Analyte

All Labs PT Report

Statistical reports have been updated to a new organizational format.

Statistical analysis remains the same. The Minerals scheme now includes method reports like the other schemes in our PT program. Report types are shown below.

Results from all labs…

…sorted by analyte (**Analyte All Labs PT Report**)

…sorted by method (Method All Labs PT Report)

Summary statistics…

…for each analyte (Analyte Summary Statistics)

…for each method (Method Summary Statistics)

Report cards evaluating individual lab performance…

…for an analyte regardless of method (Analyte Laboratory Report Card)

…for a specific method (Method Laboratory Report Card).

Detailed description on the content of the Analyte All Labs PT Report is provided in the Appendix

Issue Date: 4/30/2026

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
				Aluminum (ppm)							
015.43	Aluminum (ppm)	ICP, Microwave	**0227**	67.3	66.8	**67.05**	**-16.22**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0870**	756.417	760.207	**758.3**	**-3.20**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0510**	824	831	**827.5**	**-1.89**	928	53.08	16	
015.41	Aluminum (ppm)	ICP, Dry ash	**0407**	849.973	866.834	**858.4**	**-1.31**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0407**	864.259	873.130	**868.7**	**-1.12**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0098**	891.7	885	**888.4**	**-0.75**	928	53.08	16	
015.42	Aluminum (ppm)	ICP, Open vessel	**0160**	890	891	**890.5**	**-0.71**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0511**	919	918	**918.5**	**-0.18**	928	53.08	16	
015.52	Aluminum (ppm)	ICP-MS, Open vessel	**0186**	933.23	921.19	**927.2**	**-0.01**	928	53.08	16	
015.53	Aluminum (ppm)	ICP-MS, Microwave	**0553**	930	941	**935.5**	**0.14**	928	53.08	16	
015.53	Aluminum (ppm)	ICP-MS, Microwave	**0504**	951	1020	**985.5**	**1.08**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0148**	1046.17	950.61	**998.4**	**1.33**	928	53.08	16	
015.53	Aluminum (ppm)	ICP-MS, Microwave	**0407**	998.267	1001.71	**1000**	**1.36**	928	53.08	16	
015.43	Aluminum (ppm)	ICP, Microwave	**0964**	1047	1001	**1024**	**1.81**	928	53.08	16	
015.42	Aluminum (ppm)	ICP, Open vessel	**0042**	1100	1131	**1116**	**3.53**	928	53.08	16	
015.53	Aluminum (ppm)	ICP-MS, Microwave	**0918**	1250.98	1211.74	**1231**	**5.72**	928	53.08	16	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
				Boron (ppm)							
017.43	Boron (ppm)	ICP, Microwave	**0870**	54.7688	58.4754	**56.62**	**-2.05**	68.52	5.802	9	
017.41	Boron (ppm)	ICP, Dry ash	**0407**	61.9991	62.363	**62.18**	**-1.09**	68.52	5.802	9	
017.43	Boron (ppm)	ICP, Microwave	**0510**	66	65	**65.5**	**-0.52**	68.52	5.802	9	
017.53	Boron (ppm)	ICP-MS, Microwave	**0553**	70.6	61.1	**65.85**	**-0.46**	68.52	5.802	9	
017.42	Boron (ppm)	ICP, Open vessel	**0160**	67.7	69	**68.35**	**-0.03**	68.52	5.802	9	
017.43	Boron (ppm)	ICP, Microwave	**0407**	68.2008	68.8365	**68.52**	**0.00**	68.52	5.802	9	
017.43	Boron (ppm)	ICP, Microwave	**0098**	73.32	73	**73.16**	**0.80**	68.52	5.802	9	
017.53	Boron (ppm)	ICP-MS, Microwave	**0407**	75.8353	77.5644	**76.7**	**1.41**	68.52	5.802	9	
017.43	Boron (ppm)	ICP, Microwave	**0918**	82.5	77.12	**79.81**	**1.95**	68.52	5.802	9	
				Cobalt (ppm)							
021.43	Cobalt (ppm)	ICP, Microwave	**0227**	<0.5	<0.5	**<0.5**		14.28	1.531	25	6
021.43	Cobalt (ppm)	ICP, Microwave	**2404**	11.55	11.13	**11.34**	**-1.92**	14.28	1.531	25	
021.42	Cobalt (ppm)	ICP, Open vessel	**0160**	11.8	11.8	**11.8**	**-1.62**	14.28	1.531	25	7
021.41	Cobalt (ppm)	ICP, Dry ash	**0407**	12.1514	12.1637	**12.16**	**-1.39**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0043**	12.3	12.9	**12.6**	**-1.10**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0098**	12.7	13.14	**12.92**	**-0.89**	14.28	1.531	25	
021.42	Cobalt (ppm)	ICP, Open vessel	**0042**	13	12.9	**12.95**	**-0.87**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0407**	12.7573	13.327	**13.04**	**-0.81**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**2141**	14.92	12.71	**13.82**	**-0.31**	14.28	1.531	25	
021.31	Cobalt (ppm)	AAS, Dry ash	**0563**	13.617	14.0345	**13.83**	**-0.30**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**2404**	14.04	13.74	**13.89**	**-0.26**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0510**	14.35	14.36	**14.36**	**0.05**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0098**	14.86	14	**14.43**	**0.10**	14.28	1.531	25	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
021.43	Cobalt (ppm)	ICP, Microwave	**0964**	14.8	14.2	**14.5**	**0.14**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0511**	14	15	**14.5**	**0.14**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0033**	15.1	14.8	**14.95**	**0.44**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0504**	14.6	15.4	**15**	**0.47**	14.28	1.531	25	
021.42	Cobalt (ppm)	ICP, Open vessel	**2433**	15.1	15.04	**15.07**	**0.51**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0870**	14.6179	15.5705	**15.09**	**0.53**	14.28	1.531	25	
021.52	Cobalt (ppm)	ICP-MS, Open vessel	**0186**	15.17	15.1	**15.14**	**0.56**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0407**	15.0404	15.532	**15.29**	**0.65**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0572**	16.6	14.3	**15.45**	**0.76**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0553**	15.4	15.7	**15.55**	**0.83**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0148**	16.4	15.36	**15.88**	**1.04**	14.28	1.531	25	
021.53	Cobalt (ppm)	ICP-MS, Microwave	**0918**	15.733	16.348	**16.04**	**1.15**	14.28	1.531	25	
021.43	Cobalt (ppm)	ICP, Microwave	**0278**	17.626	15.659	**16.64**	**1.54**	14.28	1.531	25	

