Long Term Dissolution Testing of Mine Waste

Report to the United States
Environmental Protection Agency

APPENDICES

Minnesota Department of Natural Resources
Division of Minerals

March 1995

LONG TERM DISSOLUTION TESTING OF MINE WASTE

Report to the United States Environmental Protection Agency

Grant Number: X-8200322-01-0

APPENDICES

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March 1995

APPENDIX A

SOLID PHASE CHARACTERIZATION

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Reports of mineralogic and chemical analyses performed at Midland Research Center by Lou Mattson.

Table A1.1. Particle size distribution of waste rock samples as received.

Screen Diameter	Percent Retained			
	RK1[1]	RK2[2]	RK3[3]	RK4[4]
+5 in	NA	NA	NA	45.90
+4 in	10.94	NA	NA	21.85
+3 in	18.12	NA	NA	17.06
+1.5 in	30.36	NA	NA	11.20
+1.05 in	NA	NA	20.03	NA
+1 in	23.83	NA	NA	NA
+0.525 in	NA	NA	15.23	NA
+0.5 in	12.48	NA	NA	NA
+0.371 in	NA	NA	5.32	NA
+3M	NA	NA	4.77	NA
+6M	NA	NA	9.35	NA
+10M	NA	NA	9.80	NA
+20M	NA	NA	13.10	NA
+35M	NA	NA	12.20	NA

NA = Not Analyzed

[1] 4.27% - 0.5 in
[2] 100% - 6 in/+1 in, estimated visually
[3] 10.20% - 35 mesh
[4] 3.99% - 1.5 in

Table A1.2. Particle size distribution of mine waste samples distributed for predictive tests.

Particle Size			RK1	RK2	RK3	RK4
Diameter (mm)		Mesh				
min	max					
3.360		+6	1.52	8.57	1.55	16.82
1.190	3.360	+16/-6	31.92	44.83	28.65	53.3
0.500	1.190	+35/-16	26.32	18.63	31.47	14.33
0.250	0.500	+60/-35	10.99	7.65	13.46	4.37
0.149	0.250	+100/-60	7.52	6.69	9.85	3.06
0.105	0.149	+140/-100	4.96	4.10	4.66	1.71
0.074	0.105	+200/-140	2.95	3.23	3.24	1.18
0.044	0.074	+325/-200	5.24	3.83	3.45	1.74
	0.044	-325	8.58	2.47	3.67	3.41

Particle Size			TL1	TL2	TL3	TL4	TL5	TL6
Diameter (mm)		Mesh						
min	max							
3.36		-6	0	0	0	0	0	0
1.00	3.36	+18/-6	2.6	0.14	0.006	0.14	1.02	0.59
0.500	1.00	+35/-18	24.2	1.38	0.001	1.08	2.33	0.88
0.250	0.500	+60/-35	21.6	3.22	0.002	3.25	4.51	2.05
0.177	0.250	+80/-60	7.6	2.95	0.012	2.71	3.57	2.46
0.149	0.177	+100/-80	19.5	19.88	5.85	19.8	19.6	16.48
0.053	0.149	+270/-100	11.69	26.65	31.22	23.16	21.10	31.41
0.025	0.053	+500/-270	4.14	14.61	29.90	12.08	12.10	18.31
	0.025	-500	8.68	31.17	38.24	37.66	35.72	27.71

Table A2.1. Chemical analysis for regulatory parameters for mine waste samples.

Solid	concentrations in percent				concentrations in parts per million														
	S_{TOT}	SO_4 as S	S^{-2}	CO_2	Ag	As	Ba	Be	Cd	Cr	Cu	Hg	Mo	Ni	Pb	Sb	Se	Tl	Zn
RK1	0.46	0.04	0.42	0.11	0.7	49	194	NA	<0.5	149	69	NA	<1	108	10	10	NA	NA	118
RK2	0.64	0.01	0.63	0.03	1.6	37	189	NA	<0.5	161	2741	NA	<1	650	<2	<5	NA	NA	103
RK3	1.63	0.03	1.60	1.41	9.1	49	610	NA	14.7	182	150	NA	11	8	2198	5	NA	NA	5274
RK4	2.91	0.09	2.82	1.42	<0.5	118	353	NA	<0.5	149	59	NA	<1	93	11	102	NA	NA	115
TL1	0.96	0.06	0.90	0.87	<0.5	21	244	NA	<0.5	231	127	NA	358	31	45	<5	NA	NA	97
TL2	1.49	0.04	1.45	0.80	<0.5	37	992	NA	2.2	219	294	NA	112	23	16	<5	NA	NA	285
TL3	2.19	0.07	2.12	4.06	<0.5	234	126	NA	<0.5	134	66	NA	<1	18	10	<5	NA	NA	58
TL4	2.30	0.20	2.10	0.25	<0.5	28	475	NA	0.6	151	1248	NA	10	5	149	<5	NA	NA	299
TL5	5.05	0.20	4.85	0.65	<0.5	31	435	NA	<0.5	151	146	NA	14	41	84	12	NA	NA	124
TL6	5.81	0.63	5.18	2.01	7.6	372	476	NA	<0.5	123	1958	NA	8	38	176	<5	NA	NA	218

NA = Not Analyzed

Table A2.2. Chemical analysis for major components in the mine waste samples.

Solid	concentrations in percent											
	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	LOI	Total
RK1	15.20	0.51	6.27	3.24	3.61	0.03	1.19	0.04	60.50	0.73	6.63	97.96
RK2	17.20	7.79	14.52	0.61	7.90	0.15	2.59	0.23	45.73	1.54	0.15	98.42
RK3	12.80	0.28	4.59	5.84	0.53	0.71	0.10	0.17	69.30	0.21	4.01	98.54
RK4	11.10	1.27	5.67	5.46	1.57	0.07	0.06	0.25	66.40	0.55	5.73	98.13
TL1	11.30	2.05	2.87	5.98	1.47	0.07	1.35	0.25	69.80	0.52	2.40	98.06
TL2	9.91	1.66	4.17	4.53	1.11	0.08	0.34	0.21	74.98	0.26	2.70	99.96
TL3	5.28	1.60	21.94	0.95	4.13	0.57	0.19	0.06	56.65	0.24	7.59	99.19
TL4	14.40	0.35	4.12	4.84	0.67	0.04	0.29	0.11	68.80	0.35	4.24	98.21
TL5	13.60	0.33	7.35	6.70	0.78	0.01	1.84	<0.01	62.40	0.29	5.09	98.40
TL6	4.59	14.90	22.30	1.31	4.92	0.27	0.27	0.21	47.60	0.30	2.63	99.30

Table A2.3. Chemical analysis for miscellaneous parameters in the mine waste samples.

Solid	concentrations in parts per million														
	Bi	Co	Ga	La	Li	Nb	Sc	Sn	Sr	Ta	Te	V	W	Y	Zr
RK1	<5	19	<10	8	66	<5	14	<20	53	<5	<25	182	<20	16	83
RK2	<5	77	13	7	17	9	136	<20	262	20	<25	168	<20	14	45
RK3	<5	3	16	13	10	<5	22	<20	112	13	<25	27	<20	8	17
RK4	<5	14	14	9	57	<5	40	<20	63	38	<25	134	<20	16	57
TL1	<5	10	<10	26	42	<5	19	<20	225	<5	<25	60	<20	13	8
TL2	<5	16	11	16	28	<5	22	<20	155	<5	<25	51	<20	15	28
TL3	<5	10	<10	16	18	<5	110	<20	28	104	<25	45	<20	11	18
TL4	<5	10	23	28	11	<5	<10	<20	165	<5	<25	25	<20	18	21
TL5	<5	12	<10	30	23	13	27	<20	521	25	<25	70	<20	18	71
TL6	<5	32	<10	23	10	<5	239	<20	80	110	<25	59	<20	20	17

Reports of mineralogic and chemical analyses
performed at Midland Research Center by Lou Mattson.

Hanna Research Center
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M.A. Hanna Company

November 11, 1991

Mr. Kim Lapakko
Minnesota DNR - Minerals
P.O. Box 567
Hibbing, MN 55746

RE: NON-FERROUS MINE WASTE MINERALOGY, 1991 SAMPLES

Dear Mr. Lapakko:

The 4 waste rock and 6 tailings samples from United States non-ferrous mining operations that you submitted have been evaluated mineralogically as requested. The waste rock samples have been examined both as coarsely crushed fragments and as pulverized pulps while the fine tailings materials were evaluated as-received.

Methodology

Each of the waste rock pulps and the fine tails were subjected to X-ray diffraction (XRD) to identify minerals and determine approximate percentages of each mineral. In addition to the whole sample XRD analyses, an XRD pattern was obtained for a heavy mineral concentrate from each sample. Except for the iron sulfides, most of the minerals containing regulatory elements are present in very small amounts and must be concentrated to be identified by XRD. The heavy mineral concentrates, however contain a high percentage of iron sulfides which yield strong XRD peaks that tend to mask the weak peaks of trace minerals. Clearly, all of the regulatory element-bearing minerals cannot be identified by this XRD technique alone.

The XRD data from both the whole samples and heavy concentrates has been combined with the chemical assay data that you provided to determine a detailed mineral composition for each sample. Mineral percentages are tabulated in Table 1 and discussed briefly in following sections. A "?" on Table 1 indicates possibly present but not positively identified by XRD.

In addition to the XRD study of fines, coarse rock fragments of the waste rock materials were examined macroscopically to determine distribution of carbonates and regulatory element-bearing minerals relative to their possible reactions during natural leaching. Refer to discussions and attached photos.

The fines pulp from each of the waste rock samples and each tailings sample were wet screened on 100, 270, and 500 mesh sieves to determine a general size distribution for each sample and to aid in determining liberation characteristics for some of the minerals. The screen structure data is tabulated in Table 2 and liberation is discussed in following sections.

Sample RK-1

The rock fragments observed were all partly weathered and oxidized. The majority of the regulatory element-bearing minerals appear to occur on joint fracture surfaces and are at least partly oxidized. See attached photo. Due to weathering these joint surfaces are relatively porous and one should expect fairly easy leaching of regulatory elements from the coarse rock.

The total amount of regulatory minerals is small and its very difficult to identify all of the varieties that may be present by XRD alone. You will note that there are a lot of question marks in Table 1. The ground pulp of this sample (see table 2) is very fine grained and all of the regulatory minerals observed are very well liberated. Siderite was the only carbonate detected. The nickel-bearing mineral was not detected.

Sample RK-2

The rock fragments received were all crushed to minus 1/2 inch and the only regulatory minerals observed were fine grained and occur included in or interstitial to relatively coarse grained rock forming minerals. Leaching of those minerals exposed on the surface of coarse rock fragments should proceed readily but interior minerals would leach very slowly. See photo.

As in RK-1, the total content of regulatory minerals is small and all those listed in Table 1 were not detected in this XRD study. For example, maucherite the arsenic-bearing mineral was not detected, but from previous studies of this rock is known to be present. Calcite was not observed but is assumed to be the trace carbonate mineral and zinc is known to occur in spinels in this rock. The ground pulp of this sample (see Table 2) is very fine grained and all regulatory minerals observed are very well liberated.

Sample RK-3

The coarsely crushed sample examined was dominantly fines which suggests that either the original stockpile contained a high percentage of fines or the rock is generally friable, or both. The coarse fragments available (see photo) indicate common coarse to fine dissemenated and veinlets of regulatory minerals. The high fines and friable, weathered, nature of the rock suggest that a high percentage of the regulatory element-bearing minerals would be available for attack by leaching solutions.

The minerals detected by XRD account for most of the regulatory element values provided. A discrete cadmium-bearing mineral was not detected and the 14.7 ppm Cd reported is probably in the sphalerite. A possible trace amount of Mn-carbonate is present as rhodochrosite. As with the other rock pulps, the grain sizes are very fine and all regulatory element bearing minerals observed are very well liberated. Two exceptions are fine chalcopyrite blebs included in sphalerite and acanthite in galena.

Sample RK-4

The coarse fragments of this sample indicate a massive, competent, rock type. Carbonate (± silica) occurs in thin (1-2mm) veinlets and regulatory element-bearing minerals occur with quartz in veinlets and in small completely enclosed vugs within the rock. The veinlets with the regulatory minerals are relatively open and porous (see photo) compared to the "tight" carbonate veinlets and may allow infiltration of leach solutions into the interior portions of coarse rocks. Any reaction with carbonates would be mainly on the surface of coarse fragments.

Pyrite is the dominant regulatory element-bearing mineral in this sample and all others are present in trace amounts only. A "?" indicates uncertain identification. A nickel-bearing mineral was not detected. The ground pulp of this sample is very fine grained (75% minus 500 mesh) and all carbonate and regulatory minerals observed are very well liberated.

Sample TL-1

The majority of the regulatory element-bearing minerals were identified by XRD, however the low level (21 ppm) arsenic mineral was not detected. This sample is the coarsest (75% plus 100 mesh) of the tailings samples but all carbonates and regulatory element-bearing minerals observed are well liberated. The coarser fragments tend to have some attached gangue mineral, but not enough to significantly reduce contact with leach solutions.

Sample TL-2

Only arsenopyrite as the arsenic-bearing mineral was not identified by XRD or visually. Carbonates and regulatory element-bearing minerals observed were all very well liberated. The cadmium (2.2 ppm) in the sample probably occurs in the sphalerite.

Sample TL-3

XRD indicated a possibility of tetrahedrite as the antimony-bearing mineral, however assays indicate <5 ppm Sb in the sample. All carbonate and regulatory element-bearing minerals observed occur as fine sized, very well liberated grains. Most of the pyrrhotite grains are tarnished.

Sample TL-4

Neither an arsenic-bearing (28 ppm) nor a sulfate-bearing (0.6%) mineral(s) were detected by XRD or observed visually. The cadmium (0.6 ppm) probably occurs in sphalerite. The carbonate and most of the regulatory element-bearing minerals observed are very well liberated. The chalcocite typically exhibits some attached gangue mineral but is still well liberated.

Sample TL-5

An antimony-bearing mineral was not detected by XRD. Barite was identified as a sulfate-bearing mineral, however neither the XRD amount nor the Ba assay were sufficient to account for all of the SO_4. Excess SO_4 was assumed to be present as melanterite. The regulatory element-bearing minerals observed are nearly all minus 100 mesh and very well liberated. Carbonates are well liberated.

Sample TL-6

This sample has high pyrrhotite and high SO_4 sulfur contents with only trace amounts of most other regulatory minerals. The copper content (1958 ppm) is relatively high and both chalcopyrite and covellite were positively identified. XRD suggests that chalcocite may be present but identification is uncertain. No SO_4-bearing mineral(s) was positively identified and, due to the easy alteration of pyrrhotite, all SO_4 was assumed to occur as melanterite, however gypsum or anhydrite are possibilities. Carbonates and regulatory element-bearing minerals observed are generally well liberated.

Thank you for using the services of the Hanna Research Center. Please phone if you have any questions.

Sincerely,

HANNA RESEARCH CENTER

L. A. Matt

Louis A. Mattson
Sr. Supv. Scientist

LAM/nsj

TABLE 1

WGA mine waste mineralogy: Regulatory element-bearing minerals. Values in weight percent.

Regulatory Element-Bearing Minerals		RK-1	RK-2	RK-3	RK-4	TL-1	TL-2	TL-3	TL-4	TL-5	TL-6
Pyrite	S	0.74	-	2.43	5.16	1.58	2.60	1.08	3.68	8.17	1.93
Marcasite	S	0.02	-	-	0.16	-	0.08	-	-	0.95	-
Pyrrhotite	S	0.03	0.64	-	-	-	-	4.30	-	-	10.92
Pentlandite	Ni,S	-	0.18	-	-	-	-	-	-	-	-
Mackinawite	Ni,S	-	<0.01	-	-	-	-	-	-	-	-
Arsenopyrite	As,S	?	-	0.01	0.02?	-	0.01?	0.05	<0.01?	-	0.08?
Maucherite	Ni,As	-	0.01	-	-	-	-	-	-	-	-
Tennantite	Cu,As,S	0.02?	-	-	?	-	-	-	-	0.02	-
Prowstite	Ag,As,S	-	-	-	-	-	-	-	-	-	<0.01?
Chalcopyrite	Cu,S	?	0.27	0.04	<0.01	0.04	0.02	0.02	0.07	0.02	0.23
Cubanite	Cu,S	-	0.67	-	-	-	-	-	?	-	-
Bornite	Cu,S	-	0.04	-	-	-	-	-	?	<0.01	-
Chalcocite	Cu,S	?	-	-	0.01	?	0.03	-	0.13	-	-
Covellite	Cu,S	?	-	-	<0.01	?	-	-	-	<0.01	0.18
Stibnite	Sb,S	?	-	-	0.01	-	-	-	-	-	-
Tetrahedrite	Cu,Sb,S	<0.01?	-	<0.01	?	-	-	?	-	-	-
Molybdenite	Mo,S	-	-	<0.01	-	0.06	0.02	-	<0.01	<0.01	<0.01
Ferrimolybdite	Mo	-	-	-	-	?	-	-	-	-	-
Galena	Pb,S	<0.01?	-	0.25	<0.01	<0.01	<0.01	<0.01	0.02	0.01	0.02
Sphalerite	Zn,S	0.02	-	0.79	0.02	0.01	0.04	0.01	0.04	0.02	0.03
Acanthite	Ag,S	-	-	<0.01	-	-	-	-	-	-	-
Gypsum	SO_4	-	-	-	0.5	0.4	-	0.3	-	-	-
Anhydrite	SO_4	-	-	-	-	-	-	0.1	-	-	-
Barite	Ba,SO_4	?	-	0.3	?	-	0.4	-	-	0.1	-
Jarosite	SO_4	0.1?	-	-	-	?	-	-	?	-	-
Melanterite	SO_4	0.2	0.1?	-	0.2?	-	-	-	?	0.2?	5.4?

WGA mine waste mineralogy: Rock forming minerals.[1] Values in weight percent.

	RK-1	RK-2	RK-3	RK-4	TL-1	TL-2	TL-3	TL-4	TL-5	TL-6
Quartz	24	-	41	34	38	53	42	45	21	12
Feldspar	24	54	29	29	39	30	12	13	52	5
Mica	6	4	12	4	14	10	10	30	10	2
Chlorite	14	2	2	2	1	-	14	-	-	-
Amphibole	-	4	-	-	-	-	3	-	-	3
Pyroxene	-	18	-	-	-	-	-	-	-	55
Olivine	-	11	-	-	-	-	-	-	-	-
Stilpnomelane	-	-	-	-	-	-	2	-	-	-
Serpentine	-	<1	-	-	-	-	-	-	-	-
Kaolinite	2	-	8?	2	-	-	-	6	6?	-
Clay (15 angstroms)	29	-	-	19	-	-	-	-	-	-
Iron Oxides/ Ilmonite	<1	4	?	1	2	2	-	1	1	-

[1] Samples may also contain accessory to trace amounts of one or more of the following minerals: rutile, sphene, garnet, epidote, graphite, tourmaline, scheelite, topaz, apatite, flourite.

WGA mine waste mineralogy: Carbonate minerals. Values in weight percent.

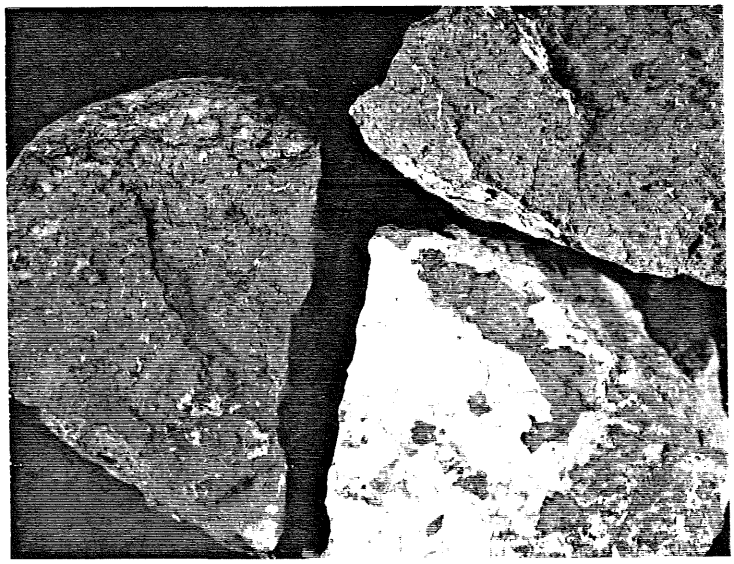
Carbonate Minerals[2]	RK-1	RK-2	RK-3	RK-4	TL-1	TL-2	TL-3	TL-4	TL-5	TL-6
Calcite	?	0.1	0.5	-	1.5	0.7	0.2	0.6	-	4.6
Dolomite	?	-	-	3.0	0.4	0.8	-	-	1.10	-
Ankerite	-	-	-	-	-	-	1.9	-	-	-
Siderite	0.3	-	3.2	-	-	0.2	8.3	-	-	-
Rhodochrosite	-	-	?	-	<0.1	-	-	-	-	-
Magnesite	-	-	-	-	-	-	-	-	0.23	-

[2] Trace amounts of copper carbonates were noted in TL-2.

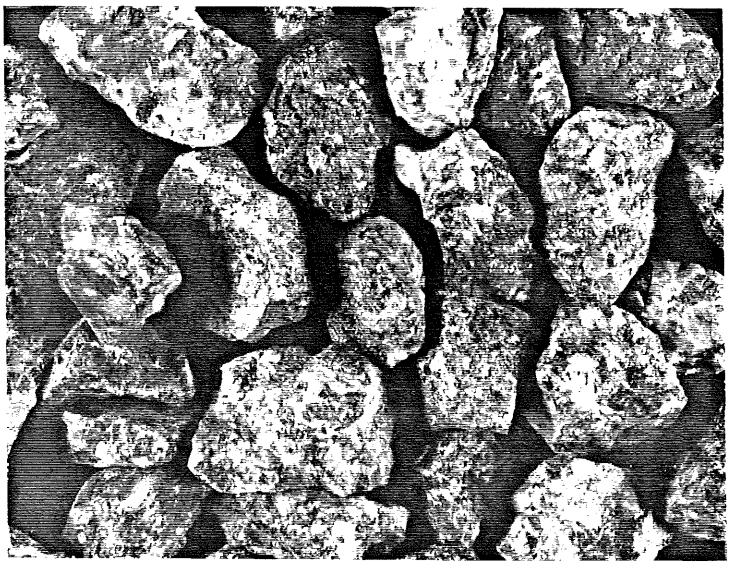
TABLE 2

WGA mine waste particle size distribution. **(Wt.%)**

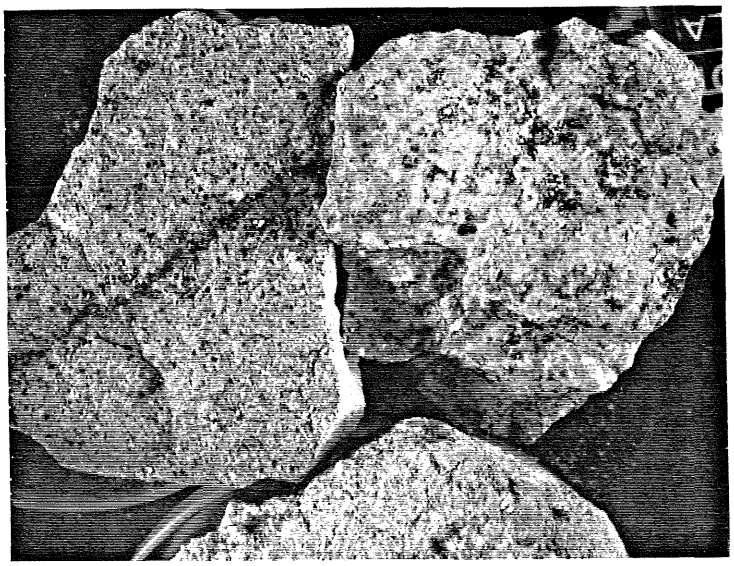
Sample	+100m	+270m	+500m	-500m
RK-1	0.00	14.80	15.18	70.02
RK-2	0.02	37.10	26.20	36.68
RK-3	0.05	29.35	19.42	51.18
RK-4	0.00	11.60	13.65	74.75
TL-1	75.49	11.69	4.14	8.68
TL-2	27.57	26.65	14.61	31.17
TL-3	0.59	31.22	29.90	38.24
TL-4	27.10	23.16	12.08	37.66
TL-5	31.08	21.10	12.10	35.72
TL-6	22.57	31.41	18.31	27.71



RK-1, macrophoto (1.3X) showing silica-rich joint coating with sulfides and secondary iron oxides/sulfates (lower right). Upper right and left show cross-section of joint edge and internal joint/void fillings.



RK-2, macrophoto (1.3X). Rock-forming minerals are relatively coarse grained and sulfides are generally very fine grained and occur included-in or interstitial to rock forming minerals.



RK-3, macrophoto (1.3X) of coarse fragments from the mostly fine grained sample. Disseminated sulfides occur in all 3 fragments and a sphalerite-pyrite-chalcopyrite veinlet cuts left fragment.

RK-4, macrophoto (1.3X) showing fragments of the fine grained, massive, rock. Upper fragment contains silica-rich carbonate veinlets and lower fragment exhibits a quartz-sulfide veinlet plus enclosed quartz-sulfide filled vuglets (small dark areas in lower center).

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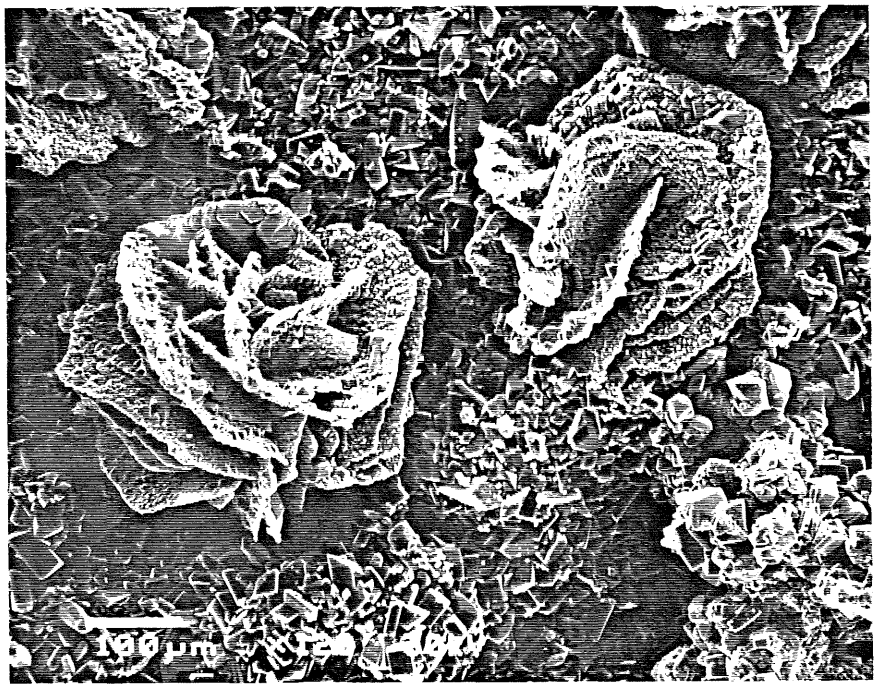

RK-4: SEM photo of "flowers growing" in a vug in one of the coarse fragments examined. The original rosettes (carbonate? barite?) have been replaced by FeS_2. Crystal form suggests marcasite. "Flowers" are "growing" on a ground of small quartz and FeS_2 (marcasite?) crystals.

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MIDLAND RESEARCH CENTER

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September 10, 1994

Mr. Kim Lapakko
MN DNR-Minerals
1525 E. 3rd Avenue
Hibbing, MN 55746-1461

Dear Kim:

Attached are the results of XRD, SEM, and chemical assays requested. SRM 886 data requires some assay checks and I'll get back to that on 9/16/94.

Sincerely,

MIDLAND RESEARCH CENTER

Louis A. Mattson/dr

Louis A. Mattson
Senior Technical Consultant

MIDLAND RESEARCH CENTER

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DNR Sample: NBM-1, Canadian Static Test Standard.
As we discussed, some additional assays were obtained and the non-carbonate minerals have been quantified.

Chemical Assays

Element	Wt%
SiO_2	65.1
Al_2O_3	14.5
Fe tot	4.1*
CaO	3.3
MgO	2.5
Na_2O	3.7
K_2O	2.9
CO_2	2.8

*Fe tot. assay from your Canadian data. All other assays from MRC, except the previously reported Lerch CO_2.

The previous XRD pattern has been reviewed in an effort to better define the non-carbonate minerals. The clay minerals kaolinite and montmorillonite are positively identified. Chlorite is not indicated in the XRD pattern. Based on the rather "messy" XRD pattern, the identification of mica mineral (muscovite or biotite) is in question.

A quick look at the sample with a petrographic microscope indicates that the mica is biotite. Feldspar identification by XRD alone yields only a ball-park composition so the feldspar is indicated below as Na, K, and Ca end members based on XRD and assay data.

NMB-1 Mineral Composition

Minerals	**Wt%**
Quartz	25.0
Feldspar:	
Orthoclase (K)	(14.8)
Albite (Na)	(31.4)
Anorthite (Ca)	(9.9)
Total Feldspar	56.1
Biotite (+montmorillonite)	7.0
Kaolinite	3.3
Carbonates:	
Ankerite	(3.6)
Calcite	(0.5)
Siderite	(2.5)
Summation	98.0%*

*Iron oxides and silfides raise sum to near 100%.

Sincerely,

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Louis A. Mattson/dr

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9/8/94

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DNR Sample: #10457

This sample of "white salt from particle size experiment" was evaluated by X-ray diffraction (XRD) to determine the compounds present. The XRD pattern indicates major, and roughly equal amounts, of:

Gypsum	$CaSO_4.2H_2O$
Hexahydrite	$MgSO_4.6H_2O$

The XRD pattern exhibits numerous peaks related to the above compounds and a number of unidentified weak (max. 200 cps) peaks. These weak XRD peaks suggest some anhydrite ($CaSO_4$) and other various hydrated CA and Mg sulfates.

Sincerely,

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DNR Sample: RK-1
#10510 Unleached Feed. 24
#10483 Leached Residue, ~~40~~ weeks ET

X-ray Diffraction

One XRD pattern was obtained for each sample. The leached residue, compared to the unleached feed, exhibits moderately less intense XRD peaks for chlorite and mica suggesting that these minerals have been partially dissolved. Quartz and feldspar peaks are somewhat stronger in the leached residue than in the unleached feed.

Based on XRD and previous assay data, the 24% feldspar in this sample occurs as 14% orthoclase (K) and 10% albite (Na) end members.

SEM Examination

A bulk amount of wet screened +200 mesh particles from the leached residue was examined by SEM. Except for a few free quartz grains, all particles were aggregates of very fine grained minerals. Features related to dissolution during leaching were not observed.

Sincerely,

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DNR Sample: **RK-2, Duluth Complex**
#10514 Unleached Feed. 24
#10484 Leached Residue, ~~40~~ Weeks ET

X-Ray Diffraction

One XRD pattern was obtained for each of these two samples. The ferro-magnesium minerals (pyroxene, amphibole, chlorite, biotite) yield less intense XRD peaks in the leached residue than in the unleached feed which suggests partial dissolution of these materials. The monorillonite peak is roughly 6 times more intense in the residue indicating that this clay mineral formed as a by-product during leaching. Kaolinite clay is tentatively identified and may exhibit a stronger XRD peak in the leached residue. Overall, the felspar peak intensities are roughly the same in both samples. The 54% feldspar in this sample, based on XRD and previous assays, is 4% orthoclase (K), 22% albite (Na), and 28% anorthite (Ca) end members.

The leached residue from this sample was not examined by SEM. Refer to SEM observations from the more extensively leached Duluth Complex sample (#10518).

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DNR Sample: **RK-4**
#10486 Leach Residue, ~~40~~ 25 week, ET

X-ray Diffraction and SEM Examination

An XRD pattern was obtained and numerous wet screened +200 mesh iron oxide coated grains were broken and mounted for SEM exam. Remanent carbonate could not be confirmed by either XRD or SEM. One of the feldspar peaks coincides with the major dolomite peak and its intensity in the leached residue is about right for the feldspar. This peak is reduced significantly from that in the previous unleached XRD pattern which indicates that dolomite has been consumed during leaching. No dolomite was detected during SEM examination. Concentrated HCl applied to the leached residue yields a few bubbles indicating that a trace of carbonate remains.

The feldspar in this sample, based on XRD and previous assay data, appears to be all the orthoclase (K) end members.

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DNR Sample: Duluth Complex
#10517 Unleached Feed
#10518 Leached Residue, 289 weeks.

X-ray Diffraction

XRD inidicates unleached mineralogy similar to the RK-2 sample. Two XRD patterns were obtained for both the unleached and leached samples and XRD peak intensities for the minerals were compared. The peak intensities for the ferro-magnesium minerals (biotite, amphibole, pyroxene, olivine) are all lower in the leached material. Montmorillonite exhibits a 20 times greater peak in the leached material compared to the unleached feed. Feldspar peak intensities are roughly the same before and after leaching.

SEM Examination

Wet screened +200 mesh grains from the leach residue were picked and mounted for SEM examination. As in the XRD data, the ferro-magnesium minerals exhibit the most dissolution during leaching. The attached SEM photos illustrate dissolution features.

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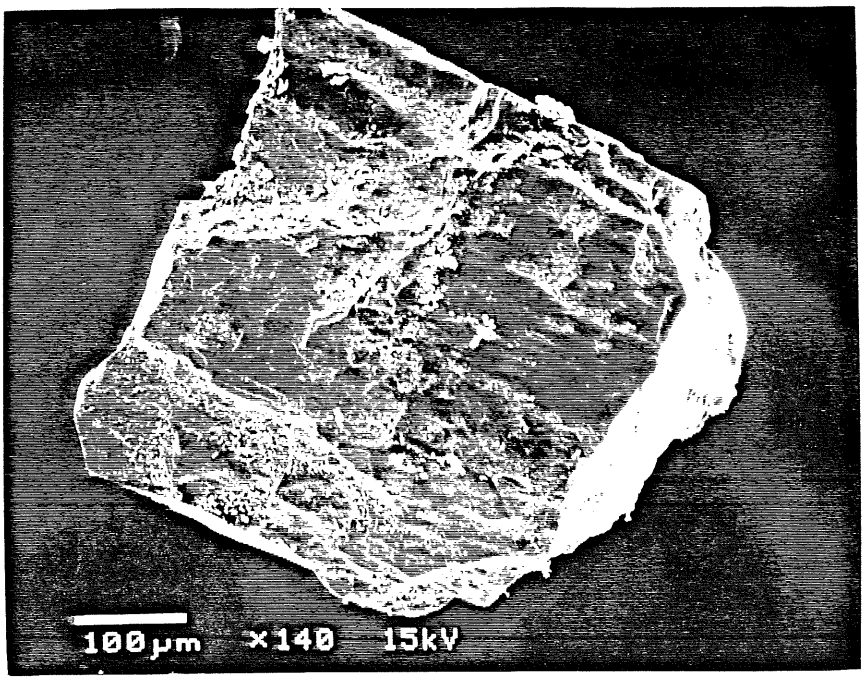

Photo 1: Duluth Complex, 289 week Leach Residue. Typical pyroxene grain exhibiting dissolution. See photo 2 below.

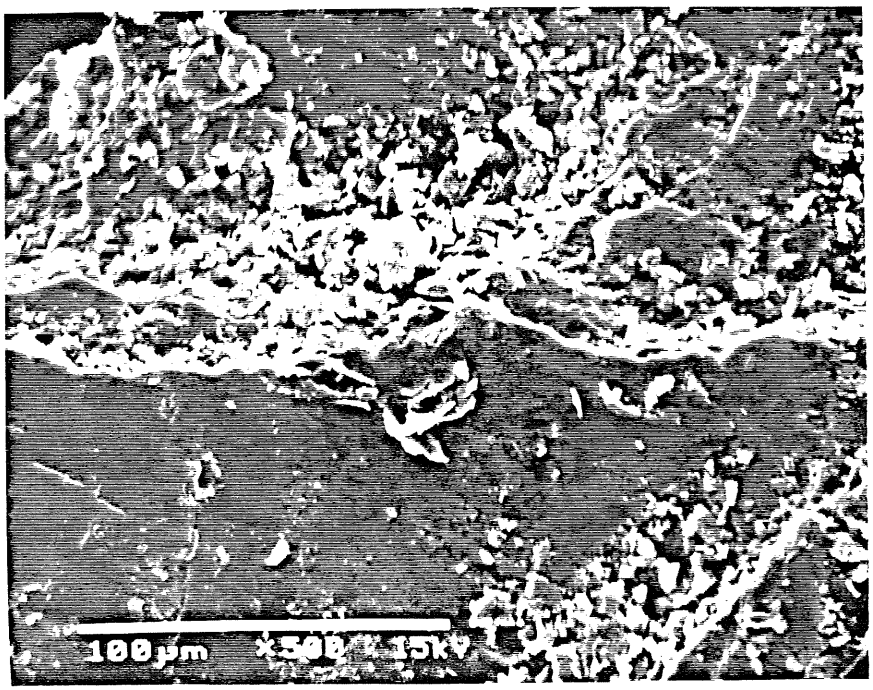

Photo 2: Enlargement of upper left portion of photo 1 above. Note pitting and dissolution of the Mg, Fe, Ca, Si pyroxene. Much of the lighter colored material appears to be "residual" montmorillonite.

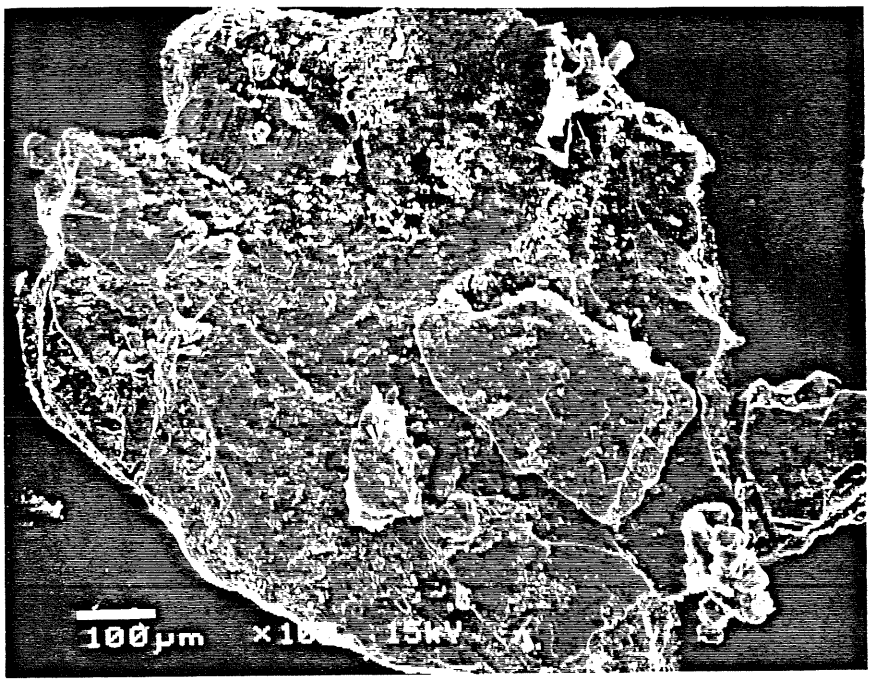

Photo 3: Duluth Complex, 289 week Leach Residue. Biotite mica exhibiting surface and edge dissolution.

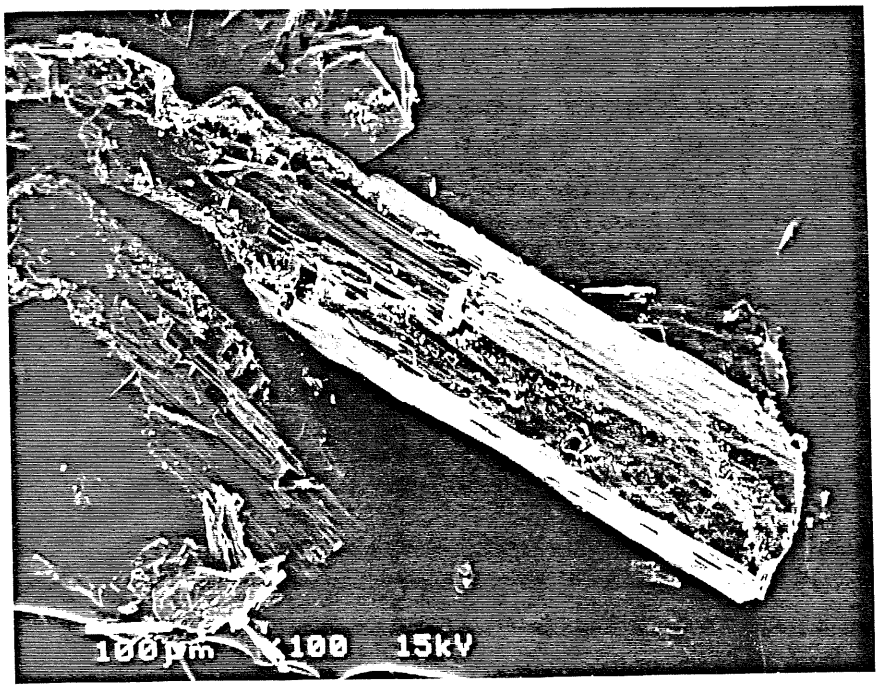

Photo 4: Duluth Complex, 289 week Leach Residue. Amphibole with an iron rich coating over a partially dissolved friable interior.

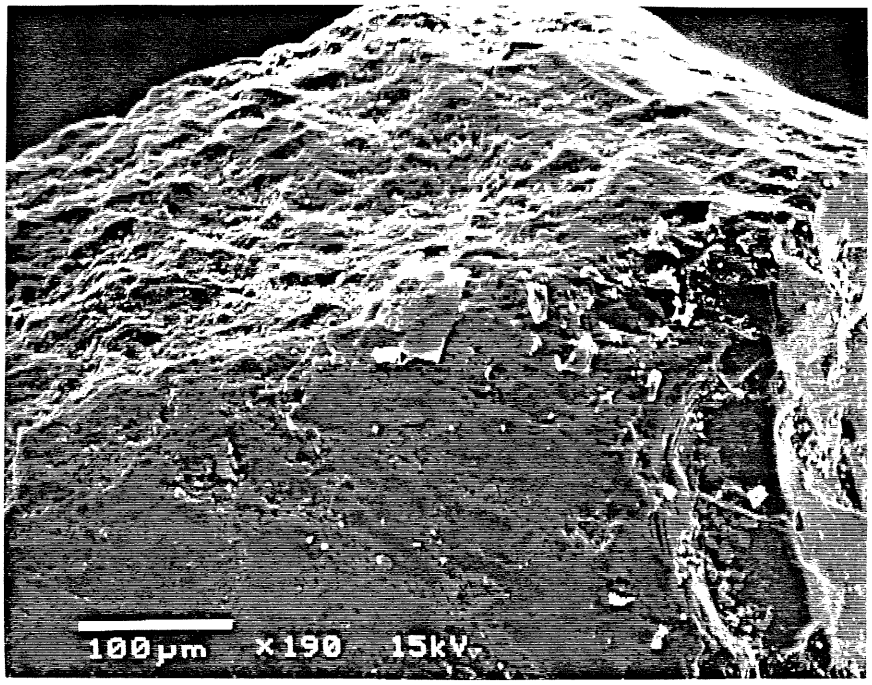

Photo 5: Duluth Complex, 289 week Leach Residue. Typical feldspar grain with an "iron stained" surface exhibiting mild pitting and dissolution.

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DNR Sample: **TL-6**
#10509 Unleached
#10492 Leach Residue, ~~40~~ 26 weeks, ET
#10516 Leach Residue, 173 weeks, ET

X-ray Diffraction (XRD)

Three patterns were obtained for the unleached feed and 2 patterns were obtained for each of the leached residues. The major XRD peak intensities for the minerals were compared between samples in an attempt to determine changes that may have occurred during leaching. Results are summarized below:

1) The unleached feed XRD patterns match those obtained a few years ago with the exception of some gypsum being present in the sample now run.

2) The major minerals, quartz and pyroxenes, exhibit roughly the same XRD intensity in all 3 samples.

3) The 2 greatest changes are with montmorillonite clay and calcite. Compared to the unleached sample, the 40 week and 173 week leached samples respectively, exhibit a montmorillonite peak roughly 10 times and 5 times greater. XRD data indicates that roughly 1/2 - 2/3 of the original calcite remains in the 40 week sample while calcite was not detected in the 173 week material. No other carbonate minerals were detected.

4) Chlorite and mica peaks are both weaker in the leached residues.

SEM Examination

A portion of the 173 week leached sample was wet screened on 200 mesh and mineral grains were picked from the +200 mesh fraction for examination by SEM. Most of the grains examined were of the Ca, Fe, SiO_2 (Hedenbergite-Diopside) pyroxene. These grains tended to be either relatively unaltered (no etch pits) or altered to the point of being friable. One such friable grain is shown in photo 1 and EDS indicates a relatively high Fe content suggesting that Ca has been perferentially leached. Photo 2 shows an altered grain containing what were originally thought to be secondary gypsum crystals. However, EDS indicates a composition essentially the same as the pyroxene in the sample. The crystals appear to be secondary and may be a zeolite mineral. Photo 3 is of a grain picked as feldspar exhibiting solution along perfered surfaces. Selective solution is probably correct but EDS indicates a Ti, Fe, Ca, Si, composition. Feldspar which is only 5% of the sample was not observed in grains mounted for SEM.

Sincerely,

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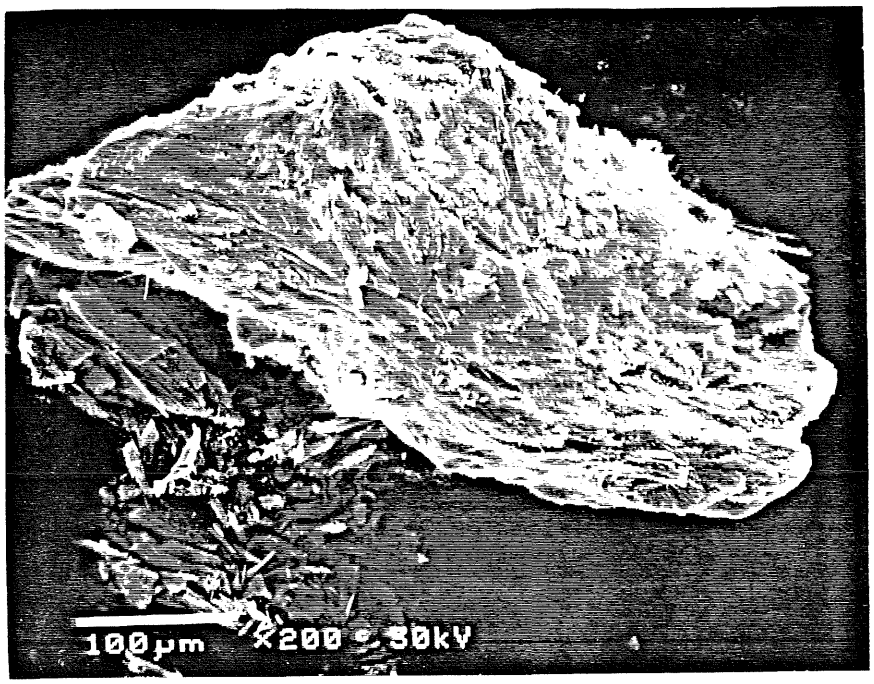

Photo 1: TL-6, 173 week Leach Residue Leached and friable pyroxene grain.

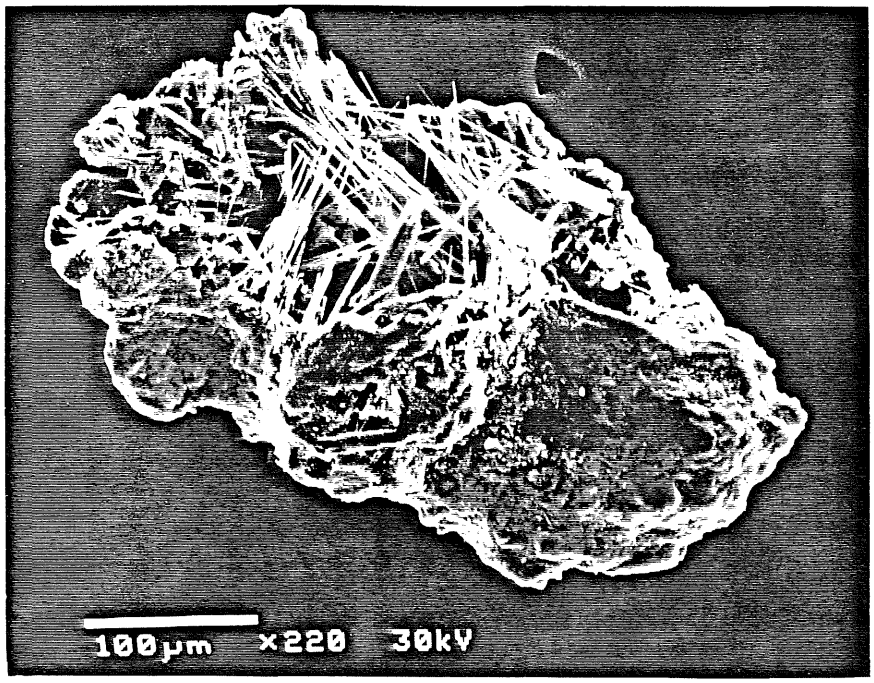

Photo 2: TL-6, 173 week Leach Residue Crystals with composition comparable to host rock pyroxene in quartz (right) and iron oxide rich (lower left) material. May be a secondary zeolite mineral.

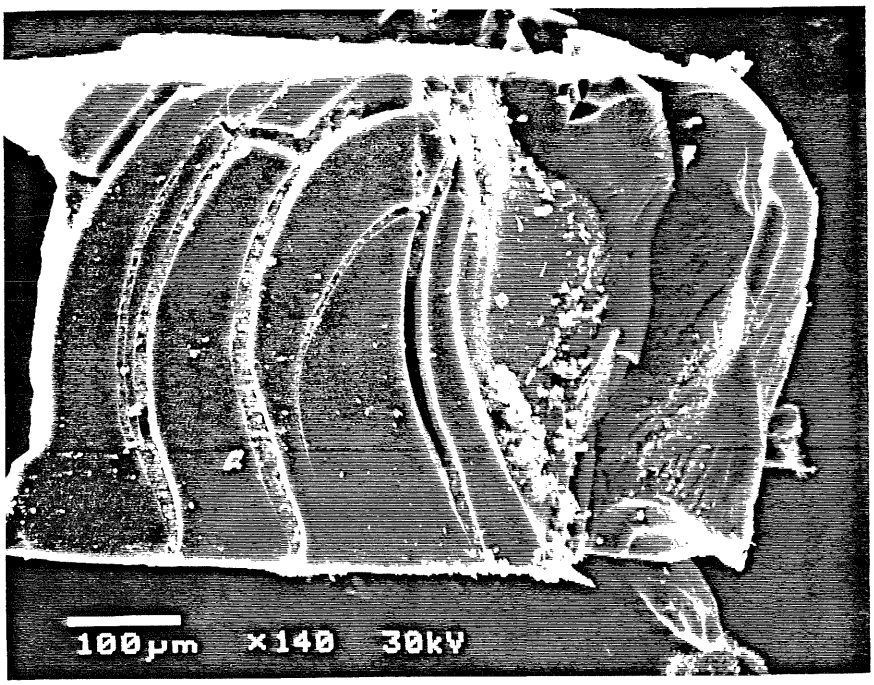

Photo 3: TL-6, 173 week Leached Residue an unidentified mineral (Ti, Fe, Ca, Si) exhibiting perferential (?) solution along selected surfaces.

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DNR Sample: **TL-5**
#10508, Unleached Feed.
#10491, Leached Residue, ~~40~~ actually 26 weeks, ET

X-ray Diffraction

A single XRD pattern was obtained for each of the unleached and leached samples. There are no significant XRD peak intensity differences between the samples -- the patterns are essentially identical.

Based on the XRD data and the previous chemical assays, the felspar in the sample consists of 36% orthoclase (K) and 16% albite (Na) end members making up the 52% total feldspar.

SEM Examination

A number of wet screened +200 mesh feldspar grains from the leached residue were picked and examined by SEM. All of the grains examined exhibit some pitting and dissolution due to leaching. One typical SEM photo is attached.

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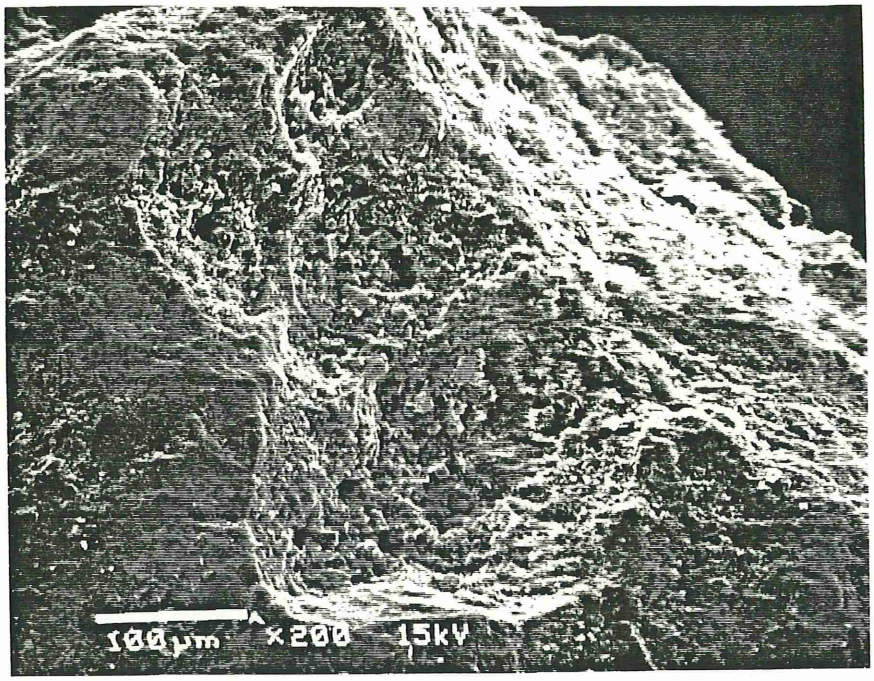

TL-5 ~~40~~ 26 week, ET, Leached Residue. Typical feldspar grain showing pitting and dissolution due to extended leaching.

APPENDIX B

WET-DRY CYCLE TEST

Table B1.1.	Wet-Dry Cycle Test: Summary statistics for weekly and daily temperature and relative humidity readings.
Tables B1.2.-B1.4.	Average weekly temperature and relative humidity readings for the Wet-Dry Cycle Test.
Figure B1.5.	Average weekly temperature and relative humidity versus time for the Wet-Dry Cycle Test.
Tables B1.6.-B1.13.	Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.
Figure B1.14.	Daily temperature and relative humidity readings for the Wet-Dry Cycle Test (weeks 0 - 132).
Tables B2.1.-B2.30.	Wet-Dry Cycle Test drainage quality.
Table B2.31.	Identification of anomalous concentrations based on concentration versus time plots for the Wet-Dry Cycle Test (weeks 0 - 132).
Table B3.0.	Summary of cumulative mass release from the Wet-Dry Cycle Test (132 weeks).
Tables B3.1.-B3.40.	Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test.
Figures B3.41.-B3.50.	Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test.
Table B4.1.	Ratio of calcium plus magnesium release to sulfate release for the Wet-Dry Cycle Test (weeks 0 - 132).
Text B5.1.-B5.5.	Wet-Dry Cycle Test lab notes.

Table B1.1. Wet-Dry Cycle Test: Summary statistics for weekly and daily temperature and relative humidity readings.

	Weekly	Daily
Temperature (°C)		
minimum	21.7	19.4
average	25.5	25.3
maximum	30.0	30.0
standard deviation	1.86	1.92
number of cases	132	451
Relative Humidity (%)		
minimum	42.0	30.0
average	52.2	52.3
maximum	67.5	68.0
standard deviation	5.14	5.79
number of cases	129	434

Table B1.2. Average weekly temperature and relative humidity readings for the Wet-Dry Cycle Test.

Week	Month	Day	Year	Temperature (°C)	Relative Humidity (%)
1	5	9	91	24.6	58.0
2	5	16	91	28.1	61.8
3	5	23	91	28.3	59.0
4	5	30	91	27.4	59.8
5	6	6	91	27.6	55.0
6	6	13	91	27.8	56.8
7	6	20	91	28.5	59.5
8	6	27	91	27.8	60.0
9	7	4	91	30.0	.
10	7	11	91	27.8	60.0
11	7	18	91	27.8	61.5
12	7	25	91	28.3	59.0
13	8	1	91	27.8	54.0
14	8	8	91	27.9	53.7
15	8	15	91	28.6	57.0
16	8	22	91	28.1	57.8
17	8	29	91	28.3	64.0
18	9	5	91	28.1	56.0
19	9	12	91	26.7	62.0
20	9	19	91	26.7	50.7
21	9	26	91	27.2	58.5
22	10	3	91	27.2	53.5
23	10	10	91	27.4	49.7
24	10	17	91	27.4	49.3
25	10	24	91	26.5	48.7
26	10	31	91	27.2	50.3
27	11	7	91	27.8	42.0
28	11	14	91	26.4	50.3
29	11	21	91	26.8	51.0
30	11	28	91	26.7	50.0
31	12	5	91	26.7	48.0
32	12	12	91	26.1	42.5
33	12	19	91	25.4	45.5
34	12	26	91	25.7	48.3
35	1	2	92	26.1	43.0
36	1	9	92	25.8	48.3
37	1	16	92	25.0	49.0
38	1	23	92	24.9	52.0
39	1	30	92	25.0	44.0
40	2	6	92	27.2	48.0
41	2	13	92	26.6	48.5
42	2	20	92	26.3	50.5
43	2	27	92	27.1	49.6
44	3	5	92	26.9	51.0
45	3	12	92	25.9	48.7
46	3	19	92	26.7	50.0
47	3	26	92	27.2	49.5
48	4	2	92	26.7	47.0
49	4	9	92	28.3	44.0
50	4	16	92	27.2	47.0
51	4	23	92	27.8	52.0
52	4	30	92	27.2	.
53	5	7	92	26.7	.
54	5	14	92	27.8	52.7
55	5	21	92	27.4	49.8
56	5	28	92	26.1	46.3
57	6	4	92	26.9	52.5
58	6	11	92	26.7	50.0
59	6	18	92	27.5	47.5
60	6	25	92	28.2	44.0

Table B1.3. Average weekly temperature and relative humidity readings for the Wet-Dry Cycle Test.

Week	Month	Day	Year	Temperature (°C)	Relative Humidity (%)
61	7	2	92	26.6	49.0
62	7	9	92	26.3	54.8
63	7	16	92	26.7	52.5
64	7	23	92	26.8	51.8
65	7	30	92	25.5	48.7
66	8	6	92	26.1	48.3
67	8	13	92	25.4	55.5
68	8	20	92	25.7	48.7
69	8	27	92	25.2	53.7
70	9	3	92	25.9	51.3
71	9	10	92	25.3	50.7
72	9	17	92	25.2	53.3
73	9	24	92	25.3	53.0
74	10	1	92	24.6	53.0
75	10	8	92	25.2	52.5
76	10	15	92	25.3	50.3
77	10	22	92	24.8	49.2
78	10	29	92	25.6	51.7
79	11	5	92	25.7	50.7
80	11	12	92	24.2	47.5
81	11	19	92	24.6	52.5
82	11	26	92	24.7	54.0
83	12	3	92	24.3	56.8
84	12	10	92	24.4	47.0
85	12	17	92	24.6	51.0
86	12	24	92	24.3	52.0
87	12	31	92	22.1	52.0
88	1	7	93	24.3	46.0
89	1	14	93	24.7	46.0
90	1	21	93	24.6	47.8
91	1	28	93	24.4	47.0
92	2	4	93	24.4	42.2
93	2	11	93	24.6	46.6
94	2	18	93	24.2	46.3
95	2	25	93	24.7	43.5
96	3	4	93	25.4	46.8
97	3	11	93	24.3	49.6
98	3	18	93	23.1	51.6
99	3	25	93	22.6	51.6
100	4	1	93	23.2	52.5
101	4	8	93	22.9	52.3
102	4	15	93	22.9	52.3
103	4	22	93	22.5	52.8
104	4	29	93	22.4	53.8
105	5	6	93	22.7	52.8
106	5	13	93	22.8	54.8
107	5	20	93	22.4	53.0
108	5	27	93	22.1	54.7
109	6	3	93	23.0	56.8
110	6	10	93	22.5	59.8
111	6	17	93	23.5	60.5
112	6	24	93	23.9	59.8
113	7	1	93	22.7	58.4
114	7	8	93	23.7	62.0
115	7	15	93	24.4	56.8
116	7	22	93	24.4	61.7
117	7	29	93	24.4	67.5
118	8	5	93	24.7	62.5
119	8	12	93	25.1	59.8
120	8	19	93	25.4	58.3

Table B1.4. Average weekly temperature and relative humidity readings for the Wet-Dry Cycle Test.

Week	Month	Day	Year	Temperature (°C)	Relative Humidity (%)
121	8	26	93	26.9	58.0
122	9	2	93	25.1	57.2
123	9	9	93	22.8	54.3
124	9	16	93	22.7	52.8
125	9	23	93	22.9	52.3
126	9	30	93	22.4	48.5
127	10	7	93	21.7	48.7
128	10	14	93	22.1	48.3
129	10	21	93	23.3	47.4
130	10	28	93	22.9	46.3
131	11	4	93	23.6	53.0
132	11	11	93	24.6	48.8

Figure B1.5. Average weekly temperature and relative humidity versus time for the Wet–Dry Cycle Test (weeks 0 – 132).

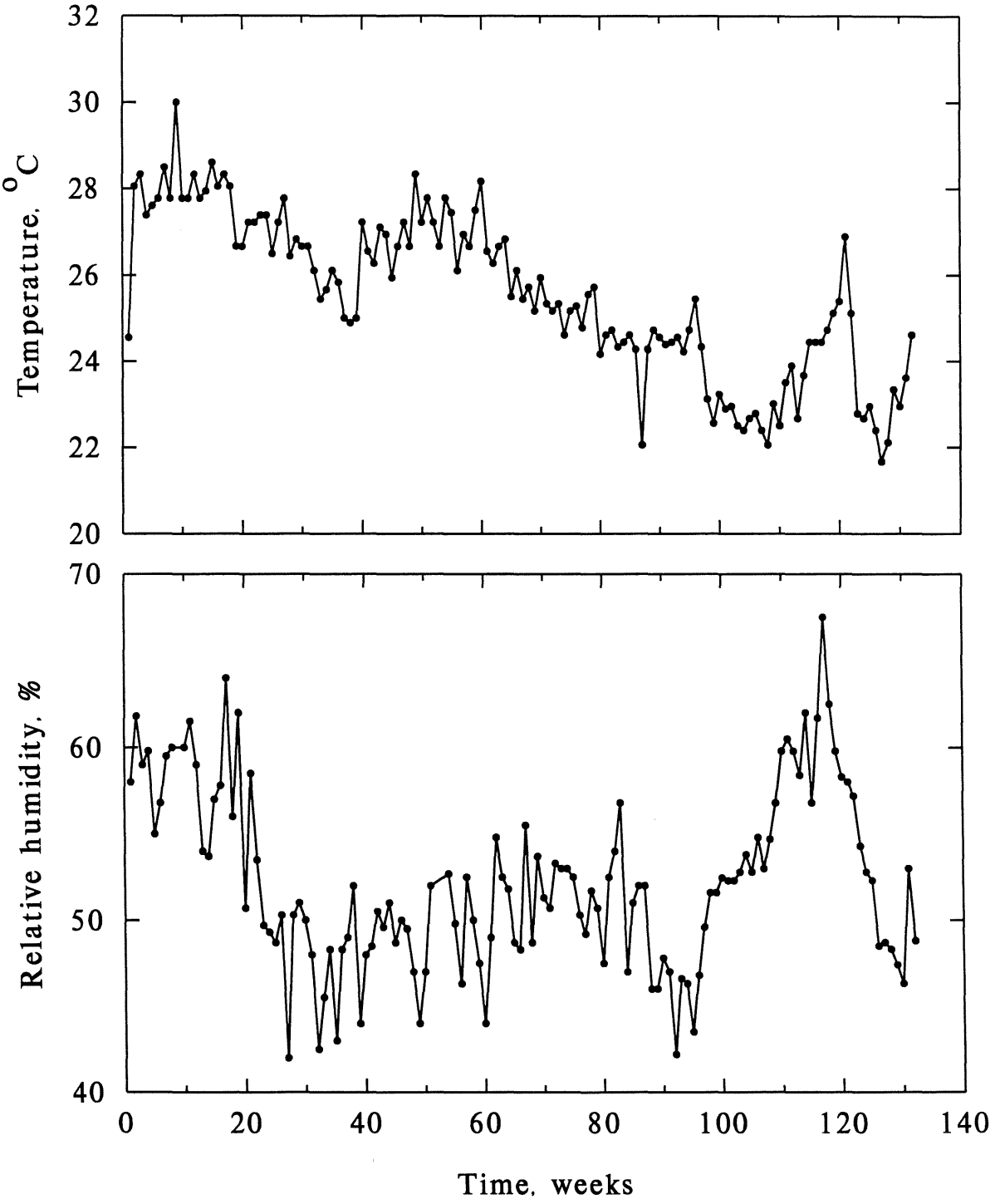

Table B1.6. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
5	3	91	23.9	55.0
5	6	91	24.4	58.0
5	7	91	23.9	55.0
5	8	91	23.9	55.0
5	9	91	26.7	67.0
5	13	91	28.9	63.0
5	14	91	26.7	62.0
5	15	91	28.9	60.0
5	16	91	27.8	62.0
5	17	91	27.2	57.0
5	22	91	28.3	63.0
5	23	91	29.4	57.0
5	24	91	27.8	62.0
5	28	91	27.2	57.0
5	29	91	26.7	62.0
5	30	91	27.8	58.0
6	3	91	27.8	55.0
6	4	91	27.8	55.0
6	5	91	27.2	55.0
6	10	91	28.3	59.0
6	11	91	27.8	55.0
6	12	91	28.3	53.0
6	13	91	26.7	60.0
6	17	91	28.9	56.0
6	18	91	28.9	63.0
6	20	91	27.8	.
6	24	91	27.8	58.0
6	25	91	27.8	62.0
7	3	91	30.0	.
7	8	91	28.9	.
7	9	91	26.7	60.0
7	15	91	28.9	63.0
7	16	91	26.7	60.0
7	17	91	.	.
7	23	91	28.3	59.0
7	29	91	28.9	50.0
7	30	91	26.7	57.0
8	1	91	27.8	55.0
8	5	91	28.3	53.0
8	6	91	28.3	53.0
8	8	91	27.2	55.0
8	13	91	28.9	56.0
8	15	91	28.3	58.0
8	16	91	30.0	57.0
8	20	91	28.3	55.0
8	21	91	26.7	62.0
8	22	91	27.2	57.0
8	27	91	28.9	63.0
8	28	91	27.8	65.0
9	2	91	28.9	58.0
9	4	91	27.2	54.0
9	10	91	26.7	62.0
9	13	91	27.2	54.0
9	16	91	26.1	50.0
9	18	91	26.7	48.0
9	24	91	26.7	62.0
9	26	91	27.8	55.0
9	30	91	28.3	53.0
10	1	91	26.1	54.0
10	8	91	26.1	50.0
10	9	91	28.3	47.0

Table B1.7. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
10	10	91	27.8	52.0
10	14	91	27.2	.
10	15	91	27.2	48.0
10	16	91	27.8	49.0
10	17	91	27.2	51.0
10	22	91	26.7	49.0
10	23	91	26.7	48.0
10	24	91	26.1	49.0
10	25	91	26.7	51.0
10	28	91	26.7	48.0
10	29	91	28.3	52.0
11	4	91	26.7	.
11	5	91	27.8	38.0
11	6	91	27.8	46.0
11	11	91	26.1	50.0
11	12	91	26.7	47.0
11	13	91	26.7	54.0
11	18	91	26.7	51.0
11	19	91	27.2	48.0
11	20	91	26.7	54.0
11	26	91	26.7	43.0
11	27	91	26.7	57.0
12	5	91	26.7	48.0
12	11	91	26.7	48.0
12	12	91	25.6	37.0
12	13	91	26.7	34.0
12	16	91	24.4	52.0
12	17	91	25.6	47.0
12	19	91	25.0	47.0
12	23	91	25.8	45.0
12	24	91	25.0	49.0
12	26	91	26.1	48.0
12	30	91	26.1	43.0
1	3	92	25.6	49.0
1	7	92	25.0	49.0
1	8	92	26.7	45.0
1	9	92	26.1	50.0
1	13	92	25.0	49.0
1	14	92	25.0	49.0
1	16	92	25.0	49.0
1	17	92	24.4	52.0
1	21	92	25.0	50.0
1	22	92	25.0	53.0
1	23	92	25.0	53.0
1	28	92	25.0	44.0
2	3	92	.	.
2	4	92	27.8	49.0
2	5	92	26.7	47.0
2	7	92	26.7	51.0
2	10	92	26.7	48.0
2	11	92	26.7	50.0
2	13	92	26.1	45.0
2	18	92	25.6	.
2	19	92	26.7	54.0
2	20	92	26.7	47.0
2	21	92	27.2	51.0
2	24	92	27.2	51.0
2	25	92	26.7	50.0
2	26	92	26.7	47.0
2	27	92	27.8	49.0
2	28	92	26.7	48.0

Table B1.8. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
3	2	92	27.2	51.0
3	3	92	27.2	51.0
3	5	92	26.7	54.0
3	9	92	.	.
3	10	92	26.1	50.0
3	11	92	25.0	46.0
3	12	92	26.7	50.0
3	17	92	.	.
3	19	92	26.7	50.0
3	23	92	.	.
3	24	92	27.2	48.0
3	25	92	27.2	51.0
3	27	92	26.7	47.0
3	31	92	26.7	47.0
4	7	92	.	.
4	8	92	28.9	39.0
4	9	92	27.8	49.0
4	13	92	.	.
4	14	92	27.2	47.0
4	20	92	.	.
4	21	92	28.3	52.0
4	23	92	27.2	52.0
4	29	92	27.2	.
5	5	92	26.7	.
5	7	92	.	.
5	11	92	27.8	52.0
5	12	92	28.3	62.0
5	13	92	27.8	.
5	14	92	27.2	44.0
5	15	92	26.7	46.0
5	18	92	27.2	48.0
5	19	92	28.3	47.0
5	20	92	27.2	54.0
5	21	92	27.8	54.0
5	26	92	25.6	40.0
5	27	92	26.7	51.0
5	28	92	26.1	48.0
6	1	92	26.7	48.0
6	2	92	27.8	54.0
6	3	92	27.2	54.0
6	4	92	26.1	54.0
6	8	92	27.2	46.0
6	9	92	26.1	50.0
6	10	92	26.7	54.0
6	12	92	27.2	57.0
6	15	92	27.8	39.0
6	16	92	27.2	46.0
6	17	92	27.8	48.0
6	22	92	28.9	42.0
6	23	92	28.9	42.0
6	24	92	26.7	48.0
6	29	92	26.7	48.0
6	30	92	26.7	48.0
7	1	92	26.1	50.0
7	1	92	26.7	50.0
7	6	92	27.2	46.0
7	7	92	26.1	53.0
7	8	92	26.1	57.0
7	9	92	25.6	63.0
7	13	92	26.7	50.0
7	14	92	27.2	52.0
7	15	92	27.2	52.0

Table B1.9. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
7	16	92	25.6	56.0
7	20	92	27.8	49.0
7	21	92	26.1	50.0
7	22	92	26.7	51.0
7	23	92	26.7	57.0
7	27	92	26.1	45.0
7	28	92	25.6	53.0
7	29	92	25.6	48.0
7	30	92	23.3	.
8	3	92	25.0	53.0
8	4	92	26.7	48.0
8	5	92	26.7	44.0
8	6	92	26.1	.
8	10	92	25.6	60.0
8	11	92	25.0	58.0
8	12	92	24.4	52.0
8	13	92	26.7	52.0
8	17	92	25.6	53.0
8	18	92	26.1	47.0
8	19	92	27.2	46.0
8	20	92	23.9	.
8	24	92	25.6	60.0
8	25	92	25.6	53.0
8	26	92	26.7	48.0
8	27	92	22.8	.
8	31	92	25.0	54.0
9	1	92	26.1	50.0
9	2	92	26.7	50.0
9	4	92	25.0	55.0
9	8	92	26.7	46.0
9	9	92	24.4	51.0
9	11	92	25.6	49.0
9	14	92	25.6	54.0
9	15	92	24.4	51.0
9	16	92	25.0	59.0
9	21	92	26.1	53.0
9	22	92	25.0	53.0
9	23	92	25.0	53.0
9	28	92	24.4	52.0
9	29	92	25.0	53.0
9	30	92	24.4	52.0
10	1	92	24.4	55.0
10	5	92	24.4	52.0
10	6	92	24.4	53.0
10	7	92	26.7	49.0
10	8	92	25.0	56.0
10	9	92	25.0	53.0
10	12	92	24.4	51.0
10	13	92	26.7	48.0
10	14	92	25.0	49.0
10	16	92	25.0	49.0
10	19	92	24.4	48.0
10	20	92	25.0	49.0
10	21	92	25.0	48.0
10	22	92	24.4	52.0
10	26	92	26.7	48.0
10	27	92	25.6	53.0
10	28	92	24.4	54.0
10	30	92	26.7	47.0
11	2	92	27.2	.
11	3	92	24.4	52.0

Table B1.10. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
11	4	92	24.4	53.0
11	9	92	23.9	43.0
11	10	92	24.4	52.0
11	16	92	24.4	53.0
11	17	92	25.0	50.0
11	18	92	24.4	52.0
11	19	92	24.4	55.0
11	23	92	25.0	53.0
11	24	92	24.4	55.0
11	30	92	25.0	53.0
12	1	92	24.4	58.0
12	2	92	23.9	58.0
12	3	92	23.9	58.0
12	4	92	23.9	45.0
12	7	92	23.3	38.0
12	8	92	25.6	50.0
12	9	92	25.0	49.0
12	10	92	25.0	53.0
12	11	92	25.6	49.0
12	15	92	23.9	53.0
12	16	92	25.0	50.0
12	17	92	23.9	52.0
12	18	92	23.3	54.0
12	21	92	25.6	47.0
12	22	92	23.9	55.0
12	29	92	19.4	57.0
12	30	92	22.2	53.0
12	31	92	24.4	46.0
1	4	93	23.9	37.0
1	5	93	23.9	52.0
1	6	93	25.0	49.0
1	8	93	24.4	49.0
1	11	93	25.0	43.0
1	12	93	24.4	43.0
1	14	93	25.0	49.0
1	15	93	24.4	49.0
1	18	93	25.6	47.0
1	19	93	23.9	48.0
1	20	93	23.3	48.0
1	21	93	25.6	47.0
1	22	93	24.7	52.0
1	25	93	23.3	47.0
1	26	93	25.0	40.0
1	27	93	.	.
1	28	93	24.4	49.0
1	29	93	24.4	33.0
2	1	93	23.9	48.0
2	2	93	25.0	43.0
2	3	93	25.0	42.0
2	4	93	23.9	45.0
2	5	93	25.6	47.0
2	8	93	24.4	46.0
2	9	93	24.4	46.0
2	10	93	23.9	48.0
2	11	93	24.4	46.0
2	12	93	24.4	46.0
2	15	93	25.0	.
2	16	93	23.3	45.0
2	17	93	23.9	48.0
2	18	93	24.4	46.0
2	19	93	24.4	46.0

Table B1.11. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
2	22	93	26.1	30.0
2	23	93	23.3	51.0
2	25	93	25.0	47.0
2	26	93	26.1	44.0
3	2	93	25.6	47.0
3	3	93	24.4	49.0
3	4	93	25.6	47.0
3	5	93	23.9	52.0
3	8	93	25.6	47.0
3	9	93	23.3	55.0
3	10	93	24.4	48.0
3	11	93	24.4	46.0
3	12	93	23.3	51.0
3	15	93	22.2	54.0
3	16	93	22.8	54.0
3	17	93	23.3	51.0
3	18	93	23.9	48.0
3	19	93	23.3	47.0
3	22	93	22.8	53.0
3	23	93	21.7	56.0
3	24	93	22.8	49.0
3	25	93	22.2	53.0
3	26	93	26.1	51.0
3	29	93	22.8	54.0
3	30	93	23.3	51.0
3	31	93	23.9	52.0
4	1	93	22.8	54.0
4	2	93	22.2	.
4	5	93	22.8	54.0
4	6	93	22.8	53.0
4	7	93	23.3	52.0
4	8	93	23.3	50.0
4	9	93	23.9	48.0
4	12	93	22.8	54.0
4	13	93	21.7	56.0
4	14	93	23.9	51.0
4	16	93	22.8	54.0
4	19	93	22.2	53.0
4	20	93	22.8	50.0
4	21	93	22.2	54.0
4	23	93	22.2	53.0
4	26	93	22.2	53.0
4	27	93	22.2	55.0
4	29	93	22.8	54.0
4	30	93	22.2	53.0
5	3	93	22.2	53.0
5	4	93	22.8	54.0
5	5	93	23.3	51.0
5	7	93	22.8	53.0
5	10	93	22.8	60.0
5	11	93	22.8	53.0
5	12	93	22.8	53.0
5	17	93	22.2	53.0
5	18	93	22.2	53.0
5	19	93	22.2	53.0
5	20	93	22.8	53.0
5	24	93	21.7	54.0
5	25	93	22.2	57.0
5	26	93	22.2	53.0
5	28	93	24.4	.
5	31	93	23.3	56.0

Table B1.12. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
6	1	93	22.8	57.0
6	2	93	22.2	57.0
6	3	93	22.2	57.0
6	7	93	22.8	57.0
6	8	93	21.7	58.0
6	9	93	22.8	62.0
6	10	93	22.8	62.0
6	14	93	24.4	64.0
6	15	93	23.3	58.0
6	16	93	23.3	58.0
6	17	93	22.8	62.0
6	18	93	23.3	58.0
6	21	93	23.3	62.0
6	22	93	24.4	58.0
6	23	93	24.4	61.0
6	25	93	24.4	55.0
6	28	93	22.2	57.0
6	29	93	22.2	61.0
6	30	93	22.2	57.0
7	1	93	23.3	62.0
7	2	93	23.3	62.0
7	5	93	24.4	63.0
7	6	93	23.9	57.0
7	7	93	23.3	62.0
7	8	93	23.3	66.0
7	12	93	23.9	58.0
7	13	93	23.3	58.0
7	14	93	26.1	54.0
7	19	93	23.9	63.0
7	20	93	25.6	59.0
7	21	93	23.9	63.0
7	26	93	23.9	68.0
7	27	93	24.4	67.0
7	28	93	24.4	68.0
7	29	93	25.0	67.0
7	30	93	27.2	58.0
8	2	93	24.4	63.0
8	3	93	23.9	63.0
8	4	93	23.3	66.0
8	6	93	23.3	62.0
8	9	93	24.4	60.0
8	10	93	25.0	63.0
8	11	93	26.1	57.0
8	12	93	26.7	57.0
8	16	93	25.6	60.0
8	17	93	24.4	60.0
8	18	93	26.1	55.0
8	20	93	25.6	63.0
8	23	93	26.7	55.0
8	24	93	26.7	60.0
8	25	93	27.2	58.0
8	26	93	28.3	54.0
8	28	93	27.8	55.0
8	30	93	26.1	60.0
8	31	93	24.4	55.0
9	1	93	23.3	58.0
9	2	93	23.9	58.0
9	7	93	23.3	52.0
9	8	93	21.7	53.0
9	9	93	23.3	58.0
9	13	93	23.9	51.0

Table B1.13. Temperature and relative humidity data for the Wet-Dry Cycle Test: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
9	14	93	21.7	53.0
9	15	93	22.8	50.0
9	16	93	22.2	57.0
9	20	93	23.3	52.0
9	21	93	22.2	53.0
9	22	93	22.8	54.0
9	23	93	23.3	50.0
9	27	93	22.2	49.0
9	28	93	22.8	50.0
9	29	93	22.2	53.0
9	30	93	22.8	54.0
10	5	93	22.2	49.0
10	6	93	22.2	49.0
10	7	93	22.2	53.0
10	8	93	22.8	50.0
10	11	93	22.2	49.0
10	12	93	22.2	53.0
10	13	93	22.2	49.0
10	15	93	22.2	49.0
10	18	93	25.6	41.0
10	19	93	25.0	44.0
10	25	93	23.3	47.0
10	26	93	22.8	46.0
10	27	93	22.8	50.0
10	28	93	23.3	52.0
10	29	93	23.9	55.0
11	1	93	24.4	45.0
11	2	93	24.4	49.0
11	4	93	23.9	55.0
11	5	93	25.0	56.0
11	8	93	22.8	50.0
11	9	93	22.2	53.0
11	10	93	24.4	52.0

Figure B1.14. Daily temperature and relative humidity readings for the Wet-Dry Cycle Test (weeks 0 - 132).

