

AFPC Rock Check Program

Sample No. 2008-09

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	20	0.83	0.120
Other (describe)	102	9	0.69	0.127
Method Group 100		29	0.79	0.12
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	4	28.83	0.108
ICP-induced coupled plasma	202	3	29.11	0.116
Photometric-AFPC 9-6	203	13	28.91	0.160
Automated -AOAC 978.01-15th	204	9	28.81	0.086
Other(describe)	205	7	28.88	0.162
Method Group 200		36	28.86	0.17
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	4	28.99	0.064
ICP-induced coupled plasma	212	3	29.39	0.132
Photometric-AFPC 9-6	213	7	29.05	0.136
Automated -AOAC 978.01-15th	214	9	29.03	0.075
Other(describe)	215	6	29.15	0.115
Method Group 210		29	29.05	0.17
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	7	1.02	0.151
ICP-induced coupled plasma	302	27	1.08	0.151
Other(describe)	303	1	1.13	0.000
Method Group 300		35	1.08	0.14
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	5	1.16	0.108
ICP-induced coupled plasma	402	27	1.02	0.026
Other(describe)	403	1	1.03	0.000
Method Group 400		33	1.03	0.10
MgO				
Atomic Absorption-AFPC 9-18,19	501	8	0.48	0.029
ICP-induced coupled plasma	502	25	0.50	0.015
Other(describe)	503	2	0.52	0.017
Method Group 500		35	0.50	0.02
Acid Insoluble				
Insoluble-AFPC 9-8	601	18	11.95	0.317
Other(describe)	602	2	7.27	3.407
Method Group 600		20	11.95	0.33
CaO				
Gravimetric sulfate	701	2	43.40	0.000
ICP-induced coupled plasma	702	13	43.28	1.034
Ceric Sulfate volumetric	703			
Permanganate	704	6	43.30	0.785
EDTA Volumetric	705	2	42.48	1.004
Other(describe)	706	8	43.50	0.181
Method Group 700		31	43.40	0.45
CaO (on Dry Basis)				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	7	43.30	0.356
Ceric Sulfate volumetric	713			
Permanganate	714	4	43.66	0.318
EDTA Volumetric	715	2	42.65	1.131
Other(describe)	716	7	43.82	0.175
Method Group 710		27	43.81	0.39

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801			
Specific Ion Electrode	802	20	3.47	0.132
Other (describe)	803	3	3.45	0.082
Method Group 800		23	3.47	0.14
Arsenic, As				
Atomic Absorption	911			
ICP-induced coupled plasma	912	6	17.9	2.52
Other(describe)	913	4	14.5	1.44
Method Group 900		10	15.1	2.54
Cadmium, Cd				
Atomic Absorption	921			
ICP-induced coupled plasma	922			
Other(describe)	923	13	3	0.3
Method Group 910		13	3	0.3
Cobalt, Co				
Atomic Absorption	931			
ICP-induced coupled plasma	932			
Other(describe)	933	12	5	1.1
Method Group 920		12	5	1.1
Mercury, Hg				
Atomic Absorption	941			
ICP-induced coupled plasma	942			
Other(describe)	943	2	0.1	0.07
Method Group 930		2	0.1	0.07
Molybdenum, Mo				
Atomic Absorption	951			
ICP-induced coupled plasma	952			
Other(describe)	953	11	9	1.1
Method Group 940		11	9	1.1
Nickel, Ni				
Atomic Absorption	961			
ICP-induced coupled plasma	962			
Other(describe)	963	12	20	1.5
Method Group 950		12	20	1.5
Lead, Pb				
Atomic Absorption	971			
ICP-induced coupled plasma	972			
Other(describe)	973	10	11	2.1
Method Group 960		10	11	2.1
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982			
Other(describe)	983	4	1	1.5
Method Group 970		4	1	1.5
Zinc, Zn				
Atomic Absorption	991			
ICP-induced coupled plasma	992			
Other(describe)	993	14	50	8
Method Group 980		14	50	8

