

AFPC Rock Check Program

Sample No. 2004-08

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	27	1.31	0.082
Other (describe)	102	1	1.27	
Method Group 100		28	1.31	0.08
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	2	33.02	0.131
ICP-induced coupled plasma	202	1	32.72	0.000
Photometric-AFPC 9-6	203	18	32.82	0.367
Automated -AOAC 978.01-15th	204	10	32.87	0.118
Other(describe)	205	2	33.02	0.034
Method Group 200		33	32.84	0.14
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	2	33.32	0.220
ICP-induced coupled plasma	212			
Photometric-AFPC 9-6	213	16	33.29	0.345
Automated -AOAC 978.01-15th	214	10	33.32	0.086
Other(describe)	215			
Method Group 210		28	33.31	0.23
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	7	0.69	0.019
ICP-induced coupled plasma	302	23	0.70	0.017
Other(describe)	303	2	0.68	0.004
Method Group 300		32	0.70	0.02
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	6	1.39	0.035
ICP-induced coupled plasma	402	23	1.38	0.152
Other(describe)	403	1	1.56	0.000
Method Group 400		30	1.39	0.15
MgO				
Atomic Absorption-AFPC 9-18,19	501	8	0.32	0.017
ICP-induced coupled plasma	502	23	0.33	0.007
Other(describe)	503	1	0.33	0.000
Method Group 500		32	0.33	0.01
Acid Insoluble				
Insoluble-AFPC 9-8	601	19	3.28	0.216
Other(describe)	602	1	3.16	0.000
Method Group 600		20	3.27	0.22
CaO				
Gravimetric sulfate	701			
ICP-induced coupled plasma	702	10	47.86	0.813
Ceric Sulfate volumetric	703	1	46.60	0.000
Permanganate	704	2	47.78	0.056
EDTA Volumetric	705	7	47.82	0.188
Other(describe)	706	8	47.98	0.390
Method Group 700		28	47.85	0.35
CaO (on Dry Basis)				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	2	48.93	0.055
Ceric Sulfate volumetric	713	1	47.19	0.000
Permanganate	714	1	48.33	0.000
EDTA Volumetric	715	4	48.36	0.193
Other(describe)	716	8	48.58	0.303
Method Group 710		25	48.48	0.17

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801			
Specific Ion Electrode	802	21	3.81	0.104
Other (describe)	803	2	3.98	0.019
Method Group 800		23	3.81	0.11
Arsenic, As				
Atomic Absorption	911			
ICP-induced coupled plasma	912	6	7.5	5.04
Other(describe)	913	4	9.0	0.41
Method Group 900		10	8.5	1.40
Cadmium, Cd				
Atomic Absorption	921	3	7	0.7
ICP-induced coupled plasma	922	12	6	0.6
Other(describe)	923	1	7	0.0
Method Group 910		16	6	0.4
Cobalt, Co				
Atomic Absorption	931	2	11	0.7
ICP-induced coupled plasma	932	9	7	1.4
Other(describe)	933	1	5	0.0
Method Group 920		12	7	1.3
Mercury, Hg				
Atomic Absorption	941	1	0.2	0.00
ICP-induced coupled plasma	942	2	0.6	0.42
Other(describe)	943			
Method Group 930		3	0.2	0.42
Molybdenum, Mo				
Atomic Absorption	951	1	21	0.0
ICP-induced coupled plasma	952	9	26	0.6
Other(describe)	953	1	29	0.0
Method Group 940		11	26	2.6
Nickel, Ni				
Atomic Absorption	961	2	12	1.5
ICP-induced coupled plasma	962	9	11	1.3
Other(describe)	963	3	33	9.8
Method Group 950		14	11	1.4
Lead, Pb				
Atomic Absorption	971	2	18	5.6
ICP-induced coupled plasma	972	8	10	2.9
Other(describe)	973	2	16	3.1
Method Group 960		12	11	4.1
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982	1	3	0.0
Other(describe)	983	1	4	0.0
Method Group 970		2	3	0.4
Zinc, Zn				
Atomic Absorption	991	4	81	14
ICP-induced coupled plasma	992	10	78	3
Other(describe)	993	2	80	8
Method Group 980		16	78	11