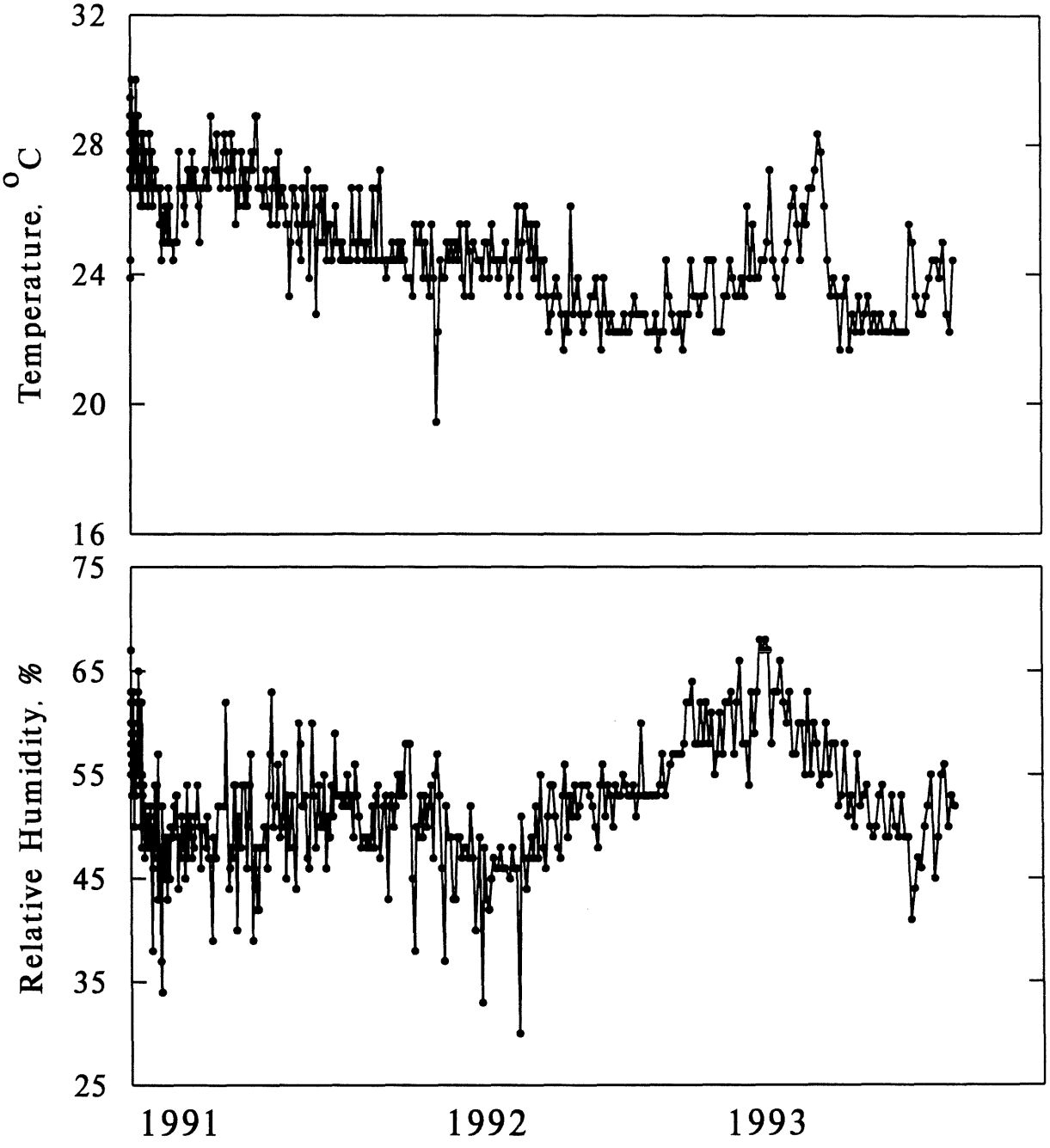

Table B2.1. Wet-Dry Cycle Test drainage quality from Solid RK1, reactor 1.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	625.	7.75	.	.	288.0	.	.	3000.	.	4	30	91
0	.	90.	.	.	.	.	.	.	.	.	4	30	91
0	.	15.	7.12	.	.	<2.0	0.65	0.65	3022.	.	5	2	91
1	154.8	168.	7.81	29.0	.	34.0	7.25	8.35	3044.	.	5	9	91
2	.	120.	7.69	34.0	.	34.0	8.00	8.30	3078.	.	5	16	91
3	151.4	102.	7.78	26.0	.	.	.	.	.	.	5	22	91
4	153.9	120.	7.62	.	.	8.0	.	.	3122.	.	5	30	91
5	146.8	138.	7.70	34.0	.	.	.	.	.	.	6	6	91
6	144.5	90.	7.54	.	.	11.4	4.25	4.10	3166.	.	6	13	91
7	154.9	78.	7.27	26.0	.	.	.	.	.	.	6	20	91
8	121.9	97.	7.62	.	.	14.4	4.55	4.75	3218.	.	6	27	91
9	136.6	119.	7.52	32.0	.	.	.	.	.	.	7	3	91
10	147.6	72.	7.43	.	.	10.2	3.40	3.35	3265.	.	7	11	91
11	146.3	77.	.	24.0	.	.	.	.	.	.	7	18	91
12	145.6	92.	7.66	.	.	12.7	3.85	3.85	3309.	.	7	25	91
13	141.2	68.	7.29	21.0	.	.	.	.	.	.	7	31	91
14	148.9	68.	7.03	.	.	9.3	3.10	3.20	3361.	.	8	8	91
15	135.8	66.	7.39	16.0	.	.	.	.	.	.	8	15	91
16	144.5	65.	7.38	.	.	11.9	3.55	3.45	3408.	.	8	22	91
17	144.2	60.	7.39	15.0	.	.	.	.	.	.	8	29	91
18	134.9	72.	7.88	.	.	13.4	3.85	3.25	3452.	.	9	5	91
19	153.3	72.	7.35	23.0	.	.	.	.	.	.	9	12	91
20	140.3	58.	.	.	.	10.6	2.90	2.75	3504.	.	9	19	91
21	137.9	70.	7.49	15.0	.	.	.	.	.	.	9	26	91
22	141.0	80.	7.42	.	.	9.5	.	.	3548.	.	10	3	91
23	143.7	62.	7.15	11.0	.	.	.	.	.	.	10	10	91
24	145.3	75.	7.33	.	.	9.6	3.45	3.35	3595.	.	10	17	91
25	.	65.	7.40	13.0	.	.	.	.	.	.	10	24	91
26	.	60.	7.34	.	.	9.7	3.40	4.05	3639.	.	10	31	91
27	142.5	58.	7.29	13.0	.	.	.	.	.	.	11	7	91
28	147.2	65.	6.91	.	.	9.6	3.20	2.50	3661.	.	11	14	91
29	122.4	60.	7.20	16.0	.	.	.	.	.	.	11	21	91
30	145.7	58.	6.88	.	.	8.6	2.30	2.30	3683.	.	11	27	91
31	136.7	65.	7.20	10.0	.	.	.	.	.	.	12	5	91
32	138.3	52.	7.16	.	.	.	2.35	2.15	3705.	.	12	12	91
33	150.2	92.	7.22	15.0	.	.	.	.	.	.	12	19	91
34	139.5	50.	7.15	.	.	6.7	2.40	2.65	3727.	.	12	26	91
35	141.9	52.	7.26	14.0	.	.	.	.	.	.	1	2	92
36	147.0	56.	7.23	.	.	.	2.10	2.05	3749.	.	1	9	92
37	147.3	57.	7.23	6.3	.	.	.	.	.	.	1	16	92
38	144.2	52.	7.23	.	.	8.9	2.50	2.30	3771.	.	1	23	92
39	146.7	50.	7.29	3.0	.	.	.	.	.	.	1	30	92
40	151.9	47.	7.19	.	.	6.5	2.30	2.50	3793.	.	2	6	92
41	145.7	40.	7.24	<3.0	.	.	.	.	.	49.0	2	13	92
42	148.3	50.	7.20	.	.	5.9	4.00	2.80	3815.	29.0	2	20	92
43	150.8	46.	7.18	9.0	.	.	.	.	.	52.0	2	27	92

Table B2.2. Wet-Dry Cycle Test drainage quality from Solid RK1, reactor 1.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	149.5	38.	7.26	.	.	7.0	4.20	3.40	3837.	35.0	3	5	92
45	143.0	38.	7.14	6.0	.	.	.	.	.	34.0	3	12	92
46	153.1	42.	6.71	.	.	5.1	1.20	1.80	3859.	64.0	3	19	92
47	150.9	43.	6.82	9.0	.	.	.	.	.	57.0	3	26	92
48	149.4	49.	6.91	.	.	5.5	2.00	2.60	3881.	45.0	4	2	92
49	139.5	50.	6.90	12.6	.	.	.	.	.	42.0	4	9	92
50	148.6	55.	7.10	.	.	<2.0	1.40	2.80	55000.	50.0	4	16	92
51	152.2	44.	6.95	12.6	.	.	.	.	.	22.0	4	23	92
52	141.6	42.	7.11	.	.	4.8	0.80	2.60	55011.	12.0	4	30	92
53	144.0	46.	6.64	12.6	.	.	.	.	.	20.0	5	7	92
54	150.4	43.	6.40	.	.	6.7	1.80	4.40	55022.	26.0	5	14	92
55	148.8	43.	7.17	3.0	.	.	.	.	.	25.0	5	21	92
56	146.6	30.	6.56	.	.	4.7	2.50	2.90	55033.	0.0	5	28	92
57	140.1	58.	7.29	18.0	.	.	.	.	.	9.0	6	4	92
58	151.7	41.	7.23	.	.	4.4	2.00	1.80	55044.	0.0	6	11	92
59	149.1	40.	7.09	8.0	.	.	.	.	.	17.0	6	18	92
60	156.3	50.	7.08	.	.	5.9	2.20	2.30	55056.	0.0	6	25	92
61	159.1	40.	7.03	10.0	.	.	.	.	.	0.0	7	2	92
62	160.0	36.	6.90	.	.	4.8	2.00	1.60	55067.	.	7	9	92
63	159.3	31.	6.66	8.0	.	.	.	.	.	.	7	16	92
64	159.5	38.	6.88	.	.	4.0	1.70	1.40	55078.	.	7	23	92
65	154.0	35.	6.93	11.0	.	.	.	.	.	.	7	30	92
66	154.5	32.	6.78	.	.	3.4	1.30	1.35	55089.	.	8	6	92
67	153.2	44.	6.87	19.0	.	.	.	.	.	.	8	13	92
68	154.4	35.	6.92	.	.	6.6	1.35	1.35	55100.	.	8	20	92
69	159.2	47.	6.88	11.0	.	.	.	.	.	.	8	27	92
70	161.1	34.	6.97	.	.	4.8	1.20	1.15	55112.	.	9	3	92
71	161.0	33.	7.06	13.0	.	.	.	.	.	.	9	10	92
72	158.1	33.	7.17	.	.	6.2	1.25	1.30	55123.	.	9	17	92
73	159.3	50.	7.18	13.0	.	.	.	.	.	.	9	24	92
74	159.7	37.	6.87	.	.	5.0	1.10	1.20	55134.	.	10	1	92
75	162.0	29.	7.18	11.0	.	.	.	.	.	.	10	8	92
76	160.6	29.	7.29	.	.	5.0	1.00	1.15	55145.	.	10	15	92
77	159.7	30.	7.26	13.0	.	.	.	.	.	.	10	22	92
78	159.0	28.	7.32	.	.	.	1.05	1.15	55157.	.	10	29	92
79	160.8	26.	7.21	8.0	.	.	.	.	.	.	11	5	92
80	148.0	30.	7.27	.	.	.	1.00	1.00	55168.	47.0	11	12	92
81	165.8	28.	7.00	.	.	.	.	.	.	.	11	18	92
82	164.0	27.	7.11	.	.	.	1.15	2.85	55179.	.	11	25	92
83	162.6	24.	6.96	7.0	.	.	.	.	.	.	12	3	92
84	160.4	27.	6.90	.	.	.	0.75	0.80	55190.	.	12	10	92
85	166.1	28.	6.82	8.1	.	.	.	.	.	.	12	17	92
86	139.4	25.	.	.	.	5.3	1.05	2.15	55201.	71.0	12	24	92
87	.	.	.	.	.	.	.	.	.	.	12	31	92
88	161.3	23.	6.95	.	.	3.7	0.80	0.90	55213.	.	1	7	93
89	162.6	23.	6.74	9.7	.	.	.	.	.	.	1	14	93

Table B2.3. Wet-Dry Cycle Test drainage quality from Solid RK1, reactor 1.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	159.7	23.	7.06	.	.	3.0	0.80	0.90	55224.	.	1	21	93
91	163.5	19.	6.94	8.1	.	.	.	.	.	.	1	28	93
92	162.4	25.	7.09	.	.	2.4	0.80	1.00	55235.	.	2	4	93
93	160.9	24.	6.94	7.4	.	.	.	.	.	.	2	11	93
94	159.3	23.	7.02	.	.	2.8	0.75	1.10	55246.	.	2	18	93
95	163.5	23.	7.05	11.4	.	.	.	.	.	.	2	25	93
96	162.1	24.	7.01	.	.	2.5	0.90	1.15	55257.	.	3	4	93
97	166.1	24.	6.84	10.2	.	.	.	.	.	.	3	11	93
98	164.2	18.	6.69	.	.	<2.0	0.75	1.50	55269.	.	3	18	93
99	165.0	21.	6.75	6.8	.	.	.	.	.	.	3	25	93
100	163.4	18.	6.78	.	.	3.1	0.65	0.75	55280.	.	4	1	93
101	163.6	19.	6.90	6.2	.	.	.	.	.	.	4	8	93
102	164.8	19.	6.88	.	.	3.4	0.75	0.90	55291.	.	4	15	93
103	160.2	24.	6.88	6.0	.	.	.	.	.	.	4	22	93
104	153.4	23.	6.65	.	.	3.1	0.85	1.10	55302.	38.0	4	29	93
105	168.2	20.	6.82	6.2	.	.	.	.	.	.	5	6	93
106	168.2	24.	6.65	.	.	4.4	0.90	1.10	55314.	.	5	13	93
107	162.4	21.	6.81	4.0	.	.	.	.	.	.	5	20	93
108	163.1	26.	6.90	.	.	4.7	0.80	1.00	55325.	.	5	27	93
109	166.2	22.	7.02	5.0	.	.	.	.	.	.	6	3	93
110	170.9	24.	6.65	.	.	4.2	0.70	0.80	55336.	.	6	10	93
111	160.6	25.	7.05	7.5	.	.	.	.	.	.	6	17	93
112	180.8	.	6.14	.	.	2.6	0.25	0.30	55347.	.	6	23	93
113	167.7	35.	7.08	7.5	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	161.2	33.	6.82	7.5	.	.	.	.	.	.	7	15	93
116	164.6	33.	6.82	.	.	5.1	0.95	1.10	55359.	.	7	22	93
117	164.7	26.	6.85	7.5	.	.	.	.	.	.	7	29	93
118	163.7	28.	6.88	.	.	8.3	1.00	1.20	55370.	.	8	5	93
119	165.1	26.	6.90	10.0	.	.	.	.	.	.	8	12	93
120	165.4	26.	6.90	.	.	4.9	0.80	0.95	55381.	.	8	19	93
121	164.2	26.	6.79	5.0	.	.	.	.	.	.	8	26	93
122	164.7	25.	6.99	.	.	6.2	0.70	0.80	55392.	.	9	2	93
123	164.3	26.	7.08	6.0	.	.	.	.	.	.	9	9	93
124	165.9	22.	6.80	.	.	4.0	0.60	0.85	55404.	.	9	16	93
125	168.2	21.	6.88	5.0	.	.	.	.	.	.	9	23	93
126	164.5	21.	6.94	.	.	4.2	0.75	1.45	55416.	.	9	30	93
127	166.5	21.	7.02	7.0	.	.	.	.	.	.	10	7	93
128	163.6	29.	6.79	.	.	4.1	0.60	0.75	55427.	.	10	14	93
129	161.6	26.	6.86	7.5	.	.	.	.	.	.	10	20	93
130	169.2	24.	7.17	.	.	3.6	0.70	1.20	55439.	.	10	28	93
131	167.4	22.	6.92	5.0	.	.	.	.	.	.	11	4	93
132	168.1	22.	7.25	.	.	3.7	0.60	0.85	55450.	.	11	10	93

Table B2.4. Wet-Dry Cycle Test drainage quality from Solid RK2, reactor 3.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	262.	7.92	.	.	83.0	13.10	4.52	3002.	.	4	30	91
0	.	102.	.	.	.	.	.	.	.	.	5	1	91
0	.	48.	8.45	.	.	10.0	4.30	1.60	3024.	.	5	2	91
1	169.0	160.	7.85	40.0	.	60.0	11.10	5.20	3046.	.	5	9	91
2	.	132.	7.70	31.0	.	43.0	10.50	3.45	3080.	.	5	16	91
3	162.0	136.	7.64	23.0	.	.	.	.	.	.	5	23	91
4	164.6	158.	7.49	.	.	41.0	.	.	3124.	.	5	30	91
5	167.0	124.	7.45	16.0	.	.	.	.	.	.	6	6	91
6	167.1	105.	7.45	.	.	28.0	7.70	1.75	3168.	.	6	13	91
7	164.1	102.	7.45	9.0	.	.	.	.	.	.	6	20	91
8	165.7	82.	7.43	.	.	18.6	6.05	1.50	3220.	.	6	27	91
9	159.9	97.	7.38	11.0	.	.	.	.	.	.	7	3	91
10	166.5	94.	7.26	.	.	28.0	6.20	1.55	3267.	.	7	11	91
11	171.6	96.	6.85	8.0	.	.	.	.	.	.	7	18	91
12	166.3	81.	7.37	.	.	21.7	.	.	3311.	.	7	25	91
13	166.5	69.	7.23	8.0	.	.	.	.	.	.	7	31	91
14	168.6	70.	6.83	.	.	19.9	4.20	1.35	3363.	.	8	8	91
15	166.0	69.	7.15	8.0	.	.	.	.	.	.	8	15	91
16	165.3	65.	7.37	.	.	19.2	4.15	1.40	3410.	.	8	22	91
17	166.8	70.	7.06	8.0	.	.	.	.	.	.	8	29	91
18	160.1	68.	7.78	.	.	20.1	4.10	1.75	3454.	.	9	5	91
19	168.0	68.	7.18	7.0	.	.	.	.	.	.	9	12	91
20	168.4	62.	7.02	.	.	19.3	3.70	1.60	3506.	.	9	19	91
21	164.7	50.	7.11	5.2	.	.	.	.	.	.	9	26	91
22	166.6	55.	7.22	.	.	14.4	3.30	1.60	3550.	.	10	3	91
23	163.1	50.	7.07	10.0	.	.	.	.	.	.	10	10	91
24	169.3	50.	6.85	.	.	13.8	2.90	1.40	3597.	.	10	17	91
25	168.5	45.	6.88	5.2	.	.	.	.	.	.	10	24	91
26	.	44.	6.86	.	.	9.1	2.35	0.95	3640.	.	10	31	91
27	168.0	37.	6.82	5.2	.	.	.	.	.	.	11	7	91
28	161.2	42.	6.82	.	.	10.9	2.35	1.15	3662.	.	11	14	91
29	168.9	50.	6.95	6.3	.	.	.	.	.	.	11	21	91
30	167.3	34.	6.91	.	.	7.6	2.05	1.10	3684.	.	11	27	91
31	169.0	35.	6.98	6.3	.	.	.	.	.	.	12	5	91
32	167.7	34.	6.97	.	.	8.5	1.95	1.20	3706.	.	12	12	91
33	160.7	41.	6.96	5.0	.	.	.	.	.	.	12	19	91
34	170.6	34.	6.89	.	.	5.8	2.05	1.05	3728.	.	12	26	91
35	162.1	35.	7.03	5.8	.	.	.	.	.	.	1	2	92
36	168.6	42.	6.87	.	.	10.6	2.30	1.05	3750.	.	1	9	92
37	168.9	36.	6.86	6.3	.	.	.	.	.	.	1	16	92
38	169.9	32.	6.79	.	.	8.5	2.15	1.15	3772.	.	1	23	92
39	167.4	41.	6.88	4.0	.	.	.	.	.	.	1	30	92
40	168.7	37.	6.90	.	.	10.2	2.55	1.35	3794.	.	2	6	92
41	167.9	37.	6.63	<3.0	.	.	.	.	.	.	2	13	92
42	168.0	43.	6.87	.	.	11.2	3.60	2.00	3816.	.	2	20	92
43	168.1	42.	6.75	6.3	.	.	.	.	.	.	2	27	92

Table B2.5. Wet-Dry Cycle Test drainage quality from Solid RK2, reactor 3.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	169.9	42.	6.75	.	.	13.1	4.60	2.00	3838.	.	3	5	92
45	170.6	39.	6.68	6.0	.	.	.	.	.	.	3	12	92
46	170.1	40.	6.60	.	.	12.2	2.60	1.60	3860.	.	3	19	92
47	169.9	44.	6.68	4.0	.	.	.	.	.	.	3	26	92
48	165.3	43.	6.78	.	.	12.4	2.20	1.80	3882.	.	4	2	92
49	171.1	41.	6.72	3.0	.	.	.	.	.	.	4	9	92
50	167.3	47.	6.49	.	.	13.4	2.00	2.40	55001.	.	4	16	92
51	170.8	44.	6.77	9.0	.	.	.	.	.	.	4	23	92
52	170.2	45.	7.03	.	.	11.9	1.40	2.00	55012.	.	4	30	92
53	166.4	34.	6.61	9.0	.	.	.	.	.	.	5	7	92
54	168.9	33.	6.38	.	.	11.4	1.80	2.00	55023.	.	5	14	92
55	157.5	36.	6.79	3.0	.	.	.	.	.	.	5	21	92
56	170.2	36.	6.38	.	.	10.2	3.00	1.30	55034.	.	5	28	92
57	165.8	39.	6.91	4.7	.	.	.	.	.	.	6	4	92
58	168.8	34.	6.72	.	.	8.7	2.70	1.20	55045.	.	6	11	92
59	168.5	37.	6.61	2.5	.	.	.	.	.	.	6	18	92
60	169.0	37.	6.62	.	.	8.6	2.70	1.30	55057.	.	6	25	92
61	168.7	37.	6.74	2.6	.	.	.	.	.	.	7	2	92
62	164.8	33.	6.77	.	.	9.0	3.00	2.00	55068.	.	7	9	92
63	169.9	35.	6.44	2.5	.	.	.	.	.	.	7	16	92
64	169.4	34.	6.64	.	.	7.5	2.70	1.40	55079.	.	7	23	92
65	169.8	30.	6.71	2.6	.	.	.	.	.	.	7	30	92
66	159.2	27.	6.52	.	.	6.0	2.15	1.05	55090.	.	8	6	92
67	168.2	31.	6.65	5.3	.	.	.	.	.	.	8	13	92
68	165.4	32.	6.59	.	.	7.8	2.30	1.30	55101.	.	8	20	92
69	167.9	30.	6.68	5.3	.	.	.	.	.	.	8	27	92
70	164.6	31.	6.71	.	.	6.6	2.20	1.15	55113.	.	9	3	92
71	169.0	31.	6.89	5.3	.	.	.	.	.	.	9	10	92
72	167.9	26.	7.10	.	.	7.9	2.00	0.90	55124.	.	9	17	92
73	165.8	27.	6.92	5.3	.	.	.	.	.	.	9	24	92
74	167.0	29.	6.56	.	.	7.9	1.90	0.80	55135.	.	10	1	92
75	166.3	25.	7.02	5.3	.	.	.	.	.	.	10	8	92
76	166.6	24.	6.98	.	.	7.4	1.70	0.90	55146.	.	10	15	92
77	167.7	25.	6.93	5.3	.	.	.	.	.	.	10	22	92
78	166.4	24.	7.09	.	.	.	1.70	0.70	55158.	.	10	29	92
79	168.6	21.	6.81	5.3	.	.	.	.	.	.	11	5	92
80	169.3	22.	6.87	.	.	.	1.45	0.60	55169.	.	11	12	92
81	166.6	21.	6.74	.	.	.	.	.	.	.	11	18	92
82	169.8	24.	6.10	.	.	.	1.60	0.60	55180.	.	11	25	92
83	169.0	20.	6.37	5.4	.	.	.	.	.	.	12	3	92
84	166.5	22.	6.41	.	.	.	1.55	1.15	55191.	.	12	10	92
85	170.7	23.	6.44	5.4	.	.	.	.	.	.	12	17	92
86	173.3	26.	6.57	.	.	5.4	1.95	3.95	55202.	.	12	24	92
87	171.0	24.	6.47	.	.	.	.	.	.	.	12	31	92
88	167.3	19.	6.31	.	.	4.5	1.60	0.60	55214.	.	1	7	93
89	167.2	17.	6.26	.	3.0	.	.	.	.	.	1	14	93

Table B2.6. Wet-Dry Cycle Test drainage quality from Solid RK2, reactor 3.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	162.9	19.	6.36	.	.	3.8	1.25	0.50	55225.	.	1	21	93
91	165.4	18.	6.37	5.4	.	.	.	.	.	.	1	28	93
92	167.2	18.	6.39	.	.	3.2	1.30	0.45	55236.	.	2	4	93
93	166.7	19.	6.36	<5.7	.	.	.	.	.	.	2	11	93
94	165.4	19.	6.33	.	.	4.0	1.35	0.75	55247.	.	2	18	93
95	167.8	18.	6.44	4.5	.	.	.	.	.	.	2	25	93
96	166.2	19.	6.46	.	.	4.3	1.40	0.60	55258.	.	3	4	93
97	168.2	18.	6.45	4.5	.	.	.	.	.	.	3	11	93
98	166.1	17.	6.37	.	.	3.5	1.35	0.55	55270.	.	3	18	93
99	164.7	17.	6.41	5.7	.	.	.	.	.	.	3	25	93
100	169.3	17.	6.36	.	.	3.5	1.45	0.60	55281.	.	4	1	93
101	163.0	17.	6.54	2.5	.	.	.	.	.	.	4	8	93
102	163.5	16.	6.54	.	.	3.4	1.35	0.60	55292.	.	4	15	93
103	163.1	20.	6.54	2.5	.	.	.	.	.	.	4	22	93
104	171.2	18.	6.39	.	.	3.6	1.45	0.70	55303.	.	4	29	93
105	170.5	18.	6.49	2.5	.	.	.	.	.	.	5	6	93
106	170.7	18.	6.39	.	.	5.4	1.70	0.80	55315.	.	5	13	93
107	168.3	17.	6.52	2.5	.	.	.	.	.	.	5	20	93
108	170.5	18.	6.49	.	.	4.4	1.45	0.55	55326.	.	5	27	93
109	169.5	18.	6.62	2.5	.	.	.	.	.	.	6	3	93
110	171.0	19.	6.48	.	.	4.6	1.50	1.10	55337.	.	6	10	93
111	169.1	18.	6.67	5.0	.	.	.	.	.	.	6	17	93
112	168.1	18.	6.25	.	.	4.8	1.55	0.55	55348.	.	6	23	93
113	169.2	20.	6.72	3.8	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	168.5	22.	6.62	2.5	.	.	.	.	.	.	7	15	93
116	170.9	20.	6.67	.	.	4.9	1.65	0.55	55360.	.	7	22	93
117	168.9	19.	6.63	5.0	.	.	.	.	.	.	7	29	93
118	167.8	20.	6.61	.	.	4.9	1.55	0.55	55371.	.	8	5	93
119	168.5	22.	6.62	4.0	.	.	.	.	.	.	8	12	93
120	169.1	21.	6.66	.	.	6.2	1.60	0.55	55382.	.	8	19	93
121	168.0	21.	6.52	5.0	.	.	.	.	.	.	8	26	93
122	168.5	22.	6.76	.	.	6.3	1.60	0.55	55393.	.	9	2	93
123	166.9	19.	6.82	4.0	.	.	.	.	.	.	9	9	93
124	169.9	19.	6.54	.	.	5.6	1.45	0.50	55405.	.	9	16	93
125	169.4	19.	6.54	4.0	.	.	.	.	.	.	9	23	93
126	167.2	19.	6.67	.	.	5.6	1.50	0.60	55417.	.	9	30	93
127	169.2	18.	6.61	4.0	.	.	.	.	.	.	10	7	93
128	170.8	20.	6.57	.	.	5.0	1.35	0.50	55428.	.	10	14	93
129	168.7	19.	6.70	2.5	.	.	.	.	.	.	10	20	93
130	164.6	18.	6.71	.	.	4.5	1.35	0.50	55440.	.	10	28	93
131	172.0	19.	6.49	4.0	.	.	.	.	.	.	11	4	93
132	168.3	18.	6.52	.	.	4.7	1.35	0.50	55451.	.	11	10	93

Table B2.7. Wet-Dry Cycle Test drainage quality from Solid RK3, reactor 5.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	675.	7.18	.	.	310.0	54.20	23.90	3004.	.	4	30	91
0	.	255.	.	.	.	.	.	.	.	.	5	1	91
0	.	33.	7.16	.	.	5.0	1.50	0.60	3026.	.	5	2	91
1	158.3	160.	7.57	29.0	.	50.0	10.10	4.15	3048.	.	5	9	91
2	.	255.	7.30	17.0	.	97.0	24.50	8.60	3082.	.	5	16	91
3	163.3	170.	7.40	11.0	.	.	.	.	.	.	5	23	91
4	162.3	157.	7.52	.	.	39.0	.	.	3126.	.	5	30	91
5	167.1	122.	7.47	21.0	.	.	.	.	.	.	6	6	91
6	164.9	96.	7.13	.	.	24.0	8.30	2.40	3170.	.	6	13	91
7	167.7	92.	7.13	11.0	.	.	.	.	.	.	6	20	91
8	164.8	104.	7.45	.	.	19.2	8.20	2.40	3222.	.	6	27	91
9	166.5	86.	7.39	18.0	.	.	.	.	.	.	7	3	91
10	171.1	135.	7.09	.	.	6.8	2.50	0.60	3269.	.	7	11	91
11	164.8	132.	6.88	11.0	.	.	.	.	.	.	7	18	91
12	166.4	78.	7.37	.	.	23.2	6.20	1.65	3313.	.	7	25	91
13	161.8	77.	7.30	18.0	.	.	.	.	.	.	7	31	91
14	156.0	80.	7.23	.	.	14.8	6.80	1.70	3365.	.	8	8	91
15	167.0	40.	7.11	8.0	.	.	.	.	.	.	8	15	91
16	167.3	78.	7.50	.	.	14.7	6.75	1.75	3412.	.	8	22	91
17	158.0	80.	7.56	10.5	.	.	.	.	.	.	8	29	91
18	155.4	72.	7.46	.	.	12.4	7.90	2.20	3456.	.	9	5	91
19	159.9	67.	7.33	17.0	.	.	.	.	.	.	9	12	91
20	157.7	60.	7.13	.	.	11.9	5.45	1.50	3508.	.	9	19	91
21	159.3	52.	7.37	15.0	.	.	.	.	.	.	9	26	91
22	156.5	59.	7.32	.	.	8.7	4.95	1.50	3552.	.	10	3	91
23	163.2	55.	7.20	13.0	.	.	.	.	.	.	10	10	91
24	159.2	61.	7.35	.	.	10.6	5.90	1.75	3599.	.	10	17	91
25	149.5	60.	7.38	26.0	.	.	.	.	.	.	10	24	91
26	.	46.	7.29	.	.	5.9	4.00	0.90	3641.	.	10	31	91
27	155.2	49.	7.29	17.0	.	.	.	.	.	.	11	7	91
28	158.8	57.	6.99	.	.	6.7	5.50	1.30	3663.	.	11	14	91
29	157.2	52.	7.17	16.0	.	.	.	.	.	.	11	21	91
30	161.5	42.	6.82	.	.	6.0	4.35	1.70	3685.	.	11	27	91
31	156.4	50.	7.12	19.0	.	.	.	.	.	.	12	5	91
32	170.7	11.	7.00	.	.	<2.0	0.85	0.30	3707.	.	12	12	91
33	166.3	58.	7.20	18.0	.	.	.	.	.	.	12	19	91
34	171.8	25.	7.03	.	.	3.8	2.30	0.60	3729.	.	12	26	91
35	171.3	44.	7.06	12.0	.	.	.	.	.	.	1	2	92
36	158.5	58.	7.13	.	.	7.2	4.85	1.35	3751.	.	1	9	92
37	167.8	50.	7.37	16.0	.	.	.	.	.	.	1	16	92
38	172.8	35.	7.12	.	.	4.5	3.10	2.05	3773.	.	1	23	92
39	175.9	6.	7.05	7.0	.	.	.	.	.	.	1	30	92
40	166.3	51.	7.05	.	.	7.8	5.15	1.75	3795.	.	2	6	92
41	165.4	40.	7.20	18.0	.	.	.	.	.	24.0	2	13	92
42	181.8	5.	6.97	.	.	<2.0	2.20	0.40	3817.	.	2	20	92
43	172.3	48.	7.17	12.6	.	.	.	.	.	.	2	27	92

Table B2.8. Wet-Dry Cycle Test drainage quality from Solid RK3, reactor 5.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	168.6	45.	7.30	.	.	5.7	5.40	1.60	3839.	.	3	5	92
45	167.9	36.	7.11	12.6	.	.	.	.	.	.	3	12	92
46	168.1	37.	6.74	.	.	3.7	3.00	1.40	3861.	.	3	19	92
47	169.4	40.	6.73	12.6	.	.	.	.	.	.	3	26	92
48	168.6	36.	6.88	.	.	3.9	2.60	2.00	3883.	.	4	2	92
49	170.8	42.	6.82	12.6	.	.	.	.	.	.	4	9	92
50	169.1	44.	7.17	.	.	4.1	2.40	2.20	55002.	.	4	16	92
51	169.9	43.	7.11	12.6	.	.	.	.	.	.	4	23	92
52	170.1	43.	7.01	.	.	4.6	1.60	1.80	55013.	.	4	30	92
53	167.4	40.	6.67	16.0	.	.	.	.	.	.	5	7	92
54	166.7	32.	6.33	.	.	5.0	3.00	2.00	55024.	.	5	14	92
55	162.3	42.	7.08	19.0	.	.	.	.	.	.	5	21	92
56	169.6	38.	6.55	.	.	4.8	3.70	1.30	55035.	.	5	28	92
57	165.5	44.	6.88	12.6	.	.	.	.	.	.	6	4	92
58	168.1	43.	6.99	.	.	5.3	3.90	1.70	55046.	.	6	11	92
59	171.2	43.	7.10	7.8	.	.	.	.	.	.	6	18	92
60	169.7	55.	7.07	.	.	5.6	3.60	1.50	55058.	.	6	25	92
61	169.9	45.	7.01	10.0	.	.	.	.	.	.	7	2	92
62	169.7	40.	6.84	.	.	4.7	3.30	1.40	55069.	.	7	9	92
63	171.6	35.	6.72	10.0	.	.	.	.	.	.	7	16	92
64	168.9	47.	6.99	.	.	5.9	3.30	1.70	55080.	.	7	23	92
65	168.4	46.	6.95	11.0	.	.	.	.	.	.	7	30	92
66	167.5	41.	6.87	.	.	6.8	2.95	1.50	55091.	.	8	6	92
67	168.6	42.	6.79	11.0	.	.	.	.	.	.	8	13	92
68	167.1	43.	6.72	.	.	9.1	3.20	1.55	55102.	.	8	20	92
69	168.6	50.	6.77	11.0	.	.	.	.	.	.	8	27	92
70	169.5	47.	6.75	.	.	7.5	2.75	1.35	55114.	.	9	3	92
71	169.8	47.	6.70	11.0	.	.	.	.	.	.	9	10	92
72	170.9	38.	6.84	.	.	8.8	2.55	1.35	55125.	.	9	17	92
73	171.7	43.	6.79	13.0	.	.	.	.	.	.	9	24	92
74	170.0	43.	6.90	.	.	7.3	2.40	1.30	55136.	.	10	1	92
75	168.6	40.	6.78	11.0	.	.	.	.	.	.	10	8	92
76	169.1	36.	6.79	.	.	7.8	2.20	1.25	55147.	.	10	15	92
77	168.3	34.	6.80	13.0	.	.	.	.	.	.	10	22	92
78	168.8	41.	6.84	.	.	.	2.60	1.40	55159.	.	10	29	92
79	170.0	33.	6.89	11.0	.	.	.	.	.	.	11	5	92
80	170.4	33.	6.86	.	.	.	1.70	1.05	55170.	.	11	12	92
81	170.3	32.	6.77	.	.	.	.	.	.	.	11	18	92
82	170.6	33.	6.81	.	.	.	1.70	1.15	55181.	.	11	25	92
83	171.9	28.	6.73	9.0	.	.	.	.	.	.	12	3	92
84	170.9	31.	7.01	.	.	.	1.50	0.90	55192.	.	12	10	92
85	172.7	30.	6.84	11.0	.	.	.	.	.	.	12	17	92
86	170.8	26.	.	.	.	5.4	1.20	1.10	55203.	.	12	24	92
87	170.5	28.	6.89	.	.	.	.	.	.	.	12	31	92
88	172.3	26.	6.96	.	.	4.2	1.40	1.00	55215.	.	1	7	93
89	170.5	23.	6.73	9.7	.	.	.	.	.	.	1	14	93

Table B2.9. Wet-Dry Cycle Test drainage quality from Solid RK3, reactor 5.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	171.4	26.	6.94	.	.	4.2	1.30	0.95	55226.	.	1	21	93
91	172.5	24.	6.86	10.8	.	.	.	.	.	.	1	28	93
92	171.4	27.	7.10	.	.	3.5	1.35	1.00	55237.	.	2	4	93
93	171.3	32.	6.96	10.2	.	.	.	.	.	.	2	11	93
94	172.3	28.	6.97	.	.	4.5	1.50	1.90	55248.	.	2	18	93
95	171.6	22.	6.84	8.5	.	.	.	.	.	.	2	25	93
96	173.7	27.	6.96	.	.	2.8	1.10	0.95	55259.	.	3	4	93
97	173.0	31.	6.98	11.4	.	.	.	.	.	.	3	11	93
98	174.2	27.	6.77	.	.	3.1	1.25	1.20	55271.	.	3	18	93
99	171.4	27.	6.83	11.4	.	.	.	.	.	.	3	25	93
100	175.0	25.	6.78	.	.	3.7	1.25	1.05	55282.	.	4	1	93
101	172.2	31.	6.76	6.2	.	.	.	.	.	.	4	8	93
102	173.3	29.	6.81	.	.	3.8	1.55	1.40	55293.	.	4	15	93
103	169.1	33.	6.81	8.5	.	.	.	.	.	.	4	22	93
104	174.3	32.	6.59	.	.	4.9	1.40	1.40	55304.	.	4	29	93
105	173.4	31.	6.90	7.5	.	.	.	.	.	.	5	6	93
106	174.3	31.	6.69	.	.	7.1	1.35	1.30	55316.	.	5	13	93
107	170.4	31.	6.72	8.8	.	.	.	.	.	.	5	20	93
108	171.7	32.	7.05	.	.	6.2	1.40	1.40	55327.	.	5	27	93
109	175.5	28.	7.16	10.0	.	.	.	.	.	.	6	3	93
110	174.9	32.	6.82	.	.	5.4	1.25	1.25	55338.	.	6	10	93
111	172.1	32.	7.19	10.0	.	.	.	.	.	.	6	17	93
112	171.6	31.	6.46	.	.	9.4	1.25	1.40	55349.	.	6	23	93
113	171.9	36.	7.17	8.8	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	172.4	38.	6.99	10.0	.	.	.	.	.	.	7	15	93
116	172.1	36.	6.64	.	.	7.8	1.40	1.75	55361.	.	7	22	93
117	171.3	34.	7.03	10.0	.	.	.	.	.	.	7	29	93
118	172.7	38.	6.94	.	.	9.2	1.40	1.55	55372.	.	8	5	93
119	169.7	39.	6.87	6.0	.	.	.	.	.	.	8	12	93
120	171.0	34.	6.93	.	.	7.1	1.20	1.45	55383.	.	8	19	93
121	170.2	34.	6.82	5.0	.	.	.	.	.	.	8	26	93
122	170.7	33.	6.93	.	.	7.6	1.15	1.45	55394.	.	9	2	93
123	173.8	35.	7.02	5.0	.	.	.	.	.	.	9	9	93
124	172.0	28.	6.80	.	.	6.1	0.90	1.20	55406.	.	9	16	93
125	173.7	24.	6.99	5.0	.	.	.	.	.	.	9	23	93
126	169.2	27.	6.76	.	.	4.5	0.95	1.25	55418.	.	9	30	93
127	170.9	25.	6.88	10.0	.	.	.	.	.	.	10	7	93
128	173.4	29.	6.75	.	.	4.9	0.85	1.20	55429.	.	10	14	93
129	171.3	28.	6.65	7.5	.	.	.	.	.	.	10	20	93
130	172.5	28.	7.18	.	.	4.3	0.75	1.10	55441.	.	10	28	93
131	172.8	28.	6.98	14.6	.	.	.	.	.	.	11	4	93
132	169.9	21.	6.79	.	.	24.5	0.60	0.90	55452.	.	11	10	93

Table B2.10. Wet-Dry Cycle Test drainage quality from Solid RK4, reactor 7.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	1210.	7.01	.	.	685.0	.	52.00	3006.	.	4	30	91
0	.	620.	.	.	.	.	.	.	.	.	4	30	91
0	.	150.	7.87	.	.	13.0	8.85	6.75	3028.	.	5	2	91
1	158.8	650.	6.94	34.0	.	344.0	72.40	41.60	3050.	.	5	9	91
2	.	500.	7.47	37.0	.	258.0	56.60	33.70	3084.	.	5	16	91
3	163.4	198.	7.85	22.0	.	.	.	.	.	.	5	23	91
4	158.7	302.	7.75	.	.	78.0	.	.	3128.	.	5	30	91
5	159.2	210.	7.87	45.0	.	.	.	.	.	.	6	6	91
6	164.1	127.	7.77	.	.	23.6	11.15	5.65	3172.	.	6	13	91
7	158.0	160.	7.89	50.0	.	.	.	.	.	.	6	20	91
8	160.7	152.	7.95	.	.	16.8	12.70	6.10	3224.	.	6	27	91
9	160.6	157.	7.92	50.0	.	.	.	.	.	.	7	3	91
10	160.4	142.	7.82	.	.	20.6	12.80	6.15	3271.	.	7	11	91
11	160.0	140.	7.58	47.0	.	.	.	.	.	.	7	18	91
12	161.9	137.	7.99	.	.	24.6	.	.	3315.	.	7	25	91
13	160.4	122.	7.83	39.0	.	.	.	.	.	.	7	31	91
14	160.0	121.	7.93	.	.	14.8	11.50	5.60	3367.	.	8	8	91
15	161.5	123.	7.80	42.0	.	.	.	.	.	.	8	15	91
16	156.7	119.	7.94	.	.	15.4	11.40	5.15	3414.	.	8	22	91
17	160.1	128.	7.99	36.0	.	.	.	.	.	.	8	29	91
18	157.9	132.	7.90	.	.	14.0	13.50	6.45	3458.	.	9	5	91
19	163.5	112.	7.85	36.0	.	.	.	.	.	.	9	12	91
20	161.6	108.	7.65	.	.	12.5	10.10	4.90	3510.	.	9	19	91
21	163.6	105.	7.89	37.0	.	.	.	.	.	.	9	26	91
22	166.9	78.	7.91	.	.	6.1	6.75	3.25	3554.	.	10	3	91
23	164.3	100.	7.69	31.0	.	.	.	.	.	.	10	10	91
24	159.7	108.	7.94	.	.	9.9	11.05	4.90	3601.	.	10	17	91
25	160.1	110.	7.94	50.0	.	.	.	.	.	.	10	24	91
26	.	93.	7.90	.	.	7.0	9.45	4.25	3642.	.	10	31	91
27	165.8	90.	7.81	42.0	.	.	.	.	.	.	11	7	91
28	166.9	100.	7.62	.	.	6.0	10.85	4.85	3664.	.	11	14	91
29	192.2	80.	7.75	41.0	.	.	.	.	.	.	11	21	91
30	166.4	78.	7.92	.	.	5.9	9.35	4.20	3686.	.	11	27	91
31	161.2	100.	7.83	44.0	.	.	.	.	.	.	12	5	91
32	163.6	96.	7.86	.	.	5.1	9.45	4.15	3708.	.	12	12	91
33	162.6	105.	7.90	38.0	.	.	.	.	.	.	12	19	91
34	165.0	93.	7.87	.	.	6.3	10.95	4.55	3730.	.	12	26	91
35	164.4	96.	7.74	43.0	.	.	.	.	.	.	1	2	92
36	164.3	110.	7.80	.	.	9.1	11.20	4.55	3752.	.	1	9	92
37	164.7	115.	7.88	41.0	.	.	.	.	.	.	1	16	92
38	165.1	115.	7.89	.	.	12.9	12.20	5.20	3774.	.	1	23	92
39	163.7	80.	7.87	44.0	.	.	.	.	.	.	1	30	92
40	165.3	148.	7.64	.	.	39.0	16.90	7.15	3796.	.	2	6	92
41	165.1	155.	7.78	47.0	.	.	.	.	.	.	2	13	92
42	166.3	210.	7.77	.	.	54.0	21.00	10.20	3818.	.	2	20	92
43	165.7	310.	7.73	44.0	.	.	.	.	.	.	2	27	92

Table B2.11. Wet-Dry Cycle Test drainage quality from Solid RK4, reactor 7.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	167.3	190.	7.79	.	.	66.0	25.00	11.00	3840.	.	3	5	92
45	162.8	190.	7.52	38.0	.	.	.	.	.	.	3	12	92
46	168.5	180.	7.18	.	.	46.4	18.00	8.20	3862.	.	3	19	92
47	168.0	262.	7.11	28.0	.	.	.	.	.	.	3	26	92
48	164.5	190.	7.12	.	.	43.0	17.60	8.60	3884.	.	4	2	92
49	154.3	300.	7.16	38.0	.	.	.	.	.	.	4	9	92
50	158.7	235.	7.71	.	.	52.4	19.40	9.60	55003.	.	4	16	92
51	165.3	200.	7.68	44.0	.	.	.	.	.	.	4	23	92
52	169.1	225.	7.45	.	.	46.4	18.20	9.20	55014.	.	4	30	92
53	164.8	180.	7.27	22.0	.	.	.	.	.	.	5	7	92
54	162.6	250.	6.74	.	.	92.0	28.60	13.60	55025.	.	5	14	92
55	161.6	210.	7.51	38.0	.	.	.	.	.	.	5	21	92
56	167.7	238.	7.03	.	.	76.0	25.90	11.20	55036.	.	5	28	92
57	160.5	275.	7.39	38.0	.	.	.	.	.	.	6	4	92
58	162.4	225.	7.39	.	.	68.0	.	11.00	55047.	.	6	11	92
59	167.8	232.	7.60	31.0	.	.	.	.	.	.	6	18	92
60	164.8	197.	7.60	.	.	48.4	20.00	9.40	55059.	.	6	25	92
61	167.1	195.	7.63	26.0	.	.	.	.	.	.	7	2	92
62	164.1	205.	7.36	.	.	62.8	22.20	10.50	55070.	.	7	9	92
63	166.3	180.	7.21	21.0	.	.	.	.	.	.	7	16	92
64	165.7	203.	7.46	.	.	54.8	21.40	10.35	55081.	.	7	23	92
65	162.2	198.	7.55	29.0	.	.	.	.	.	.	7	30	92
66	153.2	205.	7.58	.	.	60.8	21.90	9.90	55092.	.	8	6	92
67	170.0	14.	7.18	.	.	.	.	.	.	.	8	13	92
68	160.4	240.	7.38	.	.	76.0	23.65	10.70	55103.	.	8	20	92
69	174.3	.	7.08	.	.	.	.	.	.	.	8	27	92
70	168.5	250.	7.33	.	.	74.0	24.30	11.25	55115.	.	9	3	92
71	167.7	163.	7.20	21.0	.	.	.	.	.	.	9	10	92
72	166.5	164.	7.59	.	.	45.6	14.55	6.50	55126.	37.0	9	17	92
73	167.1	138.	7.56	21.0	.	.	.	.	.	.	9	24	92
74	166.4	210.	7.47	.	.	50.0	17.50	8.45	55137.	.	10	1	92
75	165.9	175.	7.33	29.0	.	.	.	.	.	.	10	8	92
76	165.1	185.	7.20	.	.	47.2	17.70	8.20	55148.	.	10	15	92
77	166.1	175.	7.20	26.0	.	.	.	.	.	.	10	22	92
78	164.6	165.	7.13	.	.	.	15.75	7.55	55160.	.	10	29	92
79	165.8	158.	7.43	25.0	.	.	.	.	.	.	11	5	92
80	167.0	190.	7.32	.	.	.	17.55	8.40	55171.	.	11	12	92
81	168.5	140.	7.27	.	.	.	.	.	.	.	11	18	92
82	166.7	150.	7.19	.	.	.	13.90	7.75	55182.	.	11	25	92
83	167.8	135.	7.36	19.0	.	.	.	.	.	.	12	3	92
84	167.0	155.	7.64	.	.	.	12.95	6.25	55193.	.	12	10	92
85	164.8	127.	7.30	22.0	.	.	.	.	.	.	12	17	92
86	154.0	135.	7.76	.	.	38.8	12.55	6.70	55204.	15.0	12	24	92
87	161.4	145.	7.45	.	.	.	.	.	.	.	12	31	92
88	161.4	113.	7.62	.	.	40.4	11.80	5.60	55216.	30.0	1	7	93
89	166.5	98.	7.32	26.0	.	.	.	.	.	.	1	14	93

Table B2.12. Wet-Dry Cycle Test drainage quality from Solid RK4, reactor 7.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	167.1	105.	7.51	.	.	37.4	10.40	5.00	55227.	.	1	21	93
91	168.7	90.	7.54	24.0	.	.	.	.	.	.	1	28	93
92	166.7	115.	7.67	.	.	36.0	10.25	4.85	55238.	.	2	4	93
93	170.1	120.	7.50	23.0	.	.	.	.	.	.	2	11	93
94	169.3	100.	7.54	.	.	31.2	8.85	4.85	55249.	.	2	18	93
95	168.4	100.	7.47	23.0	.	.	.	.	.	.	2	25	93
96	167.7	95.	7.52	.	.	25.6	8.60	4.70	55260.	.	3	4	93
97	171.9	108.	7.38	26.0	.	.	.	.	.	.	3	11	93
98	170.0	98.	7.25	.	.	31.6	9.15	5.20	55272.	.	3	18	93
99	166.7	110.	7.49	23.0	.	.	.	.	.	.	3	25	93
100	167.0	129.	7.35	.	.	40.6	11.25	5.85	55283.	.	4	1	93
101	167.3	98.	7.53	15.0	.	.	.	.	.	.	4	8	93
102	173.4	122.	7.28	.	.	37.0	12.20	6.30	55294.	.	4	15	93
103	165.4	122.	7.32	18.0	.	.	.	.	.	.	4	22	93
104	169.3	132.	7.05	.	.	59.0	12.80	6.75	55305.	.	4	29	93
105	170.7	122.	7.25	11.0	.	.	.	.	.	.	5	6	93
106	172.8	148.	7.02	.	.	53.6	13.65	7.70	55317.	.	5	13	93
107	168.2	127.	7.02	10.0	.	.	.	.	.	.	5	20	93
108	175.8	126.	7.20	.	.	46.0	11.10	5.90	55328.	.	5	27	93
109	168.4	125.	7.29	10.0	.	.	.	.	.	.	6	3	93
110	175.8	122.	7.03	.	.	51.0	11.80	6.90	55339.	.	6	10	93
111	170.3	140.	7.25	10.0	.	.	.	.	.	.	6	17	93
112	171.5	116.	6.53	.	.	45.0	10.75	5.45	55350.	.	6	23	93
113	172.7	130.	7.18	10.0	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	173.6	128.	6.96	10.0	.	.	.	.	.	.	7	15	93
116	174.7	102.	6.79	.	.	36.6	9.15	4.85	55362.	.	7	22	93
117	172.6	90.	7.02	7.5	.	.	.	.	.	.	7	29	93
118	171.7	105.	6.91	.	.	32.8	7.20	3.70	55373.	.	8	5	93
119	171.3	87.	6.94	10.0	.	.	.	.	.	.	8	12	93
120	172.5	92.	6.87	.	.	.	7.10	3.65	55384.	.	8	19	93
121	171.5	93.	6.77	5.0	.	.	.	.	.	.	8	26	93
122	171.1	90.	6.92	.	.	29.4	6.25	3.45	55395.	.	9	2	93
123	171.6	80.	6.95	5.0	.	.	.	.	.	.	9	9	93
124	174.9	62.	6.80	.	.	19.2	4.25	2.65	55407.	.	9	16	93
125	173.8	55.	6.99	5.0	.	.	.	.	.	.	9	23	93
126	169.9	60.	6.79	.	.	18.0	4.00	2.20	55419.	.	9	30	93
127	172.6	55.	6.88	5.0	.	.	.	.	.	.	10	7	93
128	175.3	50.	6.75	.	.	15.4	3.20	1.80	55430.	.	10	14	93
129	172.1	52.	6.66	5.0	.	.	.	.	.	.	10	20	93
130	175.4	50.	6.97	.	.	14.0	3.05	1.70	55442.	.	10	28	93
131	176.6	50.	6.89	5.0	.	.	.	.	.	.	11	4	93
132	167.1	53.	6.71	.	.	10.5	3.25	1.80	55453.	.	11	10	93

Table B2.13. Wet-Dry Cycle Test drainage quality from Solid TL1, reactor 11.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	610.	7.91	.	.	238.0	103.00	11.10	3010.	.	4	29	91
0	.	145.	.	.	.	.	.	.	.	.	5	1	91
0	.	58.	8.87	.	.	7.0	7.60	0.65	3032.	.	5	1	91
1	182.1	65.	7.60	23.0	.	8.0	9.00	2.25	3054.	.	5	9	91
2	.	58.	7.73	20.0	.	6.0	8.55	0.60	3088.	.	5	16	91
3	176.5	62.	7.71	21.0	.	.	.	.	.	.	5	23	91
4	177.8	65.	7.70	.	.	4.0	.	.	3132.	.	5	30	91
5	177.9	60.	7.76	21.0	.	.	.	.	.	.	6	6	91
6	174.0	52.	7.58	.	.	4.1	7.70	0.50	3176.	.	6	13	91
7	176.4	55.	7.52	20.0	.	.	.	.	.	.	6	20	91
8	178.1	50.	7.74	.	.	5.0	7.10	0.40	3228.	.	6	27	91
9	174.4	59.	8.58	18.0	.	.	.	.	.	.	7	3	91
10	181.2	62.	7.67	.	.	5.4	8.40	0.45	3275.	.	7	11	91
11	179.3	66.	7.38	18.0	.	.	.	.	.	.	7	18	91
12	178.1	71.	7.65	.	.	12.4	.	.	3319.	.	7	25	91
13	177.0	71.	7.51	16.0	.	.	.	.	.	.	7	31	91
14	176.3	72.	7.57	.	.	10.9	9.60	0.35	3371.	.	8	8	91
15	176.6	72.	7.60	18.0	.	.	.	.	.	.	8	15	91
16	177.9	75.	7.65	.	.	12.9	10.45	0.45	3418.	.	8	22	91
17	178.5	72.	7.71	16.0	.	.	.	.	.	.	8	29	91
18	175.2	80.	7.45	.	.	14.1	11.00	0.30	3462.	.	9	5	91
19	176.3	72.	7.44	16.0	.	.	.	.	.	.	9	12	91
20	180.6	67.	7.28	.	.	10.8	9.65	0.30	3514.	.	9	19	91
21	178.3	62.	7.53	16.0	.	.	.	.	.	.	9	26	91
22	176.3	68.	7.54	.	.	9.1	8.95	0.25	3558.	.	10	3	91
23	176.9	45.	7.33	13.0	.	.	.	.	.	.	10	10	91
24	177.5	62.	7.51	.	.	8.6	9.50	0.20	3605.	.	10	17	91
25	180.8	60.	7.45	13.0	.	.	.	.	.	.	10	24	91
26	.	50.	7.50	.	.	6.5	7.55	0.35	3644.	.	10	31	91
27	183.9	50.	7.47	16.0	.	.	.	.	.	.	11	7	91
28	176.8	53.	7.21	.	.	6.9	7.50	0.10	3666.	.	11	14	91
29	177.2	59.	7.34	16.0	.	.	.	.	.	.	11	21	91
30	179.0	52.	7.25	.	.	7.3	8.35	0.15	3688.	.	11	27	91
31	175.6	50.	7.28	16.0	.	.	.	.	.	.	12	5	91
32	177.0	50.	7.51	.	.	10.6	6.60	0.10	3710.	.	12	12	91
33	176.5	90.	7.55	18.0	.	.	.	.	.	.	12	19	91
34	178.1	50.	7.33	.	.	6.0	7.55	0.10	3732.	.	12	26	91
35	177.8	49.	7.52	14.0	.	.	.	.	.	.	1	2	92
36	177.1	50.	7.29	.	.	6.8	7.65	0.20	3754.	.	1	9	92
37	178.7	55.	7.59	19.0	.	.	.	.	.	.	1	16	92
38	177.3	49.	7.60	.	.	5.2	6.95	0.10	3776.	.	1	23	92
39	176.3	50.	7.50	22.0	.	.	.	.	.	.	1	30	92
40	176.8	52.	7.43	.	.	6.4	9.10	0.55	3798.	.	2	6	92
41	177.1	44.	7.52	19.0	.	.	.	.	.	.	2	13	92
42	177.1	49.	7.41	.	.	5.4	8.20	0.60	3820.	.	2	20	92
43	177.4	49.	7.46	12.0	.	.	.	.	.	.	2	27	92

Table B2.14. Wet-Dry Cycle Test drainage quality from Solid TL1, reactor 11.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	178.6	49.	7.56	.	.	5.8	8.60	0.40	3842.	.	3	5	92
45	178.0	42.	7.17	19.0	.	.	.	.	.	.	3	12	92
46	171.4	49.	7.17	.	.	5.3	6.40	0.60	3864.	.	3	19	92
47	176.1	37.	6.98	19.0	.	.	.	.	.	.	3	26	92
48	176.7	45.	6.85	.	.	4.5	6.00	1.20	3886.	.	4	2	92
49	177.4	48.	7.04	16.0	.	.	.	.	.	.	4	9	92
50	176.4	50.	7.56	.	.	5.4	6.20	1.20	55005.	.	4	16	92
51	178.6	50.	7.39	12.6	.	.	.	.	.	.	4	23	92
52	171.7	50.	7.22	.	.	5.1	5.60	0.80	55016.	.	4	30	92
53	175.2	45.	7.10	6.3	.	.	.	.	.	.	5	7	92
54	177.2	44.	6.75	.	.	4.7	7.00	0.80	55027.	.	5	14	92
55	171.5	43.	7.29	12.6	.	.	.	.	.	.	5	21	92
56	176.4	44.	6.97	.	.	4.6	7.60	0.40	55038.	.	5	28	92
57	172.3	49.	7.27	18.0	.	.	.	.	.	.	6	4	92
58	175.9	47.	7.34	.	.	3.3	8.00	0.60	55049.	.	6	11	92
59	176.1	50.	7.46	16.0	.	.	.	.	.	.	6	18	92
60	174.1	48.	7.40	.	.	4.7	8.00	0.40	55061.	.	6	25	92
61	174.5	50.	7.48	13.0	.	.	.	.	.	.	7	2	92
62	176.1	45.	7.30	.	.	3.7	8.00	1.40	55072.	.	7	9	92
63	174.5	49.	7.36	10.0	.	.	.	.	.	.	7	16	92
64	175.0	50.	7.46	.	.	3.0	7.85	0.20	55083.	.	7	23	92
65	173.5	46.	7.65	13.0	.	.	.	.	.	.	7	30	92
66	172.3	46.	7.54	.	.	2.6	7.60	0.20	55094.	.	8	6	92
67	174.3	47.	7.37	16.0	.	.	.	.	.	.	8	13	92
68	174.2	46.	7.37	.	.	3.8	7.35	0.15	55105.	.	8	20	92
69	175.2	50.	7.29	13.0	.	.	.	.	.	.	8	27	92
70	173.9	50.	7.37	.	.	4.0	7.20	0.20	55117.	.	9	3	92
71	174.8	50.	7.47	16.0	.	.	.	.	.	.	9	10	92
72	174.4	46.	7.34	.	.	4.9	7.35	0.10	55128.	.	9	17	92
73	174.2	45.	7.66	16.0	.	.	.	.	.	.	9	24	92
74	174.5	50.	7.54	.	.	5.3	7.20	0.35	55139.	.	10	1	92
75	175.6	46.	7.36	18.0	.	.	.	.	.	.	10	8	92
76	174.9	41.	7.51	.	.	.	6.55	0.10	55150.	.	10	15	92
77	174.8	44.	7.58	16.0	.	.	.	.	.	.	10	22	92
78	174.5	43.	7.20	.	.	.	6.85	0.10	55162.	.	10	29	92
79	175.1	41.	7.42	16.0	.	.	.	.	.	.	11	5	92
80	175.5	43.	7.69	.	.	.	6.55	0.10	55173.	.	11	12	92
81	177.2	39.	7.40	.	.	.	.	.	.	.	11	18	92
82	177.1	42.	7.17	.	.	.	6.25	0.05	55184.	.	11	25	92
83	175.2	37.	7.38	10.0	.	.	.	.	.	.	12	3	92
84	177.3	41.	7.62	.	.	.	5.95	0.15	55195.	.	12	10	92
85	179.8	37.	7.36	11.0	.	.	.	.	.	.	12	17	92
86	177.1	37.	7.30	.	.	3.5	5.75	0.60	55206.	.	12	24	92
87	176.7	40.	7.34	.	.	.	.	.	.	.	12	31	92
88	178.7	34.	7.62	.	.	2.4	6.15	0.05	55218.	.	1	7	93
89	177.0	32.	7.32	16.0	.	.	.	.	.	.	1	14	93

Table B2.15. Wet-Dry Cycle Test drainage quality from Solid TL1, reactor 11.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	177.8	34.	7.47	.	.	2.3	6.00	0.30	55229.	.	1	21	93
91	176.4	35.	7.51	16.0	.	.	.	.	.	.	1	28	93
92	176.0	37.	7.61	.	.	3.5	5.95	0.10	55240.	.	2	4	93
93	178.8	40.	7.55	14.0	.	.	.	.	.	.	2	11	93
94	180.0	35.	7.58	.	.	2.2	5.80	0.10	55251.	.	2	18	93
95	176.9	36.	7.53	17.0	.	.	.	.	.	.	2	25	93
96	175.8	36.	7.55	.	.	2.4	5.95	0.10	55262.	.	3	4	93
97	178.7	37.	7.35	17.0	.	.	.	.	.	.	3	11	93
98	179.0	34.	7.39	.	.	2.4	5.55	0.25	55274.	.	3	18	93
99	176.6	37.	7.45	20.0	.	.	.	.	.	.	3	25	93
100	176.7	35.	7.51	.	.	2.9	6.25	0.40	55285.	.	4	1	93
101	177.3	36.	7.57	12.0	.	.	.	.	.	.	4	8	93
102	177.9	36.	7.49	.	.	2.4	6.30	0.30	55296.	.	4	15	93
103	174.4	39.	7.47	14.0	.	.	.	.	.	.	4	22	93
104	177.9	36.	7.24	.	.	2.8	6.05	0.25	55307.	.	4	29	93
105	189.6	38.	7.44	15.0	.	.	.	.	.	.	5	6	93
106	177.9	38.	7.34	.	.	3.2	6.80	0.50	55319.	.	5	13	93
107	175.1	36.	7.58	12.0	.	.	.	.	.	.	5	20	93
108	176.0	37.	7.46	.	.	3.2	6.15	0.15	55330.	.	5	27	93
109	178.1	36.	7.68	15.0	.	.	.	.	.	.	6	3	93
110	179.0	39.	7.51	.	.	4.0	6.35	0.20	55341.	.	6	10	93
111	174.4	38.	7.69	20.0	.	.	.	.	.	.	6	17	93
112	174.3	38.	7.48	.	.	3.5	6.75	0.20	55352.	.	6	23	93
113	175.3	40.	7.66	14.0	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	176.8	45.	7.57	15.0	.	.	.	.	.	.	7	15	93
116	176.7	37.	7.34	.	.	3.6	6.75	<0.05	55364.	.	7	22	93
117	175.8	40.	7.60	15.0	.	.	.	.	.	.	7	29	93
118	176.7	38.	7.56	.	.	3.5	6.80	0.60	55375.	.	8	5	93
119	176.1	42.	7.47	12.5	.	.	.	.	.	.	8	12	93
120	175.1	39.	7.49	.	.	3.4	6.60	0.10	55386.	.	8	19	93
121	174.9	40.	7.50	15.0	.	.	.	.	.	.	8	26	93
122	174.7	40.	7.62	.	.	4.1	6.45	0.10	55397.	.	9	2	93
123	175.2	38.	7.40	12.5	.	.	.	.	.	.	9	9	93
124	176.9	36.	7.46	.	.	3.1	5.90	0.10	55409.	.	9	16	93
125	177.8	33.	7.56	10.0	.	.	.	.	.	.	9	23	93
126	175.5	36.	7.33	.	.	3.2	5.80	0.90	55421.	.	9	30	93
127	177.3	34.	7.49	13.5	.	.	.	.	.	.	10	7	93
128	177.4	36.	7.35	.	.	3.1	5.10	0.10	55432.	.	10	14	93
129	175.8	31.	7.15	10.0	.	.	.	.	.	.	10	20	93
130	177.6	31.	7.55	.	.	3.6	4.60	0.95	55444.	.	10	28	93
131	178.5	29.	7.39	10.5	.	.	.	.	.	.	11	4	93
132	175.8	26.	7.33	.	.	.	4.20	0.10	55455.	.	11	10	93

Table B2.16. Wet-Dry Cycle Test drainage quality from Solid TL2, reactor 13.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	560.	7.88	.	.	184.0	84.20	3.93	3012.	.	4	29	91
0	.	225.	.	.	.	.	.	.	.	.	5	1	91
0	.	170.	7.90	.	.	21.0	26.00	1.79	3034.	.	5	1	91
1	165.2	240.	7.92	43.0	.	57.0	41.40	4.35	3056.	.	5	9	91
2	.	180.	7.90	38.0	.	25.0	33.10	2.59	3090.	.	5	16	91
3	164.3	192.	7.95	40.0	.	.	.	.	.	.	5	23	91
4	165.2	194.	7.97	.	.	19.0	.	.	3134.	.	5	30	91
5	167.8	192.	8.05	42.0	.	.	.	.	.	.	6	6	91
6	167.4	175.	7.88	.	.	18.4	30.80	2.52	3178.	.	6	13	91
7	166.4	172.	7.84	38.0	.	.	.	.	.	.	6	20	91
8	168.3	168.	7.91	.	.	12.6	28.20	2.37	3230.	.	6	27	91
9	170.1	173.	8.10	37.0	.	.	.	.	.	.	7	3	91
10	165.7	168.	7.90	.	.	10.2	28.20	1.96	3277.	.	7	11	91
11	167.3	173.	7.78	42.0	.	.	.	.	.	.	7	18	91
12	166.6	163.	7.98	.	.	15.4	.	.	3321.	.	7	25	91
13	168.3	153.	7.89	37.0	.	.	.	.	.	.	7	31	91
14	172.3	155.	7.86	.	.	13.8	30.10	2.13	3373.	.	8	8	91
15	164.8	151.	7.88	34.0	.	.	.	.	.	.	8	15	91
16	166.3	145.	7.88	.	.	11.4	27.30	1.50	3420.	.	8	22	91
17	167.7	150.	7.95	31.0	.	.	.	.	.	.	8	29	91
18	165.8	155.	7.84	.	.	11.8	23.10	1.21	3464.	.	9	5	91
19	168.9	160.	7.52	42.0	.	.	.	.	.	.	9	12	91
20	161.9	148.	7.62	.	.	10.4	24.00	1.45	3516.	.	9	19	91
21	167.0	150.	7.87	39.0	.	.	.	.	.	.	9	26	91
22	167.8	155.	7.86	.	.	8.6	22.40	1.60	3560.	.	10	3	91
23	162.5	150.	7.73	26.0	.	.	.	.	.	.	10	10	91
24	164.9	138.	7.86	.	.	8.1	22.80	1.60	3607.	.	10	17	91
25	168.0	138.	7.82	37.0	.	.	.	.	.	.	10	24	91
26	.	125.	7.80	.	.	6.3	20.80	1.60	3645.	.	10	31	91
27	170.0	135.	7.77	34.0	.	.	.	.	.	.	11	7	91
28	168.8	140.	7.61	.	.	8.4	24.00	1.40	3667.	.	11	14	91
29	169.3	142.	7.71	38.0	.	.	.	.	.	.	11	21	91
30	170.0	135.	7.77	.	.	5.3	22.20	1.20	3689.	.	11	28	91
31	169.3	122.	7.64	35.0	.	.	.	.	.	.	12	5	91
32	169.2	139.	7.84	.	.	5.7	22.80	1.00	3711.	.	12	12	91
33	168.1	139.	7.90	50.0	.	.	.	.	.	.	12	19	91
34	170.1	120.	7.73	.	.	7.2	21.40	1.00	3733.	.	12	26	91
35	170.2	123.	7.85	43.0	.	.	.	.	.	.	1	2	92
36	167.9	130.	7.61	.	.	6.6	22.00	1.00	3755.	.	1	9	92
37	170.5	140.	7.89	38.0	.	.	.	.	.	.	1	16	92
38	172.3	140.	7.90	.	.	5.8	22.00	0.80	3777.	.	1	23	92
39	170.2	100.	7.87	50.0	.	.	.	.	.	.	1	30	92
40	168.7	120.	7.75	.	.	5.2	22.90	1.20	3799.	.	2	6	92
41	168.0	115.	7.84	38.0	.	.	.	.	.	.	2	13	92
42	169.0	130.	7.87	.	.	5.3	21.20	1.00	3821.	.	2	20	92
43	170.6	130.	7.82	44.0	.	.	.	.	.	.	2	27	92

Table B2.17. Wet-Dry Cycle Test drainage quality from Solid TL2, reactor 13.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	172.6	130.	7.86	.	.	5.5	23.20	1.00	3843.	.	3	5	92
45	165.6	100.	7.73	38.0	.	.	.	.	.	.	3	12	92
46	170.6	125.	7.69	.	.	4.8	20.60	1.00	3865.	.	3	19	92
47	170.3	140.	7.63	50.0	.	.	.	.	.	.	3	26	92
48	169.7	140.	7.31	.	.	4.8	21.80	1.80	3887.	.	4	2	92
49	170.5	140.	7.20	53.0	.	.	.	.	.	.	4	9	92
50	168.1	135.	7.78	.	.	4.0	19.40	1.40	55006.	.	4	16	92
51	172.0	140.	7.74	47.0	.	.	.	.	.	.	4	23	92
52	173.7	150.	7.69	.	.	4.7	22.20	1.20	55017.	.	4	30	92
53	170.1	115.	7.67	38.0	.	.	.	.	.	.	5	7	92
54	169.6	120.	7.05	.	.	5.2	21.80	1.40	55028.	.	5	14	92
55	164.0	122.	7.73	44.0	.	.	.	.	.	.	5	21	92
56	171.1	125.	7.42	.	.	4.9	21.80	1.00	55039.	.	5	28	92
57	167.2	125.	7.70	41.0	.	.	.	.	.	.	6	4	92
58	169.1	125.	7.52	.	.	4.4	23.60	0.60	55050.	.	6	11	92
59	170.7	125.	7.83	39.0	.	.	.	.	.	.	6	18	92
60	170.3	115.	7.75	.	.	3.8	21.40	0.60	55062.	.	6	25	92
61	168.8	125.	7.77	41.0	.	.	.	.	.	.	7	2	92
62	169.0	115.	7.59	.	.	3.6	22.40	0.80	55073.	.	7	9	92
63	170.5	125.	7.74	31.0	.	.	.	.	.	.	7	16	92
64	170.8	125.	7.83	.	.	3.6	21.50	0.60	55084.	.	7	23	92
65	170.2	118.	7.78	40.0	.	.	.	.	.	.	7	30	92
66	168.4	115.	7.77	.	.	3.6	21.95	0.65	55095.	.	8	6	92
67	167.4	105.	7.66	34.0	.	.	.	.	.	.	8	13	92
68	167.4	120.	7.69	.	.	7.0	21.45	0.65	55106.	.	8	20	92
69	169.7	112.	7.60	34.0	.	.	.	.	.	.	8	27	92
70	170.1	122.	7.67	.	.	6.0	20.00	0.55	55118.	.	9	3	92
71	170.0	123.	7.64	32.0	.	.	.	.	.	.	9	10	92
72	170.9	105.	7.42	.	.	9.2	18.65	0.50	55129.	.	9	17	92
73	168.3	120.	7.78	37.0	.	.	.	.	.	.	9	24	92
74	170.5	139.	7.90	.	.	7.4	20.15	0.55	55140.	.	10	1	92
75	170.6	123.	7.66	34.0	.	.	.	.	.	.	10	8	92
76	169.5	112.	7.62	.	.	.	19.45	0.50	55151.	.	10	15	92
77	168.4	103.	7.85	40.0	.	.	.	.	.	.	10	22	92
78	168.1	103.	7.51	.	.	.	20.30	0.50	55163.	.	10	29	92
79	169.9	108.	7.72	32.0	.	.	.	.	.	.	11	5	92
80	170.1	118.	7.79	.	.	.	20.75	0.60	55174.	.	11	12	92
81	166.2	110.	7.73	.	.	.	.	.	.	.	11	18	92
82	170.5	105.	7.44	.	.	.	19.50	0.60	55185.	.	11	25	92
83	171.5	105.	7.72	30.0	.	.	.	.	.	.	12	3	92
84	170.7	108.	7.87	.	.	.	17.40	0.40	55196.	.	12	10	92
85	169.7	102.	7.70	32.0	.	.	.	.	.	.	12	17	92
86	171.8	102.	7.94	.	.	5.3	19.00	0.65	55207.	.	12	24	92
87	170.2	100.	7.85	.	.	.	.	.	.	.	12	31	92
88	172.3	98.	7.90	.	.	4.5	19.40	0.40	55219.	.	1	7	93
89	170.8	93.	7.71	38.0	.	.	.	.	.	.	1	14	93

Table B2.18. Wet-Dry Cycle Test drainage quality from Solid TL2, reactor 13.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	171.6	98.	7.77	.	.	3.1	19.05	0.45	55230.	.	1	21	93
91	170.9	90.	7.78	33.0	.	.	.	.	.	.	1	28	93
92	169.9	99.	7.88	.	.	3.7	18.65	0.45	55241.	.	2	4	93
93	170.9	109.	7.83	40.0	.	.	.	.	.	.	2	11	93
94	167.5	102.	7.88	.	.	4.3	19.05	0.45	55252.	.	2	18	93
95	170.4	108.	7.87	40.0	.	.	.	.	.	.	2	25	93
96	169.4	100.	7.85	.	.	4.2	17.70	0.40	55263.	.	3	4	93
97	173.7	108.	7.72	34.0	.	.	.	.	.	.	3	11	93
98	172.2	100.	7.74	.	.	4.3	17.25	0.55	55275.	.	3	18	93
99	170.3	107.	7.91	35.0	.	.	.	.	.	.	3	25	93
100	169.9	102.	7.80	.	.	3.8	18.35	0.55	55286.	.	4	1	93
101	169.4	100.	7.88	32.0	.	.	.	.	.	.	4	8	93
102	170.1	95.	7.76	.	.	5.2	18.60	0.60	55297.	.	4	15	93
103	168.5	102.	7.85	34.0	.	.	.	.	.	.	4	22	93
104	173.7	100.	7.62	.	.	5.8	18.40	0.60	55308.	.	4	29	93
105	171.0	102.	7.79	32.5	.	.	.	.	.	.	5	6	93
106	171.5	112.	7.66	.	.	8.6	19.50	0.65	55320.	.	5	13	93
107	171.1	108.	7.75	36.0	.	.	.	.	.	.	5	20	93
108	170.0	110.	7.83	.	.	9.0	20.20	0.60	55331.	.	5	27	93
109	170.8	108.	7.94	30.0	.	.	.	.	.	.	6	3	93
110	170.4	106.	7.79	.	.	10.2	19.45	0.55	55342.	.	6	10	93
111	169.9	100.	7.91	30.0	.	.	.	.	.	.	6	17	93
112	170.3	109.	7.57	.	.	14.0	20.25	0.55	55353.	.	6	23	93
113	170.2	127.	7.94	30.0	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	170.9	127.	7.73	33.0	.	.	.	.	.	.	7	15	93
116	172.3	130.	7.58	.	.	26.2	24.15	0.75	55365.	.	7	22	93
117	171.7	128.	7.76	25.0	.	.	.	.	.	.	7	29	93
118	170.2	130.	7.75	.	.	28.8	24.20	0.75	55376.	.	8	5	93
119	170.1	140.	7.70	25.0	.	.	.	.	.	.	8	12	93
120	171.1	140.	7.60	.	.	31.8	23.25	1.05	55387.	.	8	19	93
121	168.7	153.	7.62	25.0	.	.	.	.	.	.	8	26	93
122	168.5	160.	7.71	.	.	35.2	24.70	0.90	55398.	.	9	2	93
123	169.8	150.	7.52	21.0	.	.	.	.	.	.	9	9	93
124	170.3	142.	7.54	.	.	30.4	22.15	0.85	55410.	.	9	16	93
125	170.7	140.	7.68	25.0	.	.	.	.	.	.	9	23	93
126	169.0	135.	7.54	.	.	27.8	22.95	1.00	55422.	.	9	30	93
127	169.6	140.	7.65	25.0	.	.	.	.	.	.	10	7	93
128	172.4	135.	7.52	.	.	26.0	22.20	0.90	55433.	.	10	14	93
129	170.0	140.	7.42	25.0	.	.	.	.	.	.	10	20	93
130	168.7	130.	7.76	.	.	24.4	20.95	2.15	55445.	.	10	28	93
131	167.3	130.	7.62	25.0	.	.	.	.	.	.	11	4	93
132	161.6	120.	7.55	.	.	23.2	17.85	0.80	55456.	.	11	10	93

Table B2.19. Wet-Dry Cycle Test drainage quality from Solid TL3, reactor 15.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	1525.	7.30	.	.	900.0	205.00	89.20	3014.	.	4	29	91
0	.	155.	.	.	.	.	.	.	.	.	5	1	91
0	.	100.	8.07	.	.	9.0	11.50	3.05	3036.	.	5	1	91
1	166.6	320.	7.82	51.0	.	41.0	38.90	13.30	3058.	.	5	9	91
2	.	240.	8.15	57.0	.	34.0	25.60	10.80	3092.	.	5	16	91
3	164.0	212.	8.26	48.0	.	.	.	.	.	.	5	23	91
4	166.2	215.	8.17	.	.	45.0	.	.	3136.	.	5	30	91
5	167.7	260.	8.14	45.0	.	.	.	.	.	.	6	6	91
6	168.7	350.	7.97	.	.	109.0	35.70	14.10	3180.	.	6	13	91
7	165.5	365.	7.98	46.0	.	.	.	.	.	.	6	20	91
8	167.6	353.	7.99	.	.	113.0	34.50	13.60	3232.	.	6	27	91
9	170.2	370.	7.93	47.0	.	.	.	.	.	.	7	3	91
10	167.4	342.	8.09	.	.	84.0	37.10	12.10	3279.	.	7	11	91
11	169.3	358.	7.92	50.0	.	.	.	.	.	.	7	18	91
12	169.0	308.	8.01	.	.	85.0	.	.	3323.	.	7	25	91
13	167.3	228.	8.01	45.0	.	.	.	.	.	.	7	31	91
14	165.2	228.	7.92	.	.	55.2	27.70	9.35	3375.	.	8	8	91
15	159.3	205.	7.91	45.0	.	.	.	.	.	.	8	15	91
16	166.5	.	7.97	.	.	43.2	23.10	8.30	3422.	.	8	22	91
17	163.8	220.	8.12	52.0	.	.	.	.	.	.	8	29	91
18	164.9	212.	7.98	.	.	35.5	19.30	7.85	3466.	.	9	5	91
19	167.5	198.	8.04	52.0	.	.	.	.	.	.	9	12	91
20	157.5	178.	7.80	.	.	27.2	15.95	6.20	3518.	.	9	19	91
21	169.9	160.	8.02	50.0	.	.	.	.	.	.	9	26	91
22	164.7	167.	8.02	.	.	15.2	15.00	6.25	3562.	.	10	3	91
23	164.7	140.	7.90	47.0	.	.	.	.	.	.	10	10	91
24	163.0	160.	7.96	.	.	17.2	16.90	5.85	3609.	.	10	17	91
25	167.0	135.	7.91	37.0	.	.	.	.	.	.	10	24	91
26	.	135.	7.95	.	.	15.9	13.35	5.20	3646.	.	10	31	91
27	166.8	148.	7.91	45.0	.	.	.	.	.	.	11	7	91
28	166.9	150.	7.78	.	.	13.0	14.65	6.05	3668.	.	11	14	91
29	167.6	155.	7.88	47.0	.	.	.	.	.	.	11	21	91
30	168.7	154.	7.99	.	.	13.6	15.65	6.20	3690.	.	11	28	91
31	167.7	140.	7.88	57.0	.	.	.	.	.	.	12	5	91
32	166.2	145.	8.00	.	.	13.2	14.10	5.40	3712.	.	12	12	91
33	166.6	140.	8.02	69.0	.	.	.	.	.	.	12	19	91
34	169.0	125.	7.96	.	.	11.4	13.65	5.50	3734.	.	12	26	91
35	166.6	133.	7.91	55.0	.	.	.	.	.	.	1	2	92
36	166.2	150.	7.91	.	.	17.2	13.90	5.95	3756.	.	1	9	92
37	168.0	170.	8.08	54.0	.	.	.	.	.	.	1	16	92
38	166.1	150.	8.04	.	.	13.5	14.75	6.30	3778.	.	1	23	92
39	167.7	165.	8.08	63.0	.	.	.	.	.	.	1	30	92
40	167.1	145.	7.94	.	.	19.2	16.40	6.85	3800.	.	2	6	92
41	165.1	142.	7.98	57.0	.	.	.	.	.	.	2	13	92
42	168.6	160.	8.01	.	.	16.8	16.20	7.20	3822.	.	2	20	92
43	168.6	150.	7.96	57.0	.	.	.	.	.	.	2	27	92

Table B2.20. Wet-Dry Cycle Test drainage quality from Solid TL3, reactor 15.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	168.0	143.	8.01	.	.	17.4	16.40	7.20	3844.	.	3	5	92
45	169.2	135.	7.82	50.0	.	.	.	.	.	.	3	12	92
46	166.3	150.	7.75	.	.	21.2	13.40	6.40	3866.	.	3	19	92
47	167.4	150.	7.65	57.0	.	.	.	.	.	.	3	26	92
48	167.2	165.	7.43	.	.	18.6	14.00	7.80	3888.	.	4	2	92
49	168.5	160.	7.41	57.0	.	.	.	.	.	.	4	9	92
50	166.7	170.	8.02	.	.	18.6	14.80	8.00	55007.	.	4	16	92
51	167.8	155.	7.91	63.0	.	.	.	.	.	.	4	23	92
52	165.6	170.	7.75	.	.	20.2	14.20	7.20	55018.	.	4	30	92
53	166.6	140.	7.98	.	.	.	.	.	.	.	5	7	92
54	166.1	130.	7.28	.	.	22.0	15.20	8.40	55029.	.	5	14	92
55	159.6	140.	7.96	53.0	.	.	.	.	.	.	5	21	92
56	166.5	140.	7.48	.	.	22.7	14.80	6.80	55040.	.	5	28	92
57	162.8	140.	8.01	53.0	.	.	.	.	.	.	6	4	92
58	165.4	155.	7.78	.	.	17.2	15.60	7.20	55051.	.	6	11	92
59	167.8	155.	7.97	44.0	.	.	.	.	.	.	6	18	92
60	167.3	150.	7.94	.	.	16.6	16.20	7.60	55063.	.	6	25	92
61	166.9	160.	7.98	51.0	.	.	.	.	.	.	7	2	92
62	168.8	122.	7.67	.	.	17.0	12.60	5.80	55074.	.	7	9	92
63	168.2	148.	7.68	44.0	.	.	.	.	.	.	7	16	92
64	167.8	152.	7.97	.	.	16.8	16.00	7.50	55085.	.	7	23	92
65	167.4	148.	7.99	53.0	.	.	.	.	.	.	7	30	92
66	163.1	135.	7.92	.	.	20.0	14.40	6.80	55096.	.	8	6	92
67	164.5	135.	7.87	49.0	.	.	.	.	.	.	8	13	92
68	164.6	138.	7.89	.	.	18.0	13.90	6.60	55107.	.	8	20	92
69	166.1	145.	7.74	45.0	.	.	.	.	.	.	8	27	92
70	167.0	150.	7.90	.	.	21.6	13.35	6.50	55119.	.	9	3	92
71	167.3	163.	7.87	48.0	.	.	.	.	.	.	9	10	92
72	169.8	142.	7.77	.	.	21.2	14.15	6.80	55130.	.	9	17	92
73	161.2	167.	8.09	53.0	.	.	.	.	.	.	9	24	92
74	166.2	194.	8.11	.	.	20.6	16.45	8.60	55141.	.	10	1	92
75	168.1	158.	7.93	56.0	.	.	.	.	.	.	10	8	92
76	169.3	150.	7.91	.	.	.	15.50	7.40	55152.	.	10	15	92
77	166.4	142.	7.92	53.0	.	.	.	.	.	.	10	22	92
78	165.6	142.	7.66	.	.	.	16.10	7.55	55164.	.	10	29	92
79	166.3	138.	7.91	48.0	.	.	.	.	.	.	11	5	92
80	169.1	145.	7.91	.	.	.	15.15	7.10	55175.	.	11	12	92
81	167.4	122.	7.78	.	.	.	.	.	.	.	11	18	92
82	169.3	133.	7.64	.	.	.	12.85	5.90	55186.	.	11	25	92
83	167.6	138.	7.91	48.0	.	.	.	.	.	.	12	3	92
84	167.4	152.	8.08	.	.	.	14.20	6.85	55197.	.	12	10	92
85	168.4	118.	7.84	51.0	.	.	.	.	.	.	12	17	92
86	168.6	142.	8.08	.	.	21.6	15.30	10.30	55208.	.	12	24	92
87	167.0	135.	7.96	.	.	.	.	.	.	.	12	31	92
88	165.5	112.	7.99	.	.	20.8	12.95	5.95	55220.	.	1	7	93
89	166.7	125.	7.94	59.0	.	.	.	.	.	.	1	14	93

Table B2.21. Wet-Dry Cycle Test drainage quality from Solid TL3, reactor 15.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	168.1	104.	7.77	.	.	23.4	11.85	5.30	55231.	.	1	21	93
91	165.7	138.	8.04	59.0	.	.	.	.	.	.	1	28	93
92	167.0	139.	8.10	.	.	14.4	15.25	6.85	55242.	.	2	4	93
93	167.3	132.	7.94	48.0	.	.	.	.	.	.	2	11	93
94	166.9	118.	7.94	.	.	15.6	12.20	6.35	55253.	.	2	18	93
95	166.3	145.	8.03	57.0	.	.	.	.	.	.	2	25	93
96	167.2	138.	7.97	.	.	17.0	14.20	9.15	55264.	.	3	4	93
97	165.8	150.	7.91	51.0	.	.	.	.	.	.	3	11	93
98	166.8	140.	7.98	.	.	19.8	15.00	7.85	55276.	.	3	18	93
99	166.6	160.	8.11	60.0	.	.	.	.	.	.	3	25	93
100	167.2	150.	8.06	.	.	23.0	15.60	7.85	55287.	.	4	1	93
101	168.0	150.	8.12	60.0	.	.	.	.	.	.	4	8	93
102	168.4	142.	8.06	.	.	20.8	16.15	8.10	55298.	.	4	15	93
103	163.7	162.	8.11	60.0	.	.	.	.	.	.	4	22	93
104	170.3	140.	7.87	.	.	22.4	14.55	7.40	55309.	.	4	29	93
105	167.2	152.	8.05	55.0	.	.	.	.	.	.	5	6	93
106	167.3	155.	8.04	.	.	22.0	15.15	7.85	55321.	.	5	13	93
107	165.8	160.	8.04	58.0	.	.	.	.	.	.	5	20	93
108	167.7	140.	8.05	.	.	9.4	14.70	8.05	55332.	.	5	27	93
109	167.2	129.	8.10	43.0	.	.	.	.	.	.	6	3	93
110	169.2	143.	8.07	.	.	25.0	15.30	8.40	55343.	.	6	10	93
111	166.7	152.	8.21	55.0	.	.	.	.	.	.	6	17	93
112	166.3	145.	7.87	.	.	22.2	15.40	7.80	55354.	.	6	23	93
113	166.0	175.	8.23	62.0	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	167.9	170.	8.12	58.0	.	.	.	.	.	.	7	15	93
116	167.1	150.	8.08	.	.	24.0	16.70	9.80	55366.	.	7	22	93
117	166.8	149.	8.15	45.0	.	.	.	.	.	.	7	29	93
118	167.0	155.	8.12	.	.	24.4	15.75	8.70	55377.	.	8	5	93
119	166.9	168.	8.15	55.0	.	.	.	.	.	.	8	12	93
120	167.2	160.	8.10	.	.	29.8	15.25	8.50	55388.	.	8	19	93
121	166.1	167.	8.09	50.0	.	.	.	.	.	.	8	26	93
122	166.3	168.	8.23	.	.	29.6	15.25	9.15	55399.	.	9	2	93
123	166.1	160.	8.06	52.0	.	.	.	.	.	.	9	9	93
124	167.0	140.	8.04	.	.	20.0	13.55	8.00	55411.	.	9	16	93
125	166.0	145.	8.05	45.0	.	.	.	.	.	.	9	23	93
126	165.4	148.	7.97	.	.	20.8	14.35	8.35	55423.	.	9	30	93
127	166.5	168.	8.14	60.0	.	.	.	.	.	.	10	7	93
128	169.8	152.	8.08	.	.	19.8	14.55	8.45	55434.	.	10	17	93
129	166.0	170.	7.97	55.0	.	.	.	.	.	.	10	20	93
130	165.9	162.	8.18	.	.	20.0	15.85	9.25	55446.	.	10	28	93
131	166.5	178.	8.11	65.0	.	.	.	.	.	.	11	4	93
132	166.4	172.	8.14	.	.	23.0	16.75	9.60	55457.	.	11	10	93

Table B2.22. Wet-Dry Cycle Test drainage quality from Solid TL4, reactor 17.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	1000.	7.84	.	.	530.0	210.00	4.80	3016.	.	4	29	91
0	.	120.	.	.	.	.	.	.	.	.	5	1	91
0	.	47.	7.55	.	.	10.0	6.95	0.20	3038.	.	5	2	91
1	165.4	160.	7.98	46.0	.	41.0	32.30	0.79	3060.	.	5	9	91
2	.	175.	7.93	41.0	.	53.0	32.40	0.58	3094.	.	5	16	91
3	164.7	159.	7.59	31.0	.	.	.	.	.	.	5	23	91
4	168.8	114.	7.72	.	.	21.0	.	.	3138.	.	5	30	91
5	164.9	89.	7.82	21.0	.	.	.	.	.	.	6	6	91
6	168.2	70.	7.71	.	.	12.4	10.55	0.25	3182.	.	6	13	91
7	165.2	75.	7.70	16.0	.	.	.	.	.	.	6	20	91
8	168.5	63.	7.77	.	.	8.7	8.60	0.60	3234.	.	6	27	91
9	169.2	74.	7.50	18.0	.	.	.	.	.	.	7	3	91
10	168.7	71.	7.73	.	.	11.9	9.80	0.70	3281.	.	7	11	91
11	160.7	70.	7.78	18.0	.	.	.	.	.	.	7	18	91
12	167.2	72.	7.66	.	.	17.6	8.80	0.80	3325.	.	7	25	91
13	156.4	68.	7.66	11.0	.	.	.	.	.	.	7	31	91
14	161.1	75.	7.77	.	.	18.7	8.55	1.20	3377.	.	8	8	91
15	156.9	71.	7.58	16.0	.	.	.	.	.	.	8	15	91
16	166.5	70.	7.68	.	.	14.9	7.60	1.25	3424.	.	8	22	91
17	163.1	65.	7.62	10.5	.	.	.	.	.	.	8	29	91
18	161.6	60.	7.68	.	.	11.0	6.90	1.35	3468.	.	9	5	91
19	161.5	55.	7.69	10.0	.	.	.	.	.	.	9	12	91
20	161.7	50.	7.66	.	.	8.4	6.00	1.40	3520.	.	9	19	91
21	168.3	45.	7.50	8.0	.	.	.	.	.	.	9	26	91
22	.	50.	7.61	.	.	.	5.10	1.40	3564.	.	10	3	91
23	167.3	46.	7.60	8.0	.	.	.	.	.	.	10	10	91
24	163.9	50.	7.49	.	.	6.7	5.25	1.70	3611.	.	10	17	91
25	160.9	41.	7.45	11.0	.	.	.	.	.	.	10	24	91
26	.	35.	7.36	.	.	3.7	5.60	0.80	3647.	.	10	31	91
27	163.5	35.	7.49	11.0	.	.	.	.	.	.	11	7	91
28	170.9	41.	7.42	.	.	4.3	3.70	1.05	3669.	.	11	14	91
29	162.2	39.	7.49	10.0	.	.	.	.	.	.	11	21	91
30	168.0	34.	.	.	.	4.2	3.55	1.05	3691.	.	11	28	91
31	164.8	36.	7.59	6.3	.	.	.	.	.	.	12	5	91
32	158.4	38.	7.52	.	.	.	3.45	1.20	3713.	.	12	12	91
33	162.7	55.	7.63	22.0	.	.	.	.	.	.	12	19	91
34	149.9	41.	7.59	.	.	5.4	4.05	1.20	3735.	.	12	26	91
35	158.9	41.	7.69	12.0	.	.	.	.	.	.	1	2	92
36	163.4	42.	7.62	.	.	6.3	3.60	1.25	3757.	.	1	9	92
37	157.3	42.	7.48	6.0	.	.	.	.	.	.	1	16	92
38	161.3	35.	7.44	.	.	4.9	4.10	1.10	3779.	.	1	23	92
39	161.3	43.	7.68	9.0	.	.	.	.	.	.	1	30	92
40	161.0	35.	7.55	.	.	.	3.45	1.35	3801.	.	2	6	92
41	167.6	27.	7.36	6.0	.	.	.	.	.	100.0	2	13	92
42	166.2	31.	7.51	.	.	4.3	4.60	1.60	3823.	83.0	2	20	92
43	162.9	36.	7.52	6.0	.	.	.	.	.	35.0	2	27	92

