

AFPC Rock Check Program

Sample No. 2009-03

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	19	0.68	0.095
Other (describe)	102	10	0.76	0.024
Method Group 100		30	0.73	0.08
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	2	29.25	0.019
ICP-induced coupled plasma	202	5	29.22	0.149
Photometric-AFPC 9-6	203	14	29.01	0.266
Automated -AOAC 978.01-15th	204	12	29.14	0.138
Other(describe)	205	6	29.26	0.285
Method Group 200		40	29.18	0.21
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	2	29.41	0.029
ICP-induced coupled plasma	212	5	29.48	0.137
Photometric-AFPC 9-6	213	8	29.24	0.188
Automated -AOAC 978.01-15th	214	12	29.34	0.187
Other(describe)	215	2	29.73	0.191
Method Group 210		29	29.40	0.25
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	4	1.01	0.025
ICP-induced coupled plasma	302	30	0.99	0.037
Other(describe)	303	4	1.14	0.160
Method Group 300		39	1.00	0.05
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	3	1.02	0.116
ICP-induced coupled plasma	402	31	1.04	0.041
Other(describe)	403	1	1.01	0.000
Method Group 400		36	1.03	0.03
MgO				
Atomic Absorption-AFPC 9-18,19	501	4	0.56	0.031
ICP-induced coupled plasma	502	30	0.56	0.026
Other(describe)	503	4	0.70	0.157
Method Group 500		39	0.56	0.03
Acid Insoluble				
Insoluble-AFPC 9-8	601	21	12.35	0.138
Other(describe)	602	4	11.89	0.244
Method Group 600		26	12.32	0.29
CaO				
Gravimetric sulfate	701			
ICP-induced coupled plasma	702	16	43.65	0.426
Ceric Sulfate volumetric	703			
Permanganate	704	5	43.20	0.175
EDTA Volumetric	705	7	43.67	0.670
Other(describe)	706	7	43.30	0.425
Method Group 700		36	43.44	0.45
CaO (on Dry Basis)				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	7	44.05	0.240
Ceric Sulfate volumetric	713			
Permanganate	714	4	43.59	0.231
EDTA Volumetric	715	6	44.02	0.613
Other(describe)	716	7	43.61	0.378
Method Group 710		28	43.96	0.48

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801			
Specific Ion Electrode	802	23	3.42	0.168
Other (describe)	803	4	2.67	1.065
Method Group 800		28	3.40	0.14
Arsenic, As				
Atomic Absorption	911			
ICP-induced coupled plasma	912	9	11.9	5.30
Other(describe)	913	1	8.6	0.00
Method Group 900		10	10.7	5.15
Cadmium, Cd				
Atomic Absorption	921	2	7	1.7
ICP-induced coupled plasma	922	12	4	0.3
Other(describe)	923	2	4	0.1
Method Group 910		16	4	0.4
Cobalt, Co				
Atomic Absorption	931			
ICP-induced coupled plasma	932	11	8	1.5
Other(describe)	933	3	14	2.2
Method Group 920		14	9	1.5
Mercury, Hg				
Atomic Absorption	941			
ICP-induced coupled plasma	942	2	0.1	0.09
Other(describe)	943	1	0.3	0.00
Method Group 930		3	0.2	0.12
Molybdenum, Mo				
Atomic Absorption	951			
ICP-induced coupled plasma	952	9	8	1.5
Other(describe)	953	2	14	4.1
Method Group 940		11	8	2.4
Nickel, Ni				
Atomic Absorption	961	1	57	0.0
ICP-induced coupled plasma	962	11	24	4.7
Other(describe)	963	4	30	9.6
Method Group 950		16	26	6.9
Lead, Pb				
Atomic Absorption	971	1	7	0.0
ICP-induced coupled plasma	972	10	9	2.4
Other(describe)	973	2	20	7.5
Method Group 960		13	9	2.6
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982	4	4	1.0
Other(describe)	983	1	2	0.0
Method Group 970		5	4	0.9
Zinc, Zn				
Atomic Absorption	991	2	68	4
ICP-induced coupled plasma	992	13	57	16
Other(describe)	993	4	51	16
Method Group 980		19	57	16