Copper (ppm)

022.43	Copper (ppm)	ICP, Microwave	**0227**	10.3	10.2	**10.25**	**-13.38**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0148**	107.805	97.3596	**102.6**	**-7.40**	216.9	15.44	27	
022.31	Copper (ppm)	AAS, Dry ash	**0563**	100.42	109.05	**104.7**	**-7.26**	216.9	15.44	27	
022.31	Copper (ppm)	AAS, Dry ash	**0529**	151.8	145.4	**148.6**	**-4.42**	216.9	15.44	27	
022.41	Copper (ppm)	ICP, Dry ash	**0407**	153.040	155.769	**154.4**	**-4.05**	216.9	15.44	27	
022.53	Copper (ppm)	ICP-MS, Microwave	**0043**	187.4	197.4	**192.4**	**-1.59**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0870**	200.809	201.580	**201.2**	**-1.02**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**2404**	200.69	203.05	**201.9**	**-0.97**	216.9	15.44	27	
022.53	Copper (ppm)	ICP-MS, Microwave	**2404**	207.29	205.53	**206.4**	**-0.68**	216.9	15.44	27	
022.52	Copper (ppm)	ICP-MS, Open vessel	**0009**	206.6	211.3	**209**	**-0.51**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0918**	217.05	213.63	**215.3**	**-0.10**	216.9	15.44	27	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats			[4] Flag
								Robust Mean	ffp StDev	n used	
022.43	Copper (ppm)	ICP, Microwave	**2532**	216.96	213.8	**215.4**	**-0.10**	216.9	15.44	27	
022.53	Copper (ppm)	ICP-MS, Microwave	**0553**	232	208	**220**	**0.20**	216.9	15.44	27	
022.52	Copper (ppm)	ICP-MS, Open vessel	**0186**	231.85	224.72	**228.3**	**0.74**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0010**	223.1	234.3	**228.7**	**0.76**	216.9	15.44	27	
022.42	Copper (ppm)	ICP, Open vessel	**0278**	238.6	227.8	**233.2**	**1.06**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0407**	232.832	234.794	**233.8**	**1.10**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0510**	234	234	**234**	**1.11**	216.9	15.44	27	7
022.43	Copper (ppm)	ICP, Microwave	**0511**	235	235	**235**	**1.17**	216.9	15.44	27	7
022.43	Copper (ppm)	ICP, Microwave	**0964**	249	229	**239**	**1.43**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0098**	241.8	237	**239.4**	**1.46**	216.9	15.44	27	
022.53	Copper (ppm)	ICP-MS, Microwave	**0572**	248	232	**240**	**1.50**	216.9	15.44	27	
022.42	Copper (ppm)	ICP, Open vessel	**0504**	239	246	**242.5**	**1.66**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0033**	246	242	**244**	**1.76**	216.9	15.44	27	
022.53	Copper (ppm)	ICP-MS, Microwave	**0407**	243.590	246.122	**244.9**	**1.81**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**0504**	244	251	**247.5**	**1.98**	216.9	15.44	27	
022.43	Copper (ppm)	ICP, Microwave	**2141**	255.793	243.773	**249.8**	**2.13**	216.9	15.44	27	
						Fluorine (ppm)					
023.01	Fluorine (ppm)	Ion Sel Elect	**0227**	<15	<15	**<15**					6
023.01	Fluorine (ppm)	Ion Sel Elect	**0563**	36.5	36.16	**36.33**					
						Iodine (ppm)					
024.52	Iodine (ppm)	ICP-MS, Open vessel	**0186**	353.16	370.41	**361.8**					
024.52	Iodine (ppm)	ICP-MS, Open vessel	**0160**	424	376	**400**					