101 Ground Sample AFPC 9-2		
Lab	%	H ₂ O
13	1.57	-3.228
13	1.55	-2.985
61	1.45	-1.766
61	1.45	-1.766
5	1.44	-1.645
Std Dev	1.39	-1.000
6	1.37	-0.792
8	1.35	-0.548
78	1.35	-0.548
78	1.35	-0.548
78	1.34	-0.365
78	1.34	-0.365
5	1.31	-0.061
8	1.31	0.000
24	1.31	0.000
24	1.31	0.000
Median	1.31	0.000
57	1.30	0.061
50	1.28	0.305
27	1.26	0.548
15	1.26	0.609
15	1.24	0.792
17	1.24	0.792
Std Dev	1.22	1.000
34	1.22	1.035
9	1.21	1.157
9	1.20	1.279
17	1.15	1.888
77	0.57	8.954
77	0.53	9.441

102 Other (describe)		
Lab	%	H ₂ O
51	1.27	0.000
Median	1.27	0.000

201 Gravimetric AFPC 9-5		
Lab	%	P2O5
51	33.19	-1.340
Std Dev	33.15	-1.000
Median	33.02	0.000
Std Dev	32.88	1.000

202 ICP-induced coupled plasma		
Lab	%	P2O5
26	32.72	0.000
Median	32.72	0.000

203 Photometric-AFPC 9-6		
Lab	%	P2O5
19	33.30	-1.316
Std Dev	33.18	-1.000

9	33.18	-0.989
5	33.17	-0.962
9	33.14	-0.880
34	32.96	-0.389
5	32.95	-0.361
8	32.88	-0.157
8	32.84	-0.061
61	32.84	-0.048
Median	32.82	0.000
61	32.80	0.048
78	32.80	0.048
78	32.80	0.048
27	32.47	0.948
78	32.47	0.962
78	32.47	0.962
Std Dev	32.45	1.000
17	32.07	2.039
17	32.06	2.066
60	31.85	2.639

204 Automated -AOAC 978.01-15th		
Lab	%	P2O5
24	33.43	-4.706
24	33.38	-4.326
Std Dev	32.99	-1.000
15	32.96	-0.739
15	32.91	-0.359
50	32.89	-0.190
Median	32.87	0.000
13	32.85	0.190
13	32.80	0.570
6	32.78	0.739
77	32.78	0.739

Std Dev	32.75	1.000
57	32.66	1.751

205 Other(describe)		
Lab	%	P2O5
51	33.06	-1.340
Std Dev	33.05	-1.000
Median	33.02	0.000
Std Dev	32.98	1.000
70	32.97	1.340

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
51	33.62	-1.340	
Std Dev	33.54	-1.000	
Median	33.32	0.000	
Std Dev	33.10	1.000	
77	33.03	1.340	

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB
Median	0.00	0.000	

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
5	33.65	-1.067	
Std Dev	33.63	-1.000	
9	33.59	-0.870	
9	33.54	-0.743	
5	33.39	-0.293	
34	33.37	-0.235	
61	33.32	-0.093	
8	33.31	-0.069	
8	33.29	-0.010	
Median	33.29	0.000	
61	33.28	0.010	
78	33.24	0.122	
78	33.24	0.122	
Std Dev	32.94	1.000	
78	32.91	1.091	
78	32.91	1.091	
27	32.88	1.163	
17	32.46	2.384	
17	32.44	2.440	

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
24	33.87	-6.319	
24	33.82	-5.790	
Std Dev	33.41	-1.000	
15	33.37	-0.589	
13	33.36	-0.452	
15	33.32	0.000	
Median	33.32	0.000	
13	33.32	0.000	
50	33.32	0.078	
Std Dev	33.24	1.000	
6	33.24	1.021	
57	33.09	2.708	
77	32.95	4.283	

215 Other(describe)			
Lab	%	P2O5	dB
Median	0.00	0.000	

301 Atomic Absorption-AFPC 9-12,13		
Lab	%	Fe2O3
5	0.71	-1.072
51	0.71	-1.072
57	0.71	-1.072
Std Dev	0.71	-1.000
5	0.69	0.000
17	0.69	0.000
Median	0.69	0.000
17	0.68	0.536
60	0.68	0.536

302 ICP-induced coupled plasma		
Lab	%	Fe2O3
50	1.09	-22.988
77	0.78	-4.526
77	0.78	-4.526
51	0.75	-2.740
78	0.73	-1.548
78	0.73	-1.548
Std Dev	0.72	-1.000
15	0.72	-0.655
15	0.71	-0.357