101 Ground Sample AFPC 9-2			
Lab	%	H ₂ O	
35	1.30		-6.569
266	1.10		-4.467
10	0.81		-1.366
49	0.79		-1.209
Std Dev	0.77		-1.000
10	0.76		-0.841
16	0.75		-0.736
16	0.73		-0.578
24	0.72		-0.420
15	0.69		-0.105
15	0.68		0.000
Median	0.68		0.000
75	0.67		0.053
6	0.66		0.158
6	0.66		0.158
75	0.64		0.420
30	0.61		0.683
24	0.59		0.946
Std Dev	0.58		1.000
77	0.33		3.626
77	0.32		3.731
27	0.21		4.887

102 Other (describe)			
Lab	%	H ₂ O	
13	0.82		-2.474
Std Dev	0.78		-1.000
13	0.78		-0.825
55	0.78		-0.825
26	0.77		-0.206
9	0.76		0.000
21	0.76		0.000
Median	0.76		0.000
9	0.76		0.206
21	0.74		0.825
Std Dev	0.74		1.000
69	0.67		3.917
55	0.64		4.948

201 Gravimetric AFPC 9-5			
Lab	%	P2O5	
77	29.27		-1.340

Std Dev	29.26		-1.000
Median	29.25		0.000
Std Dev	29.23		1.000
26	29.22		1.340

202 ICP-induced coupled plasma			
Lab	%	P2O5	
10	29.38		-1.039
Std Dev	29.37		-1.000
10	29.36		-0.938
6	29.22		0.000
Median	29.22		0.000
266	29.16		0.402
Std Dev	29.07		1.000
55	28.84		2.546

203 Photometric-AFPC 9-6			
Lab	%	P2O5	
60	30.05		-3.931
35	29.79		-2.953
69	29.39		-1.448
Std Dev	29.27		-1.000
9	29.21		-0.752
16	29.02		-0.056
9	29.02		-0.038
16	29.01		-0.019
Median	29.01		0.000
30	29.00		0.019
92	29.00		0.019
92	28.90		0.395
78	28.77		0.884
78	28.77		0.903
Std Dev	28.74		1.000
270	28.53		1.787
27	28.49		1.937

204 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
75	29.60		-3.350
15	29.37		-1.684
15	29.36		-1.612
Std Dev	29.28		-1.000
21	29.24		-0.706
75	29.20		-0.453

21	29.16		-0.127
Median	29.14		0.000
77	29.12		0.127
6	29.11		0.199
24	29.09		0.380
24	29.07		0.489
Std Dev	29.00		1.000
13	28.78		2.589
13	28.78		2.589

205 Other(describe)			
Lab	%	P2O5	
19	30.00		-2.592
55	29.75		-1.717
Std Dev	29.55		-1.000
36	29.26		0.000
36	29.26		0.000
Median	29.26		0.000
49	29.24		0.070
244	29.14		0.420

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
26	29.45		-1.340
Std Dev	29.44		-1.000
Median	29.41		0.000
Std Dev	29.38		1.000
77	29.37		1.340

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB
10	29.60		-0.831
10	29.60		-0.829
266	29.48		0.000
Median	29.48		0.000
6	29.41		0.511
Std Dev	29.35		1.000
55	29.03		3.337

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
35	30.18		-5.041
69	29.59		-1.871
9	29.43		-1.021

Std Dev	29.42		-1.000
9	29.24		-0.010
Median	29.24		0.000
16	29.23		0.010
16	29.23		0.040
30	29.18		0.305
Std Dev	29.05		1.000
27	28.55		3.648