Selenium (ppm)

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats: Robust Mean	ffp StDev	n used	[4] Flag
034.42	Selenium (ppm)	ICP, Open vessel	**0160**	<10	<10	**<10**		1.327	0.2034	21	6
034.42	Selenium (ppm)	ICP, Open vessel	**0042**	<12	<12	**<12**		1.327	0.2034	21	6
034.43	Selenium (ppm)	ICP, Microwave	**2141**	<5	<5	**<5**		1.327	0.2034	21	6
034.53	Selenium (ppm)	ICP-MS, Microwave	**0227**	0.278	0.323	**0.3005**	**-5.05**	1.327	0.2034	21	
034.43	Selenium (ppm)	ICP, Microwave	**2404**	0.8	0.91	**0.855**	**-2.32**	1.327	0.2034	21	
034.42	Selenium (ppm)	ICP, Open vessel	**0148**	1.05	1.05	**1.05**	**-1.36**	1.327	0.2034	21	7
034.43	Selenium (ppm)	ICP, Microwave	**0723**	1.093	1.093	**1.093**	**-1.15**	1.327	0.2034	21	7
034.04	Selenium (ppm)	AA, Hydride	**0563**	1.1019	1.1001	**1.101**	**-1.11**	1.327	0.2034	21	
034.43	Selenium (ppm)	ICP, Microwave	**0870**	1.1037	1.1678	**1.136**	**-0.94**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0504**	1.14	1.19	**1.165**	**-0.80**	1.327	0.2034	21	
034.52	Selenium (ppm)	ICP-MS, Open vessel	**0208**	1.27	1.29	**1.28**	**-0.23**	1.327	0.2034	21	
034.52	Selenium (ppm)	ICP-MS, Open vessel	**0186**	1.31	1.29	**1.3**	**-0.13**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0553**	1.27	1.37	**1.32**	**-0.03**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0572**	1.28	1.43	**1.355**	**0.14**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0033**	1.31	1.42	**1.365**	**0.19**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0009**	1.256	1.48	**1.368**	**0.20**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**2404**	1.34	1.41	**1.375**	**0.24**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0278**	1.28	1.47	**1.375**	**0.24**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0098**	1.464	1.468	**1.466**	**0.68**	1.327	0.2034	21	
034.42	Selenium (ppm)	ICP, Open vessel	**2433**	1.545	1.476	**1.51**	**0.90**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0918**	1.6356	1.6376	**1.637**	**1.52**	1.327	0.2034	21	
034.43	Selenium (ppm)	ICP, Microwave	**0964**	1.68	1.64	**1.66**	**1.64**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0407**	1.6948	1.8261	**1.76**	**2.13**	1.327	0.2034	21	
034.53	Selenium (ppm)	ICP-MS, Microwave	**0010**	1.73	1.84	**1.785**	**2.25**	1.327	0.2034	21	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats: Robust Mean	ffp StDev	n used	[4] Flag
				Sulfur (%)							
036.53	Sulfur (%)	ICP-MS, Microwave	**0227**	0.24	0.24	**0.24**	**-11.52**	0.4924	0.0219	14	7
036.43	Sulfur (%)	ICP, Microwave	**0407**	0.4337	0.4428	**0.4382**	**-2.47**	0.4924	0.0219	14	
036.53	Sulfur (%)	ICP-MS, Microwave	**0553**	0.468	0.472	**0.47**	**-1.02**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**0033**	0.468	0.472	**0.47**	**-1.02**	0.4924	0.0219	14	
036.52	Sulfur (%)	ICP-MS, Open vessel	**0186**	0.4788	0.4745	**0.4766**	**-0.72**	0.4924	0.0219	14	
036.42	Sulfur (%)	ICP, Open vessel	**0407**	0.4609	0.5044	**0.4826**	**-0.44**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**0964**	0.496	0.4977	**0.4968**	**0.20**	0.4924	0.0219	14	
036.42	Sulfur (%)	ICP, Open vessel	**0870**	0.5151	0.4893	**0.5022**	**0.45**	0.4924	0.0219	14	