101 Ground Sample AFPC 9-2			
Lab	%	H ₂ O	
13	0.98	-1.288	
Std Dev	0.95	-1.000	
10	0.95	-0.997	
24	0.95	-0.997	
10	0.93	-0.873	
24	0.93	-0.831	
13	0.91	-0.706	
16	0.84	-0.125	
16	0.84	-0.125	
16	0.84	-0.125	
16	0.84	-0.125	
Median	0.83	0.000	
30	0.81	0.125	
75	0.81	0.125	
6	0.79	0.291	
75	0.79	0.291	
35	0.78	0.416	
Std Dev	0.70	1.000	
15	0.69	1.163	
15	0.66	1.413	
51	0.66	1.413	
77	0.55	2.285	
77	0.39	3.615	

102 Other (describe)			
Lab	%	H ₂ O	
9	0.85	-1.261	
Std Dev	0.82	-1.000	
9	0.82	-0.985	
	0.77	-0.631	
26	0.71	-0.158	
55	0.69	0.000	
55	0.69	0.000	
Median	0.69	0.000	
55	0.60	0.709	
55	0.60	0.709	
241	0.58	0.867	

201 Gravimetric AFPC 9-5			
Lab	%	P2O5	
77	28.89	-0.554	
51	28.88	-0.462	
Median	28.83	0.000	

26	28.78	0.462	
Std Dev	28.72	1.000	
241	28.61	2.033	

202 ICP-induced coupled plasma			
Lab	%	P2O5	
10	29.12	-0.086	
10	29.11	0.000	
Median	29.11	0.000	
Std Dev	28.99	1.000	
6	28.81	2.594	

203 Photometric-AFPC 9-6			
Lab	%	P2O5	
36	29.49	-3.615	
78	29.11	-1.215	
Std Dev	29.07	-1.000	
30	29.03	-0.748	
9	29.02	-0.654	
60	29.00	-0.561	
9	28.96	-0.312	
78	28.91	0.000	
Median	28.91	0.000	
16	28.81	0.623	
16	28.81	0.623	
16	28.80	0.686	
16	28.80	0.686	
Std Dev	28.75	1.000	
270	28.74	1.091	
244	28.71	1.247	

16	28.81	0.623	
16	28.80	0.686	
16	28.80	0.686	
Std Dev	28.75	1.000	
270	28.74	1.091	
244	28.71	1.247	

204 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
75	29.10	-3.379	
15	28.91	-1.165	
Std Dev	28.90	-1.000	
75	28.84	-0.350	
15	28.84	-0.291	
77	28.81	0.000	
Median	28.81	0.000	
24	28.79	0.291	
24	28.73	0.990	
Std Dev	28.72	1.000	
13	28.70	1.282	

13	28.59	2.563	
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205 Other(describe)			
Lab	%	P2O5	
35	29.06	-1.140	
55	29.06	-1.109	
55	29.06	-1.109	
Std Dev	29.04	-1.000	
55	28.88	0.000	
55	28.88	0.000	
Median	28.88	0.000	
51	28.80	0.462	
	28.75	0.770	

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	
51	29.07	-1.179	
Std Dev	29.06	-1.000	
77	29.00	-0.134	
Median	28.99	0.000	
26	28.99	0.134	
Std Dev	28.93	1.000	
241	28.78	3.376	

212 ICP-induced coupled plasma			
Lab	%	P2O5	
10	29.39	-0.043	
10	29.39	0.000	
Median	29.39	0.000	
Std Dev	29.26	1.000	
6	29.04	2.637	

213 Photometric-AFPC 9-6			
Lab	%	P2O5	
30	29.27	-1.570	
9	29.25	-1.469	
9	29.21	-1.136	
Std Dev	29.19	-1.000	
16	29.05	0.000	
16	29.05	0.000	
Median	29.05	0.000	
16	29.04	0.074	
16	29.04	0.074	

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
75	29.34	-4.057	
Std Dev	29.11	-1.000	
15	29.10	-0.891	
75	29.07	-0.478	
24	29.05	-0.265	
15	29.03	0.000	
Median	29.03	0.000	
24	29.00	0.465	
77	28.97	0.862	
13	28.96	0.939	
Std Dev	28.96	1.000	
13	28.87	2.150	

215 Other(describe)			
Lab	%	P2O5	
35	29.29	-1.160	
Std Dev	29.27	-1.000	
55	29.23	-0.670	
55	29.23	-0.670	
Median	29.15	0.000	
55	29.08	0.670	
55	29.08	0.670	
Std Dev	29.04	1.000	
	28.97	1.558	