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
75	29.79		-2.413
15	29.57		-1.239
15	29.56		-1.201
Std Dev	29.52		-1.000
21	29.46		-0.647
75	29.40		-0.316
21	29.37		-0.184
Median	29.34		0.000
6	29.30		0.184
24	29.29		0.232
24	29.24		0.518
77	29.21		0.665
Std Dev	29.15		1.000
13	29.02		1.711
13	29.01		1.773

215 Other(describe)			
Lab	%	P2O5	dB
55	29.98		-1.340
Std Dev	29.92		-1.000
Median	29.73		0.000
Std Dev	29.54		1.000
49	29.47		1.340

301 Atomic Absorption-AFPC 9-12,13			
Lab	%	Fe2O3	
30	1.03		-0.893
55	1.02		-0.496
Median	1.01		0.000
27	1.00		0.496
Std Dev	0.98		1.000
60	0.97		1.489

302 ICP-induced coupled plasma		
Lab	%	Fe2O3
35	1.33	-9.179
77	1.22	-6.231
77	1.22	-6.231
78	1.09	-2.747
266	1.09	-2.747
26	1.07	-2.211
78	1.04	-1.407
Std Dev	1.02	-1.000
6	1.01	-0.603
6	1.01	-0.603
9	1.00	-0.335
92	1.00	-0.335
270	1.00	-0.335
9	1.00	-0.201
55	1.00	-0.201
92	0.99	-0.067
Median	0.99	0.000
15	0.99	0.067
15	0.99	0.067
13	0.98	0.201
13	0.97	0.469
16	0.97	0.469
10	0.96	0.737
16	0.96	0.737
49	0.96	0.737
10	0.96	0.871
Std Dev	0.95	1.000
75	0.94	1.156
75	0.93	1.660
24	0.90	2.345
24	0.90	2.345
21	0.81	4.891
21	0.79	5.293

303 Other(describe)		
Lab	%	Fe2O3
36	1.24	-0.658
36	1.24	-0.658
Median	1.14	0.000
19	1.03	0.658
69	1.02	0.752

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
30	1.02	0.000
55	1.02	0.000
Median	1.02	0.000
Std Dev	0.90	1.000
27	0.71	2.680

402 ICP-induced coupled plasma		
Lab	%	Al2O3
266	1.56	-12.791
77	1.36	-7.918
77	1.34	-7.431
78	1.21	-4.264
78	1.16	-3.045
69	1.11	-1.705
Std Dev	1.08	-1.000
24	1.08	-0.975
24	1.07	-0.853
9	1.06	-0.609
21	1.06	-0.487
92	1.05	-0.365
92	1.05	-0.365
9	1.04	-0.122
270	1.04	-0.122
75	1.04	-0.027
26	1.04	0.000
Median	1.04	0.000
6	1.03	0.122
6	1.03	0.122
13	1.03	0.122
55	1.02	0.365
10	1.02	0.487
13	1.01	0.609
16	1.01	0.609
35	1.01	0.609
49	1.01	0.609
16	1.01	0.731
10	1.00	0.853
21	1.00	0.975
Std Dev	0.99	1.000
75	0.99	1.176
15	0.95	2.071
15	0.94	2.315

403 Other(describe)		
Lab	%	Al2O3
19	1.01	0.000
Median	1.01	0.000

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
35	0.60	-1.218
Std Dev	0.59	-1.000
55	0.57	-0.244
Median	0.56	0.000
60	0.56	0.244
Std Dev	0.53	1.000
30	0.48	2.680

502 ICP-induced coupled plasma		
Lab	%	MgO
92	0.62	-2.340
92	0.62	-2.340
9	0.59	-1.192
Std Dev	0.58	-1.000
6	0.58	-0.809
6	0.58	-0.809
9	0.58	-0.809
26	0.58	-0.809
10	0.58	-0.617
16	0.58	-0.617
16	0.58	-0.617
13	0.57	-0.426
49	0.57	-0.426
10	0.56	-0.043
78	0.56	-0.043
266	0.56	-0.043
Median	0.56	0.000
75	0.56	0.043
55	0.56	0.148
13	0.55	0.340
24	0.55	0.340
78	0.55	0.340
15	0.55	0.531
15	0.54	0.723
24	0.54	0.723
21	0.54	0.914