036.42	Sulfur (%)	ICP, Open vessel	**0278**	0.54	0.47	**0.505**	**0.58**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**0510**	0.51	0.5	**0.505**	**0.58**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**0098**	0.54	0.491	**0.5155**	**1.05**	0.4924	0.0219	14	
036.53	Sulfur (%)	ICP-MS, Microwave	**0504**	0.509	0.529	**0.519**	**1.21**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**0918**	0.508	0.545	**0.5265**	**1.56**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**2532**	0.55	0.54	**0.545**	**2.40**	0.4924	0.0219	14	
036.43	Sulfur (%)	ICP, Microwave	**2141**	4174.53	4002.32	**4088**	**>100**	0.4924	0.0219	14	3
				Molybdenum (ppm)							
038.43	Molybdenum (ppm)	ICP, Microwave	**2141**	<5	<5	**<5**		2.883	0.3933	20	6
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0227**	0.918	0.891	**0.9045**	**-5.03**	2.883	0.3933	20	
038.43	Molybdenum (ppm)	ICP, Microwave	**0870**	1.3283	1.2734	**1.301**	**-4.02**	2.883	0.3933	20	
038.43	Molybdenum (ppm)	ICP, Microwave	**0964**	2.06	1.86	**1.96**	**-2.35**	2.883	0.3933	20	
038.42	Molybdenum (ppm)	ICP, Open vessel	**0042**	2.09	2.52	**2.305**	**-1.47**	2.883	0.3933	20	
038.41	Molybdenum (ppm)	ICP, Dry ash	**0407**	2.3773	2.4192	**2.398**	**-1.23**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0918**	2.465	2.51	**2.488**	**-1.01**	2.883	0.3933	20	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats: Robust Mean	ffp StDev	n used	[4] Flag
038.43	Molybdenum (ppm)	ICP, Microwave	**0407**	2.5123	2.9335	**2.723**	**-0.41**	2.883	0.3933	20	
038.42	Molybdenum (ppm)	ICP, Open vessel	**0278**	2.64	2.92	**2.78**	**-0.26**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0407**	2.6904	3.0484	**2.869**	**-0.04**	2.883	0.3933	20	
038.43	Molybdenum (ppm)	ICP, Microwave	**0510**	2.8	3	**2.9**	**0.04**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0553**	2.55	3.28	**2.915**	**0.08**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0098**	3.004	3.068	**3.036**	**0.39**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0572**	3.22	2.91	**3.065**	**0.46**	2.883	0.3933	20	
038.42	Molybdenum (ppm)	ICP, Open vessel	**0160**	3.4	3	**3.2**	**0.81**	2.883	0.3933	20	
038.52	Molybdenum (ppm)	ICP-MS, Open vessel	**0186**	3.35	3.11	**3.23**	**0.88**	2.883	0.3933	20	
038.43	Molybdenum (ppm)	ICP, Microwave	**0148**	3.29	3.21	**3.25**	**0.93**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0504**	3.34	3.34	**3.34**	**1.16**	2.883	0.3933	20	7
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0033**	3.63	3.72	**3.675**	**2.01**	2.883	0.3933	20	
038.53	Molybdenum (ppm)	ICP-MS, Microwave	**0010**	3.9	4	**3.95**	**2.71**	2.883	0.3933	20	
038.43	Molybdenum (ppm)	ICP, Microwave	**0098**	9.908	9.5	**9.704**	**17.34**	2.883	0.3933	20	
					Vanadium (ppm)						
041.43	Vanadium (ppm)	ICP, Microwave	**0870**	30.4182	29.1267	**29.77**	**-2.51**	38.74	3.574	8	
041.34	Vanadium (ppm)	AAS, Graphite furnace	**0563**	35.15	34.85	**35**	**-1.05**	38.74	3.574	8	
041.42	Vanadium (ppm)	ICP, Open vessel	**0160**	37.8	36.8	**37.3**	**-0.40**	38.74	3.574	8	
041.53	Vanadium (ppm)	ICP-MS, Microwave	**0407**	39.9262	40.6027	**40.26**	**0.43**	38.74	3.574	8	