301 Atomic Absorption-AFPC 9-12,13			
Lab	%	Fe2O3	
30	1.12	-0.695	
241	1.10	-0.562	
60	1.08	-0.397	
51	1.02	0.000	
Median	1.02	0.000	
55	0.89	0.860	
55	0.89	0.860	
Std Dev	0.86	1.000	
36	0.70	2.084	

302 ICP-induced coupled plasma			
Lab	%	Fe2O3	
77	1.30	-1.489	
77	1.30	-1.489	
Std Dev	1.23	-1.000	
78	1.19	-0.761	

78	1.18	-0.662
51	1.17	-0.596
55	1.15	-0.496
55	1.15	-0.496
15	1.13	-0.331
6	1.11	-0.232
15	1.11	-0.232
75	1.10	-0.169
26	1.10	-0.165
75	1.08	-0.062
270	1.08	0.000
Median	1.08	0.000
35	1.05	0.165
9	0.99	0.596
9	0.97	0.695
13	0.95	0.827
10	0.94	0.893
13	0.94	0.893
10	0.93	0.960
16	0.93	0.960
16	0.93	0.960
16	0.93	0.993
16	0.93	0.993
Std Dev	0.92	1.000
24	0.81	1.754
24	0.81	1.754

303 Other(describe)		
Lab	%	Fe2O3
Median	1.13	0.000
	1.13	0.000

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
55	1.17	-0.092
55	1.17	-0.092
51	1.16	0.000
Median	1.16	0.000
Std Dev	1.05	1.000
30	1.02	1.248
241	0.96	1.802

402 ICP-induced coupled plasma		
Lab	%	Al2O3
77	1.39	-14.166

77	1.36	-13.017
78	1.25	-8.614
78	1.23	-8.040
51	1.19	-6.317
270	1.16	-5.169
9	1.05	-1.149
Std Dev	1.05	-1.000
9	1.05	-0.957
24	1.05	-0.957
13	1.04	-0.766
24	1.04	-0.766
10	1.03	-0.383
10	1.03	-0.383
6	1.02	0.000
16	1.02	0.000
16	1.02	0.000
26	1.02	0.000
Median	1.02	0.000
15	1.02	0.191
55	1.02	0.191
55	1.02	0.191
13	1.01	0.383
15	1.01	0.574
16	1.01	0.574
16	1.01	0.574
75	1.00	0.580
75	1.00	0.934
Std Dev	0.99	1.000
35	0.89	5.169

403 Other(describe)		
Lab	%	Al2O3
Median	1.03	0.000
	1.03	0.000

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
36	0.63	-5.036
51	0.52	-1.110
Std Dev	0.51	-1.000
35	0.51	-0.905
30	0.49	-0.256
Median	0.48	0.000
55	0.48	0.256
55	0.48	0.256

241	0.46	0.768
60	0.46	0.939
502 ICP-induced coupled plasma		
Lab	%	MgO
13	0.51	-1.021
Std Dev	0.51	-1.000
9	0.51	-0.681
9	0.51	-0.681
16	0.51	-0.681
16	0.51	-0.681
6	0.50	-0.340
10	0.50	-0.340
15	0.50	-0.340
78	0.50	-0.340
10	0.50	0.000
15	0.50	0.000
16	0.50	0.000
16	0.50	0.000
Median	0.50	0.000
13	0.49	0.340
55	0.49	0.340
55	0.49	0.340
51	0.49	0.681
78	0.49	0.681
75	0.48	1.000
Std Dev	0.48	1.000
77	0.47	1.702
77	0.47	1.702
26	0.46	2.383
24	0.46	2.724
75	0.45	3.043
24	0.45	3.064

503 Other(describe)		
Lab	%	MgO
270	0.55	-1.340
Std Dev	0.54	-1.000
Median	0.52	0.000
Std Dev	0.51	1.000
	0.50	1.340

601 Insoluble-AFPC 9-8		
Lab	%	Al
16	12.30	-1.096

16	12.30	-1.096
9	12.27	-1.001
Std Dev	12.27	-1.000
51	12.26	-0.970
16	12.18	-0.717
16	12.18	-0.717
10	12.13	-0.560
10	12.10	-0.465
15	11.96	-0.008
Median	11.95	0.000
13	11.95	0.008
13	11.94	0.039
6	11.89	0.197
35	11.77	0.575
15	11.75	0.638
9	11.73	0.717
24	11.65	0.970
Std Dev	11.64	1.000
24	11.59	1.159
30	11.22	2.310