Std Dev	0.53	1.000
77	0.53	1.106
77	0.53	1.106
270	0.52	1.488
21	0.52	1.680
75	0.50	2.274
69	0.08	18.526

503 Other(describe)		
Lab	%	MgO
36	0.80	-0.638
36	0.80	-0.638
Median	0.70	0.000
19	0.60	0.638
27	0.56	0.893

601 Insoluble-AFPC 9-8		
Lab	%	Al
55	16.05	-26.800
Std Dev	12.49	-1.000
55	12.40	-0.362
69	12.40	-0.362
10	12.40	-0.326
15	12.39	-0.290
21	12.37	-0.145
9	12.37	-0.109
15	12.36	-0.072
16	12.36	-0.036
16	12.36	-0.036
10	12.35	0.000
Median	12.35	0.000
24	12.32	0.217
9	12.32	0.254
21	12.28	0.543
Std Dev	12.21	1.000
13	12.21	1.014
24	12.19	1.195
13	12.17	1.304
26	12.00	2.535
6	11.98	2.680
35	11.58	5.577
30	11.56	5.722

602 Other(describe)			
Lab	%	AI	
27	12.57		-2.782
Std Dev	12.13		-1.000
6	11.98		-0.368
Median	11.89		0.000
19	11.80		0.368
266	11.80		0.368

701 Gravimetric sulfate			
Lab	%	CaO	
Median	0.00		0.000

702 ICP-induced coupled plasma			
Lab	%	CaO	
75	45.15		-3.513
75	44.26		-1.427
77	44.10		-1.050
Std Dev	44.08		-1.000
77	43.90		-0.581
16	43.89		-0.545
6	43.77		-0.276
6	43.77		-0.276
16	43.73		-0.182
Median	43.65		0.000
78	43.58		0.182
10	43.46		0.463
92	43.38		0.639
10	43.34		0.733
92	43.25		0.944
Std Dev	43.23		1.000
49	43.18		1.108
69	42.95		1.648
78	41.55		4.932

703 Ceric Sulfate volumetric			
Lab	%	CaO	
Median	0.00		0.000

704 Permanganate			
Lab	%	CaO	
21	43.60		-2.252
30	43.41		-1.197
Std Dev	43.38		-1.000

60	43.20		0.000
Median	43.20		0.000
21	43.18		0.143
27	43.11		0.542

705 EDTA Volumetric			
Lab	%	CaO	
266	44.08		-0.620
35	43.96		-0.440
9	43.70		-0.052
9	43.67		0.000
Median	43.67		0.000
55	43.12		0.821
Std Dev	43.00		1.000
270	42.75		1.366
55	42.60		1.598

706 Other(describe)			
Lab	%	CaO	
15	43.90		-1.411
15	43.89		-1.399
Std Dev	43.72		-1.000
24	43.65		-0.835
24	43.30		0.000
Median	43.30		0.000
13	43.20		0.223
19	43.20		0.223
13	43.19		0.247

711 Gravimetric sulfate				
Lab	%	CaO		dB
Median	0.00			0.000

712 ICP-induced coupled plasma				
Lab	%	CaO		dB
16	44.21			-0.677
6	44.06			-0.038
6	44.06			-0.038
16	44.05			0.000
Median	44.05			0.000
Std Dev	43.81			1.000
10	43.79			1.106
10	43.69			1.497
69	43.24			3.386

713 Ceric Sulfate volumetric				
Lab	%	CaO		dB
Median	0.00			0.000

714 Permanganate				
Lab	%	CaO		dB
21	43.92			-1.426
Std Dev	43.82			-1.000
30	43.68			-0.370
Median	43.59			0.000
21	43.51			0.370
Std Dev	43.36			1.000
27	43.20			1.713