Table B2.23. Wet-Dry Cycle Test drainage quality from Solid TL4, reactor 17.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	165.8	40.	7.61	.	.	14.5	4.60	1.60	3845.	50.0	3	5	92
45	162.0	28.	7.59	6.0	.	.	.	.	.	68.0	3	12	92
46	156.6	32.	7.70	.	.	3.4	1.80	1.40	3867.	62.0	3	19	92
47	164.5	31.	7.53	6.0	.	.	.	.	.	72.0	3	26	92
48	161.5	31.	7.56	.	.	3.1	1.80	2.00	3889.	86.0	4	2	92
49	164.5	37.	7.42	6.0	.	.	.	.	.	37.0	4	9	92
50	167.0	32.	7.62	.	.	3.2	1.80	2.20	55008.	23.0	4	16	92
51	164.1	41.	7.78	16.0	.	.	.	.	.	24.0	4	23	92
52	163.5	40.	7.85	.	.	4.0	2.80	2.00	55019.	57.0	4	30	92
53	162.1	33.	7.86	6.0	.	.	.	.	.	57.0	5	7	92
54	163.4	31.	7.42	.	.	4.5	2.00	3.40	55030.	58.0	5	14	92
55	160.0	40.	7.77	9.0	.	.	.	.	.	46.0	5	21	92
56	156.5	35.	7.69	.	.	5.1	3.50	1.50	55041.	58.0	5	28	92
57	153.7	40.	7.80	16.0	.	.	.	.	.	52.0	6	4	92
58	163.2	34.	7.47	.	.	3.5	3.30	1.60	55052.	72.0	6	11	92
59	169.4	38.	7.45	13.0	.	.	.	.	.	77.0	6	18	92
60	164.4	40.	7.44	.	.	4.0	4.00	1.80	55064.	55.0	6	25	92
61	167.9	35.	7.53	10.0	.	.	.	.	.	75.0	7	2	92
62	165.0	34.	7.57	.	.	3.0	3.40	1.60	55075.	63.0	7	9	92
63	165.6	35.	7.57	10.0	.	.	.	.	.	28.0	7	16	92
64	161.0	41.	7.70	.	.	3.5	3.65	1.75	55086.	45.0	7	23	92
65	161.5	44.	7.76	11.0	.	.	.	.	.	36.0	7	30	92
66	161.5	40.	7.67	.	.	4.3	4.00	1.90	55097.	.	8	6	92
67	168.2	38.	7.63	11.0	.	.	.	.	.	.	8	13	92
68	166.3	38.	7.63	.	.	4.6	3.50	1.70	55108.	.	8	20	92
69	170.1	39.	7.49	11.0	.	.	.	.	.	.	8	27	92
70	170.3	39.	7.58	.	.	5.3	3.05	1.50	55120.	.	9	3	92
71	164.5	39.	7.65	11.0	.	.	.	.	.	13.0	9	10	92
72	155.7	33.	7.43	.	.	7.0	2.70	1.30	55131.	23.0	9	17	92
73	161.4	37.	7.65	13.0	.	.	.	.	.	32.0	9	24	92
74	166.1	42.	7.52	.	.	6.9	3.15	1.65	55142.	13.0	10	1	92
75	162.8	34.	7.53	11.0	.	.	.	.	.	33.0	10	8	92
76	161.9	28.	7.46	.	.	.	2.45	1.25	55153.	42.0	10	15	92
77	161.9	32.	7.66	11.0	.	.	.	.	.	36.0	10	22	92
78	160.6	29.	7.53	.	.	.	2.40	1.20	55165.	63.0	10	29	92
79	160.7	27.	7.42	10.0	.	.	.	.	.	47.0	11	5	92
80	154.2	27.	7.22	.	.	.	2.30	1.15	55176.	100.0	11	12	92
81	161.7	58.	7.49	.	.	.	.	.	.	95.0	11	18	92
82	158.5	37.	7.45	.	.	.	2.60	2.05	55187.	93.0	11	25	92
83	159.0	30.	7.34	8.0	.	.	.	.	.	87.0	12	3	92
84	150.2	72.	7.51	.	.	.	5.90	2.90	55198.	116.0	12	10	92
85	163.9	23.	7.45	11.0	.	.	.	.	.	114.0	12	17	92
86	165.8	18.	7.61	.	.	4.5	1.45	0.85	55209.	142.0	12	24	92
87	163.4	27.	7.52	.	.	.	.	.	.	135.0	12	31	92
88	172.0	29.	7.20	.	.	5.4	0.25	0.75	55221.	.	1	7	93
89	166.6	22.	6.95	10.8	.	.	.	.	.	.	1	14	93

Table B2.24. Wet-Dry Cycle Test drainage quality from Solid TL4, reactor 17.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	167.1	24.	7.14	.	.	2.5	1.70	0.95	55232.	60.0	1	21	93
91	163.4	22.	7.24	10.8	.	.	.	.	.	62.0	1	28	93
92	164.1	26.	7.36	.	.	2.6	2.15	1.20	55243.	43.0	2	4	93
93	164.2	24.	7.33	11.4	.	.	.	.	.	30.0	2	11	93
94	165.1	22.	7.28	.	.	2.8	1.85	1.15	55254.	31.0	2	18	93
95	163.4	21.	7.42	8.5	.	.	.	.	.	.	2	25	93
96	165.3	25.	7.42	.	.	2.5	2.25	1.70	55265.	24.0	3	4	93
97	165.6	25.	7.42	11.4	.	.	.	.	.	33.0	3	11	93
98	165.5	23.	7.41	.	.	2.5	1.70	1.05	55277.	35.0	3	18	93
99	164.0	25.	7.61	11.4	.	.	.	.	.	6.0	3	25	93
100	159.0	26.	7.44	.	.	3.8	2.35	2.25	55288.	.	4	1	93
101	161.7	24.	7.46	6.0	.	.	.	.	.	22.0	4	8	93
102	159.9	25.	7.34	.	.	3.6	2.10	1.30	55299.	26.0	4	15	93
103	168.6	24.	7.47	6.0	.	.	.	.	.	.	4	22	93
104	165.2	27.	7.57	.	.	4.5	2.05	1.25	55310.	7.0	4	29	93
105	143.3	31.	7.52	6.2	.	.	.	.	.	.	5	6	93
106	152.9	29.	7.59	.	.	6.5	2.75	2.30	55322.	20.0	5	13	93
107	152.9	27.	7.65	7.5	.	.	.	.	.	42.0	5	20	93
108	158.5	30.	7.27	.	.	6.7	2.45	1.35	55333.	18.0	5	27	93
109	172.3	25.	7.26	5.0	.	.	.	.	.	48.0	6	3	93
110	168.5	28.	7.39	.	.	5.6	2.30	1.40	55344.	.	6	10	93
111	164.9	26.	7.30	7.5	.	.	.	.	.	.	6	17	93
112	166.2	24.	7.58	.	.	5.5	1.90	1.00	55355.	.	6	23	93
113	172.1	28.	7.46	8.5	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	174.1	26.	7.46	7.5	.	.	.	.	.	.	7	15	93
116	171.4	25.	7.64	.	.	5.7	2.20	1.70	55367.	.	7	22	93
117	171.2	24.	7.43	7.5	.	.	.	.	.	.	7	29	93
118	171.1	23.	7.45	.	.	5.2	2.05	1.10	55378.	.	8	5	93
119	167.7	27.	7.32	7.5	.	.	.	.	.	.	8	12	93
120	170.1	25.	7.26	.	.	6.2	2.15	1.50	55389.	.	8	19	93
121	168.1	25.	7.27	7.5	.	.	.	.	.	.	8	26	93
122	168.8	25.	7.56	.	.	6.4	2.05	1.20	55400.	.	9	2	93
123	170.8	25.	7.57	6.2	.	.	.	.	.	.	9	9	93
124	171.6	23.	7.46	.	.	4.9	1.90	1.10	55412.	.	9	16	93
125	173.0	20.	7.39	10.0	.	.	.	.	.	.	9	23	93
126	169.0	19.	7.39	.	.	4.4	1.50	0.95	55424.	.	9	30	93
127	171.6	20.	7.37	9.0	.	.	.	.	.	.	10	7	93
128	174.4	18.	7.29	.	.	5.1	1.20	0.75	55435.	.	10	14	93
129	170.5	19.	6.95	5.0	.	.	.	.	.	.	10	20	93
130	172.5	20.	7.30	.	.	4.3	1.30	0.85	55447.	.	10	28	93
131	175.3	21.	6.99	6.0	.	.	.	.	.	.	11	4	93
132	171.6	17.	7.12	.	.	4.9	1.15	0.75	55458.	.	11	10	93

Table B2.25. Wet-Dry Cycle Test drainage quality from Solid TL5, reactor 19.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	1175.	6.44	.	.	1250.0	592.00	88.80	3018.	.	4	29	91
0	.	290.	.	.	.	.	.	.	.	.	5	1	91
0	.	68.	7.10	.	.	22.0	9.15	1.45	3040.	.	5	1	91
1	168.1	550.	4.57	.	26.0	308.0	93.00	25.40	3062.	.	5	9	91
2	.	720.	3.91	.	109.0	400.0	77.50	37.30	3096.	.	5	16	91
3	163.7	710.	3.61	.	147.0	.	.	.	.	.	5	23	91
4	171.2	750.	3.46	.	.	350.0	.	.	3140.	.	5	30	91
5	168.2	820.	3.19	.	247.0	.	.	.	.	.	6	6	91
6	167.7	1000.	3.06	.	.	370.0	9.40	16.10	3184.	.	6	13	91
7	164.9	925.	3.06	.	336.0	.	.	.	.	.	6	20	91
8	171.7	925.	3.00	.	.	410.0	4.25	28.00	3236.	.	6	27	91
9	172.4	800.	2.99	.	333.0	.	.	.	.	.	7	3	91
10	170.8	1150.	2.90	.	.	470.0	3.55	35.50	3283.	.	7	11	91
11	168.5	1200.	2.92	.	362.0	.	.	.	.	.	7	18	91
12	172.9	925.	3.02	.	.	346.0	.	.	3327.	.	7	25	91
13	168.7	790.	3.04	.	155.0	.	.	.	.	.	7	31	91
14	172.5	800.	3.00	.	.	302.0	4.25	36.05	3379.	.	8	8	91
15	168.4	875.	2.90	.	236.0	.	.	.	.	.	8	15	91
16	171.1	975.	2.85	.	.	366.0	3.90	23.85	3426.	.	8	22	91
17	170.1	900.	2.79	.	391.0	.	.	.	.	.	8	29	91
18	170.1	1100.	2.81	.	.	355.0	3.70	24.80	3470.	.	9	5	91
19	173.1	1050.	2.84	.	270.0	.	.	.	.	.	9	12	91
20	173.8	1175.	2.83	.	.	340.0	4.15	14.45	3522.	.	9	19	91
21	172.9	1100.	2.70	.	333.0	.	.	.	.	.	9	26	91
22	170.0	910.	2.80	.	.	290.0	2.90	9.00	3566.	.	10	3	91
23	174.2	850.	2.81	.	276.0	.	.	.	.	.	10	10	91
24	162.2	890.	2.73	.	.	324.0	3.65	8.35	3613.	.	10	17	91
25	171.5	1000.	2.78	.	282.0	.	.	.	.	.	10	24	91
26	.	600.	2.76	.	.	248.0	2.40	8.00	3648.	.	10	31	91
27	172.1	950.	2.71	.	270.0	.	.	.	.	.	11	7	91
28	172.1	850.	2.82	.	.	260.0	2.20	6.85	3670.	.	11	14	91
29	172.5	995.	2.71	.	290.0	.	.	.	.	.	11	24	91
30	173.6	800.	2.79	.	.	214.0	1.60	5.50	3692.	.	11	28	91
31	172.1	800.	2.82	.	227.0	.	.	.	.	.	12	5	91
32	171.9	990.	2.73	.	.	234.0	1.90	2.65	3714.	.	12	12	91
33	172.7	950.	2.73	.	247.0	.	.	.	.	.	12	19	91
34	175.4	625.	2.74	.	.	199.0	1.70	3.90	3736.	.	12	26	91
35	173.8	700.	2.82	.	290.0	.	.	.	.	.	1	2	92
36	169.6	800.	2.78	.	.	214.0	1.65	4.90	3758.	.	1	9	92
37	172.6	1100.	2.79	.	247.0	.	.	.	.	.	1	16	92
38	169.7	900.	2.81	.	.	184.0	1.30	3.90	3780.	.	1	23	92
39	173.1	1000.	2.82	.	236.0	.	.	.	.	.	1	30	92
40	169.8	900.	2.77	.	.	.	1.15	3.55	3802.	.	2	6	92
41	172.6	920.	2.76	.	241.0	.	.	.	.	.	2	13	92
42	714.3	1000.	2.78	.	.	230.0	3.00	3.40	3824.	.	2	20	92
43	173.2	1005.	2.78	.	276.0	.	.	.	.	.	2	27	92

Table B2.26. Wet-Dry Cycle Test drainage quality from Solid TL5, reactor 19.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	172.8	1005.	2.79	.	.	214.0	2.80	3.60	3846.	.	3	5	92
45	173.1	890.	2.75	.	259.0	.	.	.	.	.	3	12	92
46	172.2	980.	2.76	.	.	206.0	1.20	3.60	3868.	.	3	19	92
47	172.3	1050.	2.76	.	258.0	.	.	.	.	.	3	26	92
48	173.4	1200.	2.72	.	.	224.0	0.40	4.20	3890.	.	4	2	92
49	171.5	800.	2.78	.	250.0	.	.	.	.	.	4	9	92
50	171.5	1100.	2.77	.	.	208.0	0.00	4.00	55009.	.	4	16	92
51	172.3	1100.	2.75	.	293.0	.	.	.	.	.	4	23	92
52	174.2	1050.	2.71	.	.	228.0	0.00	3.00	55020.	.	4	30	92
53	170.2	900.	2.78	.	241.0	.	.	.	.	.	5	7	92
54	169.8	1100.	2.76	.	.	258.0	1.80	4.90	55031.	.	5	14	92
55	170.6	1050.	2.68	.	253.0	.	.	.	.	.	5	21	92
56	172.4	850.	2.77	.	.	176.0	1.00	2.70	55042.	.	5	28	92
57	168.2	1000.	2.72	.	215.0	.	.	.	.	.	6	4	92
58	172.1	975.	2.70	.	.	188.0	1.20	2.70	55053.	.	6	11	92
59	174.5	1010.	2.79	.	264.0	.	.	.	.	.	6	18	92
60	170.8	890.	2.79	.	.	170.0	1.00	2.10	55065.	.	6	25	92
61	173.9	950.	2.79	.	215.0	.	.	.	.	.	7	2	92
62	174.2	825.	2.77	.	.	178.0	1.10	2.40	55076.	.	7	9	92
63	171.3	830.	2.80	.	258.0	.	.	.	.	.	7	16	92
64	170.9	780.	2.77	.	.	178.0	0.65	2.35	55087.	.	7	23	92
65	170.9	700.	2.79	.	230.0	.	.	.	.	.	7	30	92
66	169.4	625.	2.63	.	.	188.0	0.65	2.20	55098.	.	8	6	92
67	170.5	850.	2.77	.	216.0	.	.	.	.	.	8	13	92
68	169.1	825.	2.78	.	.	184.0	0.60	1.65	55109.	.	8	20	92
69	170.9	810.	2.78	.	218.0	.	.	.	.	.	8	27	92
70	172.0	790.	2.80	.	.	176.0	0.50	1.65	55121.	.	9	3	92
71	173.1	875.	2.80	.	221.0	.	.	.	.	.	9	10	92
72	169.4	735.	2.81	.	.	176.0	0.55	1.50	55132.	.	9	17	92
73	168.8	710.	2.81	.	230.0	.	.	.	.	.	9	24	92
74	171.6	950.	2.86	.	.	180.0	0.35	1.30	55143.	.	10	1	92
75	170.3	890.	2.83	.	177.0	.	.	.	.	.	10	8	92
76	173.1	800.	2.83	.	.	.	0.45	1.20	55154.	.	10	15	92
77	173.0	775.	2.84	.	192.0	.	.	.	.	.	10	22	92
78	173.0	725.	2.81	.	.	.	0.45	1.40	55166.	.	10	29	92
79	173.8	725.	2.82	.	180.0	.	.	.	.	.	11	5	92
80	171.5	775.	2.84	.	.	.	0.40	1.20	55177.	.	11	12	92
81	174.1	790.	2.82	.	.	.	.	.	.	.	11	18	92
82	173.9	750.	2.83	.	.	.	0.45	1.05	55188.	.	11	25	92
83	173.5	550.	2.87	.	171.0	.	.	.	.	.	12	3	92
84	171.0	780.	2.83	.	.	.	0.45	1.40	55199.	.	12	10	92
85	173.7	525.	2.83	.	172.0	.	.	.	.	.	12	17	92
86	172.2	600.	2.86	.	.	136.0	0.30	0.90	55210.	.	12	24	92
87	172.7	650.	2.84	.	.	.	.	.	.	.	12	31	92
88	170.6	550.	2.87	.	.	145.0	.	0.65	55222.	.	1	7	93
89	171.3	490.	2.83	.	168.0	.	.	.	.	.	1	14	93

Table B2.27. Wet-Dry Cycle Test drainage quality from Solid TL5, reactor 19.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	170.3	580.	2.87	.	.	97.0	0.20	0.70	55233.	.	1	21	93
91	171.8	510.	2.89	.	186.0	.	.	.	.	.	1	28	93
92	172.2	530.	2.89	.	.	112.0	0.20	0.70	55244.	.	2	4	93
93	171.4	580.	2.90	.	156.0	.	.	.	.	.	2	11	93
94	172.6	580.	2.93	.	.	121.0	0.25	1.05	55255.	.	2	18	93
95	172.2	515.	2.95	.	144.0	.	.	.	.	.	2	25	93
96	172.2	490.	2.87	.	.	101.0	0.20	0.80	55266.	.	3	4	93
97	174.6	590.	2.89	.	162.0	.	.	.	.	.	3	11	93
98	173.2	530.	2.93	.	.	93.0	0.10	0.65	55278.	.	3	18	93
99	171.6	590.	2.95	.	168.0	.	.	.	.	.	3	25	93
100	169.5	550.	2.96	.	.	136.0	0.35	0.85	55289.	.	4	1	93
101	171.9	460.	2.92	.	122.0	.	.	.	.	.	4	8	93
102	169.8	470.	2.92	.	.	104.0	0.30	0.95	55300.	.	4	15	93
103	168.9	510.	2.89	.	120.0	.	.	.	.	.	4	22	93
104	171.8	500.	2.90	.	.	84.0	0.10	0.85	55311.	.	4	29	93
105	171.7	520.	2.91	.	135.0	.	.	.	.	.	5	6	93
106	173.9	620.	2.90	.	.	124.0	0.35	0.95	55323.	.	5	13	93
107	170.4	510.	2.92	.	142.0	.	.	.	.	.	5	20	93
108	169.9	435.	2.91	.	.	106.0	0.40	0.80	55334.	.	5	27	93
109	172.5	500.	2.90	.	145.0	.	.	.	.	.	6	3	93
110	174.4	470.	2.92	.	.	110.0	0.15	0.70	55345.	.	6	10	93
111	171.2	430.	2.83	.	.	.	.	.	.	.	6	17	93
112	170.7	455.	2.88	.	.	103.0	0.20	0.70	55356.	.	6	23	93
113	171.9	540.	2.82	.	150.0	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	172.1	575.	2.86	.	140.0	.	.	.	.	.	7	15	93
116	172.1	525.	2.84	.	.	134.0	0.25	0.75	55368.	.	7	22	93
117	173.8	550.	2.87	.	155.0	.	.	.	.	.	7	29	93
118	172.8	525.	2.88	.	.	136.0	0.30	1.15	55379.	.	8	5	93
119	174.0	675.	2.81	.	155.0	.	.	.	.	.	8	12	93
120	175.2	740.	2.81	.	.	130.0	0.25	0.60	55390.	.	8	19	93
121	172.6	780.	2.80	.	162.0	.	.	.	.	.	8	26	93
122	172.6	770.	2.85	.	.	144.0	0.25	0.75	55401.	.	9	2	93
123	167.6	725.	2.84	.	150.0	.	.	.	.	.	9	9	93
124	176.4	625.	2.88	.	.	114.0	0.35	0.80	55413.	.	9	16	93
125	175.7	600.	2.89	.	110.0	.	.	.	.	.	9	23	93
126	171.7	550.	2.90	.	.	109.0	0.25	0.50	55425.	.	9	30	93
127	173.8	610.	2.92	.	145.0	.	.	.	.	.	10	7	93
128	172.5	500.	2.94	.	.	93.0	0.20	0.45	55436.	.	10	14	93
129	170.5	600.	2.89	.	100.0	.	.	.	.	.	10	20	93
130	170.8	500.	2.81	.	.	92.0	0.05	0.45	55448.	.	10	28	93
131	172.5	520.	2.88	.	122.0	.	.	.	.	.	11	4	93
132	170.3	600.	2.90	.	.	100.0	0.10	0.50	55459.	.	11	10	93

Table B2.28. Wet-Dry Cycle Test drainage quality from Solid TL6, reactor 21.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
0	.	4950.	6.68	.	.	2120.0	.	96.50	3020.	.	4	29	91
0	.	2400.	.	.	.	.	.	.	.	.	5	1	91
0	.	1900.	7.36	.	.	1230.0	620.00	0.93	3042.	.	5	1	91
1	171.4	1800.	7.71	51.0	.	1000.0	508.00	3.37	3064.	.	5	9	91
2	.	1620.	7.76	43.0	.	980.0	517.00	6.34	3098.	.	5	16	91
3	169.8	1300.	7.85	40.0	.	.	.	.	.	.	5	23	91
4	174.7	1000.	7.82	.	.	415.0	.	.	3142.	.	5	30	91
5	171.3	750.	7.80	39.0	.	.	.	.	.	.	6	6	91
6	172.6	700.	7.60	.	.	276.0	156.00	2.59	3186.	.	6	13	91
7	172.9	650.	7.82	37.0	.	.	.	.	.	.	6	20	91
8	173.1	500.	7.83	.	.	205.0	103.00	2.16	3238.	.	6	27	91
9	172.0	500.	7.76	39.0	.	.	.	.	.	.	7	3	91
10	175.5	460.	7.74	.	.	148.0	76.20	1.58	3285.	.	7	11	91
11	171.7	445.	7.70	39.0	.	.	.	.	.	.	7	18	91
12	175.7	460.	7.87	.	.	150.0	.	.	3329.	.	7	25	91
13	175.1	452.	7.84	32.0	.	.	.	.	.	.	7	31	91
14	177.1	340.	7.69	.	.	139.0	78.90	1.58	3381.	.	8	8	91
15	171.7	370.	7.79	42.0	.	.	.	.	.	.	8	15	91
16	176.5	450.	7.83	.	.	143.0	76.50	1.67	3428.	.	8	22	91
17	175.1	385.	7.86	20.0	.	.	.	.	.	.	8	29	91
18	174.4	465.	7.76	.	.	143.0	69.40	1.43	3472.	.	9	5	91
19	176.7	400.	7.56	34.0	.	.	.	.	.	.	9	12	91
20	176.7	345.	7.67	.	.	84.0	52.50	1.14	3524.	.	9	19	91
21	176.7	390.	7.87	31.0	.	.	.	.	.	.	9	26	91
22	174.7	382.	7.82	.	.	108.0	53.40	1.80	3568.	.	10	3	91
23	175.3	370.	7.72	31.0	.	.	.	.	.	.	10	10	91
24	180.7	285.	7.80	.	.	75.0	44.40	1.60	3615.	.	10	17	91
25	175.8	390.	7.82	37.0	.	.	.	.	.	.	10	24	91
26	.	315.	7.73	.	.	99.0	48.60	2.20	3649.	.	10	31	91
27	174.7	290.	7.74	34.0	.	.	.	.	.	.	11	7	91
28	174.5	362.	7.64	.	.	102.0	58.80	1.80	3671.	.	11	14	91
29	174.6	350.	7.71	35.0	.	.	.	.	.	.	11	21	91
30	175.5	265.	7.63	.	.	62.0	45.60	1.00	3693.	.	11	28	91
31	174.8	280.	7.66	45.0	.	.	.	.	.	.	12	5	91
32	175.5	300.	7.82	.	.	84.4	48.60	1.40	3715.	.	12	12	91
33	175.2	275.	7.80	57.0	.	.	.	.	.	.	12	19	91
34	176.2	250.	7.74	.	.	66.0	42.60	1.20	3737.	.	12	26	91
35	175.5	300.	7.74	49.0	.	.	.	.	.	.	1	2	92
36	175.6	330.	7.74	.	.	84.0	47.60	1.20	3759.	.	1	9	92
37	176.8	310.	7.91	50.0	.	.	.	.	.	.	1	16	92
38	175.2	310.	7.88	.	.	82.0	49.60	1.00	3781.	.	1	23	92
39	175.3	325.	7.89	50.0	.	.	.	.	.	.	1	30	92
40	172.5	260.	7.73	.	.	.	45.60	1.00	3803.	.	2	5	92
41	177.0	300.	7.81	50.0	.	.	.	.	.	.	2	13	92
42	175.0	300.	7.83	.	.	75.0	47.80	1.60	3825.	.	2	20	92
43	174.9	310.	7.76	47.0	.	.	.	.	.	.	2	27	92

Table B2.29. Wet-Dry Cycle Test drainage quality from Solid TL6, reactor 21.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
44	175.1	315.	7.77	.	.	80.0	50.80	1.20	3847.	.	3	5	92
45	172.3	270.	7.72	30.0	.	.	.	.	.	.	3	12	92
46	173.6	320.	7.52	.	.	98.0	53.20	1.60	3869.	.	3	19	92
47	175.6	310.	7.55	50.0	.	.	.	.	.	.	3	26	92
48	174.0	310.	7.32	.	.	86.5	49.00	2.00	3891.	.	4	2	92
49	176.0	320.	7.28	50.0	.	.	.	.	.	.	4	9	92
50	176.1	330.	7.74	.	.	94.4	48.40	2.00	55010.	.	4	16	92
51	174.7	305.	7.81	57.0	.	.	.	.	.	.	4	23	92
52	175.0	310.	7.65	.	.	77.2	46.60	1.40	55021.	.	4	30	92
53	174.9	300.	7.39	44.0	.	.	.	.	.	.	5	7	92
54	175.5	225.	7.09	.	.	80.0	61.40	1.40	55032.	.	5	14	92
55	171.8	270.	7.63	31.0	.	.	.	.	.	.	5	21	92
56	176.0	280.	7.30	.	.	.	47.40	1.40	55043.	.	5	28	92
57	171.5	395.	7.14	38.0	.	.	.	.	.	.	6	4	92
58	173.7	285.	7.55	.	.	77.5	49.00	1.40	55054.	.	6	11	92
59	174.9	290.	7.69	41.0	.	.	.	.	.	.	6	18	92
60	174.1	250.	7.80	.	.	55.0	39.40	1.00	55066.	.	6	25	92
61	173.6	275.	7.67	45.0	.	.	.	.	.	.	7	2	92
62	175.1	235.	7.57	.	.	69.2	43.00	0.80	55077.	.	7	9	92
63	173.5	270.	7.58	31.0	.	.	.	.	.	.	7	16	92
64	173.8	278.	7.57	.	.	75.2	48.10	1.10	55088.	.	7	23	92
65	173.1	230.	7.72	34.0	.	.	.	.	.	.	7	30	92
66	172.1	230.	7.66	.	.	57.2	40.85	0.95	55099.	.	8	6	92
67	172.3	220.	7.69	40.0	.	.	.	.	.	.	8	13	92
68	172.2	224.	7.71	.	.	56.0	38.85	0.90	55110.	.	8	20	92
69	173.3	240.	7.60	40.0	.	.	.	.	.	.	8	27	92
70	173.7	253.	7.67	.	.	64.0	40.10	0.90	55122.	.	9	3	92
71	173.5	262.	7.60	37.0	.	.	.	.	.	.	9	10	92
72	173.6	235.	7.57	.	.	69.2	40.60	0.80	55133.	.	9	17	92
73	172.7	220.	7.77	37.0	.	.	.	.	.	.	9	24	92
74	174.6	262.	7.87	.	.	56.0	41.50	0.90	55144.	.	10	1	92
75	173.1	242.	7.73	45.0	.	.	.	.	.	.	10	8	92
76	173.2	222.	7.70	.	.	.	38.20	0.75	55155.	.	10	15	92
77	173.4	210.	7.78	42.0	.	.	.	.	.	.	10	22	92
78	173.2	220.	7.55	.	.	.	41.55	0.80	55167.	.	10	29	92
79	174.1	193.	7.65	48.0	.	.	.	.	.	.	11	5	92
80	175.7	203.	7.73	.	.	.	38.10	1.05	55178.	.	11	12	92
81	173.9	205.	7.63	.	.	.	.	.	.	.	11	18	92
82	174.1	188.	7.57	.	.	.	32.70	0.75	55189.	.	11	25	92
83	174.0	186.	7.71	38.0	.	.	.	.	.	.	12	3	92
84	175.4	200.	7.83	.	.	.	30.60	0.60	55200.	.	12	10	92
85	174.0	172.	7.78	38.0	.	.	.	.	.	.	12	17	92
86	175.3	178.	7.61	.	.	41.0	31.30	1.85	55211.	.	12	24	92
87	174.2	175.	7.67	.	.	.	.	.	.	.	12	31	92
88	176.9	178.	7.92	.	.	53.6	.	1.15	55223.	.	1	7	93
89	174.8	175.	7.42	47.0	.	.	.	.	.	.	1	14	93

Table B2.30. Wet-Dry Cycle Test drainage quality from Solid TL6, reactor 21.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	Decant (mL)	Month	Day	Year
90	174.6	175.	7.72	.	.	54.2	31.35	0.65	55234.	.	1	21	93
91	179.1	185.	7.84	44.0	.	.	.	.	.	.	1	28	93
92	174.1	187.	7.91	.	.	42.6	31.70	0.65	55245.	.	2	4	93
93	175.1	205.	7.85	45.0	.	.	.	.	.	.	2	11	93
94	175.9	185.	7.88	.	.	46.0	32.55	2.50	55256.	.	2	18	93
95	175.0	190.	7.88	45.0	.	.	.	.	.	.	2	25	93
96	175.6	180.	7.77	.	.	30.0	31.25	0.90	55267.	.	3	4	93
97	175.3	208.	7.85	50.0	.	.	.	.	.	.	3	11	93
98	177.6	183.	7.68	.	.	48.2	31.60	0.75	55279.	.	3	18	93
99	175.7	200.	7.95	45.0	.	.	.	.	.	.	3	25	93
100	173.8	220.	7.91	.	.	70.0	36.70	0.90	55290.	.	4	1	93
101	176.2	215.	7.93	45.0	.	.	.	.	.	.	4	8	93
102	176.9	215.	7.85	.	.	74.0	40.45	1.00	55301.	.	4	15	93
103	173.7	225.	7.84	41.0	.	.	.	.	.	.	4	22	93
104	174.8	192.	7.66	.	.	56.4	34.50	0.80	55312.	.	4	29	93
105	177.6	220.	7.84	41.0	.	.	.	.	.	.	5	6	93
106	175.2	225.	7.69	.	.	61.2	41.20	0.95	55324.	.	5	13	93
107	175.1	210.	7.82	44.0	.	.	.	.	.	.	5	20	93
108	175.1	192.	7.87	.	.	52.0	36.15	0.90	55335.	.	5	27	93
109	176.8	180.	7.95	35.0	.	.	.	.	.	.	6	3	93
110	178.7	190.	7.82	.	.	51.2	37.35	0.95	55346.	.	6	10	93
111	174.3	230.	7.89	45.0	.	.	.	.	.	.	6	17	93
112	174.5	226.	7.40	.	.	70.4	40.10	0.90	55357.	.	6	23	93
113	176.0	225.	7.88	32.0	.	.	.	.	.	.	7	1	93
114	.	.	.	.	.	.	.	.	.	.	7	8	93
115	177.3	223.	7.82	35.0	.	.	.	.	.	.	7	15	93
116	174.4	198.	7.74	.	.	59.4	37.20	1.05	55369.	.	7	22	93
117	175.5	200.	7.80	33.0	.	.	.	.	.	.	7	29	93
118	176.1	200.	7.76	.	.	84.0	49.80	1.10	55380.	.	8	5	93
119	176.6	85.	7.39	17.0	.	.	.	.	.	.	8	12	93
120	171.4	275.	7.75	.	.	100.4	46.55	1.50	55391.	.	8	19	93
121	172.1	295.	7.67	30.0	.	.	.	.	.	.	8	26	93
122	172.4	245.	7.91	.	.	68.0	38.20	1.10	55402.	.	9	2	93
123	173.0	218.	7.75	34.0	.	.	.	.	.	.	9	9	93
124	173.2	195.	7.76	.	.	56.0	33.85	0.95	55414.	.	9	16	93
125	172.2	172.	7.81	30.0	.	.	.	.	.	.	9	23	93
126	171.8	190.	7.74	.	.	44.6	33.45	0.90	55426.	.	9	30	93
127	173.5	195.	7.88	45.0	.	.	.	.	.	.	10	7	93
128	174.2	200.	7.86	.	.	43.6	32.75	0.90	55437.	.	10	14	93
129	171.8	205.	7.67	42.0	.	.	.	.	.	.	10	20	93
130	173.9	195.	7.94	.	.	43.6	32.40	0.90	55449.	.	10	28	93
131	175.1	210.	7.88	45.0	.	.	.	.	.	.	11	4	93
132	172.8	200.	7.95	.	.	46.0	33.40	1.05	55460.	.	11	10	93

Table B2.31. Identification of anomalous concentrations based on concentration versus time plots for the Wet-Dry Cycle Test (weeks 0 - 132).

Solid	Parameter	Sample Number	Concentration (mg/L)	Comments
RK1	magnesium	55022	4.4	Trend was ~2; sample was rerun and new value was 4.2; original value was used
	pH	55201	8.00	Trend was ~6.9; suspected laboratory error; sample was deleted
RK2	magnesium	55202	3.95	Trend was <1; sample was rerun; new value was 3.80; original value was used
RK3	calcium	55080	8.6	Trend was ~3; this concentration seemed inconsistent with conductance; sample was rerun; new value 3.30
	magnesium	55080	4.4	Trend was ~1.5; this concentration seemed inconsistent with conductance; sample was rerun; new value 1.70
	pH	55203	7.77	Trend was ~6.9; suspected laboratory error; sample was deleted
	sulfate	55542	24.5	Trend was ~5; not enough sample to rerun; concentration was kept in data file
RK4	sulfate	55339	95.2	Trend was ~45; this concentration seemed inconsistent with conductance; sample was rerun; new value 51.0
TL1	sulfate	55455	13.3	Trend was 3.0; not enough sample to rerun; inconsistent with conductance; concentration was omitted
TL4	sulfate	3713	20.5	Trend was ~5; this concentration seemed inconsistent with conductance; not enough sample to rerun; sample was omitted
	sulfate	3845	14.5	Trend was ~3.0; not enough sample to rerun; concentration was kept in data file
TL5	sulfate	55255	12.1	Data entry error; should have been 121
	magnesium	55143	6.4	Trend was ~1.5; sample was rerun; new value 1.30
	calcium	55222	33.15	Trend was <1; this concentration seemed inconsistent with conductance; rerun was 33.75; sample was omitted
	sulfate	55460	4.6	Data entry error; should have been 46.0
TL6	calcium	55223	2.15	Trend was ~30; concentration seemed inconsistent with conductance; rerun was 2.15; sample was omitted; possibly samples numbers were interchanged between this sample and #55222
	sulfate	55460	4.6	Data entry error; should have been 46.0

Table B3.0. Summary of cumulative mass release from the Wet-Dry Cycle Test (132 weeks).

Solid	Sulfate (mg)	Calcium (mg)	Magnesium (mg)
RK1	207.126	45.320	48.901
RK2	258.925	63.430	28.932
RK3	291.105	89.444	41.929
RK4	1109.312	356.303	176.485
TL1	185.659	198.741	12.168
TL2	303.005	525.596	25.669
TL3	814.975	433.926	196.850
TL4	327.630	157.982	32.489
TL5	4835.077	264.116	162.761
TL6	3258.655	1870.091	58.187

Table B3.1. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK1 (reactor 1)[1].

Week	Volume[2]	Sulfate			Calcium[3]			Magnesium[3]		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	288.0	44.698	44.698	.	5.587	5.587	.	5.277	5.277
0	.	.	25.937	70.634	.	1.080	6.667	.	1.000	6.277
0	.	<2.0	0.200	70.834	0.65	0.130	6.797	0.65	0.130	6.407
1	154.8	34.0	5.263	76.097	7.25	1.122	7.920	8.35	1.293	7.699
2	.	34.0	5.172	81.269	8.00	1.217	9.136	8.30	1.263	8.962
3	151.4	.	4.164	85.433	.	1.029	10.166	.	1.083	10.045
4	153.9	8.0	1.231	86.665	.	0.952	11.118	.	0.996	11.041
5	146.8	.	2.404	89.068	.	0.789	11.906	.	0.808	11.850
6	144.5	11.4	1.647	90.716	4.25	0.614	12.520	4.10	0.592	12.442
7	154.9	.	2.400	93.115	.	0.711	13.232	.	0.721	13.163
8	121.9	14.4	1.755	94.871	4.55	0.555	13.786	4.75	0.579	13.742
9	136.6	.	1.925	96.796	.	0.564	14.351	.	0.574	14.316
10	147.6	10.2	1.506	98.302	3.40	0.502	14.852	3.35	0.494	14.811
11	146.3	.	1.882	100.184	.	0.553	15.405	.	0.553	15.364
12	145.6	12.7	1.849	102.033	3.85	0.561	15.965	3.85	0.561	15.924
13	141.2	.	1.705	103.738	.	0.506	16.471	.	0.510	16.435
14	148.9	9.3	1.385	105.123	3.10	0.462	16.933	3.20	0.476	16.911
15	135.8	.	1.572	106.694	.	0.467	17.400	.	0.465	17.376
16	144.5	11.9	1.720	108.414	3.55	0.513	17.913	3.45	0.499	17.875
17	144.2	.	1.814	110.228	.	0.522	18.435	.	0.486	18.360
18	134.9	13.4	1.808	112.035	3.85	0.519	18.955	3.25	0.438	18.799
19	153.3	.	1.853	113.888	.	0.523	19.477	.	0.477	19.276
20	140.3	10.6	1.487	115.375	2.90	0.407	19.884	2.75	0.386	19.662
21	137.9	.	1.472	116.847	.	0.433	20.317	.	0.410	20.072
22	141.0	9.5	1.340	118.187	.	0.452	20.769	.	0.432	20.504
23	143.7	.	1.444	119.631	.	0.473	21.243	.	0.458	20.963
24	145.3	9.6	1.395	121.025	3.45	0.501	21.744	3.35	0.487	21.450
25	.	.	1.423	122.448	.	0.481	22.225	.	0.501	21.951
26	.	9.7	1.386	123.834	3.40	0.486	22.711	4.05	0.579	22.530
27	142.5	.	1.390	125.225	.	0.461	23.171	.	0.457	22.987
28	147.2	9.6	1.413	126.638	3.20	0.471	23.642	2.50	0.368	23.355
29	122.4	.	1.136	127.774	.	0.347	23.989	.	0.318	23.673
30	145.7	8.6	1.253	129.027	2.30	0.335	24.324	2.30	0.335	24.008
31	136.7	.	1.197	130.224	.	0.340	24.665	.	0.326	24.335
32	138.3	.	1.186	131.410	2.35	0.325	24.990	2.15	0.297	24.632
33	150.2	.	1.200	132.610	.	0.367	25.357	.	0.366	24.998

1 Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
2 Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.
3 Calcium and magnesium concentrations for week 0, rinse 1 estimated based on ratio of metal to conductance in drainage from this rock to week 11; week 0, rinse 2 estimated based on data from drainage sample with similar conductance.

Table B3.2. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK1 (reactor 1).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
34	139.5	6.7	0.935	133.545	2.40	0.335	25.692	2.65	0.370	25.368
35	141.9	.	1.055	134.600	.	0.333	26.024	.	0.339	25.707
36	147.0	.	1.132	135.732	2.10	0.309	26.333	2.05	0.301	26.008
37	147.3	.	1.194	136.926	.	0.349	26.682	.	0.336	26.344
38	144.2	8.9	1.283	138.209	2.50	0.360	27.042	2.30	0.332	26.676
39	146.7	.	1.126	139.335	.	0.362	27.404	.	0.354	27.030
40	151.9	6.5	0.987	140.322	2.30	0.349	27.753	2.50	0.380	27.410
41	145.7	.	0.965	141.287	.	0.434	28.187	.	0.379	27.789
42	148.3	5.9	0.875	142.162	4.00	0.593	28.781	2.80	0.415	28.204
43	150.8	.	0.996	143.158	.	0.525	29.306	.	0.438	28.642
44	149.5	7.0	1.047	144.204	4.20	0.628	29.934	3.40	0.508	29.150
45	143.0	.	0.875	145.080	.	0.389	30.323	.	0.375	29.525
46	153.1	5.1	0.781	145.860	1.20	0.184	30.507	1.80	0.276	29.801
47	150.9	.	0.822	146.682	.	0.289	30.795	.	0.357	30.157
48	149.4	5.5	0.822	147.504	2.00	0.299	31.094	2.60	0.388	30.546
49	139.5	.	0.557	148.061	.	0.250	31.344	.	0.368	30.914
50	148.6	<2.0	0.149	148.210	1.40	0.208	31.552	2.80	0.416	31.330
51	152.2	.	0.559	148.769	.	0.210	31.761	.	0.412	31.743
52	141.6	4.8	0.680	149.449	0.80	0.113	31.875	2.60	0.368	32.111
53	144.0	.	0.771	150.220	.	0.212	32.086	.	0.464	32.575
54	150.4	6.7	1.008	151.227	1.80	0.271	32.357	4.40	0.662	33.237
55	148.8	.	0.818	152.045	.	0.298	32.655	.	0.493	33.730
56	146.6	4.7	0.689	152.734	2.50	0.367	33.022	2.90	0.425	34.155
57	140.1	.	0.679	153.413	.	0.299	33.321	.	0.349	34.505
58	151.7	4.4	0.667	154.081	2.00	0.303	33.624	1.80	0.273	34.778
59	149.1	.	0.766	154.847	.	0.308	33.932	.	0.322	35.100
60	156.3	5.9	0.922	155.769	2.20	0.344	34.276	2.30	0.359	35.459
61	159.1	.	0.833	156.602	.	0.324	34.600	.	0.316	35.775
62	160.0	4.8	0.768	157.370	2.00	0.320	34.920	1.60	0.256	36.031
63	159.3	.	0.737	158.107	.	0.294	35.214	.	0.261	36.292
64	159.5	4.0	0.638	158.745	1.70	0.271	35.485	1.40	0.223	36.515
65	154.0	.	0.641	159.385	.	0.243	35.728	.	0.228	36.743
66	154.5	3.4	0.525	159.911	1.30	0.201	35.929	1.35	0.209	36.952
67	153.2	.	0.758	160.669	.	0.216	36.145	.	0.217	37.169
68	154.4	6.6	1.019	161.688	1.35	0.208	36.353	1.35	0.208	37.377
69	159.2	.	0.872	162.560	.	0.212	36.565	.	0.210	37.587
70	161.1	4.8	0.773	163.333	1.20	0.193	36.758	1.15	0.185	37.773
71	161.0	.	0.880	164.213	.	0.204	36.962	.	0.206	37.979
72	158.1	6.2	0.980	165.194	1.25	0.198	37.160	1.30	0.206	38.185
73	159.3	.	0.877	166.070	.	0.192	37.352	.	0.204	38.388
74	159.7	5.0	0.798	166.869	1.10	0.176	37.528	1.20	0.192	38.580

Table B3.3. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK1 (reactor 1).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
75	162.0	.	0.831	167.699	.	0.180	37.708	.	0.199	38.779
76	160.6	5.0	0.803	168.502	1.00	0.161	37.868	1.15	0.185	38.963
77	159.7	.	0.812	169.314	.	0.171	38.039	.	0.192	39.156
78	159.0	.	0.811	170.125	1.05	0.167	38.206	1.15	0.183	39.339
79	160.8	.	0.821	170.946	.	0.170	38.376	.	0.192	39.530
80	148.0	.	0.755	171.701	1.00	0.148	38.524	1.00	0.148	39.678
81	165.8	.	0.845	172.546	.	0.178	38.703	.	0.286	39.964
82	164.0	.	0.833	173.379	1.15	0.189	38.891	2.85	0.467	40.431
83	162.6	.	0.821	174.200	.	0.161	39.052	.	0.278	40.709
84	160.4	.	0.806	175.006	0.75	0.120	39.173	0.80	0.128	40.838
85	166.1	.	0.839	175.845	.	0.157	39.329	.	0.250	41.087
86	139.4	5.3	0.739	176.584	1.05	0.146	39.476	2.15	0.300	41.387
87	.	.	0.704	177.288	.	0.145	39.621	.	0.226	41.613
88	161.3	3.7	0.597	177.884	0.80	0.129	39.750	0.90	0.145	41.758
89	162.6	.	0.599	178.483	.	0.139	39.889	.	0.172	41.931
90	159.7	3.0	0.479	178.962	0.80	0.128	40.017	0.90	0.144	42.074
91	163.5	.	0.506	179.469	.	0.137	40.154	.	0.168	42.242
92	162.4	2.4	0.390	179.858	0.80	0.130	40.284	1.00	0.162	42.405
93	160.9	.	0.467	180.325	.	0.132	40.415	.	0.173	42.578
94	159.3	2.8	0.446	180.771	0.75	0.119	40.535	1.10	0.175	42.753
95	163.5	.	0.463	181.235	.	0.138	40.673	.	0.185	42.938
96	162.1	2.5	0.405	181.640	0.90	0.146	40.819	1.15	0.186	43.125
97	166.1	.	0.377	182.016	.	0.139	40.958	.	0.208	43.333
98	164.2	<2.0	0.164	182.181	0.75	0.123	41.081	1.50	0.246	43.579
99	165.0	.	0.403	182.584	.	0.125	41.207	.	0.186	43.765
100	163.4	3.1	0.507	183.090	0.65	0.106	41.313	0.75	0.123	43.888
101	163.6	.	0.529	183.619	.	0.123	41.436	.	0.152	44.040
102	164.8	3.4	0.560	184.179	0.75	0.124	41.560	0.90	0.148	44.188
103	160.2	.	0.546	184.725	.	0.131	41.691	.	0.162	44.350
104	153.4	3.1	0.476	185.200	0.85	0.130	41.821	1.10	0.169	44.519
105	168.2	.	0.645	185.845	.	0.147	41.968	.	0.180	44.699
106	168.2	4.4	0.740	186.585	0.90	0.151	42.119	1.10	0.185	44.884
107	162.4	.	0.719	187.304	.	0.140	42.259	.	0.168	45.053
108	163.1	4.7	0.767	188.070	0.80	0.130	42.390	1.00	0.163	45.216
109	166.2	.	0.740	188.810	.	0.130	42.520	.	0.153	45.369
110	170.9	4.2	0.718	189.528	0.70	0.120	42.640	0.80	0.137	45.505
111	160.6	.	0.616	190.144	.	0.096	42.736	.	0.108	45.614
112	180.8	2.6	0.470	190.614	0.25	0.045	42.781	0.30	0.054	45.668
113	167.7	.	0.626	191.240	.	0.091	42.872	.	0.098	45.766
114	.	.	0.711	191.951	.	0.111	42.983	.	0.119	45.885
115	161.2	.	0.777	192.727	.	0.130	43.113	.	0.142	46.027

Table B3.4. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK1 (reactor 1).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
116	164.6	5.1	0.839	193.567	0.95	0.156	43.269	1.10	0.181	46.209
117	164.7	.	1.032	194.599	.	0.156	43.425	.	0.176	46.385
118	163.7	8.3	1.359	195.958	1.00	0.164	43.588	1.20	0.196	46.581
119	165.1	.	1.059	197.016	.	0.152	43.740	.	0.173	46.755
120	165.4	4.9	0.810	197.827	0.80	0.132	43.873	0.95	0.157	46.912
121	164.2	.	0.958	198.785	.	0.136	44.009	.	0.153	47.064
122	164.7	6.2	1.021	199.806	0.70	0.115	44.124	0.80	0.132	47.196
123	164.3	.	0.896	200.701	.	0.125	44.249	.	0.148	47.344
124	165.9	4.0	0.664	201.365	0.60	0.100	44.348	0.85	0.141	47.485
125	168.2	.	0.809	202.174	.	0.130	44.479	.	0.185	47.670
126	164.5	4.2	0.691	202.865	0.75	0.123	44.602	1.45	0.239	47.908
127	166.5	.	0.798	203.663	.	0.131	44.733	.	0.182	48.090
128	163.6	4.1	0.671	204.334	0.60	0.098	44.832	0.75	0.123	48.213
129	161.6	.	0.760	205.094	.	0.129	44.961	.	0.166	48.379
130	169.2	3.6	0.609	205.703	0.70	0.118	45.079	1.20	0.203	48.582
131	167.4	.	0.802	206.504	.	0.140	45.219	.	0.176	48.758
132	168.1	3.7	0.622	207.126	0.60	0.101	45.320	0.85	0.143	48.901

Table B3.5. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK2 (reactor 3)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	83.0	13.919	13.907	13.10	2.197	2.211	4.52	0.758	0.760
0	.	.	8.465	22.372	.	1.582	3.793	.	0.592	1.353
0	.	10.0	2.000	24.372	4.30	0.860	4.653	1.60	0.320	1.673
1	169.0	60.0	10.140	34.512	11.10	1.876	6.529	5.20	0.879	2.552
2	.	43.0	7.131	41.643	10.50	1.741	8.270	3.45	0.572	3.124
3	162.0	.	6.475	48.118	.	1.464	9.735	.	0.517	3.641
4	164.6	41.0	6.749	54.866	.	1.376	11.111	.	0.473	4.113
5	167.0	.	5.658	60.525	.	1.309	12.420	.	0.401	4.514
6	167.1	28.0	4.679	65.204	7.70	1.287	13.707	1.75	0.292	4.807
7	164.1	.	4.223	69.426	.	1.132	14.839	.	0.300	5.107
8	165.7	18.6	3.082	72.508	6.05	1.002	15.842	1.50	0.249	5.356
9	159.9	.	3.876	76.384	.	0.995	16.837	.	0.264	5.620
10	166.5	28.0	4.662	81.046	6.20	1.032	17.869	1.55	0.258	5.878
11	171.6	.	4.179	85.225	.	1.024	18.893	.	0.279	6.157
12	166.3	21.7	3.609	88.834	.	0.939	19.832	.	0.269	6.426
13	166.5	.	3.585	92.418	.	0.845	20.677	.	0.256	6.681
14	168.6	19.9	3.355	95.773	4.20	0.708	21.385	1.35	0.228	6.909
15	166.0	.	3.341	99.114	.	0.734	22.119	.	0.242	7.150
16	165.3	19.2	3.174	102.288	4.15	0.686	22.805	1.40	0.231	7.382
17	166.8	.	3.290	105.578	.	0.702	23.507	.	0.261	7.643
18	160.1	20.1	3.218	108.796	4.10	0.656	24.164	1.75	0.280	7.923
19	168.0	.	3.246	112.042	.	0.665	24.829	.	0.274	8.197
20	168.4	19.3	3.250	115.292	3.70	0.623	25.452	1.60	0.269	8.466
21	164.7	.	2.820	118.112	.	0.592	26.044	.	0.260	8.727
22	166.6	14.4	2.399	120.511	3.30	0.550	26.594	1.60	0.267	8.993
23	163.1	.	2.405	122.917	.	0.526	27.120	.	0.243	9.236
24	169.3	13.8	2.336	125.253	2.90	0.491	27.610	1.40	0.237	9.473
25	168.5	.	2.093	127.346	.	0.474	28.084	.	0.212	9.685
26	.	9.1	1.523	128.869	2.35	0.393	28.478	0.95	0.159	9.844
27	168.0	.	1.834	130.702	.	0.425	28.903	.	0.192	10.036
28	161.2	10.9	1.757	132.459	2.35	0.379	29.282	1.15	0.185	10.221
29	168.9	.	1.680	134.140	.	0.397	29.679	.	0.196	10.418
30	167.3	7.6	1.271	135.411	2.05	0.343	30.022	1.10	0.184	10.602
31	169.0	.	1.502	136.913	.	0.368	30.390	.	0.198	10.800
32	167.7	8.5	1.425	138.339	1.95	0.327	30.717	1.20	0.201	11.001
33	160.7	.	1.304	139.642	.	0.344	31.061	.	0.186	11.187
34	170.6	5.8	0.989	140.632	2.05	0.350	31.411	1.05	0.179	11.366
35	162.1	.	1.406	142.037	.	0.364	31.774	.	0.180	11.546

[1] Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.6. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK2 (reactor 3).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	168.6	10.6	1.787	143.825	2.30	0.388	32.162	1.05	0.177	11.723
37	168.9	.	1.614	145.439	.	0.389	32.551	.	0.195	11.918
38	169.9	8.5	1.444	146.883	2.15	0.365	32.917	1.15	0.195	12.113
39	167.4	.	1.617	148.500	.	0.408	33.324	.	0.214	12.327
40	168.7	10.2	1.721	150.221	2.55	0.430	33.755	1.35	0.228	12.555
41	167.9	.	1.781	152.002	.	0.495	34.250	.	0.266	12.821
42	168.0	11.2	1.882	153.883	3.60	0.605	34.854	2.00	0.336	13.157
43	168.1	.	1.996	155.879	.	0.614	35.469	.	0.306	13.464
44	169.9	13.1	2.226	158.105	4.60	0.782	36.250	2.00	0.340	13.804
45	170.6	.	2.102	160.207	.	0.582	36.832	.	0.303	14.107
46	170.1	12.2	2.075	162.282	2.60	0.442	37.274	1.60	0.272	14.379
47	169.9	.	2.077	164.359	.	0.443	37.718	.	0.295	14.674
48	165.3	12.4	2.050	166.409	2.20	0.364	38.081	1.80	0.298	14.971
49	171.1	.	2.151	168.560	.	0.387	38.468	.	0.340	15.311
50	167.3	13.4	2.242	170.802	2.00	0.335	38.803	2.40	0.402	15.712
51	170.8	.	2.116	172.918	.	0.330	39.133	.	0.353	16.066
52	170.2	11.9	2.025	174.943	1.40	0.238	39.371	2.00	0.340	16.406
53	166.4	.	1.939	176.882	.	0.307	39.679	.	0.323	16.729
54	168.9	11.4	1.925	178.808	1.80	0.304	39.983	2.00	0.338	17.066
55	157.5	.	1.714	180.521	.	0.370	40.353	.	0.264	17.331
56	170.2	10.2	1.736	182.257	3.00	0.511	40.863	1.30	0.221	17.552
57	165.8	.	1.626	183.883	.	0.447	41.310	.	0.229	17.781
58	168.8	8.7	1.469	185.352	2.70	0.456	41.766	1.20	0.203	17.984
59	168.5	.	1.527	186.879	.	0.451	42.216	.	0.226	18.210
60	169.0	8.6	1.453	188.332	2.70	0.456	42.673	1.30	0.220	18.429
61	168.7	.	1.505	189.838	.	0.467	43.140	.	0.265	18.695
62	164.8	9.0	1.483	191.321	3.00	0.494	43.634	2.00	0.330	19.024
63	169.9	.	1.429	192.750	.	0.469	44.103	.	0.273	19.297
64	169.4	7.5	1.270	194.021	2.70	0.457	44.560	1.40	0.237	19.534
65	169.8	.	1.247	195.268	.	0.421	44.981	.	0.222	19.756
66	159.2	6.0	0.955	196.223	2.15	0.342	45.324	1.05	0.167	19.923
67	168.2	.	1.220	197.443	.	0.387	45.711	.	0.206	20.129
68	165.4	7.8	1.290	198.733	2.30	0.380	46.091	1.30	0.215	20.344
69	167.9	.	1.239	199.972	.	0.380	46.471	.	0.204	20.548
70	164.6	6.6	1.086	201.058	2.20	0.362	46.833	1.15	0.189	20.738
71	169.0	.	1.257	202.315	.	0.362	47.195	.	0.181	20.919
72	167.9	7.9	1.326	203.641	2.00	0.336	47.531	0.90	0.151	21.070
73	165.8	.	1.299	204.940	.	0.333	47.864	.	0.154	21.224
74	167.0	7.9	1.319	206.260	1.90	0.317	48.181	0.80	0.134	21.358
75	166.3	.	1.284	207.544	.	0.312	48.493	.	0.149	21.507
76	166.6	7.4	1.233	208.777	1.70	0.283	48.776	0.90	0.150	21.657

Table B3.7. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK2 (reactor 3).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	167.7	.	1.275	210.051	.	0.297	49.073	.	0.142	21.800
78	166.4	.	1.274	211.325	1.70	0.283	49.356	0.70	0.116	21.916
79	168.6	.	1.294	212.619	.	0.281	49.636	.	0.126	22.042
80	169.3	.	1.297	213.916	1.45	0.245	49.882	0.60	0.102	22.144
81	166.6	.	1.270	215.186	.	0.268	50.150	.	0.122	22.266
82	169.8	.	1.280	216.467	1.60	0.272	50.422	0.60	0.102	22.368
83	169.0	.	1.249	217.715	.	0.276	50.698	.	0.165	22.533
84	166.5	.	1.183	218.898	1.55	0.258	50.956	1.15	0.191	22.724
85	170.7	.	1.103	220.001	.	0.297	51.253	.	0.349	23.073
86	173.3	5.4	0.936	220.937	1.95	0.338	51.591	3.95	0.685	23.758
87	171.0	.	0.927	221.864	.	0.299	51.890	.	0.333	24.090
88	167.3	4.5	0.753	222.616	1.60	0.268	52.158	0.60	0.100	24.191
89	167.2	.	0.780	223.396	.	0.255	52.412	.	0.146	24.336
90	162.9	3.8	0.619	224.015	1.25	0.204	52.616	0.50	0.081	24.418
91	165.4	.	0.676	224.691	.	0.231	52.847	.	0.109	24.526
92	167.2	3.2	0.535	225.226	1.30	0.217	53.064	0.45	0.075	24.602
93	166.7	.	0.673	225.899	.	0.233	53.297	.	0.112	24.714
94	165.4	4.0	0.662	226.560	1.35	0.223	53.521	0.75	0.124	24.838
95	167.8	.	0.725	227.286	.	0.240	53.760	.	0.118	24.956
96	166.2	4.3	0.715	228.000	1.40	0.233	53.993	0.60	0.100	25.056
97	168.2	.	0.702	228.703	.	0.241	54.234	.	0.107	25.163
98	166.1	3.5	0.581	229.284	1.35	0.224	54.458	0.55	0.091	25.254
99	164.7	.	0.644	229.928	.	0.239	54.697	.	0.103	25.357
100	169.3	3.5	0.593	230.520	1.45	0.245	54.943	0.60	0.102	25.459
101	163.0	.	0.628	231.148	.	0.238	55.181	.	0.105	25.563
102	163.5	3.4	0.556	231.704	1.35	0.221	55.402	0.60	0.098	25.662
103	163.1	.	0.642	232.346	.	0.240	55.642	.	0.111	25.772
104	171.2	3.6	0.616	232.962	1.45	0.248	55.890	0.70	0.120	25.892
105	170.5	.	0.787	233.749	.	0.271	56.161	.	0.127	26.019
106	170.7	5.4	0.922	234.671	1.70	0.290	56.451	0.80	0.137	26.156
107	168.3	.	0.838	235.509	.	0.271	56.722	.	0.121	26.277
108	170.5	4.4	0.750	236.259	1.45	0.247	56.969	0.55	0.094	26.371
109	169.5	.	0.822	237.081	.	0.264	57.233	.	0.138	26.508
110	171.0	4.6	0.787	237.868	1.50	0.257	57.490	1.10	0.188	26.696
111	169.1	.	0.848	238.716	.	0.270	57.759	.	0.138	26.834
112	168.1	4.8	0.807	239.523	1.55	0.261	58.020	0.55	0.092	26.927
113	169.2	.	0.905	240.427	.	0.282	58.302	.	0.116	27.043
114	.	.	0.946	241.373	.	0.291	58.593	.	0.120	27.163
115	168.5	.	0.935	242.308	.	0.291	58.884	.	0.113	27.276
116	170.9	4.9	0.837	243.146	1.65	0.282	59.166	0.55	0.094	27.370
117	168.9	.	0.922	244.068	.	0.286	59.452	.	0.104	27.474

Table B3.8. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK2 (reactor 3).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	167.8	4.9	0.822	244.890	1.55	0.260	59.712	0.55	0.092	27.566
119	168.5	.	1.005	245.895	.	0.284	59.996	.	0.103	27.669
120	169.1	6.2	1.048	246.943	1.60	0.271	60.266	0.55	0.093	27.762
121	168.0	.	1.099	248.043	.	0.287	60.553	.	0.103	27.864
122	168.5	6.3	1.062	249.104	1.60	0.270	60.823	0.55	0.093	27.957
123	166.9	.	1.092	250.196	.	0.280	61.103	.	0.100	28.057
124	169.9	5.6	0.951	251.148	1.45	0.246	61.349	0.50	0.085	28.142
125	169.4	.	1.095	252.243	.	0.282	61.631	.	0.106	28.248
126	167.2	5.6	0.936	253.179	1.50	0.251	61.882	0.60	0.100	28.349
127	169.2	.	1.090	254.269	.	0.281	62.164	.	0.108	28.457
128	170.8	5.0	0.854	255.123	1.35	0.231	62.394	0.50	0.085	28.542
129	168.7	.	1.082	256.206	.	0.282	62.676	.	0.107	28.650
130	164.6	4.5	0.741	256.946	1.35	0.222	62.899	0.50	0.082	28.732
131	172.0	.	1.187	258.134	.	0.304	63.203	.	0.116	28.848
132	168.3	4.7	0.791	258.925	1.35	0.227	63.430	0.50	0.084	28.932

Table B3.9. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK3 (reactor 5)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	310.0	52.328	52.283	54.20	9.149	9.140	23.90	4.034	4.029
0	.	.	24.846	77.129	.	4.510	13.650	.	1.953	5.982
0	.	5.0	1.000	78.129	1.50	0.300	13.950	0.60	0.120	6.102
1	158.3	50.0	7.915	86.044	10.10	1.599	15.549	4.15	0.657	6.759
2	.	97.0	15.798	101.841	24.50	3.990	19.539	8.60	1.401	8.159
3	163.3	.	10.270	112.111	.	2.956	22.495	.	1.076	9.236
4	162.3	39.0	6.330	118.441	.	2.532	25.027	.	0.919	10.155
5	167.1	.	6.403	124.844	.	2.084	27.111	.	0.724	10.879
6	164.9	24.0	3.958	128.802	8.30	1.369	28.480	2.40	0.396	11.274
7	167.7	.	4.513	133.315	.	1.536	30.015	.	0.485	11.760
8	164.8	19.2	3.164	136.479	8.20	1.351	31.367	2.40	0.396	12.155
9	166.5	.	3.096	139.575	.	1.095	32.462	.	0.332	12.487
10	171.1	6.8	1.163	140.739	2.50	0.428	32.890	0.60	0.103	12.590
11	164.8	.	2.935	143.673	.	0.904	33.793	.	0.258	12.848
12	166.4	23.2	3.860	147.534	6.20	1.032	34.825	1.65	0.275	13.123
13	161.8	.	3.110	150.644	.	1.055	35.880	.	0.288	13.411
14	156.0	14.8	2.309	152.952	6.80	1.061	36.940	1.70	0.265	13.676
15	167.0	.	2.720	155.672	.	1.131	38.071	.	0.303	13.980
16	167.3	14.7	2.459	158.132	6.75	1.129	39.201	1.75	0.293	14.273
17	158.0	.	2.323	160.455	.	1.119	40.319	.	0.309	14.581
18	155.4	12.4	1.927	162.382	7.90	1.228	41.547	2.20	0.342	14.923
19	159.9	.	2.107	164.489	.	1.057	42.604	.	0.298	15.221
20	157.7	11.9	1.877	166.366	5.45	0.859	43.464	1.50	0.237	15.458
21	159.3	.	1.826	168.191	.	0.891	44.355	.	0.259	15.716
22	156.5	8.7	1.362	169.553	4.95	0.775	45.129	1.50	0.235	15.951
23	163.2	.	1.708	171.261	.	0.898	46.027	.	0.267	16.218
24	159.2	10.6	1.688	172.949	5.90	0.939	46.966	1.75	0.279	16.497
25	149.5	.	1.361	174.310	.	0.763	47.730	.	0.213	16.709
26	.	5.9	0.919	175.229	4.00	0.623	48.353	0.90	0.140	16.849
27	155.2	.	1.158	176.387	.	0.754	49.107	.	0.194	17.044
28	158.8	6.7	1.064	177.451	5.50	0.873	49.980	1.30	0.206	17.250
29	157.2	.	1.089	178.540	.	0.748	50.729	.	0.225	17.476
30	161.5	6.0	0.969	179.509	4.35	0.703	51.431	1.70	0.275	17.750
31	156.4	.	0.762	180.271	.	0.502	51.933	.	0.174	17.925
32	170.7	<2.0	0.171	180.441	0.85	0.145	52.079	0.30	0.051	17.976
33	166.3	.	0.650	181.091	.	0.399	52.477	.	0.125	18.101
34	171.8	3.8	0.653	181.744	2.30	0.395	52.872	0.60	0.103	18.204
35	171.3	.	0.962	182.706	.	0.599	53.471	.	0.181	18.385

1 Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
2 Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.10. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK3 (reactor 5).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	158.5	7.2	1.141	183.847	4.85	0.769	54.240	1.35	0.214	18.599
37	167.8	.	1.011	184.858	.	0.651	54.891	.	0.261	18.860
38	172.8	4.5	0.778	185.636	3.10	0.536	55.427	2.05	0.354	19.214
39	175.9	.	1.101	186.737	.	0.713	56.140	.	0.307	19.522
40	166.3	7.8	1.297	188.034	5.15	0.856	56.997	1.75	0.291	19.813
41	165.4	.	1.079	189.113	.	0.715	57.712	.	0.257	20.070
42	181.8	<2.0	0.182	189.295	2.20	0.400	58.112	0.40	0.073	20.142
43	172.3	.	0.809	190.103	.	0.690	58.802	.	0.220	20.362
44	168.6	5.7	0.961	191.065	5.40	0.910	59.713	1.60	0.270	20.632
45	167.9	.	0.816	191.881	.	0.669	60.382	.	0.249	20.881
46	168.1	3.7	0.622	192.503	3.00	0.504	60.886	1.40	0.235	21.116
47	169.4	.	0.736	193.238	.	0.524	61.410	.	0.283	21.399
48	168.6	3.9	0.658	193.896	2.60	0.438	61.848	2.00	0.337	21.736
49	170.8	.	0.753	194.649	.	0.467	62.316	.	0.334	22.070
50	169.1	4.1	0.693	195.342	2.40	0.406	62.721	2.20	0.372	22.442
51	169.9	.	0.790	196.132	.	0.401	63.123	.	0.329	22.771
52	170.1	4.6	0.782	196.915	1.60	0.272	63.395	1.80	0.306	23.077
53	167.4	.	0.835	197.749	.	0.424	63.819	.	0.313	23.390
54	166.7	5.0	0.833	198.583	3.00	0.500	64.319	2.00	0.333	23.723
55	162.3	.	0.832	199.415	.	0.523	64.842	.	0.275	23.998
56	169.6	4.8	0.814	200.229	3.70	0.628	65.470	1.30	0.220	24.219
57	165.5	.	0.875	201.104	.	0.598	66.068	.	0.261	24.479
58	168.1	5.3	0.891	201.995	3.90	0.656	66.723	1.70	0.286	24.765
59	171.2	.	0.955	202.950	.	0.623	67.347	.	0.275	25.040
60	169.7	5.6	0.950	203.900	3.60	0.611	67.958	1.50	0.255	25.294
61	169.9	.	0.932	204.832	.	0.588	68.545	.	0.257	25.552
62	169.7	4.7	0.798	205.629	3.30	0.560	69.105	1.40	0.238	25.789
63	171.6	.	0.973	206.603	.	0.571	69.676	.	0.268	26.057
64	168.9	5.9	0.997	207.599	3.30	0.557	70.234	1.70	0.287	26.344
65	168.4	.	1.090	208.690	.	0.536	70.769	.	0.268	26.612
66	167.5	6.8	1.139	209.829	2.95	0.494	71.263	1.50	0.251	26.864
67	168.6	.	1.293	211.122	.	0.523	71.787	.	0.260	27.124
68	167.1	9.1	1.521	212.642	3.20	0.535	72.322	1.55	0.259	27.383
69	168.6	.	1.368	214.010	.	0.505	72.826	.	0.250	27.632
70	169.5	7.5	1.271	215.282	2.75	0.466	73.293	1.35	0.229	27.861
71	169.8	.	1.383	216.665	.	0.467	73.759	.	0.238	28.099
72	170.9	8.8	1.504	218.169	2.55	0.436	74.195	1.35	0.231	28.330
73	171.7	.	1.391	219.560	.	0.442	74.637	.	0.235	28.565
74	170.0	7.3	1.241	220.801	2.40	0.408	75.045	1.30	0.221	28.786
75	168.6	.	1.317	222.118	.	0.408	75.453	.	0.224	29.009
76	169.1	7.8	1.319	223.437	2.20	0.372	75.825	1.25	0.211	29.221

Table B3.11. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK3 (reactor 5).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	168.3	.	1.352	224.789	.	0.407	76.232	.	0.226	29.446
78	168.8	.	1.378	226.167	2.60	0.439	76.671	1.40	0.236	29.683
79	170.0	.	1.405	227.572	.	0.377	77.048	.	0.216	29.898
80	170.4	.	1.420	228.993	1.70	0.290	77.338	1.05	0.179	30.077
81	170.3	.	1.425	230.418	.	0.321	77.659	.	0.200	30.277
82	170.6	.	1.423	231.840	1.70	0.290	77.949	1.15	0.196	30.473
83	171.9	.	1.412	233.253	.	0.298	78.247	.	0.190	30.663
84	170.9	.	1.349	234.601	1.50	0.256	78.503	0.90	0.154	30.817
85	172.7	.	1.211	235.812	.	0.265	78.768	.	0.186	31.003
86	170.8	5.4	0.922	236.735	1.20	0.205	78.973	1.10	0.188	31.191
87	170.5	.	0.957	237.692	.	0.249	79.222	.	0.188	31.379
88	172.3	4.2	0.724	238.415	1.40	0.241	79.463	1.00	0.172	31.551
89	170.5	.	0.843	239.259	.	0.249	79.712	.	0.181	31.732
90	171.4	4.2	0.720	239.978	1.30	0.223	79.935	0.95	0.163	31.895
91	172.5	.	0.787	240.766	.	0.249	80.184	.	0.187	32.081
92	171.4	3.5	0.600	241.366	1.35	0.231	80.416	1.00	0.171	32.253
93	171.3	.	0.778	242.143	.	0.256	80.671	.	0.237	32.489
94	172.3	4.5	0.775	242.919	1.50	0.258	80.930	1.90	0.327	32.817
95	171.6	.	0.733	243.652	.	0.243	81.172	.	0.240	33.057
96	173.7	2.8	0.486	244.138	1.10	0.191	81.363	0.95	0.165	33.222
97	173.0	.	0.663	244.801	.	0.230	81.593	.	0.207	33.429
98	174.2	3.1	0.540	245.341	1.25	0.218	81.811	1.20	0.209	33.638
99	171.4	.	0.701	246.042	.	0.235	82.046	.	0.208	33.846
100	175.0	3.7	0.648	246.689	1.25	0.219	82.265	1.05	0.184	34.030
101	172.2	.	0.763	247.452	.	0.254	82.518	.	0.221	34.251
102	173.3	3.8	0.659	248.111	1.55	0.269	82.787	1.40	0.243	34.494
103	169.1	.	0.847	248.958	.	0.260	83.047	.	0.238	34.732
104	174.3	4.9	0.854	249.812	1.40	0.244	83.291	1.40	0.244	34.976
105	173.4	.	1.083	250.896	.	0.258	83.549	.	0.244	35.220
106	174.3	7.1	1.238	252.133	1.35	0.235	83.784	1.30	0.227	35.447
107	170.4	.	1.180	253.313	.	0.253	84.037	.	0.241	35.688
108	171.7	6.2	1.065	254.378	1.40	0.240	84.277	1.40	0.240	35.928
109	175.5	.	1.177	255.554	.	0.255	84.532	.	0.247	36.175
110	174.9	5.4	0.944	256.499	1.25	0.219	84.751	1.25	0.219	36.394
111	172.1	.	1.356	257.855	.	0.243	84.994	.	0.245	36.640
112	171.6	9.4	1.613	259.468	1.25	0.215	85.209	1.40	0.240	36.880
113	171.9	.	1.637	261.106	.	0.259	85.467	.	0.266	37.146
114	.	.	1.684	262.789	.	0.276	85.744	.	0.283	37.429
115	172.4	.	1.630	264.419	.	0.275	86.019	.	0.296	37.725
116	172.1	7.8	1.342	265.762	1.40	0.241	86.260	1.75	0.301	38.026
117	171.3	.	1.612	267.374	.	0.266	86.525	.	0.294	38.320

Table B3.12. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK3 (reactor 5).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	172.7	9.2	1.589	268.962	1.40	0.242	86.767	1.55	0.268	38.588
119	169.7	.	1.577	270.540	.	0.252	87.019	.	0.278	38.866
120	171.0	7.1	1.214	271.754	1.20	0.205	87.224	1.45	0.248	39.114
121	170.2	.	1.521	273.275	.	0.239	87.463	.	0.273	39.387
122	170.7	7.6	1.297	274.572	1.15	0.196	87.660	1.45	0.248	39.635
123	173.8	.	1.521	276.093	.	0.227	87.887	.	0.267	39.902
124	172.0	6.1	1.049	277.142	0.90	0.155	88.042	1.20	0.206	40.108
125	173.7	.	1.408	278.549	.	0.218	88.259	.	0.260	40.368
126	169.2	4.5	0.761	279.311	0.95	0.161	88.420	1.25	0.211	40.579
127	170.9	.	1.412	280.722	.	0.215	88.635	.	0.261	40.840
128	173.4	4.9	0.850	281.572	0.85	0.147	88.782	1.20	0.208	41.048
129	171.3	.	1.629	283.201	.	0.214	88.996	.	0.265	41.314
130	172.5	4.3	0.742	283.943	0.75	0.129	89.125	1.10	0.190	41.503
131	172.8	.	3.000	286.943	.	0.217	89.342	.	0.272	41.776
132	169.9	24.5	4.163	291.105	0.60	0.102	89.444	0.90	0.153	41.929

Table B3.13. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK4 (reactor 7)[1].

Week	Volume[2]	Sulfate			Calcium[3]			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	685.0	114.190	114.213	.	20.004	20.018	52.00	8.668	8.680
0	.	.	59.158	173.371	.	12.400	32.418	.	5.311	13.992
0	.	13.0	2.600	175.971	8.85	1.770	34.188	6.75	1.350	15.342
1	158.8	344.0	54.627	230.598	72.40	11.497	45.685	41.60	6.606	21.948
2	.	258.0	41.861	272.459	56.60	9.183	54.868	33.70	5.468	27.415
3	163.4	.	27.844	300.303	.	7.131	61.999	.	4.517	31.933
4	158.7	78.0	12.379	312.682	.	5.687	67.686	.	3.666	35.599
5	159.2	.	12.710	325.392	.	4.070	71.756	.	2.571	38.169
6	164.1	23.6	3.873	329.264	11.15	1.830	73.585	5.65	0.927	39.097
7	158.0	.	6.738	336.002	.	2.484	76.069	.	1.414	40.511
8	160.7	16.8	2.700	338.702	12.70	2.041	78.110	6.10	0.980	41.491
9	160.6	.	5.095	343.797	.	2.285	80.395	.	1.217	42.708
10	160.4	20.6	3.304	347.102	12.80	2.053	82.448	6.15	0.986	43.695
11	160.0	.	4.687	351.789	.	2.220	84.668	.	1.178	44.872
12	161.9	24.6	3.983	355.772	.	2.243	86.911	.	1.210	46.082
13	160.4	.	4.015	359.786	.	2.103	89.014	.	1.112	47.195
14	160.0	14.8	2.368	362.154	11.50	1.840	90.854	5.60	0.896	48.091
15	161.5	.	3.279	365.434	.	1.958	92.811	.	0.974	49.064
16	156.7	15.4	2.413	367.847	11.40	1.786	94.598	5.15	0.807	49.871
17	160.1	.	2.935	370.782	.	1.989	96.587	.	0.967	50.838
18	157.9	14.0	2.211	372.992	13.50	2.132	98.718	6.45	1.018	51.856
19	163.5	.	2.651	375.644	.	1.931	100.649	.	0.948	52.804
20	161.6	12.5	2.020	377.664	10.10	1.632	102.281	4.90	0.792	53.596
21	163.6	.	2.098	379.762	.	1.567	103.848	.	0.770	54.366
22	166.9	6.1	1.018	380.780	6.75	1.127	104.975	3.25	0.542	54.908
23	164.3	.	1.822	382.602	.	1.568	106.543	.	0.742	55.650
24	159.7	9.9	1.581	384.183	11.05	1.765	108.308	4.90	0.783	56.433
25	160.1	.	1.705	385.888	.	1.649	109.957	.	0.759	57.192
26	.	7.0	1.150	387.038	9.45	1.552	111.509	4.25	0.698	57.890
27	165.8	.	1.509	388.547	.	1.713	113.222	.	0.784	58.674
28	166.9	6.0	1.001	389.548	10.85	1.811	115.033	4.85	0.809	59.484
29	192.2	.	1.611	391.159	.	1.980	117.013	.	0.902	60.385
30	166.4	5.9	0.982	392.141	9.35	1.556	118.568	4.20	0.699	61.084
31	161.2	.	1.287	393.427	.	1.602	120.170	.	0.722	61.806
32	163.6	5.1	0.834	394.262	9.45	1.546	121.716	4.15	0.679	62.485
33	162.6	.	1.346	395.607	.	1.704	123.421	.	0.745	63.230

1 Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
2 Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.
3 Calcium concentration for week 0, rinses 1 and 2 estimated based on ratio of metal to conductance in duplicate reactor for week 0, rinses 1 and 2, respectively.

