002		0.0053	0.0014	16	6
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	354	<0.01	<0.01	<0.01		0.0053	0.0014	16	6
321.99	Acid Soluble Zn (%)	Other	481	<0.01	0.01	<0.01		0.0053	0.0014	16	6
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	371	0	0	0		0.0053	0.0014	16	5
321.03	Acid Soluble Zn (%)	AA, 965.09, test portion 2006.03A-	498	0.003	0.002	0.0025	-2.05	0.0053	0.0014	16	
321.33	Acid Soluble Zn (%)	ICP, 2017.02	106	0.0035	0.0034	0.0034	-1.36	0.0053	0.0014	16	
321.99	Acid Soluble Zn (%)	Other	368	0.0041	0.0044	0.0042	-0.78	0.0053	0.0014	16	
321.99	Acid Soluble Zn (%)	Other	572	0.0048	0.0046	0.0047	-0.45	0.0053	0.0014	16	
321.33	Acid Soluble Zn (%)	ICP, 2017.02	43	0.005	0.005	0.005	-0.23	0.0053	0.0014	16	
321.33	Acid Soluble Zn (%)	ICP, 2017.02	136	0.005	0.005	0.005	-0.23	0.0053	0.0014	16	
321.33	Acid Soluble Zn (%)	ICP, 2017.02	27	0.005	0.005	0.005	-0.23	0.0053	0.0014	16	
321.33	Acid Soluble Zn (%)	ICP, 2017.02	527	0.0052	0.0049	0.005	-0.20	0.0053	0.0014	16	
321.32	Acid Soluble Zn (%)	ICP, test portion 2006.03A-C	405	0.0052	0.0051	0.0052	-0.12	0.0053	0.0014	16	
321.32	Acid Soluble Zn (%)	ICP, test portion 2006.03A-C	220	0.0053	0.0052	0.0052	-0.05	0.0053	0.0014	16	
321.99	Acid Soluble Zn (%)	Other	220	0.0053	0.0054	0.0054	0.02	0.0053	0.0014	16	
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	35	0.0053	0.0059	0.0056	0.20	0.0053	0.0014	16	
321.32	Acid Soluble Zn (%)	ICP, test portion 2006.03A-C	95	0.0062	0.0064	0.0063	0.71	0.0053	0.0014	16	
321.30	Acid Soluble Zn (%)	ICP, test portion inorganic 965.09	255	0.008	0.006	0.007	1.22	0.0053	0.0014	16	

Code	Analyte	Method	Lab Num	Result1	Result2	Lab Value	Z score	Population of Lab Values			
								Robust Mean	Robust StDev	# Obs	Flag
321.99	Acid Soluble Zn (%)	Other	523	0.015	0.01	0.0125	5.22	0.0053	0.0014	16	
321.33	Acid Soluble Zn (%)	ICP, 2017.02	515	38.65	35.25	36.95	>100	0.0053	0.0014	16	
321.99	Acid Soluble Zn (%)	Other	515	46.5	80.6	63.55	>100	0.0053	0.0014	16	1
321.33	Acid Soluble Zn (%)	ICP, 2017.02	624	284.47	280.46	282.5	>100	0.0053	0.0014	16	2

Lab Data: Value is the average of 2 reported lab results and range is the difference between 2 reported lab results. † 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 # of observations ≥ 6 . Method code and analyte name are shown in green for guaranteed analytes along with guaranteed concentration.

Statistical parameters of the population: Robust statistics was used to determine mean, %RSD, and range if number of observations ≥ 6 (blue background). Classical statistics was used if number of observations = 3, 4, or 5 (pink background). The number of observations in parantheses is the number of values used in the statistical calculation. Footnote on flags below identifies flag numbers where data was rejected and the reason why.

Z scores: 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 determined for data populations with number of observation ≥ 3 for values that are not an analytical limit or 0. Color ratings shown for number of observations ≥ 6 .

Flags: Flag number denotes whether or not Lab Value was used in the population to determine statistical parameters. No flag number indicates data was used, 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").

Appendix

Content Description of Analyte All Tests Report

The All Tests reports have 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 number. 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. Determination of mean and standard deviation followed protocols in ISO 13528:2015(E) (Statistical methods for use in proficiency testing by interlaboratory comparison) where robust statistics was used to determine the mean and standard deviation 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 is only appropriate for use 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 had 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.