715 EDTA Volumetric				
Lab	%	CaO		dB
266	44.57			-0.904
35	44.54			-0.853
9	44.03			-0.027
Median	44.02			0.000
9	44.00			0.027
55	43.45			0.916
Std Dev	43.40			1.000
55	42.87			1.869

716 Other(describe)				
Lab	%	CaO		dB
15	44.19			-1.552
15	44.19			-1.550
Std Dev	43.98			-1.000
24	43.91			-0.794
24	43.61			0.000
Median	43.61			0.000
13	43.55			0.158
13	43.54			0.178
Std Dev	43.23			1.000
19	43.20			1.076

801 Volumetric-AFPC 9-37				
Lab	%	Fluorine, F		
Median	0.00			0.000

802 Specific Ion Electrode			
Lab	%	Fluorine, F	
27	3.72		-1.757
21	3.70		-1.668
266	3.64		-1.310
69	3.64		-1.280
270	3.63		-1.251
55	3.60		-1.072
9	3.60		-1.042
Std Dev	3.59		-1.000
35	3.54		-0.715
21	3.49		-0.387
24	3.44		-0.089
13	3.43		-0.060
30	3.42		0.000
Median	3.42		0.000
75	3.41		0.089
55	3.40		0.149
6	3.38		0.238
6	3.38		0.238
24	3.38		0.268
9	3.37		0.298
49	3.37		0.298
13	3.32		0.596
75	3.31		0.685
Std Dev	3.25		1.000
15	3.21		1.251
15	3.21		1.251

803 Oher(describe)			
Lab	%	Fluorine, F	
77	3.44		-0.727
77	3.37		-0.662
Median	2.67		0.000
36	1.96		0.662
36	1.96		0.662

911 Atomic Absorption-AFPC 9-18,19				
Lab	ppm	Arsenic, As		
Median	0.0			0.000

912 ICP-induced coupled plasma				
Lab	ppm	Arsenic, As		
69	41.5			-5.596

Std Dev	17.2	-1.000
55	15.0	-0.591
270	15.0	-0.591
266	14.9	-0.572
6	11.9	0.000
Median	11.9	0.000
26	9.5	0.447
78	7.9	0.749
Std Dev	6.6	1.000
78	6.0	1.108
55	4.5	1.391

913 Other(describe)		
Lab	ppm	Arsenic, As
13	8.6	0.000
Median	8.6	0.000

921 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Cadmium, Cd
27	10	-1.340
Std Dev	9	-1.000
Median	7	0.000
Std Dev	6	1.000
19	5	1.340

922 ICP-induced coupled plasma		
Lab	ppm	Cadmium, Cd
55	8	-14.105
75	5	-1.763
78	5	-1.763
266	4	-1.199
Std Dev	4	-1.000
6	4	-0.317
26	4	0.000
75	4	0.000
77	4	0.000
77	4	0.000
78	4	0.000
Median	4	0.000
270	4	0.705
Std Dev	4	1.000
55	4	1.763

923 Other(describe)		
Lab	ppm	Cadmium, Cd
13	4	-1.340
Std Dev	4	-1.000
Median	4	0.000
Std Dev	4	1.000
69	4	1.340

931 Atomic Absorption-AFPC 9-16,17		
Lab	ppm	Cobalt, Co
Median	0	0.000

932 ICP-induced coupled plasma		
Lab	ppm	Cobalt, Co
55	11	-2.218
Std Dev	9	-1.000
270	9	-0.945
78	9	-0.878
78	9	-0.878
266	9	-0.677
6	8	0.000
Median	8	0.000
55	8	0.127
75	7	0.462
75	7	0.462
Std Dev	6	1.000
77	6	1.132
77	6	1.132