041.53	Vanadium (ppm)	ICP-MS, Microwave	**0098**	40.46	40.5	**40.48**	**0.49**	38.74	3.574	8	
041.43	Vanadium (ppm)	ICP, Microwave	**0511**	40	41	**40.5**	**0.49**	38.74	3.574	8	
041.53	Vanadium (ppm)	ICP-MS, Microwave	**0553**	39.3	41.9	**40.6**	**0.52**	38.74	3.574	8	
041.43	Vanadium (ppm)	ICP, Microwave	**0278**	43.484	41.51	**42.5**	**1.05**	38.74	3.574	8	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats: Robust Mean	ffp StDev	n used	[4] Flag
				Arsenic, Total (ppm)							
516.42	Arsenic, Total (ppm)	ICP, Open vessel	**0160**	<10	<10	**<10**		8.631	0.9982	25	6
516.99	Arsenic, Total (ppm)	Miscellaneous	**2302**	0	0	**0**		8.631	0.9982	25	5
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0227**	0.051	0.049	**0.05**	**-8.60**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**2445**	6.29	6.37	**6.33**	**-2.31**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**0148**	6.514	6.728	**6.621**	**-2.01**	8.631	0.9982	25	
516.52	Arsenic, Total (ppm)	ICP-MS, Open vessel	**0186**	6.84	6.63	**6.735**	**-1.90**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**0870**	7.0932	7.3588	**7.226**	**-1.41**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**0723**	8.077	8.077	**8.077**	**-0.56**	8.631	0.9982	25	7
516.52	Arsenic, Total (ppm)	ICP-MS, Open vessel	**0208**	8.09	8.07	**8.08**	**-0.55**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**0964**	8.5	8.12	**8.31**	**-0.32**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0098**	8.27	8.397	**8.334**	**-0.30**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**2404**	8.62	8.5	**8.56**	**-0.07**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**2141**	8.556	8.72	**8.638**	**0.01**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**2404**	8.803	8.605	**8.704**	**0.07**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0504**	8.68	8.81	**8.745**	**0.11**	8.631	0.9982	25	
516.43	Arsenic, Total (ppm)	ICP, Microwave	**0511**	9	9	**9**	**0.37**	8.631	0.9982	25	7
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0006**	8.96	9.08	**9.02**	**0.39**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0553**	8.76	9.39	**9.075**	**0.44**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0572**	9.07	9.14	**9.105**	**0.47**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0043**	9.3	9.2	**9.25**	**0.62**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0407**	9.1288	9.7349	**9.432**	**0.80**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0278**	9.602	9.264	**9.433**	**0.80**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0033**	9.7	9.32	**9.51**	**0.88**	8.631	0.9982	25	
516.00	Arsenic, Total (ppm)	AA, Hydride	**0563**	9.474	10.072	**9.773**	**1.14**	8.631	0.9982	25	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats: Robust Mean	ffp StDev	n used	[4] Flag
516.43	Arsenic, Total (ppm)	ICP, Microwave	**2322**	9.79	9.79	**9.79**	**1.16**	8.631	0.9982	25	7
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0918**	9.9808	9.7432	**9.862**	**1.23**	8.631	0.9982	25	
516.53	Arsenic, Total (ppm)	ICP-MS, Microwave	**0010**	9.8	10.3	**10.05**	**1.42**	8.631	0.9982	25	