78	0.71	-0.298
78	0.71	-0.298
8	0.71	-0.060
34	0.70	0.000
Median	0.70	0.000
6	0.70	0.238
9	0.70	0.238
9	0.70	0.238
26	0.70	0.238
61	0.70	0.238
61	0.70	0.238
Std Dev	0.69	1.000
8	0.69	1.132
13	0.68	1.429
13	0.67	2.025
24	0.66	2.918
24	0.66	2.918

303 Other(describe)		
Lab	%	Fe2O3
19	0.68	-1.340
Std Dev	0.68	-1.000
Median	0.68	0.000
Std Dev	0.67	1.000
27	0.67	1.340

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
27	1.58	-5.501
Std Dev	1.42	-1.000
5	1.41	-0.705
5	1.39	-0.141
Median	1.39	0.000
51	1.38	0.141
17	1.35	0.987
Std Dev	1.35	1.000
17	1.34	1.269

402 ICP-induced coupled plasma		
Lab	%	Al2O3
50	2.56	-7.803
77	1.67	-1.943
77	1.64	-1.745
78	1.57	-1.268

78	1.57	-1.268
78	1.55	-1.126
78	1.55	-1.126
Std Dev	1.53	-1.000
51	1.50	-0.823
24	1.42	-0.296
24	1.42	-0.263
6	1.39	-0.099
13	1.38	0.000
Median	1.38	0.000
34	1.37	0.013
9	1.36	0.099
8	1.35	0.165
9	1.35	0.165
8	1.35	0.198
61	1.34	0.230
15	1.33	0.329
15	1.33	0.329
13	1.32	0.362
61	1.32	0.362
26	1.29	0.560

403 Other(describe)		
Lab	%	Al2O3
19	1.56	0.000
Median	1.56	0.000

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
51	0.36	-2.680
57	0.34	-1.489
Std Dev	0.33	-1.000
5	0.33	-0.893
17	0.32	-0.298
Median	0.32	0.000
5	0.31	0.298
17	0.31	0.298
60	0.31	0.298
27	0.30	0.893

502 ICP-induced coupled plasma		
Lab	%	MgO
50	0.40	-9.380
51	0.35	-2.680

15	0.34	-1.340
77	0.34	-1.340
34	0.34	-1.206
Std Dev	0.34	-1.000
13	0.34	-0.670
9	0.33	0.000
9	0.33	0.000
15	0.33	0.000
61	0.33	0.000
61	0.33	0.000
77	0.33	0.000
78	0.33	0.000
78	0.33	0.000
Median	0.33	0.000
78	0.33	0.536
78	0.33	0.536
13	0.33	0.670
Std Dev	0.32	1.000
6	0.32	1.340
8	0.32	1.340
8	0.32	2.010
24	0.31	2.680
24	0.31	2.680
26	0.31	2.680

503 Other(describe)		
Lab	%	MgO
19	0.33	0.000
Median	0.33	0.000

601 Insoluble-AFPC 9-8		
Lab	%	Al
19	4.25	-4.505
27	4.00	-3.350
5	3.65	-1.733
13	3.55	-1.271
Std Dev	3.49	-1.000
9	3.49	-0.993
5	3.44	-0.762
51	3.38	-0.485
24	3.31	-0.139
9	3.28	-0.023
13	3.28	0.000
Median	3.28	0.000

6	3.26	0.069
8	3.23	0.231
24	3.23	0.231
57	3.19	0.393
61	3.16	0.531
61	3.15	0.578
15	3.12	0.716
8	3.10	0.809
15	3.10	0.832

602 Other(describe)		
Lab	%	Al
70	3.16	0.000
Median	3.16	0.000

701 Gravimetric sulfate		
Lab	%	CaO
Median	0.00	0.000

702 ICP-induced coupled plasma		
Lab	%	CaO
77	48.70	-1.037
Std Dev	48.67	-1.000
61	48.30	-0.538
77	48.20	-0.422
61	48.15	-0.360
34	47.93	-0.089
Median	47.86	0.000
78	47.79	0.089
78	47.79	0.089
Std Dev	47.05	1.000
26	46.87	1.215
78	46.51	1.665
78	46.51	1.665