933 Other(describe)		
Lab	ppm	Cobalt, Co
27	15	-0.203
69	14	0.000
Median	14	0.000
Std Dev	12	1.000
13	9	2.477

941 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Mercury, Hg
Median	0.0	0.000

942 ICP-induced coupled plasma		
Lab	ppm	Mercury, Hg
266	0.2	-1.340

Std Dev	0.2	-1.000
Median	0.1	0.000
Std Dev	0.0	1.000
270	0.0	1.340

943 Other(describe)		
Lab	ppm	Mercury, Hg
69	<0.1	0.000
13	0.3	0.000
Median	0.3	0.000

951 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Molybdenum, Mo
Median	0	0.000

952 ICP-induced coupled plasma		
Lab	ppm	Molybdenum, Mo
78	14	-3.745
78	12	-2.707
Std Dev	9	-1.000
55	9	-0.697
270	8	-0.027
266	8	0.000
Median	8	0.000
6	8	0.228
55	7	0.643
77	7	0.643
Std Dev	6	1.000
77	6	1.313

953 Other(describe)		
Lab	ppm	Molybdenum, Mo
69	19	-1.340
Std Dev	18	-1.000
Median	14	0.000
Std Dev	10	1.000
13	8	1.340

961 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Nickel, Ni
27	57	0.000
Median	57	0.000

962 ICP-induced coupled plasma		
Lab	ppm	Nickel, Ni
270	32	-1.715
266	32	-1.694
55	30	-1.286
Std Dev	29	-1.000
78	26	-0.322
6	24	0.000
78	24	0.000
Median	24	0.000
55	23	0.214
75	22	0.536
75	22	0.536
Std Dev	19	1.000
77	18	1.286
77	18	1.286

963 Other(describe)		
Lab	ppm	Nickel, Ni
19	57	-2.845
Std Dev	39	-1.000
19	33	-0.358
Median	30	0.000
13	26	0.358
69	26	0.370

971 Atomic Absorption-AFPC 9-16,17		
Lab	ppm	Lead, Pb
27	7	0.000
Median	7	0.000

972 ICP-induced coupled plasma		
Lab	ppm	Lead, Pb
55	14	-2.238
270	13	-1.829
Std Dev	11	-1.000
78	11	-0.806
266	10	-0.642
6	9	-0.012
Median	9	0.000
78	9	0.012
26	8	0.421
55	7	0.626
Std Dev	6	1.000

77	4	1.853
77	4	1.853

973 Other(describe)		
Lab	ppm	Lead, Pb
69	30	-1.340
Std Dev	27	-1.000
Median	20	0.000
Std Dev	12	1.000
13	10	1.340

981 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Selenium, Se
Median	0	0.000

982 ICP-induced coupled plasma		
Lab	ppm	Selenium, Se
55	5	-1.466
Std Dev	5	-1.000
266	4	-0.051
Median	4	0.000
55	4	0.051
Std Dev	3	1.000
270	0	3.590

983 Other(describe)		
Lab	ppm	Selenium, Se
69	<0.1	0.000
13	2	0.000
Median	2	0.000

991 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Zinc, Zn
60	74	-1.340
Std Dev	72	-1.000
Median	68	0.000
Std Dev	64	1.000
27	63	1.340

992 ICP-induced coupled plasma		
Lab	ppm	Zinc, Zn
24	82	-1.513
24	79	-1.328
55	75	-1.112

270	75	-1.112
Std Dev	73	-1.000
78	66	-0.556
78	62	-0.309
75	57	0.000
Median	57	0.000
75	57	0.031
55	55	0.124
6	53	0.228
266	52	0.321
Std Dev	41	1.000
77	40	1.050
77	39	1.112

993 Other(describe)		
Lab	ppm	Zinc, Zn
19	74	-1.391
Std Dev	68	-1.000
19	55	-0.224
Median	51	0.000
69	48	0.224
Std Dev	35	1.000
13	9	2.623