Table B3.14. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK4 (reactor 7).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
34	165.0	6.3	1.040	396.647	10.95	1.807	125.227	4.55	0.751	63.981
35	164.4	.	1.658	398.305	.	1.846	127.074	.	0.784	64.765
36	164.3	9.1	1.495	399.800	11.20	1.840	128.914	4.55	0.748	65.513
37	164.7	.	2.232	402.032	.	1.975	130.889	.	0.842	66.355
38	165.1	12.9	2.130	404.161	12.20	2.014	132.903	5.20	0.859	67.213
39	163.7	.	4.033	408.194	.	2.318	135.221	.	0.999	68.213
40	165.3	39.0	6.447	414.641	16.90	2.794	138.015	7.15	1.182	69.394
41	165.1	.	5.889	420.530	.	2.696	140.710	.	1.188	70.582
42	166.3	54.0	8.980	429.510	21.00	3.492	144.203	10.20	1.696	72.279
43	165.7	.	8.791	438.300	.	3.471	147.673	.	1.587	73.866
44	167.3	66.0	11.042	449.342	25.00	4.183	151.856	11.00	1.840	75.706
45	162.8	.	8.656	457.998	.	3.357	155.213	.	1.520	77.226
46	168.5	46.4	7.818	465.817	18.00	3.033	158.246	8.20	1.382	78.608
47	168.0	.	7.855	473.672	.	3.095	161.341	.	1.454	80.062
48	164.5	43.0	7.074	480.745	17.60	2.895	164.236	8.60	1.415	81.477
49	154.3	.	7.454	488.199	.	2.877	167.113	.	1.397	82.874
50	158.7	52.4	8.316	496.515	19.40	3.079	170.192	9.60	1.524	84.397
51	165.3	.	8.401	504.915	.	3.161	173.353	.	1.557	85.955
52	169.1	46.4	7.846	512.762	18.20	3.078	176.431	9.20	1.556	87.510
53	164.8	.	10.637	523.398	.	3.677	180.108	.	1.780	89.290
54	162.6	92.0	14.959	538.357	28.60	4.650	184.758	13.60	2.211	91.502
55	161.6	.	12.198	550.555	.	4.072	188.830	.	1.874	93.376
56	167.7	76.0	12.745	563.300	25.90	4.343	193.174	11.20	1.878	95.254
57	160.5	.	11.152	574.453	.	3.884	197.057	.	1.751	97.005
58	162.4	68.0	11.043	585.496	.	3.765	200.822	11.00	1.786	98.792
59	167.8	.	10.092	595.589	.	3.670	204.492	.	1.721	100.513
60	164.8	48.4	7.976	603.565	20.00	3.296	207.788	9.40	1.549	102.062
61	167.1	.	9.561	613.126	.	3.552	211.340	.	1.673	103.735
62	164.1	62.8	10.305	623.431	22.20	3.643	214.983	10.50	1.723	105.458
63	166.3	.	9.742	633.174	.	3.581	218.565	.	1.701	107.158
64	165.7	54.8	9.080	642.254	21.40	3.546	222.111	10.35	1.715	108.873
65	162.2	.	9.504	651.758	.	3.485	225.596	.	1.632	110.505
66	153.2	60.8	9.315	661.073	21.90	3.355	228.951	9.90	1.517	112.022
67	170.0	.	11.121	672.194	.	3.765	232.716	.	1.723	113.745
68	160.4	76.0	12.190	684.384	23.65	3.793	236.510	10.70	1.716	115.462
69	174.3	.	12.162	696.546	.	3.957	240.467	.	1.818	117.280
70	168.5	74.0	12.469	709.015	24.30	4.095	244.561	11.25	1.896	119.175
71	167.7	.	10.112	719.127	.	3.308	247.869	.	1.521	120.696
72	166.5	45.6	7.592	726.719	14.55	2.423	250.292	6.50	1.082	121.778
73	167.1	.	8.554	735.273	.	2.865	253.157	.	1.336	123.114
74	166.4	50.0	8.320	743.593	17.50	2.912	256.069	8.45	1.406	124.521

Table B3.15. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK4 (reactor 7).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
75	165.9	.	8.270	751.863	.	2.908	258.977	.	1.372	125.893
76	165.1	47.2	7.793	759.655	17.70	2.922	261.900	8.20	1.354	127.247
77	166.1	.	8.104	767.760	.	2.801	264.701	.	1.324	128.571
78	164.6	.	8.075	775.835	15.75	2.592	267.294	7.55	1.243	129.814
79	165.8	.	8.131	783.966	.	2.745	270.038	.	1.318	131.131
80	167.0	.	8.158	792.123	17.55	2.931	272.969	8.40	1.403	132.534
81	168.5	.	8.174	800.297	.	2.645	275.614	.	1.332	133.866
82	166.7	.	8.003	808.300	13.90	2.317	277.931	7.75	1.292	135.158
83	167.8	.	7.929	816.229	.	2.347	280.278	.	1.201	136.359
84	167.0	.	7.683	823.911	12.95	2.163	282.441	6.25	1.044	137.403
85	164.8	.	7.150	831.061	.	2.166	284.607	.	1.096	138.498
86	154.0	38.8	5.975	837.036	12.55	1.933	286.540	6.70	1.032	139.530
87	161.4	.	6.581	843.617	.	2.012	288.551	.	1.011	140.541
88	161.4	40.4	6.521	850.138	11.80	1.905	290.456	5.60	0.904	141.445
89	166.5	.	6.578	856.716	.	1.920	292.376	.	0.933	142.378
90	167.1	37.4	6.250	862.965	10.40	1.738	294.113	5.00	0.836	143.213
91	168.7	.	6.326	869.292	.	1.816	295.929	.	0.881	144.094
92	166.7	36.0	6.001	875.293	10.25	1.709	297.638	4.85	0.808	144.902
93	170.1	.	5.926	881.219	.	1.708	299.346	.	0.863	145.765
94	169.3	31.2	5.282	886.501	8.85	1.498	300.844	4.85	0.821	146.586
95	168.4	.	5.241	891.742	.	1.578	302.422	.	0.841	147.427
96	167.7	25.6	4.293	896.035	8.60	1.442	303.865	4.70	0.788	148.215
97	171.9	.	5.329	901.364	.	1.615	305.480	.	0.879	149.094
98	170.0	31.6	5.372	906.736	9.15	1.555	307.035	5.20	0.884	149.978
99	166.7	.	5.982	912.718	.	1.715	308.750	.	0.920	150.898
100	167.0	40.6	6.780	919.498	11.25	1.879	310.629	5.85	0.977	151.875
101	167.3	.	6.510	926.008	.	1.910	312.539	.	0.998	152.873
102	173.4	37.0	6.416	932.424	12.20	2.115	314.654	6.30	1.092	153.965
103	165.4	.	7.569	939.993	.	2.006	316.660	.	1.052	155.017
104	169.3	59.0	9.989	949.982	12.80	2.167	318.827	6.75	1.143	156.160
105	170.7	.	8.861	958.843	.	2.163	320.990	.	1.169	157.329
106	172.8	53.6	9.262	968.105	13.65	2.359	323.349	7.70	1.331	158.659
107	168.2	.	8.233	976.338	.	2.049	325.397	.	1.117	159.777
108	175.8	46.0	8.087	984.424	11.10	1.951	327.349	5.90	1.037	160.814
109	168.4	.	8.047	992.472	.	1.936	329.285	.	1.069	161.883
110	175.8	51.0	8.966	1001.437	11.80	2.074	331.360	6.90	1.213	163.096
111	170.3	.	8.006	1009.444	.	1.907	333.266	.	1.039	164.135
112	171.5	45.0	7.718	1017.161	10.75	1.844	335.110	5.45	0.935	165.069
113	172.7	.	7.635	1024.796	.	1.834	336.944	.	0.960	166.029
114	.	.	7.375	1032.171	.	1.778	338.722	.	0.935	166.965
115	173.6	.	6.964	1039.135	.	1.693	340.416	.	0.894	167.858

Table B3.16. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: RK4 (reactor 7).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
116	174.7	36.6	6.394	1045.529	9.15	1.599	342.014	4.85	0.847	168.706
117	172.6	.	6.209	1051.738	.	1.469	343.483	.	0.770	169.476
118	171.7	32.8	5.632	1057.370	7.20	1.236	344.719	3.70	0.635	170.111
119	171.3	.	5.789	1063.159	.	1.290	346.009	.	0.671	170.782
120	172.5	.	5.707	1068.866	7.10	1.225	347.234	3.65	0.630	171.412
121	171.5	.	5.381	1074.247	.	1.181	348.415	.	0.628	172.040
122	171.1	29.4	5.030	1079.277	6.25	1.069	349.484	3.45	0.590	172.630
123	171.6	.	4.458	1083.734	.	0.982	350.466	.	0.552	173.182
124	174.9	19.2	3.358	1087.093	4.25	0.743	351.210	2.65	0.463	173.646
125	173.8	.	3.665	1090.757	.	0.819	352.029	.	0.467	174.112
126	169.9	18.0	3.058	1093.815	4.00	0.680	352.709	2.20	0.374	174.486
127	172.6	.	3.212	1097.027	.	0.709	353.418	.	0.394	174.880
128	175.3	15.4	2.700	1099.727	3.20	0.561	353.979	1.80	0.316	175.195
129	172.1	.	2.839	1102.566	.	0.626	354.605	.	0.347	175.543
130	175.4	14.0	2.456	1105.022	3.05	0.535	355.140	1.70	0.298	175.841
131	176.6	.	2.535	1107.557	.	0.620	355.760	.	0.343	176.184
132	167.1	10.5	1.755	1109.312	3.25	0.543	356.303	1.80	0.301	176.485

Table B3.17. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL1 (reactor 11)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	238.0	42.055	42.054	103.00	18.200	18.216	11.10	1.961	1.957
0	.	.	18.253	60.307	.	8.337	26.553	.	0.920	2.877
0	.	7.0	1.400	61.707	7.60	1.520	28.073	0.65	0.130	3.007
1	182.1	8.0	1.457	63.164	9.00	1.639	29.712	2.25	0.410	3.417
2	.	6.0	1.061	64.225	8.55	1.511	31.224	0.60	0.106	3.523
3	176.5	.	2.132	66.357	.	2.091	33.315	.	0.222	3.745
4	177.8	4.0	0.711	67.068	.	2.147	35.462	.	0.226	3.971
5	177.9	.	1.536	68.604	.	1.911	37.373	.	0.183	4.154
6	174.0	4.1	0.713	69.318	7.70	1.340	38.713	0.50	0.087	4.241
7	176.4	.	1.324	70.641	.	1.539	40.251	.	0.117	4.358
8	178.1	5.0	0.891	71.532	7.10	1.265	41.516	0.40	0.071	4.429
9	174.4	.	1.291	72.823	.	1.480	42.996	.	0.098	4.527
10	181.2	5.4	0.978	73.801	8.40	1.522	44.518	0.45	0.082	4.608
11	179.3	.	1.714	75.515	.	1.607	46.125	.	0.101	4.709
12	178.1	12.4	2.208	77.723	.	1.648	47.773	.	0.103	4.812
13	177.0	.	2.032	79.756	.	1.678	49.452	.	0.092	4.903
14	176.3	10.9	1.922	81.677	9.60	1.692	51.144	0.35	0.062	4.965
15	176.6	.	2.113	83.790	.	1.755	52.899	.	0.081	5.046
16	177.9	12.9	2.295	86.085	10.45	1.859	54.758	0.45	0.080	5.126
17	178.5	.	2.311	88.396	.	1.858	56.616	.	0.074	5.200
18	175.2	14.1	2.470	90.866	11.00	1.927	58.543	0.30	0.053	5.253
19	176.3	.	2.162	93.028	.	1.793	60.336	.	0.062	5.315
20	180.6	10.8	1.950	94.979	9.65	1.743	62.079	0.30	0.054	5.369
21	178.3	.	1.869	96.848	.	1.688	63.767	.	0.057	5.426
22	176.3	9.1	1.604	98.452	8.95	1.578	65.344	0.25	0.044	5.470
23	176.9	.	1.656	100.108	.	1.634	66.979	.	0.049	5.519
24	177.5	8.6	1.527	101.634	9.50	1.686	68.665	0.20	0.036	5.554
25	180.8	.	1.486	103.121	.	1.568	70.233	.	0.053	5.607
26	.	6.5	1.171	104.292	7.55	1.361	71.593	0.35	0.063	5.670
27	183.9	.	1.370	105.662	.	1.459	73.052	.	0.046	5.716
28	176.8	6.9	1.220	106.882	7.50	1.326	74.378	0.10	0.018	5.734
29	177.2	.	1.340	108.222	.	1.418	75.796	.	0.032	5.766
30	179.0	7.3	1.307	109.528	8.35	1.495	77.291	0.15	0.027	5.793
31	175.6	.	1.514	111.042	.	1.347	78.638	.	0.029	5.822
32	177.0	10.6	1.876	112.918	6.60	1.168	79.806	0.10	0.018	5.840
33	176.5	.	1.452	114.370	.	1.302	81.108	.	0.026	5.866
34	178.1	6.0	1.069	115.439	7.55	1.345	82.453	0.10	0.018	5.884
35	177.8	.	1.233	116.672	.	1.357	83.809	.	0.032	5.916

[1] Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.18. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL1 (reactor 11).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	177.1	6.8	1.204	117.876	7.65	1.355	85.164	0.20	0.035	5.951
37	178.7	.	1.148	119.024	.	1.341	86.505	.	0.035	5.986
38	177.3	5.2	0.922	119.946	6.95	1.232	87.738	0.10	0.018	6.004
39	176.3	.	1.086	121.033	.	1.405	89.142	.	0.056	6.060
40	176.8	6.4	1.132	122.164	9.10	1.609	90.751	0.55	0.097	6.158
41	177.1	.	1.128	123.292	.	1.506	92.257	.	0.084	6.241
42	177.1	5.4	0.956	124.248	8.20	1.452	93.709	0.60	0.106	6.347
43	177.4	.	1.049	125.297	.	1.460	95.169	.	0.089	6.436
44	178.6	5.8	1.036	126.333	8.60	1.536	96.705	0.40	0.071	6.507
45	178.0	.	1.013	127.346	.	1.351	98.056	.	0.096	6.604
46	171.4	5.3	0.908	128.254	6.40	1.097	99.153	0.60	0.103	6.706
47	176.1	.	0.920	129.174	.	1.172	100.324	.	0.143	6.850
48	176.7	4.5	0.795	129.969	6.00	1.060	101.384	1.20	0.212	7.062
49	177.4	.	0.916	130.885	.	1.138	102.522	.	0.184	7.245
50	176.4	5.4	0.953	131.838	6.20	1.094	103.616	1.20	0.212	7.457
51	178.6	.	0.944	132.782	.	1.116	104.732	.	0.168	7.625
52	171.7	5.1	0.876	133.658	5.60	0.962	105.693	0.80	0.137	7.762
53	175.2	.	0.883	134.540	.	1.142	106.835	.	0.140	7.902
54	177.2	4.7	0.833	135.373	7.00	1.240	108.075	0.80	0.142	8.044
55	171.5	.	0.821	136.194	.	1.236	109.311	.	0.110	8.154
56	176.4	4.6	0.811	137.006	7.60	1.341	110.652	0.40	0.071	8.225
57	172.3	.	0.738	137.744	.	1.319	111.971	.	0.095	8.320
58	175.9	3.3	0.580	138.324	8.00	1.407	113.378	0.60	0.106	8.426
59	176.1	.	0.741	139.065	.	1.386	114.764	.	0.096	8.522
60	174.1	4.7	0.818	139.884	8.00	1.393	116.157	0.40	0.070	8.592
61	174.5	.	0.740	140.624	.	1.382	117.540	.	0.136	8.728
62	176.1	3.7	0.652	141.276	8.00	1.409	118.948	1.40	0.247	8.975
63	174.5	.	0.641	141.917	.	1.375	120.324	.	0.125	9.100
64	175.0	3.0	0.525	142.442	7.85	1.374	121.697	0.20	0.035	9.135
65	173.5	.	0.564	143.006	.	1.342	123.040	.	0.058	9.192
66	172.3	2.6	0.448	143.454	7.60	1.309	124.349	0.20	0.034	9.227
67	174.3	.	0.604	144.058	.	1.315	125.664	.	0.043	9.270
68	174.2	3.8	0.662	144.720	7.35	1.280	126.945	0.15	0.026	9.296
69	175.2	.	0.694	145.413	.	1.292	128.237	.	0.039	9.335
70	173.9	4.0	0.696	146.109	7.20	1.252	129.489	0.20	0.035	9.370
71	174.8	.	0.774	146.883	.	1.282	130.771	.	0.034	9.404
72	174.4	4.9	0.855	147.737	7.35	1.282	132.052	0.10	0.017	9.422
73	174.2	.	0.862	148.599	.	1.270	133.322	.	0.041	9.462
74	174.5	5.3	0.925	149.524	7.20	1.256	134.579	0.35	0.061	9.523
75	175.6	.	0.903	150.426	.	1.231	135.809	.	0.040	9.563
76	174.9	.	0.896	151.323	6.55	1.146	136.955	0.10	0.017	9.581

Table B3.19. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL1 (reactor 11).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	174.8	.	0.896	152.219	.	1.195	138.150	.	0.026	9.607
78	174.5	.	0.896	153.115	6.85	1.195	139.345	0.10	0.017	9.624
79	175.1	.	0.899	154.014	.	1.186	140.531	.	0.023	9.648
80	175.5	.	0.900	154.914	6.55	1.150	141.681	0.10	0.018	9.665
81	177.2	.	0.904	155.818	.	1.159	142.840	.	0.021	9.686
82	177.1	.	0.894	156.712	6.25	1.107	143.947	0.05	0.009	9.695
83	175.2	.	0.866	157.578	.	1.103	145.049	.	0.025	9.720
84	177.3	.	0.841	158.419	5.95	1.055	146.104	0.15	0.027	9.746
85	179.8	.	0.768	159.187	.	1.095	147.199	.	0.057	9.803
86	177.1	3.5	0.620	159.806	5.75	1.018	148.217	0.60	0.106	9.909
87	176.7	.	0.599	160.405	.	1.080	149.297	.	0.054	9.963
88	178.7	2.4	0.429	160.834	6.15	1.099	150.396	0.05	0.009	9.972
89	177.0	.	0.507	161.340	.	1.093	151.489	.	0.038	10.009
90	177.8	2.3	0.409	161.749	6.00	1.067	152.555	0.30	0.053	10.063
91	176.4	.	0.543	162.292	.	1.078	153.634	.	0.037	10.100
92	176.0	3.5	0.616	162.908	5.95	1.047	154.681	0.10	0.018	10.117
93	178.8	.	0.540	163.448	.	1.080	155.761	.	0.026	10.143
94	180.0	2.2	0.396	163.844	5.80	1.044	156.805	0.10	0.018	10.161
95	176.9	.	0.472	164.316	.	1.066	157.871	.	0.025	10.186
96	175.8	2.4	0.422	164.738	5.95	1.046	158.917	0.10	0.018	10.204
97	178.7	.	0.480	165.218	.	1.065	159.982	.	0.035	10.239
98	179.0	2.4	0.430	165.647	5.55	0.993	160.976	0.25	0.045	10.284
99	176.6	.	0.501	166.149	.	1.072	162.047	.	0.053	10.336
100	176.7	2.9	0.512	166.661	6.25	1.104	163.152	0.40	0.071	10.407
101	177.3	.	0.509	167.170	.	1.121	164.273	.	0.059	10.466
102	177.9	2.4	0.427	167.597	6.30	1.121	165.394	0.30	0.053	10.519
103	174.4	.	0.503	168.100	.	1.104	166.498	.	0.052	10.571
104	177.9	2.8	0.498	168.598	6.05	1.076	167.574	0.25	0.044	10.616
105	189.6	.	0.601	169.199	.	1.234	168.807	.	0.067	10.683
106	177.9	3.2	0.569	169.768	6.80	1.210	170.017	0.50	0.089	10.772
107	175.1	.	0.592	170.360	.	1.151	171.168	.	0.057	10.828
108	176.0	3.2	0.563	170.923	6.15	1.082	172.250	0.15	0.026	10.855
109	178.1	.	0.660	171.583	.	1.153	173.404	.	0.041	10.895
110	179.0	4.0	0.716	172.299	6.35	1.137	174.540	0.20	0.036	10.931
111	174.4	.	0.677	172.976	.	1.165	175.705	.	0.040	10.971
112	174.3	3.5	0.610	173.586	6.75	1.177	176.882	0.20	0.035	11.005
113	175.3	.	0.692	174.278	.	1.214	178.096	.	0.041	11.046
114	.	.	0.724	175.002	.	1.236	179.333	.	0.041	11.087
115	176.8	.	0.716	175.718	.	1.238	180.570	.	0.029	11.116
116	176.7	3.6	0.636	176.354	6.75	1.193	181.763	<0.05	0.005	11.121
117	175.8	.	0.687	177.041	.	1.223	182.986	.	0.048	11.169

Table B3.20. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL1 (reactor 11).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	176.7	3.5	0.618	177.660	6.80	1.202	184.188	0.60	0.106	11.275
119	176.1	.	0.683	178.343	.	1.217	185.405	.	0.057	11.333
120	175.1	3.4	0.595	178.938	6.60	1.156	186.560	0.10	0.018	11.350
121	174.9	.	0.718	179.656	.	1.188	187.749	.	0.033	11.383
122	174.7	4.1	0.716	180.372	6.45	1.127	188.876	0.10	0.017	11.400
123	175.2	.	0.718	181.091	.	1.149	190.025	.	0.033	11.434
124	176.9	3.1	0.548	181.639	5.90	1.044	191.069	0.10	0.018	11.451
125	177.8	.	0.701	182.340	.	1.125	192.194	.	0.080	11.531
126	175.5	3.2	0.562	182.902	5.80	1.018	193.212	0.90	0.158	11.689
127	177.3	.	0.732	183.634	.	1.075	194.287	.	0.087	11.776
128	177.4	3.1	0.550	184.184	5.10	0.905	195.192	0.10	0.018	11.794
129	175.8	.	0.836	185.019	.	1.005	196.196	.	0.093	11.887
130	177.6	3.6	0.639	185.659	4.60	0.817	197.013	0.95	0.169	12.056
131	178.5	.	.	.	.	0.989	198.002	.	0.095	12.151
132	175.8	.	.	.	4.20	0.738	198.741	0.10	0.018	12.168

Table B3.21. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL2 (reactor 13)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	184.0	31.170	31.198	84.20	14.263	14.260	3.93	0.666	0.655
0	.	.	16.323	47.521	.	9.249	23.510	.	0.527	1.182
0	.	21.0	4.200	51.721	26.00	5.200	28.710	1.79	0.358	1.540
1	165.2	57.0	9.416	61.137	41.40	6.839	35.549	4.35	0.719	2.258
2	.	25.0	4.173	65.310	33.10	5.525	41.074	2.59	0.432	2.691
3	164.3	.	4.650	69.961	.	5.473	46.547	.	0.431	3.122
4	165.2	19.0	3.139	73.099	.	5.361	51.907	.	0.418	3.540
5	167.8	.	3.705	76.804	.	5.273	57.181	.	0.415	3.955
6	167.4	18.4	3.080	79.885	30.80	5.156	62.337	2.52	0.422	4.377
7	166.4	.	2.990	82.875	.	4.932	67.268	.	0.397	4.774
8	168.3	12.6	2.121	84.995	28.20	4.746	72.014	2.37	0.399	5.173
9	170.1	.	2.417	87.412	.	4.837	76.852	.	0.370	5.543
10	165.7	10.2	1.690	89.103	28.20	4.673	81.524	1.96	0.325	5.868
11	167.3	.	2.362	91.464	.	4.712	86.236	.	0.339	6.207
12	166.6	15.4	2.566	94.030	.	4.686	90.922	.	0.335	6.542
13	168.3	.	2.484	96.514	.	4.801	95.723	.	0.339	6.881
14	172.3	13.8	2.378	98.892	30.10	5.186	100.910	2.13	0.367	7.248
15	164.8	.	2.198	101.090	.	4.624	105.534	.	0.300	7.548
16	166.3	11.4	1.896	102.986	27.30	4.540	110.073	1.50	0.249	7.798
17	167.7	.	2.062	105.049	.	4.301	114.374	.	0.250	8.048
18	165.8	11.8	1.956	107.005	23.10	3.830	118.204	1.21	0.201	8.249
19	168.9	.	1.953	108.958	.	4.076	122.280	.	0.241	8.489
20	161.9	10.4	1.684	110.642	24.00	3.886	126.166	1.45	0.235	8.724
21	167.0	.	1.708	112.349	.	3.927	130.093	.	0.254	8.979
22	167.8	8.6	1.443	113.792	22.40	3.759	133.852	1.60	0.268	9.247
23	162.5	.	1.480	115.272	.	3.723	137.575	.	0.256	9.503
24	164.9	8.1	1.336	116.608	22.80	3.760	141.335	1.60	0.264	9.767
25	168.0	.	1.356	117.964	.	3.742	145.076	.	0.264	10.031
26	.	6.3	1.061	119.025	20.80	3.503	148.579	1.60	0.269	10.301
27	170.0	.	1.335	120.360	.	3.829	152.408	.	0.254	10.554
28	168.8	8.4	1.418	121.778	24.00	4.051	156.460	1.40	0.236	10.791
29	169.3	.	1.243	123.021	.	3.880	160.339	.	0.227	11.017
30	170.0	5.3	0.901	123.922	22.20	3.774	164.113	1.20	0.204	11.221
31	169.3	.	1.083	125.005	.	3.820	167.933	.	0.199	11.420
32	169.2	5.7	0.964	125.969	22.80	3.858	171.791	1.00	0.169	11.589
33	168.1	.	1.141	127.111	.	3.736	175.527	.	0.181	11.770
34	170.1	7.2	1.225	128.336	21.40	3.640	179.167	1.00	0.170	11.940
35	170.2	.	1.196	129.532	.	3.731	182.898	.	0.178	12.118

[1] Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.22. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL2 (reactor 13).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	167.9	6.6	1.108	130.640	22.00	3.694	186.592	1.00	0.168	12.286
37	170.5	.	1.119	131.759	.	3.761	190.353	.	0.167	12.453
38	172.3	5.8	0.999	132.758	22.00	3.791	194.144	0.80	0.138	12.591
39	170.2	.	1.024	133.782	.	3.803	197.946	.	0.176	12.766
40	168.7	5.2	0.877	134.659	22.90	3.863	201.810	1.20	0.202	12.969
41	168.0	.	0.993	135.653	.	3.769	205.578	.	0.191	13.160
42	169.0	5.3	0.896	136.549	21.20	3.583	209.161	1.00	0.169	13.329
43	170.6	.	0.997	137.546	.	3.792	212.954	.	0.182	13.510
44	172.6	5.5	0.949	138.495	23.20	4.004	216.958	1.00	0.173	13.683
45	165.6	.	0.910	139.405	.	3.626	220.583	.	0.177	13.860
46	170.6	4.8	0.819	140.224	20.60	3.514	224.098	1.00	0.171	14.030
47	170.3	.	0.883	141.107	.	3.641	227.739	.	0.226	14.256
48	169.7	4.8	0.815	141.921	21.80	3.699	231.438	1.80	0.305	14.562
49	170.5	.	0.829	142.750	.	3.568	235.007	.	0.252	14.813
50	168.1	4.0	0.672	143.423	19.40	3.261	238.268	1.40	0.235	15.049
51	172.0	.	0.824	144.247	.	3.617	241.885	.	0.226	15.275
52	173.7	4.7	0.816	145.063	22.20	3.856	245.741	1.20	0.208	15.483
53	170.1	.	0.873	145.937	.	3.705	249.446	.	0.218	15.701
54	169.6	5.2	0.882	146.819	21.80	3.697	253.143	1.40	0.237	15.939
55	164.0	.	0.855	147.674	.	3.578	256.721	.	0.194	16.133
56	171.1	4.9	0.838	148.512	21.80	3.730	260.451	1.00	0.171	16.304
57	167.2	.	0.827	149.339	.	3.743	264.194	.	0.151	16.455
58	169.1	4.4	0.744	150.083	23.60	3.991	268.185	0.60	0.101	16.557
59	170.7	.	0.775	150.858	.	3.810	271.995	.	0.124	16.681
60	170.3	3.8	0.647	151.506	21.40	3.644	275.639	0.60	0.102	16.783
61	168.8	.	0.713	152.219	.	3.705	279.344	.	0.127	16.910
62	169.0	3.6	0.608	152.827	22.40	3.786	283.129	0.80	0.135	17.045
63	170.5	.	0.705	153.532	.	3.732	286.862	.	0.126	17.171
64	170.8	3.6	0.615	154.147	21.50	3.672	290.534	0.60	0.102	17.273
65	170.2	.	0.720	154.867	.	3.694	294.228	.	0.117	17.390
66	168.4	3.6	0.606	155.473	21.95	3.696	297.924	0.65	0.109	17.499
67	167.4	.	0.907	156.380	.	3.611	301.535	.	0.115	17.614
68	167.4	7.0	1.172	157.552	21.45	3.591	305.125	0.65	0.109	17.723
69	169.7	.	1.097	158.648	.	3.537	308.662	.	0.110	17.832
70	170.1	6.0	1.021	159.669	20.00	3.402	312.064	0.55	0.094	17.926
71	170.0	.	1.265	160.934	.	3.371	315.435	.	0.100	18.026
72	170.9	9.2	1.572	162.506	18.65	3.187	318.622	0.50	0.085	18.112
73	168.3	.	1.364	163.870	.	3.315	321.938	.	0.097	18.209
74	170.5	7.4	1.262	165.131	20.15	3.436	325.373	0.55	0.094	18.303
75	170.6	.	1.349	166.480	.	3.393	328.766	.	0.098	18.400
76	169.5	.	1.379	167.859	19.45	3.297	332.062	0.50	0.085	18.485

Table B3.23. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL2 (reactor 13).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	168.4	.	1.401	169.260	.	3.361	335.424	.	0.094	18.579
78	168.1	.	1.427	170.687	20.30	3.412	338.836	0.50	0.084	18.663
79	169.9	.	1.466	172.153	.	3.454	342.290	.	0.100	18.763
80	170.1	.	1.487	173.639	20.75	3.530	345.819	0.60	0.102	18.865
81	166.2	.	1.464	175.103	.	3.331	349.150	.	0.103	18.968
82	170.5	.	1.502	176.605	19.50	3.325	352.475	0.60	0.102	19.070
83	171.5	.	1.491	178.096	.	3.247	355.722	.	0.096	19.167
84	170.7	.	1.422	179.519	17.40	2.970	358.692	0.40	0.068	19.235
85	169.7	.	1.236	180.755	.	3.162	361.855	.	0.097	19.331
86	171.8	5.3	0.911	181.665	19.00	3.264	365.119	0.65	0.112	19.443
87	170.2	.	0.987	182.652	.	3.263	368.381	.	0.096	19.539
88	172.3	4.5	0.775	183.427	19.40	3.343	371.724	0.40	0.069	19.608
89	170.8	.	0.822	184.249	.	3.284	375.008	.	0.086	19.694
90	171.6	3.1	0.532	184.781	19.05	3.269	378.277	0.45	0.077	19.772
91	170.9	.	0.751	185.532	.	3.246	381.523	.	0.087	19.859
92	169.9	3.7	0.629	186.161	18.65	3.169	384.692	0.45	0.076	19.936
93	170.9	.	0.802	186.963	.	3.234	387.925	.	0.088	20.023
94	167.5	4.3	0.720	187.683	19.05	3.191	391.116	0.45	0.075	20.099
95	170.4	.	0.835	188.518	.	3.163	394.280	.	0.086	20.184
96	169.4	4.2	0.711	189.230	17.70	2.998	397.278	0.40	0.068	20.252
97	173.7	.	0.865	190.095	.	3.120	400.398	.	0.094	20.346
98	172.2	4.3	0.740	190.836	17.25	2.970	403.369	0.55	0.095	20.441
99	170.3	.	0.847	191.683	.	3.083	406.452	.	0.102	20.543
100	169.9	3.8	0.646	192.328	18.35	3.118	409.570	0.55	0.093	20.637
101	169.4	.	0.918	193.246	.	3.143	412.713	.	0.107	20.744
102	170.1	5.2	0.885	194.131	18.60	3.164	415.877	0.60	0.102	20.846
103	168.5	.	1.067	195.198	.	3.150	419.026	.	0.112	20.957
104	173.7	5.8	1.007	196.205	18.40	3.196	422.222	0.60	0.104	21.062
105	171.0	.	1.332	197.538	.	3.263	425.485	.	0.118	21.180
106	171.5	8.6	1.475	199.013	19.50	3.344	428.829	0.65	0.111	21.291
107	171.1	.	1.590	200.603	.	3.379	432.208	.	0.120	21.411
108	170.0	9.0	1.530	202.133	20.20	3.434	435.642	0.60	0.102	21.513
109	170.8	.	1.783	203.916	.	3.399	439.042	.	0.116	21.629
110	170.4	10.2	1.738	205.654	19.45	3.314	442.356	0.55	0.094	21.723
111	169.9	.	2.154	207.808	.	3.407	445.763	.	0.115	21.838
112	170.3	14.0	2.384	210.192	20.25	3.449	449.212	0.55	0.094	21.931
113	170.2	.	2.656	212.848	.	3.518	452.730	.	0.131	22.063
114	.	.	3.030	215.878	.	3.622	456.352	.	0.149	22.212
115	170.9	.	3.637	219.515	.	3.814	460.166	.	0.153	22.365
116	172.3	26.2	4.514	224.030	24.15	4.161	464.327	0.75	0.129	22.494
117	171.7	.	4.495	228.525	.	4.043	468.370	.	0.154	22.648

Table B3.24. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL2 (reactor 13).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	170.2	28.8	4.902	233.426	24.20	4.119	472.489	0.75	0.128	22.776
119	170.1	.	4.990	238.416	.	4.007	476.497	.	0.174	22.949
120	171.1	31.8	5.441	243.857	23.25	3.978	480.475	1.05	0.180	23.129
121	168.7	.	5.442	249.300	.	4.011	484.485	.	0.187	23.316
122	168.5	35.2	5.931	255.231	24.70	4.162	488.647	0.90	0.152	23.468
123	169.8	.	5.525	260.756	.	3.986	492.633	.	0.187	23.655
124	170.3	30.4	5.177	265.933	22.15	3.772	496.405	0.85	0.145	23.800
125	170.7	.	5.228	271.161	.	3.914	500.319	.	0.203	24.003
126	169.0	27.8	4.698	275.859	22.95	3.879	504.197	1.00	0.169	24.172
127	169.6	.	4.987	280.846	.	3.876	508.074	.	0.221	24.393
128	172.4	26.0	4.482	285.328	22.20	3.827	511.901	0.90	0.155	24.548
129	170.0	.	4.904	290.232	.	3.777	515.678	.	0.302	24.851
130	168.7	24.4	4.116	294.348	20.95	3.534	519.212	2.15	0.363	25.213
131	167.3	.	4.908	299.256	.	3.499	522.711	.	0.327	25.540
132	161.6	23.2	3.749	303.005	17.85	2.885	525.596	0.80	0.129	25.669

Table B3.25. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL3 (reactor 15)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	900.0	150.120	150.122	205.00	34.194	34.175	89.20	14.879	14.884
0	.	.	68.286	218.409	.	17.456	51.631	.	7.188	22.072
0	.	9.0	1.800	220.209	11.50	2.300	53.931	3.05	0.610	22.682
1	166.6	41.0	6.831	227.039	38.90	6.481	60.412	13.30	2.216	24.898
2	.	34.0	5.661	232.701	25.60	4.263	64.674	10.80	1.798	26.696
3	164.0	.	10.761	243.461	.	5.642	70.316	.	2.195	28.891
4	166.2	45.0	7.479	250.940	.	6.012	76.329	.	2.308	31.199
5	167.7	.	13.868	264.808	.	6.105	82.433	.	2.348	33.547
6	168.7	109.0	18.388	283.196	35.70	6.023	88.456	14.10	2.379	35.926
7	165.5	.	17.032	300.228	.	5.886	94.342	.	2.272	38.198
8	167.6	113.0	18.939	319.167	34.50	5.782	100.125	13.60	2.279	40.477
9	170.2	.	16.380	335.548	.	6.047	106.172	.	2.194	42.671
10	167.4	84.0	14.062	349.609	37.10	6.211	112.382	12.10	2.026	44.697
11	169.3	.	14.385	363.994	.	5.942	118.324	.	2.041	46.737
12	169.0	85.0	14.365	378.359	.	5.656	123.980	.	1.960	48.697
13	167.3	.	12.044	390.403	.	5.176	129.156	.	1.788	50.486
14	165.2	55.2	9.119	399.522	27.70	4.576	133.732	9.35	1.545	52.030
15	159.3	.	8.775	408.297	.	4.231	137.963	.	1.481	53.511
16	166.5	43.2	7.193	415.490	23.10	3.846	141.809	8.30	1.382	54.893
17	163.8	.	7.283	422.773	.	3.720	145.529	.	1.380	56.273
18	164.9	35.5	5.854	428.627	19.30	3.183	148.712	7.85	1.294	57.568
19	167.5	.	6.015	434.642	.	3.251	151.963	.	1.252	58.820
20	157.5	27.2	4.284	438.926	15.95	2.512	154.475	6.20	0.976	59.797
21	169.9	.	4.560	443.486	.	2.927	157.402	.	1.141	60.938
22	164.7	15.2	2.503	445.989	15.00	2.470	159.872	6.25	1.029	61.967
23	164.7	.	3.515	449.505	.	2.776	162.648	.	1.051	63.018
24	163.0	17.2	2.804	452.308	16.90	2.755	165.403	5.85	0.954	63.972
25	167.0	.	3.301	455.609	.	2.674	168.077	.	0.992	64.963
26	.	15.9	2.648	458.256	13.35	2.223	170.300	5.20	0.866	65.829
27	166.8	.	2.922	461.179	.	2.516	172.816	.	0.985	66.814
28	166.9	13.0	2.170	463.348	14.65	2.445	175.261	6.05	1.010	67.824
29	167.6	.	2.686	466.035	.	2.601	177.862	.	1.032	68.856
30	168.7	13.6	2.294	468.329	15.65	2.640	180.502	6.20	1.046	69.902
31	167.7	.	2.599	470.929	.	2.561	183.062	.	0.999	70.902
32	166.2	13.2	2.194	473.122	14.10	2.343	185.406	5.40	0.897	71.799
33	166.6	.	2.432	475.554	.	2.425	187.831	.	0.953	72.753
34	169.0	11.4	1.927	477.481	13.65	2.307	190.138	5.50	0.930	73.682
35	166.6	.	2.604	480.085	.	2.395	192.533	.	0.979	74.661

1 Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
2 Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.26. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL3 (reactor 15).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	166.2	17.2	2.859	482.943	13.90	2.310	194.843	5.95	0.989	75.650
37	168.0	.	2.754	485.697	.	2.471	197.314	.	1.037	76.686
38	166.1	13.5	2.242	487.939	14.75	2.450	199.764	6.30	1.046	77.733
39	167.7	.	2.885	490.824	.	2.608	202.372	.	1.094	78.827
40	167.1	19.2	3.208	494.032	16.40	2.740	205.113	6.85	1.145	79.971
41	165.1	.	3.126	497.158	.	2.659	207.772	.	1.120	81.091
42	168.6	16.8	2.832	499.990	16.20	2.731	210.503	7.20	1.214	82.305
43	168.6	.	3.121	503.112	.	2.720	213.224	.	1.193	83.497
44	168.0	17.4	2.923	506.035	16.40	2.755	215.979	7.20	1.210	84.707
45	169.2	.	3.305	509.340	.	2.573	218.552	.	1.169	85.875
46	166.3	21.2	3.526	512.866	13.40	2.228	220.781	6.40	1.064	86.940
47	167.4	.	3.352	516.218	.	2.399	223.180	.	1.191	88.131
48	167.2	18.6	3.110	519.328	14.00	2.341	225.521	7.80	1.304	89.435
49	168.5	.	3.264	522.592	.	2.460	227.981	.	1.287	90.723
50	166.7	18.6	3.101	525.692	14.80	2.467	230.448	8.00	1.334	92.056
51	167.8	.	3.335	529.027	.	2.464	232.912	.	1.267	93.323
52	165.6	20.2	3.345	532.373	14.20	2.352	235.263	7.20	1.192	94.516
53	166.6	.	3.504	535.877	.	2.471	237.734	.	1.277	95.792
54	166.1	22.0	3.654	539.531	15.20	2.525	240.259	8.40	1.395	97.187
55	159.6	.	3.487	543.018	.	2.402	242.660	.	1.201	98.388
56	166.5	22.7	3.780	546.797	14.80	2.464	245.124	6.80	1.132	99.521
57	162.8	.	3.309	550.106	.	2.479	247.603	.	1.163	100.683
58	165.4	17.2	2.845	552.951	15.60	2.580	250.183	7.20	1.191	101.874
59	167.8	.	3.049	556.000	.	2.621	252.804	.	1.223	103.097
60	167.3	16.6	2.777	558.777	16.20	2.710	255.514	7.60	1.271	104.369
61	166.9	.	2.961	561.738	.	2.460	257.974	.	1.145	105.514
62	168.8	17.0	2.870	564.607	12.60	2.127	260.101	5.80	0.979	106.493
63	168.2	.	2.985	567.592	.	2.451	262.552	.	1.140	107.633
64	167.8	16.8	2.819	570.411	16.00	2.685	265.237	7.50	1.259	108.892
65	167.4	.	3.133	573.545	.	2.515	267.752	.	1.179	110.071
66	163.1	20.0	3.262	576.807	14.40	2.349	270.100	6.80	1.109	111.180
67	164.5	.	3.175	579.982	.	2.370	272.470	.	1.118	112.298
68	164.6	18.0	2.963	582.945	13.90	2.288	274.758	6.60	1.086	113.384
69	166.1	.	3.327	586.272	.	2.327	277.085	.	1.110	114.494
70	167.0	21.6	3.607	589.879	13.35	2.229	279.314	6.50	1.086	115.580
71	167.3	.	3.545	593.423	.	2.358	281.672	.	1.134	116.714
72	169.8	21.2	3.600	597.023	14.15	2.403	284.075	6.80	1.155	117.869
73	161.2	.	3.403	600.426	.	2.434	286.508	.	1.203	119.072
74	166.2	20.6	3.424	603.850	16.45	2.734	289.242	8.60	1.429	120.501
75	168.1	.	3.567	607.416	.	2.633	291.875	.	1.300	121.801
76	169.3	.	3.646	611.062	15.50	2.624	294.499	7.40	1.253	123.054

Table B3.27. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL3 (reactor 15).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	166.4	.	3.626	614.689	.	2.602	297.101	.	1.240	124.294
78	165.6	.	3.647	618.335	16.10	2.666	299.767	7.55	1.250	125.544
79	166.3	.	3.696	622.031	.	2.570	302.337	.	1.212	126.756
80	169.1	.	3.788	625.819	15.15	2.562	304.899	7.10	1.201	127.956
81	167.4	.	3.774	629.593	.	2.408	307.307	.	1.130	129.087
82	169.3	.	3.834	633.427	12.85	2.176	309.483	5.90	0.999	130.086
83	167.6	.	3.802	637.229	.	2.339	311.822	.	1.120	131.205
84	167.4	.	3.785	641.014	14.20	2.377	314.199	6.85	1.147	132.352
85	168.4	.	3.748	644.763	.	2.453	316.652	.	1.345	133.697
86	168.6	21.6	3.642	648.405	15.30	2.580	319.232	10.30	1.737	135.434
87	167.0	.	3.610	652.014	.	2.367	321.599	.	1.300	136.735
88	165.5	20.8	3.442	655.457	12.95	2.143	323.742	5.95	0.985	137.719
89	166.7	.	3.644	659.100	.	2.182	325.924	.	1.042	138.762
90	168.1	23.4	3.934	663.034	11.85	1.992	327.916	5.30	0.891	139.652
91	165.7	.	3.258	666.292	.	2.261	330.177	.	1.050	140.702
92	167.0	14.4	2.405	668.697	15.25	2.547	332.724	6.85	1.144	141.846
93	167.3	.	2.837	671.534	.	2.309	335.033	.	1.122	142.968
94	166.9	15.6	2.604	674.138	12.20	2.036	337.069	6.35	1.060	144.028
95	166.3	.	2.897	677.035	.	2.261	339.330	.	1.251	145.280
96	167.2	17.0	2.842	679.878	14.20	2.374	341.705	9.15	1.530	146.809
97	165.8	.	3.134	683.012	.	2.404	344.109	.	1.344	148.153
98	166.8	19.8	3.303	686.315	15.00	2.502	346.611	7.85	1.309	149.463
99	166.6	.	3.508	689.823	.	2.519	349.129	.	1.304	150.767
100	167.2	23.0	3.846	693.669	15.60	2.608	351.738	7.85	1.313	152.079
101	168.0	.	3.654	697.323	.	2.618	354.356	.	1.323	153.403
102	168.4	20.8	3.503	700.825	16.15	2.720	357.076	8.10	1.364	154.767
103	163.7	.	3.558	704.383	.	2.511	359.587	.	1.268	156.035
104	170.3	22.4	3.815	708.198	14.55	2.478	362.065	7.40	1.260	157.295
105	167.2	.	3.660	711.858	.	2.512	364.577	.	1.283	158.578
106	167.3	22.0	3.681	715.538	15.15	2.535	367.111	7.85	1.313	159.891
107	165.8	.	2.980	718.519	.	2.493	369.604	.	1.307	161.198
108	167.7	9.4	1.576	720.095	14.70	2.465	372.070	8.05	1.350	162.548
109	167.2	.	3.123	723.219	.	2.527	374.597	.	1.352	163.900
110	169.2	25.0	4.230	727.449	15.30	2.589	377.185	8.40	1.421	165.321
111	166.7	.	3.800	731.248	.	2.562	379.748	.	1.343	166.664
112	166.3	22.2	3.692	734.940	15.40	2.561	382.309	7.80	1.297	167.961
113	166.0	.	3.825	738.765	.	2.581	384.890	.	1.324	169.285
114	.	.	3.938	742.703	.	2.625	387.514	.	1.363	170.648
115	167.9	.	4.031	746.734	.	2.697	390.211	.	1.457	172.105
116	167.1	24.0	4.010	750.744	16.70	2.791	393.002	9.80	1.638	173.742
117	166.8	.	4.118	754.863	.	2.690	395.692	.	1.488	175.230

Table B3.28. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL3 (reactor 15).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	167.0	24.4	4.075	758.937	15.75	2.630	398.323	8.70	1.453	176.683
119	166.9	.	4.477	763.414	.	2.620	400.942	.	1.431	178.114
120	167.2	29.8	4.983	768.397	15.25	2.550	403.492	8.50	1.421	179.536
121	166.1	.	4.757	773.154	.	2.568	406.060	.	1.438	180.973
122	166.3	29.6	4.922	778.076	15.25	2.536	408.596	9.15	1.522	182.495
123	166.1	.	4.284	782.360	.	2.475	411.071	.	1.409	183.903
124	167.0	20.0	3.340	785.700	13.55	2.263	413.334	8.00	1.336	185.239
125	166.0	.	3.782	789.482	.	2.427	415.761	.	1.363	186.602
126	165.4	20.8	3.440	792.923	14.35	2.373	418.134	8.35	1.381	187.983
127	166.5	.	3.734	796.657	.	2.499	420.633	.	1.384	189.368
128	169.8	19.8	3.362	800.019	14.55	2.471	423.104	8.45	1.435	190.802
129	166.0	.	3.741	803.760	.	2.612	425.716	.	1.428	192.231
130	165.9	20.0	3.318	807.078	15.85	2.630	428.346	9.25	1.535	193.765
131	166.5	.	4.070	811.148	.	2.793	431.139	.	1.487	195.252
132	166.4	23.0	3.827	814.975	16.75	2.787	433.926	9.60	1.597	196.850

Table B3.29. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL4 (reactor 17)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	530.0	87.291	87.338	210.00	34.587	34.601	4.80	0.791	0.800
0	.	.	41.183	128.521	.	17.168	51.769	.	0.608	1.408
0	.	10.0	2.000	130.521	6.95	1.390	53.159	0.20	0.040	1.448
1	165.4	41.0	6.781	137.302	32.30	5.342	58.501	0.79	0.131	1.579
2	.	53.0	8.793	146.095	32.40	5.375	63.877	0.58	0.097	1.676
3	164.7	.	7.779	153.874	.	5.540	69.417	.	0.218	1.894
4	168.8	21.0	3.545	157.419	.	5.228	74.644	.	0.248	2.142
5	164.9	.	4.681	162.101	.	3.905	78.549	.	0.196	2.338
6	168.2	12.4	2.086	164.186	10.55	1.775	80.324	0.25	0.042	2.380
7	165.2	.	3.203	167.390	.	2.378	82.702	.	0.140	2.520
8	168.5	8.7	1.466	168.856	8.60	1.449	84.151	0.60	0.101	2.621
9	169.2	.	2.783	171.638	.	2.025	86.175	.	0.153	2.774
10	168.7	11.9	2.008	173.646	9.80	1.653	87.829	0.70	0.118	2.892
11	160.7	.	2.869	176.514	.	1.762	89.591	.	0.155	3.047
12	167.2	17.6	2.943	179.457	8.80	1.471	91.062	0.80	0.134	3.181
13	156.4	.	3.038	182.495	.	1.559	92.621	.	0.176	3.357
14	161.1	18.7	3.013	185.508	8.55	1.377	93.999	1.20	0.193	3.551
15	156.9	.	2.857	188.364	.	1.428	95.427	.	0.202	3.753
16	166.5	14.9	2.481	190.845	7.60	1.265	96.692	1.25	0.208	3.961
17	163.1	.	2.471	193.316	.	1.334	98.026	.	0.223	4.184
18	161.6	11.0	1.778	195.094	6.90	1.115	99.141	1.35	0.218	4.402
19	161.5	.	1.988	197.081	.	1.180	100.321	.	0.230	4.632
20	161.7	8.4	1.358	198.440	6.00	0.970	101.292	1.40	0.226	4.858
21	168.3	.	1.966	200.406	.	1.083	102.374	.	0.245	5.103
22	.	.	2.017	202.423	5.10	0.846	103.221	1.40	0.232	5.335
23	167.3	.	1.788	204.211	.	0.992	104.212	.	0.256	5.592
24	163.9	6.7	1.098	205.309	5.25	0.860	105.073	1.70	0.279	5.870
25	160.9	.	1.222	206.531	.	0.940	106.013	.	0.215	6.086
26	.	3.7	0.605	207.136	5.60	0.915	106.928	0.80	0.131	6.216
27	163.5	.	1.012	208.148	.	0.849	107.777	.	0.181	6.398
28	170.9	4.3	0.735	208.882	3.70	0.632	108.409	1.05	0.179	6.577
29	162.2	.	0.969	209.852	.	0.709	109.118	.	0.186	6.763
30	168.0	4.2	0.706	210.557	3.55	0.596	109.715	1.05	0.176	6.940
31	164.8	.	1.094	211.651	.	0.676	110.391	.	0.197	7.137
32	158.4	.	1.185	212.836	3.45	0.546	110.937	1.20	0.190	7.327
33	162.7	.	1.183	214.019	.	0.676	111.613	.	0.203	7.530
34	149.9	5.4	0.809	214.828	4.05	0.607	112.221	1.20	0.180	7.710
35	158.9	.	1.104	215.932	.	0.661	112.882	.	0.202	7.913

[1] Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.30. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL4 (reactor 17).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	163.4	6.3	1.029	216.961	3.60	0.588	113.470	1.25	0.204	8.117
37	157.3	.	1.060	218.022	.	0.652	114.122	.	0.197	8.314
38	161.3	4.9	0.790	218.812	4.10	0.661	114.783	1.10	0.177	8.492
39	161.3	.	1.132	219.944	.	0.657	115.440	.	0.209	8.700
40	161.0	.	1.263	221.207	3.45	0.555	115.996	1.35	0.217	8.918
41	167.6	.	1.367	222.574	.	0.682	116.678	.	0.238	9.156
42	166.2	4.3	0.715	223.289	4.60	0.765	117.442	1.60	0.266	9.422
43	162.9	.	1.647	224.935	.	0.733	118.175	.	0.263	9.685
44	165.8	14.5	2.404	227.340	4.60	0.763	118.938	1.60	0.265	9.950
45	162.0	.	1.466	228.806	.	0.575	119.513	.	0.256	10.206
46	156.6	3.4	0.532	229.338	1.80	0.282	119.795	1.40	0.219	10.425
47	164.5	.	0.882	230.220	.	0.413	120.208	.	0.285	10.710
48	161.5	3.1	0.501	230.721	1.80	0.291	120.498	2.00	0.323	11.033
49	164.5	.	0.774	231.495	.	0.383	120.881	.	0.332	11.365
50	167.0	3.2	0.534	232.029	1.80	0.301	121.182	2.20	0.367	11.733
51	164.1	.	0.789	232.818	.	0.424	121.606	.	0.344	12.077
52	163.5	4.0	0.654	233.472	2.80	0.458	122.063	2.00	0.327	12.404
53	162.1	.	0.842	234.313	.	0.436	122.499	.	0.401	12.805
54	163.4	4.5	0.735	235.049	2.00	0.327	122.826	3.40	0.556	13.361
55	160.0	.	0.889	235.937	.	0.474	123.300	.	0.374	13.735
56	156.5	5.1	0.798	236.735	3.50	0.548	123.848	1.50	0.235	13.969
57	153.7	.	0.810	237.545	.	0.527	124.375	.	0.272	14.242
58	163.2	3.5	0.571	238.116	3.30	0.539	124.914	1.60	0.261	14.503
59	169.4	.	0.827	238.943	.	0.623	125.537	.	0.300	14.803
60	164.4	4.0	0.658	239.601	4.00	0.658	126.194	1.80	0.296	15.099
61	167.9	.	0.783	240.384	.	0.631	126.825	.	0.294	15.393
62	165.0	3.0	0.495	240.879	3.40	0.561	127.386	1.60	0.264	15.657
63	165.6	.	0.749	241.628	.	0.610	127.996	.	0.287	15.944
64	161.0	3.5	0.564	242.192	3.65	0.588	128.583	1.75	0.282	16.226
65	161.5	.	0.803	242.995	.	0.622	129.205	.	0.294	16.520
66	161.5	4.3	0.694	243.690	4.00	0.646	129.851	1.90	0.307	16.827
67	168.2	.	0.920	244.610	.	0.639	130.491	.	0.303	17.129
68	166.3	4.6	0.765	245.375	3.50	0.582	131.073	1.70	0.283	17.412
69	170.1	.	1.020	246.394	.	0.591	131.663	.	0.282	17.694
70	170.3	5.3	0.903	247.297	3.05	0.519	132.183	1.50	0.255	17.950
71	164.5	.	1.147	248.444	.	0.520	132.703	.	0.249	18.199
72	155.7	7.0	1.090	249.534	2.70	0.420	133.124	1.30	0.202	18.401
73	161.4	.	1.257	250.791	.	0.504	133.627	.	0.247	18.648
74	166.1	6.9	1.146	251.938	3.15	0.523	134.150	1.65	0.274	18.922
75	162.8	.	1.443	253.380	.	0.489	134.639	.	0.244	19.166
76	161.9	.	1.620	255.001	2.45	0.397	135.036	1.25	0.202	19.368

Table B3.31. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL4 (reactor 17).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	161.9	.	1.777	256.777	.	0.444	135.479	.	0.219	19.587
78	160.6	.	1.900	258.678	2.40	0.385	135.865	1.20	0.193	19.780
79	160.7	.	2.023	260.701	.	0.428	136.293	.	0.213	19.994
80	154.2	.	2.041	262.742	2.30	0.355	136.648	1.15	0.177	20.171
81	161.7	.	2.223	264.965	.	0.450	137.097	.	0.262	20.433
82	158.5	.	2.227	267.192	2.60	0.412	137.509	2.05	0.325	20.758
83	159.0	.	2.227	269.419	.	0.615	138.124	.	0.346	21.104
84	150.2	.	1.988	271.408	5.90	0.886	139.010	2.90	0.436	21.540
85	163.9	.	1.705	273.113	.	0.579	139.589	.	0.301	21.841
86	165.8	4.5	0.746	273.859	1.45	0.240	139.830	0.85	0.141	21.982
87	163.4	.	1.201	275.060	.	0.286	140.115	.	0.185	22.167
88	172.0	5.4	0.929	275.989	0.25	0.043	140.158	0.75	0.129	22.296
89	166.6	.	1.011	277.000	.	0.264	140.423	.	0.176	22.472
90	167.1	2.5	0.418	277.418	1.70	0.284	140.707	0.95	0.159	22.631
91	163.4	.	0.801	278.219	.	0.346	141.053	.	0.192	22.823
92	164.1	2.6	0.427	278.646	2.15	0.353	141.406	1.20	0.197	23.020
93	164.2	.	0.782	279.428	.	0.368	141.774	.	0.208	23.228
94	165.1	2.8	0.462	279.890	1.85	0.305	142.079	1.15	0.190	23.418
95	163.4	.	0.768	280.659	.	0.377	142.456	.	0.236	23.654
96	165.3	2.5	0.413	281.072	2.25	0.372	142.828	1.70	0.281	23.935
97	165.6	.	0.775	281.847	.	0.379	143.208	.	0.242	24.177
98	165.5	2.5	0.414	282.261	1.70	0.281	143.489	1.05	0.174	24.351
99	164.0	.	0.853	283.114	.	0.385	143.874	.	0.271	24.623
100	159.0	3.8	0.604	283.718	2.35	0.374	144.248	2.25	0.358	24.980
101	161.7	.	0.933	284.651	.	0.404	144.652	.	0.283	25.264
102	159.9	3.6	0.576	285.227	2.10	0.336	144.988	1.30	0.208	25.471
103	168.6	.	1.062	286.289	.	0.416	145.404	.	0.251	25.722
104	165.2	4.5	0.743	287.032	2.05	0.339	145.743	1.25	0.206	25.929
105	143.3	.	1.077	288.109	.	0.388	146.131	.	0.254	26.183
106	152.9	6.5	0.994	289.103	2.75	0.420	146.551	2.30	0.352	26.534
107	152.9	.	1.310	290.413	.	0.441	146.993	.	0.279	26.813
108	158.5	6.7	1.062	291.475	2.45	0.388	147.381	1.35	0.214	27.027
109	172.3	.	1.494	292.969	.	0.483	147.864	.	0.268	27.295
110	168.5	5.6	0.944	293.912	2.30	0.388	148.252	1.40	0.236	27.531
111	164.9	.	1.428	295.340	.	0.441	148.693	.	0.233	27.764
112	166.2	5.5	0.914	296.254	1.90	0.316	149.009	1.00	0.166	27.930
113	172.1	.	1.865	298.119	.	0.507	149.515	.	0.245	28.175
114	.	.	2.188	300.307	.	0.570	150.085	.	0.274	28.449
115	174.1	.	2.041	302.347	.	0.558	150.643	.	0.296	28.745
116	171.4	5.7	0.977	303.324	2.20	0.377	151.020	1.70	0.291	29.036
117	171.2	.	1.686	305.011	.	0.499	151.519	.	0.272	29.308

Table B3.32. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL4 (reactor 17).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	171.1	5.2	0.890	305.901	2.05	0.351	151.869	1.10	0.188	29.496
119	167.7	.	1.702	307.602	.	0.494	152.363	.	0.257	29.754
120	170.1	6.2	1.055	308.657	2.15	0.366	152.729	1.50	0.255	30.009
121	168.1	.	1.846	310.503	.	0.513	153.242	.	0.264	30.272
122	168.8	6.4	1.080	311.583	2.05	0.346	153.588	1.20	0.203	30.475
123	170.8	.	1.928	313.511	.	0.536	154.124	.	0.251	30.726
124	171.6	4.9	0.841	314.352	1.90	0.326	154.450	1.10	0.189	30.915
125	173.0	.	2.004	316.356	.	0.553	155.004	.	0.245	31.160
126	169.0	4.4	0.744	317.100	1.50	0.254	155.257	0.95	0.161	31.321
127	171.6	.	2.219	319.319	.	0.572	155.830	.	0.234	31.554
128	174.4	5.1	0.889	320.208	1.20	0.209	156.039	0.75	0.131	31.685
129	170.5	.	2.558	322.766	.	0.658	156.697	.	0.244	31.929
130	172.5	4.3	0.742	323.508	1.30	0.224	156.921	0.85	0.147	32.076
131	175.3	.	3.281	326.789	.	0.863	157.784	.	0.284	32.360
132	171.6	4.9	0.841	327.630	1.15	0.197	157.982	0.75	0.129	32.489

Table B3.33. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL5 (reactor 19)[1].

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	1250.0	219.625	219.650	592.00	104.014	103.996	88.80	15.602	15.602
0	.	.	104.813	324.462	.	46.550	150.546	.	7.531	23.133
0	.	22.0	4.400	328.862	9.15	1.830	152.376	1.45	0.290	23.423
1	168.1	308.0	51.775	380.637	93.00	15.633	168.010	25.40	4.270	27.693
2	.	400.0	67.090	447.727	77.50	12.999	181.008	37.30	6.256	33.949
3	163.7	.	58.804	506.531	.	13.415	194.423	.	4.970	38.919
4	171.2	350.0	59.920	566.451	.	12.526	206.950	.	4.710	43.628
5	168.2	.	60.105	626.556	.	8.429	215.379	.	3.934	47.562
6	167.7	370.0	62.049	688.605	9.40	1.576	216.955	16.10	2.700	50.262
7	164.9	.	62.403	751.009	.	3.514	220.469	.	3.804	54.067
8	171.7	410.0	70.397	821.406	4.25	0.730	221.199	28.00	4.808	58.874
9	172.4	.	70.860	892.266	.	2.224	223.423	.	5.013	63.888
10	170.8	470.0	80.276	972.542	3.55	0.606	224.030	35.50	6.063	69.951
11	168.5	.	66.103	1038.645	.	2.042	226.072	.	5.207	75.158
12	172.9	346.0	59.823	1098.468	.	2.371	228.443	.	5.151	80.309
13	168.7	.	57.026	1155.494	.	1.940	230.384	.	5.193	85.502
14	172.5	302.0	52.095	1207.589	4.25	0.733	231.117	36.05	6.219	91.720
15	168.4	.	56.618	1264.207	.	1.280	232.397	.	4.801	96.521
16	171.1	366.0	62.623	1326.830	3.90	0.667	233.064	23.85	4.081	100.602
17	170.1	.	59.441	1386.271	.	1.077	234.141	.	4.113	104.715
18	170.1	355.0	60.386	1446.656	3.70	0.629	234.770	24.80	4.218	108.933
19	173.1	.	58.932	1505.589	.	0.997	235.767	.	3.437	112.370
20	173.8	340.0	59.092	1564.681	4.15	0.721	236.488	14.45	2.511	114.881
21	172.9	.	54.817	1619.498	.	0.880	237.368	.	2.374	117.255
22	170.0	290.0	49.300	1668.798	2.90	0.493	237.861	9.00	1.530	118.785
23	174.2	.	53.270	1722.067	.	0.798	238.658	.	1.823	120.608
24	162.2	324.0	52.553	1774.620	3.65	0.592	239.250	8.35	1.354	121.963
25	171.5	.	49.227	1823.847	.	0.706	239.956	.	1.578	123.540
26	.	248.0	42.611	1866.458	2.40	0.412	240.368	8.00	1.375	124.915
27	172.1	.	45.003	1911.461	.	0.588	240.957	.	1.401	126.316
28	172.1	260.0	44.746	1956.207	2.20	0.379	241.335	6.85	1.179	127.494
29	172.5	.	42.112	1998.319	.	0.505	241.840	.	1.184	128.678
30	173.6	214.0	37.150	2035.469	1.60	0.278	242.118	5.50	0.955	129.633
31	172.1	.	39.757	2075.226	.	0.455	242.573	.	0.884	130.517
32	171.9	234.0	40.225	2115.451	1.90	0.327	242.900	2.65	0.456	130.973
33	172.7	.	38.333	2153.783	.	0.438	243.338	.	0.738	131.711
34	175.4	199.0	34.905	2188.688	1.70	0.298	243.636	3.90	0.684	132.395
35	173.8	.	36.970	2225.658	.	0.410	244.046	.	0.817	133.212

[1] Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.

Table B3.34. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL5 (reactor 19).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
36	169.6	214.0	36.294	2261.953	1.65	0.280	244.326	4.90	0.831	134.043
37	172.6	.	35.447	2297.399	.	0.371	244.697	.	0.799	134.842
38	169.7	184.0	31.225	2328.624	1.30	0.221	244.918	3.90	0.662	135.504
39	173.1	.	34.636	2363.260	.	0.339	245.257	.	0.714	136.218
40	169.8	.	35.149	2398.409	1.15	0.195	245.452	3.55	0.603	136.821
41	172.6	.	37.279	2435.687	.	0.425	245.877	.	0.664	137.485
42	174.3	230.0	40.083	2475.770	3.00	0.521	246.398	3.40	0.583	138.067
43	173.2	.	37.780	2513.551	.	0.528	246.926	.	0.670	138.738
44	172.8	214.0	36.979	2550.530	2.80	0.484	247.409	3.60	0.622	139.360
45	173.1	.	36.832	2587.362	.	0.416	247.825	.	0.659	140.018
46	172.2	206.0	35.473	2622.836	1.20	0.207	248.032	3.60	0.620	140.638
47	172.3	.	37.061	2659.897	.	0.258	248.290	.	0.683	141.321
48	173.4	224.0	38.842	2698.738	0.40	0.069	248.359	4.20	0.728	142.050
49	171.5	.	37.044	2735.782	.	0.162	248.521	.	0.697	142.747
50	171.5	208.0	35.672	2771.454	0.00	0.000	248.521	4.00	0.686	143.433
51	172.3	.	37.583	2809.037	.	0.126	248.647	.	0.638	144.071
52	174.2	228.0	39.718	2848.755	0.00	0.000	248.647	3.00	0.523	144.593
53	170.2	.	39.533	2888.288	.	0.214	248.861	.	0.662	145.256
54	169.8	258.0	43.808	2932.096	1.80	0.306	249.167	4.90	0.832	146.088
55	170.6	.	36.815	2968.911	.	0.275	249.442	.	0.636	146.724
56	172.4	176.0	30.342	2999.254	1.00	0.172	249.615	2.70	0.465	147.190
57	168.2	.	32.130	3031.384	.	0.250	249.865	.	0.501	147.691
58	172.1	188.0	32.355	3063.739	1.20	0.207	250.071	2.70	0.465	148.156
59	174.5	.	32.148	3095.887	.	0.256	250.327	.	0.460	148.616
60	170.8	170.0	29.036	3124.923	1.00	0.171	250.498	2.10	0.359	148.974
61	173.9	.	31.153	3156.075	.	0.246	250.744	.	0.426	149.400
62	174.2	178.0	31.008	3187.083	1.10	0.192	250.936	2.40	0.418	149.818
63	171.3	.	30.905	3217.988	.	0.219	251.155	.	0.420	150.238
64	170.9	178.0	30.420	3248.408	0.65	0.111	251.266	2.35	0.402	150.640
65	170.9	.	31.341	3279.749	.	0.190	251.456	.	0.400	151.039
66	169.4	188.0	31.847	3311.596	0.65	0.110	251.566	2.20	0.373	151.412
67	170.5	.	31.566	3343.163	.	0.181	251.747	.	0.351	151.763
68	169.1	184.0	31.114	3374.277	0.60	0.101	251.848	1.65	0.279	152.042
69	170.9	.	30.977	3405.254	.	0.170	252.018	.	0.311	152.353
70	172.0	176.0	30.272	3435.526	0.50	0.086	252.104	1.65	0.284	152.637
71	173.1	.	30.817	3466.343	.	0.167	252.271	.	0.293	152.930
72	169.4	176.0	29.814	3496.158	0.55	0.093	252.364	1.50	0.254	153.184
73	168.8	.	30.144	3526.302	.	0.154	252.518	.	0.259	153.443
74	171.6	180.0	30.888	3557.190	0.35	0.060	252.578	1.30	0.223	153.666
75	170.3	.	30.562	3587.752	.	0.150	252.728	.	0.238	153.904
76	173.1	.	31.011	3618.763	0.45	0.078	252.806	1.20	0.208	154.112

Table B3.35. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL5 (reactor 19).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
77	173.0	.	30.917	3649.680	.	0.158	252.964	.	0.240	154.352
78	173.0	.	30.810	3680.490	0.45	0.078	253.042	1.40	0.242	154.594
79	173.8	.	30.806	3711.296	.	0.158	253.200	.	0.237	154.831
80	171.5	.	30.205	3741.501	0.40	0.069	253.268	1.20	0.206	155.037
81	174.1	.	30.399	3771.900	.	0.161	253.429	.	0.216	155.252
82	173.9	.	30.000	3801.900	0.45	0.078	253.508	1.05	0.183	155.435
83	173.5	.	29.399	3831.299	.	0.166	253.674	.	0.219	155.654
84	171.0	.	28.115	3859.414	0.45	0.077	253.751	1.40	0.239	155.894
85	173.7	.	26.740	3886.154	.	0.165	253.916	.	0.206	156.100
86	172.2	136.0	23.419	3909.573	0.30	0.052	253.968	0.90	0.155	156.255
87	172.7	.	24.815	3934.388	.	0.220	254.187	.	0.160	156.415
88	170.6	145.0	24.737	3959.125	.	0.271	254.458	0.65	0.111	156.526
89	171.3	.	21.917	3981.042	.	0.228	254.686	.	0.140	156.666
90	170.3	97.0	16.519	3997.561	0.20	0.034	254.720	0.70	0.119	156.785
91	171.8	.	19.724	4017.285	.	0.160	254.880	.	0.140	156.924
92	172.2	112.0	19.286	4036.572	0.20	0.034	254.915	0.70	0.121	157.045
93	171.4	.	20.386	4056.957	.	0.156	255.071	.	0.157	157.202
94	172.6	121.0	20.885	4077.842	0.25	0.043	255.114	1.05	0.181	157.383
95	172.2	.	19.762	4097.604	.	0.159	255.274	.	0.163	157.546
96	172.2	101.0	17.392	4114.996	0.20	0.034	255.308	0.80	0.138	157.684
97	174.6	.	18.486	4133.482	.	0.160	255.468	.	0.145	157.829
98	173.2	93.0	16.108	4149.590	0.10	0.017	255.485	0.65	0.113	157.942
99	171.6	.	19.794	4169.384	.	0.172	255.657	.	0.143	158.085
100	169.5	136.0	23.052	4192.436	0.35	0.059	255.716	0.85	0.144	158.229
101	171.9	.	20.398	4212.835	.	0.192	255.908	.	0.160	158.389
102	169.8	104.0	17.659	4230.494	0.30	0.051	255.959	0.95	0.161	158.550
103	168.9	.	17.490	4247.984	.	0.188	256.147	.	0.159	158.709
104	171.8	84.0	14.431	4262.415	0.10	0.017	256.164	0.85	0.146	158.855
105	171.7	.	18.586	4281.001	.	0.206	256.370	.	0.162	159.018
106	173.9	124.0	21.564	4302.565	0.35	0.061	256.431	0.95	0.165	159.183
107	170.4	.	19.645	4322.210	.	0.234	256.666	.	0.158	159.341
108	169.9	106.0	18.009	4340.220	0.40	0.068	256.734	0.80	0.136	159.477
109	172.5	.	19.371	4359.590	.	0.247	256.980	.	0.146	159.623
110	174.4	110.0	19.184	4378.774	0.15	0.026	257.006	0.70	0.122	159.745
111	171.2	.	19.101	4397.875	.	0.261	257.267	.	0.138	159.883
112	170.7	103.0	17.582	4415.457	0.20	0.034	257.302	0.70	0.119	160.002
113	171.9	.	19.668	4435.125	.	0.434	257.736	.	0.147	160.149
114	.	.	20.815	4455.940	.	0.585	258.320	.	0.158	160.307
115	172.1	.	21.987	4477.928	.	0.505	258.826	.	0.158	160.465
116	172.1	134.0	23.061	4500.989	0.25	0.043	258.869	0.75	0.129	160.594
117	173.8	.	23.461	4524.450	.	0.383	259.251	.	0.174	160.769

Table B3.36. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL5 (reactor 19).

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
118	172.8	136.0	23.501	4547.951	0.30	0.052	259.303	1.15	0.199	160.967
119	174.0	.	23.636	4571.587	.	0.398	259.702	.	0.169	161.136
120	175.2	130.0	22.776	4594.363	0.25	0.044	259.745	0.60	0.105	161.241
121	172.6	.	23.976	4618.339	.	0.435	260.180	.	0.149	161.390
122	172.6	144.0	24.854	4643.193	0.25	0.043	260.224	0.75	0.129	161.519
123	167.6	.	22.492	4665.686	.	0.487	260.710	.	0.155	161.674
124	176.4	114.0	20.110	4685.795	0.35	0.062	260.772	0.80	0.141	161.815
125	175.7	.	21.643	4707.438	.	0.595	261.368	.	0.153	161.969
126	171.7	109.0	18.715	4726.153	0.25	0.043	261.411	0.50	0.086	162.054
127	173.8	.	20.184	4746.337	.	0.698	262.108	.	0.140	162.195
128	172.5	93.0	16.043	4762.380	0.20	0.035	262.143	0.45	0.078	162.272
129	170.5	.	19.208	4781.588	.	0.840	262.982	.	0.147	162.419
130	170.8	92.0	15.714	4797.302	0.05	0.009	262.991	0.45	0.077	162.496
131	172.5	.	20.745	4818.047	.	1.108	264.099	.	0.179	162.675
132	170.3	100.0	17.030	4835.077	0.10	0.017	264.116	0.50	0.085	162.761

Table B3.37. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL6 (reactor 21)[1].

Week	Volume[2]	Sulfate			Calcium[3]			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
0	.	2120.0	370.576	370.618	.	209.760	209.752	96.50	16.868	16.867
0	.	.	267.266	637.885	.	116.000	325.752	.	7.309	24.176
0	.	1230.0	246.000	883.885	620.00	124.000	449.752	0.93	0.188	24.363
1	171.4	1000.0	171.400	1055.285	508.00	87.071	536.824	3.37	0.578	24.941
2	.	980.0	167.984	1223.269	517.00	88.620	625.444	6.34	1.087	26.027
3	169.8	.	121.956	1345.225	.	71.694	697.138	.	1.417	27.444
4	174.7	415.0	72.500	1417.726	.	62.445	759.582	.	1.425	28.869
5	171.3	.	74.192	1491.918	.	46.208	805.790	.	1.083	29.953
6	172.6	276.0	47.638	1539.555	156.00	26.926	832.715	2.59	0.447	30.400
7	172.9	.	52.462	1592.018	.	28.234	860.950	.	0.652	31.052
8	173.1	205.0	35.486	1627.503	103.00	17.829	878.779	2.16	0.374	31.426
9	172.0	.	38.849	1666.353	.	19.892	898.671	.	0.484	31.910
10	175.5	148.0	25.974	1692.327	76.20	13.373	912.044	1.58	0.277	32.187
11	171.7	.	31.774	1724.101	.	17.480	929.524	.	0.440	32.627
12	175.7	150.0	26.355	1750.456	.	18.341	947.865	.	0.479	33.107
13	175.1	.	29.323	1779.779	.	16.982	964.847	.	0.429	33.536
14	177.1	139.0	24.617	1804.395	78.90	13.973	978.820	1.58	0.280	33.816
15	171.7	.	26.888	1831.283	.	14.531	993.351	.	0.345	34.161
16	176.5	143.0	25.240	1856.523	76.50	13.502	1006.853	1.67	0.295	34.456
17	175.1	.	26.351	1882.874	.	13.538	1020.391	.	0.319	34.775
18	174.4	143.0	24.939	1907.813	69.40	12.103	1032.494	1.43	0.249	35.024
19	176.7	.	22.404	1930.217	.	11.783	1044.277	.	0.280	35.304
20	176.7	84.0	14.843	1945.060	52.50	9.277	1053.554	1.14	0.201	35.506
21	176.7	.	19.384	1964.444	.	10.366	1063.920	.	0.291	35.796
22	174.7	108.0	18.868	1983.312	53.40	9.329	1073.249	1.80	0.314	36.111
23	175.3	.	17.798	2001.109	.	9.422	1082.671	.	0.311	36.422
24	180.7	75.0	13.552	2014.662	44.40	8.023	1090.694	1.60	0.289	36.711
25	175.8	.	16.898	2031.560	.	8.966	1099.659	.	0.335	37.046
26	.	99.0	17.381	2048.940	48.60	8.532	1108.192	2.20	0.386	37.432
27	174.7	.	17.691	2066.631	.	9.498	1117.690	.	0.339	37.771
28	174.5	102.0	17.799	2084.430	58.80	10.261	1127.950	1.80	0.314	38.085
29	174.6	.	15.473	2099.903	.	9.280	1137.231	.	0.270	38.355
30	175.5	62.0	10.881	2110.784	45.60	8.003	1145.233	1.00	0.176	38.531
31	174.8	.	14.096	2124.879	.	8.650	1153.883	.	0.236	38.767
32	175.5	84.4	14.812	2139.692	48.60	8.529	1162.413	1.40	0.246	39.013
33	175.2	.	13.950	2153.641	.	8.355	1170.768	.	0.238	39.250

[1] Missing volumes and concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Volume for week 0, rinse 1 estimated as average of flow of subsequent weeks; week 0, rinses 2 and 3 estimated as 200 mL.
[3] Calcium concentration for week 0, rinse 1 estimated based on ratio of metal to conductance in drainage from this rock through week 11; week 0, rinse 2 was a composite sample.

Table B3.38. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL6 (reactor 21).

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
34	176.2	66.0	11.629	2165.271	42.60	7.506	1178.274	1.20	0.211	39.462
35	175.5	.	13.874	2179.144	.	8.252	1186.526	.	0.223	39.685
36	175.6	84.0	14.750	2193.895	47.60	8.359	1194.885	1.20	0.211	39.896
37	176.8	.	14.754	2208.648	.	8.641	1203.526	.	0.209	40.105
38	175.2	82.0	14.366	2223.015	49.60	8.690	1212.216	1.00	0.175	40.280
39	175.3	.	14.537	2237.552	.	8.476	1220.692	.	0.193	40.473
40	172.5	.	14.348	2251.900	45.60	7.866	1228.558	1.00	0.173	40.646
41	177.0	.	14.676	2266.576	.	8.435	1236.993	.	0.207	40.852
42	175.0	75.0	13.125	2279.701	47.80	8.365	1245.358	1.60	0.280	41.132
43	174.9	.	14.216	2293.917	.	8.723	1254.080	.	0.240	41.373
44	175.1	80.0	14.008	2307.925	50.80	8.895	1262.975	1.20	0.210	41.583
45	172.3	.	15.090	2323.015	.	8.852	1271.827	.	0.247	41.830
46	173.6	98.0	17.013	2340.028	53.20	9.236	1281.063	1.60	0.278	42.108
47	175.6	.	15.848	2355.876	.	8.939	1290.002	.	0.299	42.407
48	174.0	86.5	15.051	2370.927	49.00	8.526	1298.528	2.00	0.348	42.755
49	176.0	.	15.715	2386.643	.	8.684	1307.211	.	0.326	43.081
50	176.1	94.4	16.624	2403.266	48.40	8.523	1315.735	2.00	0.352	43.433
51	174.7	.	14.954	2418.220	.	8.488	1324.223	.	0.292	43.725
52	175.0	77.2	13.510	2431.730	46.60	8.155	1332.378	1.40	0.245	43.970
53	174.9	.	14.021	2445.752	.	9.178	1341.556	.	0.254	44.224
54	175.5	80.0	14.040	2459.792	61.40	10.776	1352.332	1.40	0.246	44.470
55	171.8	.	13.553	2473.345	.	9.067	1361.399	.	0.242	44.712
56	176.0	.	13.701	2487.045	47.40	8.342	1369.741	1.40	0.246	44.958
57	171.5	.	13.211	2500.256	.	8.356	1378.097	.	0.236	45.194
58	173.7	77.5	13.462	2513.718	49.00	8.511	1386.608	1.40	0.243	45.437
59	174.9	.	12.050	2525.768	.	7.926	1394.534	.	0.213	45.650
60	174.1	55.0	9.576	2535.343	39.40	6.860	1401.394	1.00	0.174	45.824
61	173.6	.	11.320	2546.664	.	7.452	1408.846	.	0.173	45.997
62	175.1	69.2	12.117	2558.781	43.00	7.529	1416.375	0.80	0.140	46.137
63	173.5	.	12.178	2570.958	.	7.806	1424.181	.	0.172	46.309
64	173.8	75.2	13.070	2584.028	48.10	8.360	1432.541	1.10	0.191	46.500
65	173.1	.	11.466	2595.494	.	7.645	1440.186	.	0.176	46.676
66	172.1	57.2	9.844	2605.338	40.85	7.030	1447.216	0.95	0.163	46.839
67	172.3	.	10.272	2615.610	.	7.072	1454.289	.	0.163	47.003
68	172.2	56.0	9.643	2625.254	38.85	6.690	1460.979	0.90	0.155	47.158
69	173.3	.	10.537	2635.791	.	6.979	1467.957	.	0.159	47.317
70	173.7	64.0	11.117	2646.908	40.10	6.965	1474.923	0.90	0.156	47.473
71	173.5	.	11.225	2658.133	.	7.037	1481.959	.	0.152	47.624
72	173.6	69.2	12.013	2670.146	40.60	7.048	1489.008	0.80	0.139	47.763
73	172.7	.	10.738	2680.884	.	7.058	1496.065	.	0.149	47.912
74	174.6	56.0	9.778	2690.661	41.50	7.246	1503.311	0.90	0.157	48.069

Table B3.39. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL6 (reactor 21).

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
75	173.1	.	9.903	2700.564	.	6.929	1510.240	.	0.145	48.215
76	173.2	.	9.830	2710.394	38.20	6.616	1516.856	0.75	0.130	48.345
77	173.4	.	9.731	2720.126	.	6.900	1523.757	.	0.141	48.485
78	173.2	.	9.601	2729.727	41.55	7.196	1530.953	0.80	0.139	48.624
79	174.1	.	9.529	2739.256	.	6.845	1537.799	.	0.157	48.781
80	175.7	.	9.493	2748.750	38.10	6.694	1544.493	1.05	0.184	48.965
81	173.9	.	9.272	2758.022	.	6.279	1550.772	.	0.155	49.120
82	174.1	.	9.153	2767.174	32.70	5.693	1556.465	0.75	0.131	49.251
83	174.0	.	8.999	2776.173	.	5.754	1562.219	.	0.136	49.387
84	175.4	.	8.856	2785.029	30.60	5.367	1567.586	0.60	0.105	49.492
85	174.0	.	8.299	2793.327	.	5.569	1573.155	.	0.196	49.688
86	175.3	41.0	7.187	2800.515	31.30	5.487	1578.642	1.85	0.324	50.012
87	174.2	.	8.404	2808.918	.	5.594	1584.236	.	0.230	50.242
88	176.9	53.6	9.482	2818.400	.	5.723	1589.959	1.15	0.203	50.445
89	174.8	.	9.079	2827.479	.	5.631	1595.590	.	0.170	50.616
90	174.6	54.2	9.463	2836.943	31.35	5.474	1601.064	0.65	0.113	50.729
91	179.1	.	8.711	2845.653	.	5.733	1606.798	.	0.146	50.875
92	174.1	42.6	7.417	2853.070	31.70	5.519	1612.316	0.65	0.113	50.988
93	175.1	.	7.949	2861.019	.	5.665	1617.981	.	0.241	51.230
94	175.9	46.0	8.091	2869.111	32.55	5.726	1623.707	2.50	0.440	51.669
95	175.0	.	7.187	2876.297	.	5.649	1629.356	.	0.259	51.929
96	175.6	30.0	5.268	2881.565	31.25	5.488	1634.843	0.90	0.158	52.087
97	175.3	.	7.432	2888.997	.	5.644	1640.487	.	0.168	52.254
98	177.6	48.2	8.560	2897.558	31.60	5.612	1646.099	0.75	0.133	52.387
99	175.7	.	9.832	2907.390	.	6.010	1652.109	.	0.155	52.543
100	173.8	70.0	12.166	2919.556	36.70	6.378	1658.487	0.90	0.156	52.699
101	176.2	.	11.623	2931.179	.	6.580	1665.067	.	0.165	52.864
102	176.9	74.0	13.091	2944.270	40.45	7.156	1672.223	1.00	0.177	53.041
103	173.7	.	10.966	2955.235	.	6.462	1678.685	.	0.157	53.198
104	174.8	56.4	9.859	2965.094	34.50	6.031	1684.716	0.80	0.140	53.338
105	177.6	.	10.467	2975.561	.	6.686	1691.402	.	0.157	53.495
106	175.2	61.2	10.722	2986.283	41.20	7.218	1698.620	0.95	0.166	53.661
107	175.1	.	9.928	2996.212	.	6.683	1705.303	.	0.160	53.821
108	175.1	52.0	9.105	3005.317	36.15	6.330	1711.633	0.90	0.158	53.979
109	176.8	.	9.478	3014.795	.	6.577	1718.210	.	0.162	54.140
110	178.7	51.2	9.149	3023.945	37.35	6.674	1724.884	0.95	0.170	54.310
111	174.3	.	10.361	3034.305	.	6.697	1731.581	.	0.160	54.470
112	174.5	70.4	12.285	3046.590	40.10	6.997	1738.579	0.90	0.157	54.627
113	176.0	.	11.343	3057.934	.	6.906	1745.485	.	0.159	54.786
114	.	.	11.119	3069.052	.	6.877	1752.362	.	0.162	54.949
115	177.3	.	11.059	3080.112	.	6.869	1759.231	.	0.173	55.121

Table B3.40. Cumulative mass release of sulfate, calcium, and magnesium for the Wet-Dry Cycle Test: TL6 (reactor 21).

Week	Volume[2]	Sulfate			Calcium			Magnesium		
	(mL)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)	Conc. (mg/L)	Mass (mg)	Cum. Mass (mg)
116	174.4	59.4	10.359	3090.471	37.20	6.488	1765.719	1.05	0.183	55.304
117	175.5	.	12.291	3102.762	.	7.440	1773.159	.	0.185	55.489
118	176.1	84.0	14.792	3117.554	49.80	8.770	1781.929	1.10	0.194	55.683
119	176.6	.	14.784	3132.338	.	8.034	1789.962	.	0.214	55.896
120	171.4	100.4	17.209	3149.547	46.55	7.979	1797.941	1.50	0.257	56.154
121	172.1	.	13.619	3163.166	.	7.208	1805.149	.	0.209	56.363
122	172.4	68.0	11.723	3174.889	38.20	6.586	1811.734	1.10	0.190	56.553
123	173.0	.	10.989	3185.878	.	6.419	1818.153	.	0.180	56.732
124	173.2	56.0	9.699	3195.577	33.85	5.863	1824.016	0.95	0.165	56.897
125	172.2	.	9.067	3204.644	.	5.965	1829.981	.	0.163	57.060
126	171.8	44.6	7.662	3212.307	33.45	5.747	1835.728	0.90	0.155	57.214
127	173.5	.	7.968	3220.275	.	5.837	1841.565	.	0.158	57.372
128	174.2	43.6	7.595	3227.870	32.75	5.705	1847.270	0.90	0.157	57.529
129	171.8	.	7.349	3235.219	.	5.663	1852.933	.	0.155	57.683
130	173.9	43.6	7.582	3242.801	32.40	5.634	1858.567	0.90	0.157	57.840
131	175.1	.	7.880	3250.679	.	5.752	1864.320	.	0.165	58.005
132	172.8	46.0	7.976	3258.655	33.40	5.772	1870.091	1.05	0.181	58.187

Figure B3.41. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid RK1.

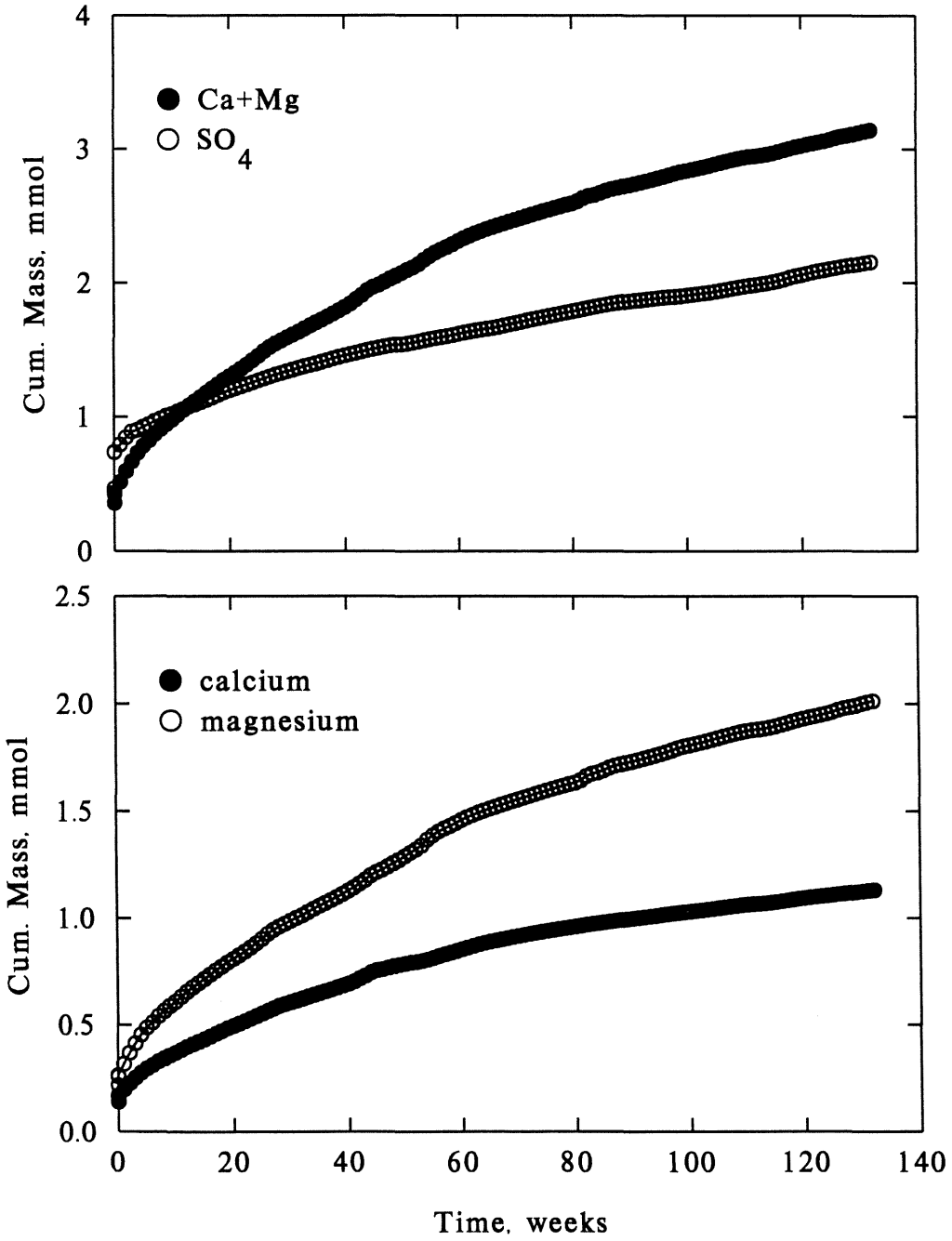

Figure B3.42. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid RK2.

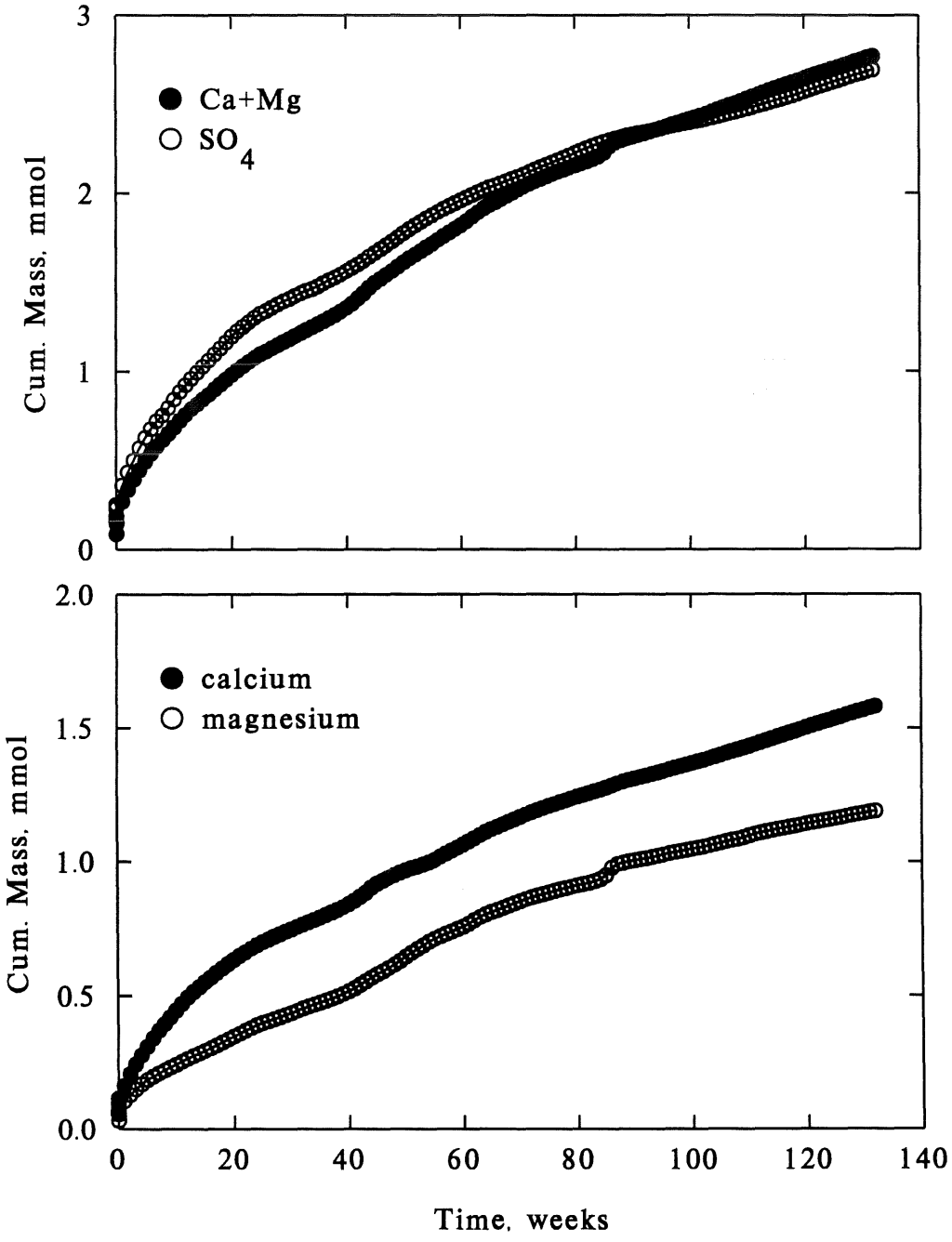

Figure B3.43. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid RK3.