703 Ceric Sulfate volumetric		
Lab	%	CaO
27	46.60	0.000
Median	46.60	0.000

704 Permanganate		
Lab	%	CaO
60	47.85	-1.340
Std Dev	47.83	-1.000

Median	47.78	0.000
Std Dev	47.72	1.000
57	47.70	1.340

705 EDTA Volumetric		
Lab	%	CaO
50	49.17	-7.164
17	48.03	-1.114
Std Dev	48.01	-1.000
17	47.96	-0.743
9	47.82	0.000
Median	47.82	0.000
9	47.79	0.159
8	47.70	0.663
Std Dev	47.63	1.000
8	46.83	5.254

706 Other(describe)		
Lab	%	CaO
24	48.77	-2.026
24	48.76	-2.000
Std Dev	48.36	-1.000
19	48.20	-0.577
15	47.99	-0.038
Median	47.98	0.000
15	47.96	0.038
13	47.85	0.333
6	47.73	0.628
13	47.63	0.885

711 Gravimetric sulfate			
Lab	%	CaO	dB
Median	0.00	0.000	

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
61	49.01	-1.340	
Std Dev	48.99	-1.000	
Median	48.93	0.000	
Std Dev	48.88	1.000	
61	48.86	1.340	

713 Ceric Sulfate volumetric			
Lab	%	CaO	dB

27	47.19	0.000
Median	47.19	0.000

714 Permanganate			
Lab	%	CaO	dB
57	48.33	0.000	
Median	48.33	0.000	

715 EDTA Volumetric			
Lab	%	CaO	dB
9	48.40	-0.204	
9	48.38	-0.072	
Median	48.36	0.000	
8	48.35	0.072	
Std Dev	48.17	1.000	
8	47.45	4.727	

716 Other(describe)			
Lab	%	CaO	dB
24	49.41	-2.732	
24	49.40	-2.699	
Std Dev	48.88	-1.000	
13	48.60	-0.057	
15	48.59	-0.038	
Median	48.58	0.000	
15	48.57	0.038	
6	48.39	0.620	
13	48.39	0.631	
Std Dev	48.28	1.000	
19	48.20	1.256	

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

802 Specific Ion Electrode			
Lab	%	Fluorine, F	
51	4.05	-2.345	
8	3.96	-1.436	
8	3.94	-1.244	
Std Dev	3.91	-1.000	
24	3.84	-0.335	
9	3.82	-0.144	
9	3.82	-0.144	

78	3.82	-0.144
78	3.82	-0.144
13	3.81	-0.048
17	3.81	-0.048
13	3.81	0.000
Median	3.81	0.000
17	3.79	0.144
78	3.73	0.766
78	3.73	0.766
Std Dev	3.70	1.000
24	3.69	1.101
50	3.68	1.196
15	3.64	1.579
6	3.61	1.866
15	3.61	1.866
27	3.60	1.962
57	3.54	2.536

803 Other(describe)		
Lab	%	Fluorine, F
77	4.00	-1.340
Std Dev	3.99	-1.000
Median	3.98	0.000
Std Dev	3.96	1.000
77	3.95	1.340

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
6	13.0	-1.092
Std Dev	12.5	-1.000
24	9.5	-0.397
78	7.5	0.000
78	7.5	0.000
Median	7.5	0.000
Std Dev	2.5	1.000
78	0.5	1.390
78	0.5	1.390

913 Other(describe)		
Lab	ppm	Arsenic, As

13	10.2	-2.924
Std Dev	9.4	-1.000
77	9.0	0.000
77	9.0	0.000
Median	9.0	0.000
Std Dev	8.6	1.000
51	8.0	2.436

921 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Cadmium, Cd
27	8	-2.010
Std Dev	7	-1.000
57	7	0.000
Median	7	0.000
51	6	0.670

922 ICP-induced coupled plasma		
Lab	ppm	Cadmium, Cd
24	7	-1.466
51	7	-1.466
Std Dev	7	-1.000
78	7	-0.712
78	7	-0.712
61	6	-0.544
61	6	-0.209
Median	6	0.000
6	6	0.209
77	6	0.209
77	6	0.209
Std Dev	6	1.000
50	5	1.884
78	4	3.224
78	4	3.224