602 Other(describe)		
Lab	%	Al
	11.83	-1.340
Std Dev	10.67	-1.000
Median	7.27	0.000
Std Dev	3.86	1.000
270	2.70	1.340

701 Gravimetric sulfate		
Lab	%	CaO
55	43.40	0.000
55	43.40	0.000
Median	43.40	0.000

702 ICP-induced coupled plasma		
Lab	%	CaO
75	45.14	-1.802
75	44.68	-1.355
77	44.50	-1.180
Std Dev	44.31	-1.000
77	44.30	-0.987
6	43.69	-0.397
10	43.43	-0.145
10	43.28	0.000

Median	43.28	0.000
16	42.94	0.334
16	42.94	0.334
16	42.92	0.353
16	42.92	0.353
Std Dev	42.25	1.000
78	39.86	3.314
78	37.97	5.142

703 Ceric Sulfate volumetric		
Lab	%	CaO
Median	0.00	0.000

704 Permanganate		
Lab	%	CaO
26	46.52	-4.106
30	44.64	-1.712
Std Dev	44.08	-1.000
9	43.32	-0.025
Median	43.30	0.000
9	43.28	0.025
60	43.25	0.057
51	43.18	0.146

705 EDTA Volumetric		
Lab	%	CaO
35	43.82	-1.340
Std Dev	43.48	-1.000
Median	42.48	0.000
Std Dev	41.47	1.000
270	41.13	1.340

706 Other(describe)		
Lab	%	CaO
24	43.60	-0.580
15	43.60	-0.553
24	43.53	-0.166
15	43.52	-0.138
Median	43.50	0.000
43.47	0.138	
241	43.35	0.801
Std Dev	43.31	1.000
13	43.15	1.906
13	42.93	3.122

711 Gravimetric sulfate			
Lab	%	CaO	dB
Median	0.00	0.000	

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
6	44.04	-2.078	
10	43.84	-1.515	
10	43.69	-1.108	
Std Dev	43.65	-1.000	
16	43.30	0.000	
16	43.30	0.000	
Median	43.30	0.000	
16	43.28	0.057	
16	43.28	0.057	

713 Ceric Sulfate volumetric			
Lab	%	CaO	dB
Median	0.00	0.000	

714 Permanganate			
Lab	%	CaO	dB
30	45.00	-4.227	
Std Dev	43.98	-1.000	
9	43.69	-0.088	
Median	43.66	0.000	
9	43.63	0.088	
51	43.46	0.608	

715 EDTA Volumetric			
Lab	%	CaO	dB
35	44.16	-1.340	
Std Dev	43.78	-1.000	
Median	42.65	0.000	
Std Dev	41.51	1.000	
270	41.13	1.340	

716 Other(describe)			
Lab	%	CaO	dB
24	44.01	-1.068	
Std Dev	44.00	-1.000	
24	43.94	-0.686	
15	43.88	-0.356	
15	43.82	0.000	

Median	43.82	0.000
43.81	0.073	
Std Dev	43.65	1.000
13	43.55	1.565
13	43.35	2.658

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

802 Specific Ion Electrode		
Lab	%	Fluorine, F
24	3.66	-1.415
24	3.66	-1.415
Std Dev	3.60	-1.000
51	3.59	-0.887
30	3.54	-0.510
6	3.50	-0.208
13	3.50	-0.208
55	3.50	-0.208
9	3.49	-0.094
35	3.48	-0.057
Median	3.47	0.000
9	3.47	0.057
13	3.40	0.547
75	3.38	0.698
Std Dev	3.34	1.000
55	3.33	1.076
55	3.33	1.076
75	3.30	1.302
270	3.30	1.302
36	3.17	2.284
15	3.02	3.416
15	3.00	3.605

803 Other(describe)		
Lab	%	Fluorine, F
77	3.45	0.000
Median	3.45	0.000
Std Dev	3.37	1.000
77	3.28	2.071

911 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Arsenic, As
77	3	0.419
77	3	0.419

Median	0.0	0.000
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912 ICP-induced coupled plasma		
Lab	ppm	Arsenic, As
270	20.0	-0.834
6	19.0	-0.437
55	17.9	0.000
55	17.9	0.000
Median	17.9	0.000
Std Dev	15.4	1.000
78	14.5	1.350
78	14.5	1.350