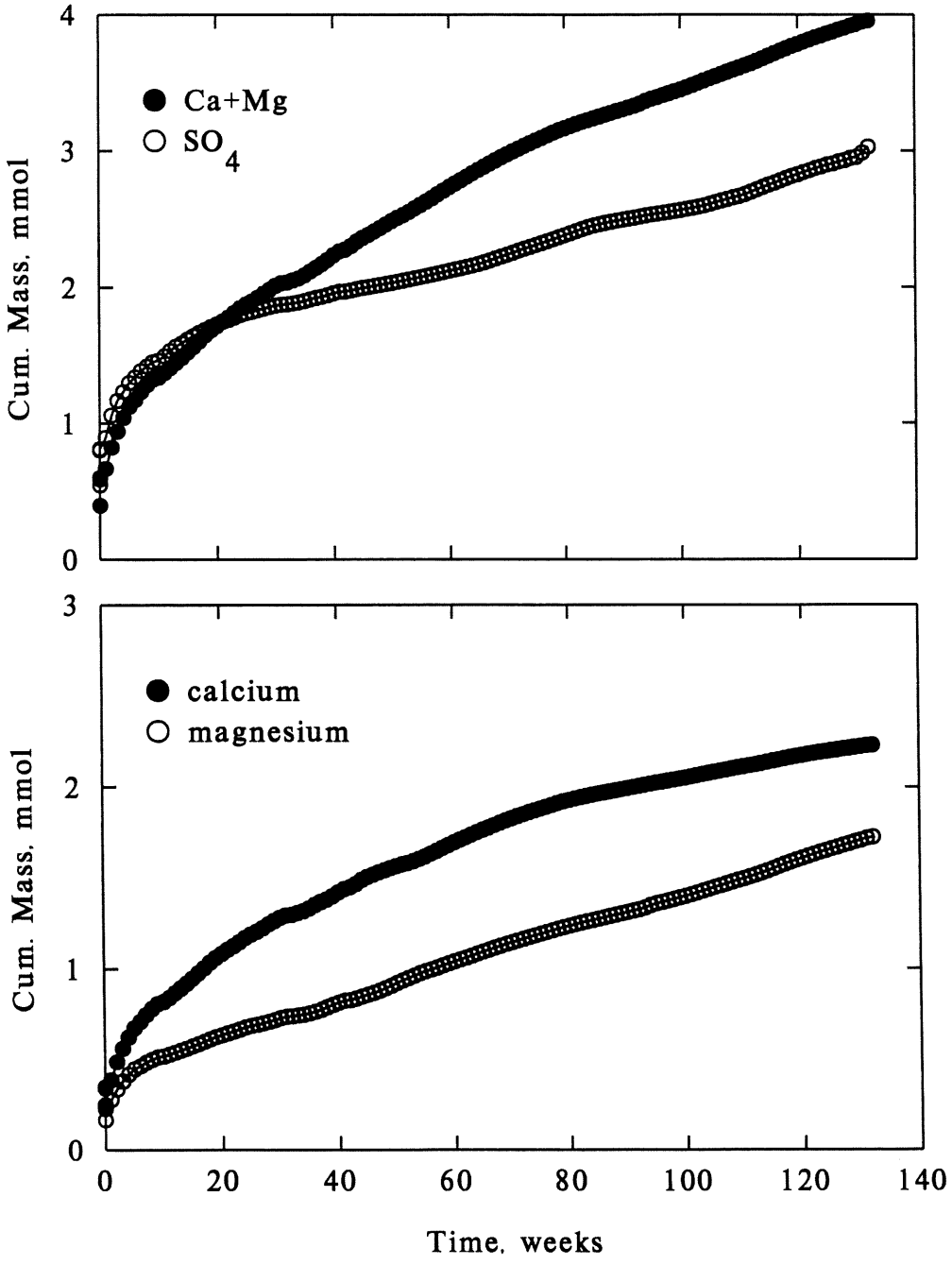

Figure B3.44. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid RK4.

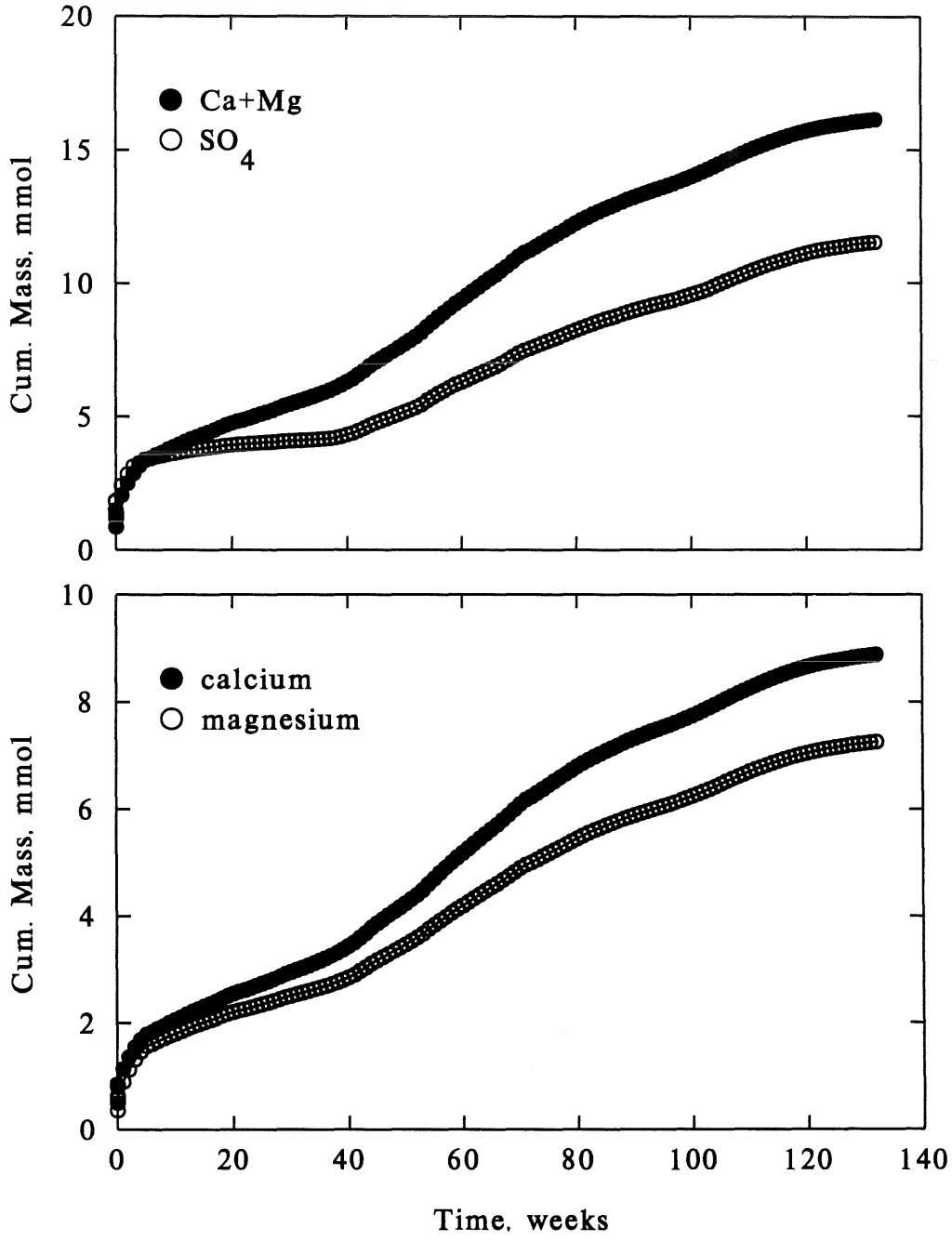

Figure B3.45. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid TL1.

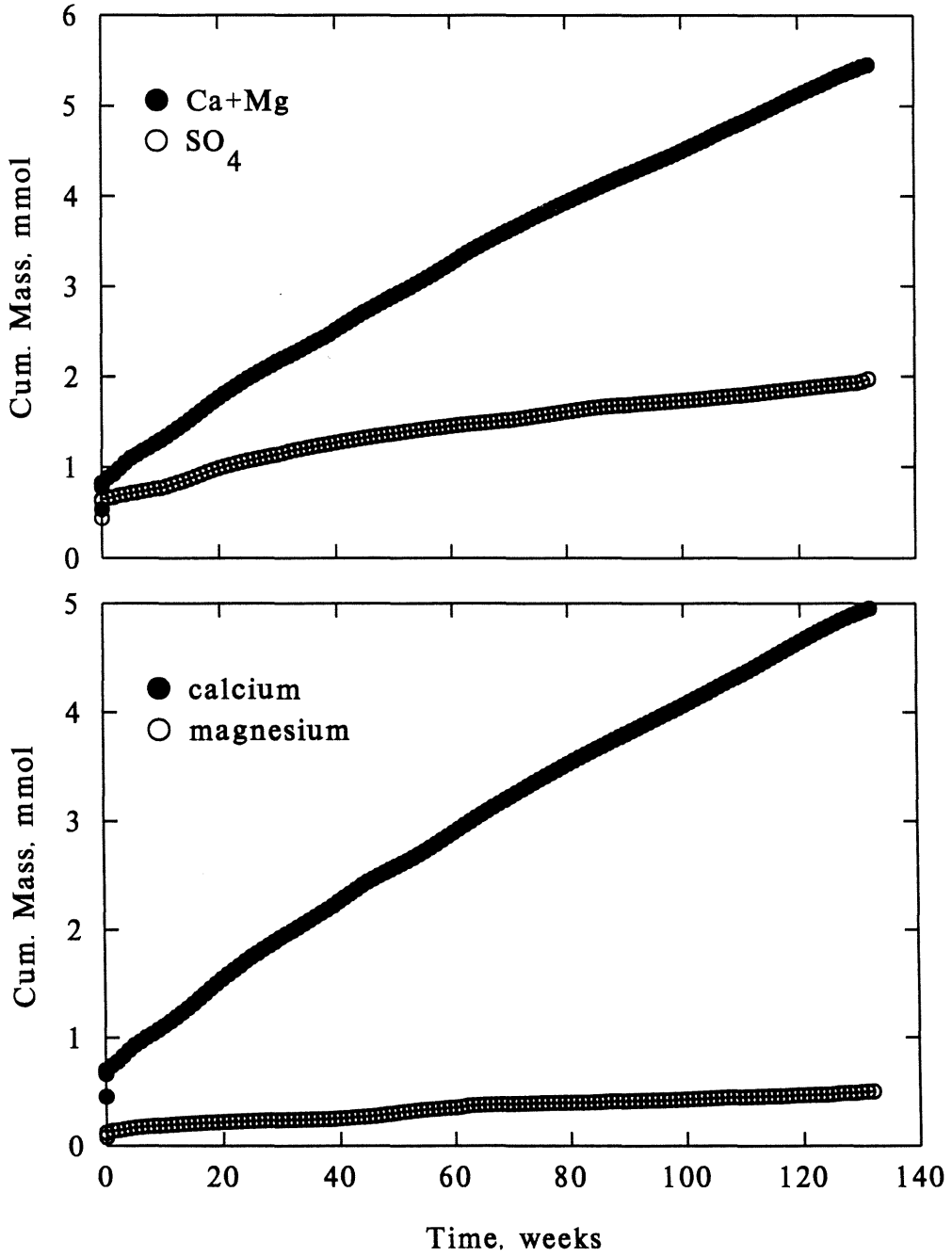

Figure B3.46. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid TL2.

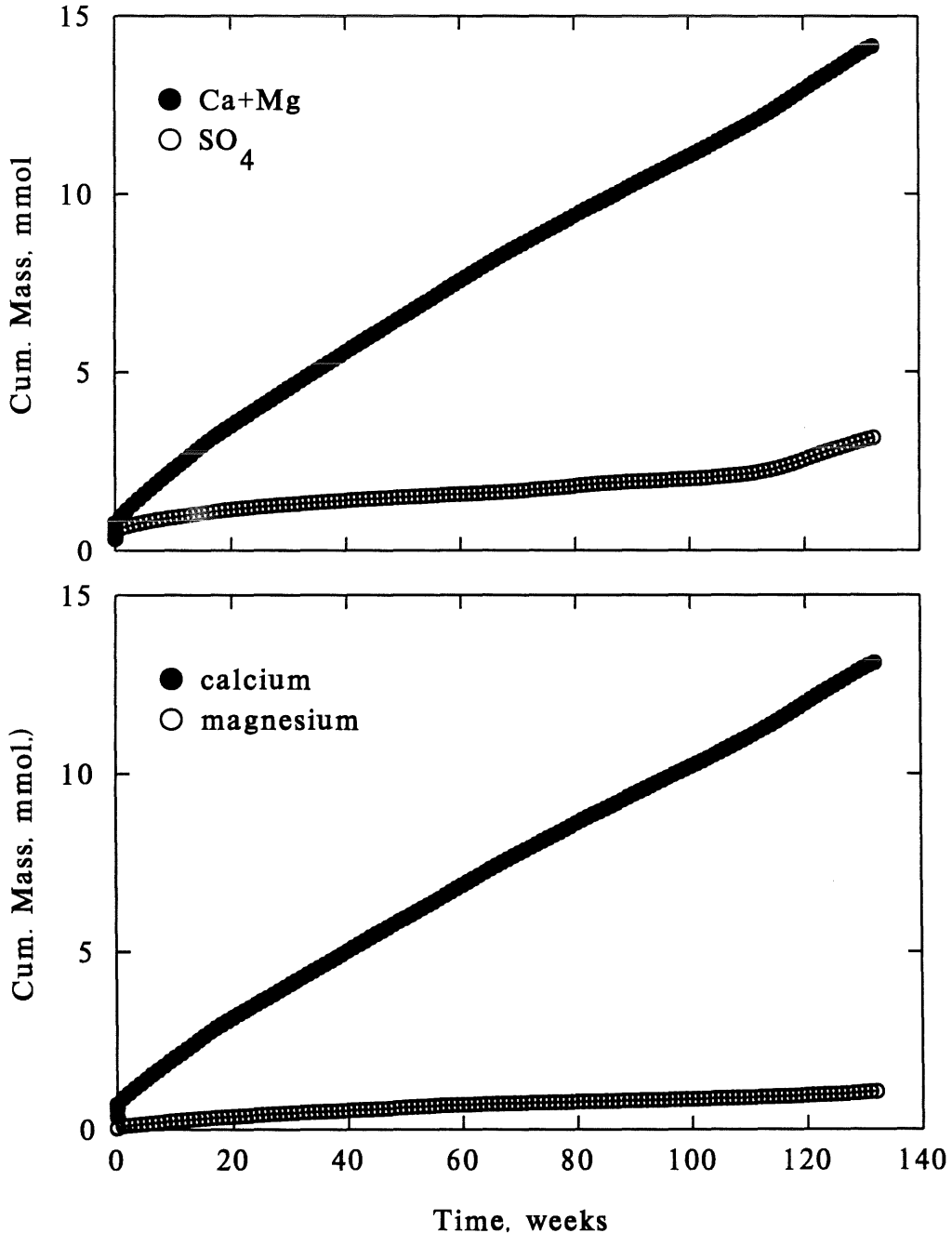

Figure B3.47. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid TL3.

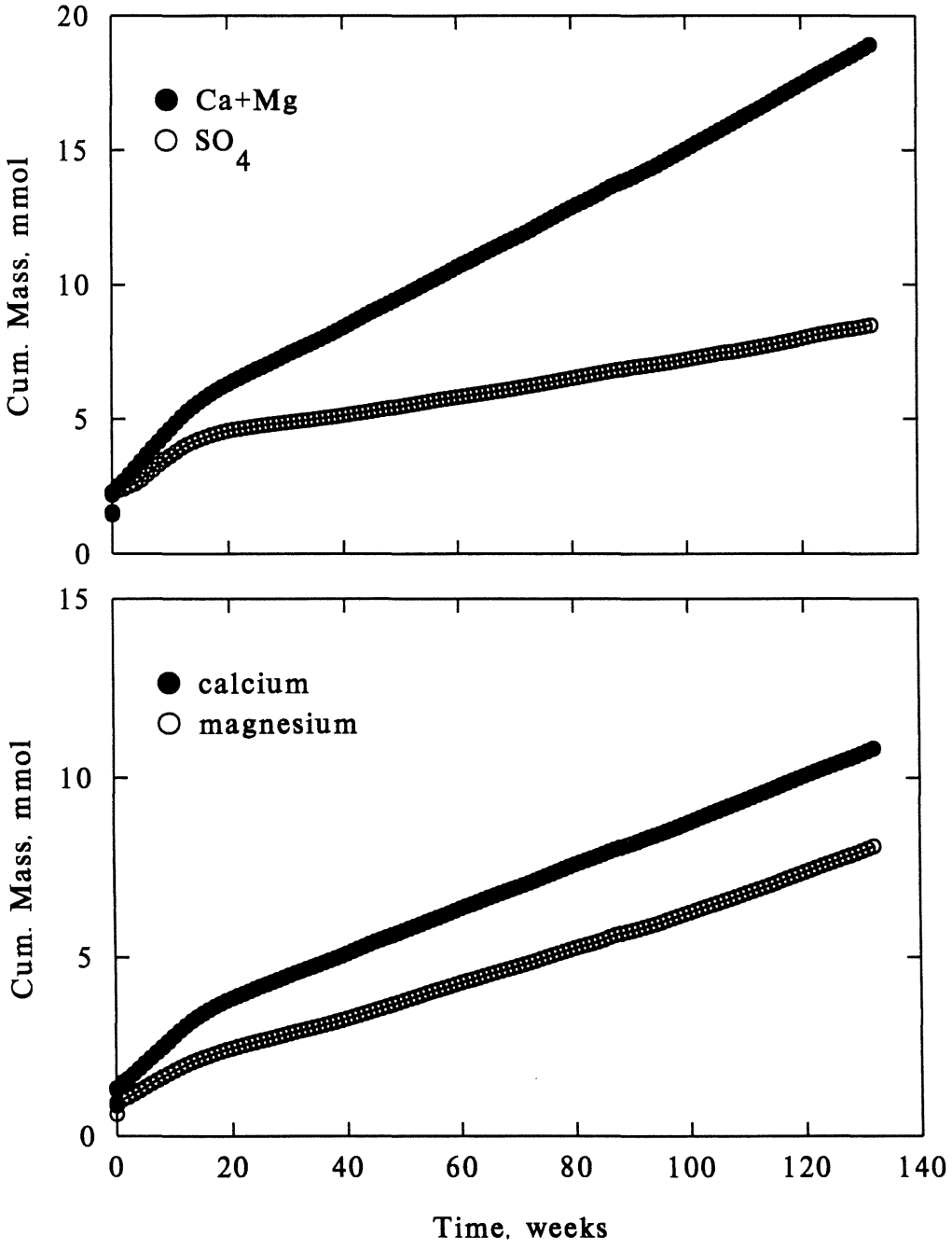

Figure B3.48. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid TL4.

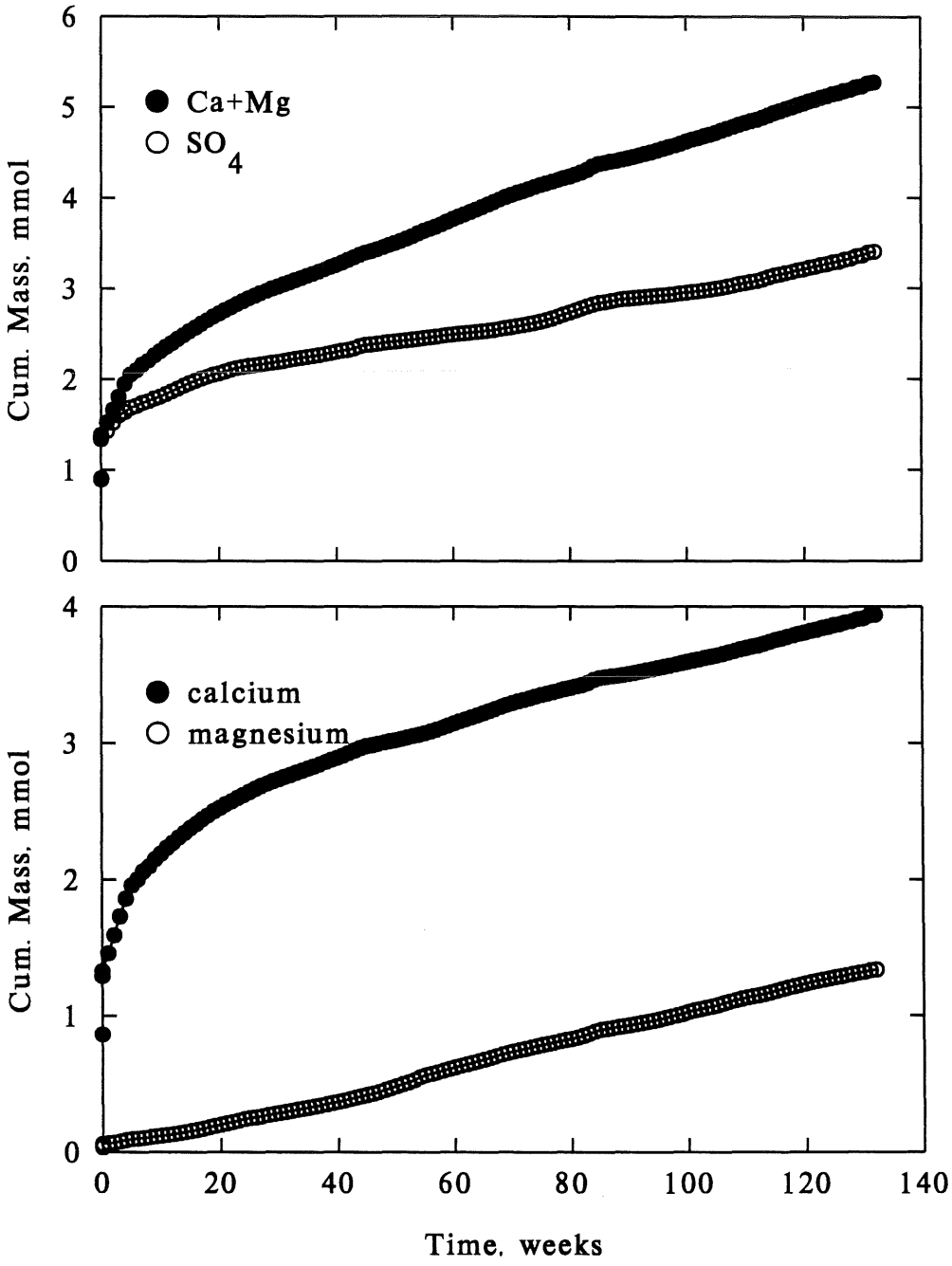

Figure B3.49. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid TL5.

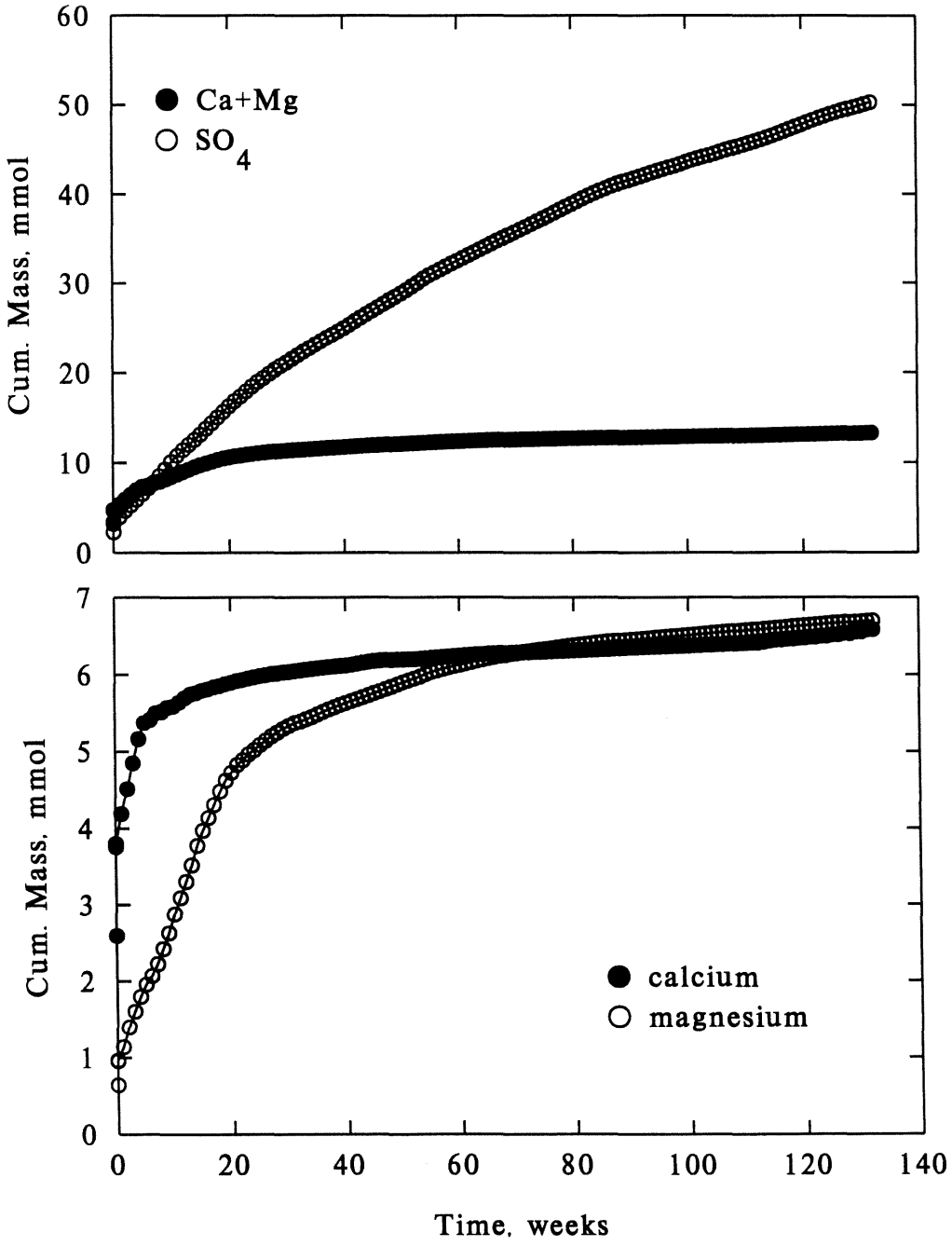

Figure B3.50. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Wet-Dry Cycle Test: Solid TL6.

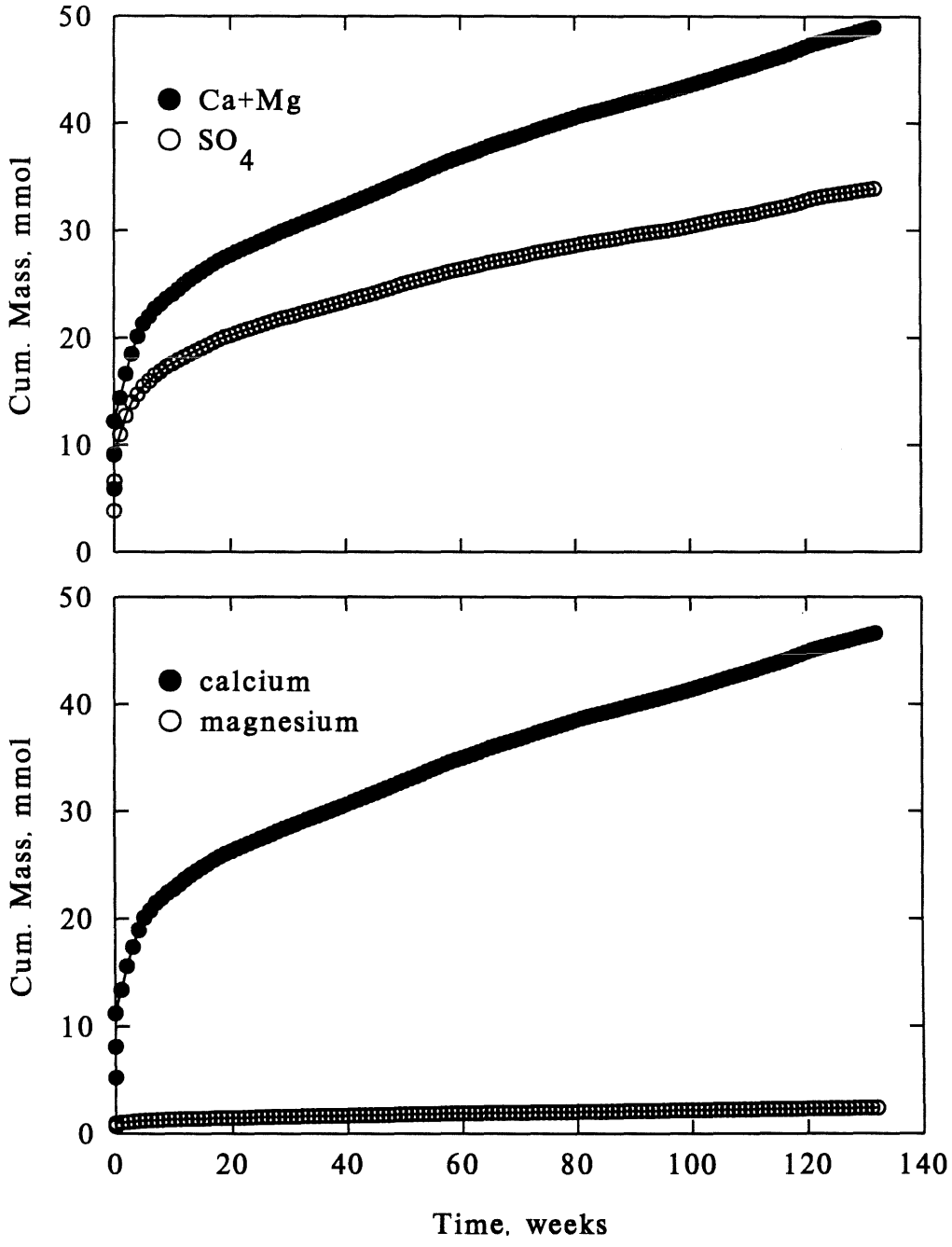

Table B4.1. Ratio of calcium plus magnesium release to sulfate release for the Wet-Dry Cycle Test (weeks 0 - 132).

Solid	APP Release (mmol)	NP Release (mmol)	Ratio
RK1	2.155	3.143	1.458
RK2	2.694	2.772	1.029
RK3	3.029	3.956	1.306
RK4	11.543	16.148	1.399
TL1	1.932	5.457	2.825
TL2	3.153	14.163	4.492
TL3	8.480	18.922	2.231
TL4	3.409	5.277	1.548
TL5	51.605	13.401	0.264
TL6	33.909	49.030	1.446

Text B5.1. Wet-Dry Cycle Test lab notes.

REACTOR 1

DATE	COMMENTS
5/09/91	Solids dried in one hard clump. There is about a 1/8" gap between the solids and the side of the reactor. The first 20 mL drained very quickly, some solids passed around the filter. Drainage was very slow, tried to filter with vacuum, the filter blew and some solids came through. Solids were recovered by filtration.
5/16	The first 80 mL drained very quickly; some solids passed around the filter. Filtered output water through an S.S. filter before reading pH. Retained solids and returned to the reactor.
5/23	A few solids passed around the filter; retained solids.
5/30	The first 50 mL drained very quickly, some solids passed around the filter, retained solids.
6/06	Removed solids from reactor top, placed them in a plastic bag, and crushed them. Replaced the filter and returned solids to the reactor. Some solids still came through, retained solids.
6/13	The first 30 mL drained very quickly.
6/20	Changed reactor top, recorded new weight.
6/27	Removed solids and crushed, changed filter. This will be the standard procedure for this reactor unless otherwise noted.
7/24	The first 50 mL drained very quickly, some solids passed around the filter, retained solids.
9/18	Solids did not dry completely; did not remove and crush but sealed cracks with a spatula.
12/18	Did not add decanted water back to bottom of the reactor. Water that was decanted from the top of the reactor is listed in the systat data file.
11/18/92	No alkalinity was run.
12/31	Solids were rinsed but no sample data was recorded.
6/22/93	Solids were not dry, mixed solids in place rather than removing and crushing.

REACTOR 3

DATE	COMMENTS
5/08/91	Solids dried uniformly, no visible cracks.
1/25/93	Reactor has been functioning properly.

Text B5.2. Wet-Dry Cycle Test lab notes.

REACTOR 5

DATE	COMMENTS
5/09/91	There were some small cracks present after drying; broke up surface with a spatula to seal cracks. The solids broke into 1/4" size particles and smaller. Reactor drained slowly.
5/22	The first 50 mL drained very quickly, then the solids sealed up.
5/30	Broke up surface of the solids with a spatula to seal cracks. This will be standard procedure for this reactor unless otherwise noted.
6/06	Added 210 mL. The first 50 mL drained very quickly, some solids came through, retained solids.
6/13	The first 100 mL drained very quickly.
6/20	Some solids came through, retained solids.
6/27	Removed, crushed, and replaced solids along with a new filter.
7/03	The first 50 mL drained very quickly.
7/11	The first 170 mL drained very quickly. May have to break up solids into finer particles.
7/17	Removed, crushed, and replaced solids along with a new filter and reactor top.
7/24	The first 70 mL drained very quickly.
7/31	Still using spatula method, but attempting to crush into smaller particles and mix better.
9/25	The first 50 mL drained quickly.
10/24	Spilled about 10 mL from top of reactor.
12/12	All 200 mL ran through very quickly.
12/31	Removed solids to change filter.
1/22/92	The first 60 mL drained quickly.
1/30	All 200 mL drained very quickly, the perforated base was bad and the water was going around it.
2/05	Changed reactor top.
2/19	All 200 mL drained very quickly, another bad perforated base.
2/26	Changed reactor top.
7/23	Removed solids, crushed, and changed filter.
12/16	Removed solids, crushed, and changed filter.
2/10/93	Removed solids, crushed, and changed filter.
5/05	Removed solids, crushed, and changed filter.
7/07	Removed solids, crushed, and changed filter.
9/08	Removed solids, crushed, and changed filter.

Text B5.3. Wet-Dry Cycle Test lab notes.

REACTOR 7

DATE	COMMENTS
5/09/91	Some small cracks present after drying.
5/22	The first 125 mL drained quickly, a lot of solid came through. Filtered through a S.S. filter and retained the solids.
5/30	The first 30 mL drained quickly.
6/06	Removed solids, crushed, and replaced.
6/12	The first 75 mL drained quickly.
6/26	Mixed solids with spatula before water addition. This will be standard procedure for this reactor unless otherwise noted.
10/03	Some solids came through, retained solids.
12/19	Removed solids, crushed, and replaced.
2/06/92	The first 50 mL drained quickly.
3/11	The first 50 mL drained quickly. Poured the 50 mL back into the top of the reactor and allowed it to drain through again.
5/27	Removed solids, crushed, and replaced.
6/03	Removed solids, crushed, and replaced.
6/25	Removed solids, crushed, and replaced.
7/01	Removed solids, crushed, and replaced.
7/15	Changed reactor top.
8/13	Glue did not hold on new top, replaced. Water drained very quickly.
8/27	Drained very quickly, reactor top still not working.
9/02	Changed reactor top.
9/09	Removed solids, crushed, and replaced.
9/15	Removed solids, crushed, and replaced.
9/24	Removed solids, crushed, and replaced. This will be the new standard procedure for this reactor unless otherwise noted.

REACTOR 11

DATE	COMMENTS
5/09/91	No visible cracks after drying.
1/12/94	Removed solids and replaced the reactor.

Text B5.4. Wet-Dry Cycle Test lab notes.

REACTOR 13

DATE	COMMENTS
5/09/91	Some small cracks on the surface of the solids after drying. This should not create a flow problem.
5/15	Solids had larger cracks, removed solids and changed the filter. Water drained quickly.
5/22	Seems to be functioning properly.
1/25/94	Reactor functioning properly.

REACTOR 15

DATE	COMMENTS
5/09/91	A few small cracks after drying.
1/25/94	Reactor functioning properly.

REACTOR 17

DATE	COMMENTS
5/09/91	A few small cracks around the edge of the reactor, cracks about 1/16" wide.
7/11	Very slow flow through the solids, will have to decant some water. See systat data file for decanted volumes.
10/03	Spilled some of the sample, took only metals.
7/15/92	In an attempt to get better flow through the solids, the surface of the solids bed was mixed with a spatula before water addition. This will be standard procedure unless otherwise noted.
1/07/93	Removed solids and changed filter.
4/21	Removed solids and changed filter.

Text B5.5. Wet-Dry Cycle Test lab notes.

REACTOR 19

DATE	COMMENTS
5/09/91	A few small cracks on surface of solids after drying.
5/15	Added 210 mL.
6/06	When running acidity, a dark yellow precipitate formed. This occurred through the duration of the experiment.
1/12/94	Added 215 mL.

REACTOR 21

DATE	COMMENTS
5/09/91	A few small cracks on the surface of the solids after drying.
8/18/93	Removed solids and changed filter.
12/01	Added 215 mL.

APPENDIX C

ELEVATED TEMPERATURE TEST

Table C1.1. Elevated Temperature Test: Summary statistics for weekly and daily temperature readings.

	Weekly: rocks	Weekly: tailings	Daily
	Temperature (°C)		
minimum	91.0	91.0	82.0
average	97.6	97.[illegible]	97.3
maximum	106	107	102
standard deviation	3.05	3.11	4.07
number of cases	66	65	473

Table C1.2. Average weekly temperature readings for the Elevated Temperature Test for rocks RK1 - RK4.

Week	Month	Day	Year	Temperature (°C)
0	5	9	91	37.2
2	5	22	91	38.0
4	6	5	91	37.6
6	6	19	91	37.6
8	7	3	91	40.0
10	7	17	91	36.8
12	7	31	91	39.3
14	8	14	91	38.3
16	8	28	91	37.1
18	9	11	91	41.0
20	9	24	91	37.8
22	10	9	91	36.3
24	10	23	91	41.2
26	11	6	91	40.0
28	11	20	91	41.3
30	12	4	91	36.7
32	12	18	91	36.4
34	1	2	92	36.6
36	1	15	92	37.3
38	1	29	92	37.6
40	2	12	92	37.3
42	2	26	92	36.7
44	3	11	92	36.8
46	3	25	92	36.4
48	4	8	92	35.9
50	4	22	92	36.7
52	5	6	92	37.2
54	5	20	92	35.1
56	6	3	92	35.8
58	6	18	92	35.5
60	7	1	92	35.2
62	7	15	92	36.0
64	7	29	92	34.4
66	8	12	92	35.2
68	8	26	92	35.7
70	9	9	92	36.6
72	9	23	92	35.5
74	10	7	92	36.9
76	10	21	92	36.6
78	11	4	92	35.9
80	11	18	92	35.9
82	12	2	92	34.7
84	12	16	92	34.7
86	12	30	92	35.2
88	1	13	93	35.7
90	1	27	93	35.6
92	2	10	93	35.2
94	2	23	93	34.2
96	3	10	93	34.1
98	3	23	93	32.8
100	4	7	93	34.6
102	4	21	93	34.9
104	5	5	93	35.4
106	5	19	93	34.4
108	6	1	93	35.6
110	6	16	93	34.9
112	6	30	93	36.2
114	7	14	93	36.4
116	7	28	93	36.3
118	8	11	93	35.6
120	8	25	93	35.2
122	9	8	93	34.8
124	9	22	93	35.9
126	10	6	93	36.2
128	10	20	93	37.9
130	11	3	93	37.8

Table C1.3. Average weekly temperature readings for the Elevated Temperature Test for tailings TL1 - TL6.

Week	Month	Day	Year	Temperature (°C)
0	5	2	91	.
2	5	15	91	37.4
4	5	29	91	38.1
6	6	12	91	37.7
8	6	26	91	38.1
10	7	8	91	41.1
12	7	24	91	38.3
14	8	7	91	38.3
16	8	21	91	38.2
18	9	4	91	37.6
20	9	18	91	39.7
22	10	2	91	38.5
24	10	16	91	36.1
26	10	30	91	41.4
28	11	13	91	40.4
30	11	27	91	40.2
32	12	11	91	36.7
34	12	26	92	36.5
36	1	8	92	36.9
38	1	22	92	37.4
40	2	5	92	37.2
41	2	26	92	36.7
43	3	11	92	36.8
45	3	25	92	36.4
47	4	8	92	35.9
49	4	22	92	36.7
51	5	6	92	37.2
53	5	20	92	35.1
55	6	3	92	35.8
57	6	18	92	35.5
59	7	1	92	35.2
61	7	15	92	36.0
63	7	29	92	34.4
65	8	12	92	35.2
67	8	26	92	35.7
69	9	9	92	36.6
71	9	23	92	35.5
73	10	7	92	36.9
75	10	21	92	36.6
77	11	4	92	35.9
79	11	18	92	35.9
81	12	2	92	34.7
83	12	16	92	34.7
85	12	30	92	35.2
87	1	13	93	35.7
89	1	27	93	35.6
91	2	10	93	35.2
93	2	23	93	34.2
95	3	10	93	34.1
97	3	23	93	32.8
99	4	7	93	34.6
101	4	21	93	34.9
103	5	5	93	35.4
105	5	19	93	34.4
107	6	1	93	35.6
109	6	16	93	34.9
111	6	30	93	36.2
113	7	14	93	36.4
115	7	28	93	36.3
117	8	11	93	35.6
119	8	25	93	35.2
121	9	8	93	34.8
123	9	22	93	35.9
125	10	6	93	33.8
127	10	20	93	37.9
129	11	3	93	37.8

Figure C1.4. Average weekly temperature versus time for the Elevated Temperature Test (weeks 0 – 129/131).

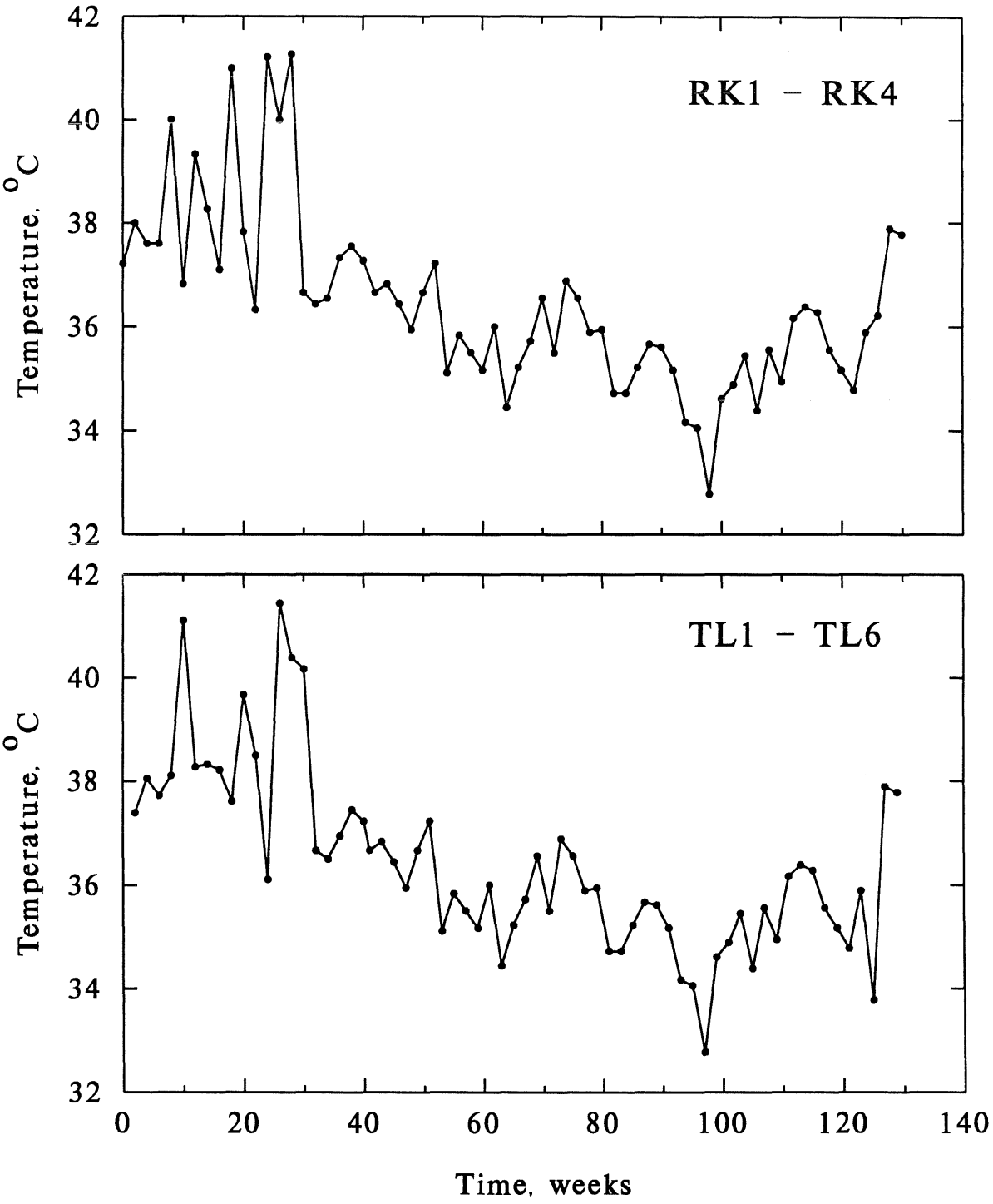

Table C1.5. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
5	6	91	35.0
5	7	91	36.1
5	8	91	38.9
5	9	91	38.9
5	10	91	38.9
5	13	91	34.4
5	14	91	39.4
5	15	91	37.2
5	16	91	38.9
5	17	91	40.0
5	20	91	37.8
5	21	91	37.8
5	22	91	37.8
5	23	91	38.3
5	24	91	38.9
5	27	91	38.9
5	28	91	36.7
5	29	91	35.6
5	30	91	37.8
5	31	91	37.8
6	3	91	37.8
6	4	91	37.2
6	5	91	37.2
6	6	91	39.4
6	7	91	38.3
6	10	91	37.8
6	11	91	36.7
6	12	91	37.2
6	13	91	37.8
6	14	91	37.8
6	17	91	37.2
6	19	91	37.2
6	20	91	38.9
6	24	91	38.9
6	26	91	38.9
7	1	91	38.9
7	3	91	44.4
7	8	91	40.0
7	15	91	40.0
7	17	91	30.6
7	18	91	40.0
7	19	91	40.0
7	22	91	40.6
7	23	91	38.9
7	24	91	37.8
7	25	91	40.0
7	29	91	40.6
7	30	91	37.8
7	31	91	38.3
8	5	91	38.3
8	6	91	37.2
8	7	91	36.1
8	8	91	38.9
8	12	91	37.8
8	13	91	39.4
8	14	91	40.0
8	15	91	36.7
8	16	91	38.3
8	19	91	38.9
8	21	91	35.6
8	26	91	36.7
8	28	91	36.7
9	4	91	39.4

Table C1.6. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
9	5	91	43.3
9	6	91	41.1
9	9	91	39.4
9	10	91	41.1
9	11	91	41.7
9	12	91	36.1
9	13	91	38.9
9	16	91	38.3
9	17	91	37.2
9	19	91	37.2
9	23	91	36.7
9	24	91	40.6
9	25	91	37.8
9	26	91	41.7
9	30	91	40.6
10	2	91	35.0
10	4	91	36.7
10	7	91	32.2
10	8	91	32.2
10	9	91	34.4
10	10	91	41.7
10	14	91	37.8
10	16	91	37.8
10	17	91	43.9
10	22	91	46.1
10	23	91	40.0
10	24	91	40.0
10	25	91	40.0
10	28	91	39.4
10	29	91	40.6
11	4	91	40.0
11	7	91	38.9
11	11	91	42.2
11	14	91	35.0
11	18	91	48.9
11	27	91	36.7
12	2	91	36.7
12	3	91	36.7
12	4	91	36.7
12	10	91	36.7
12	11	91	36.7
12	12	91	36.1
12	13	91	36.7
12	16	91	36.1
12	23	91	36.7
12	24	91	36.7
12	26	91	36.7
12	30	91	36.7
12	31	91	36.7
1	2	92	36.1
1	3	92	37.2
1	6	92	37.2
1	8	92	37.8
1	13	92	36.7
1	15	92	37.8
1	16	92	37.2
1	21	92	37.8
1	22	92	37.8
1	23	92	37.2
1	29	92	37.8
2	3	92	36.7
2	4	92	37.2
2	6	92	36.7

Table C1.7. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
2	7	92	37.8
2	10	92	36.7
2	11	92	38.3
2	12	92	37.8
2	14	92	36.7
2	17	92	36.7
2	19	92	36.7
2	20	92	36.7
2	26	92	36.7
2	27	92	37.8
3	2	92	45.6
3	4	92	35.0
3	5	92	35.6
3	6	92	35.0
3	9	92	35.6
3	10	92	35.0
3	11	92	35.0
3	12	92	35.0
3	13	92	36.1
3	16	92	35.6
3	17	92	37.2
3	19	92	37.2
3	20	92	37.2
3	23	92	37.2
3	24	92	36.1
3	25	92	36.1
3	27	92	35.6
3	30	92	36.1
4	1	92	36.1
4	2	92	36.1
4	3	92	36.1
4	6	92	36.1
4	7	92	35.6
4	9	92	35.6
4	10	92	35.6
4	13	92	36.1
4	14	92	36.1
4	15	92	37.8
4	20	92	37.8
4	21	92	37.2
4	22	92	37.2
4	27	92	40.6
4	29	92	36.7
5	1	92	37.2
5	4	92	37.2
5	6	92	34.4
5	8	92	36.1
5	11	92	35.6
5	14	92	37.2
5	18	92	37.2
5	19	92	35.0
5	20	92	29.4
5	21	92	34.4
5	22	92	35.0
5	26	92	36.1
5	27	92	36.7
5	28	92	35.6
6	1	92	37.2
6	2	92	36.1
6	3	92	35.6
6	4	92	35.0
6	5	92	35.0
6	8	92	35.0

Table C1.8. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
6	9	92	36.7
6	10	92	35.6
6	12	92	36.1
6	15	92	36.7
6	16	92	35.0
6	17	92	34.4
6	19	92	35.6
6	22	92	36.1
6	23	92	35.6
6	24	92	35.6
6	29	92	34.4
6	30	92	34.4
7	1	92	34.4
7	6	92	36.1
7	6	92	43.3
7	7	92	36.1
7	8	92	35.6
7	9	92	34.4
7	10	92	34.4
7	13	92	35.0
7	14	92	34.4
7	15	92	34.4
7	20	92	31.1
7	21	92	34.4
7	22	92	34.4
7	23	92	35.0
7	27	92	38.9
7	28	92	33.3
7	29	92	33.9
7	30	92	35.6
8	3	92	37.8
8	4	92	33.9
8	5	92	32.8
8	6	92	35.6
8	10	92	36.1
8	11	92	35.0
8	12	92	35.0
8	13	92	32.2
8	17	92	32.2
8	18	92	37.2
8	19	92	37.2
8	20	92	36.7
8	24	92	37.2
8	25	92	36.1
8	26	92	36.7
8	27	92	37.2
8	31	92	38.3
9	1	92	36.7
9	2	92	35.0
9	3	92	36.1
9	4	92	38.9
9	7	92	38.9
9	8	92	34.4
9	9	92	33.3
9	10	92	29.4
9	11	92	36.1
9	14	92	36.1
9	15	92	36.7
9	21	92	36.7
9	22	92	36.7
9	23	92	36.7
9	28	92	35.0
9	29	92	38.3

Table C1.9. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
9	30	92	37.8
10	1	92	36.7
10	2	92	36.7
10	5	92	37.8
10	6	92	36.7
10	7	92	36.1
10	8	92	33.9
10	9	92	35.6
10	12	92	40.0
10	13	92	36.7
10	14	92	36.1
10	15	92	37.8
10	16	92	39.4
10	19	92	37.2
10	20	92	34.4
10	21	92	34.4
10	22	92	36.7
10	26	92	36.7
10	27	92	33.9
10	28	92	35.0
10	29	92	36.7
10	30	92	37.2
11	2	92	36.7
11	3	92	34.4
11	5	92	36.1
11	9	92	35.0
11	10	92	35.6
11	11	92	35.6
11	12	92	36.7
11	16	92	37.8
11	18	92	35.0
11	19	92	33.9
11	23	92	35.0
11	24	92	35.0
11	25	92	35.0
11	30	92	35.0
12	1	92	34.4
12	3	92	35.6
12	4	92	36.1
12	7	92	36.1
12	8	92	34.4
12	9	92	34.4
12	10	92	33.3
12	11	92	34.4
12	14	92	34.4
12	15	92	33.9
12	16	92	34.4
12	17	92	35.0
12	18	92	35.6
12	21	92	35.6
12	22	92	35.0
12	23	92	36.7
12	28	92	34.4
12	29	92	34.4
12	30	92	35.0
12	31	92	33.9
1	4	93	36.7
1	5	93	36.1
1	6	93	36.1
1	7	93	35.6
1	8	93	36.7
1	11	93	36.1
1	12	93	35.6

Table C1.10. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
1	13	93	35.0
1	14	93	36.7
1	15	93	35.0
1	18	93	35.6
1	19	93	35.0
1	22	93	35.0
1	25	93	36.7
1	26	93	35.0
1	27	93	36.1
1	28	93	35.6
1	29	93	35.6
2	1	93	36.1
2	2	93	33.9
2	4	93	35.0
2	5	93	34.4
2	8	93	34.4
2	9	93	35.6
2	10	93	36.1
2	12	93	35.0
2	15	93	34.4
2	16	93	34.4
2	17	93	34.4
2	18	93	33.9
2	19	93	33.3
2	22	93	34.4
2	23	93	33.3
2	25	93	28.9
2	26	93	33.9
3	1	93	35.0
3	3	93	35.0
3	4	93	35.6
3	5	93	36.7
3	8	93	34.4
3	9	93	33.3
3	10	93	33.9
3	11	93	33.9
3	12	93	31.1
3	15	93	33.9
3	16	93	34.4
3	17	93	33.9
3	18	93	29.4
3	22	93	32.8
3	23	93	32.8
3	25	93	35.0
3	26	93	35.0
3	29	93	35.0
3	30	93	34.4
3	31	93	34.4
4	1	93	33.9
4	5	93	36.1
4	6	93	33.9
4	7	93	33.9
4	8	93	34.4
4	9	93	33.3
4	12	93	37.2
4	13	93	35.0
4	14	93	35.0
4	16	93	34.4
4	19	93	35.6
4	20	93	34.4
4	21	93	34.4
4	23	93	35.6
4	26	93	36.7

Table C1.11. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
4	27	93	35.6
4	29	93	35.6
4	30	93	35.6
5	3	93	35.0
5	4	93	35.0
5	5	93	34.4
5	7	93	35.0
5	10	93	32.2
5	11	93	35.0
5	12	93	34.4
5	13	93	34.4
5	17	93	32.2
5	18	93	35.0
5	19	93	36.7
5	21	93	35.6
5	24	93	35.6
5	28	93	36.1
5	31	93	35.6
6	1	93	35.0
6	3	93	35.0
6	7	93	37.2
6	8	93	34.4
6	9	93	35.0
6	10	93	35.6
6	14	93	35.0
6	15	93	33.9
6	16	93	33.3
6	17	93	36.1
6	18	93	35.0
6	21	93	36.7
6	22	93	35.6
6	23	93	35.6
6	25	93	38.3
6	28	93	37.2
6	29	93	35.0
6	30	93	36.1
7	2	93	36.7
7	5	93	40.6
7	6	93	37.8
7	7	93	35.6
7	8	93	35.0
7	12	93	35.6
7	13	93	35.0
7	14	93	35.0
7	19	93	36.1
7	20	93	37.2
7	21	93	37.2
7	26	93	33.9
7	27	93	36.7
7	28	93	36.7
7	29	93	35.0
7	30	93	34.4
8	2	93	35.0
8	3	93	36.1
8	4	93	36.7
8	6	93	38.3
8	9	93	36.7
8	10	93	33.9
8	11	93	33.9
8	16	93	36.1
8	17	93	36.7
8	18	93	36.7
8	19	93	34.4

Table C1.12. Temperature data for the Elevated Temperature Test: daily readings.

Month	Day	Year	Temperature (°C)
8	23	93	33.9
8	24	93	33.9
8	25	93	34.4
8	26	93	35.0
8	27	93	35.6
8	30	93	35.6
8	31	93	36.1
9	1	93	35.6
9	2	93	27.8
9	6	93	37.2
9	8	93	35.6
9	13	93	37.2
9	14	93	36.7
9	15	93	35.6
9	20	93	35.0
9	22	93	35.0
9	23	93	33.9
9	28	93	35.0
9	29	93	38.3
10	4	93	37.2
10	6	93	36.7
10	7	93	37.8
10	11	93	37.8
10	13	93	38.3
10	15	93	37.8
10	18	93	38.3
10	20	93	37.2
10	25	93	40.0
10	26	93	37.2
10	29	93	38.3
11	1	93	38.3
11	3	93	35.0

Figure C1.13. Daily temperature readings for the Elevated Temperature Test (May 6, 1991 – November 3, 1993).

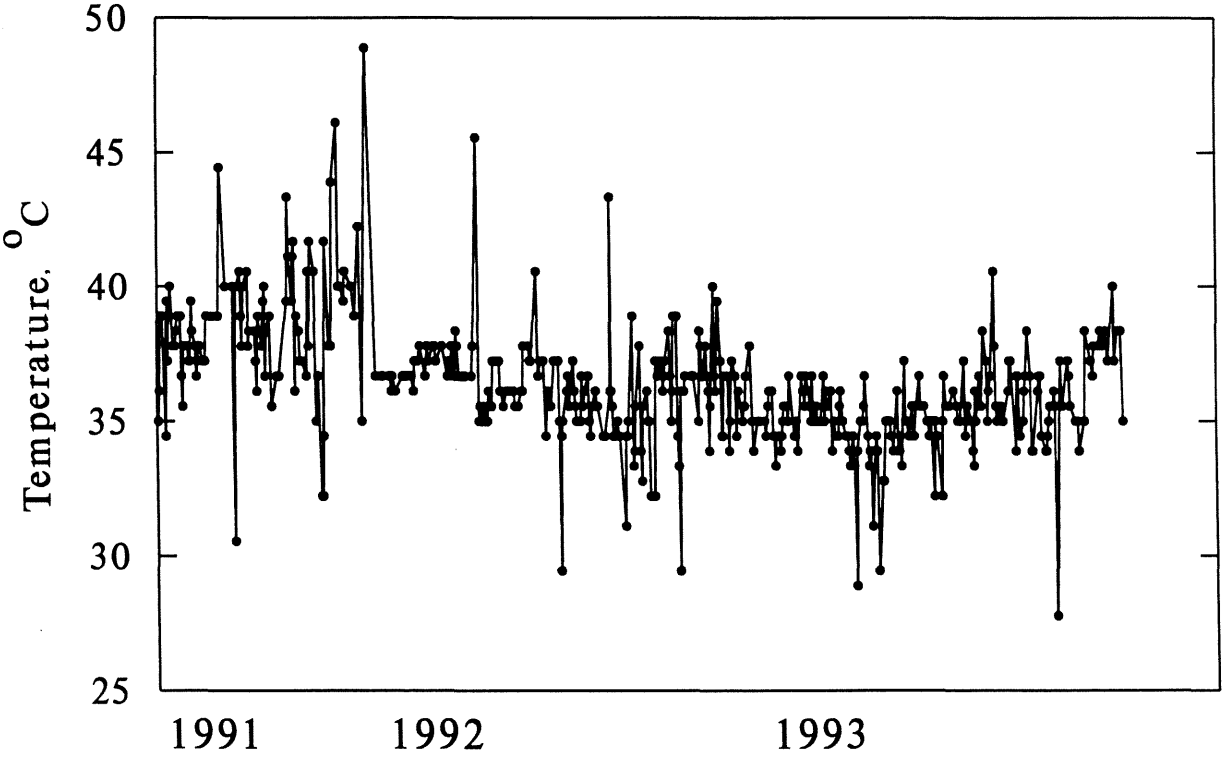

Table C2.1. Elevated Temperature Test drainage quality from Solid RK1, reactor 1.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	650.	7.65	.	.	288.0	36.000	34.000	.	.	.	5	7	91
0	.	90.	.	.	.	.	.	.	.	.	.	5	8	91
0	.	62.	.	.	.	<2.0	0.469	0.652	.	.	.	5	9	91
2	315.1	270.	7.45	28.0	.	72.0	13.100	11.000	3100.	.	.	5	22	91
4	321.0	340.	7.13	26.0	.	123.0	26.200	19.800	3144.	.	.	6	5	91
6	326.4	430.	6.31	16.0	.	149.0	25.600	24.000	3196.	.	.	6	19	91
8	325.7	500.	4.42	.	29.0	202.0	32.400	28.600	3243.	.	.	7	3	91
10	312.5	262.	4.87	.	.	64.0	.	.	3287.	.	.	7	17	91
12	318.3	435.	4.16	.	46.0	150.0	21.600	18.000	3331.	.	.	7	31	91
14	321.1	450.	4.03	.	46.0	164.0	.	.	3383.	.	.	8	14	91
16	330.7	157.	6.00	.	9.0	50.8	6.700	5.850	3430.	.	.	8	28	91
18	321.8	190.	5.96	.	8.0	60.8	.	.	3474.	.	.	9	11	91
20	323.0	158.	5.90	.	12.0	49.2	6.950	6.150	3526.	.	.	9	24	91
22	321.4	150.	4.46	.	14.0	37.2	6.750	6.250	3573.	.	.	10	9	91
24	336.0	370.	4.25	.	37.0	108.0	16.950	15.400	3617.	.	.	10	23	91
26	311.3	160.	4.01	.	32.0	32.6	5.300	4.600	3650.	.	.	11	6	91
28	330.6	425.	3.60	.	166.0	86.5	16.250	14.500	3672.	.	.	11	20	91
30	322.7	150.	4.04	.	40.0	23.9	4.050	3.650	3694.	.	.	12	4	91
32	329.0	143.	4.13	.	34.0	15.5	4.900	4.550	3716.	.	.	12	18	91
34	328.8	68.	5.43	.	22.0	15.0	2.300	2.150	3738.	.	.	1	2	92
36	329.2	80.	4.51	.	17.0	15.6	2.400	2.250	3760.	.	.	1	15	92
38	324.8	82.	4.72	.	14.0	13.0	2.350	2.050	3782.	.	.	1	29	92
40	320.0	50.	5.71	.	8.6	.	.	.	3804.	.	.	2	12	92
42	318.6	75.	4.60	.	14.0	16.7	4.400	2.600	3826.	152.	15.0	2	26	92
44	328.6	120.	4.43	.	11.0	27.6	5.600	4.000	3848.	240.	41.0	3	11	92
46	328.9	85.	4.25	.	46.0	15.6	4.000	3.200	3870.	195.	32.0	3	25	92
48	332.1	120.	3.95	.	52.0	14.2	4.200	3.600	3892.	239.	.	4	8	92
50	315.4	138.	3.95	.	57.0	14.2	4.800	3.600	60000.	240.	.	4	22	92
52	301.8	150.	3.86	.	92.0	15.6	6.600	4.600	60011.	325.	.	5	6	92
54	328.1	39.	5.89	.	17.0	8.0	3.400	2.200	60022.	111.	.	5	20	92
56	320.5	80.	5.65	.	23.0	11.1	3.000	2.400	60033.	145.	.	6	3	92
58	321.4	55.	5.92	.	8.6	8.7	4.800	1.800	60044.	92.	.	6	17	92
60	324.1	42.	6.13	.	7.0	8.7	1.800	1.400	60056.	72.	.	7	1	92
62	323.4	50.	6.05	.	11.0	11.4	2.500	1.900	60067.	98.	.	7	15	92
64	329.7	39.	6.24	.	14.0	7.5	1.800	1.200	60078.	70.	.	7	29	92
66	309.0	38.	6.08	.	8.6	8.3	1.250	1.200	60089.	65.	.	8	12	92
68	323.9	40.	6.03	.	2.8	6.6	1.100	1.150	60101.	70.	.	8	26	92
70	324.0	34.	6.11	.	11.5	7.0	1.000	1.050	60112.	75.	.	9	9	92
72	321.3	34.	6.09	.	6.0	6.4	0.950	1.050	60123.	64.	.	9	23	92
74	325.2	42.	6.13	.	3.0	7.7	1.450	1.200	60134.	76.	.	10	7	92
76	325.4	32.	6.26	.	6.0	6.6	1.450	1.400	60145.	72.	.	10	21	92
78	323.5	43.	6.25	.	9.0	.	1.200	1.100	60157.	62.	.	11	4	92
80	334.6	41.	5.24	.	15.0	.	1.300	1.150	60168.	.	.	11	18	92

Table C2.2. Elevated Temperature Test drainage quality from Solid RK1, reactor 1.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
82	324.9	35.	6.24	.	9.0	.	0.800	0.800	60179.	55.	.	12	2	92
84	336.4	27.	6.21	.	6.0	.	0.850	1.100	60190.	55.	49.0	12	16	92
86	323.5	32.	5.01	.	6.0	.	0.850	0.850	60201.	59.	25.0	12	30	92
88	331.4	37.	4.64	.	18.0	4.8	0.900	0.850	60213.	58.	.	1	13	93
90	329.3	45.	4.50	.	24.0	4.8	0.950	1.050	60224.	78.	.	1	27	93
92	323.3	45.	4.77	.	17.0	4.6	1.100	1.100	60235.	88.	.	2	10	93
94	324.7	34.	4.93	.	12.0	4.0	0.750	0.700	60246.	58.	.	2	23	93
96	337.7	26.	5.89	.	6.0	4.6	0.600	0.650	60257.	58.	.	3	10	93
98	321.2	23.	5.82	.	12.0	3.8	0.600	0.650	60269.	55.	12.0	3	24	93
100	328.4	23.	6.23	.	3.0	4.5	0.550	0.650	60280.	54.	.	4	7	93
102	326.3	24.	6.30	5.0	.	3.9	0.800	0.600	60291.	45.	.	4	21	93
104	324.6	27.	6.77	5.0	.	4.3	0.850	0.900	60302.	43.	.	5	5	93
106	324.0	22.	6.24	.	3.0	3.4	0.650	0.500	60314.	50.	.	5	19	93
108	328.6	22.	6.38	.	10.0	3.7	0.600	0.500	60325.	43.	.	6	2	93
110	276.8	15.	6.20	.	2.5	2.8	0.250	0.250	60336.	14.	.	6	16	93
112	329.7	22.	6.56	5.0	.	4.2	0.550	0.400	60347.	38.	.	6	30	93
114	325.7	33.	5.71	.	3.8	5.2	0.800	0.650	60359.	71.	.	7	14	93
116	338.5	24.	6.23	.	5.0	4.4	0.600	0.450	60370.	55.	.	7	28	93
118	333.6	34.	6.37	5.0	.	4.3	0.950	1.750	60382.	62.	.	8	11	93
120	333.8	23.	6.46	5.0	.	4.0	0.500	0.400	60394.	40.	.	8	25	93
122	334.4	21.	6.53	5.0	.	4.3	0.800	0.750	60405.	44.	.	9	8	93
124	330.8	24.	6.45	7.5	.	3.7	0.700	0.650	60416.	50.	.	9	22	93
126	334.7	18.	6.37	12.5	.	3.6	0.800	0.650	60427.	55.	.	10	6	93
128	330.0	34.	6.27	.	5.0	4.9	0.900	0.850	60440.	62.	.	10	20	93
130	331.8	24.	6.41	7.5	.	4.3	0.500	0.450	60451.	50.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.3. Elevated Temperature Test drainage quality from Solid RK2, reactor 3.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	262.	8.00	.	.	83.0	13.100	4.520	.	.	.	5	7	91
0	.	90.	.	.	.	.	.	.	.	.	.	5	8	91
0	.	79.	.	.	.	10.0	4.310	1.730	.	.	.	5	9	91
2	343.2	210.	7.65	28.0	.	48.5	22.000	5.400	3102.	.	.	5	22	91
4	344.8	117.	7.39	21.0	.	21.0	.	.	3146.	.	.	6	5	91
6	345.6	75.	7.10	16.0	.	13.6	6.050	0.750	3198.	.	.	6	19	91
8	344.0	53.	7.08	13.0	.	8.5	3.900	0.800	3245.	.	.	7	3	91
10	339.2	53.	6.88	7.8	.	9.3	.	.	3289.	.	.	7	17	91
12	341.1	75.	6.61	16.0	.	14.1	.	.	3333.	.	.	7	31	91
14	322.5	58.	6.38	.	2.9	12.3	.	.	3385.	.	.	8	14	91
16	340.4	60.	6.78	14.0	.	9.3	4.350	1.250	3432.	.	.	8	28	91
18	342.2	60.	6.53	.	13.0	10.0	.	.	3476.	.	.	9	11	91
20	341.2	55.	6.67	.	9.0	7.7	4.000	1.200	3528.	.	.	9	24	91
22	337.4	50.	6.31	.	9.0	7.5	4.350	1.850	3575.	.	.	10	9	91
24	343.1	50.	6.26	.	1.0	7.5	3.650	1.150	3619.	.	.	10	23	91
26	339.6	46.	6.33	5.2	.	13.0	3.300	1.000	3651.	.	.	11	6	91
28	348.6	125.	4.49	.	46.0	4.8	9.900	3.150	3673.	.	.	11	20	91
30	331.6	65.	5.42	.	14.0	4.4	4.950	2.000	3695.	.	.	12	14	91
32	339.6	50.	5.41	.	9.0	5.7	2.350	4.250	3717.	.	.	12	18	91
34	344.3	46.	6.16	.	9.5	4.8	3.100	1.400	3739.	.	.	1	2	92
36	341.2	35.	6.48	.	3.0	5.0	2.300	1.050	3761.	.	.	1	15	92
38	338.7	45.	6.57	6.3	.	5.4	2.500	1.150	3783.	.	.	1	29	92
40	391.5	31.	6.47	9.0	.	.	.	.	3805.	.	.	2	12	92
42	339.1	43.	6.54	12.6	.	9.1	4.400	1.600	3827.	72.	.	2	26	92
44	336.0	58.	6.23	5.7	.	12.5	5.400	2.000	3849.	105.	.	3	11	92
46	342.1	38.	6.24	.	5.7	8.5	3.400	1.200	3871.	70.	.	3	25	92
48	340.2	36.	6.24	.	5.0	8.1	3.000	1.200	3893.	68.	.	4	8	92
50	339.8	45.	5.94	.	5.0	7.7	4.000	1.000	60001.	73.	.	4	22	92
52	294.6	27.	6.10	.	5.0	7.5	4.000	1.400	60012.	76.	.	5	6	92
54	335.7	25.	6.39	6.3	.	6.4	3.400	1.400	60023.	49.	.	5	20	92
56	330.5	30.	6.45	12.6	.	5.8	2.800	1.300	60034.	49.	.	6	3	92
58	332.7	32.	6.44	5.0	.	6.6	3.100	1.200	60045.	50.	.	6	17	92
60	331.9	26.	6.42	7.0	.	7.2	2.600	1.100	60057.	47.	.	7	1	92
62	335.1	41.	6.59	5.0	.	8.6	3.900	1.600	60068.	71.	.	7	15	92
64	331.9	26.	6.46	11.0	.	5.9	2.300	0.850	60079.	46.	.	7	29	92
66	326.1	6.	6.30	5.0	.	.	0.450	0.250	60090.	48.	.	8	12	92
68	338.8	28.	5.71	.	5.7	5.0	1.800	0.650	60102.	49.	.	8	26	92
70	334.7	29.	5.71	.	11.0	5.3	1.800	0.700	60113.	58.	.	9	9	92
72	332.8	25.	5.99	.	6.0	5.6	2.050	0.800	60124.	52.	.	9	23	92
74	336.9	30.	5.83	.	3.0	5.6	2.600	0.800	60135.	52.	.	10	7	92
76	337.8	46.	4.83	.	18.0	5.3	3.850	1.100	60146.	78.	.	10	21	92
78	333.6	47.	4.77	.	15.0	.	3.750	1.050	60158.	84.	.	11	4	92
80	341.6	38.	4.75	.	12.0	.	2.600	1.500	60169.	.	.	11	18	92

Table C2.4. Elevated Temperature Test drainage quality from Solid RK2, reactor 3.

Week	Volume (mL)	S.C.[1] (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
82	345.5	36.	4.78	.	15.0	.	2.450	0.600	60180.	57.	.	12	2	92
84	352.9	19.	5.77	.	6.0	.	1.700	0.900	60191.	40.	.	12	16	92
86	349.2	26.	4.99	.	12.0	.	1.650	0.450	60202.	39.	.	12	30	92
88	340.4	29.	4.60	.	18.0	3.6	1.800	0.500	60214.	48.	.	1	13	93
90	333.3	25.	4.72	.	9.0	4.5	2.100	0.600	60225.	55.	.	1	27	93
92	347.9	26.	4.76	.	9.0	3.5	1.900	0.500	60236.	57.	.	2	10	93
94	337.9	24.	5.07	.	6.0	3.8	1.500	0.450	60247.	45.	.	2	23	93
96	335.3	20.	5.33	.	6.0	4.1	1.500	0.650	60258.	45.	.	3	10	93
98	336.4	18.	5.55	.	3.0	3.8	1.300	0.400	60270.	40.	.	3	24	93
100	338.0	17.	6.06	.	3.0	4.3	1.750	0.450	60281.	31.	.	4	7	93
102	335.8	18.	6.19	.	4.0	4.3	1.550	0.450	60292.	33.	.	4	21	93
104	332.6	20.	6.44	4.0	.	4.4	1.450	0.700	60303.	32.	.	5	5	93
106	331.2	19.	5.65	.	3.0	4.0	1.550	0.450	60315.	36.	.	5	19	93
108	327.1	20.	5.74	.	5.0	3.7	1.550	0.450	60326.	36.	.	6	2	93
110	332.8	20.	5.80	.	3.0	4.3	1.800	0.750	60337.	36.	.	6	16	93
112	329.0	17.	6.09	.	2.5	4.3	1.500	0.350	60348.	30.	.	6	30	93
114	326.0	22.	5.23	.	5.0	4.3	1.450	0.400	60360.	42.	.	7	14	93
116	332.2	19.	5.68	.	<5.0	4.7	1.450	0.350	60371.	38.	.	7	28	93
118	333.8	25.	5.91	.	7.0	5.2	1.550	0.450	60383.	38.	.	8	11	93
120	331.4	21.	6.18	.	2.5	4.4	1.450	0.400	60395.	34.	.	8	25	93
122	330.6	22.	6.10	.	10.0	4.9	1.850	0.500	60406.	30.	.	9	8	93
124	337.0	20.	5.79	.	<5.0	3.6	1.550	0.450	60417.	33.	.	9	22	93
126	330.4	16.	5.84	.	2.5	4.4	1.350	0.400	60428.	32.	.	10	6	93
128	349.2	10.	5.68	.	2.5	2.0	0.800	0.250	60441.	16.	.	10	20	93
130	326.8	33.	5.14	.	7.5	6.2	2.050	0.600	60452.	70.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.5. Elevated Temperature Test drainage quality from Solid RK3, reactor 5.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	700.	7.10	.	.	310.0	54.200	23.900	.	.	.	5	7	91
0	.	250.	.	.	.	.	.	.	.	.	.	5	8	91
0	.	50.	.	.	.	5.0	1.530	0.652	.	.	.	5	9	91
2	327.2	500.	7.28	46.0	.	154.0	37.200	13.400	3104.	.	.	5	22	91
4	332.4	370.	7.32	37.0	.	117.0	28.400	8.000	3148.	.	.	6	5	91
6	340.4	330.	7.01	24.0	.	108.0	26.400	8.600	3200.	.	.	6	19	91
8	331.4	580.	4.90	.	69.0	287.0	36.600	13.200	3247.	.	.	7	3	91
10	341.2	155.	6.35	10.5	.	43.4	.	.	3291.	.	.	7	17	91
12	335.3	438.	4.58	.	109.0	109.0	23.600	9.200	3335.	.	.	7	31	91
14	328.3	240.	5.03	.	29.0	63.6	.	.	3387.	.	.	8	14	91
16	332.1	275.	5.33	.	26.0	88.0	10.700	5.800	3434.	.	.	8	28	91
18	335.9	145.	6.30	16.0	.	36.0	.	.	3478.	.	.	9	11	91
20	330.2	172.	5.81	.	12.0	43.6	6.300	4.400	3530.	.	.	9	24	91
22	328.2	318.	4.71	.	32.0	105.0	12.100	9.500	3577.	.	.	10	9	91
24	326.8	.	5.94	.	9.0	20.8	1.800	1.700	3621.	.	.	10	23	91
26	319.9	250.	4.65	.	49.0	8.7	6.100	6.650	3652.	.	.	11	6	91
28	329.2	500.	4.17	.	124.0	157.0	9.450	12.650	3674.	.	.	11	20	91
30	324.6	145.	5.20	.	17.0	34.5	2.600	4.450	3696.	.	.	12	4	91
32	326.3	123.	5.17	.	14.0	42.5	2.350	4.250	3718.	.	.	12	18	91
34	333.1	108.	5.46	.	13.0	31.7	2.150	4.150	3740.	.	.	1	2	92
36	330.8	92.	5.18	.	5.7	30.5	2.150	4.100	3762.	.	.	1	15	92
38	329.6	150.	4.96	.	11.5	36.8	2.800	5.000	3784.	.	.	1	29	92
40	332.8	80.	5.35	.	11.5	.	.	.	3806.	.	.	2	12	92
42	323.0	169.	4.74	.	26.0	51.2	5.000	6.600	3828.	295.	.	2	26	92
44	326.5	205.	4.57	.	28.0	57.2	4.800	7.200	3850.	342.	.	3	11	92
46	329.6	200.	4.27	.	75.0	53.0	4.200	7.200	3872.	420.	.	3	25	92
48	331.2	150.	4.25	.	69.0	31.6	2.600	4.400	3894.	280.	.	4	8	92
50	336.4	243.	4.15	.	74.0	40.4	4.000	5.800	30002.	375.	.	4	22	92
52	305.8	140.	4.37	.	40.0	28.4	3.400	4.400	60013.	245.	.	5	6	92
54	328.6	112.	4.33	.	40.0	27.3	2.800	4.200	60024.	189.	.	5	20	92
56	326.2	110.	4.49	.	29.0	23.8	2.100	3.600	60035.	159.	.	6	3	92
58	327.3	70.	4.45	.	29.0	24.0	2.200	3.500	60046.	150.	.	6	17	92
60	328.3	80.	4.38	.	34.0	26.5	3.900	4.400	60058.	162.	.	7	1	92
62	331.0	135.	4.33	.	14.0	29.4	2.200	3.800	60069.	198.	.	7	15	92
64	332.4	105.	4.36	.	29.0	26.1	1.350	2.950	60080.	145.	.	7	29	92
66	314.1	95.	4.34	.	15.0	21.5	1.100	2.300	60091.	135.	.	8	12	92
68	335.3	105.	4.23	.	32.0	20.2	1.050	2.400	60103.	155.	.	8	26	92
70	336.6	110.	4.16	.	37.0	23.5	1.200	2.650	60114.	204.	.	9	9	92
72	326.9	85.	4.58	.	11.0	22.3	1.050	2.300	60125.	145.	.	9	23	92
74	330.3	100.	4.41	.	24.0	17.8	1.150	2.100	60136.	142.	.	10	7	92
76	333.8	80.	4.57	.	21.0	15.8	1.000	1.900	60147.	115.	.	10	21	92
78	329.4	68.	4.54	.	18.0	.	0.950	1.900	60159.	112.	.	11	4	92
80	333.7	65.	4.70	.	9.0	.	0.800	1.600	60170.	.	.	11	18	92

Table C2.6. Elevated Temperature Test drainage quality from Solid RK3, reactor 5.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
82	334.4	67.	4.69	.	9.0	.	0.750	1.600	60181.	89.	.	12	2	92
84	346.6	55.	4.77	.	11.0	.	0.750	1.450	60192.	82.	.	12	16	92
86	336.1	60.	4.61	.	12.0	.	0.600	1.400	60203.	78.	.	12	30	92
88	330.1	62.	4.27	.	21.0	16.6	0.950	1.800	60215.	95.	.	1	13	93
90	329.9	60.	4.40	.	15.0	14.2	0.750	1.650	60226.	99.	.	1	27	93
92	338.0	55.	4.50	.	15.0	13.6	0.800	1.400	60237.	100.	.	2	10	93
94	338.6	55.	4.65	.	12.0	12.8	0.650	1.050	60248.	68.	.	2	23	93
96	326.2	59.	4.78	.	15.0	14.3	0.750	1.200	60259.	82.	.	3	10	93
98	324.5	52.	4.68	.	9.0	15.8	0.750	1.300	60271.	83.	.	3	24	93
100	328.6	55.	4.82	.	7.5	15.4	1.000	1.100	60282.	73.	.	4	7	93
102	326.5	58.	4.82	.	7.5	17.0	1.000	1.100	60293.	78.	.	4	21	93
104	321.6	65.	4.92	.	7.5	20.6	1.000	1.350	60304.	90.	.	5	5	93
106	327.4	60.	4.53	.	10.0	14.8	1.050	1.100	60316.	87.	.	5	19	93
108	326.3	61.	4.52	.	5.0	17.0	1.000	1.050	60327.	80.	.	6	2	93
110	328.0	61.	4.45	.	10.0	15.5	1.000	1.100	60338.	95.	.	6	16	93
112	323.0	61.	4.53	.	10.0	16.2	1.050	1.000	60349.	90.	.	6	30	93
114	319.8	81.	4.38	.	12.0	20.8	1.100	1.100	60361.	101.	.	7	14	93
116	332.9	62.	4.43	.	12.0	18.8	0.750	0.900	60372.	87.	.	7	28	93
118	330.4	81.	4.27	.	15.0	21.5	1.000	1.050	60384.	110.	.	8	11	93
120	332.1	70.	4.30	.	15.0	16.8	0.900	0.900	60396.	100.	.	8	25	93
122	326.1	68.	4.32	.	10.0	15.8	0.800	0.850	60407.	85.	.	9	8	93
124	332.0	72.	4.28	.	15.0	17.4	0.900	0.900	60418.	94.	.	9	22	93
126	336.5	68.	4.35	.	10.0	18.4	1.050	0.850	60429.	105.	.	10	6	93
128	326.8	210.	3.51	.	55.0	67.6	3.650	2.900	60442.	410.	.	10	20	93
130	332.5	113.	3.89	.	20.0	27.7	1.000	1.200	60453.	180.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.7. Elevated Temperature Test drainage quality from Solid RK4, reactor 7.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	1380.	6.83	.	.	685.0	120.000	52.000	.	.	.	5	7	91
0	.	460.	.	.	.	.	.	.	.	.	.	5	8	91
0	.	168.	.	.	.	13.0	10.600	8.170	.	.	.	5	9	91
2	326.8	1100.	7.62	91.0	.	415.0	99.800	70.200	3106.	.	.	5	22	91
4	315.7	1200.	7.70	89.0	.	515.0	.	.	3150.	.	.	6	5	91
6	325.1	1520.	7.77	52.5	.	368.0	112.000	51.200	3202.	.	.	6	19	91
8	327.2	3100.	6.18	.	43.0	970.0	240.000	129.000	3249.	.	.	7	3	91
10	338.6	790.	7.37	59.0	.	338.0	.	.	3293.	.	.	7	17	91
12	331.4	1050.	6.47	34.0	.	610.0	.	.	3337.	.	.	7	31	91
14	327.7	725.	6.67	34.0	.	358.0	.	.	3389.	.	.	8	14	91
16	334.0	980.	4.81	.	46.0	504.0	105.800	45.600	3436.	.	.	8	28	91
18	332.9	1000.	3.59	.	109.0	510.0	.	.	3480.	.	.	9	11	91
20	331.4	438.	4.18	.	35.0	135.0	34.600	12.600	3532.	.	.	9	24	91
22	329.9	675.	3.57	.	115.0	268.0	57.000	19.000	3579.	.	.	10	9	91
24	332.9	1000.	3.13	.	207.0	370.0	53.800	18.800	3623.	.	.	10	23	91
26	310.8	680.	3.22	.	168.0	178.0	32.800	11.800	3653.	.	.	11	6	91
28	339.5	1200.	2.79	.	437.0	390.0	31.600	11.600	3675.	.	.	11	20	91
30	328.2	500.	3.20	.	112.0	97.0	11.750	4.650	3697.	.	.	12	4	91
32	319.3	625.	3.00	.	158.0	168.0	15.100	5.800	3719.	.	.	12	18	91
34	333.0	460.	3.24	.	110.0	93.0	11.000	4.400	3741.	.	.	1	2	92
36	329.1	440.	3.21	.	75.0	97.0	11.750	4.400	3763.	.	.	1	15	92
38	327.9	500.	3.30	.	106.0	91.0	11.300	4.050	3785.	.	.	1	29	92
40	330.6	420.	3.27	.	80.0	.	.	.	3807.	.	.	2	12	92
42	328.3	400.	3.35	.	86.0	93.0	14.000	3.800	3829.	590.	.	2	26	92
44	330.5	470.	3.28	.	86.0	98.0	9.000	3.800	3851.	700.	.	3	11	92
46	332.0	400.	3.22	.	92.0	95.0	7.400	3.000	3873.	625.	.	3	25	92
48	328.4	400.	3.21	.	92.0	90.0	6.000	2.600	3895.	670.	.	4	8	92
50	330.2	690.	3.03	.	144.0	148.0	7.800	3.000	60003.	1075.	.	4	22	92
52	302.1	500.	3.08	.	132.0	128.0	7.000	3.200	60014.	980.	.	5	6	92
54	328.6	500.	3.05	.	144.0	118.0	6.000	3.000	60025.	840.	.	5	20	92
56	320.2	500.	3.10	.	144.0	115.0	5.100	2.800	60036.	830.	.	6	3	92
58	321.4	420.	3.16	.	103.0	89.0	4.400	2.500	60047.	650.	.	6	17	92
60	328.0	430.	3.16	.	120.0	98.4	4.100	2.500	60059.	680.	.	7	1	92
62	329.4	590.	3.02	.	195.0	144.0	5.000	2.700	60070.	950.	.	7	15	92
64	332.7	340.	3.13	.	104.0	89.6	3.100	2.100	60081.	575.	.	7	29	92
66	323.0	420.	3.13	.	109.0	98.0	3.050	2.100	60092.	650.	.	8	12	92
68	334.1	440.	3.14	.	103.0	74.4	2.700	1.900	60104.	660.	.	8	26	92
70	331.7	500.	3.08	.	142.0	102.0	2.950	2.150	60115.	840.	.	9	9	92
72	329.8	340.	3.21	.	121.0	86.4	2.700	2.000	60126.	640.	.	9	23	92
74	331.8	460.	3.18	.	138.0	85.2	2.900	1.750	60137.	720.	.	10	7	92
76	336.9	310.	3.30	.	81.0	.	2.100	1.450	60148.	468.	.	10	21	92
78	334.0	325.	3.25	.	96.0	.	2.200	1.550	60160.	500.	.	11	4	92
80	334.8	365.	3.22	.	96.0	.	2.050	1.500	60171.	.	.	11	18	92

Table C2.8. Elevated Temperature Test drainage quality from Solid RK4, reactor 7.