923 Other(describe)		
Lab	ppm	Cadmium, Cd
13	7	0.000
Median	7	0.000

931 Atomic Absorption-AFPC 9-16,17		
Lab	ppm	Cobalt, Co
27	12	-1.340
Std Dev	12	-1.000
Median	11	0.000

Std Dev	10	1.000
57	10	1.340

932 ICP-induced coupled plasma		
Lab	ppm	Cobalt, Co
77	7	0.000
78	7	0.000
78	7	0.000
78	7	0.000
78	7	0.000
Median	7	0.000
77	6	0.705
Std Dev	6	1.000
6	5	1.340
51	5	1.411
24	4	2.116

933 Other(describe)		
Lab	ppm	Cobalt, Co
13	5	0.000
Median	5	0.000

941 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Mercury, Hg
57	0.2	0.000
Median	0.2	0.000

942 ICP-induced coupled plasma		
Lab	ppm	Mercury, Hg
6	1.2	-1.340
Std Dev	1.1	-1.000
Median	0.6	0.000
Std Dev	0.2	1.000
24	0.1	1.340

943 Other(describe)		
Lab	ppm	Mercury, Hg
13	<0.04	0.000
Median	0.0	0.000

951 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Iolybdenum, Mo
51	21	0.000
Median	21	0.000

952 ICP-induced coupled plasma			
Lab	ppm	Iolybdenum, Mo	
77	31	-8.375	
24	28	-3.853	
78	27	-1.256	
78	27	-1.256	
Std Dev	27	-1.000	
77	26	0.000	
Median	26	0.000	
78	26	0.084	
78	26	0.084	
Std Dev	25	1.000	
6	22	6.532	
51	21	8.375	

953 Other(describe)		
Lab	ppm	Iolybdenum, Mo
13	29	0.000
Median	29	0.000

961 Atomic Absorption-AFPC 9-12,13			
Lab	ppm	Nickel, Ni	
57	14	-1.340	
Std Dev	13	-1.000	
Median	12	0.000	
Std Dev	11	1.000	
51	10	1.340	

962 ICP-induced coupled plasma			
Lab	ppm	Nickel, Ni	
78	12	-1.117	
78	12	-1.117	
Std Dev	12	-1.000	
51	11	-0.372	
78	11	0.000	
78	11	0.000	
Median	11	0.000	
24	10	0.112	
6	9	0.968	
Std Dev	9	1.000	
77	9	1.117	
77	7	2.606	

963 Other(describe)			
Lab	ppm	Nickel, Ni	
19	38	-0.510	
27	33	0.000	
Median	33	0.000	
Std Dev	23	1.000	
13	12	2.170	

971 Atomic Absorption-AFPC 9-16,17			
Lab	ppm	Lead, Pb	
51	25	-1.340	
Std Dev	23	-1.000	
Median	18	0.000	
Std Dev	12	1.000	
57	10	1.340	

972 ICP-induced coupled plasma			
Lab	ppm	Lead, Pb	
77	17	-2.321	
24	15	-1.445	
Std Dev	13	-1.000	
77	13	-0.920	
6	11	-0.254	
Median	10	0.000	
78	10	0.254	
78	10	0.254	
78	9	0.394	
78	9	0.394	

973 Other(describe)			
Lab	ppm	Lead, Pb	
27	20	-1.340	
Std Dev	19	-1.000	
Median	16	0.000	
Std Dev	13	1.000	
13	12	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	
24	3	0.000	

Median	3	0.000
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983 Other(describe)			
Lab	ppm	Selenium, Se	
13	4	0.000	
Median	4	0.000	

991 Atomic Absorption-AFPC 9-18,19			
Lab	ppm	Zinc, Zn	
27	94	-0.961	
57	88	-0.518	
Median	81	0.000	
51	74	0.518	
Std Dev	67	1.000	
60	64	1.294	

992 ICP-induced coupled plasma			
Lab	ppm	Zinc, Zn	
24	91	-5.042	
24	89	-4.308	
51	81	-1.052	
Std Dev	81	-1.000	
78	79	-0.060	
78	79	-0.060	
Median	78	0.000	
6	78	0.060	
78	77	0.536	
78	77	0.536	
Std Dev	76	1.000	
77	69	3.712	
77	68	4.109	

993 Other(describe)			
Lab	ppm	Zinc, Zn	
13	91	-1.340	
Std Dev	88	-1.000	
Median	80	0.000	
Std Dev	73	1.000	
19	70	1.340	