Cadmium (ppm)

518.99	Cadmium (ppm)	Miscellaneous	**2302**	0	0	**0**		9.35	1.068	28	5
518.53	Cadmium (ppm)	ICP-MS, Microwave	**0227**	0.051	0.05	**0.0505**	**-8.70**	9.35	1.068	28	
518.41	Cadmium (ppm)	ICP, Dry ash	**0407**	4.56	4.1997	**4.38**	**-4.65**	9.35	1.068	28	
518.31	Cadmium (ppm)	AAS, Dry ash	**0563**	5.1845	5.3954	**5.29**	**-3.80**	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	**0407**	7.5127	7.5509	**7.532**	**-1.70**	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	**0723**	8.123	8.123	**8.123**	**-1.15**	9.35	1.068	28	7
518.43	Cadmium (ppm)	ICP, Microwave	**2404**	8.38	8.25	**8.315**	**-0.97**	9.35	1.068	28	
518.42	Cadmium (ppm)	ICP, Open vessel	**0160**	8.8	8.5	**8.65**	**-0.66**	9.35	1.068	28	
518.52	Cadmium (ppm)	ICP-MS, Open vessel	**0208**	8.56	9.01	**8.785**	**-0.53**	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	**2141**	8.85	8.87	**8.86**	**-0.46**	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	**0511**	9	9	**9**	**-0.33**	9.35	1.068	28	7
518.43	Cadmium (ppm)	ICP, Microwave	**0870**	8.9557	9.1304	**9.043**	**-0.29**	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	**2404**	9.099	9.099	**9.099**	**-0.23**	9.35	1.068	28	7
518.43	Cadmium (ppm)	ICP, Microwave	**0278**	9.435	9.518	**9.476**	**0.12**	9.35	1.068	28	
518.52	Cadmium (ppm)	ICP-MS, Open vessel	**0186**	9.86	9.41	**9.635**	**0.27**	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	**0043**	9.8	9.7	**9.75**	**0.37**	9.35	1.068	28	
518.42	Cadmium (ppm)	ICP, Open vessel	**2433**	9.884	9.675	**9.78**	**0.40**	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	**0964**	9.91	9.66	**9.785**	**0.41**	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	**0407**	9.7694	9.8102	**9.79**	**0.41**	9.35	1.068	28	
518.42	Cadmium (ppm)	ICP, Open vessel	**0042**	9.86	10	**9.93**	**0.54**	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	**0148**	10.17	9.72	**9.945**	**0.56**	9.35	1.068	28	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
518.53	Cadmium (ppm)	ICP-MS, Microwave	0006	9.8	10.1	9.95	0.56	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	0572	10.1	10.1	10.1	0.70	9.35	1.068	28	7
518.53	Cadmium (ppm)	ICP-MS, Microwave	0098	10.2	10	10.1	0.70	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	0033	10.2	10.2	10.2	0.80	9.35	1.068	28	7
518.53	Cadmium (ppm)	ICP-MS, Microwave	0553	10.5	9.94	10.22	0.81	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	0010	9.9	11.2	10.55	1.12	9.35	1.068	28	1
518.53	Cadmium (ppm)	ICP-MS, Microwave	0504	10.6	10.7	10.65	1.22	9.35	1.068	28	
518.43	Cadmium (ppm)	ICP, Microwave	2445	11.08	11.04	11.06	1.60	9.35	1.068	28	
518.53	Cadmium (ppm)	ICP-MS, Microwave	0918	11.2512	11.2333	11.24	1.77	9.35	1.068	28	

Chromium (ppm)