Week	Volume (mL)	S.C.[1] (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
82	336.2	335.	3.22	.	108.0	.	2.000	1.550	60182.	475.	.	12	2	92
84	347.0	262.	3.37	.	72.0	.	1.900	1.550	60193.	485.	.	12	16	92
86	341.6	190.	3.55	.	66.0	.	1.600	1.300	60204.	610.	.	12	30	92
88	322.1	290.	3.27	.	150.0	96.4	2.300	2.100	60216.	500.	36.0	1	13	93
90	314.1	220.	3.29	.	144.0	79.2	1.850	1.950	60227.	470.	.	1	27	93
92	338.9	318.	3.40	.	84.0	61.6	1.700	1.600	60238.	458.	.	2	10	93
94	330.2	245.	3.35	.	72.0	50.0	1.200	1.100	60249.	.	.	2	23	93
96	334.0	250.	3.36	.	72.0	46.4	0.950	0.850	60260.	390.	.	3	10	93
98	327.5	240.	3.33	.	84.0	54.6	1.100	1.000	60272.	385.	.	3	24	93
100	330.0	290.	3.33	.	70.0	59.6	1.900	1.600	60283.	468.	.	4	7	93
102	330.6	262.	3.39	.	58.0	63.6	1.450	1.150	60294.	398.	.	4	21	93
104	327.9	271.	3.30	.	72.0	60.0	1.500	1.150	60305.	475.	.	5	5	93
106	325.7	235.	3.31	.	67.5	52.0	1.350	1.000	60317.	425.	.	5	19	93
108	328.8	195.	3.51	.	60.0	51.0	1.450	0.950	60328.	110.	32.0	6	2	93
110	326.7	210.	3.36	.	70.0	60.6	1.600	1.200	60339.	410.	.	6	16	93
112	325.6	295.	3.30	.	70.0	64.0	1.550	1.100	60350.	490.	.	6	30	93
114	327.3	325.	3.30	.	72.0	71.2	1.500	1.100	60362.	500.	.	7	14	93
116	334.8	320.	3.30	.	82.0	75.6	1.700	1.200	60373.	467.	.	7	28	93
118	327.5	315.	3.27	.	85.0	74.0	1.500	1.150	60385.	480.	.	8	11	93
120	327.4	310.	3.35	.	75.0	56.8	1.400	0.950	60397.	490.	.	8	25	93
122	325.0	310.	3.33	.	65.0	60.8	1.700	1.900	60408.	475.	36.0	9	8	93
124	332.9	285.	3.33	.	62.0	64.8	1.350	1.000	60419.	415.	.	9	22	93
126	332.1	200.	3.30	.	60.0	72.0	1.550	1.100	60430.	500.	.	10	6	93
128	329.8	500.	3.05	.	150.0	126.0	2.050	1.500	60443.	800.	.	10	20	93
130	331.2	380.	3.18	.	85.0	95.2	1.250	1.200	60454.	650.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.9. Elevated Temperature Test drainage quality from Solid TL1, reactor 11.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	525.	8.26	.	.	238.0	103.000	11.100	.	.	.	4	30	91
0	.	165.	.	.	.	.	.	.	.	.	.	5	1	91
0	.	65.	.	.	.	7.0	8.370	0.874	.	.	.	5	2	91
2	350.0	102.	7.50	34.0	.	13.2	14.700	0.850	3066.	.	.	5	15	91
4	355.8	98.	7.70	31.0	.	9.2	.	.	3110.	.	.	5	29	91
6	353.6	91.	7.60	26.0	.	9.4	12.550	0.600	3154.	.	.	6	12	91
8	351.4	82.	7.60	26.0	.	7.7	12.300	0.300	3206.	.	.	6	26	91
10	347.2	130.	7.76	26.0	.	14.8	.	.	3253.	.	.	7	10	91
12	346.0	134.	7.65	16.0	.	16.0	.	.	3297.	.	.	7	24	91
14	348.8	191.	7.46	26.0	.	39.4	.	.	3349.	.	.	8	7	91
16	350.1	210.	7.40	30.0	.	47.2	33.600	1.200	3396.	.	.	8	21	91
18	349.4	182.	7.53	32.0	.	42.8	.	.	3440.	.	.	9	4	91
20	348.9	245.	7.46	32.0	.	52.5	35.800	1.400	3492.	.	.	9	18	91
22	349.5	270.	7.60	37.0	.	66.0	.	.	3536.	.	.	10	2	91
24	349.4	225.	7.42	37.0	.	24.3	35.800	0.800	3583.	.	.	10	16	91
26	347.7	150.	7.37	28.0	.	29.0	24.000	1.000	3627.	.	.	10	30	91
28	354.6	220.	7.41	37.0	.	50.8	37.400	0.800	3655.	.	.	11	13	91
30	348.6	200.	7.44	.	.	38.8	33.000	1.000	3677.	.	.	11	27	91
32	353.6	212.	7.21	35.0	.	51.2	33.200	0.600	3699.	.	.	12	11	91
34	353.4	220.	7.39	.	.	67.2	38.000	0.600	3721.	.	.	12	26	91
36	350.5	135.	7.33	25.0	.	25.4	22.000	0.600	3743.	.	.	1	8	92
38	351.5	220.	7.11	28.0	.	49.6	30.400	0.600	3765.	.	.	1	22	92
40	350.5	160.	7.23	9.0	.	46.6	28.000	0.400	3787.	.	.	2	5	92
41	349.1	82.	7.28	28.0	.	16.6	16.000	0.600	3809.	125.	.	2	12	92
43	345.0	240.	7.00	22.0	.	71.2	35.400	0.600	3831.	395.	.	2	26	92
45	347.8	272.	6.58	19.0	.	80.0	41.600	1.400	3853.	480.	.	3	11	92
47	348.9	105.	6.88	19.0	.	23.8	18.600	0.400	3875.	162.	.	3	25	92
49	343.8	215.	6.70	22.0	.	54.4	33.800	0.400	3897.	400.	.	4	8	92
51	348.8	230.	7.08	25.0	.	49.6	32.000	0.400	60005.	353.	.	4	22	92
53	331.2	120.	7.15	35.0	.	22.7	21.200	0.400	60016.	200.	.	5	6	92
55	336.9	115.	6.91	18.9	.	29.0	15.600	0.200	60027.	170.	.	5	20	92
57	342.4	90.	6.80	25.0	.	26.6	21.000	0.800	60038.	178.	.	6	3	92
59	345.7	122.	7.22	20.0	.	30.5	21.000	0.600	60049.	160.	.	6	17	92
61	343.2	135.	6.82	9.0	.	42.4	22.200	0.600	60061.	218.	.	7	1	92
63	344.0	140.	6.78	16.0	.	36.8	23.400	0.600	60072.	204.	.	7	15	92
65	343.3	100.	7.09	21.0	.	23.8	17.500	0.250	60083.	128.	.	7	29	92
67	330.5	80.	7.00	16.0	.	16.3	12.750	0.200	60094.	100.	.	8	12	92
69	348.5	115.	6.88	16.0	.	26.8	18.000	0.100	60106.	172.	.	8	26	92
71	344.1	200.	6.19	.	7.9	53.4	31.200	0.300	60117.	360.	.	9	9	92
73	341.2	125.	6.46	10.6	.	28.2	21.850	0.300	60128.	202.	.	9	23	92
75	343.5	110.	6.67	5.0	.	18.4	18.100	0.150	60139.	152.	.	10	7	92
77	340.9	115.	6.55	16.0	.	.	19.650	0.250	60150.	163.	.	10	21	92
79	342.9	135.	5.85	.	3.0	.	24.600	0.250	60162.	215.	.	11	4	92

Table C2.10. Elevated Temperature Test drainage quality from Solid TL1, reactor 11.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
81	347.1	100.	6.21	.	3.0	.	19.550	0.250	60173.	.	.	11	18	92
83	348.5	143.	5.65	.	16.0	.	26.100	0.250	60184.	230.	.	12	2	92
85	357.9	95.	6.29	.	6.0	.	17.250	0.200	60195.	152.	.	12	16	92
87	347.6	82.	6.31	.	13.0	.	15.100	0.200	60206.	123.	.	12	30	92
89	349.1	98.	5.98	.	3.0	13.6	18.200	0.200	60218.	140.	.	1	13	93
91	344.8	115.	5.91	.	3.0	24.5	22.800	0.250	60229.	200.	.	1	27	93
93	347.1	75.	6.48	13.0	.	15.2	14.150	0.200	60240.	150.	.	2	10	93
95	334.0	82.	6.91	16.0	.	13.6	13.150	0.150	60251.	120.	.	2	23	93
97	338.5	92.	6.79	11.0	.	19.4	15.250	0.150	60262.	150.	.	3	10	93
99	344.0	82.	7.27	11.0	.	16.8	13.750	0.250	60274.	125.	.	3	24	93
101	333.4	90.	6.67	10.0	.	20.2	15.550	0.200	60285.	118.	.	4	7	93
103	338.3	90.	6.58	12.0	.	20.6	15.550	0.200	60296.	131.	.	4	21	93
105	338.9	77.	7.45	12.0	.	17.5	13.150	0.200	60307.	110.	.	5	5	93
107	338.2	80.	6.82	12.5	.	18.9	14.600	0.200	60319.	130.	.	5	19	93
109	338.3	90.	6.92	7.5	.	24.2	16.900	0.200	60330.	140.	.	6	2	93
111	338.2	95.	6.72	10.0	.	25.6	16.900	0.200	60341.	155.	.	6	16	93
113	340.8	92.	6.64	10.0	.	23.5	16.300	0.200	60352.	135.	.	6	30	93
115	344.4	119.	6.43	10.0	.	30.0	18.550	0.250	60364.	180.	.	7	14	93
117	344.0	82.	7.04	12.0	.	18.5	13.450	<0.050	60375.	115.	.	7	28	93
119	338.0	75.	7.26	12.0	.	14.5	12.300	0.100	60387.	105.	.	8	11	93
121	336.2	120.	6.98	10.0	.	26.8	20.000	0.250	60399.	185.	.	8	25	93
123	336.1	82.	7.32	12.5	.	17.2	13.000	0.150	60410.	110.	.	9	8	93
125	338.9	88.	7.34	14.0	.	20.2	14.350	0.150	60421.	124.	.	9	22	93
127	341.6	75.	7.05	10.0	.	18.3	13.250	0.150	60432.	120.	.	10	6	93
129	338.7	160.	6.35	10.0	.	47.6	24.400	0.250	60445.	230.	.	10	20	93
131	333.3	120.	6.56	10.0	.	68.6	18.500	0.200	60456.	200.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.11. Elevated Temperature Test drainage quality from Solid TL2, reactor 13.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	520.	8.07	.	.	184.0	84.200	3.930	.	.	.	4	30	91
0	.	208.	.	.	.	.	.	.	.	.	.	5	1	91
0	.	112.	.	.	.	21.0	26.000	1.790	.	.	.	5	2	91
2	340.5	298.	7.98	51.0	.	58.0	50.400	2.600	3068.	.	.	5	15	91
4	341.5	332.	7.80	46.0	.	31.0	.	.	3112.	.	.	5	29	91
6	339.4	252.	7.96	45.0	.	31.0	34.600	3.200	3156.	.	.	6	12	91
8	343.5	214.	7.91	42.0	.	27.0	33.800	2.600	3208.	.	.	6	26	91
10	337.5	210.	7.98	37.0	.	26.0	.	.	3255.	.	.	7	10	91
12	341.7	248.	7.98	47.0	.	39.0	.	.	3299.	.	.	7	24	91
14	344.1	395.	7.94	68.0	.	97.0	.	.	3351.	.	.	8	7	91
16	338.7	500.	8.13	63.0	.	114.0	85.600	3.800	3398.	.	.	8	21	91
18	337.9	550.	7.96	76.0	.	168.0	.	.	3442.	.	.	9	4	91
20	340.9	875.	7.80	74.0	.	302.0	154.400	7.000	3494.	.	.	9	18	91
22	342.7	600.	7.86	71.0	.	178.0	.	.	3538.	.	.	10	2	91
24	338.1	475.	7.75	70.0	.	101.0	73.800	3.400	3585.	.	.	10	16	91
26	338.5	575.	7.55	71.0	.	108.0	116.000	7.000	3629.	.	.	10	30	91
28	344.9	500.	7.27	47.0	.	157.0	87.600	4.200	3656.	.	.	11	13	91
30	328.8	580.	6.64	38.0	.	157.0	99.600	5.600	3678.	.	.	11	27	91
32	335.4	330.	7.51	44.0	.	64.0	50.000	2.400	3700.	.	.	12	11	91
34	339.5	300.	7.33	.	.	82.0	48.800	3.000	3722.	.	.	12	26	91
36	338.0	250.	7.35	32.0	.	49.6	36.600	2.400	3744.	.	.	1	8	92
38	337.0	260.	7.31	25.0	.	54.4	33.600	2.000	3766.	.	.	1	22	92
40	334.8	240.	7.14	22.0	.	69.6	37.600	2.400	3788.	.	.	2	5	92
41	330.2	170.	7.15	18.0	.	44.6	26.600	2.000	3810.	258.	.	2	12	92
43	335.3	200.	6.85	10.0	.	75.2	36.000	2.800	3832.	438.	.	2	26	92
45	338.4	342.	6.19	10.0	.	110.0	44.400	3.800	3854.	510.	.	3	11	92
47	337.6	175.	6.41	9.0	.	52.6	25.600	2.000	3876.	285.	.	3	25	92
49	336.4	169.	6.19	.	17.0	47.6	22.800	1.800	3898.	270.	.	4	8	92
51	340.4	173.	6.39	6.3	.	49.4	21.200	1.600	60006.	260.	.	4	22	92
53	315.2	172.	5.89	.	46.0	55.6	25.200	2.200	60017.	325.	.	5	6	92
55	335.9	150.	5.91	.	37.0	45.2	20.400	2.000	60028.	219.	.	5	20	92
57	387.7	140.	5.86	.	30.0	37.0	19.000	2.000	60039.	198.	.	6	3	92
59	333.8	138.	5.55	.	43.0	42.6	17.800	1.800	60050.	210.	.	6	17	92
61	333.8	138.	5.52	.	37.0	42.0	16.800	1.800	60062.	195.	.	7	1	92
63	334.4	150.	5.18	.	43.0	39.8	17.600	1.800	60073.	211.	.	7	15	92
65	335.6	115.	5.61	.	29.0	33.6	14.350	1.500	60084.	161.	.	7	29	92
67	319.0	110.	5.72	.	43.0	31.5	13.600	1.350	60095.	165.	.	8	12	92
69	337.3	70.	5.35	.	34.0	33.0	13.900	1.300	60107.	191.	.	8	26	92
70	338.5	120.	5.51	.	19.0	28.0	12.300	1.250	60118.	176.	.	9	9	92
73	233.8	98.	5.50	.	34.0	27.7	11.250	1.200	60129.	152.	.	9	23	92
75	335.4	110.	5.31	.	30.0	29.6	12.550	1.200	60140.	164.	.	10	7	92
77	337.1	160.	4.86	.	42.0	.	15.900	1.550	60151.	210.	.	10	21	92
79	334.0	100.	5.33	.	33.0	.	11.350	1.200	60163.	146.	.	11	4	92

Table C2.12. Elevated Temperature Test drainage quality from Solid TL2, reactor 13.

Week	Volume (mL)	S.C.[1] (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
81	343.8	90.	5.37	.	24.0	.	11.700	1.250	60174.	.	.	11	18	92
83	339.1	95.	5.52	.	28.0	.	10.550	1.150	60185.	135.	.	12	2	92
85	351.2	82.	5.63	.	30.0	.	9.500	1.100	60196.	128.	.	12	16	92
87	341.0	100.	4.97	.	36.0	.	11.450	1.250	60207.	150.	.	12	30	92
89	335.2	85.	4.88	.	33.0	25.5	10.250	1.250	60219.	120.	.	1	13	93
91	343.5	80.	4.97	.	33.0	21.9	10.450	1.350	60230.	140.	.	1	27	93
93	343.2	75.	5.03	.	18.0	22.0	8.600	1.150	60241.	145.	.	2	10	93
95	343.3	80.	5.11	.	19.0	21.0	9.100	1.200	60252.	132.	.	2	23	93
97	341.6	88.	5.20	.	21.0	27.4	8.750	1.650	60263.	132.	.	3	10	93
99	332.4	80.	5.30	.	30.0	23.8	8.550	1.200	60275.	128.	.	3	24	93
101	330.4	82.	5.61	.	15.0	26.4	9.100	1.150	60286.	120.	.	4	7	93
103	334.0	82.	5.65	.	15.0	26.2	9.050	1.200	60297.	120.	.	4	21	93
105	329.7	87.	5.62	.	20.0	28.3	9.750	1.400	60308.	138.	.	5	5	93
107	335.1	75.	5.16	.	17.5	18.5	7.700	1.100	60320.	107.	.	5	19	93
109	333.9	78.	5.52	.	20.0	25.6	8.300	1.150	60331.	115.	.	6	2	93
111	329.6	78.	5.31	.	15.0	24.3	9.150	1.300	60342.	135.	.	6	16	93
113	332.1	75.	5.31	.	20.0	24.0	8.300	1.150	60353.	115.	.	6	30	93
115	338.0	89.	4.72	.	20.0	25.0	8.350	1.150	60365.	148.	.	7	14	93
117	341.5	74.	5.07	.	20.0	22.9	7.400	1.050	60376.	112.	.	7	28	93
119	331.5	80.	5.06	.	20.0	24.6	7.900	1.250	60388.	123.	.	8	11	93
121	336.1	85.	5.14	.	25.0	25.2	8.650	1.300	60400.	155.	.	8	25	93
123	339.8	92.	5.26	.	15.0	22.5	7.700	1.250	60411.	125.	.	9	8	93
125	335.2	65.	5.95	.	20.0	19.4	6.300	1.000	60422.	100.	.	9	22	93
127	338.5	63.	5.76	.	90.0	20.6	6.600	1.100	60433.	100.	.	10	6	93
129	337.3	68.	5.69	.	10.0	19.4	6.500	1.100	60446.	100.	.	10	20	93
131	334.0	63.	5.20	.	15.0	17.2	6.000	1.100	60457.	125.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.13. Elevated Temperature Test drainage quality from Solid TL3, reactor 15.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	1410.	7.38	.	.	900.0	205.000	89.200	.	.	.	4	29	91
0	.	170.	.	.	.	.	.	.	.	.	.	5	1	91
0	.	98.	.	.	.	9.0	13.100	3.360	.	.	.	5	2	91
2	343.5	610.	8.00	101.0	.	204.0	82.000	25.800	3070.	.	.	5	15	91
4	347.9	620.	8.00	103.0	.	176.0	.	.	3114.	.	.	5	29	91
6	346.1	428.	8.22	95.0	.	87.0	39.000	16.200	3158.	.	.	5	12	91
8	342.0	350.	8.21	92.0	.	63.0	35.800	13.400	3210.	.	.	6	26	91
10	360.8	400.	8.25	89.0	.	66.0	.	.	3257.	.	.	6	10	91
12	340.2	410.	8.15	89.0	.	73.0	.	.	3301.	.	.	7	24	91
14	336.5	500.	8.05	97.0	.	117.0	.	.	3353.	.	.	7	7	91
16	341.1	495.	8.17	92.0	.	97.0	51.600	18.800	3400.	.	.	8	21	91
18	340.4	500.	8.15	92.0	.	112.0	.	.	3444.	.	.	8	4	91
20	342.2	425.	8.05	84.0	.	76.0	39.600	16.600	3496.	.	.	9	18	91
22	336.1	350.	8.16	79.0	.	56.4	.	.	3540.	.	.	10	2	91
24	341.3	302.	7.86	71.0	.	144.0	91.400	4.200	3587.	.	.	10	16	91
26	347.4	215.	7.72	47.0	.	40.6	21.800	9.200	3631.	.	.	10	30	91
28	343.7	245.	7.98	68.0	.	35.6	25.200	11.000	3657.	.	.	11	13	91
30	338.6	330.	7.83	113.0	.	28.5	34.800	15.000	3679.	.	.	11	27	91
32	344.7	208.	7.85	82.0	.	19.6	22.200	9.000	3701.	.	.	12	11	91
34	344.0	187.	7.87	.	.	22.2	20.200	8.600	3723.	.	.	12	26	91
36	342.4	178.	7.78	57.0	.	19.2	16.850	7.350	3745.	.	.	1	8	92
38	340.0	180.	7.94	63.0	.	21.4	17.950	7.950	3767.	.	.	1	22	92
40	339.9	150.	7.85	63.0	.	17.2	16.500	7.500	3789.	.	.	2	5	92
41	341.0	130.	7.94	63.0	.	13.6	15.800	6.200	3811.	185.	.	2	12	92
43	340.9	162.	7.76	63.0	.	19.4	17.600	8.000	3833.	230.	.	2	26	92
45	341.5	220.	7.93	69.0	.	33.8	20.400	16.000	3855.	320.	.	3	11	92
47	342.4	170.	7.56	63.0	.	24.6	19.000	8.800	3877.	260.	.	3	25	92
49	338.0	155.	7.35	63.0	.	15.2	15.600	6.800	3899.	212.	.	4	8	92
51	340.2	188.	7.62	57.0	.	42.0	17.400	7.400	60007.	260.	.	4	22	92
53	323.8	180.	7.68	46.0	.	20.4	19.600	9.200	60018.	280.	.	5	6	92
55	336.6	140.	7.66	63.0	.	12.3	17.200	7.800	60029.	182.	.	5	20	92
57	332.6	150.	7.46	63.0	.	13.6	15.150	7.600	60040.	204.	.	6	3	92
59	336.9	160.	7.92	52.0	.	17.3	17.600	8.200	60051.	210.	.	6	17	92
61	336.2	135.	7.74	52.0	.	12.8	15.400	7.200	60063.	182.	.	7	1	92
63	337.3	150.	7.82	72.0	.	19.8	21.200	10.400	60074.	282.	.	7	15	92
65	334.5	130.	7.93	56.0	.	8.0	14.100	7.650	60085.	162.	.	7	29	92
67	323.1	130.	7.80	42.0	.	8.4	14.050	7.500	60096.	170.	.	8	12	92
69	338.3	105.	7.64	48.0	.	9.1	15.250	8.250	60108.	204.	.	8	26	92
71	338.5	142.	7.50	50.0	.	9.2	13.450	7.050	60119.	196.	.	9	9	92
73	334.8	100.	7.68	40.0	.	7.8	13.100	7.100	60130.	178.	.	9	23	92
75	331.5	270.	7.70	100.0	.	8.2	32.550	16.100	60141.	489.	.	10	7	92
77	332.4	175.	7.49	69.0	.	.	19.450	10.300	60152.	262.	.	10	21	92
79	332.3	140.	7.77	58.0	.	.	15.300	8.050	60164.	192.	.	11	4	92

Table C2.14. Elevated Temperature Test drainage quality from Solid TL3, reactor 15.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
81	338.2	100.	7.59	54.0	.	.	15.600	8.200	60175.	.	.	11	18	92
83	337.3	120.	7.45	48.0	.	.	12.750	7.050	60186.	158.	.	12	2	92
85	349.8	140.	7.45	54.0	.	.	16.350	8.350	60197.	240.	.	12	16	92
87	338.8	220.	7.38	52.0	.	.	26.700	12.950	60208.	330.	.	12	30	92
89	340.9	320.	7.20	86.0	.	4.2	39.000	19.750	60220.	505.	.	1	13	93
91	336.1	200.	7.20	75.0	.	6.8	29.050	14.000	60231.	410.	.	1	27	93
93	337.6	130.	7.63	48.0	.	4.6	14.650	7.800	60242.	220.	.	2	10	93
95	336.1	115.	7.72	60.0	.	4.2	12.000	6.400	60253.	162.	.	2	23	93
97	335.3	92.	7.73	45.0	.	5.4	10.800	5.550	60264.	145.	.	3	10	93
99	331.4	100.	7.84	40.0	.	5.4	11.050	6.000	60276.	133.	.	3	24	93
101	331.2	105.	7.84	45.0	.	4.9	11.950	5.950	60287.	139.	.	4	7	93
103	337.8	94.	7.65	42.0	.	4.3	10.100	5.250	60298.	139.	.	4	21	93
105	327.9	103.	8.08	48.0	.	5.0	11.050	5.500	60309.	138.	.	5	5	93
107	335.1	90.	7.77	45.0	.	4.8	10.450	5.350	60321.	135.	.	5	19	93
109	331.5	100.	7.91	42.5	.	4.4	10.150	5.300	60332.	130.	.	6	2	93
111	333.3	90.	8.03	40.0	.	4.9	10.700	5.600	60343.	142.	.	6	16	93
113	329.2	80.	8.08	40.0	.	5.4	10.050	5.500	60354.	120.	.	6	30	93
115	334.0	104.	7.99	42.0	.	9.4	10.250	5.550	60366.	145.	.	7	14	93
117	336.6	93.	7.95	40.0	.	6.5	9.750	6.350	60377.	121.	.	7	28	93
119	336.1	98.	8.03	43.0	.	5.4	10.000	6.750	60389.	125.	.	8	11	93
121	326.5	110.	8.02	35.0	.	5.4	10.300	6.150	60401.	140.	.	8	25	93
123	324.4	94.	7.91	30.0	.	4.3	9.200	6.100	60412.	110.	.	9	8	93
125	335.5	95.	8.00	44.0	.	5.0	8.950	5.250	60423.	120.	.	9	22	93
127	322.9	100.	7.64	35.0	.	5.0	9.350	2.600	60434.	130.	.	10	6	93
129	337.8	70.	7.64	30.0	.	5.0	8.250	5.250	60447.	125.	.	10	20	93
131	327.3	90.	7.92	40.0	.	4.7	7.600	5.100	60458.	125.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.15. Elevated Temperature Test drainage quality from Solid TL4, reactor 17.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	980.	7.88	.	.	530.0	210.000	4.800	.	.	.	4	30	91
0	.	159.	.	.	.	.	.	.	.	.	.	5	1	91
0	.	46.	.	.	.	10.0	7.270	0.403	.	.	.	5	2	91
2	337.2	215.	7.95	43.0	.	52.0	38.000	1.000	3072.	.	.	5	15	91
4	342.8	135.	7.40	26.0	.	27.0	18.250	0.350	3116.	.	.	5	29	91
6	335.7	94.	7.30	18.0	.	17.0	12.800	0.500	3160.	.	.	6	12	91
8	337.8	70.	7.15	23.0	.	12.0	9.350	0.550	3212.	.	.	6	26	91
10	344.6	60.	7.60	10.0	.	8.0	.	.	3259.	.	.	7	10	91
12	322.8	82.	7.38	15.0	.	13.0	10.350	1.100	3303.	.	.	7	24	91
14	335.4	75.	7.64	13.0	.	15.0	.	.	3355.	.	.	8	7	91
16	334.8	69.	7.09	13.0	.	7.6	7.650	1.850	3402.	.	.	8	21	91
18	342.1	75.	7.50	16.0	.	9.6	.	.	3446.	.	.	9	4	91
20	347.0	68.	7.29	13.0	.	6.0	6.450	1.800	3498.	.	.	9	18	91
22	333.3	70.	7.12	11.0	.	.	.	.	3542.	.	.	10	2	91
24	340.5	52.	7.19	12.0	.	4.4	4.540	1.450	3589.	.	.	10	16	91
26	329.1	48.	7.25	5.0	.	3.6	3.900	1.250	3633.	.	.	10	30	91
28	329.4	44.	7.00	5.3	.	4.0	3.550	1.250	3658.	.	.	11	13	91
30	335.7	88.	5.98	.	11.5	4.9	8.250	3.000	3680.	.	.	11	27	91
32	342.1	61.	6.80	6.3	.	10.7	5.100	2.000	3702.	.	.	12	11	91
34	333.3	122.	6.65	.	.	5.6	10.500	4.500	3724.	.	.	12	26	91
36	340.1	105.	4.75	.	52.0	5.3	8.250	3.900	3746.	.	.	1	8	92
38	340.0	110.	4.61	.	40.0	4.6	6.950	3.400	3768.	.	.	1	22	92
40	339.1	58.	4.81	.	23.0	4.2	4.750	2.450	3790.	.	.	2	5	92
41	335.2	37.	5.29	.	11.5	4.0	5.200	2.400	3812.	72.	103.0	2	12	92
43	340.4	51.	5.30	.	9.4	8.6	5.800	2.400	3834.	115.	129.0	2	26	92
45	334.3	88.	4.91	.	19.0	14.4	4.600	3.600	3856.	170.	149.0	3	11	92
47	337.0	58.	5.14	.	14.0	10.9	4.800	2.400	3878.	112.	85.0	3	25	92
49	338.9	51.	5.26	.	17.0	6.8	4.200	2.000	3900.	98.	60.0	4	8	92
51	339.0	52.	5.42	.	10.0	7.6	5.400	2.200	60008.	94.	109.0	4	22	92
53	310.8	34.	5.95	.	10.0	7.0	5.000	2.200	60019.	90.	102.0	5	6	92
55	334.9	37.	6.21	.	2.5	5.4	3.800	1.900	60030.	63.	106.0	5	20	92
57	327.6	42.	5.82	.	3.0	6.6	4.000	2.000	60041.	78.	132.0	6	3	92
59	335.4	39.	5.85	.	3.0	7.8	3.300	1.800	60052.	72.	150.0	6	17	92
61	335.1	46.	5.25	.	3.0	7.0	3.600	1.900	60064.	85.	106.0	7	1	92
63	337.9	65.	4.97	.	11.0	11.9	4.900	2.700	60075.	126.	101.0	7	15	92
65	335.1	45.	5.26	.	12.0	8.2	2.950	1.800	60086.	82.	121.0	7	29	92
67	323.4	37.	5.43	.	11.5	7.3	2.200	1.400	60097.	60.	107.0	8	12	92
69	333.7	50.	5.02	.	5.7	7.7	2.650	1.700	60109.	88.	71.0	8	26	92
71	337.5	51.	5.45	.	5.7	11.5	2.600	1.700	60120.	88.	53.0	9	9	92
73	321.8	43.	5.57	.	6.0	12.3	2.350	1.700	60131.	80.	15.0	9	23	92
75	329.6	60.	5.74	.	9.0	15.6	3.400	1.950	60142.	87.	27.0	10	7	92
77	329.5	60.	5.56	.	6.0	.	3.700	2.250	60153.	94.	.	10	21	92
79	336.7	55.	5.33	.	9.0	.	3.350	2.050	60165.	93.	.	11	4	92

Table C2.16. Elevated Temperature Test drainage quality from Solid TL4, reactor 17.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
81	331.7	60.	5.22	.	3.0	.	3.650	2.150	60176.	.	43.0	11	18	92
83	337.3	65.	5.02	.	12.0	.	3.650	2.150	60187.	110.	93.0	12	2	92
85	340.6	72.	4.81	.	24.0	.	3.850	2.350	60198.	130.	85.0	12	16	92
87	331.0	85.	4.59	.	18.0	.	4.250	2.400	60209.	135.	31.0	12	30	92
89	336.0	95.	4.31	.	24.0	29.0	4.200	2.600	60221.	145.	.	1	13	93
91	335.9	95.	4.14	.	42.0	33.1	4.200	2.700	60232.	200.	.	1	27	93
93	330.5	130.	4.05	.	28.0	36.5	3.600	2.150	60243.	230.	.	2	10	93
95	329.6	110.	4.00	.	30.0	35.3	3.350	2.050	60254.	220.	15.0	2	23	93
97	332.3	155.	3.83	.	42.0	36.0	3.250	2.000	60265.	268.	.	3	10	93
99	331.1	130.	3.78	.	54.0	32.4	2.750	1.650	60277.	245.	12.0	3	24	93
101	331.9	135.	3.74	.	35.0	38.0	2.700	1.450	60288.	245.	.	4	7	93
103	333.2	168.	3.57	.	40.0	42.6	2.500	1.300	60299.	291.	.	4	21	93
105	330.7	174.	3.55	.	42.0	43.2	2.350	1.150	60310.	320.	.	5	5	93
107	333.9	123.	3.58	.	35.0	32.4	1.900	0.950	60322.	250.	.	5	19	93
109	331.1	190.	3.50	.	35.0	38.8	1.600	0.800	60333.	245.	.	6	2	93
111	328.9	150.	3.47	.	35.0	37.0	1.400	0.700	60344.	300.	.	6	16	93
113	329.3	115.	3.51	.	37.0	39.0	1.400	0.800	60355.	270.	.	6	30	93
115	326.3	215.	3.43	.	52.0	44.2	1.100	0.500	60367.	340.	.	7	14	93
117	338.1	172.	3.49	.	42.0	31.6	0.900	0.400	60378.	270.	.	7	28	93
119	340.1	185.	3.41	.	35.0	36.4	0.850	0.350	60390.	300.	.	8	11	93
121	339.1	285.	3.35	.	50.0	44.0	0.800	0.350	60402.	490.	.	8	25	93
123	329.5	325.	3.27	.	60.0	52.8	0.900	0.550	60413.	500.	.	9	8	93
125	336.6	225.	3.39	.	52.0	33.2	0.550	0.300	60424.	348.	.	9	22	93
127	332.7	190.	3.48	.	35.0	31.2	0.500	0.300	60435.	350.	.	10	6	93
129	334.9	430.	3.13	.	125.0	84.0	0.700	0.350	60448.	600.	.	10	20	93
131	332.0	180.	3.44	.	35.0	31.2	0.300	0.200	60459.	430.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.17. Elevated Temperature Test drainage quality from Solid TL5, reactor 19.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	1920.	6.45	.	.	1250.0	592.000	88.800	.	.	.	4	29	91
0	.	300.	.	.	.	.	.	.	.	.	.	5	1	91
0	.	87.	.	.	.	22.0	10.200	1.700	.	.	.	5	2	91
2	342.0	650.	3.85	.	104.0	328.0	62.400	22.200	3074.	.	.	5	15	91
4	346.5	1200.	3.10	.	339.0	400.0	.	.	3118.	.	.	5	29	91
6	342.9	800.	3.30	.	201.0	338.0	18.600	35.600	3162.	.	.	6	12	91
8	337.5	715.	3.27	.	201.0	344.0	10.050	36.650	3214.	.	.	6	26	91
10	339.0	1200.	2.91	.	488.0	500.0	.	.	3261.	.	.	7	10	91
12	333.3	1310.	2.89	.	604.0	565.0	.	.	3305.	.	.	7	24	91
14	338.8	1900.	2.56	.	1173.0	1050.0	.	.	3357.	.	.	8	7	91
16	342.3	1925.	2.61	.	937.0	940.0	4.850	25.150	3404.	.	.	8	21	91
18	344.5	2150.	2.63	.	1276.0	1230.0	.	.	3448.	.	.	9	4	91
20	343.5	1880.	2.60	.	834.0	760.0	3.850	17.400	3500.	.	.	9	18	91
22	347.7	1600.	2.62	.	592.0	1140.0	.	.	3544.	.	.	10	2	91
24	342.6	1075.	2.78	.	331.0	254.0	2.550	9.250	3591.	.	.	10	16	91
26	345.1	1000.	2.72	.	365.0	312.0	2.850	9.000	3635.	.	.	10	30	91
28	334.2	900.	2.72	.	535.0	356.0	6.500	8.350	3659.	.	.	11	13	91
30	340.1	500.	3.04	.	221.0	128.0	1.800	7.050	3681.	.	.	11	27	91
32	343.7	418.	3.19	.	173.0	74.0	0.800	4.150	3703.	.	.	12	11	91
34	345.4	305.	3.01	.	.	59.0	0.650	3.650	3725.	.	.	12	26	91
36	344.9	378.	3.24	.	132.0	78.0	0.650	4.000	3747.	.	.	1	8	92
38	340.8	800.	2.91	.	252.0	148.0	0.750	4.450	3769.	.	.	1	22	92
40	344.8	322.	3.16	.	126.0	75.0	0.600	3.100	3791.	.	.	2	5	92
41	335.4	350.	3.19	.	80.0	72.0	2.800	2.400	3813.	580.	.	2	12	92
43	339.7	500.	3.01	.	158.0	114.0	2.600	3.000	3835.	1020.	.	2	26	92
45	341.0	1080.	2.80	.	431.0	302.0	2.600	4.000	3857.	2300.	.	3	11	92
47	336.5	450.	3.07	.	167.0	81.0	1.200	1.800	3879.	780.	.	3	25	92
49	341.0	500.	3.04	.	138.0	50.0	1.200	1.800	3901.	850.	.	4	8	92
51	339.2	500.	3.13	.	109.0	70.0	1.800	1.800	60009.	750.	.	4	22	92
53	318.9	520.	2.99	.	150.0	88.0	2.200	2.200	60020.	1000.	.	5	6	92
55	336.7	470.	3.01	.	144.0	78.0	1.100	1.600	60031.	730.	.	5	20	92
57	331.5	600.	2.95	.	144.0	110.0	1.400	1.700	60042.	1080.	.	6	3	92
59	336.9	450.	3.10	.	115.0	88.0	1.100	1.700	60053.	720.	.	6	17	92
61	337.4	425.	3.13	.	98.0	81.6	1.300	1.400	60065.	680.	.	7	1	92
63	337.0	490.	3.06	.	138.0	100.0	1.200	1.400	60076.	750.	.	7	15	92
65	335.8	295.	3.13	.	89.0	73.6	0.500	1.100	60087.	500.	.	7	29	92
67	322.1	455.	3.02	.	103.0	108.0	0.450	1.100	60098.	900.	.	8	12	92
69	337.6	420.	3.09	.	86.0	80.4	0.300	1.050	60110.	700.	.	8	26	92
71	337.2	425.	3.06	.	79.0	70.0	0.300	1.000	60121.	760.	.	9	9	92
73	334.7	200.	3.08	.	63.0	77.2	0.300	0.950	60132.	710.	.	9	23	92
75	334.2	870.	2.87	.	186.0	178.0	0.500	1.100	60143.	1370.	.	10	7	92
77	336.9	720.	2.86	.	198.0	.	0.350	0.950	60154.	1250.	.	10	21	92
79	335.2	470.	3.05	.	108.0	.	0.250	0.750	60166.	760.	.	11	4	92

Table C2.18. Elevated Temperature Test drainage quality from Solid TL5, reactor 19.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
81	336.8	452.	3.06	.	96.0	.	0.400	0.750	60177.	.	.	11	18	92
83	343.7	410.	3.07	.	99.0	.	0.300	0.700	60188.	525.	.	12	2	92
85	351.1	400.	3.04	.	102.0	.	0.250	0.700	60199.	750.	.	12	16	92
87	341.6	350.	3.07	.	90.0	.	0.400	0.700	60210.	500.	.	12	30	92
89	332.3	400.	2.97	.	126.0	94.0	0.200	0.800	60222.	720.	.	1	13	93
91	329.6	420.	2.95	.	150.0	89.0	0.150	0.800	60233.	820.	.	1	27	93
93	333.1	300.	3.11	.	90.0	65.7	0.300	0.650	60244.	600.	.	2	10	93
95	337.0	330.	3.09	.	60.0	63.2	0.200	0.750	60255.	700.	.	2	23	93
97	329.1	435.	3.07	.	90.0	63.2	0.200	0.700	60266.	720.	.	3	10	93
99	334.8	320.	3.10	.	90.0	67.2	0.250	0.650	60278.	610.	.	3	24	93
101	331.7	380.	3.06	.	80.0	68.8	0.350	0.650	60289.	600.	.	4	7	93
103	332.5	490.	2.99	.	115.0	95.6	0.350	0.700	60300.	740.	.	4	21	93
105	329.9	395.	3.01	.	92.0	68.0	0.400	0.650	60311.	700.	.	5	5	93
107	332.7	320.	3.08	.	82.0	61.0	0.400	0.600	60323.	500.	.	5	19	93
109	329.7	580.	2.90	.	120.0	113.0	0.650	1.900	60334.	575.	.	6	2	93
111	330.1	390.	2.99	.	95.0	92.0	0.300	0.600	60345.	720.	.	6	16	93
113	332.7	450.	2.95	.	120.0	113.0	0.300	0.700	60356.	650.	.	6	30	93
115	336.5	520.	2.94	.	150.0	142.0	0.400	0.650	60368.	850.	.	7	14	93
117	341.6	368.	3.13	.	110.0	70.0	0.350	0.450	60379.	540.	.	7	28	93
119	339.8	330.	3.13	.	80.0	60.8	0.300	0.750	60391.	480.	.	8	11	93
121	332.7	470.	3.07	.	80.0	74.0	0.300	0.600	60403.	780.	.	8	25	93
123	333.9	610.	2.93	.	125.0	115.0	0.350	0.600	60414.	1000.	.	9	8	93
125	341.9	620.	2.88	.	130.0	105.0	0.200	0.550	60425.	973.	.	9	22	93
127	336.9	500.	2.94	.	100.0	108.0	0.200	0.600	60436.	1000.	.	10	6	93
129	334.9	990.	2.69	.	260.0	225.0	0.250	0.750	60449.	1700.	.	10	20	93
131	333.5	610.	2.82	.	80.0	132.0	0.200	0.550	60460.	1250.	.	11	3	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.19. Elevated Temperature Test drainage quality from Solid TL6, reactor 21.

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (µS/cm)	Decant (mL)	Month	Day	Year
0	.	4775.	6.63	.	.	2120.0	1200.000	96.500	.	.	.	4	29	91
0	.	2450.	.	.	.	.	.	.	.	.	.	5	1	91
0	.	1900.	.	.	.	1230.0	620.000	0.938	.	.	.	5	2	91
2	346.3	2000.	8.00	128.0	.	1080.0	560.000	8.800	3076.	.	.	5	15	91
4	352.2	1625.	7.48	125.0	.	660.0	.	.	3120.	.	.	5	29	91
6	351.8	810.	7.74	113.0	.	295.0	185.400	4.200	3164.	.	.	6	12	91
8	343.7	625.	7.72	102.0	.	233.0	133.000	4.200	3216.	.	.	6	26	91
10	343.0	750.	7.69	100.0	.	224.0	.	.	3263.	.	.	7	10	91
12	346.8	800.	6.70	100.0	.	292.0	.	.	3307.	.	.	7	24	91
14	344.1	725.	7.57	102.0	.	254.0	.	.	3359.	.	.	8	7	91
16	340.2	625.	7.50	100.0	.	226.0	143.400	3.600	3406.	.	.	8	21	91
18	345.6	790.	7.41	100.0	.	264.0	.	.	3450.	.	.	9	4	91
20	348.8	575.	7.64	89.0	.	156.0	94.800	3.200	3502.	.	.	9	18	91
22	346.8	800.	7.66	105.0	.	246.0	.	.	3546.	.	.	10	2	91
24	345.1	380.	7.44	50.0	.	117.0	57.400	1.800	3593.	.	.	10	16	91
26	347.8	445.	7.68	74.0	.	100.0	69.200	2.400	3637.	.	.	10	30	91
28	337.9	500.	7.60	49.0	.	128.0	88.600	2.800	3660.	.	.	11	13	91
30	341.7	600.	7.56	132.0	.	118.0	114.800	4.000	3682.	.	.	11	27	91
32	350.1	378.	7.71	104.0	.	66.0	62.000	1.800	3704.	.	.	12	11	91
34	349.1	390.	7.61	.	.	94.0	71.800	1.600	3726.	.	.	12	26	91
36	346.3	400.	7.54	63.0	.	87.0	59.600	1.600	3748.	.	.	1	8	92
38	347.0	450.	7.61	69.0	.	97.0	67.000	1.800	3770.	.	.	1	22	92
40	348.5	270.	7.69	69.0	.	84.0	55.600	1.600	3792.	.	.	2	5	92
41	339.0	235.	7.73	63.0	.	60.8	42.200	2.400	3814.	363.	.	2	12	92
43	341.3	345.	7.56	63.0	.	80.5	56.000	1.800	3836.	500.	.	2	26	92
45	344.3	413.	7.48	69.0	.	98.0	65.200	2.000	3858.	550.	.	3	11	92
47	342.8	280.	7.13	60.0	.	60.5	50.000	1.600	3880.	445.	.	3	25	92
49	342.2	255.	7.02	63.0	.	55.5	52.400	1.400	3902.	500.	.	4	8	92
51	348.4	359.	7.25	63.0	.	57.0	55.600	1.800	60010.	500.	.	4	22	92
53	315.3	320.	7.20	63.0	.	53.5	58.400	2.000	60021.	520.	.	5	6	92
55	340.3	235.	7.31	66.0	.	60.8	68.800	2.200	60032.	480.	.	5	20	92
57	337.4	300.	7.24	69.0	.	53.0	58.600	2.400	60043.	495.	.	6	3	92
59	345.9	260.	7.50	57.0	.	53.4	47.200	2.000	60054.	400.	.	6	17	92
61	342.6	245.	7.43	52.0	.	51.6	44.000	1.800	60066.	378.	.	7	1	92
63	344.2	320.	7.42	67.0	.	80.0	70.800	2.600	60077.	610.	.	7	15	92
65	344.2	260.	7.51	56.0	.	63.2	53.500	1.900	60088.	427.	.	7	29	92
67	333.1	220.	7.21	42.0	.	42.6	37.700	1.300	60099.	332.	.	8	12	92
69	344.3	230.	7.42	37.0	.	46.4	42.500	1.350	60111.	368.	.	8	26	92
71	348.1	230.	7.20	42.0	.	46.8	36.200	1.200	60122.	358.	.	9	9	92
73	342.3	170.	7.37	42.0	.	45.6	35.550	1.050	60133.	315.	.	9	23	92
75	342.9	230.	7.38	42.0	.	46.4	38.500	1.250	60144.	342.	.	10	7	92
77	344.9	270.	7.31	48.0	.	.	46.600	1.650	60155.	397.	.	10	21	92
79	342.7	178.	7.39	40.0	.	.	32.250	1.100	60167.	264.	.	11	4	92

Table C2.20. Elevated Temperature Test drainage quality from Solid TL6, reactor 21.

Week	Volume (mL)	S.C.[1] (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Sample	S.C. (μS/cm)	Decant (mL)	Month	Day	Year
81	342.7	158.	7.27	32.0	.	.	28.800	1.000	60178.	.	.	11	18	92
83	348.5	165.	7.33	37.0	.	.	28.500	0.950	60189.	230.	.	12	2	92
85	355.0	175.	7.31	35.0	.	.	30.150	1.050	60200.	285.	.	12	16	92
87	347.0	175.	7.32	32.0	.	.	32.300	1.600	60211.	255.	.	12	30	92
89	342.7	130.	7.43	38.0	.	35.0	30.700	1.150	60223.	220.	.	1	13	93
91	339.9	200.	7.25	43.0	.	50.0	43.100	1.650	60234.	400.	.	1	27	93
93	343.4	150.	7.38	27.0	.	41.0	29.400	1.150	60245.	305.	.	2	10	93
95	346.2	150.	7.51	28.0	.	29.2	27.150	1.100	60256.	250.	.	2	23	93
97	342.4	160.	7.54	21.0	.	34.2	27.400	1.100	60267.	250.	.	3	10	93
99	345.9	145.	7.46	34.0	.	29.4	26.600	1.050	60279.	230.	.	3	24	93
101	343.7	160.	7.44	35.0	.	32.4	31.500	1.350	60290.	275.	.	4	7	93
103	339.4	152.	7.33	32.0	.	28.8	27.150	1.250	60301.	226.	.	4	21	93
105	339.8	137.	7.62	32.0	.	26.4	23.250	1.150	60312.	200.	.	5	5	93
107	341.8	110.	7.58	27.5	.	23.4	21.250	0.950	60324.	175.	.	5	19	93
109	338.5	130.	7.62	30.0	.	27.6	22.800	0.950	60335.	192.	.	6	2	93
111	347.0	120.	7.49	25.0	.	29.6	23.050	1.300	60346.	200.	.	6	16	93
113	339.2	128.	7.65	30.0	.	29.8	22.750	1.050	60357.	192.	.	6	30	93
115	336.2	147.	7.49	30.0	.	36.6	24.400	1.100	60369.	210.	.	7	14	93
117	348.1	160.	7.42	22.0	.	43.2	27.750	1.350	60380.	247.	.	7	11	93
119	352.3	140.	7.51	25.0	.	37.6	24.400	1.400	60392.	220.	.	8	25	93
121	344.0	140.	7.57	22.0	.	34.6	20.400	1.300	60404.	250.	.	8	8	93
123	336.2	158.	7.40	30.0	.	37.6	24.450	1.450	60415.	228.	.	9	22	93
125	340.9	130.	7.56	22.0	.	29.0	19.450	1.150	60426.	190.	.	9	6	93
127	341.9	120.	7.48	25.0	.	31.0	20.350	1.250	60437.	190.	.	10	20	93
129	342.8	180.	7.38	22.0	.	54.8	29.800	2.050	60450.	350.	.	10	3	93
131	343.5	148.	7.44	24.0	.	35.6	21.300	1.650	60461.	250.	.	11	17	93

[1] Specific conductance was obtained as a composite (first column labelled S.C.). To evalaute rinising efficiency, a preliminary specific conductance was measured (second column labelled S.C.).

Table C2.21. Identification of anomalous concentrations based on concentration versus time plots for the Elevated Temperature Test (weeks 0 - 130/131).

Solid	Parameter	Sample Number	Concentration (mg/L)	Comments
RK1	calcium	60044	12.0	Data entry error; should have been 4.8
RK2	sulfate	3849	18.5	Trend was ~8; sample was rerun; new value was 12.5
	calcium	3673	9.9	Trend was ~3.5; sample was rerun; new value was 9.60; original value was used
TL3	calcium	60040	0.6	Trend was ~17; this concentration seemed inconsistent with conductance; sample was rerun; new value 15.15
	magnesium	60434	0.65	Data entry error; should have been 2.6
TL4	sulfate	3542	95.0	Trend was ~5; this concentration seemed inconsistent with conductance; not enough sample to rerun; sample was omitted
	sulfate	60448	125	Data entry error; should have been 84
TL5	calcium	60042	7.0	Data entry error; should have been 1.4

Table C3.0. Summary of cumulative mass release from the Elevated Temperature Test (130/131 weeks).

Solid	Sulfate (mg)	Calcium (mg)	Magnesium (mg)
RK1	649.738	113.556	97.703
RK2	190.650	78.656	23.364
RK3	974.246	131.027	90.553
RK4	3633.600	555.079	275.185
TL1	770.392	530.794	14.650
TL2	1229.103	703.607	49.485
TL3	940.944	576.461	240.385
TL4	628.510	176.717	39.146
TL5	5079.872	284.122	159.407
TL6	3614.784	2249.209	79.438

Table C3.1. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: RK1 (reactor 1).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	288.0	44.486	36.000	5.601	34.000	5.240
0	.	.	73.239	.	9.432	.	8.802
0	.	<2.0	73.439	0.469	9.526	0.652	8.933
2	315.1	72.0	96.126	13.100	13.654	11.000	12.399
4	321.0	123.0	135.609	26.200	22.064	19.800	18.755
6	326.4	149.0	184.242	25.600	30.420	24.000	26.588
8	325.7	202.0	250.034	32.400	40.973	28.600	35.903
10	312.5	64.0	270.034	.	48.556	.	42.484
12	318.3	150.0	317.779	21.600	55.432	18.000	48.213
14	321.1	164.0	370.439	.	60.439	.	52.497
16	330.7	50.8	387.239	6.700	62.655	5.850	54.431
18	321.8	60.8	406.804	.	65.740	.	57.133
20	323.0	49.2	422.696	6.950	67.985	6.150	59.119
22	321.4	37.2	434.652	6.750	70.154	6.250	61.128
24	336.0	108.0	470.940	16.950	75.849	15.400	66.302
26	311.3	32.6	481.088	5.300	77.499	4.600	67.734
28	330.6	86.5	509.685	16.250	82.872	14.500	72.528
30	322.7	23.9	517.398	4.050	84.178	3.650	73.706
32	329.0	15.5	522.497	4.900	85.791	4.550	75.203
34	328.8	15.0	527.429	2.300	86.547	2.150	75.910
36	329.2	15.6	532.565	2.400	87.337	2.250	76.651
38	324.8	13.0	536.787	2.350	88.100	2.050	77.316
40	320.0	.	542.845	.	89.375	.	78.281
42	318.6	16.7	548.166	4.400	90.776	2.600	79.110
44	328.6	27.6	557.235	5.600	92.617	4.000	80.424
46	328.9	15.6	562.366	4.000	93.932	3.200	81.477
48	332.1	14.2	567.082	4.200	95.327	3.600	82.672
50	315.4	14.2	571.561	4.800	96.841	3.600	83.808
52	301.8	15.6	576.269	6.600	98.833	4.600	85.196
54	328.1	8.0	578.893	3.400	99.948	2.200	85.918
56	320.5	11.1	582.451	3.000	100.910	2.400	86.687
58	321.4	8.7	585.247	4.800	102.453	1.800	87.265
60	324.1	8.7	588.067	1.800	103.036	1.400	87.719
62	323.4	11.4	591.754	2.500	103.844	1.900	88.334
64	329.7	7.5	594.226	1.800	104.438	1.200	88.729
66	309.0	8.3	596.791	1.250	104.824	1.200	89.100
68	323.9	6.6	598.929	1.100	105.180	1.150	89.473
70	324.0	7.0	601.197	1.000	105.504	1.050	89.813
72	321.3	6.4	603.253	0.950	105.810	1.050	90.150
74	325.2	7.7	605.757	1.450	106.281	1.200	90.540
76	325.4	6.6	607.905	1.450	106.753	1.400	90.996
78	323.5	.	610.234	1.200	107.141	1.100	91.352
80	334.6	.	612.689	1.300	107.576	1.150	91.737
82	324.9	.	615.065	0.800	107.836	0.800	91.997
84	336.4	.	617.450	0.850	108.122	1.100	92.367
86	323.5	.	619.520	0.850	108.397	0.850	92.642
88	331.4	4.8	621.111	0.900	108.695	0.850	92.923
90	329.3	4.8	622.692	0.950	109.008	1.050	93.269
92	323.3	4.6	624.179	1.100	109.364	1.100	93.625
94	324.7	4.0	625.478	0.750	109.607	0.700	93.852
96	337.7	4.6	627.031	0.600	109.810	0.650	94.071
98	321.2	3.8	628.252	0.600	110.003	0.650	94.280
100	328.4	4.5	629.729	0.550	110.183	0.650	94.494
102	326.3	3.9	631.002	0.800	110.444	0.600	94.689
104	324.6	4.3	632.398	0.850	110.720	0.900	94.982
106	324.0	3.4	633.499	0.650	110.931	0.500	95.144
108	328.6	3.7	634.715	0.600	111.128	0.500	95.308
110	276.8	2.8	635.490	0.250	111.197	0.250	95.377
112	329.7	4.2	636.875	0.550	111.379	0.400	95.509
114	325.7	5.2	638.569	0.800	111.639	0.650	95.721
116	338.5	4.4	640.058	0.600	111.842	0.450	95.873
118	333.6	4.3	641.492	0.950	112.159	1.750	96.457
120	333.8	4.0	642.828	0.500	112.326	0.400	96.590
122	334.4	4.3	644.266	0.800	112.594	0.750	96.841
124	330.8	3.7	645.490	0.700	112.825	0.650	97.056
126	334.7	3.6	646.694	0.800	113.093	0.650	97.274
128	330.0	4.9	648.311	0.900	113.390	0.850	97.554
130	331.8	4.3	649.738	0.500	113.556	0.450	97.703

Table C3.2. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: RK2 (reactor 3).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	83.0	13.948	13.100	2.201	4.520	<2.233
0	.	.	26.741	.	5.056	.	<1.275
0	.	10.0	30.133	4.310	6.518	1.730	<0.688
2	343.2	48.5	46.778	22.000	14.068	5.400	1.165
4	344.8	21.0	54.019	.	17.821	.	2.057
6	345.6	13.6	58.719	6.050	19.912	0.750	2.316
8	344.0	8.5	61.643	3.900	21.253	0.800	2.591
10	339.2	9.3	64.798	.	23.029	.	3.016
12	341.1	14.1	69.607	.	24.824	.	3.484
14	322.5	12.3	73.574	.	26.419	.	3.929
16	340.4	9.3	76.740	4.350	27.899	1.250	4.355
18	342.2	10.0	80.162	.	29.415	.	4.825
20	341.2	7.7	82.789	4.000	30.780	1.200	5.234
22	337.4	7.5	85.320	4.350	32.247	1.850	5.859
24	343.1	7.5	87.893	3.650	33.500	1.150	6.253
26	339.6	13.0	92.308	3.300	34.620	1.000	6.593
28	348.6	4.8	93.981	9.900	38.072	3.150	7.691
30	331.6	4.4	95.440	4.950	39.713	2.000	8.354
32	339.6	5.7	97.376	2.350	40.511	4.250	9.797
34	344.3	4.8	99.028	3.100	41.578	1.400	10.279
36	341.2	5.0	100.734	2.300	42.363	1.050	10.638
38	338.7	5.4	102.563	2.500	43.210	1.150	11.027
40	391.5	.	105.600	.	44.608	.	11.600
42	339.1	9.1	108.686	4.400	46.100	1.600	12.143
44	336.0	12.5	112.886	5.400	47.915	2.000	12.815
46	342.1	8.5	115.794	3.400	49.078	1.200	13.225
48	340.2	8.1	118.550	3.000	50.098	1.200	13.634
50	339.8	7.7	121.166	4.000	51.458	1.000	13.973
52	294.6	7.5	123.375	4.000	52.636	1.400	14.386
54	335.7	6.4	125.524	3.400	53.777	1.400	14.856
56	330.5	5.8	127.441	2.800	54.703	1.300	15.286
58	332.7	6.6	129.637	3.100	55.734	1.200	15.685
60	331.9	7.2	132.026	2.600	56.597	1.100	16.050
62	335.1	8.6	134.908	3.900	57.904	1.600	16.586
64	331.9	5.9	136.866	2.300	58.667	0.850	16.868
66	326.1	.	138.925	0.450	58.814	0.250	16.950
68	338.8	5.0	140.619	1.800	59.424	0.650	17.170
70	334.7	5.3	142.393	1.800	60.026	0.700	17.404
72	332.8	5.6	144.257	2.050	60.709	0.800	17.670
74	336.9	5.6	146.143	2.600	61.585	0.800	17.940
76	337.8	5.3	147.934	3.850	62.885	1.100	18.312
78	333.6	.	150.141	3.750	64.136	1.050	18.662
80	341.6	.	152.599	2.600	65.024	1.500	19.174
82	345.5	.	155.170	2.450	65.871	0.600	19.382
84	352.9	.	157.726	1.700	66.471	0.900	19.699
86	349.2	.	159.860	1.650	67.047	0.450	19.856
88	340.4	3.6	161.085	1.800	67.660	0.500	20.026
90	333.3	4.5	162.585	2.100	68.359	0.600	20.226
92	347.9	3.5	163.803	1.900	69.020	0.500	20.400
94	337.9	3.8	165.087	1.500	69.527	0.450	20.552
96	335.3	4.1	166.462	1.500	70.030	0.650	20.770
98	336.4	3.8	167.740	1.300	70.468	0.400	20.905
100	338.0	4.3	169.193	1.750	71.059	0.450	21.057
102	335.8	4.3	170.637	1.550	71.580	0.450	21.208
104	332.6	4.4	172.101	1.450	72.062	0.700	21.441
106	331.2	4.0	173.425	1.550	72.575	0.450	21.590
108	327.1	3.7	174.636	1.550	73.082	0.450	21.737
110	332.8	4.3	176.067	1.800	73.681	0.750	21.987
112	329.0	4.3	177.481	1.500	74.175	0.350	22.102
114	326.0	4.3	178.883	1.450	74.647	0.400	22.232
116	332.2	4.7	180.445	1.450	75.129	0.350	22.349
118	333.8	5.2	182.180	1.550	75.647	0.450	22.499
120	331.4	4.4	183.639	1.450	76.127	0.400	22.631
122	330.6	4.9	185.258	1.850	76.739	0.500	22.797
124	337.0	3.6	186.472	1.550	77.261	0.450	22.948
126	330.4	4.4	187.925	1.350	77.707	0.400	23.081
128	349.2	2.0	188.624	0.800	77.986	0.250	23.168
130	326.8	6.2	190.650	2.050	78.656	0.600	23.364

Table C3.3. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: RK3 (reactor 5).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	[illegible]	310.0	51.957	54.200	9.135	23.900	4.026
0	.	.	97.361	.	17.507	.	7.562
0	.	5.0	99.027	1.530	18.017	0.652	7.779
2	327.2	154.0	149.416	37.200	30.189	13.400	12.164
4	332.4	117.0	188.307	28.400	39.629	8.000	14.823
6	340.4	108.0	225.070	26.400	48.615	8.600	17.750
8	331.4	287.0	320.182	36.600	60.745	13.200	22.125
10	341.2	43.4	334.990	.	69.691	.	25.508
12	335.3	109.0	371.537	23.600	77.604	9.200	28.592
14	328.3	63.6	392.417	.	83.337	.	31.101
16	332.1	88.0	421.642	10.700	86.890	5.800	33.027
18	335.9	36.0	433.735	.	90.450	.	35.047
20	330.2	43.6	448.131	6.300	92.530	4.400	36.500
22	328.2	105.0	482.592	12.100	96.501	9.500	39.618
24	326.8	20.8	489.390	1.800	97.090	1.700	40.174
26	319.9	8.7	492.173	6.100	99.041	6.650	42.301
28	329.2	157.0	543.857	9.450	102.152	12.650	46.465
30	324.6	34.5	555.056	2.600	102.996	4.450	47.910
32	326.3	42.5	568.924	2.350	103.763	4.250	49.297
34	333.1	31.7	579.483	2.150	104.479	4.150	50.679
36	330.8	30.5	589.572	2.150	105.190	4.100	52.035
38	329.6	36.8	601.702	2.800	106.113	5.000	53.683
40	332.8	.	616.561	.	107.458	.	55.566
42	323.0	51.2	633.098	5.000	109.073	6.600	57.698
44	326.5	57.2	651.774	4.800	110.641	7.200	60.049
46	329.6	53.0	669.243	4.200	112.025	7.200	62.422
48	331.2	31.6	679.709	2.600	112.886	4.400	63.879
50	336.4	40.4	693.299	4.000	114.232	5.800	65.830
52	305.8	28.4	701.984	3.400	115.271	4.400	67.176
54	328.6	27.3	710.955	2.800	116.192	4.200	68.556
56	326.2	23.8	718.718	2.100	116.877	3.600	69.730
58	327.3	24.0	726.574	2.200	117.597	3.500	70.876
60	328.3	26.5	735.274	3.900	118.877	4.400	72.320
62	331.0	29.4	745.005	2.200	119.605	3.800	73.578
64	332.4	26.1	753.681	1.350	120.054	2.950	74.559
66	314.1	21.5	760.434	1.100	120.399	2.300	75.281
68	335.3	20.2	767.207	1.050	120.751	2.400	76.086
70	336.6	23.5	775.117	1.200	121.155	2.650	76.978
72	326.9	22.3	782.407	1.050	121.499	2.300	77.730
74	330.3	17.8	788.286	1.150	121.878	2.100	78.423
76	333.8	15.8	793.560	1.000	122.212	1.900	79.058
78	329.4	.	800.694	0.950	122.525	1.900	79.684
80	333.7	.	808.717	0.800	122.792	1.600	80.217
82	334.4	.	817.159	0.750	123.043	1.600	80.753
84	346.6	.	825.862	0.750	123.303	1.450	81.255
86	336.1	.	833.398	0.600	123.505	1.400	81.726
88	330.1	16.6	838.877	0.950	123.818	1.800	82.320
90	329.9	14.2	843.562	0.750	124.066	1.650	82.864
92	338.0	13.6	848.159	0.800	124.336	1.400	83.337
94	338.6	12.8	852.493	0.650	124.556	1.050	83.693
96	326.2	14.3	857.158	0.750	124.801	1.200	84.084
98	324.5	15.8	862.285	0.750	125.044	1.300	84.506
100	328.6	15.4	867.345	1.000	125.373	1.100	84.868
102	326.5	17.0	872.896	1.000	125.699	1.100	85.227
104	321.6	20.6	879.521	1.000	126.021	1.350	85.661
106	327.4	14.8	884.366	1.050	126.365	1.100	86.021
108	326.3	17.0	889.913	1.000	126.691	1.050	86.364
110	328.0	15.5	894.997	1.000	127.019	1.100	86.725
112	323.0	16.2	900.230	1.050	127.358	1.000	87.048
114	319.8	20.8	906.882	1.100	127.710	1.100	87.399
116	332.9	18.8	913.140	0.750	127.960	0.900	87.699
118	330.4	21.5	920.244	1.000	128.290	1.050	88.046
120	332.1	16.8	925.823	0.900	128.589	0.900	88.345
122	326.1	15.8	930.975	0.800	128.850	0.850	88.622
124	332.0	17.4	936.752	0.900	129.148	0.900	88.921
126	336.5	18.4	942.944	1.050	129.502	0.850	89.207
128	326.8	67.6	965.036	3.650	130.695	2.900	90.154
130	332.5	27.7	974.246	1.000	131.027	1.200	90.553

Table C3.4. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: RK4 (reactor 7).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	685.0	113.618	120.000	19.968	52.000	8.627
0	.	.	224.416	.	40.697	.	18.923
0	.	13.0	228.691	10.600	44.183	8.170	21.610
2	326.8	415.0	364.313	99.800	76.798	70.200	44.551
4	315.7	515.0	526.899	.	108.002	.	61.962
6	325.1	368.0	646.535	112.000	144.413	51.200	78.607
8	327.2	970.0	963.919	240.000	222.941	129.000	120.816
10	338.6	338.0	1078.366	.	276.821	.	149.148
12	331.4	610.0	1280.520	.	320.202	.	171.445
14	327.7	358.0	1397.837	.	356.467	.	189.055
16	334.0	504.0	1566.173	105.800	391.804	45.600	204.285
18	332.9	510.0	1735.952	.	415.969	.	214.813
20	331.4	135.0	1780.691	34.600	427.435	12.600	218.989
22	329.9	268.0	1869.104	57.000	446.239	19.000	225.257
24	332.9	370.0	1992.277	53.800	464.149	18.800	231.515
26	310.8	178.0	2047.599	32.800	474.344	11.800	235.183
28	339.5	390.0	2180.004	31.600	485.072	11.600	239.121
30	328.2	97.0	2211.840	11.750	488.928	4.650	240.647
32	319.3	168.0	2265.482	15.100	493.749	5.800	242.499
34	333.0	93.0	2296.451	11.000	497.412	4.400	243.964
36	329.1	97.0	2328.374	11.750	501.279	4.400	245.412
38	327.9	91.0	2358.213	11.300	504.985	4.050	246.740
40	330.6	.	2393.332	.	509.493	.	248.366
42	328.3	93.0	2423.864	14.000	514.089	3.800	249.614
44	330.5	98.0	2456.253	9.000	517.064	3.800	250.870
46	332.0	95.0	2487.793	7.400	519.521	3.000	251.866
48	328.4	90.0	2517.349	6.000	521.491	2.600	252.719
50	330.2	148.0	2566.219	7.800	524.067	3.000	253.710
52	302.1	128.0	2604.888	7.000	526.181	3.200	254.677
54	328.6	118.0	2643.663	6.000	528.153	3.000	255.663
56	320.2	115.0	2680.486	5.100	529.786	2.800	256.559
58	321.4	89.0	2709.090	4.400	531.200	2.500	257.363
60	328.0	98.4	2741.365	4.100	532.545	2.500	258.183
62	329.4	144.0	2788.799	5.000	534.192	2.700	259.072
64	332.7	89.6	2818.609	3.100	535.223	2.100	259.771
66	323.0	98.0	2850.263	3.050	536.208	2.100	260.449
68	334.1	74.4	2875.120	2.700	537.110	1.900	261.084
70	331.7	102.0	2908.953	2.950	538.089	2.150	261.797
72	329.8	86.4	2937.448	2.700	538.979	2.000	262.456
74	331.8	85.2	2965.717	2.900	539.942	1.750	263.037
76	336.9	.	2995.297	2.100	540.649	1.450	263.526
78	334.0	.	3024.682	2.200	541.384	1.550	264.043
80	334.8	.	3053.972	2.050	542.070	1.500	264.546
82	336.2	.	3083.088	2.000	542.743	1.550	265.067
84	347.0	.	3112.829	1.900	543.402	1.550	265.605
86	341.6	.	3142.423	1.600	543.949	1.300	266.049
88	322.1	96.4	3173.474	2.300	544.689	2.100	266.725
90	314.1	79.2	3198.350	1.850	545.270	1.950	267.337
92	338.9	61.6	3219.227	1.700	545.847	1.600	267.880
94	330.2	50.0	3235.737	1.200	546.243	1.100	268.243
96	334.0	46.4	3251.234	0.950	546.560	0.850	268.527
98	327.5	54.6	3269.116	1.100	546.920	1.000	268.854
100	330.0	59.6	3288.784	1.900	547.547	1.600	269.382
102	330.6	63.6	3309.810	1.450	548.027	1.150	269.763
104	327.9	60.0	3329.484	1.500	548.519	1.150	270.140
106	325.7	52.0	3346.420	1.350	548.958	1.000	270.465
108	328.8	51.0	3363.189	1.450	549.435	0.950	270.778
110	326.7	60.6	3382.987	1.600	549.958	1.200	271.170
112	325.6	64.0	3403.826	1.550	550.462	1.100	271.528
114	327.3	71.2	3427.129	1.500	550.953	1.100	271.888
116	334.8	75.6	3452.440	1.700	551.523	1.200	272.290
118	327.5	74.0	3476.675	1.500	552.014	1.150	272.666
120	327.4	56.8	3495.271	1.400	552.472	0.950	272.977
122	325.0	60.8	3515.031	1.700	553.025	1.900	273.595
124	332.9	64.8	3536.603	1.350	553.474	1.000	273.928
126	332.1	72.0	3560.515	1.550	553.989	1.100	274.293
128	329.8	126.0	3602.069	2.050	554.665	1.500	274.788
130	331.2	95.2	3633.600	1.250	555.079	1.200	275.185

Table C3.5. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: TL1 (reactor 11).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	238.0	42.066	103.000	18.194	11.100	1.952
0	.	.	72.756	.	33.169	.	3.565
0	.	7.0	75.190	8.370	36.079	0.874	3.868
2	350.0	13.2	79.810	14.700	41.224	0.850	4.166
4	355.8	9.2	83.083	.	47.182	.	4.583
6	353.6	9.4	86.407	12.550	51.620	0.600	4.795
8	351.4	7.7	89.113	12.300	55.942	0.300	4.900
10	347.2	14.8	94.251	.	61.821	.	5.176
12	346.0	16.0	99.787	.	68.796	.	5.508
14	348.8	39.4	113.530	.	77.604	.	5.886
16	350.1	47.2	130.055	33.600	89.367	1.200	6.306
18	349.4	42.8	145.009	.	100.304	.	6.731
20	348.9	52.5	163.326	35.800	112.795	1.400	7.220
22	349.5	66.0	186.393	.	124.196	.	7.599
24	349.4	24.3	194.884	35.800	136.704	0.800	7.879
26	347.7	29.0	204.967	24.000	145.049	1.000	8.226
28	354.6	50.8	222.981	37.400	158.311	0.800	8.510
30	348.6	38.8	236.507	33.000	169.815	1.000	8.859
32	353.6	51.2	254.611	33.200	181.554	0.600	9.071
34	353.4	67.2	278.359	38.000	194.984	0.600	9.283
36	350.5	25.4	287.262	22.000	202.695	0.600	9.493
38	351.5	49.6	304.696	30.400	213.380	0.600	9.704
40	350.5	46.6	321.030	28.000	223.194	0.400	9.844
41	349.1	16.6	326.825	16.000	228.780	0.600	10.054
43	345.0	71.2	351.389	35.400	240.993	0.600	10.261
45	347.8	80.0	379.213	41.600	255.461	1.400	10.747
47	348.9	23.8	387.517	18.600	261.951	0.400	10.887
49	343.8	54.4	406.219	33.800	273.571	0.400	11.025
51	348.8	49.6	423.520	32.000	284.733	0.400	11.164
53	331.2	22.7	431.038	21.200	291.754	0.400	11.297
55	336.9	29.0	440.808	15.600	297.010	0.200	11.364
57	342.4	26.6	449.916	21.000	304.200	0.800	11.638
59	345.7	30.5	460.460	21.000	311.460	0.600	11.845
61	343.2	42.4	475.012	22.200	319.079	0.600	12.051
63	344.0	36.8	487.671	23.400	327.129	0.600	12.258
65	343.3	23.8	495.841	17.500	333.136	0.250	12.343
67	330.5	16.3	501.228	12.750	337.350	0.200	12.410
69	348.5	26.8	510.568	18.000	343.623	0.100	12.444
71	344.1	53.4	528.943	31.200	354.359	0.300	12.548
73	341.2	28.2	538.565	21.850	361.814	0.300	12.650
75	343.5	18.4	544.885	18.100	368.032	0.150	12.702
77	340.9	.	553.164	19.650	374.730	0.250	12.787
79	342.9	.	561.880	24.600	383.166	0.250	12.872
81	347.1	.	570.796	19.550	389.952	0.250	12.959
83	348.5	.	579.638	26.100	399.047	0.250	13.046
85	357.9	.	588.321	17.250	405.221	0.200	13.118
87	347.6	.	595.680	15.100	410.470	0.200	13.187
89	349.1	13.6	600.428	18.200	416.824	0.200	13.257
91	344.8	24.5	608.876	22.800	424.685	0.250	13.343
93	347.1	15.2	614.152	14.150	429.597	0.200	13.413
95	334.0	13.6	618.694	13.150	433.989	0.150	13.463
97	338.5	19.4	625.261	15.250	439.151	0.150	13.514
99	344.0	16.8	631.040	13.750	443.881	0.250	13.600
101	333.4	20.2	637.775	15.550	449.065	0.200	13.666
103	338.3	20.6	644.744	15.550	454.326	0.200	13.734
105	338.9	17.5	650.675	13.150	458.782	0.200	13.802
107	338.2	18.9	657.067	14.600	463.720	0.200	13.870
109	338.3	24.2	665.253	16.900	469.437	0.200	13.937
111	338.2	25.6	673.911	16.900	475.153	0.200	14.005
113	340.8	23.5	681.920	16.300	480.708	0.200	14.073
115	344.4	30.0	692.252	18.550	487.096	0.250	14.159
117	344.0	18.5	698.616	13.450	491.723	<0.050	14.228
119	338.0	14.5	703.517	12.300	495.881	0.100	14.262
121	336.2	26.8	712.527	20.000	502.605	0.250	14.346
123	336.1	17.2	718.308	13.000	506.974	0.150	14.396
125	338.9	20.2	725.154	14.350	511.837	0.150	14.447
127	341.6	18.3	731.405	13.250	516.363	0.150	14.498
129	338.7	47.6	747.527	24.400	524.628	0.250	14.583
131	333.3	68.6	770.392	18.500	530.794	0.200	14.650

Table C3.6. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: TL2 (reactor 13).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	184.0	31.134	84.200	14.292	3.930	0.645
0	.	.	61.076	.	31.172	.	1.509
0	.	21.0	68.235	26.000	40.036	1.790	2.119
2	340.5	58.0	87.984	50.400	57.197	2.600	3.005
4	341.5	31.0	98.571	.	71.400	.	3.927
6	339.4	31.0	109.092	34.600	83.144	3.200	5.013
8	343.5	27.0	118.367	33.800	94.754	2.600	5.906
10	337.5	26.0	127.142	.	108.983	.	6.855
12	341.7	39.0	140.468	.	126.099	.	7.884
14	344.1	97.0	173.846	.	148.245	.	9.042
16	338.7	114.0	212.458	85.600	177.237	3.800	10.329
18	337.9	168.0	269.225	.	210.674	.	11.908
20	340.9	302.0	372.177	154.400	263.309	7.000	14.294
22	342.7	178.0	433.177	.	297.631	.	15.948
24	338.1	101.0	467.325	73.800	322.583	3.400	17.098
26	338.5	108.0	503.883	116.000	361.849	7.000	19.467
28	344.9	157.0	558.033	87.600	392.062	4.200	20.916
30	328.8	157.0	609.654	99.600	424.810	5.600	22.757
32	335.4	64.0	631.120	50.000	441.580	2.400	23.562
34	339.5	82.0	658.959	48.800	458.148	3.000	24.581
36	338.0	49.6	675.724	36.600	470.519	2.400	25.392
38	337.0	54.4	694.056	33.600	481.842	2.000	26.066
40	334.8	69.6	717.359	37.600	494.431	2.400	26.869
41	330.2	44.6	732.085	26.600	503.214	2.000	27.530
43	335.3	75.2	757.300	36.000	515.285	2.800	28.469
45	338.4	110.0	794.524	44.400	530.310	3.800	29.754
47	337.6	52.6	812.282	25.600	538.952	2.000	30.430
49	336.4	47.6	828.294	22.800	546.622	1.800	31.035
51	340.4	49.4	845.110	21.200	553.839	1.600	31.580
53	315.2	55.6	862.635	25.200	561.782	2.200	32.273
55	335.9	45.2	877.818	20.400	568.634	2.000	32.945
57	387.7	37.0	892.163	19.000	576.000	2.000	33.720
59	333.8	42.6	906.383	17.800	581.942	1.800	34.321
61	333.8	42.0	920.402	16.800	587.550	1.800	34.922
63	334.4	39.8	933.711	17.600	593.435	1.800	35.524
65	335.6	33.6	944.988	14.350	598.251	1.500	36.027
67	319.0	31.5	955.036	13.600	602.589	1.350	36.458
69	337.3	33.0	966.167	13.900	607.278	1.300	36.897
70	338.5	28.0	975.645	12.300	611.442	1.250	37.320
73	233.8	27.7	982.121	11.250	614.072	1.200	37.600
75	335.4	29.6	992.049	12.550	618.281	1.200	38.003
77	337.1	.	1002.715	15.900	623.641	1.550	38.525
79	334.0	.	1013.581	11.350	627.432	1.200	38.926
81	343.8	.	1024.890	11.700	631.454	1.250	39.356
83	339.1	.	1035.989	10.550	635.032	1.150	39.746
85	351.2	.	1047.157	9.500	638.368	1.100	40.132
87	341.0	.	1057.167	11.450	642.273	1.250	40.558
89	335.2	25.5	1065.714	10.250	645.708	1.250	40.977
91	343.5	21.9	1073.237	10.450	649.298	1.350	41.441
93	343.2	22.0	1080.787	8.600	652.250	1.150	41.836
95	343.3	21.0	1087.997	9.100	655.374	1.200	42.248
97	341.6	27.4	1097.356	8.750	658.363	1.650	42.811
99	332.4	23.8	1105.268	8.550	661.205	1.200	43.210
101	330.4	26.4	1113.990	9.100	664.211	1.150	43.590
103	334.0	26.2	1122.741	9.050	667.234	1.200	43.991
105	329.7	28.3	1132.071	9.750	670.449	1.400	44.453
107	335.1	18.5	1138.271	7.700	673.029	1.100	44.821
109	333.9	25.6	1146.819	8.300	675.800	1.150	45.205
111	329.6	24.3	1154.828	9.150	678.816	1.300	45.634
113	332.1	24.0	1162.798	8.300	681.572	1.150	46.016
115	338.0	25.0	1171.248	8.350	684.395	1.150	46.404
117	341.5	22.9	1179.069	7.400	686.922	1.050	46.763
119	331.5	24.6	1187.224	7.900	689.541	1.250	47.177
121	336.1	25.2	1195.693	8.650	692.448	1.300	47.614
123	339.8	22.5	1203.339	7.700	695.064	1.250	48.039
125	335.2	19.4	1209.842	6.300	697.176	1.000	48.374
127	338.5	20.6	1216.815	6.600	699.410	1.100	48.746
129	337.3	19.4	1223.358	6.500	701.603	1.100	49.118
131	334.0	17.2	1229.103	6.000	703.607	1.100	49.485

Table C3.7. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: TL3 (reactor 15).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	900.0	152.272	205.000	34.561	89.200	15.057
0	.	.	271.076	.	65.426	.	27.768
0	.	9.0	274.170	13.100	69.930	3.360	28.924
2	343.5	204.0	344.244	82.000	98.097	25.800	37.786
4	347.9	176.0	405.475	.	117.361	.	44.673
6	346.1	87.0	435.585	39.000	130.859	16.200	50.280
8	342.0	63.0	457.131	35.800	143.103	13.400	54.863
10	360.8	66.0	480.944	.	157.862	.	60.332
12	340.2	73.0	505.779	.	172.311	.	65.611
14	336.5	117.0	545.149	.	187.509	.	71.100
16	341.1	97.0	578.236	51.600	205.110	18.800	77.512
18	340.4	112.0	616.361	.	220.387	.	83.008
20	342.2	76.0	642.368	39.600	233.939	16.600	88.688
22	336.1	56.4	661.324	.	251.882	.	92.540
24	341.3	144.0	710.471	91.400	283.076	4.200	93.973
26	347.4	40.6	724.576	21.800	290.650	9.200	97.169
28	343.7	35.6	736.811	25.200	299.311	11.000	100.950
30	338.6	28.5	746.461	34.800	311.094	15.000	106.029
32	344.7	19.6	753.218	22.200	318.747	9.000	109.131
34	344.0	22.2	760.854	20.200	325.695	8.600	112.090
36	342.4	19.2	767.428	16.850	331.465	7.350	114.606
38	340.0	21.4	774.704	17.950	337.568	7.950	117.309
40	339.9	17.2	780.551	16.500	343.176	7.500	119.859
41	341.0	13.6	785.188	15.800	348.564	6.200	121.973
43	340.9	19.4	791.802	17.600	354.564	8.000	124.700
45	341.5	33.8	803.344	20.400	361.530	16.000	130.164
47	342.4	24.6	811.768	19.000	368.036	8.800	133.177
49	338.0	15.2	816.905	15.600	373.309	6.800	135.475
51	340.2	42.0	831.194	17.400	379.228	7.400	137.993
53	323.8	20.4	837.799	19.600	385.575	9.200	140.972
55	336.6	12.3	841.939	17.200	391.364	7.800	143.597
57	332.6	13.6	846.463	15.150	396.403	7.600	146.125
59	336.9	17.3	852.291	17.600	402.333	8.200	148.888
61	336.2	12.8	856.594	15.400	407.510	7.200	151.308
63	337.3	19.8	863.273	21.200	414.661	10.400	154.816
65	334.5	8.0	865.949	14.100	419.377	7.650	157.375
67	323.1	8.4	868.663	14.050	423.917	7.500	159.798
69	338.3	9.1	871.741	15.250	429.076	8.250	162.589
71	338.5	9.2	874.856	13.450	433.629	7.050	164.976
73	334.8	7.8	877.467	13.100	438.015	7.100	167.353
75	331.5	8.2	880.185	32.550	448.805	16.100	172.690
77	332.4	.	883.683	19.450	455.270	10.300	176.114
79	332.3	.	887.511	15.300	460.354	8.050	178.789
81	338.2	.	891.576	15.600	465.630	8.200	181.562
83	337.3	.	895.632	12.750	469.931	7.050	183.940
85	349.8	.	899.590	16.350	475.650	8.350	186.861
87	338.8	.	902.649	26.700	484.696	12.950	191.248
89	340.9	4.2	904.081	39.000	497.991	19.750	197.981
91	336.1	6.8	906.366	29.050	507.755	14.000	202.686
93	337.6	4.6	907.919	14.650	512.701	7.800	205.320
95	336.1	4.2	909.331	12.000	516.734	6.400	207.471
97	335.3	5.4	911.142	10.800	520.355	5.550	209.332
99	331.4	5.4	912.931	11.050	524.017	6.000	211.320
101	331.2	4.9	914.554	11.950	527.975	5.950	213.291
103	337.8	4.3	916.007	10.100	531.387	5.250	215.064
105	327.9	5.0	917.646	11.050	535.010	5.500	216.868
107	335.1	4.8	919.255	10.450	538.512	5.350	218.660
109	331.5	4.4	920.713	10.150	541.876	5.300	220.417
111	333.3	4.9	922.346	10.700	545.443	5.600	222.284
113	329.2	5.4	924.124	10.050	548.751	5.500	224.094
115	334.0	9.4	927.264	10.250	552.175	5.550	225.948
117	336.6	6.5	929.452	9.750	555.457	6.350	228.086
119	336.1	5.4	931.266	10.000	558.818	6.750	230.354
121	326.5	5.4	933.030	10.300	562.181	6.150	232.362
123	324.4	4.3	934.425	9.200	565.165	6.100	234.341
125	335.5	5.0	936.102	8.950	568.168	5.250	236.102
127	322.9	5.0	937.717	9.350	571.187	2.600	236.942
129	337.8	5.0	939.406	8.250	573.974	5.250	238.715
131	327.3	4.7	940.944	7.600	576.461	5.100	240.385

Table C3.8. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: TL4 (reactor 17).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	530.0	87.407	210.000	34.545	4.800	0.796
0	.	.	152.887	.	62.056	.	1.733
0	.	10.0	156.262	7.270	64.509	0.403	1.869
2	337.2	52.0	173.796	38.000	77.323	1.000	2.206
4	342.8	27.0	183.052	18.250	83.579	0.350	2.326
6	335.7	17.0	188.759	12.800	87.876	0.500	2.494
8	337.8	12.0	192.812	9.350	91.034	0.550	2.680
10	344.6	8.0	195.569	.	95.641	.	3.076
12	322.8	13.0	199.765	10.350	98.982	1.100	3.431
14	335.4	15.0	204.796	.	102.735	.	3.964
16	334.8	7.6	207.341	7.650	105.296	1.850	4.584
18	342.1	9.6	210.625	.	108.351	.	5.220
20	347.0	6.0	212.707	6.450	110.590	1.800	5.844
22	333.3	.	215.645	.	112.942	.	6.438
24	340.5	4.4	217.143	4.540	114.488	1.450	6.932
26	329.1	3.6	218.328	3.900	115.771	1.250	7.343
28	329.4	4.0	219.645	3.550	116.941	1.250	7.755
30	335.7	4.9	221.290	8.250	119.710	3.000	8.762
32	342.1	10.7	224.951	5.100	121.455	2.000	9.446
34	333.3	5.6	226.817	10.500	124.955	4.500	10.946
36	340.1	5.3	228.620	8.250	127.760	3.900	12.273
38	340.0	4.6	230.184	6.950	130.123	3.400	13.429
40	339.1	4.2	231.608	4.750	131.734	2.450	14.259
41	335.2	4.0	232.949	5.200	133.477	2.400	15.064
43	340.4	8.6	235.876	5.800	135.452	2.400	15.881
45	334.3	14.4	240.690	4.600	136.989	3.600	17.084
47	337.0	10.9	244.364	4.800	138.607	2.400	17.893
49	338.9	6.8	246.668	4.200	140.030	2.000	18.571
51	339.0	7.6	249.244	5.400	141.861	2.200	19.317
53	310.8	7.0	251.420	5.000	143.415	2.200	20.000
55	334.9	5.4	253.228	3.800	144.688	1.900	20.637
57	327.6	6.6	255.391	4.000	145.998	2.000	21.292
59	335.4	7.8	258.007	3.300	147.105	1.800	21.896
61	335.1	7.0	260.352	3.600	148.311	1.900	22.532
63	337.9	11.9	264.373	4.900	149.967	2.700	23.445
65	335.1	8.2	267.121	2.950	150.955	1.800	24.048
67	323.4	7.3	269.482	2.200	151.667	1.400	24.501
69	333.7	7.7	272.052	2.650	152.551	1.700	25.068
71	337.5	11.5	275.933	2.600	153.429	1.700	25.642
73	321.8	12.3	279.891	2.350	154.185	1.700	26.189
75	329.6	15.6	285.033	3.400	155.306	1.950	26.831
77	329.5	.	291.879	3.700	156.525	2.250	27.573
79	336.7	.	300.149	3.350	157.653	2.050	28.263
81	331.7	.	309.383	3.650	158.863	2.150	28.976
83	337.3	.	319.710	3.650	160.094	2.150	29.701
85	340.6	.	330.815	3.850	161.406	2.350	30.502
87	331.0	.	341.640	4.250	162.813	2.400	31.296
89	336.0	29.0	351.384	4.200	164.224	2.600	32.170
91	335.9	33.1	362.502	4.200	165.635	2.700	33.077
93	330.5	36.5	374.566	3.600	166.824	2.150	33.787
95	329.6	35.3	386.201	3.350	167.928	2.050	34.463
97	332.3	36.0	398.163	3.250	169.008	2.000	35.128
99	331.1	32.4	408.891	2.750	169.919	1.650	35.674
101	331.9	38.0	421.503	2.700	170.815	1.450	36.155
103	333.2	42.6	435.697	2.500	171.648	1.300	36.588
105	330.7	43.2	449.984	2.350	172.425	1.150	36.969
107	333.9	32.4	460.802	1.900	173.060	0.950	37.286
109	331.1	38.8	473.649	1.600	173.589	0.800	37.551
111	328.9	37.0	485.818	1.400	174.050	0.700	37.781
113	329.3	39.0	498.661	1.400	174.511	0.800	38.044
115	326.3	44.2	513.083	1.100	174.870	0.500	38.208
117	338.1	31.6	523.767	0.900	175.174	0.400	38.343
119	340.1	36.4	536.147	0.850	175.463	0.350	38.462
121	339.1	44.0	551.067	0.800	175.734	0.350	38.580
123	329.5	52.8	568.465	0.900	176.031	0.550	38.762
125	336.6	33.2	579.640	0.550	176.216	0.300	38.863
127	332.7	31.2	590.020	0.500	176.383	0.300	38.962
129	334.9	84.0	618.152	0.700	176.617	0.350	39.080
131	332.0	31.2	628.510	0.300	176.717	0.200	39.146

Table C3.9. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: TL5 (reactor 19).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	1250.0	219.596	592.000	104.122	88.800	15.631
0	.	.	398.845	.	180.593	.	28.017
0	.	22.0	406.324	10.200	184.061	1.700	28.595
2	342.0	328.0	518.500	62.400	205.401	22.200	36.187
4	346.5	400.0	657.100	.	224.007	.	45.464
6	342.9	338.0	773.000	18.600	230.385	35.600	57.671
8	337.5	344.0	889.100	10.050	233.777	36.650	70.040
10	339.0	500.0	1058.600	.	242.549	.	80.256
12	333.3	565.0	1246.915	.	251.520	.	89.255
14	338.8	1050.0	1602.655	.	258.460	.	97.661
16	342.3	940.0	1924.417	4.850	260.121	25.150	106.270
18	344.5	1230.0	2348.152	.	263.870	.	113.266
20	343.5	760.0	2609.212	3.850	265.193	17.400	119.243
22	347.7	1140.0	3005.590	.	267.763	.	124.084
24	342.6	254.0	3092.610	2.550	268.636	9.250	127.253
26	345.1	312.0	3200.281	2.850	269.620	9.000	130.359
28	334.2	356.0	3319.257	6.500	271.792	8.350	133.150
30	340.1	128.0	3362.789	1.800	272.404	7.050	135.547
32	343.7	74.0	3388.223	0.800	272.679	4.150	136.974
34	345.4	59.0	3408.602	0.650	272.904	3.650	138.234
36	344.9	78.0	3435.504	0.650	273.128	4.000	139.614
38	340.8	148.0	3485.942	0.750	273.383	4.450	141.131
40	344.8	75.0	3511.802	0.600	273.590	3.100	142.200
41	335.4	72.0	3535.951	2.800	274.529	2.400	143.004
43	339.7	114.0	3574.677	2.600	275.413	3.000	144.024
45	341.0	302.0	3677.659	2.600	276.299	4.000	145.388
47	336.5	81.0	3704.916	1.200	276.703	1.800	145.993
49	341.0	50.0	3721.966	1.200	277.112	1.800	146.607
51	339.2	70.0	3745.710	1.800	277.723	1.800	147.218
53	318.9	88.0	3773.773	2.200	278.424	2.200	147.919
55	336.7	78.0	3800.035	1.100	278.795	1.600	148.458
57	331.5	110.0	3836.500	1.400	279.259	1.700	149.022
59	336.9	88.0	3866.148	1.100	279.629	1.700	149.594
61	337.4	81.6	3893.679	1.300	280.068	1.400	150.067
63	337.0	100.0	3927.379	1.200	280.472	1.400	150.538
65	335.8	73.6	3952.094	0.500	280.640	1.100	150.908
67	322.1	108.0	3986.881	0.450	280.785	1.100	151.262
69	337.6	80.4	4014.024	0.300	280.887	1.050	151.617
71	337.2	70.0	4037.628	0.300	280.988	1.000	151.954
73	334.7	77.2	4063.467	0.300	281.088	0.950	152.272
75	334.2	178.0	4122.955	0.500	281.255	1.100	152.639
77	336.9	.	4171.069	0.350	281.373	0.950	152.959
79	335.2	.	4216.519	0.250	281.457	0.750	153.211
81	336.8	.	4260.652	0.400	281.592	0.750	153.463
83	343.7	.	4304.072	0.300	281.695	0.700	153.704
85	351.1	.	4346.128	0.250	281.783	0.700	153.950
87	341.6	.	4383.232	0.400	281.919	0.700	154.189
89	332.3	94.0	4414.469	0.200	281.986	0.800	154.455
91	329.6	89.0	4443.803	0.150	282.035	0.800	154.718
93	333.1	65.7	4465.688	0.300	282.135	0.650	154.935
95	337.0	63.2	4486.986	0.200	282.202	0.750	155.188
97	329.1	63.2	4507.785	0.200	282.268	0.700	155.418
99	334.8	67.2	4530.284	0.250	282.352	0.650	155.636
101	331.7	68.8	4553.105	0.350	282.468	0.650	155.851
103	332.5	95.6	4584.892	0.350	282.584	0.700	156.084
105	329.9	68.0	4607.325	0.400	282.716	0.650	156.298
107	332.7	61.0	4627.620	0.400	282.849	0.600	156.498
109	329.7	113.0	4664.876	0.650	283.064	1.900	157.124
111	330.1	92.0	4695.245	0.300	283.163	0.600	157.323
113	332.7	113.0	4732.840	0.300	283.263	0.700	157.555
115	336.5	142.0	4780.623	0.400	283.397	0.650	157.774
117	341.6	70.0	4804.535	0.350	283.517	0.450	157.928
119	339.8	60.8	4825.195	0.300	283.619	0.750	158.183
121	332.7	74.0	4849.815	0.300	283.719	0.600	158.382
123	333.9	115.0	4888.213	0.350	283.835	0.600	158.583
125	341.9	105.0	4924.113	0.200	283.904	0.550	158.771
127	336.9	108.0	4960.498	0.200	283.971	0.600	158.973
129	334.9	225.0	5035.850	0.250	284.055	0.750	159.224
131	333.5	132.0	5079.872	0.200	284.122	0.550	159.407

Table C3.10. Cumulative mass release of sulfate, calcium, and magnesium for the Elevated Temperature Test: TL6 (reactor 21).