913 Other(describe)		
Lab	ppm	Arsenic, As
13	15.2	-0.487
77	15.0	-0.348
Median	14.5	0.000
77	14.0	0.348
Std Dev	13.1	1.000
51	10.5	2.784

921 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Cadmium, Cd
Median	0	0.000

922 ICP-induced coupled plasma		
Lab	ppm	Cadmium, Cd
Median	0	0.000

923 Other(describe)		
Lab	ppm	Cadmium, Cd
75	4	-2.931
75	4	-2.931
51	4	-1.256
Std Dev	3	-1.000
13	3	-0.921
78	3	-0.586
78	3	-0.084
55	3	0.000
55	3	0.000
Median	3	0.000
77	3	0.419
77	3	0.419

Std Dev	3	1.000
270	3	1.089
6	3	1.759
51	2	3.769

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

932	ICP-induced coupled plasma	
Lab	ppm	Cobalt, Co
Median	0	0.000

933	Other(describe)	
Lab	ppm	Cobalt, Co

78	8	-2.209
78	8	-2.209
270	6	-1.061
Std Dev	6	-1.000
51	6	-0.884
13	5	-0.194
75	5	0.000
75	5	0.000
Median	5	0.000
55	5	0.402
55	5	0.402
6	5	0.442
Std Dev	4	1.000
77	3	1.768
77	3	1.768

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
Median	0.0	0.000

943	Other(describe)	
Lab	ppm	Mercury, Hg
13	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

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

952	ICP-induced coupled plasma	
Lab	ppm	lolybdenum, Mo
Median	0	0.000

953	Other(describe)	
Lab	ppm	lolybdenum, Mo

270	12	-1.904
13	11	-1.811
6	11	-1.442
Std Dev	11	-1.000
51	10	-0.518
78	10	-0.055
55	9	0.000
55	9	0.000
Median	9	0.000
78	9	0.314
51	9	0.407
Std Dev	8	1.000
77	8	1.331
77	8	1.331

961	Atomic Absorption-AFPC 9-12,13	
Lab	ppm	Nickel, Ni
Median	0	0.000

962	ICP-induced coupled plasma	
Lab	ppm	Nickel, Ni
Median	0	0.000

963	Other(describe)	
Lab	ppm	Nickel, Ni

270	24	-2.489
6	22	-1.521
Std Dev	21	-1.000
13	20	-0.423
51	20	-0.229
78	20	-0.229

55	20	0.000
55	20	0.000
Median	20	0.000
78	19	0.417
Std Dev	18	1.000
75	18	1.062
75	18	1.062
77	14	3.645
77	14	3.645

971	Atomic Absorption-AFPC 9-16,17	
Lab	ppm	Lead, Pb
Median	0	0.000

972	ICP-induced coupled plasma	
Lab	ppm	Lead, Pb
Median	0	0.000

973	Other(describe)	
Lab	ppm	Lead, Pb

270	14	-1.502
6	13	-1.018
Std Dev	13	-1.000
55	12	-0.662
13	12	-0.436
Median	11	0.000
51	10	0.436
78	10	0.678
78	10	0.678
Std Dev	9	1.000
77	6	2.375
77	6	2.375

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

982	ICP-induced coupled plasma	
Lab	ppm	Selenium, Se
Median	0	0.000

983	Other(describe)	
Lab	ppm	Selenium, Se

13	3	-1.031
Std Dev	3	-1.000
270	2	-0.618
Median	1	0.000
55	0	0.618
55	0	0.618

991	Atomic Absorption-AFPC 9-18,19	
Lab	ppm	Zinc, Zn
Median	0	0.000

992	ICP-induced coupled plasma	
Lab	ppm	Zinc, Zn
Median	0	0.000

993	Other(describe)	
Lab	ppm	Zinc, Zn

24	57	-0.938
24	55	-0.625
78	53	-0.375
75	52	-0.313
75	52	-0.313
13	51	-0.238
78	51	-0.125
Median	50	0.000
270	49	0.125
55	42	0.920
55	42	0.920
Std Dev	42	1.000
51	41	1.063
60	40	1.188
77	28	2.689
77	27	2.814