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
520.53	Chromium (ppm)	ICP-MS, Microwave	0227	1.63	1.87	1.75	-9.79	29.49	2.835	25	
520.42	Chromium (ppm)	ICP, Open vessel	0042	8.54	8.79	8.665	-7.35	29.49	2.835	25	
520.41	Chromium (ppm)	ICP, Dry ash	0407	14.4276	18.277	16.35	-4.63	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	2141	19.545	15.1366	17.34	-4.29	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	0870	25.3826	26.3168	25.85	-1.28	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	2404	26.39	26.16	26.28	-1.13	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	0407	23.0683	29.8304	26.45	-1.07	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	0098	26.4	27.2	26.8	-0.95	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	0407	23.5821	30.6473	27.11	-0.84	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	0553	22.8	31.9	27.35	-0.75	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	0723	28.252	28.252	28.25	-0.44	29.49	2.835	25	7
520.42	Chromium (ppm)	ICP, Open vessel	0160	28.5	28.4	28.45	-0.37	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	2404	31.5	30.82	31.16	0.59	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	0010	29.9	32.7	31.3	0.64	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	0504	32.1	32.7	32.4	1.03	29.49	2.835	25	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats: Robust Mean	ffp StDev	n used	[4] Flag
520.43	Chromium (ppm)	ICP, Microwave	**0098**	33.69	32	**32.84**	**1.18**	29.49	2.835	25	
520.52	Chromium (ppm)	ICP-MS, Open vessel	**0186**	33.49	32.3	**32.9**	**1.20**	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	**0511**	33	33	**33**	**1.24**	29.49	2.835	25	7
520.43	Chromium (ppm)	ICP, Microwave	**0510**	33.19	33.05	**33.12**	**1.28**	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	**0964**	35.2	31.1	**33.15**	**1.29**	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	**2445**	33.9	34.39	**34.14**	**1.64**	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	**0918**	33.1846	35.2606	**34.22**	**1.67**	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	**0148**	35.392	34.2416	**34.82**	**1.88**	29.49	2.835	25	
520.43	Chromium (ppm)	ICP, Microwave	**0278**	38.576	34.529	**36.55**	**2.49**	29.49	2.835	25	
520.53	Chromium (ppm)	ICP-MS, Microwave	**0033**	32.1	41.4	**36.75**	**2.56**	29.49	2.835	25	
						Lead (ppm)					
526.43	Lead (ppm)	ICP, Microwave	**2141**	<5	<5	**<5**		3.401	0.4526	24	6
526.42	Lead (ppm)	ICP, Open vessel	**0160**	<5	<5	**<5**		3.401	0.4526	24	6
526.43	Lead (ppm)	ICP, Microwave	**0148**	<9.7	<9.7	**<9.7**		3.401	0.4526	24	6
526.99	Lead (ppm)	Miscellaneous	**2302**	0	0	**0**		3.401	0.4526	24	5
526.53	Lead (ppm)	ICP-MS, Microwave	**0227**	0.063	0.056	**0.0595**	**-7.38**	3.401	0.4526	24	
526.31	Lead (ppm)	AAS, Dry ash	**0563**	0.856	0.8735	**0.8648**	**-5.61**	3.401	0.4526	24	
526.41	Lead (ppm)	ICP, Dry ash	**0407**	1.2101	1.2272	**1.219**	**-4.82**	3.401	0.4526	24	
526.43	Lead (ppm)	ICP, Microwave	**0407**	2.7728	2.8739	**2.823**	**-1.28**	3.401	0.4526	24	
526.43	Lead (ppm)	ICP, Microwave	**0723**	3.006	3.006	**3.006**	**-0.87**	3.401	0.4526	24	7
526.43	Lead (ppm)	ICP, Microwave	**0870**	3.1283	2.9946	**3.061**	**-0.75**	3.401	0.4526	24	
526.43	Lead (ppm)	ICP, Microwave	**2404**	3.08	3.09	**3.085**	**-0.70**	3.401	0.4526	24	
526.43	Lead (ppm)	ICP, Microwave	**2322**	3.11	3.14	**3.125**	**-0.61**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0098**	3.57	3.14	**3.355**	**-0.10**	3.401	0.4526	24	
526.42	Lead (ppm)	ICP, Open vessel	**2433**	3.5	3.328	**3.414**	**0.03**	3.401	0.4526	24	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
526.52	Lead (ppm)	ICP-MS, Open vessel	**0208**	3.36	3.53	**3.445**	**0.10**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**2404**	3.441	3.472	**3.456**	**0.12**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0504**	3.51	3.47	**3.49**	**0.20**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0033**	3.48	3.54	**3.51**	**0.24**	3.401	0.4526	24	
526.52	Lead (ppm)	ICP-MS, Open vessel	**0186**	3.64	3.62	**3.63**	**0.51**	3.401	0.4526	24	
526.43	Lead (ppm)	ICP, Microwave	**0964**	3.51	3.77	**3.64**	**0.53**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0572**	3.58	3.89	**3.735**	**0.74**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0006**	3.72	3.75	**3.735**	**0.74**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0407**	3.7004	3.7784	**3.739**	**0.75**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0043**	3.8	3.7	**3.75**	**0.77**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0553**	3.75	3.81	**3.78**	**0.84**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0010**	3.6	4	**3.8**	**0.88**	3.401	0.4526	24	
526.53	Lead (ppm)	ICP-MS, Microwave	**0918**	3.971	3.694	**3.832**	**0.95**	3.401	0.4526	24	
526.43	Lead (ppm)	ICP, Microwave	**0278**	4.087	4.035	**4.061**	**1.46**	3.401	0.4526	24	
526.42	Lead (ppm)	ICP, Open vessel	**0042**	6.49	7.22	**6.855**	**7.63**	3.401	0.4526	24	1

Mercury (ppb)