Week	Volume	Sulfate		Calcium		Magnesium	
	(mL)	(mg/L)	(mg)	(mg/L)	(mg)	(mg/L)	(mg)
0	.	2120.0	371.180	1200.000	210.329	96.500	16.938
0	.	.	807.927	.	452.418	.	29.555
0	.	1230.0	1232.778	620.000	666.570	0.938	29.879
2	346.3	1080.0	1606.782	560.000	860.498	8.800	32.927
4	352.2	660.0	1839.234	.	991.971	.	36.060
6	351.8	295.0	1943.015	185.400	1057.195	4.200	37.537
8	343.7	233.0	2023.098	133.000	1102.907	4.200	38.981
10	343.0	224.0	2099.930	.	1167.367	.	41.003
12	346.8	292.0	2201.195	.	1232.581	.	43.079
14	344.1	254.0	2288.597	.	1291.438	.	44.891
16	340.2	226.0	2365.482	143.400	1340.222	3.600	46.116
18	345.6	264.0	2456.720	.	1385.538	.	47.512
20	348.8	156.0	2511.133	94.800	1418.605	3.200	48.628
22	346.8	246.0	2596.446	.	1451.335	.	49.715
24	345.1	117.0	2636.822	57.400	1471.144	1.800	50.337
26	347.8	100.0	2671.602	69.200	1495.211	2.400	51.171
28	337.9	128.0	2714.854	88.600	1525.149	2.800	52.117
30	341.7	118.0	2755.174	114.800	1564.377	4.000	53.484
32	350.1	66.0	2778.281	62.000	1586.083	1.800	54.114
34	349.1	94.0	2811.096	71.800	1611.148	1.600	54.673
36	346.3	87.0	2841.224	59.600	1631.788	1.600	55.227
38	347.0	97.0	2874.883	67.000	1655.037	1.800	55.852
40	348.5	84.0	2904.157	55.600	1674.413	1.600	56.409
41	339.0	60.8	2924.769	42.200	1688.719	2.400	57.223
43	341.3	80.5	2952.243	56.000	1707.832	1.800	57.837
45	344.3	98.0	2985.985	65.200	1730.280	2.000	58.526
47	342.8	60.5	3006.724	50.000	1747.420	1.600	59.074
49	342.2	55.5	3025.716	52.400	1765.351	1.400	59.553
51	348.4	57.0	3045.575	55.600	1784.722	1.800	60.181
53	315.3	53.5	3062.443	58.400	1803.136	2.000	60.811
55	340.3	60.8	3083.134	68.800	1826.549	2.200	61.560
57	337.4	53.0	3101.016	58.600	1846.320	2.400	62.370
59	345.9	53.4	3119.487	47.200	1862.647	2.000	63.061
61	342.6	51.6	3137.165	44.000	1877.721	1.800	63.678
63	344.2	80.0	3164.701	70.800	1902.091	2.600	64.573
65	344.2	63.2	3186.455	53.500	1920.505	1.900	65.227
67	333.1	42.6	3200.645	37.700	1933.063	1.300	65.660
69	344.3	46.4	3216.620	42.500	1947.696	1.350	66.125
71	348.1	46.8	3232.911	36.200	1960.297	1.200	66.542
73	342.3	45.6	3248.520	35.550	1972.466	1.050	66.902
75	342.9	46.4	3264.431	38.500	1985.667	1.250	67.331
77	344.9	.	3280.112	46.600	2001.740	1.650	67.900
79	342.7	.	3295.457	32.250	2012.792	1.100	68.277
81	342.7	.	3310.586	28.800	2022.662	1.000	68.619
83	348.5	.	3325.775	28.500	2032.594	0.950	68.950
85	355.0	.	3341.040	30.150	2043.297	1.050	69.323
87	347.0	.	3355.493	32.300	2054.505	1.600	69.878
89	342.7	35.0	3367.488	30.700	2065.026	1.150	70.272
91	339.9	50.0	3384.483	43.100	2079.676	1.650	70.833
93	343.4	41.0	3398.562	29.400	2089.772	1.150	71.228
95	346.2	29.2	3408.671	27.150	2099.171	1.100	71.609
97	342.4	34.2	3420.381	27.400	2108.553	1.100	71.986
99	345.9	29.4	3430.551	26.600	2117.754	1.050	72.349
101	343.7	32.4	3441.687	31.500	2128.580	1.350	72.813
103	339.4	28.8	3451.462	27.150	2137.795	1.250	73.237
105	339.8	26.4	3460.432	23.250	2145.695	1.150	73.628
107	341.8	23.4	3468.430	21.250	2152.959	0.950	73.953
109	338.5	27.6	3477.773	22.800	2160.676	0.950	74.274
111	347.0	29.6	3488.044	23.050	2168.675	1.300	74.725
113	339.2	29.8	3498.152	22.750	2176.392	1.050	75.081
115	336.2	36.6	3510.457	24.400	2184.595	1.100	75.451
117	348.1	43.2	3525.495	27.750	2194.255	1.350	75.921
119	352.3	37.6	3538.742	24.400	2202.851	1.400	76.414
121	344.0	34.6	3550.644	20.400	2209.868	1.300	76.862
123	336.2	37.6	3563.285	24.450	2218.089	1.450	77.349
125	340.9	29.0	3573.171	19.450	2224.719	1.150	77.741
127	341.9	31.0	3583.770	20.350	2231.677	1.250	78.168
129	342.8	54.8	3602.556	29.800	2241.892	2.050	78.871
131	343.5	35.6	3614.784	21.300	2249.209	1.650	79.438

Figure C3.11. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid RK1.

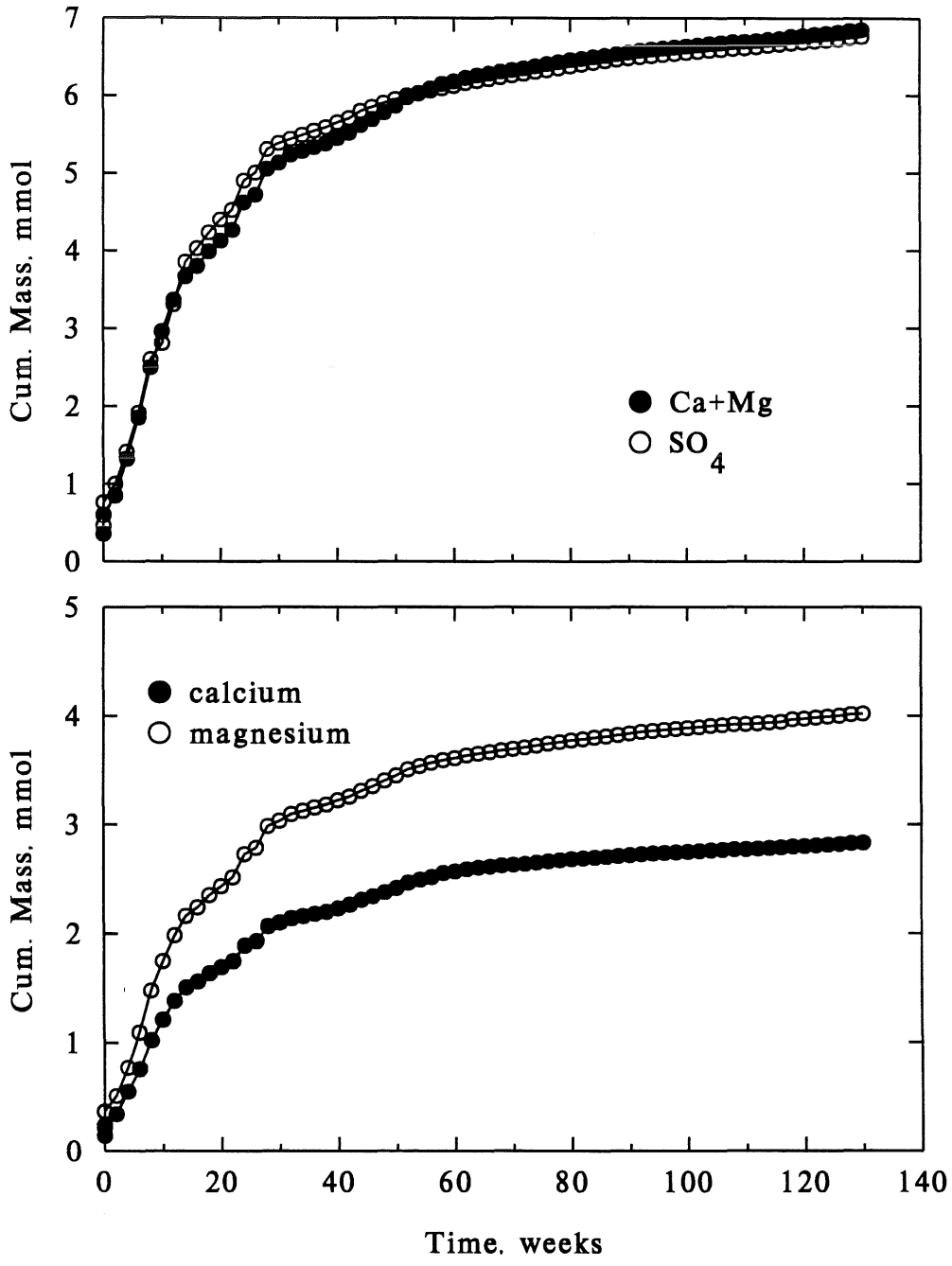

Figure C3.12. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid RK2.

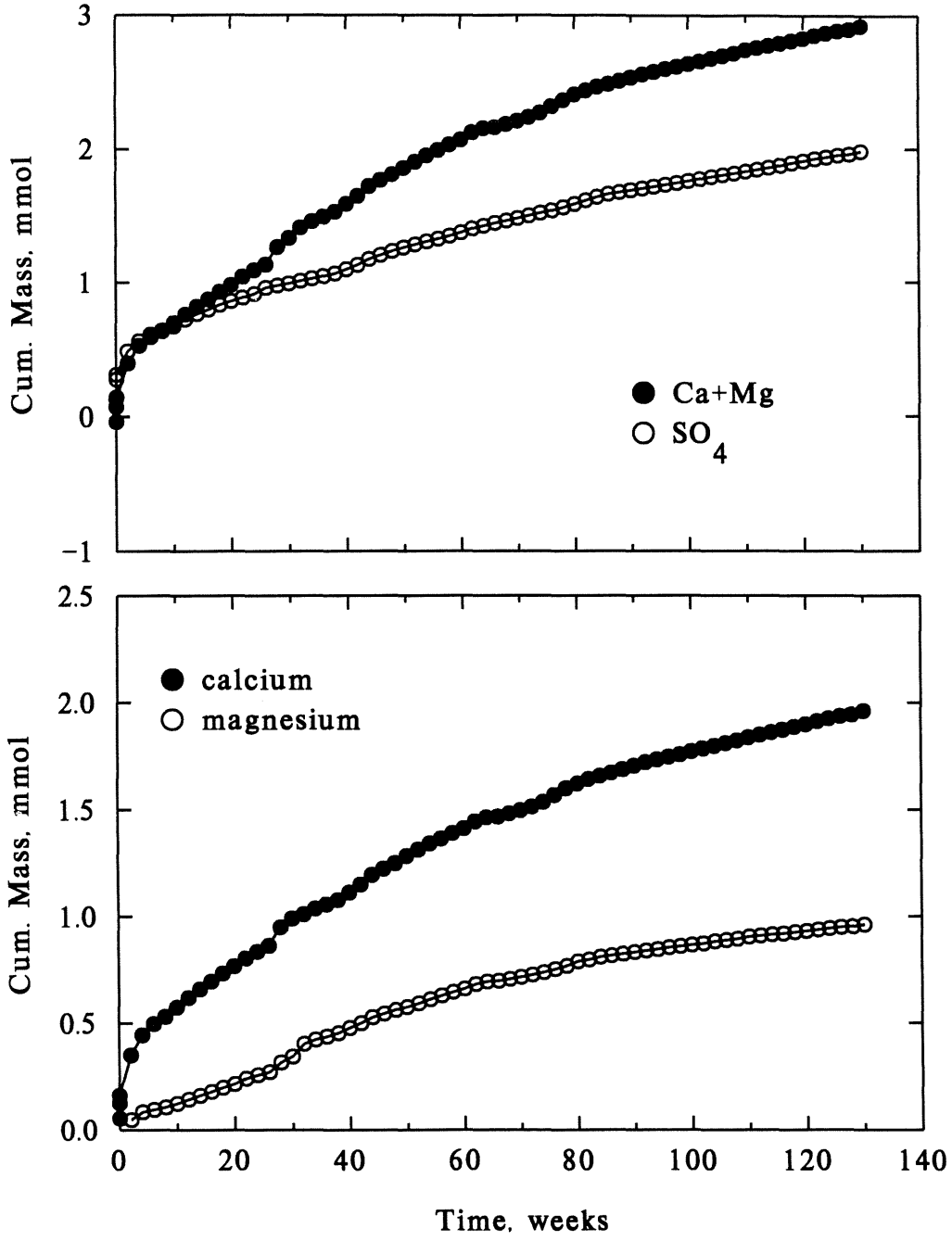

Figure C3.13. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid RK3.

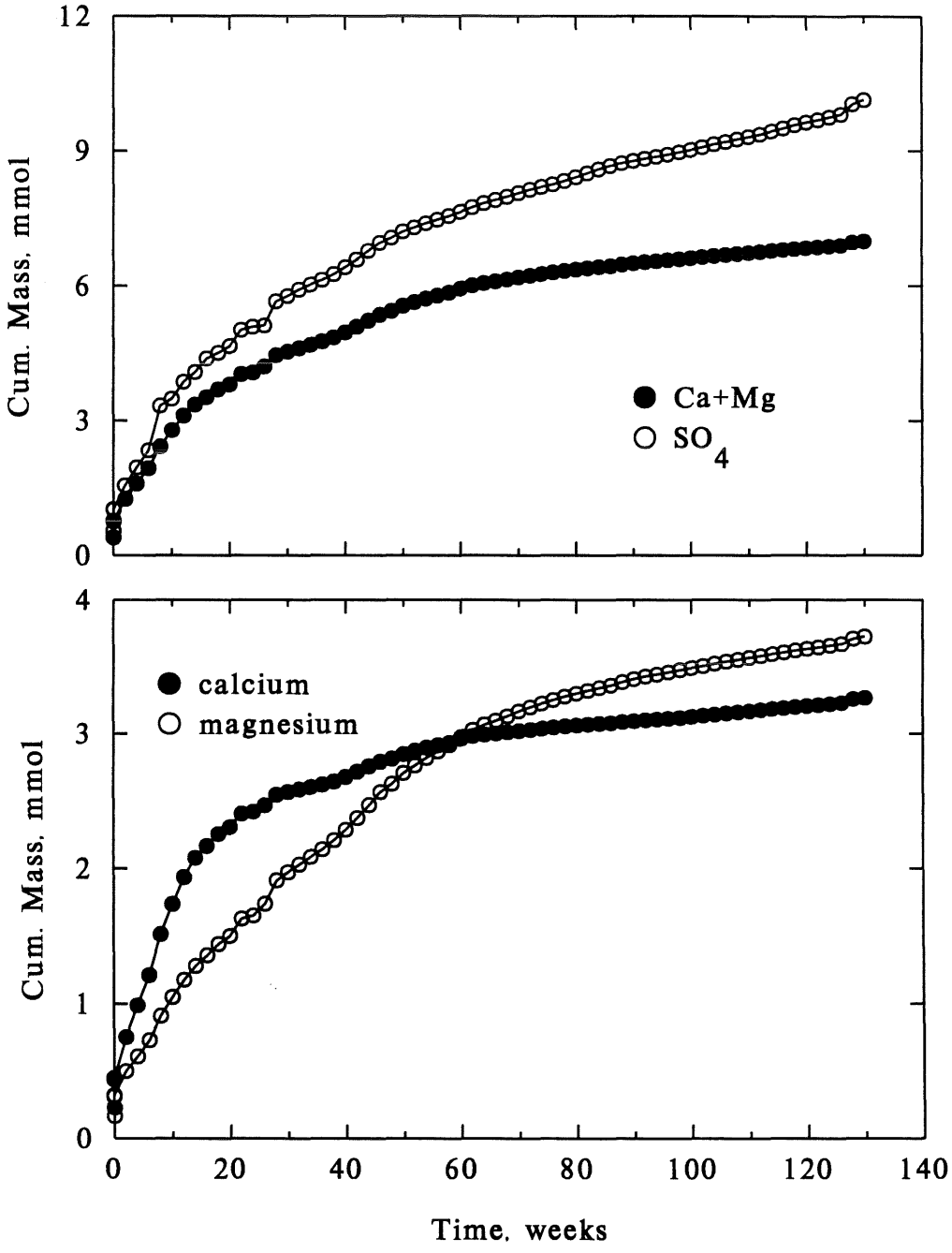

Figure C3.14. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid RK4.

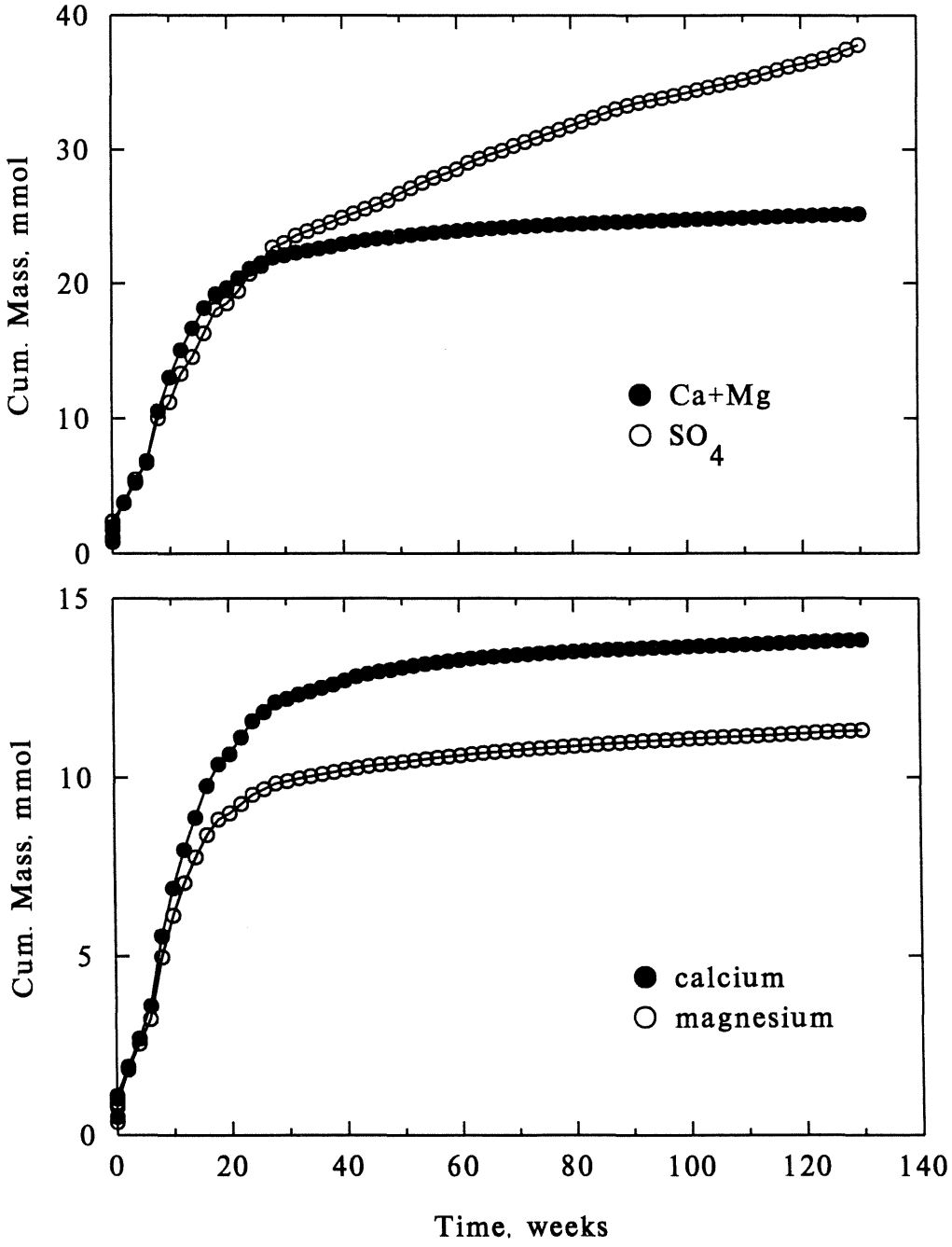

Figure C3.15. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid TL1.

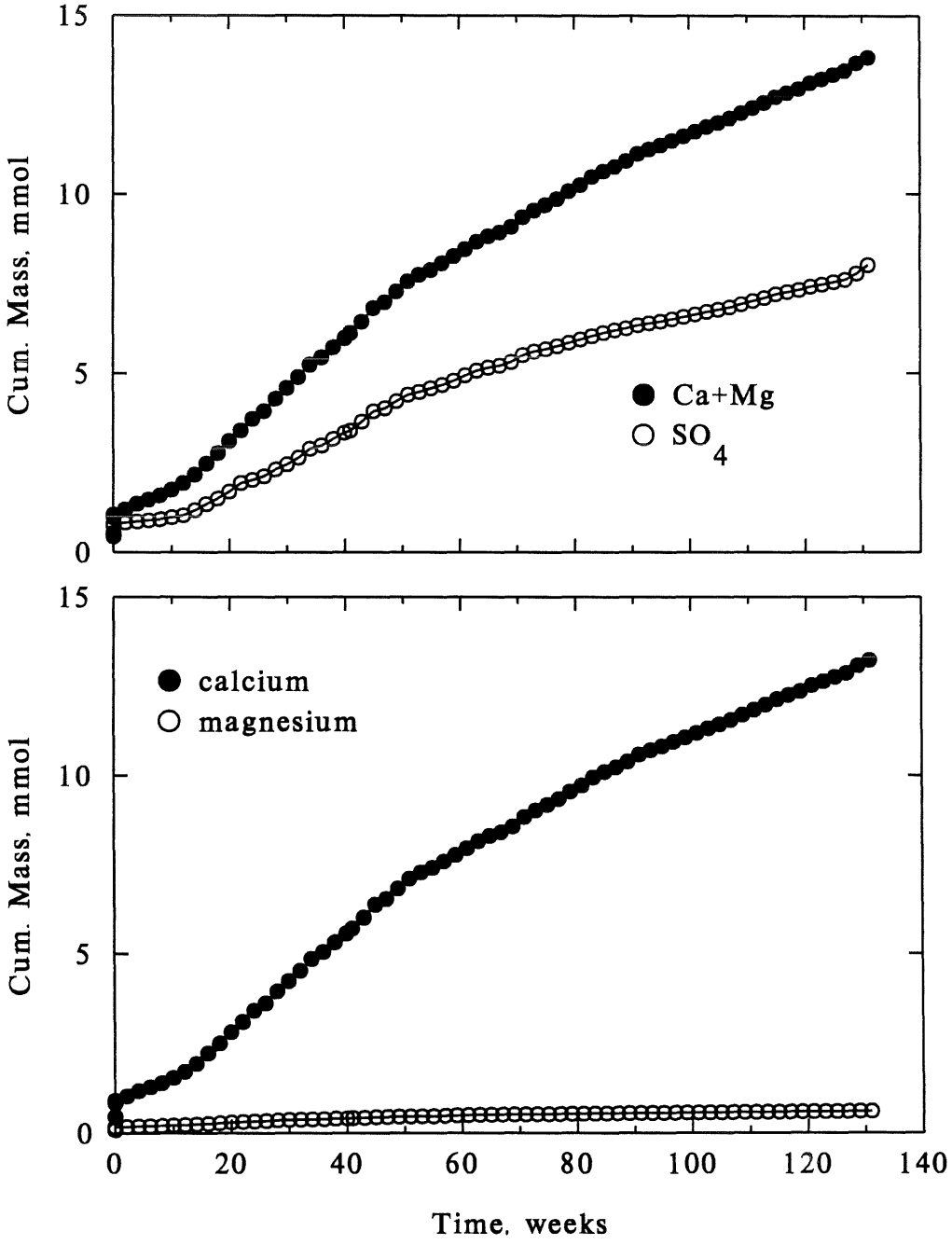

Figure C3.16. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid TL2.

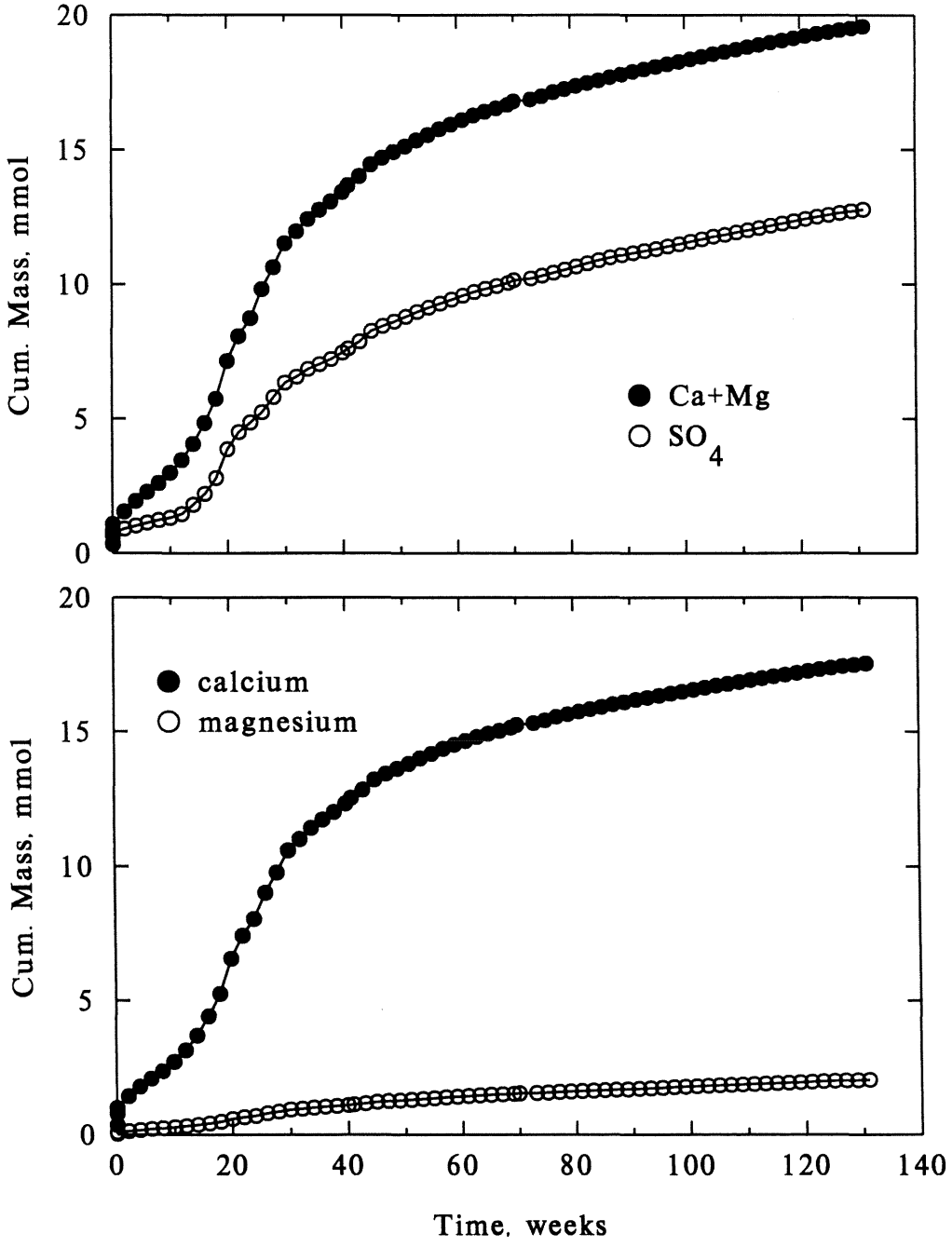

Figure C3.17. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid TL3.

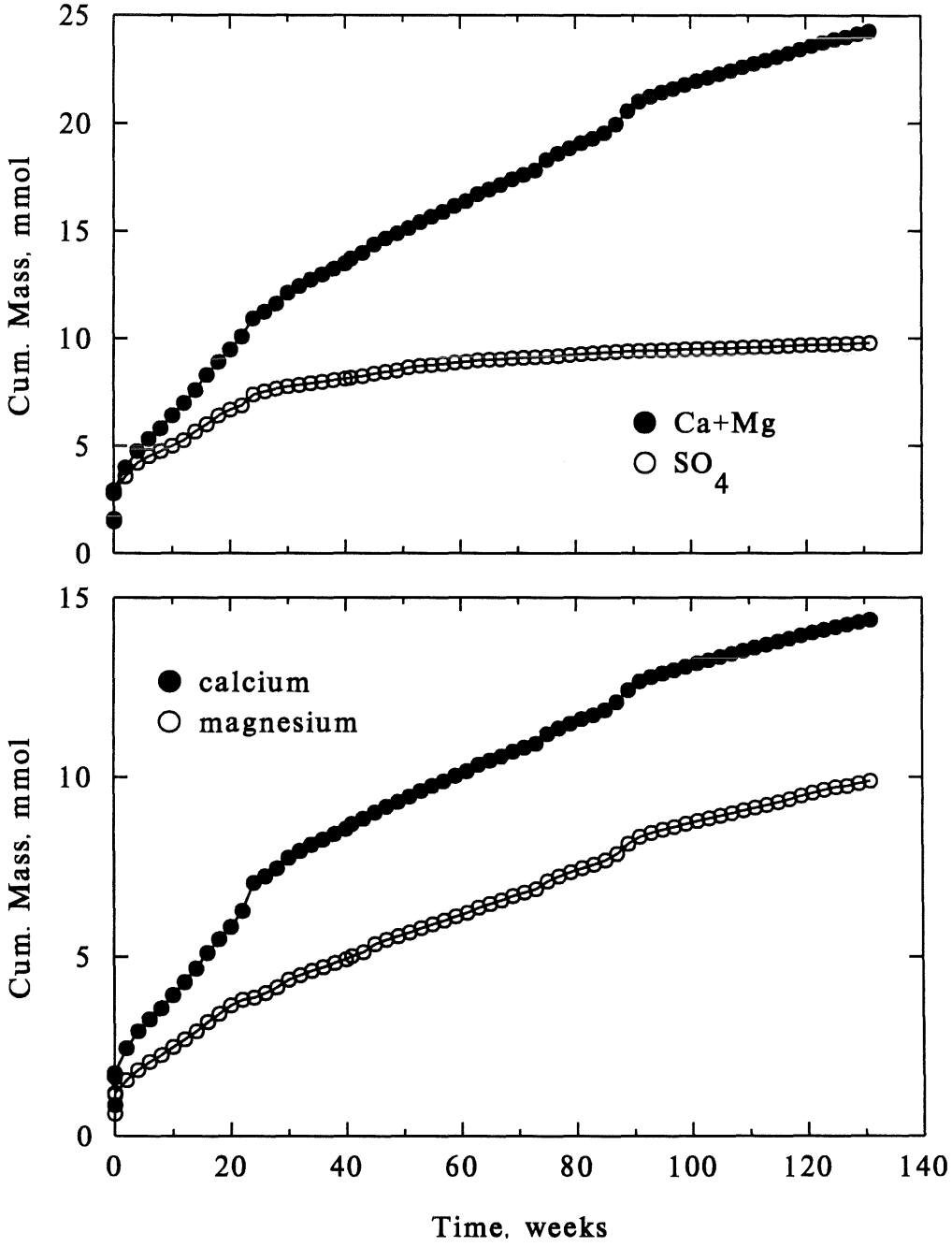

Figure C3.18. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid TL4.

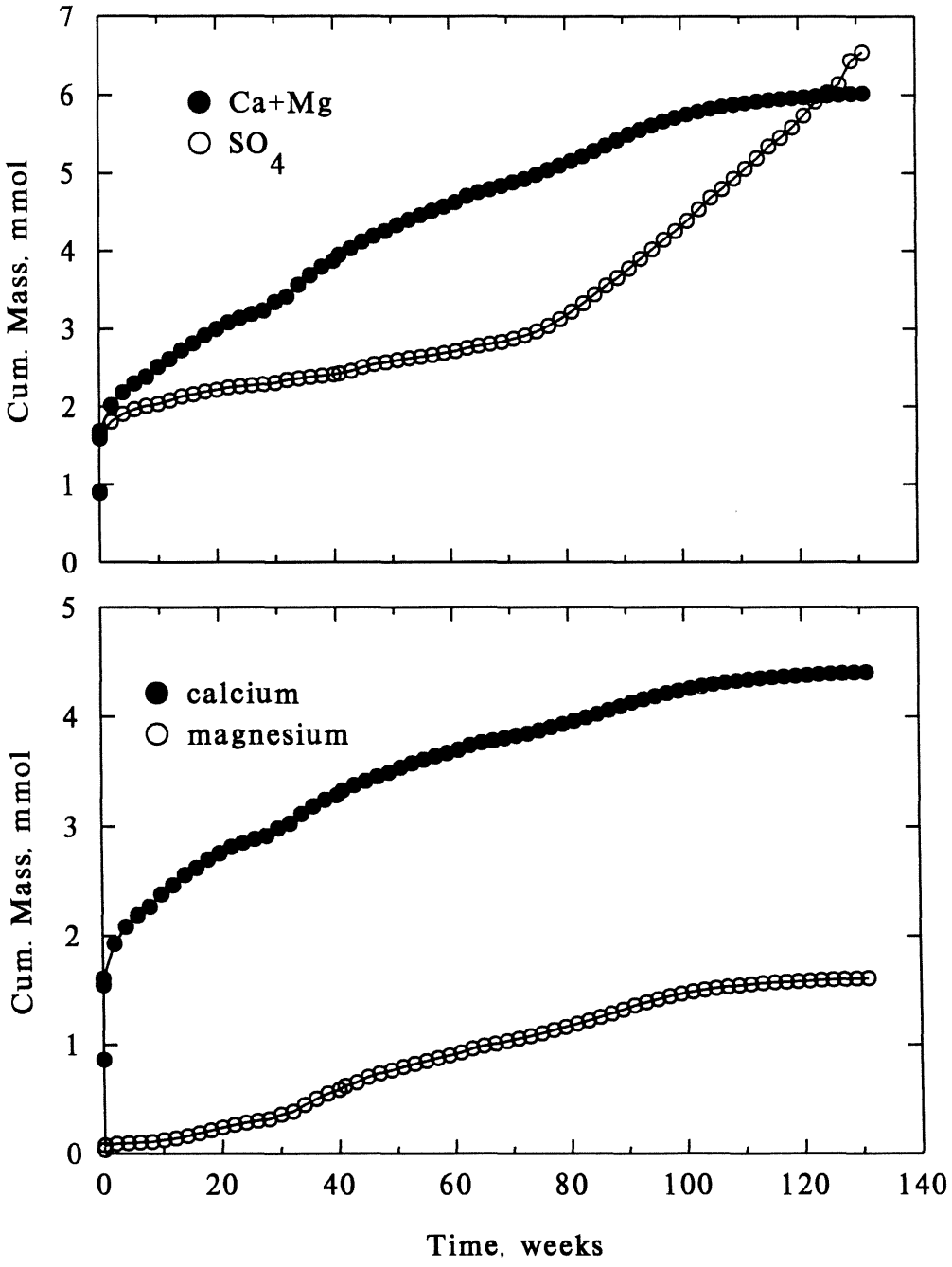

Figure C3.19. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid TL5.

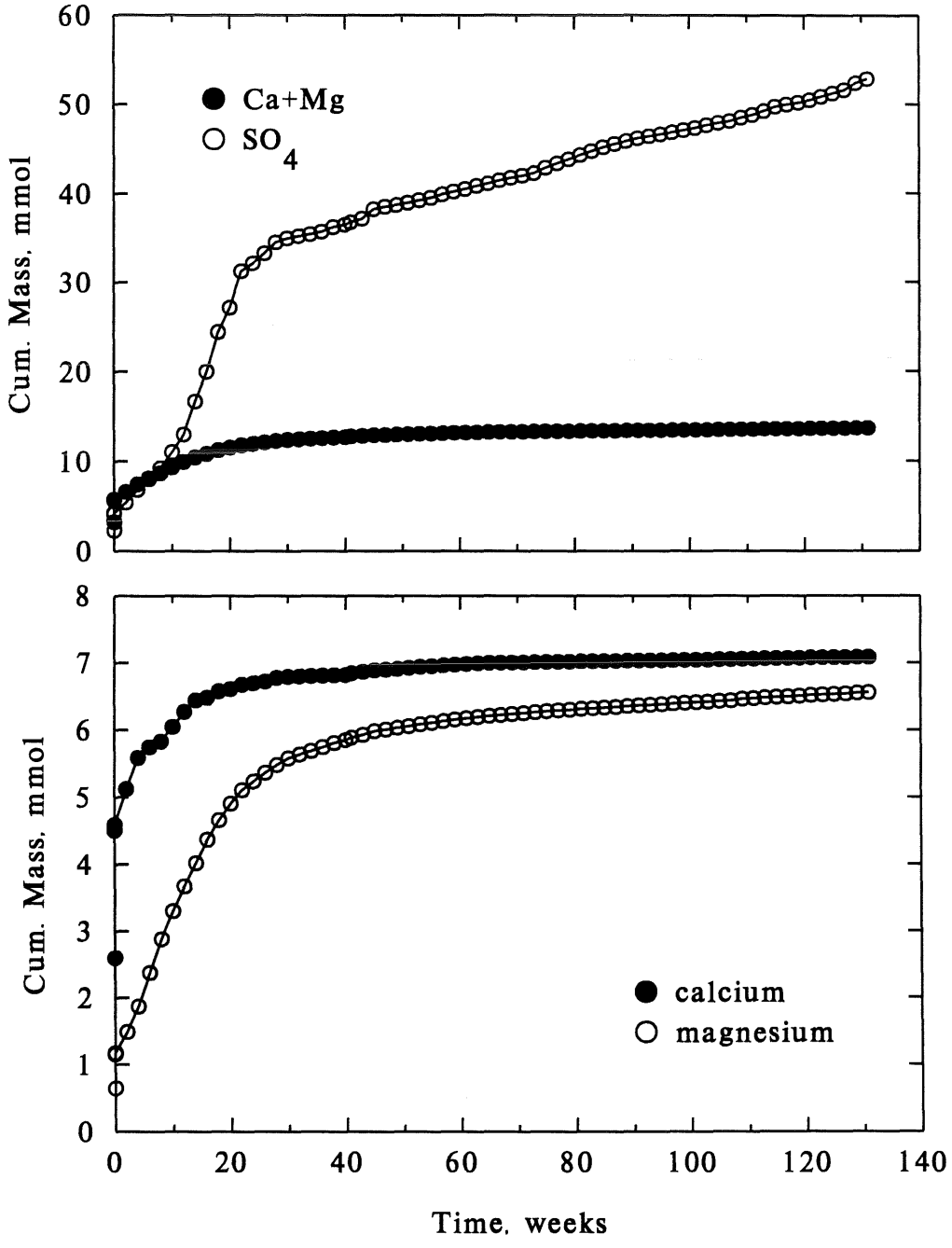

Figure C3.20. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Elevated Temperature Test: Solid TL6.

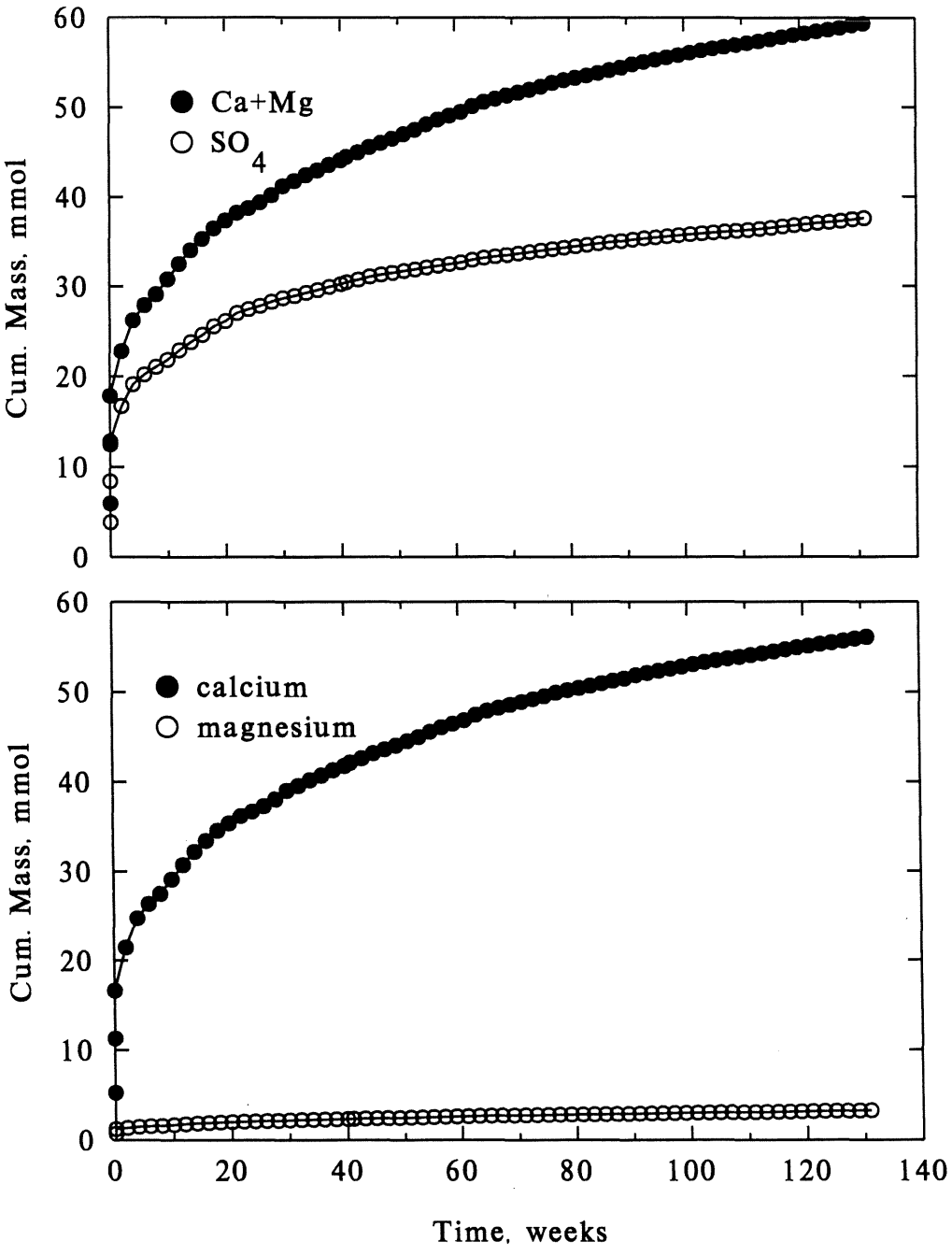

Table C4.1. Ratio of calcium plus magnesium release to sulfate release for the Elevated Temperature Test (weeks 0 - 130/131).

Solid	APP Release (mmol)	NP Release (mmol)	Ratio
RK1	7.273	7.244	0.996
RK2	2.129	3.132	1.472
RK3	10.686	7.388	0.691
RK4	39.007	26.027	0.667
TL1	8.432	14.348	1.702
TL2	13.121	19.973	1.522
TL3	11.435	25.814	2.257
TL4	7.494	6.960	0.929
TL5	54.973	16.632	0.303
TL6	41.351	65.114	1.575

Text C5.1. Elevated Temperature Test lab notes.

Sampling Interval:

Due to laboratory time constraints, the experiment was split into two separate sampling periods. The reactors containing tailings samples (TL1, TL2, TL3, TL4, TL5, and TL6) were started on May 15, 1991 (week 2) and the reactors containing rock samples (RK1, RK2, RK3, and RK4) were started on May 22, 1991 (week 2). The duplicate samples were discontinued at week 24 (rock samples) and at week 26 (tailings samples). As a result of the decreased sample load, the remaining reactors would be sampled on the same day. In order to accomplish this, it was necessary to sample the tailing samples on a one week oxidation time (week 27). For the remainder of the experiment, all reactors were sampled on the same day at two week intervals.

REACTOR 1

DATE	COMMENTS
6/04/91	Removed solids, crushed, and replaced along with a new filter. This will be standard procedure for this reactor.
7/02	The reactor top cracked, replaced with new one.
10/21	The perforated base on the reactor top was replaced. The heat apparently breaks down the plastic. Some small pieces of plastic crumbled into the solids.
11/04	Changed the reactor top, the base came unglued.
11/18	The oven temperature was 120 degrees, which resulted in the reactor base melting. Changed base. This was the case for all reactors.
5/03/93	Changed the reactor top.
6/14	Lost some water due to leakage around the base of the reactor top.

REACTOR 2

DATE	COMMENTS
6/17/91	Removed solids, crushed, and replaced along with a new filter. This will be standard procedure for this reactor.
7/01	Changed reactor top.
10/23	Discontinued reactor.

Text C5.2. Elevated Temperature Test lab notes.

REACTOR 3

DATE	COMMENTS
6/04/91	The perforated base of the reactor broke down due to high heat and interaction with the solids chemistry. Replaced base.
8/13	Perforated base came unglued. Changed reactor top.
11/18	Reactor base melted. Replace reactor top.
8/12/92	Sample water from second rinse was contaminated. Data from this week should be omitted from data set.
10/19	A small amount of solids was spilled from reactor top.
11/02	Removed solids to change filter.
10/18/93	Water drained very fast through solids, possible hole in filter.
11/01	Changed reactor top and filter.

REACTOR 4

DATE	COMMENTS
10/07/91	Changed base of reactor top.
10/21	Changed top of reactor.
10/23	Discontinued reactor.

REACTOR 5

DATE	COMMENTS
6/05/91	Drainage very slow.
7/30	Replaced base of reactor top.
10/21	Changed reactor top.
10/22	Water leaked from reactor base. No first rinse data.
11/18	Replaced base of reactor top.
2/10/92	Water ran through cracks in dried solids quickly, i.e. poor contact time.
6/02	Mixed surface of solids with spatula to improve contact time. This will be standard procedure for this solid unless otherwise noted.
9/21	Changed reactor top and filter.
4/05/93	Removed solids to change filter.
6/28	Removed solids to change filter.

Text C5.3. Elevated Temperature Test lab notes.

REACTOR 6

DATE	COMMENTS
6/04/91	Rinse water drained rapidly resulting in poor contact time with solids.
6/17	Changed reactor top. Base of reactor top had deteriorated, some plastic may have gotten into solids.
7/01	Stirred solids with spatula.
7/15	Fast drainage, poor contact time.
10/21	Stirred solids.
10/23	Discontinued reactor.

REACTOR 7

DATE	COMMENTS
10/21/91	Changed reactor top.
11/18	Changed base of reactor top.
6/02/92	Mixed solids with spatula. This became standard procedure until 10/05.
9/21	Changed reactor top and filter.
10/05	Removed solids and crushed. This seemed to improve contact and drainage. This became standard procedure unless otherwise noted.
11/18	Mixed solids with spatula.
12/02	Fast drainage, poor contact time.
12/28	Fast drainage, poor contact time.
1/11/93	Changed filter.
1/25	Changed base of reactor top and filter.
3/08	Mixed solids with spatula.

REACTOR 8

DATE	COMMENTS
10/21/91	Changed reactor top.
10/23	Discontinued reactor.

REACTOR 11

DATE	COMMENTS
11/18/91	Oven temperature set too high (120 degrees).
6/29/93	Changed filter.
7/12	Changed reactor top.

Text C5.4. Elevated Temperature Test lab notes.

REACTOR 12

DATE	COMMENTS.
8/20/91	Fast drainage, poor contact.
9/02	Fast drainage, poor contact.
9/16	Changed reactor top. Fast drainage, poor contact.
9/30	Changed filter.
10/30	Discontinued reactor.

REACTOR 13

DATE	COMMENTS
9/30/91	Changed reactor top.
11/18	Oven temperature set too high (120 degrees).

REACTOR 14

DATE	COMMENTS
10/30/91	Discontinued reactor.

REACTOR 15

DATE	COMMENTS
11/18/91	Oven temperature set too high (120 degrees).
7/28/92	Changed filter.
9/21	Replaced reactor top.
1/11/93	Replaced reactor top.
10/11	Changed base of reactor top.

Text C5.5. Elevated Temperature Test lab notes.

REACTOR 16

DATE	COMMENTS
10/30/91	Discontinued reactor.

REACTOR 17

DATE	COMMENTS
5/28/91	Poor drainage. Decanted water remaining in upper reactor. See data file for volume(s) decanted.
8/05	Changed reactor top.
8/19	Fast drainage, poor contact time.
11/18	Oven temperature set too high (120 degrees).
6/16/92	Mixed surface of solids with spatula. This will be standard procedure unless otherwise noted.
8/24	Changed base of reactor top.

REACTOR 18

DATE	COMMENTS
5/28/91	Poor drainage. Decanted water remaining in upper reactor. See data file for volume(s) decanted.
10/30	Discontinued reactor.

REACTOR 19

DATE	COMMENTS
11/18/91	Oven temperature set too high (120 degrees).
6/15/92	Changed base of reactor top and filter.
6/29/93	Changed filter.
7/12	Changed base of reactor top and filter.

Text C5.6. Elevated Temperature Test lab notes.

REACTOR 20

DATE	COMMENTS
10/30/91	Discontinued reactor

REACTOR 21

DATE	COMMENTS
6/11/91	Changed base of reactor top and filter.
11/18	Oven temperature set too high (120 degrees).
6/01/92	Changed filter.
10/19	Changed base of reactor top and filter.
5/03/93	Changed base of reactor top and filter.

REACTOR 22

DATE	COMMENTS
8/05/91	Changed reactor top.
10/30/91	Discontinued reactor.

Text C6.1. Rinse water temperature comparison.

Prior to the start of the Elevated Temperature Test, the effects of rinsing with room temperature distilled water versus distilled water heated to 85 degrees centigrade were examined.

Duplicate 75 gram samples of Virginia Formation hornfels (+270/-100 mesh, 5% sulfur) were placed into the same reactors used in the Elevated Temperature Test and the Wet-Dry Cycle Test. The samples were then rinsed with five distilled water volumes of 200 mL, to remove oxidation products that had accumulated during storage. The rinses were analyzed for specific conductance and pH to determine the reproducibility of the sample splits (table C6.2).

After the initial rinses, the reactors were placed into an oven with a temperature setting of approximately 100 degrees centigrade, and allowed to oxidize for two weeks. Reactor 1 was rinsed five times with heated distilled water on weeks 2, 5, and 7, and with room temperature distilled water on week 4. Reactor 2 was rinsed with room temperature distilled water on weeks 2, 5, and 7, and with heated distilled of week 4. Specific conductance and pH were analyzed for all rinses, and sulfate on weeks 5 and 7 (table C6.3). The hot water rinses were allowed to cool to room temperature before analysis.

With one exception, drainage pH of the hot water rinses was lower than that of the room temperature rinses. The specific conductance of the hot water rinse was always higher than that of the room temperature rinses. The limited sulfate data indicated that the hot water rinse removed 20 to 150% more sulfate than the room temperature rinse. To maximize rinsing efficiency, distilled water was heated prior to rinsing in the Elevated Temperature Test.

Table C6.2. Rinse water temperature comparison: Initial rinse data.

Reactor 1			Reactor 2		
Rinse	SC[1]	pH	Rinse	SC	pH
1	2200	3.30	1	2210	3.30
2	1000	3.47	2	1010	3.43
3	580	3.55	3	580	3.55
4	510	3.55	4	510	3.56
5	280	3.65	5	270	3.63

[1] SC = specific conductance

Table C6.3. Rinse water temperature comparison data.

Week	Rinse	Specific Conductance		pH		Sulfate	
		R.T.[1]	Hot	R.T.	Hot	R.T.	Hot
2	1	1200	1850	2.98	2.34	--[2]	--
	2	345	500	3.46	2.77	--	--
	3	170	315	3.60	2.91	--	--
	4	132	245	3.69	3.02	--	--
	5	113	200	3.75	3.11	--	--
4	1	1710	2075	2.57	2.61	--	--
	2	340	575	3.21	3.04	--	--
	3	162	400	3.50	3.18	--	--
	4	115	285	3.63	3.27	--	--
	5	100	260	3.67	3.33	--	--
5	1	1060	2525	2.81	2.46	360	930
	2	300	725	3.32	2.87	69	140
	3	182	500	3.47	3.01	34	97
	4	132	380	3.56	3.10	25	69
	5	120	310	3.62	3.22	23	43
7	1	1425	2125	2.68	2.27	585	670
	2	410	725	3.17	2.66	96	132
	3	248	500	3.37	2.80	44	87
	4	185	390	3.48	2.89	29	67
	5	152	310	3.51	3.00	24	53

[1] R.T. = room temperature
[2] -- = not analyzed

APPENDIX D

PARTICLE SIZE EXPERIMENT

Table D1.1. Average weekly temperature and relative humidity summary statistics for the Particle Size Experiment.

	Upper Shelf[1]	Lower Shelf[2]	Box[3]	All data[4]
Temperature (°C)				
minimum	21.1	20.9	22.9	20.9
average	23.9	24.0	24.4	24.1
maximum	26.3	26.0	26.8	26.8
standard deviation	1.63	1.21	1.01	1.31
number of cases	29	29	30	88
Relative Humidity (%)				
minimum	44.0	45.4	50.5	44.0
average	50.8	51.2	56.6	52.9
maximum	57.2	58.8	63.0	63.0
standard deviation	3.66	4.19	3.48	4.60
number of cases	29	29	30	88

[1] Reactors 5, 6, 7, 12, 18, 19, and 23.
[2] Reactors 4, 11, 13, 17, 21, 20, 24, and 25.
[3] Reactors 1, 2, 3, 8, 9, 10, 14, 15, and 16.
[4] Represents statistics for the data overall.

Table D1.2. Average weekly temperature and relative humidity readings for the upper shelf from the Particle Size Experiment.

Week	Month	Day	Year	Temperature (°C)	Relative Humidity (%)
1	12	9	93	.	.
2	12	16	93	23.333	47.0
3	12	23	93	22.667	47.2
4	12	30	93	21.111	50.3
5	1	6	94	21.944	50.0
6	1	13	94	22.889	51.6
7	1	20	94	21.500	51.3
8	1	27	94	22.333	54.0
9	2	3	94	22.111	51.0
1	2	10	94	21.556	55.8
11	2	17	94	24.556	51.6
12	2	24	94	24.611	52.3
13	3	3	94	23.333	53.4
14	3	10	94	23.333	53.5
15	3	17	94	22.333	57.2
16	3	24	94	22.500	55.5
17	3	31	94	23.333	50.0
18	4	7	94	23.222	47.6
19	4	14	94	26.278	47.8
20	4	21	94	25.556	44.0
21	4	28	94	26.111	45.8
22	5	5	94	25.556	47.0
23	5	12	94	25.556	45.5
24	5	19	94	25.167	47.0
25	5	26	94	25.722	46.5
26	6	2	94	24.444	53.0
27	6	9	94	24.611	54.0
28	6	16	94	25.556	55.3
29	6	23	94	25.833	54.0
30	6	30	94	26.278	55.0

Table D1.3. Average weekly temperature and relative humidity readings for the lower shelf from the Particle Size Experiment.

Week	Month	Day	Year	Temperature (°C)	Relative Humidity (%)
1	12	9	93	.	.
2	12	16	93	24.778	45.8
3	12	23	93	23.778	47.6
4	12	30	93	22.611	48.7
5	1	6	94	23.222	48.8
6	1	13	94	24.667	47.0
7	1	20	94	23.778	46.8
8	1	27	94	24.778	48.6
9	2	3	94	25.111	45.4
10	2	10	94	23.667	51.8
11	2	17	94	25.333	50.2
12	2	24	94	25.556	48.2
13	3	3	94	25.222	50.6
14	3	10	94	24.444	52.0
15	3	17	94	22.222	57.8
16	3	24	94	22.500	58.8
17	3	31	94	23.333	51.8
18	4	7	94	23.222	49.4
19	4	14	94	26.000	46.0
20	4	21	94	24.722	46.0
21	4	28	94	25.222	46.6
22	5	5	94	23.611	51.0
23	5	12	94	20.944	57.5
24	5	19	94	21.944	54.0
25	5	26	94	23.500	55.7
26	6	2	94	23.611	54.5
27	6	9	94	23.889	55.0
28	6	16	94	24.611	56.3
29	6	24	94	25.000	56.8
30	6	30	94	25.167	55.5

Table D1.4. Average weekly temperature and relative humidity readings for the box from the Particle Size Experiment.

Week	Month	Day	Year	Temperature (°C)	Relative Humidity (%)
1	12	16	93	24.111	52.4
2	12	23	93	23.778	52.4
3	12	30	93	22.944	51.3
4	1	6	94	23.611	54.8
5	1	13	94	23.667	55.4
6	1	20	94	24.056	52.7
7	1	27	94	24.889	54.2
8	2	3	94	24.667	52.0
9	2	10	94	24.556	52.6
10	2	17	94	24.111	58.8
11	2	24	94	24.611	56.8
12	3	3	94	24.778	57.0
13	3	10	94	24.167	60.5
14	3	17	94	24.056	63.0
15	3	24	94	23.611	60.0
16	3	31	94	24.222	56.4
17	4	7	94	23.444	59.0
18	4	14	94	25.000	53.5
19	4	21	94	23.611	54.3
20	4	28	94	24.000	58.0
21	5	5	94	23.611	56.0
22	5	12	94	23.167	50.5
23	5	19	94	23.333	57.8
24	5	26	94	25.167	59.7
25	6	2	94	25.167	59.3
26	6	9	94	25.278	57.0
27	6	16	94	25.833	61.8
28	6	23	94	26.556	60.8
29	6	30	94	26.833	59.5
30	7	7	94	26.500	61.0

Figure D1.5. Average weekly temperature and relative humidity versus time for the Particle Size Experiment (weeks 0 – 30).

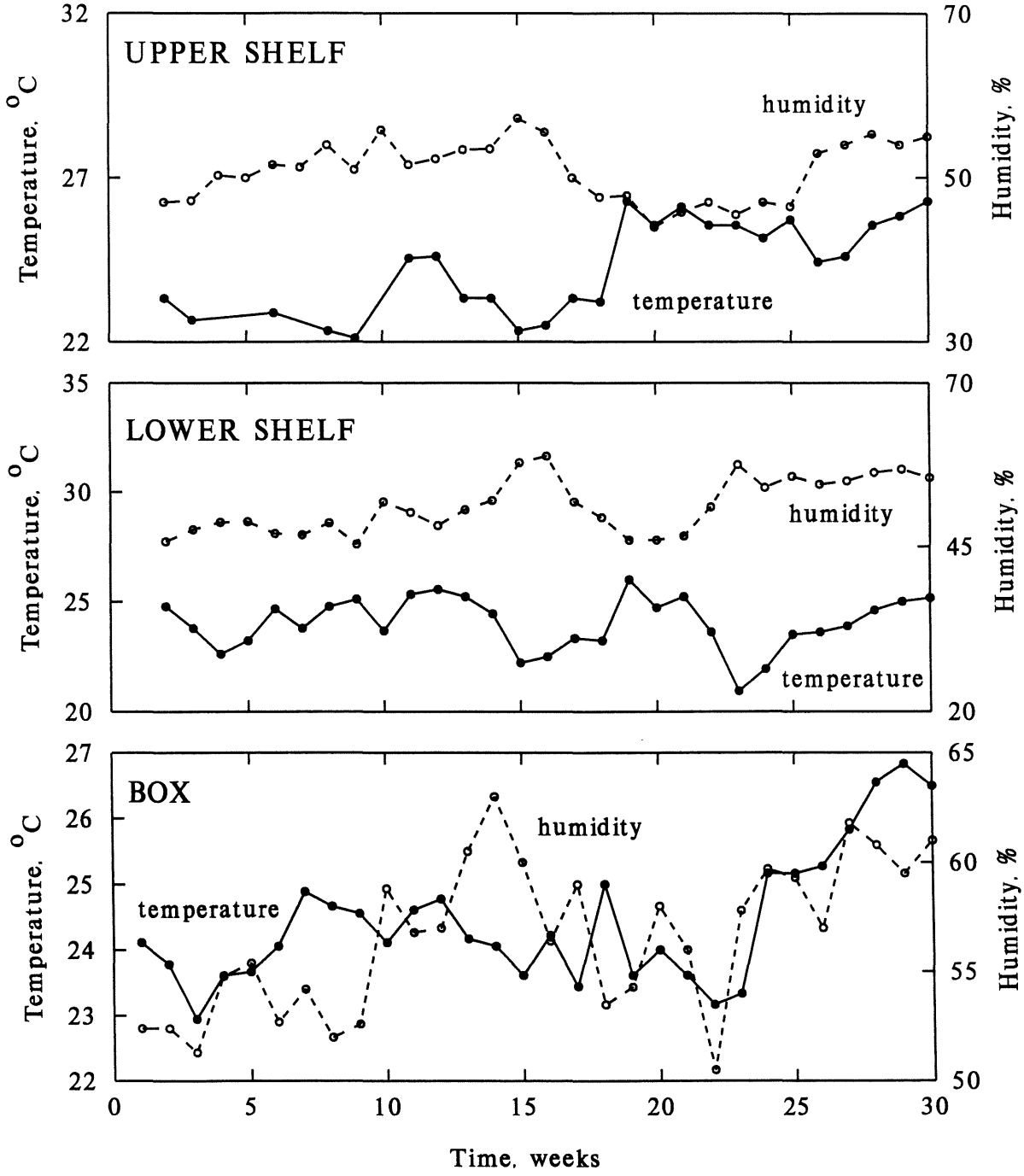

Table D1.6. Temperature and relative humidity daily reading summary statistics for the Particle Size Experiment.

	Upper Shelf[1]	Lower Shelf[2]	Box[3]	All data[4]
Temperature (°C)				
minimum	21.1	20.6	22.2	20.6
average	23.8	24.1	24.4	24.1
maximum	28.3	26.7	27.2	28.3
standard deviation	1.78	1.39	1.13	1.47
number of cases	120	121	122	363
Relative Humidity (%)				
minimum	40.0	40.0	46.0	40.0
average	50.9	50.9	56.5	52.8
maximum	65.0	68.0	68.0	68.0
standard deviation	4.75	5.13	4.33	5.44
number of cases	114	120	120	354

[1] Reactors 5, 6, 7, 12, 18, 19, and 23.
[2] Reactors 4, 11, 13, 17, 21, 20, 24, and 25.
[3] Reactors 1, 2, 3, 8, 9, 10, 14, 15, and 16.
[4] Represents statistics for the data overall.

Table D1.7. Temperature and relative humidity for the upper shelf from the Particle Size Experiment: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
12	10	93	22.8	47.0
12	13	93	23.3	45.0
12	14	93	25.6	44.0
12	15	93	22.2	49.0
12	16	93	22.8	50.0
12	17	93	23.3	47.0
12	20	93	22.8	50.0
12	21	93	21.7	43.0
12	22	93	23.3	47.0
12	23	93	22.2	49.0
12	27	93	21.1	53.0
12	28	93	21.1	49.0
12	29	93	21.1	49.0
1	3	94	22.2	48.0
1	4	94	22.2	49.0
1	5	94	21.1	56.0
1	6	94	22.2	49.0
1	7	94	22.8	53.0
1	10	94	22.2	53.0
1	11	94	27.2	40.0
1	12	94	21.1	56.0
1	13	94	21.1	56.0
1	14	94	21.1	53.0
1	18	94	.	.
1	19	94	21.7	49.0
1	20	94	21.7	52.0
1	21	94	22.2	49.0
1	24	94	22.2	53.0
1	25	94	22.2	57.0
1	26	94	22.8	54.0
1	27	94	22.2	57.0
1	28	94	23.3	50.0
1	31	94	22.2	54.0
2	1	94	22.2	43.0
2	2	94	21.1	55.0
2	3	94	21.7	53.0
2	4	94	22.2	51.0
2	7	94	21.7	56.0
2	8	94	21.1	56.0
2	9	94	21.1	56.0
2	10	94	21.7	60.0
2	11	94	23.9	50.0
2	14	94	25.6	50.0
2	15	94	25.0	50.0
2	16	94	24.4	53.0
2	17	94	23.9	55.0
2	18	94	25.6	53.0
2	22	94	24.4	53.0
2	23	94	25.6	50.0
2	24	94	22.8	53.0
2	25	94	23.9	55.0
2	28	94	23.3	54.0
3	1	94	23.3	50.0
3	2	94	22.8	54.0
3	3	94	23.3	54.0
3	7	94	23.9	50.0
3	8	94	22.8	57.0
3	10	94	.	.
3	11	94	22.2	60.0
3	14	94	22.8	57.0
3	15	94	22.2	65.0

Table D1.8. Temperature and relative humidity for the upper shelf from the Particle Size Experiment: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
3	16	94	22.2	51.0
3	17	94	22.2	53.0
3	18	94	22.2	51.0
3	21	94	21.7	64.0
3	22	94	22.8	57.0
3	24	94	23.3	50.0
3	25	94	23.3	54.0
3	28	94	23.3	54.0
3	29	94	23.9	48.0
3	30	94	23.3	47.0
3	31	94	22.8	47.0
4	1	94	23.9	47.0
4	4	94	22.2	50.0
4	5	94	22.2	46.0
4	6	94	23.3	47.0
4	7	94	24.4	48.0
4	11	94	25.6	47.0
4	12	94	26.7	56.0
4	13	94	26.7	43.0
4	14	94	26.1	45.0
4	18	94	25.6	44.0
4	19	94	26.1	42.0
4	20	94	26.1	45.0
4	21	94	24.4	45.0
4	22	94	26.1	42.0
4	25	94	26.7	45.0
4	26	94	25.0	49.0
4	27	94	26.7	45.0
4	28	94	26.1	48.0
4	29	94	26.1	48.0
5	2	94	25.0	46.0
5	6	94	25.6	.
5	9	94	25.0	49.0
5	11	94	26.1	42.0
5	16	94	25.6	47.0
5	17	94	25.0	49.0
5	18	94	25.0	46.0
5	19	94	25.0	46.0
5	24	94	28.3	44.0
5	25	94	25.0	49.0
5	26	94	23.9	.
5	27	94	24.4	52.0
5	31	94	25.0	56.0
6	1	94	25.0	54.0
6	2	94	23.3	50.0
6	6	94	25.0	.
6	7	94	25.0	56.0
6	8	94	25.0	54.0
6	9	94	24.4	52.0
6	13	94	25.0	.
6	14	94	25.6	53.0
6	15	94	26.1	60.0
6	16	94	25.6	53.0
6	20	94	26.1	.
6	21	94	26.1	54.0
6	22	94	25.6	54.0
6	23	94	26.7	54.0
6	27	94	26.7	.
6	28	94	26.7	54.0
6	29	94	26.1	57.0
6	30	94	25.6	54.0

Table D1.9. Temperature and relative humidity for the lower shelf from the Particle Size Experiment: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
12	10	93	23.3	48.0
12	13	93	23.3	45.0
12	14	93	26.7	43.0
12	15	93	25.6	44.0
12	16	93	25.0	49.0
12	17	93	25.0	46.0
12	20	93	23.3	50.0
12	21	93	23.3	44.0
12	22	93	24.4	48.0
12	23	93	22.8	50.0
12	27	93	22.2	49.0
12	28	93	22.2	49.0
12	29	93	23.3	47.0
1	3	94	22.8	50.0
1	4	94	23.3	50.0
1	5	94	22.8	47.0
1	6	94	23.9	48.0
1	7	94	25.6	47.0
1	10	94	25.0	49.0
1	11	94	25.6	40.0
1	12	94	23.9	49.0
1	13	94	23.3	50.0
1	14	94	23.3	45.0
1	18	94	23.9	49.0
1	19	94	24.4	43.0
1	20	94	23.3	50.0
1	21	94	23.9	48.0
1	24	94	24.4	45.0
1	25	94	25.6	47.0
1	26	94	25.6	50.0
1	27	94	24.4	53.0
1	28	94	26.7	43.0
1	31	94	25.0	46.0
2	1	94	25.6	41.0
2	2	94	24.4	49.0
2	3	94	23.9	48.0
2	4	94	25.0	46.0
2	7	94	23.3	54.0
2	8	94	23.3	50.0
2	9	94	23.9	52.0
2	10	94	22.8	57.0
2	11	94	24.4	52.0
2	14	94	25.0	49.0
2	15	94	26.1	47.0
2	16	94	25.6	54.0
2	17	94	25.6	49.0
2	18	94	26.7	47.0
2	22	94	25.6	46.0
2	23	94	25.6	49.0
2	24	94	24.4	52.0
2	25	94	26.1	50.0
2	28	94	25.6	50.0
3	1	94	25.6	47.0
3	2	94	24.4	53.0
3	3	94	24.4	53.0
3	7	94	25.0	49.0
3	8	94	23.9	55.0
3	10	94	.	.
3	11	94	22.2	60.0
3	14	94	22.8	57.0
3	15	94	21.7	68.0
3	16	94	22.2	51.0

Table D1.10. Temperature and relative humidity for the lower shelf from the Particle Size Experiment: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
3	17	94	22.2	53.0
3	18	94	22.2	60.0
3	21	94	21.7	68.0
3	22	94	22.8	53.0
3	24	94	23.3	54.0
3	25	94	23.3	54.0
3	28	94	23.3	54.0
3	29	94	23.9	48.0
3	30	94	22.8	53.0
3	31	94	23.3	50.0
4	1	94	23.9	51.0
4	4	94	22.2	53.0
4	5	94	22.2	44.0
4	6	94	23.3	51.0
4	7	94	24.4	48.0
4	11	94	25.0	46.0
4	12	94	26.7	48.0
4	13	94	26.1	45.0
4	14	94	26.1	45.0
4	18	94	24.4	45.0
4	19	94	25.0	44.0
4	20	94	25.6	47.0
4	21	94	23.9	48.0
4	22	94	25.6	44.0
4	25	94	26.1	47.0
4	26	94	25.0	46.0
4	27	94	23.3	51.0
4	28	94	26.1	45.0
4	29	94	26.1	47.0
5	2	94	21.1	55.0
5	6	94	21.1	.
5	9	94	21.1	55.0
5	11	94	20.6	60.0
5	16	94	21.1	55.0
5	17	94	21.7	55.0
5	18	94	23.3	50.0
5	19	94	21.7	56.0
5	24	94	23.3	58.0
5	25	94	23.9	55.0
5	26	94	23.3	54.0
5	27	94	23.9	55.0
5	31	94	23.3	58.0
6	1	94	23.9	55.0
6	2	94	23.3	50.0
6	6	94	23.9	55.0
6	7	94	23.9	55.0
6	8	94	23.9	55.0
6	9	94	23.9	55.0
6	13	94	23.9	55.0
6	14	94	24.4	55.0
6	15	94	25.6	60.0
6	16	94	24.4	55.0
6	20	94	24.4	64.0
6	21	94	25.0	52.0
6	22	94	25.0	55.0
6	23	94	25.6	56.0
6	27	94	25.6	50.0
6	28	94	25.6	54.0
6	29	94	25.0	59.0
6	30	94	24.4	59.0

Table D1.11. Temperature and relative humidity for the box from the Particle Size Experiment: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
12	10	93	25.0	49.0
12	13	93	23.9	48.0
12	14	93	23.3	55.0
12	15	93	23.3	58.0
12	16	93	25.0	52.0
12	17	93	23.9	52.0
12	20	93	23.3	55.0
12	21	93	23.3	47.0
12	22	93	25.0	49.0
12	23	93	23.3	59.0
12	27	93	23.3	54.0
12	28	93	22.2	50.0
12	29	93	23.3	50.0
1	3	94	22.2	57.0
1	4	94	23.9	55.0
1	5	94	22.8	57.0
1	6	94	25.6	50.0
1	7	94	24.4	52.0
1	10	94	25.0	53.0
1	11	94	22.2	57.0
1	12	94	22.8	61.0
1	13	94	23.9	54.0
1	14	94	23.3	54.0
1	18	94	.	.
1	19	94	24.4	52.0
1	20	94	24.4	52.0
1	21	94	25.0	52.0
1	24	94	25.0	53.0
1	25	94	24.4	58.0
1	26	94	25.6	53.0
1	27	94	24.4	55.0
1	28	94	25.0	55.0
1	31	94	24.4	52.0
2	1	94	25.0	49.0
2	2	94	23.9	55.0
2	3	94	25.0	49.0
2	4	94	25.0	46.0
2	7	94	23.9	58.0
2	8	94	24.4	55.0
2	9	94	24.4	55.0
2	10	94	25.0	49.0
2	11	94	24.4	58.0
2	14	94	23.3	62.0
2	15	94	23.9	58.0
2	16	94	24.4	58.0
2	17	94	24.4	58.0
2	18	94	25.0	59.0
2	22	94	24.4	55.0
2	23	94	25.0	55.0
2	24	94	23.9	58.0
2	25	94	26.1	53.0
2	28	94	25.0	56.0
3	1	94	23.9	59.0
3	2	94	25.0	55.0
3	3	94	23.9	62.0
3	7	94	24.4	58.0
3	8	94	23.9	63.0
3	10	94	.	.
3	11	94	23.3	65.0
3	14	94	24.4	62.0
3	15	94	23.3	66.0
3	16	94	25.0	59.0

Table D1.12. Temperature and relative humidity for the box from the Particle Size Experiment: daily readings.

Month	Day	Year	Temperature (°C)	Relative Humidity (%)
3	17	94	.	.
3	18	94	23.3	65.0
3	21	94	23.3	66.0
3	22	94	23.3	54.0
3	24	94	24.4	55.0
3	25	94	23.9	58.0
3	28	94	25.0	55.0
3	29	94	24.4	55.0
3	30	94	23.3	62.0
3	31	94	24.4	52.0
4	1	94	24.4	58.0
4	4	94	22.8	60.0
4	5	94	23.3	57.0
4	6	94	23.3	62.0
4	7	94	23.3	58.0
4	11	94	23.9	55.0
4	12	94	25.0	50.0
4	13	94	24.4	55.0
4	14	94	26.7	54.0
4	18	94	23.3	54.0
4	19	94	23.3	54.0
4	20	94	24.4	55.0
4	21	94	23.3	54.0
4	22	94	23.3	58.0
4	25	94	24.4	58.0
4	26	94	24.4	58.0
4	27	94	23.9	58.0
4	28	94	23.9	58.0
4	29	94	24.4	55.0
5	2	94	22.8	57.0
5	6	94	22.8	.
5	9	94	23.3	54.0
5	11	94	23.3	47.0
5	16	94	23.3	57.0
5	17	94	23.3	58.0
5	18	94	23.3	58.0
5	19	94	23.3	58.0
5	24	94	25.6	60.0
5	25	94	25.6	60.0
5	26	94	24.4	59.0
5	27	94	25.0	64.0
5	31	94	25.6	57.0
6	1	94	25.6	57.0
6	2	94	24.4	59.0
6	6	94	25.0	.
6	7	94	25.6	60.0
6	8	94	25.6	56.0
6	9	94	25.0	55.0
6	13	94	25.0	59.0
6	14	94	26.1	60.0
6	15	94	26.7	68.0
6	16	94	25.6	60.0
6	20	94	26.1	65.0
6	21	94	26.7	60.0
6	22	94	26.7	57.0
6	23	94	26.7	61.0
6	27	94	27.2	58.0
6	28	94	27.2	58.0
6	29	94	26.7	61.0
6	30	94	26.1	61.0
7	5	94	26.1	61.0
7	6	94	26.7	61.0
7	7	94	26.7	61.0

Figure D1.13. Temperature and relative humidity (daily readings) versus time for the Particle Size Experiment (weeks 0 – 30).

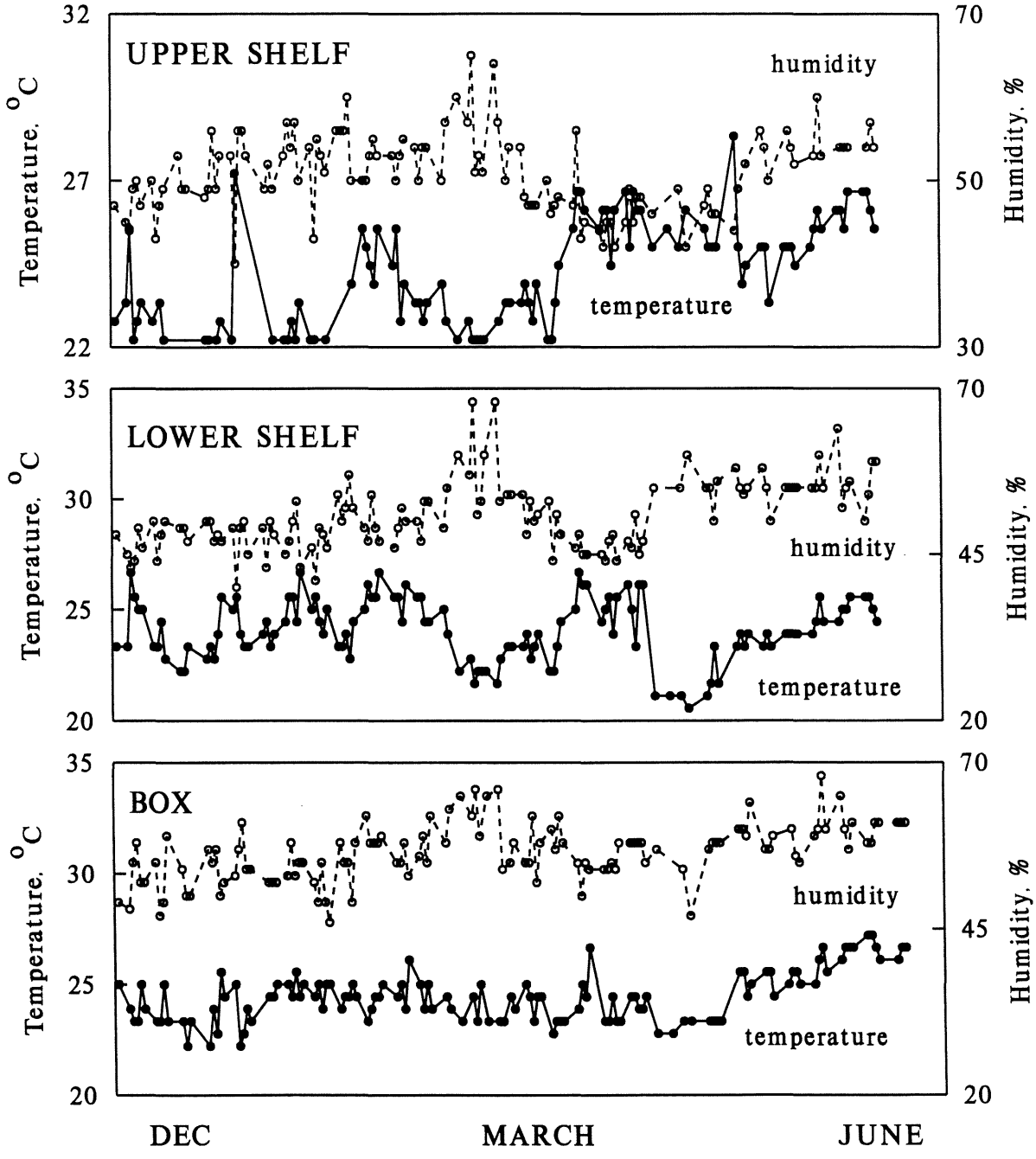

Table D2.1. Initial rinse drainage quality for the Particle Size Experiment: RK3 (reactor 8, -270 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
12	1	93	1850.0	6.32	.	.	.	.	.	.	147.9	1	.
12	2	93	1400.0	6.90	.	.	.	.	.	.	147.1	2	.
12	3	93	700.0	7.00	.	.	.	.	.	.	100.1	3	.
12	4	93	480.0	7.05	.	.	.	.	.	.	123.9	4	.
12	6	93	280.0	7.31	.	.	.	.	.	.	137.2	5	.
12	7	93	89.0	7.07	.	.	.	.	.	.	136.7	6	.
12[1]	7	93	.	.	.	432.5	105.00	21.35	1.05	12.95	792.9	-	70008.
12	9	93	110.0	7.33	12.0	26.0	13.10	0.75	0.20	2.55	121.6	7	70028.