529.99	Mercury (ppb)	Miscellaneous	**0227**	<0.01	<0.01	**<0.01**		764.4	127.3	17	6
529.99	Mercury (ppb)	Miscellaneous	**2302**	0	0	**0**		764.4	127.3	17	5
529.99	Mercury (ppb)	Miscellaneous	**0208**	0.925	1	**0.9625**	**-6.00**	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	**0504**	169	173	**171**	**-4.66**	764.4	127.3	17	
529.00	Mercury (ppb)	Cold vapor	**0160**	540	450	**495**	**-2.12**	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	**0563**	699	705	**702**	**-0.49**	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	**0870**	712.3	729.1	**720.7**	**-0.34**	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	**0043**	732	734	**733**	**-0.25**	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	**0407**	751.714	773.471	**762.6**	**-0.01**	764.4	127.3	17	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats Robust Mean	ffp StDev	n used	[4] Flag
529.00	Mercury (ppb)	Cold vapor	0042	755	785	770	0.04	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	2445	810.011	738.751	774.4	0.08	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0186	783.5	778.8	781.2	0.13	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0006	765	890	827.5	0.50	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0148	846.66	808.79	827.7	0.50	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0033	803	856	829.5	0.51	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0918	810	861	835.5	0.56	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0010	788	885	836.5	0.57	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0553	861	820	840.5	0.60	764.4	127.3	17	
529.99	Mercury (ppb)	Miscellaneous	0098	867	837	852	0.69	764.4	127.3	17	
					Nickel (ppm)						
539.42	Nickel (ppm)	ICP, Open vessel	0042	4.51	4.42	4.465	-6.67	15.28	1.622	18	
539.43	Nickel (ppm)	ICP, Microwave	0870	10.4158	9.9499	10.18	-3.14	15.28	1.622	18	
539.41	Nickel (ppm)	ICP, Dry ash	0407	11.8974	11.9659	11.93	-2.07	15.28	1.622	18	
539.43	Nickel (ppm)	ICP, Microwave	0407	10.9679	13.8703	12.42	-1.77	15.28	1.622	18	
539.43	Nickel (ppm)	ICP, Microwave	0964	13.33	14.5	13.92	-0.84	15.28	1.622	18	
539.53	Nickel (ppm)	ICP-MS, Microwave	0407	12.9769	15.8365	14.41	-0.54	15.28	1.622	18	
539.53	Nickel (ppm)	ICP-MS, Microwave	0098	14.7	14.2	14.45	-0.51	15.28	1.622	18	
539.53	Nickel (ppm)	ICP-MS, Microwave	0010	15	15	15	-0.18	15.28	1.622	18	7
539.42	Nickel (ppm)	ICP, Open vessel	0160	15.4	15.4	15.4	0.07	15.28	1.622	18	7
539.43	Nickel (ppm)	ICP, Microwave	0511	16	16	16	0.44	15.28	1.622	18	7
539.43	Nickel (ppm)	ICP, Microwave	2141	19.1466	12.9733	16.06	0.48	15.28	1.622	18	
539.53	Nickel (ppm)	ICP-MS, Microwave	0553	13.4	20.5	16.95	1.03	15.28	1.622	18	
539.53	Nickel (ppm)	ICP-MS, Microwave	0504	17	17.1	17.05	1.09	15.28	1.622	18	
539.42	Nickel (ppm)	ICP, Open vessel	2433	17.54	16.705	17.12	1.13	15.28	1.622	18	

Code	Analyte	Method	Lab Code	Result1	Result2	[1] Lab Value	[2] Z score	[3] Robust Stats			[4] Flag
								Robust Mean	ffp StDev	n used	
539.52	Nickel (ppm)	ICP-MS, Open vessel	**0186**	17.53	16.93	**17.23**	**1.20**	15.28	1.622	18	
539.53	Nickel (ppm)	ICP-MS, Microwave	**0918**	16.914	19.0885	**18**	**1.68**	15.28	1.622	18	
539.43	Nickel (ppm)	ICP, Microwave	**0148**	19.487	17.182	**18.33**	**1.88**	15.28	1.622	18	
539.43	Nickel (ppm)	ICP, Microwave	**0278**	19.495	17.186	**18.34**	**1.88**	15.28	1.622	18	

1. Lab Value: Lab Value is the average of 2 reported lab results.

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 Value)/(Thompson-Horwitz standard deviation (ffp StDev)).

3. Statistical parameters: Robust statistics was employed to determine mean 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. The fit for purpose standard deviation (ffp StDev) is the Thompson-Horwitz standard deviation used to determine Z values.

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 outier, 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 PT Report

The Analyte All Labs PT 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, fit-for-purpose standard deviation (ffp StDev), and number of observations used (n 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 was 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 was performed. The fit-for-purpose standard deviation (ffp StDev) was calculated from the Thompson-Horwitz standard deviation equation based on data analyzed by Thompson and Horwitz (Thompson, DOI: 10.1039/b000282h). 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. Duplicate results that were the same were removed from determination of mean range evaluating precision to remove undo influence of entries from labs reporting one result twice. The data removed from analysis are denoted with numerical flags on the far right-hand side of the report that are defined in a footnote. 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.