Table D2.2. Initial rinse drainage quality for the Particle Size Experiment: RK3 (reactor 9, +270/-100 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	195.0	6.22	.	.	.	.	.	.	166.8	1	.
12	1	93	98.0	7.27	.	.	.	.	.	.	192.2	2	.
12	1	93	38.0	7.36	.	.	.	.	.	.	199.6	3	.
12	2	93	50.0	7.24	.	.	.	.	.	.	192.0	4	.
12	2	93	28.0	7.15	.	.	.	.	.	.	197.0	5	.
12[1]	2	93	.	.	.	19.9	5.60	2.65	0.45	1.30	947.6	-	70009.

Table D2.3. Initial rinse drainage quality for the Particle Size Experiment: RK3 (reactor 10, +100/-35 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	162.0	6.26	.	.	.	.	.	.	172.4	1	.
12	1	93	70.0	7.25	.	.	.	.	.	.	189.2	2	.
12	1	93	25.0	7.39	.	.	.	.	.	.	198.1	3	.
12	2	93	34.0	7.29	.	.	.	.	.	.	193.4	4	.
12	2	93	19.0	7.12	.	.	.	.	.	.	197.7	5	.
12[1]	2	93	.	.	.	15.6	4.60	1.55	0.80	1.05	950.8	-	70010.

[1] Represents flow weighted composite of previous rinses.

Table D2.4. Initial rinse drainage quality for the Particle Size Experiment: RK3 (reactor 11, +100/-35 mesh, 225 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	440.0	6.30	.	.	.	.	.	.	123.2	1	.
12	1	93	225.0	6.98	.	.	.	.	.	.	181.2	2	.
12	1	93	82.0	7.04	.	.	.	.	.	.	195.7	3	.
12	2	93	93.0	7.06	.	.	.	.	.	.	193.8	4	.
12	2	93	62.0	7.04	.	.	.	.	.	.	201.8	5	.
12[1]	2	93	.	.	.	49.4	13.15	4.70	0.80	3.85	895.7	-	70011.

Table D2.5. Initial rinse drainage quality for the Particle Size Experiment: RK3 (reactor 12, +35/-10 mesh, 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	750.0	6.24	.	.	.	.	.	.	181.9	1	.
12	1	93	400.0	6.76	.	.	.	.	.	.	382.6	2	.
12	1	93	115.0	6.58	.	.	.	.	.	.	370.5	3	.
12	2	93	133.0	7.01	.	.	.	.	.	.	342.2	4	.
12	2	93	78.0	7.02	.	.	.	.	.	.	374.0	5	.
12[1]	2	93	.	.	.	89.7	11.25	10.60	1.15	6.65	1651.2	-	70012.

Table D2.6. Initial rinse drainage quality for the Particle Size Experiment: RK3 (reactor 13, +10 mesh/-¼", 500 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	720.0	6.12	.	.	.	.	.	.	159.4	1	.
12	1	93	580.0	6.58	.	.	.	.	.	.	190.5	2	.
12	1	93	137.0	6.71	.	.	.	.	.	.	199.6	3	.
12	2	93	139.0	6.80	.	.	.	.	.	.	192.8	4	.
12	2	93	62.0	6.68	.	.	.	.	.	.	195.2	5	.
12[1]	2	93	.	.	.	124.8	8.15	14.55	1.60	9.20	937.5	-	70013.

[1] Represents flow weighted composite of previous rinses.

Table D2.7. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 1, -270 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
12	1	93	3625.0	6.54	.	.	.	.	.	.	154.0	1	.
12	2	93	1600.0	7.39	.	.	.	.	.	.	148.7	2	.
12	3	93	218.0	7.92	.	.	.	.	.	.	110.5	3	.
12	4	93	198.0	7.93	.	.	.	.	.	.	135.0	4	.
12	6	93	210.0	8.13	.	.	.	.	.	.	137.6	5	.
12[1]	6	93	.	.	.	758.9	175.00	95.00	1.60	7.15	685.8	-	70001.
12	9	93	200.0	7.91	60.0	42.4	26.75	7.50	0.30	2.35	149.0	6	70021.

Table D2.8. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 2, +270/-100 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	500.0	6.30	.	.	.	.	.	.	158.2	1	.
12	1	93	215.0	7.35	.	.	.	.	.	.	188.0	2	.
12	1	93	102.0	7.32	.	.	.	.	.	.	210.2	3	.
12	2	93	118.0	7.69	.	.	.	.	.	.	191.0	4	.
12	2	93	85.0	7.66	.	.	.	.	.	.	197.5	5	.
12[1]	2	93	.	.	.	58.9	16.25	9.60	0.50	1.80	944.9	-	70002.

Table D2.9. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 3, +100/-35 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	620.0	6.18	.	.	.	.	.	.	161.7	1	.
12	1	93	180.0	7.39	.	.	.	.	.	.	178.6	2	.
12	1	93	75.0	7.35	.	.	.	.	.	.	198.7	3	.
12	2	93	100.0	7.67	.	.	.	.	.	.	193.4	4	.
12	2	93	67.0	7.63	.	.	.	.	.	.	197.1	5	.
12[1]	2	93	.	.	.	79.7	19.85	10.25	1.00	1.55	929.5	-	70003.

[1] Represents flow weighted composite of previous rinses.

Table D2.10. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 4, +100/-35 mesh, 225 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	1850.0	6.29	.	.	.	.	.	.	89.9	1	.
12	1	93	800.0	7.17	.	.	.	.	.	.	175.4	2	.
12	1	93	305.0	7.18	.	.	.	.	.	.	198.5	3	.
12	2	93	220.0	7.63	.	.	.	.	.	.	189.0	4	.
12	2	93	160.0	7.67	.	.	.	.	.	.	202.8	5	.
12	3	93	125.0	7.85	.	.	.	.	.	.	191.9	6	.
12[1]	3	93	.	.	.	196.3	48.60	23.40	2.35	2.45	1047.5	-	70004.

Table D2.11. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 5, +35/-10 mesh, 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	4700.0	3.92	.	.	.	.	.	.	228.9	1	.
12	1	93	2700.0	5.77	.	.	.	.	.	.	440.9	2	.
12	1	93	910.0	6.16	.	.	.	.	.	.	397.4	3	.
12	2	93	725.0	6.68	.	.	.	.	.	.	383.9	4	.
12	2	93	300.0	6.99	.	.	.	.	.	.	394.0	5	.
12	2	93	137.0	7.19	.	.	.	.	.	.	394.5	6	.
12	2	93	128.0	6.98	.	.	.	.	.	.	393.6	7	.
12[1]	2	93	.	.	.	774.2	150.00	90.00	2.80	1.60	2633.2	-	70005.

Table D2.12. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 6, +10 mesh/-¼", 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	2800.0	3.36	.	.	.	.	.	.	323.4	1	.
12	1	93	2375.0	3.65	.	.	.	.	.	.	398.6	2	.
12	1	93	1350.0	3.91	.	.	.	.	.	.	373.9	3	.
12	2	93	1575.0	4.50	.	.	.	.	.	.	391.5	4	.
12	2	93	510.0	4.54	.	.	.	.	.	.	395.4	5	.
12	2	93	195.0	4.72	.	.	.	.	.	.	398.0	6	.
12	2	93	195.0	4.69	.	.	.	.	.	.	394.9	7	.
12[1]	2	93	.	.	.	708.6	100.00	90.00	1.05	2.20	2675.6	-	70006.

[1] Represents flow weighted composite of previous rinses.

Table D2.13. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 7, +¼"/-¾", 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	1450.0	3.49	.	.	.	.	.	.	332.3	1	.
12	1	93	3525.0	3.85	.	.	.	.	.	.	404.1	2	.
12	1	93	710.0	4.02	.	.	.	.	.	.	391.1	3	.
12	2	93	1425.0	3.99	.	.	.	.	.	.	395.1	4	.
12	2	93	415.0	4.15	.	.	.	.	.	.	393.9	5	.
12	2	93	155.0	4.30	.	.	.	.	.	.	395.9	6	.
12	2	93	195.0	4.22	.	.	.	.	.	.	395.6	7	.
12[1]	2	93	.	.	.	731.3	75.00	85.00	1.00	1.95	2708.0	-	70007.

Table D2.14. Initial rinse drainage quality for the Particle Size Experiment: RK4 (reactor 23, +¼"/-¾", 1000 grams, uncovered).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
12	14	93	575.0	4.07	.	.	.	.	.	.	394.6	1	.
12	15	93	1050.0	4.21	.	.	.	.	.	.	383.9	2	.
12	15	93	318.0	4.42	.	.	.	.	.	.	397.6	3	.
12	16	93	340.0	4.22	.	.	.	.	.	.	394.2	4	.
12[1]	16	93	.	.	.	376.0	42.30	45.60	1.10	1.45	1570.3	-	70043.

Table D2.15. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 14, -270 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
12	1	93	1300.0	7.42	.	.	.	.	.	.	172.8	1	.
12	2	93	230.0	8.11	.	.	.	.	.	.	192.7	2	.
12	2	93	145.0	7.94	.	.	.	.	.	.	193.2	3	.
12	3	93	102.0	7.96	.	.	.	.	.	.	196.1	4	.
12	4	93	102.0	7.88	.	.	.	.	.	.	193.8	5	.
12	6	93	95.0	7.85	.	.	.	.	.	.	192.1	6	.
12[1]	6	93	.	.	.	121.4	30.95	19.00	2.30	1.95	1140.7	-	70014.
12	9	93	165.0	7.48	20.0	46.4	20.30	4.80	0.70	1.95	190.2	7	70034.

[1] Represents flow weighted composite of previous rinses.

Table D2.16. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 15, +270/-100 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	680.0	6.66	.	.	.	.	.	.	172.6	1	.
12	1	93	82.0	7.37	.	.	.	.	.	.	194.3	2	.
12	1	93	31.0	7.25	.	.	.	.	.	.	199.2	3	.
12	2	93	51.0	7.63	.	.	.	.	.	.	193.9	4	.
12[1]	2	93	.	.	.	12.4	3.05	2.45	1.25	0.90	760.0	-	70015.

Table D2.17. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 22, +270/-100 mesh, 75 grams, uncovered).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
12	13	93	63.0	6.24	.	.	.	.	.	.	170.0	1	.
12	13	93	38.0	7.11	.	.	.	.	.	.	196.3	2	.
12	13	93	27.0	7.05	.	.	.	.	.	.	199.3	3	.
12	13	93	19.0	7.06	.	.	.	.	.	.	199.3	4	.
12[1]	13	93	.	.	.	7.8	1.75	1.55	1.70	0.60	764.9	-	70042.
12	13	93	18.0	7.08	.	7.6	1.10	0.95	0.65	0.70	199.3	5	70044.
12	16	93	99.0	7.00	5.0	190.0	6.45	4.60	1.30	1.80	178.9	6	70045.

Table D2.18. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 16, +100/-35 mesh, 75 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	1350.0	4.81	.	.	.	.	.	.	171.6	1	.
12	1	93	73.0	6.86	.	.	.	.	.	.	192.5	2	.
12	1	93	21.0	7.31	.	.	.	.	.	.	197.7	3	.
12	2	93	39.0	7.55	.	.	.	.	.	.	193.4	4	.
12[1]	2	93	.	.	.	10.0	2.60	2.25	1.80	0.65	755.2	-	70016.

[1] Represents flow weighted composite of previous rinses.

Table D2.19. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 17, +100/-35 mesh, 225 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	300.0	6.29	.	.	.	.	.	.	120.5	1	.
12	1	93	203.0	7.22	.	.	.	.	.	.	188.3	2	.
12	1	93	60.0	7.08	.	.	.	.	.	.	196.6	3	.
12	2	93	98.0	7.32	.	.	.	.	.	.	193.4	4	.
12[1]	2	93	.	.	.	28.2	7.60	7.35	4.35	1.10	698.8	-	70017.

Table D2.20. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 18, +350/-10 mesh, 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	300.0	6.43	.	.	.	.	.	.	119.9	1	.
12	1	93	255.0	7.19	.	.	.	.	.	.	333.8	2	.
12	1	93	60.0	7.10	.	.	.	.	.	.	290.2	3	.
12	2	93	96.0	7.34	.	.	.	.	.	.	282.1	4	.
12[1]	2	93	.	.	.	50.4	10.40	8.25	3.40	1.05	1026.0	-	70018.

Table D2.21. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 24, +35/-10 mesh, 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
1	12	94	445.0	6.62	.	.	.	.	.	.	93.1	1	.
1	12	94	238.0	6.69	.	.	.	.	.	.	319.8	2	.
1	12	94	102.0	6.95	.	.	.	.	.	.	299.2	3	.
1	13	94	158.0	7.00	.	.	.	.	.	.	284.0	4	.
1	13	94	65.0	7.32	.	.	.	.	.	.	300.2	5	.
1[1]	13	94	.	.	.	47.2	9.00	6.45	4.50	0.85	1296.3	-	70117.

[1] Represents flow weighted composite of previous rinses.

Table D2.22. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 19, +10 mesh/-¼", 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	330.0	6.22	.	.	.	.	.	.	264.9	1	.
12	1	93	195.0	7.10	.	.	.	.	.	.	301.0	2	.
12	1	93	30.0	7.18	.	.	.	.	.	.	298.4	3	.
12	2	93	81.0	6.95	.	.	.	.	.	.	285.3	4	.
12[1]	2	93	.	.	.	49.7	9.40	6.15	2.40	0.75	1149.6	-	70019.

Table D2.23. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 20, +¼"/-¾", 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
11	30	93	168.0	5.99	.	.	.	.	.	.	287.1	1	.
12	1	93	133.0	6.60	.	.	.	.	.	.	292.0	2	.
12	1	93	20.0	6.67	.	.	.	.	.	.	295.8	3	.
12	2	93	75.0	6.44	.	.	.	.	.	.	285.3	4	.
12[1]	2	93	.	.	.	30.5	5.15	3.80	1.65	0.65	1160.2	-	70020.

Table D2.24. Initial rinse drainage quality for the Particle Size Experiment: RK5 (reactor 25, +¼"/-¾", 1000 grams).

Month	Day	Year	S.C.	pH	Alk.	SO_4	Ca	Mg	Na	K	Vol. Out	Rinse	Sample
1	12	94	88.0	5.82	.	.	.	.	.	.	217.8	1	.
1	12	94	55.0	5.89	.	.	.	.	.	.	301.6	2	.
1	12	94	36.0	5.79	.	.	.	.	.	.	301.6	3	.
1	13	94	150.0	6.81	.	.	.	.	.	.	271.7	4	.
1	13	94	22.0	5.46	.	.	.	.	.	.	296.0	5	.
1[1]	13	94	.	.	.	16.9	3.90	2.85	1.70	0.75	1388.7	-	70118.

[1] Represents flow weighted composite of previous rinses.

Table D3.1. Particle Size Experiment drainage quality from Solid RK3, reactor 8 (-270 mesh, 75 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	137.2	105.	6.77	5.0	.	29.6	10.95	0.85	0.25	0.67	70054.	62.8	24.6	9.5	12	16	93
2	154.3	85.	6.89	<5.0	.	25.0	8.15	1.10	0.30	2.85	70089.	47.6	17.9	6.3	12	23	93
3	133.1	50.	6.80	5.0	.	.	.	.	.	.	.	63.1	28.3	11.5	12	30	93
4	167.6	75.	6.55	.	.	19.0	6.80	0.80	1.15	2.90	70094.	36.7	0.0	0.0	1	6	94
5	144.5	60.	7.24	9.0	.	.	.	.	.	.	.	44.5	.	0.0	1	13	94
6	138.3	55.	6.98	.	.	10.9	4.55	0.70	0.75	2.70	70120.	49.4	15.3	0.0	1	20	94
7	143.3	49.	6.89	9.0	.	.	.	.	.	.	.	45.2	0.0	0.0	1	27	94
8	142.8	46.	7.23	.	.	9.7	3.60	0.60	1.35	2.60	70148.	44.9	2.4	0.0	2	3	94
9	142.8	25.	6.80	5.0	.	.	.	.	.	.	.	44.7	3.9	0.0	2	10	94
10	132.8	34.	7.19	.	.	5.7	2.50	0.45	0.15	3.00	70173.	53.8	4.0	0.0	2	17	94
11	146.2	43.	7.29	10.0	.	.	.	.	.	.	.	44.4	0.0	0.0	2	24	94
12	143.2	39.	7.22	.	.	7.9	2.55	0.55	0.25	2.70	70199.	45.4	16.1	0.0	3	3	94
13	146.9	28.	6.76	5.0	.	.	.	.	.	.	.	43.7	23.3	12.2	3	10	94
14	164.9	32.	7.51	.	.	5.7	2.60	1.05	0.70	2.15	70224.	36.8	13.5	9.3	3	17	94
15	168.6	42.	7.48	10.0	.	.	.	.	.	.	.	34.1	12.9	0.8	3	24	94
16	142.7	29.	7.33	.	.	4.6	2.10	0.70	1.00	2.75	70250.	48.8	23.1	14.1	3	31	94
17	176.5	23.	7.20	10.0	.	.	.	.	.	.	.	30.8	0.0	0.0	4	7	94
18	136.3	30.	7.36	.	.	4.3	2.05	0.40	.	.	70276.	49.3	.	0.0	4	14	94
19	142.8	27.	7.29	10.0	.	.	.	.	.	.	.	43.5	0.0	0.0	4	20	94
20	131.7	28.	7.38	.	.	3.9	2.05	0.35	.	.	70301.	50.5	20.0	8.1	4	28	94
21	172.6	15.	6.81	5.0	.	.	.	.	.	.	.	28.8	3.0	0.0	5	5	94
22	144.6	26.	7.40	.	.	4.0	1.55	0.40	0.95	1.80	70327.	45.2	12.5	0.0	5	12	94
23	146.4	18.	7.45	5.0	.	.	.	.	.	.	.	.	8.5	0.0	5	19	94
24	150.9	25.	7.51	.	.	3.8	1.55	0.65	1.00	1.60	70353.	43.4	16.1	8.5	5	26	94
25	170.3	27.	7.40	10.0	.	.	.	.	.	.	.	30.4	8.5	0.0	6	2	94
26	145.2	30.	7.40	.	.	4.6	1.90	1.30	0.95	1.60	70378.	39.7	12.5	0.0	6	9	94
27	160.9	25.	7.09	10.0	.	.	.	.	.	.	.	34.5	14.3	0.0	6	16	94
28	156.3	29.	7.55	.	.	2.5	1.05	0.30	0.30	1.40	70404.	31.4	2.7	0.0	6	23	94
29	155.8	17.	7.31	10.0	.	.	.	.	.	.	.	33.5	.	0.0	6	30	94
30	147.7	24.	7.35	.	.	3.4	1.25	0.35	0.95	1.55	70429.	32.2	9.0	0.0	7	7	94

Table D3.2. Particle Size Experiment drainage quality from Solid RK3, reactor 9 (+270/-100 mesh, 75 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	197.9	67.	7.24	10.0	.	15.5	5.30	2.20	0.05	0.22	70029.	34.7	0.8	0.0	12	9	93
2	158.1	65.	6.69	5.0	.	16.6	4.45	1.85	0.25	1.60	70055.	40.0	37.2	36.2	12	16	93
3	198.2	79.	7.26	12.0	.	.	.	.	.	.	.	36.2	34.3	33.3	12	23	93
4	198.3	55.	7.14	.	.	11.0	4.05	1.65	0.10	1.50	70074.	34.4	32.3	31.7	12	30	93
5	195.3	52.	6.74	15.0	.	.	.	.	.	.	.	33.9	30.4	29.8	1	6	94
6	187.1	55.	6.87	.	.	9.3	4.50	1.70	0.25	1.30	70103.	38.5	.	35.3	1	13	94
7	199.4	55.	7.22	15.0	.	.	.	.	.	.	.	35.3	33.1	31.7	1	20	94
8	193.0	55.	7.27	.	.	9.4	4.65	1.70	0.40	0.90	70131.	33.9	31.4	30.5	1	27	94
9	191.0	51.	7.22	15.0	.	.	.	.	.	.	.	39.1	35.3	34.3	2	3	94
10	197.1	50.	7.23	.	.	7.9	4.60	2.45	0.55	1.05	70156.	35.2	33.5	32.8	2	10	94
11	197.0	54.	6.77	18.0	.	.	.	.	.	.	.	32.8	31.1	30.2	2	17	94
12	197.4	55.	7.41	.	.	5.4	4.25	1.85	<0.05	0.65	70182.	31.3	28.7	28.0	2	24	94
13	190.2	50.	7.41	15.0	.	.	.	.	.	.	.	36.8	35.3	33.8	3	3	94
14	198.6	50.	7.12	.	.	6.5	3.95	1.80	<0.05	0.55	70207.	34.1	33.1	32.7	3	10	94
15	196.3	47.	7.40	12.5	.	.	.	.	.	.	.	33.3	32.0	31.7	3	17	94
16	197.7	48.	7.29	.	.	5.9	3.80	1.70	0.20	0.55	70233.	33.0	31.4	30.9	3	24	94
17	197.5	46.	7.48	16.0	.	.	.	.	.	.	.	32.1	30.9	30.4	3	31	94
18	197.8	45.	7.31	.	.	5.9	3.75	1.80	0.15	0.50	70258.	32.2	30.5	30.0	4	7	94
19	196.6	53.	7.24	18.0	.	.	.	.	.	.	.	31.8	.	29.9	4	14	94
20	197.0	46.	7.14	.	.	4.8	3.55	1.80	.	.	70284.	31.9	30.8	30.3	4	20	94
21	197.3	49.	7.46	16.0	.	.	.	.	.	.	.	33.1	31.8	31.3	4	28	94
22	195.6	50.	7.32	.	.	5.0	3.85	2.95	.	.	70310.	32.9	31.6	30.4	5	5	94
23	196.6	50.	7.33	15.0	.	.	.	.	.	.	.	33.0	31.9	31.5	5	12	94
24	198.4	47.	7.02	.	.	4.9	3.45	1.95	1.45	0.90	70335.	.	30.9	30.5	5	19	94
25	198.7	47.	7.59	12.5	.	.	.	.	.	.	.	32.6	31.2	31.0	5	26	94
26	197.8	52.	7.65	.	.	5.1	3.55	2.55	0.85	0.65	70361.	32.9	31.8	31.3	6	2	94
27	192.8	60.	7.56	15.0	.	.	.	.	.	.	.	32.5	31.3	30.9	6	9	94
28	197.1	50.	7.57	.	.	5.7	3.45	2.00	<0.05	0.60	70386.	33.0	31.8	31.3	6	16	94
29	197.4	49.	7.66	15.0	.	.	.	.	.	.	.	32.9	31.3	30.7	6	23	94
30	196.3	48.	7.68	.	.	5.7	3.15	1.95	0.05	0.90	70412.	33.0	.	30.5	6	30	94

Table D3.3. Particle Size Experiment drainage quality from Solid RK3, reactor 10 (+100/-35 mesh, 75 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	198.2	50.	7.23	7.5	.	11.8	4.30	1.45	0.05	0.14	70030.	30.8	0.0	0.0	12	9	93
2	167.7	46.	6.81	5.0	.	10.6	3.35	1.20	0.25	1.25	70056.	31.7	27.9	27.4	12	16	93
3	195.8	53.	7.28	9.0	.	.	.	.	.	.	.	30.1	28.9	28.1	12	23	93
4	194.8	37.	7.20	.	.	6.0	3.00	1.00	0.10	0.65	70075.	33.1	31.2	30.7	12	30	93
5	197.9	44.	6.89	14.5	.	.	.	.	.	.	.	30.8	28.7	28.1	1	6	94
6	193.9	42.	6.99	.	.	5.7	3.85	1.25	0.25	0.65	70104.	32.1	.	29.6	1	13	94
7	195.4	45.	7.16	15.0	.	.	.	.	.	.	.	31.7	30.4	29.9	1	20	94
8	198.0	49.	7.37	.	.	8.5	4.60	1.45	0.35	0.60	70132.	30.2	28.5	27.5	1	27	94
9	193.2	42.	7.36	15.0	.	.	.	.	.	.	.	31.4	30.3	29.5	2	3	94
10	197.4	44.	7.37	.	.	5.0	4.45	1.60	0.40	0.65	70157.	30.3	29.3	28.6	2	10	94
11	195.7	44.	6.94	15.0	.	.	.	.	.	.	.	30.1	25.3	24.4	2	17	94
12	192.7	43.	7.57	.	.	3.8	4.00	1.70	0.05	0.60	70183.	29.8	28.0	26.6	2	24	94
13	194.4	50.	7.54	15.0	.	.	.	.	.	.	.	29.6	28.4	26.5	3	3	94
14	196.1	42.	7.34	.	.	5.6	4.20	1.75	0.20	0.40	70208.	29.4	28.4	27.7	3	10	94
15	196.0	42.	7.57	15.0	.	.	.	.	.	.	.	29.4	27.8	27.3	3	17	94
16	197.2	41.	7.43	.	.	3.6	4.10	1.60	0.20	0.45	70234.	29.0	27.8	27.1	3	24	94
17	194.8	43.	7.64	20.0	.	.	.	.	.	.	.	30.0	29.0	28.0	3	31	94
18	198.2	44.	7.50	.	.	3.6	4.40	1.75	.	.	70259.	29.0	27.4	26.8	4	7	94
19	196.0	46.	7.49	18.0	.	.	.	.	.	.	.	29.5	.	27.9	4	14	94
20	197.7	47.	7.35	.	.	2.8	4.45	1.85	.	.	70285.	29.3	28.0	27.7	4	20	94
21	196.7	47.	7.48	20.0	.	.	.	.	.	.	.	30.6	28.9	28.1	4	28	94
22	195.6	46.	7.32	.	.	2.5	4.35	1.80	.	.	70311.	30.4	27.4	25.2	5	5	94
23	196.2	47.	7.53	18.0	.	.	.	.	.	.	.	29.6	28.1	27.7	5	12	94
24	195.7	51.	7.32	.	.	3.0	5.15	3.65	0.30	0.65	70336.	.	28.0	27.7	5	19	94
25	199.4	60.	7.40	20.0	.	.	.	.	.	.	.	28.6	27.6	27.5	5	26	94
26	194.3	52.	7.72	.	.	2.7	4.35	2.15	0.25	0.50	70362.	29.3	28.3	28.0	6	2	94
27	197.0	52.	7.64	20.0	.	.	.	.	.	.	.	28.1	21.9	20.8	6	9	94
28	190.4	50.	7.73	.	.	3.8	4.15	2.00	0.10	0.45	70387.	28.6	27.7	27.3	6	16	94
29	199.5	60.	7.77	25.0	.	.	.	.	.	.	.	28.7	27.5	27.1	6	23	94
30	198.7	55.	7.86	.	.	3.2	4.65	2.55	0.25	0.45	70413.	29.0	.	21.8	6	30	94

Table D3.4. Particle Size Experiment drainage quality from Solid RK3, reactor 12 (+35/-10 mesh, 1000 grams).

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	451.9	225.	6.96	30.0	.	63.2	12.25	9.30	0.07	1.02	70032.	349.7	147.1	74.6	12	9	93
2	203.0	225.	6.68	5.0	.	84.0	11.95	8.20	0.40	3.75	70058.	224.8	201.6	199.8	12	16	93
3	394.0	260.	7.40	18.0	.	.	.	.	.	.	.	237.9	188.5	186.7	12	23	93
4	374.5	172.	7.30	.	.	56.4	10.90	6.75	0.20	2.90	70077.	206.5	187.1	185.5	12	30	93
5	375.3	142.	7.04	20.0	.	.	.	.	.	.	.	208.7	188.5	187.2	1	6	94
6	370.8	150.	7.13	.	.	41.4	9.70	5.60	0.35	2.45	70106.	212.1	.	187.4	1	13	94
7	360.4	143.	7.23	23.0	.	.	.	.	.	.	.	220.2	201.8	201.3	1	20	94
8	383.4	140.	7.43	.	.	37.4	9.85	5.25	0.60	2.30	70134.	207.4	202.7	198.1	1	27	94
9	372.4	138.	7.44	26.0	.	.	.	.	.	.	.	214.5	200.8	200.1	2	3	94
10	359.6	137.	7.52	.	.	35.5	10.35	5.10	0.05	1.95	70159.	233.1	222.8	222.6	2	10	94
11	396.2	152.	7.19	35.0	.	.	.	.	.	.	.	220.6	205.0	205.0	2	17	94
12	373.1	152.	7.55	.	.	32.4	11.80	5.70	0.10	2.10	70185.	225.6	204.2	202.2	2	24	94
13	359.4	155.	7.52	30.0	.	.	.	.	.	.	.	236.7	218.2	216.5	3	3	94
14	368.0	142.	7.62	.	.	39.0	13.00	5.90	0.30	1.70	70210.	242.5	200.1	198.3	3	10	94
15	328.8	132.	7.64	38.0	.	.	.	.	.	.	.	263.7	204.2	199.7	3	17	94
16	356.9	138.	7.40	.	.	29.8	12.50	5.80	0.20	1.45	70236.	236.7	199.2	197.1	3	24	94
17	355.0	150.	7.82	42.0	.	.	.	.	.	.	.	234.2	196.7	189.9	3	31	94
18	349.9	142.	7.70	.	.	25.8	13.05	6.40	.	.	70261.	231.6	195.2	190.9	4	7	94
19	350.6	174.	7.84	53.0	.	.	.	.	.	.	.	232.9	.	190.0	4	14	94
20	353.7	172.	7.59	.	.	30.6	16.10	8.20	.	.	70287.	257.9	187.2	187.2	4	20	94
21	354.5	180.	7.58	55.0	.	.	.	.	.	.	.	223.5	186.2	182.2	4	28	94
22	340.5	173.	7.62	.	.	28.7	16.45	9.15	.	.	70313.	238.6	190.2	178.7	5	5	94
23	326.3	179.	7.92	50.0	.	.	.	.	.	.	.	243.4	195.2	179.2	5	12	94
24	324.8	175.	7.84	.	.	25.9	15.60	10.15	2.15	1.70	70338.	246.9	198.2	180.7	5	19	94
25	326.6	175.	8.06	50.0	.	.	.	.	.	.	.	231.0	174.7	167.8	5	26	94
26	320.4	180.	7.99	.	.	22.6	14.10	10.00	0.40	1.55	70364.	246.9	189.2	173.2	6	2	94
27	320.6	180.	8.04	65.0	.	.	.	.	.	.	.	247.9	184.2	169.7	6	9	94
28	334.3	178.	7.95	.	.	21.9	14.20	9.80	0.20	3.10	70389.	235.4	185.7	168.2	6	16	94
29	330.4	180.	8.14	65.0	.	.	.	.	.	.	.	228.4	175.2	168.2	6	23	94
30	316.9	190.	8.17	.	.	25.0	14.90	10.95	0.20	1.75	70415.	236.5	.	171.2	6	30	94

Table D3.5. Particle Size Experiment drainage quality from Solid RK3, reactor 13 (+10 mesh/ -1/4", 500 grams).

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	201.0	120.	6.32	4.0	.	38.6	2.70	4.60	0.11	1.22	70033.	39.9	1.7	0.3	12	9	93
2	119.3	110.	6.51	<2.5	.	35.2	2.35	3.90	0.55	4.80	70059.	77.8	69.3	50.5	12	16	93
3	178.3	210.	6.71	2.5	.	.	.	.	.	.	.	69.3	67.4	67.4	12	23	93
4	222.6	200.	7.02	.	.	76.0	5.45	8.70	0.50	4.75	70078.	44.8	43.5	43.4	12	30	93
5	204.1	162.	6.86	5.0	.	.	.	.	.	.	.	36.4	34.9	34.3	1	6	94
6	157.7	160.	6.83	.	.	58.0	4.35	6.70	0.35	3.75	70107.	75.2	.	40.6	1	13	94
7	200.2	138.	6.95	2.5	.	.	.	.	.	.	.	38.5	35.7	35.8	1	20	94
8	194.3	145.	6.79	.	.	61.6	4.00	5.60	0.60	3.85	70135.	37.2	36.1	35.9	1	27	94
9	190.9	145.	7.08	5.0	.	.	.	.	.	.	.	37.5	35.5	35.5	2	3	94
10	193.2	138.	7.16	.	.	56.0	4.20	5.85	0.25	2.80	70160.	38.7	36.8	35.8	2	10	94
11	188.0	147.	6.89	7.5	.	.	.	.	.	.	.	47.5	39.8	39.6	2	17	94
12	182.4	152.	6.74	.	.	53.2	4.90	6.80	0.15	3.40	70186.	55.4	40.8	40.3	2	24	94
13	173.3	142.	7.07	5.0	.	.	.	.	.	.	.	62.6	41.7	41.7	3	3	94
14	166.0	143.	7.37	.	.	65.0	5.30	7.30	0.30	2.15	70211.	69.5	42.4	40.4	3	10	94
15	152.8	111.	7.31	5.0	.	.	.	.	.	.	.	81.8	43.3	40.8	3	17	94
16	169.9	116.	7.03	.	.	46.8	4.20	5.60	0.25	2.00	70237.	67.8	40.8	40.0	3	24	94
17	153.2	132.	7.35	5.0	.	.	.	.	.	.	.	74.8	40.8	38.7	3	31	94
18	155.9	128.	7.22	.	.	47.6	4.85	5.70	.	.	70262.	78.1	42.8	40.6	4	7	94
19	140.3	148.	7.50	7.5	.	.	.	.	.	.	.	92.5	.	43.8	4	14	94
20	139.8	142.	7.18	.	.	52.2	6.00	8.60	.	.	70288.	116.5	48.8	43.1	4	20	94
21	137.7	150.	7.35	12.5	.	.	.	.	.	.	.	98.8	66.5	59.8	4	28	94
22	137.5	142.	7.37	.	.	50.3	5.45	7.00	2.50	2.05	70314.	122.1	77.3	43.3	5	5	94
23	114.5	122.	7.26	7.5	.	.	.	.	.	.	.	128.8	81.8	71.9	5	12	94
24	122.6	145.	6.63	.	.	57.7	6.35	8.65	0.45	2.10	70339.	143.1	124.3	57.8	5	19	94
25	104.8	135.	7.59	10.0	.	.	.	.	.	.	.	135.4	81.3	52.3	5	26	94
26	95.0	150.	7.53	.	.	47.5	5.10	6.60	0.45	1.80	70365.	149.8	93.8	48.0	6	2	94
27	81.0	130.	7.49	15.0	.	.	.	.	.	.	.	165.8	94.8	52.8	6	9	94
28	77.1	145.	6.85	.	.	52.6	5.65	7.10	0.20	5.55	70390.	180.8	103.8	62.8	6	16	94
29	62.4	150.	7.57	10.0	.	.	.	.	.	.	.	192.8	115.3	75.8	6	23	94
30	42.6	185.	7.62	.	.	68.2	7.40	9.30	0.25	16.00	70416.	228.8	.	115.8	6	30	94

Table D3.6. Particle Size Experiment drainage quality from Solid RK4, reactor 1 (-270 mesh, 75 grams).

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	155.2	780.	7.22	40.0	.	179.0	100.00	36.100	0.34	1.08	70047.	35.2	4.6	0.0	12	16	93
2	154.9	550.	7.70	32.0	.	256.0	65.00	25.050	0.45	4.15	70088.	34.9	3.7	0.0	12	23	93
3	150.9	268.	7.72	34.0	.	.	.	.	.	.	.	37.8	6.9	0.0	12	30	93
4	152.1	209.	7.55	.	.	47.6	19.30	8.350	0.85	2.40	70093.	33.8	0.0	0.0	1	6	94
5	149.5	158.	7.63	40.0	.	.	.	.	.	.	.	37.6	.	0.0	1	13	94
6	149.2	140.	7.63	.	.	30.8	15.60	6.450	0.50	1.80	70119.	37.2	0.0	0.0	1	20	94
7	146.7	152.	7.74	35.0	.	.	.	.	.	.	.	38.7	0.0	0.0	1	27	94
8	150.9	149.	7.65	.	.	33.5	15.25	6.600	1.25	1.25	70147.	35.5	0.1	0.0	2	3	94
9	148.3	130.	7.78	28.0	.	.	.	.	.	.	.	38.0	1.2	0.0	2	10	94
10	155.3	122.	7.26	.	.	23.6	11.55	5.050	0.15	3.10	70172.	32.5	0.0	0.0	2	17	94
11	150.0	140.	7.39	33.0	.	.	.	.	.	.	.	33.7	0.0	0.0	2	24	94
12	149.4	125.	7.71	.	.	23.2	11.40	5.200	0.15	2.20	70198.	40.1	0.0	0.0	3	3	94
13	150.9	86.	7.58	25.0	.	.	.	.	.	.	.	32.2	8.8	0.8	3	10	94
14	159.5	62.	7.48	.	.	14.6	6.80	2.600	0.25	1.70	70223.	29.5	2.5	0.0	3	17	94
15	153.8	89.	7.43	25.0	.	.	.	.	.	.	.	32.2	2.5	0.0	3	24	94
16	150.0	105.	7.90	.	.	17.3	10.90	5.350	0.50	1.60	70249.	34.7	5.5	0.0	3	31	94
17	150.4	95.	7.73	33.0	.	.	.	.	.	.	.	32.5	0.0	0.0	4	7	94
18	145.7	102.	7.81	.	.	12.6	10.30	4.300	.	.	70275.	37.0	.	0.0	4	14	94
19	153.7	100.	7.55	35.0	.	.	.	.	.	.	.	29.7	0.0	0.0	4	20	94
20	148.4	92.	7.49	.	.	9.1	9.65	4.050	.	.	70300.	31.2	0.0	0.0	4	28	94
21	146.6	92.	7.77	35.0	.	.	.	.	.	.	.	37.5	0.0	0.0	5	5	94
22	153.7	80.	7.71	.	.	9.3	8.40	3.650	1.55	1.55	70326.	31.0	0.0	0.0	5	12	94
23	150.4	90.	7.67	35.0	.	.	.	.	.	.	.	.	0.0	0.0	5	19	94
24	152.1	92.	8.01	.	.	10.2	7.75	3.500	1.15	1.05	70352.	29.0	0.0	0.0	5	26	94
25	156.0	92.	7.47	30.0	.	.	.	.	.	.	.	27.6	0.0	0.0	6	2	94
26	150.7	110.	7.64	.	.	14.9	9.35	4.600	0.05	2.10	70377.	30.5	3.2	0.0	6	9	94
27	157.5	112.	7.86	30.0	.	.	.	.	.	.	.	28.6	0.0	0.0	6	16	94
28	152.6	105.	7.75	.	.	15.7	9.85	4.200	0.30	2.00	70403.	.	0.0	0.0	6	23	94
29	159.4	90.	7.93	30.0	.	.	.	.	.	.	.	26.2	.	0.0	6	30	94
30	153.5	100.	7.78	.	.	10.7	8.75	4.350	3.00	1.20	70428.	24.9	0.0	0.0	7	7	94

Table D3.7. Particle Size Experiment drainage quality from Solid RK4, reactor 2 (+270/-100 mesh, 75 grams).

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	197.1	180.	7.71	21.0	.	64.8	16.45	8.65	0.07	0.25	70022.	40.2	0.0	0.0	12	9	93
2	152.6	600.	6.90	5.0	.	257.5[1]	60.00	31.75	0.15	0.68	70048.	44.0	38.6	38.3	12	16	93
3	196.1	420.	7.60	22.0	.	.	.	.	.	.	.	40.5	39.6	39.1	12	23	93
4	193.2	158.	7.47	.	.	45.2	14.90	7.35	0.15	1.60	70068.	44.2	43.4	42.8	12	30	93
5	197.6	150.	7.00	25.0	.	.	.	.	.	.	.	42.2	40.3	39.7	1	6	94
6	193.8	148.	7.24	.	.	43.4	13.75	6.45	0.60	1.60	70097.	42.5	.	41.0	1	13	94
7	196.0	119.	7.58	25.0	.	.	.	.	.	.	.	42.5	41.0	40.4	1	20	94
8	196.3	125.	7.64	.	.	37.6	12.00	5.30	0.60	1.05	70125.	41.4	40.2	39.6	1	27	94
9	196.8	116.	7.52	20.0	.	.	.	.	.	.	.	40.7	39.6	39.1	2	3	94
10	196.8	112.	7.69	.	.	30.1	11.05	4.90	0.40	0.80	70150.	40.4	39.7	39.0	2	10	94
11	196.9	105.	7.25	18.0	.	.	.	.	.	.	.	40.3	33.7	33.1	2	17	94
12	189.2	152.	7.60	.	.	42.0	14.30	6.65	0.05	1.20	70176.	41.0	35.6	34.9	2	24	94
13	191.3	150.	7.53	18.0	.	.	.	.	.	.	.	41.0	39.8	38.1	3	3	94
14	195.8	100.	7.52	.	.	31.2	10.15	4.65	<0.05	0.65	70201.	39.5	39.0	38.8	3	10	94
15	196.5	88.	7.57	20.0	.	.	.	.	.	.	.	39.7	39.0	38.7	3	17	94
16	197.1	83.	7.43	.	.	20.6	8.40	3.80	0.40	0.55	70227.	40.4	39.3	38.8	3	24	94
17	196.4	93.	7.72	21.0	.	.	.	.	.	.	.	40.0	39.3	39.0	3	31	94
18	195.3	87.	7.54	.	.	19.0	8.25	3.95	0.25	0.75	70252.	39.9	38.8	38.0	4	7	94
19	196.6	90.	7.56	20.0	.	.	.	.	.	.	.	39.7	.	38.6	4	14	94
20	195.8	80.	7.56	.	.	16.9	7.85	3.35	.	.	70278.	40.0	38.1	37.2	4	20	94
21	194.0	85.	7.14	25.0	.	.	.	.	.	.	.	40.0	37.7	36.9	4	28	94
22	196.4	82.	7.70	.	.	15.6	8.45	3.30	.	.	70304.	40.2	39.3	39.0	5	5	94
23	196.0	78.	7.67	21.0	.	.	.	.	.	.	.	41.0	40.1	39.8	5	12	94
24	196.9	71.	7.37	.	.	14.8	7.65	3.35	0.30	0.95	70329.	.	39.7	39.4	5	19	94
25	198.8	82.	7.03	20.0	.	.	.	.	.	.	.	40.3	37.5	37.0	5	26	94
26	194.8	85.	7.83	.	.	14.6	7.55	3.80	0.50	0.80	70355.	39.6	38.9	38.6	6	2	94
27	197.4	90.	7.70	25.0	.	.	.	.	.	.	.	40.4	39.0	38.2	6	9	94
28	195.5	100.	7.81	.	.	16.6	9.40	4.00	<0.05	0.75	70380.	39.9	37.3	35.6	6	16	94
29	194.7	95.	7.80	25.0	.	.	.	.	.	.	.	39.4	36.7	34.0	6	23	94
30	192.4	95.	7.76	.	.	19.0	8.60	3.70	0.10	0.85	70406.	40.3	.	39.1	6	30	94

[1] Original reported concentration 1320.0 mg/L sulfate; inconsistent with specific conductance and other sulfate concentrations; concentration estimated as average between values determined by the relationship between conductance and sulfate and as determined by charge balance.

Table D3.8. Particle Size Experiment drainage quality from Solid RK4, reactor 3 (+100/-35 mesh, 75 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	195.6	165.	7.60	25.0	.	44.4	15.90	7.40	0.09	0.19	70023.	43.6	0.4	0.0	12	9	93
2	157.8	500.	6.37	2.5	.	201.0[1]	48.30	23.00	0.18	0.61	70049.	41.4	37.6	36.9	12	16	93
3	194.2	410.	7.57	20.0	.	.	.	.	.	.	.	40.0	39.0	38.6	12	23	93
4	192.1	155.	7.45	.	.	55.2	15.85	7.60	0.15	1.75	70069.	43.8	40.7	40.2	12	30	93
5	194.7	172.	7.00	21.0	.	.	.	.	.	.	.	40.9	41.2	37.5	1	6	94
6	193.9	162.	7.28	.	.	48.2	15.65	7.75	0.20	0.75	70098.	40.6	.	38.3	1	13	94
7	194.0	122.	7.71	20.0	.	.	.	.	.	.	.	41.0	38.3	37.5	1	20	94
8	193.8	140.	7.62	.	.	45.0	13.40	6.00	0.55	0.75	70126.	40.3	38.8	37.5	1	27	94
9	195.0	115.	7.55	20.0	.	.	.	.	.	.	.	39.9	37.9	35.5	2	3	94
10	192.2	113.	7.65	.	.	33.6	11.75	5.10	0.50	0.70	70151.	40.3	39.3	37.1	2	10	94
11	194.6	118.	7.33	20.0	.	.	.	.	.	.	.	39.9	33.6	31.7	2	17	94
12	188.3	130.	7.60	.	.	34.0	12.30	5.50	0.15	0.75	70177.	40.5	32.3	30.1	2	24	94
13	184.8	168.	7.52	19.0	.	.	.	.	.	.	.	39.8	37.4	35.1	3	3	94
14	190.2	102.	7.52	.	.	27.4	10.35	4.65	0.05	0.60	70202.	39.9	39.3	39.1	3	10	94
15	191.6	90.	7.61	25.0	.	.	.	.	.	.	.	40.4	39.4	39.2	3	17	94
16	196.5	88.	7.44	.	.	23.5	9.30	4.20	0.20	0.55	70228.	40.6	39.4	38.8	3	24	94
17	194.8	110.	7.71	20.0	.	.	.	.	.	.	.	40.9	39.2	38.7	3	31	94
18	196.7	94.	7.56	.	.	22.6	9.10	4.15	0.20	0.60	70253.	39.5	37.9	37.1	4	7	94
19	194.1	95.	7.60	20.0	.	.	.	.	.	.	.	40.2	.	38.9	4	14	94
20	197.9	92.	7.51	.	.	20.9	8.75	3.70	.	.	70279.	39.3	37.3	36.1	4	20	94
21	192.5	90.	7.22	20.0	.	.	.	.	.	.	.	40.9	39.4	38.8	4	28	94
22	193.1	95.	7.65	.	.	21.0	9.05	3.85	.	.	70305.	41.6	38.2	36.4	5	5	94
23	189.3	82.	7.58	20.0	.	.	.	.	.	.	.	40.9	39.2	38.2	5	12	94
24	195.9	92.	7.43	.	.	21.2	10.30	5.55	0.30	0.70	70330.	.	39.1	38.8	5	19	94
25	197.1	85.	7.79	20.0	.	.	.	.	.	.	.	40.7	37.8	37.3	5	26	94
26	197.1	90.	7.74	.	.	17.8	7.65	3.60	0.95	0.65	70356.	39.8	38.7	38.3	6	2	94
27	195.7	90.	7.66	20.0	.	.	.	.	.	.	.	38.9	37.0	36.8	6	9	94
28	180.5	90.	7.78	.	.	16.4	7.60	3.45	<0.05	0.40	70381.	40.0	38.8	38.5	6	16	94
29	194.2	90.	7.72	15.0	.	.	.	.	.	.	.	40.2	35.9	34.4	6	23	94
30	191.8	85.	7.72	.	.	20.4	7.45	3.25	0.50	0.45	70407.	40.3	.	37.9	6	30	94

1 Original reported concentration 1320.0 mg/L sulfate; inconsistent with specific conductance and other sulfate concentrations; concentration estimated as average between values determined by the relationship between conductance and sulfate and as determined by charge balance.

Table D3.9. Particle Size Experiment drainage quality from Solid RK4, reactor 5 (+35/-10 mesh, 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	395.2	1250.	6.95	20.0	.	675.0	170.00	110.00	0.17	0.33	70025.	164.4	83.8	46.5	12	9	93
2	213.2	1450.	5.42	10.0	.	850.0	200.00	90.00	0.31	0.48	70051.	191.4	188.7	188.3	12	16	93
3	390.2	2030.	7.23	19.0	.	.	.	.	.	.	.	194.1	184.0	182.4	12	23	93
4	376.6	1800.	7.31	.	.	1138.5[1]	250.00	120.00	0.55	1.80	70071.	195.5	180.5	179.2	12	30	93
5	375.5	1550.	7.16	22.5	.	.	.	.	.	.	.	197.9	184.3	183.3	1	6	94
6	383.9	1350.	7.25	.	.	965.0	210.00	100.00	0.65	1.70	70100.	191.7	.	169.4	1	13	94
7	381.1	1560.	7.26	25.0	.	.	.	.	.	.	.	181.5	164.5	157.0	1	20	94
8	386.9	1350.	7.42	.	.	890.0	190.00	87.50	0.80	1.85	70128.	161.6	150.8	149.8	1	27	94
9	376.5	1380.	7.15	20.0	.	.	.	.	.	.	.	162.4	151.3	150.2	2	3	94
10	380.1	1450.	7.41	.	.	922.9	205.00	93.50	0.70	1.80	70153.	162.5	146.1	143.8	2	10	94
11	381.1	1550.	6.97	25.0	.	.	.	.	.	.	.	157.8	144.0	143.7	2	17	94
12	377.8	1450.	7.35	.	.	840.0	215.00	95.00	0.35	2.45	70179.	158.9	146.0	145.0	2	24	94
13	379.3	1420.	7.35	25.0	.	.	.	.	.	.	.	162.1	145.3	144.5	3	3	94
14	378.6	1350.	7.38	.	.	865.0	190.00	85.00	0.35	1.75	70204.	161.3	146.2	145.3	3	10	94
15	374.0	1250.	7.40	25.0	.	.	.	.	.	.	.	164.8	146.3	145.5	3	17	94
16	381.2	1190.	7.11	.	.	797.2	166.00	74.00	0.45	1.55	70230.	158.1	153.5	149.2	3	24	94
17	383.3	1400.	7.41	22.0	.	.	.	.	.	.	.	159.7	145.0	143.7	3	31	94
18	377.1	1280.	7.37	.	.	741.7	162.00	74.00	0.45	1.40	70255.	158.4	152.5	146.9	4	7	94
19	383.7	1410.	7.43	25.0	.	.	.	.	.	.	.	196.3	.	142.2	4	14	94
20	373.4	1380.	7.20	.	.	827.0	179.00	82.50	.	.	70281.	184.9	143.3	141.8	4	20	94
21	377.9	1400.	7.14	25.0	.	.	.	.	.	.	.	157.4	143.5	142.0	4	28	94
22	381.5	1330.	7.45	.	.	752.5	162.00	72.50	.	.	70307.	158.6	143.0	141.5	5	5	94
23	375.1	1190.	7.37	25.0	.	.	.	.	.	.	.	160.0	141.5	140.5	5	12	94
24	376.3	1200.	7.26	.	.	703.9	162.00	73.00	2.30	2.00	70332.	152.8	143.0	140.5	5	19	94
25	365.9	1250.	7.55	25.0	.	.	.	.	.	.	.	160.0	141.5	141.5	5	26	94
26	371.7	1250.	7.49	.	.	736.1	162.00	74.00	0.70	1.80	70358.	165.8	142.5	142.5	6	2	94
27	392.9	1000.	7.35	30.0	.	.	.	.	.	.	.	175.7	146.0	144.5	6	9	94
28	386.1	1100.	7.64	.	.	604.7	128.00	60.00	0.20	1.50	70383.	162.5	141.0	141.5	6	16	94
29	371.9	1200.	7.57	25.0	.	.	.	.	.	.	.	159.5	140.5	138.5	6	23	94
30	362.9	1000.	7.68	.	.	775.5	157.00	73.00	0.60	2.00	70409.	165.5	.	142.5	6	30	94

1 Original reported concentration 1320.0 mg/L sulfate; inconsistent with specific conductance and other sulfate concentrations; concentration estimated as average between values determined by the relationship between conductance and sulfate and as determined by charge balance.

Table D3.10. Particle Size Experiment drainage quality from Solid RK4, reactor 6 (+10 mesh/ -1/4", 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	401.2	780.	4.47	.	20.0	410.0	90.00	37.00	0.15	0.37	70026.	67.6	22.3	13.4	12	9	93
2	290.5	1400.	3.76	.	138.0	790.0	175.00	60.00	0.35	0.35	70052.	67.7	19.7	49.0	12	16	93
3	389.2	1100.	4.17	.	45.0	.	.	.	.	.	.	55.0	49.7	48.9	12	23	93
4	388.5	900.	4.20	.	.	480.0	105.00	44.50	0.60	0.80	70072.	55.2	50.3	50.2	12	30	93
5	390.1	1000.	4.05	.	35.0	.	.	.	.	.	.	65.1	50.9	50.7	1	6	94
6	389.8	1000.	4.00	.	.	504.0	110.00	45.20	1.80	1.40	70101.	57.5	.	51.3	1	13	94
7	388.5	1000.	3.91	.	38.0	.	.	.	.	.	.	56.4	50.1	49.7	1	20	94
8	386.7	1100.	3.79	.	.	554.0	115.00	50.50	0.90	0.90	70129.	54.9	50.6	50.5	1	27	94
9	380.3	1220.	3.68	.	39.0	.	.	.	.	.	.	55.0	50.4	50.4	2	3	94
10	383.3	1325.	3.67	.	.	759.3	155.00	70.00	0.95	1.00	70154.	59.2	52.4	52.0	2	10	94
11	386.4	1860.	3.41	.	118.0	.	.	.	.	.	.	59.9	54.0	54.0	2	17	94
12	384.3	2320.	3.32	.	.	1240.0	270.00	110.00	0.70	1.15	70180.	61.8	54.2	53.3	2	24	94
13	378.6	2600.	3.30	.	205.0	.	.	.	.	.	.	66.5	54.7	54.7	3	3	94
14	374.5	2510.	3.25	.	.	1680.0	310.00	120.00	0.55	1.00	70205.	71.1	55.8	54.8	3	10	94
15	332.1	2700.	3.16	.	250.0	.	.	.	.	.	.	115.0	56.9	60.0	3	17	94
16	379.2	2410.	3.23	.	.	1629.5	287.00	152.00	0.65	0.80	70231.	70.3	55.2	55.2	3	24	94
17	346.2	2700.	3.15	.	210.0	.	.	.	.	.	.	87.8	56.4	56.2	3	31	94
18	361.7	2400.	3.24	.	.	1556.4	269.00	148.00	0.55	0.75	70256.	85.2	56.7	56.4	4	7	94
19	357.5	2600.	3.12	.	205.0	.	.	.	.	.	.	89.0	.	57.2	4	14	94
20	370.0	2400.	3.17	.	.	1498.0	270.00	126.50	.	.	70282.	70.9	57.2	56.2	4	20	94
21	359.0	2400.	3.15	.	220.0	.	.	.	.	.	.	83.1	56.7	55.9	4	28	94
22	344.8	2220.	3.30	.	.	1370.0	245.00	115.00	.	.	70308.	103.4	58.2	58.2	5	5	94
23	326.8	2200.	3.20	.	210.0	.	.	.	.	.	.	118.9	56.7	56.7	5	12	94
24	331.7	1900.	3.13	.	.	1223.3	233.00	112.00	2.40	1.00	70333.	116.7	57.2	56.2	5	19	94
25	342.4	2050.	3.19	.	205.0	.	.	.	.	.	.	127.6	56.2	55.5	5	26	94
26	356.5	1900.	3.16	.	.	1174.1	210.00	105.00	0.70	2.45	70359.	96.2	54.7	54.2	6	2	94
27	359.3	1800.	3.17	.	170.0	.	.	.	.	.	.	103.2	55.2	54.2	6	9	94
28	375.0	1700.	3.18	.	.	963.0	164.00	79.00	0.35	0.90	70384.	82.2	55.2	53.2	6	16	94
29	347.5	1800.	3.11	.	205.0	.	.	.	.	.	.	92.2	55.2	54.2	6	23	94
30	332.0	1850.	3.12	.	.	1199.2	200.00	103.00	1.05	4.00	70410.	102.2	.	53.2	6	30	94

Table D3.11. Particle Size Experiment drainage quality from Solid RK4, reactor 7 (+1/4" / -3/4", 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	409.3	560.	4.02	.	40.0	257.0	42.90	28.65	0.12	0.30	70027.	47.0	13.5	6.1	12	9	93
2	365.7	600.	3.78	.	50.0	274.0	65.00	17.10	0.25	0.16	70053.	39.1	35.5	34.0	12	16	93
3	389.1	1100.	3.77	.	100.0	.	.	.	.	.	.	39.8	38.4	37.5	12	23	93
4	389.6	575.	3.94	.	.	275.0	38.30	30.25	0.75	0.40	70073.	41.4	41.1	41.1	12	30	93
5	395.2	800.	3.79	.	65.0	.	.	.	.	.	.	42.8	41.9	41.7	1	6	94
6	394.1	830.	3.67	.	.	376.0	75.00	33.80	1.00	0.65	70102.	40.8	.	40.4	1	13	94
7	392.0	800.	3.51	.	68.0	.	.	.	.	.	.	42.6	42.3	41.7	1	20	94
8	390.4	1000.	3.36	.	.	450.0	91.00	39.10	1.10	0.55	70130.	40.9	41.1	41.1	1	27	94
9	386.6	750.	3.31	.	76.0	.	.	.	.	.	.	42.7	42.3	42.3	2	3	94
10	388.0	1100.	3.23	.	.	563.3	85.50	45.40	0.95	0.50	70155.	47.3	46.6	46.2	2	10	94
11	390.3	1290.	3.04	.	205.0	.	.	.	.	.	.	48.7	48.8	47.7	2	17	94
12	388.1	1050.	3.09	.	.	375.0	36.50	50.00	0.40	0.60	70181.	52.2	48.8	48.7	2	24	94
13	386.9	1100.	3.08	.	210.0	.	.	.	.	.	.	55.5	51.5	51.0	3	3	94
14	385.1	1080.	3.05	.	.	540.0	34.50	60.00	0.35	0.25	70206.	56.5	48.5	47.4	3	10	94
15	383.4	810.	3.11	.	163.0	.	.	.	.	.	.	55.9	48.4	48.0	3	17	94
16	385.4	850.	3.13	.	.	397.6	33.85	39.00	0.35	0.20	70232.	57.0	49.2	48.2	3	24	94
17	384.4	1000.	3.05	.	150.0	.	.	.	.	.	.	55.1	49.5	48.3	3	31	94
18	383.6	1100.	3.07	.	.	517.0	35.95	53.00	0.45	0.25	70257.	57.2	53.7	53.1	4	7	94
19	383.1	1680.	2.87	.	268.0	.	.	.	.	.	.	61.0	.	56.7	4	14	94
20	381.9	1650.	2.92	.	.	890.8	115.00	76.50	.	.	70283.	89.3	56.3	56.3	4	20	94
21	383.9	1420.	2.94	.	240.0	.	.	.	.	.	.	59.3	55.3	54.8	4	28	94
22	385.9	1300.	3.01	.	.	602.8	80.00	59.50	.	.	70309.	63.1	57.3	56.3	5	5	94
23	391.2	1325.	3.02	.	200.0	.	.	.	.	.	.	60.1	54.8	54.9	5	12	94
24	384.8	1300.	2.99	.	.	624.9	92.00	56.00	1.45	0.60	70334.	60.1	56.3	54.8	5	19	94
25	377.6	1200.	3.02	.	170.0	.	.	.	.	.	.	64.3	52.3	51.8	5	26	94
26	388.2	1250.	3.00	.	.	544.4	84.00	44.00	1.50	3.20	70360.	59.3	51.6	51.1	6	2	94
27	400.5	1100.	3.04	.	150.0	.	.	.	.	.	.	59.3	51.3	50.3	6	9	94
28	394.4	1050.	2.97	.	.	438.0	56.00	34.00	0.15	0.35	70385.	60.3	54.3	52.3	6	16	94
29	380.9	1150.	2.95	.	185.0	.	.	.	.	.	.	62.3	54.8	54.2	6	23	94
30	385.4	1000.	3.03	.	.	407.7	41.00	37.00	0.80	0.30	70411.	63.3	.	55.3	6	30	94

Table D3.12. Particle Size Experiment drainage quality from Solid RK5, reactor 14 (-270 mesh, 75 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	167.1	272.	7.11	7.5	.	100.0	31.70	7.20	0.90	2.75	70060.	31.1	27.9	26.2	12	16	93
2	197.7	240.	7.42	15.0	.	78.0	24.65	5.90	0.80	2.40	70090.	25.7	25.4	24.9	12	23	93
3	197.3	140.	7.35	6.5	.	.	.	.	.	.	.	27.4	26.5	26.2	12	30	93
4	195.7	128.	7.16	.	.	43.4	12.35	3.85	0.75	2.05	70095.	27.5	25.3	24.8	1	6	94
5	194.9	160.	7.01	5.0	.	.	.	.	.	.	.	27.4	.	25.5	1	13	94
6	196.3	162.	7.05	.	.	65.0	15.60	5.65	1.20	2.50	70121.	27.0	25.0	24.5	1	20	94
7	196.7	190.	6.41	1.5	.	.	.	.	.	.	.	26.5	24.6	23.7	1	27	94
8	197.5	179.	6.13	.	.	73.6	15.20	6.60	1.20	3.05	70149.	25.9	24.4	23.9	2	3	94
9	196.5	160.	5.89	.	5.0	.	.	.	.	.	.	26.0	24.9	24.2	2	10	94
10	195.5	130.	5.96	.	.	40.0	9.75	4.85	0.70	7.90	70174.	25.9	24.0	23.0	2	17	94
11	196.0	128.	6.10	.	10.0	.	.	.	.	.	.	26.3	24.3	22.9	2	24	94
12	194.8	122.	6.20	.	.	63.0	8.35	4.75	0.70	3.00	70200.	26.1	24.9	23.7	3	3	94
13	196.1	105.	6.33	2.5	.	.	.	.	.	.	.	25.6	24.9	24.7	3	10	94
14	195.8	98.	6.35	.	.	40.8	6.50	3.05	0.75	2.55	70225.	25.3	24.3	24.1	3	17	94
15	197.6	93.	6.05	.	5.0	.	.	.	.	.	.	25.8	25.0	24.6	3	24	94
16	196.8	100.	6.01	.	.	39.9	6.45	3.95	0.80	2.40	70251.	25.7	24.9	24.4	3	31	94
17	197.8	98.	5.74	.	5.0	.	.	.	.	.	.	25.3	24.3	23.2	4	7	94
18	195.2	110.	5.49	.	.	40.7	9.50	3.95	.	.	70277.	25.6	.	24.7	4	14	94
19	198.6	82.	5.84	.	5.0	.	.	.	.	.	.	25.5	24.6	24.4	4	20	94
20	197.4	90.	5.15	.	.	33.8	5.55	3.15	.	.	70302.	25.5	24.8	24.5	4	28	94
21	197.4	95.	5.72	.	5.0	.	.	.	.	.	.	24.8	24.3	23.1	5	5	94
22	196.6	85.	5.22	.	.	33.5	5.50	3.15	0.50	1.90	70328.	25.8	25.1	24.8	5	12	94
23	196.8	82.	6.06	.	<5.0	.	.	.	.	.	.	.	24.7	24.5	5	19	94
24	199.0	90.	5.47	.	.	32.9	5.45	3.35	0.95	2.35	70354.	25.5	24.6	24.5	5	26	94
25	199.1	90.	5.22	.	5.0	.	.	.	.	.	.	25.6	24.2	23.3	6	2	94
26	196.1	90.	4.90	.	.	34.2	5.65	3.90	0.40	1.40	70379.	25.8	24.6	24.4	6	9	94
27	199.9	90.	5.18	.	<5.0	.	.	.	.	.	.	25.7	24.9	24.7	6	16	94
28	197.2	95.	5.20	.	.	35.1	5.25	3.00	0.60	1.55	70405.	27.1	24.8	24.4	6	23	94
29	197.4	90.	5.11	.	5.0	.	.	.	.	.	.	25.5	.	24.1	6	30	94
30	196.1	100.	4.92	.	.	34.9	5.55	3.35	0.90	1.20	70430.	24.8	20.9	19.8	7	7	94

Table D3.13. Particle Size Experiment drainage quality from Solid RK5, reactor 15 (+270/-100 mesh, 75 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	199.7	75.	7.66	11.0	.	16.5	5.35	3.45	0.15	0.35	70035.	27.3	0.0	0.0	12	9	93
2	168.9	90.	6.93	2.5	.	31.2	6.60	4.65	0.55	1.90	70061.	27.8	25.3	24.6	12	16	93
3	195.9	182.	7.08	5.0	.	.	.	.	.	.	.	27.6	26.8	26.3	12	23	93
4	196.4	112.	7.06	.	.	43.6	9.25	4.25	0.65	2.35	70079.	30.2	28.6	28.0	12	30	93
5	197.1	112.	7.06	5.0	.	.	.	.	.	.	.	28.7	26.3	25.9	1	6	94
6	195.7	135.	6.65	.	.	48.0	10.65	4.65	0.95	3.15	70108.	29.1	.	26.5	1	13	94
7	196.5	120.	6.44	2.5	.	.	.	.	.	.	.	28.7	26.9	26.0	1	20	94
8	196.1	122.	6.02	.	.	52.0	8.65	4.55	0.85	2.85	70136.	28.3	26.5	25.3	1	27	94
9	196.0	100.	5.96	.	2.5	.	.	.	.	.	.	28.4	26.7	26.0	2	3	94
10	195.4	91.	5.94	.	.	36.5	6.00	3.75	0.70	2.05	70161.	27.4	26.5	25.9	2	10	94
11	197.1	79.	5.84	.	5.0	.	.	.	.	.	.	27.3	25.6	25.3	2	17	94
12	196.5	85.	5.96	.	.	29.8	4.90	3.40	0.25	2.05	70187.	27.3	25.3	24.6	2	24	94
13	195.4	82.	5.95	.	<5.0	.	.	.	.	.	.	27.5	26.3	25.2	3	3	94
14	196.8	68.	5.96	.	.	27.0	4.15	2.65	0.45	1.65	70212.	27.2	26.7	26.4	3	10	94
15	196.2	62.	5.99	.	10.0	.	.	.	.	.	.	26.9	26.0	25.7	3	17	94
16	197.4	62.	6.01	.	.	26.0	3.50	2.70	0.40	1.40	70238.	27.2	26.3	26.0	3	24	94
17	197.0	69.	5.85	.	<5.0	.	.	.	.	.	.	27.3	26.4	25.8	3	31	94
18	198.0	69.	5.81	.	.	25.3	3.95	3.65	.	.	70263.	27.0	25.9	25.5	4	7	94
19	198.2	80.	5.72	.	<5.0	.	.	.	.	.	.	26.8	.	25.8	4	14	94
20	198.6	64.	5.57	.	.	27.1	3.35	2.50	.	.	70289.	28.1	26.3	26.1	4	20	94
21	196.3	65.	5.80	.	<5.0	.	.	.	.	.	.	29.1	28.1	27.3	4	28	94
22	198.3	72.	5.81	.	.	25.0	3.80	3.40	1.95	2.00	70315.	27.7	26.8	26.5	5	5	94
23	197.8	64.	5.46	.	<5.0	.	.	.	.	.	.	27.8	26.8	26.6	5	12	94
24	195.4	63.	5.20	.	.	24.6	3.40	2.80	1.75	1.60	70340.	.	26.6	26.4	5	19	94
25	196.7	65.	5.57	.	2.5	.	.	.	.	.	.	28.3	27.1	26.9	5	26	94
26	196.2	70.	5.34	.	.	24.9	3.35	2.60	0.20	1.50	70366.	28.4	27.6	27.3	6	2	94
27	197.8	80.	4.80	.	<2.5	.	.	.	.	.	.	28.6	26.2	25.7	6	9	94
28	199.0	75.	5.10	.	.	25.1	3.25	2.60	0.40	1.40	70391.	93.0	24.4	23.6	6	16	94
29	196.8	95.	5.00	.	<5.0	.	.	.	.	.	.	27.7	25.4	24.8	6	23	94
30	196.8	70.	5.12	.	.	26.5	3.25	2.90	0.85	1.60	70417.	27.4	.	24.9	6	30	94

Table D3.14. Particle Size Experiment drainage quality from Solid RK5, reactor 16 (+100/-35 mesh, 75 grams).

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	196.5	80.	7.55	5.0	.	23.8	5.35	3.95	0.14	0.12	70036.	29.4	0.0	0.0	12	9	93
2	167.6	62.	6.83	5.0	.	19.0	3.65	2.80	0.50	0.55	70062.	29.5	26.3	26.1	12	16	93
3	196.3	125.	6.71	5.0	.	.	.	.	.	.	.	29.0	27.9	27.1	12	23	93
4	195.8	80.	6.81	.	.	29.2	5.25	3.25	0.55	0.90	70080.	32.1	30.2	29.6	12	30	93
5	198.4	98.	6.72	2.5	.	.	.	.	.	.	.	29.7	27.1	26.5	1	6	94
6	194.6	105.	6.00	.	.	38.0	7.10	4.00	0.85	1.70	70109.	29.9	.	26.9	1	13	94
7	195.3	98.	6.20	.	<5.0	.	.	.	.	.	.	28.5	26.0	25.3	1	20	94
8	195.7	99.	5.92	.	.	34.4	5.85	3.80	0.85	2.05	70137.	28.4	26.7	26.0	1	27	94
9	196.1	76.	5.98	.	<5.0	.	.	.	.	.	.	29.3	27.7	26.8	2	3	94
10	199.1	70.	5.90	.	.	29.1	3.80	2.95	0.30	2.15	70162.	28.5	27.4	26.9	2	10	94
11	195.5	65.	5.85	.	5.0	.	.	.	.	.	.	28.4	26.2	25.8	2	17	94
12	196.7	68.	5.95	.	.	21.7	3.05	3.00	0.30	1.90	70188.	28.1	26.4	25.6	2	24	94
13	195.7	60.	5.94	.	<5.0	.	.	.	.	.	.	27.7	25.9	24.8	3	3	94
14	194.8	53.	6.01	.	.	21.5	2.55	2.15	0.40	1.55	70213.	27.9	27.3	27.1	3	10	94
15	196.5	52.	6.02	.	<5.0	.	.	.	.	.	.	28.0	27.1	26.6	3	17	94
16	196.7	52.	6.02	.	.	18.2	2.10	2.05	0.35	1.35	70239.	27.8	26.6	26.2	3	24	94
17	195.2	51.	5.92	.	<5.0	.	.	.	.	.	.	28.9	28.0	27.6	3	31	94
18	198.3	51.	5.89	.	.	17.9	2.10	2.25	.	.	70264.	27.9	26.7	26.3	4	7	94
19	196.4	53.	5.78	.	<5.0	.	.	.	.	.	.	28.2	.	26.9	4	14	94
20	197.3	45.	5.74	.	.	15.0	1.70	1.90	.	.	70290.	30.0	28.9	28.2	4	20	94
21	196.8	50.	5.85	.	<5.0	.	.	.	.	.	.	30.1	29.1	28.6	4	28	94
22	196.8	51.	5.87	.	.	15.8	1.70	2.10	0.85	1.45	70316.	30.0	28.5	27.2	5	5	94
23	196.1	45.	5.73	.	<5.0	.	.	.	.	.	.	29.8	27.3	27.0	5	12	94
24	197.0	37.	5.59	.	.	16.2	1.75	2.25	1.85	1.60	70341.	.	27.9	27.7	5	19	94
25	197.8	45.	5.84	.	2.5	.	.	.	.	.	.	28.8	27.2	27.2	5	26	94
26	197.7	46.	5.77	.	.	14.8	1.50	1.80	0.05	1.45	70367.	28.9	27.8	27.5	6	2	94
27	198.0	50.	5.02	.	2.5	.	.	.	.	.	.	20.4	184.0	17.7	6	9	94
28	188.2	75.	5.26	.	.	26.7	2.65	3.35	0.55	2.65	70392.	30.3	27.9	27.6	6	16	94
29	198.4	70.	5.39	.	2.5	.	.	.	.	.	.	28.5	27.1	26.1	6	23	94
30	196.5	55.	5.50	.	.	19.4	1.75	2.65	0.45	1.30	70418.	29.1	.	26.8	6	30	94

Table D3.15. Particle Size Experiment drainage quality from Solid RK5, reactor 18 (+35/-10 mesh, 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	320.3	200.	6.99	8.0	.	66.4	14.00	9.35	0.52	0.22	70038.	148.7	57.0	20.1	12	9	93
2	176.7	132.	6.56	<2.5	.	43.2	8.30	5.55	1.35	0.75	70064.	138.7	124.5	122.3	12	16	93
3	278.7	310.	6.79	5.0	.	.	.	.	.	.	.	139.6	124.5	122.7	12	23	93
4	271.9	230.	6.62	.	.	43.6	17.05	10.60	2.50	1.50	70082.	142.2	128.4	127.6	12	30	93
5	278.0	182.	6.59	4.0	.	.	.	.	.	.	.	146.8	134.4	133.0	1	6	94
6	278.9	200.	6.42	.	.	77.2	15.45	8.49	1.85	1.30	70111.	147.7	.	127.2	1	13	94
7	273.9	168.	6.40	3.8	.	.	.	.	.	.	.	148.7	135.7	134.5	1	20	94
8	276.2	180.	6.43	.	.	67.0	13.05	7.15	1.80	1.55	70139.	148.5	135.9	135.2	1	27	94
9	280.0	158.	6.37	5.0	.	.	.	.	.	.	.	148.1	145.1	145.1	2	3	94
10	286.5	157.	6.39	.	.	64.6	12.00	6.80	1.00	1.30	70164.	152.4	143.9	143.6	2	10	94
11	300.2	175.	6.61	5.0	.	.	.	.	.	.	.	139.3	134.4	133.6	2	17	94
12	283.9	169.	6.10	.	.	57.0	11.55	6.75	1.10	1.30	70190.	145.0	133.7	132.0	2	24	94
13	283.5	160.	6.24	.	<5.0	.	.	.	.	.	.	144.9	137.9	136.7	3	3	94
14	289.3	152.	6.26	.	.	66.4	11.50	6.00	1.00	1.05	70215.	142.9	137.1	127.4	3	10	94
15	279.9	125.	6.25	.	5.0	.	.	.	.	.	.	141.6	134.3	124.7	3	17	94
16	281.6	128.	6.16	.	.	53.9	9.05	5.40	0.90	1.05	70241.	139.9	124.0	122.6	3	24	94
17	278.6	135.	6.30	.	<5.0	.	.	.	.	.	.	136.5	120.5	118.7	3	31	94
18	278.5	135.	6.25	.	.	52.8	9.60	5.35	.	.	70266.	134.5	121.5	119.9	4	7	94
19	279.7	168.	5.94	.	5.0	.	.	.	.	.	.	133.9	.	120.7	4	14	94
20	277.1	170.	5.92	.	.	66.5	12.15	7.80	.	.	70292.	162.7	121.9	120.7	4	20	94
21	282.4	170.	5.86	.	5.0	.	.	.	.	.	.	133.1	119.0	117.7	4	28	94
22	279.4	158.	5.90	.	.	59.7	10.15	6.55	2.05	1.50	70318.	134.9	127.7	118.5	5	5	94
23	278.7	158.	5.89	.	5.0	.	.	.	.	.	.	133.8	119.5	118.3	5	12	94
24	281.3	152.	5.78	.	.	60.6	9.85	7.25	1.15	1.70	70343.	135.5	126.0	125.7	5	19	94
25	274.9	160.	6.02	.	5.0	.	.	.	.	.	.	133.6	115.5	116.0	5	26	94
26	281.8	150.	5.88	.	.	57.2	9.05	5.60	0.90	1.80	70369.	132.5	118.0	117.0	6	2	94
27	283.4	145.	5.73	.	<5.0	.	.	.	.	.	.	129.5	117.0	115.5	6	9	94
28	291.4	160.	5.81	.	.	59.4	9.05	7.30	0.85	1.85	70394.	130.5	117.2	115.5	6	16	94
29	277.3	150.	5.69	.	2.5	.	.	.	.	.	.	127.5	116.5	114.5	6	23	94
30	283.6	160.	5.65	.	.	65.3	9.45	7.05	1.40	2.35	70420.	128.5	.	114.5	6	30	94

Table D3.16. Particle Size Experiment drainage quality from Solid RK5, reactor 19 (+10 mesh/ -1/4", 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	295.4	95.	6.58	3.0	.	33.0	5.35	4.15	0.27	0.16	70039.	25.3	1.3	0.6	12	9	93
2	281.0	67.	6.35	<2.5	.	20.7	3.80	2.55	0.85	0.35	70065.	17.1	16.2	15.4	12	16	93
3	290.9	102.	6.41	2.5	.	.	.	.	.	.	.	20.0	17.6	16.4	12	23	93
4	248.9	82.	6.48	.	.	26.9	4.55	3.60	1.25	1.95	70083.	24.8	24.8	24.6	12	30	93
5	295.6	70.	6.66	5.0	.	.	.	.	.	.	.	26.3	22.9	22.3	1	6	94
6	266.1	72.	6.87	.	.	22.8	4.10	3.10	1.50	0.50	70112.	47.3	.	23.0	1	13	94
7	293.6	59.	6.50	3.8	.	.	.	.	.	.	.	25.7	21.7	21.0	1	20	94
8	290.3	63.	6.40	.	.	20.6	3.20	2.05	1.05	0.60	70140.	24.0	22.9	22.9	1	27	94
9	290.4	62.	6.40	5.0	.	.	.	.	.	.	.	26.6	23.9	23.9	2	3	94
10	273.8	62.	6.38	.	.	23.5	3.75	2.80	0.75	0.65	70165.	43.5	25.4	25.2	2	10	94
11	292.0	70.	6.49	5.0	.	.	.	.	.	.	.	27.3	25.1	24.9	2	17	94
12	221.8	75.	6.55	.	.	33.6	4.30	3.25	0.90	2.15	70191.	97.8	71.6	66.4	2	24	94
13	246.0	82.	6.26	.	<5.0	.	.	.	.	.	.	115.7	81.8	66.0	3	3	94
14	241.8	68.	6.40	.	.	29.5	4.35	2.65	0.90	0.45	70216.	117.5	71.5	64.1	3	10	94
15	251.8	65.	6.38	.	5.0	.	.	.	.	.	.	78.4	59.4	52.8	3	17	94
16	226.9	58.	6.55	.	.	21.2	3.55	2.45	0.75	1.00	70242.	118.3	48.3	47.1	3	24	94
17	220.1	65.	6.40	<2.5	.	.	.	.	.	.	.	111.1	33.9	26.4	3	31	94
18	205.2	58.	6.25	.	.	22.7	3.65	2.30	.	.	70267.	115.6	48.4	39.6	4	7	94
19	238.0	71.	6.14	.	<5.0	.	.	.	.	.	.	98.1	.	40.3	4	14	94
20	279.3	58.	6.14	.	.	19.7	3.60	2.35	.	.	70293.	49.5	29.8	29.4	4	20	94
21	269.1	72.	6.04	.	5.0	.	.	.	.	.	.	53.7	28.9	28.4	4	28	94
22	.	58.	6.21	.	.	22.3	4.15	3.20	2.95	0.50	70319.	85.4	30.9	29.9	5	5	94
23	223.4	65.	6.12	.	<5.0	.	.	.	.	.	.	102.5	33.9	29.3	5	12	94
24	208.9	67.	5.96	.	.	22.1	3.70	2.70	2.35	0.65	70344.	116.4	48.4	29.9	5	19	94
25	192.3	65.	6.20	.	<5.0	.	.	.	.	.	.	112.9	28.9	24.2	5	26	94
26	212.4	62.	6.11	.	.	18.7	3.20	1.85	0.45	0.55	70370.	115.4	34.9	30.1	6	2	94
27	193.3	60.	5.96	.	<5.0	.	.	.	.	.	.	134.9	33.4	29.9	6	9	94
28	206.3	60.	6.05	.	.	21.4	4.20	4.10	0.55	0.55	70395.	129.0	36.9	27.9	6	16	94
29	191.3	55.	5.96	.	2.5	.	.	.	.	.	.	122.9	32.4	28.9	6	23	94
30	176.3	65.	6.06	.	.	22.1	3.70	2.50	0.75	0.50	70421.	139.9	.	34.9	6	30	94

Table D3.17. Particle Size Experiment drainage quality from Solid RK5, reactor 20 (+1/4" / -3/4", 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	321.2	73.	5.89	.	<3.0	23.8	3.80	3.35	0.18	0.12	70040.	12.7	0.0	0.0	12	9	93
2	289.2	50.	5.96	.	<3.0	15.3	2.45	1.65	0.55	0.35	70066.	8.9	8.4	7.8	12	16	93
3	292.9	70.	5.75	.	<5.0	.	.	.	.	.	.	11.8	10.5	8.5	12	23	93
4	289.8	57.	6.00	.	.	19.0	3.35	3.45	0.75	1.30	70084.	12.7	11.8	11.8	12	30	93
5	296.6	49.	6.32	2.5	.	.	.	.	.	.	.	13.6	12.7	12.1	1	6	94
6	295.3	50.	6.27	.	.	14.0	2.60	1.80	1.25	0.50	70113.	14.4	.	13.2	1	13	94
7	296.4	37.	6.48	3.0	.	.	.	.	.	.	.	14.2	13.1	12.3	1	20	94
8	291.8	37.	6.32	.	.	11.8	1.70	1.30	0.95	0.60	70141.	13.8	13.5	13.2	1	27	94
9	292.2	34.	6.37	5.0	.	.	.	.	.	.	.	14.5	13.2	13.2	2	3	94
10	271.4	31.	6.48	.	.	10.3	1.60	1.15	0.45	0.45	70166.	35.0	15.4	15.2	2	10	94
11	295.5	39.	6.53	5.0	.	.	.	.	.	.	.	16.3	14.3	14.3	2	17	94
12	240.4	36.	6.59	.	.	13.1	1.85	1.35	0.50	0.75	70192.	67.7	31.2	25.0	2	24	94
13	208.2	34.	6.29	.	<5.0	.	.	.	.	.	.	111.5	65.0	43.2	3	3	94
14	242.0	29.	6.49	.	.	9.4	1.65	0.95	0.55	0.30	70217.	94.5	36.6	18.3	3	10	94
15	242.3	25.	6.50	.	<5.0	.	.	.	.	.	.	36.1	17.8	17.5	3	17	94
16	269.8	24.	6.66	.	.	7.0	1.35	0.90	0.50	0.20	70243.	98.3	17.0	15.5	3	24	94
17	217.9	25.	6.44	2.5	.	.	.	.	.	.	.	82.5	16.0	15.0	3	31	94
18	219.1	27.	6.35	.	.	10.1	1.80	1.10	.	.	70268.	91.1	36.5	27.9	4	7	94
19	302.4	31.	6.28	.	<5.0	.	.	.	.	.	.	20.4	.	16.6	4	14	94
20	199.5	31.	6.16	.	.	9.6	1.90	1.15	.	.	70294.	105.8	61.3	44.5	4	20	94
21	318.1	24.	6.18	.	<5.0	.	.	.	.	.	.	22.6	20.5	19.4	4	28	94
22	.	21.	6.28	.	.	5.9	1.20	0.90	1.25	0.35	70320.	21.0	19.3	19.0	5	5	94
23	278.2	23.	6.24	.	<5.0	.	.	.	.	.	.	34.8	18.8	18.5	5	12	94
24	272.8	23.	6.15	.	.	6.6	1.25	0.90	2.60	0.40	70345.	33.0	22.0	19.5	5	19	94
25	284.9	22.	6.27	.	<5.0	.	.	.	.	.	.	25.0	17.5	18.3	5	26	94
26	276.3	23.	6.21	.	.	7.1	1.15	0.70	0.25	0.45	70371.	39.0	18.0	17.7	6	2	94
27	254.1	22.	6.08	.	<5.0	.	.	.	.	.	.	201.4	19.5	18.0	6	9	94
28	242.0	23.	6.16	.	.	7.0	1.30	1.05	0.40	0.35	70396.	84.0	20.0	16.0	6	16	94
29	233.7	23.	6.10	.	2.5	.	.	.	.	.	.	68.0	19.0	17.0	6	23	94
30	198.2	25.	6.16	.	.	7.3	1.25	0.90	0.60	0.20	70422.	104.0	.	18.0	6	30	94

Figure D3.18. pH, sulfate, calcium, and magnesium concentrations for solid RK3, size fraction -270 mesh (75 g) of the Particle Size Experiment (weeks 1 - 30).

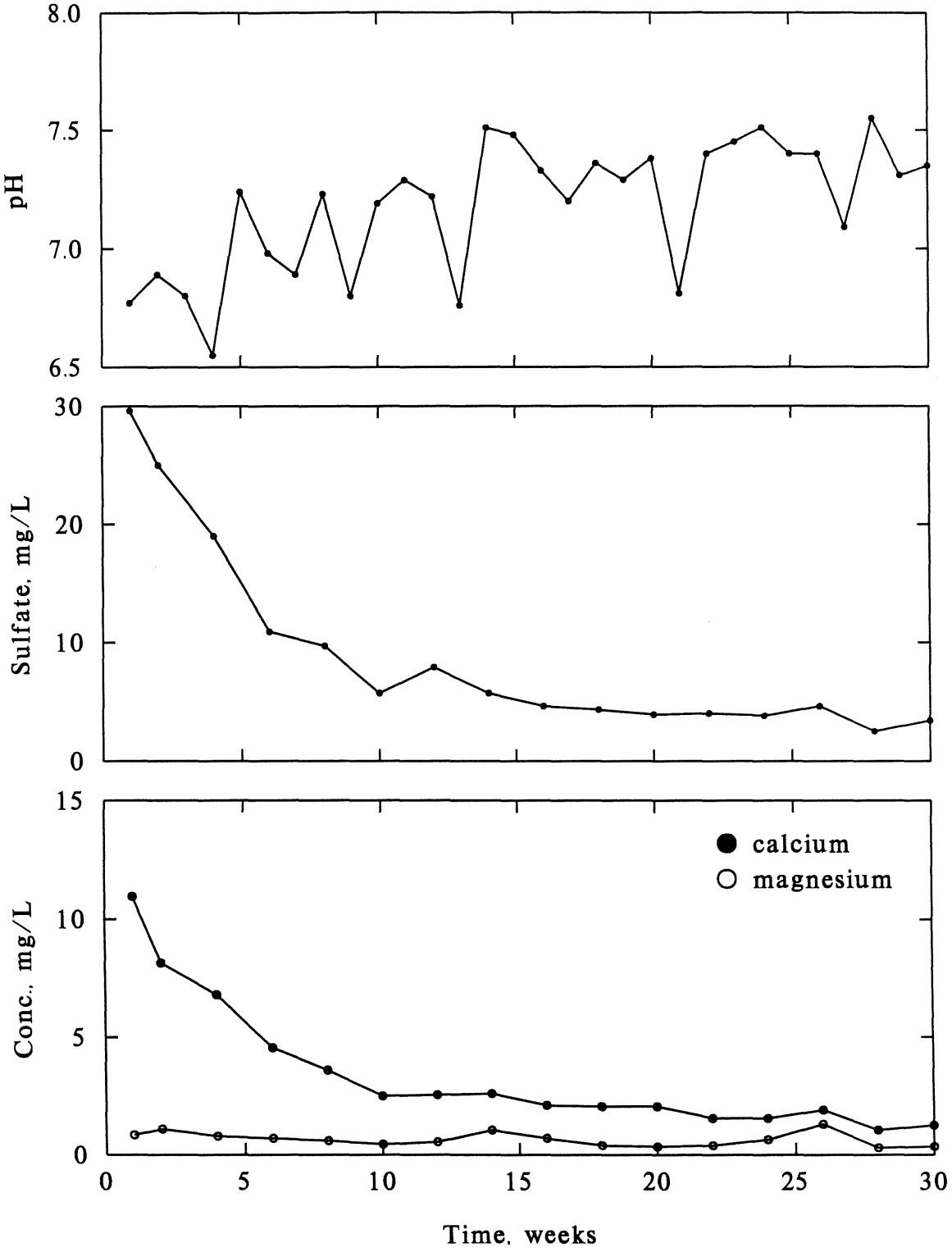

Figure D3.19. pH, sulfate, calcium, and magnesium concentrations for solid RK3, size fraction +270/−100 mesh (75 g) of the Particle Size Experiment (weeks 1 – 30).

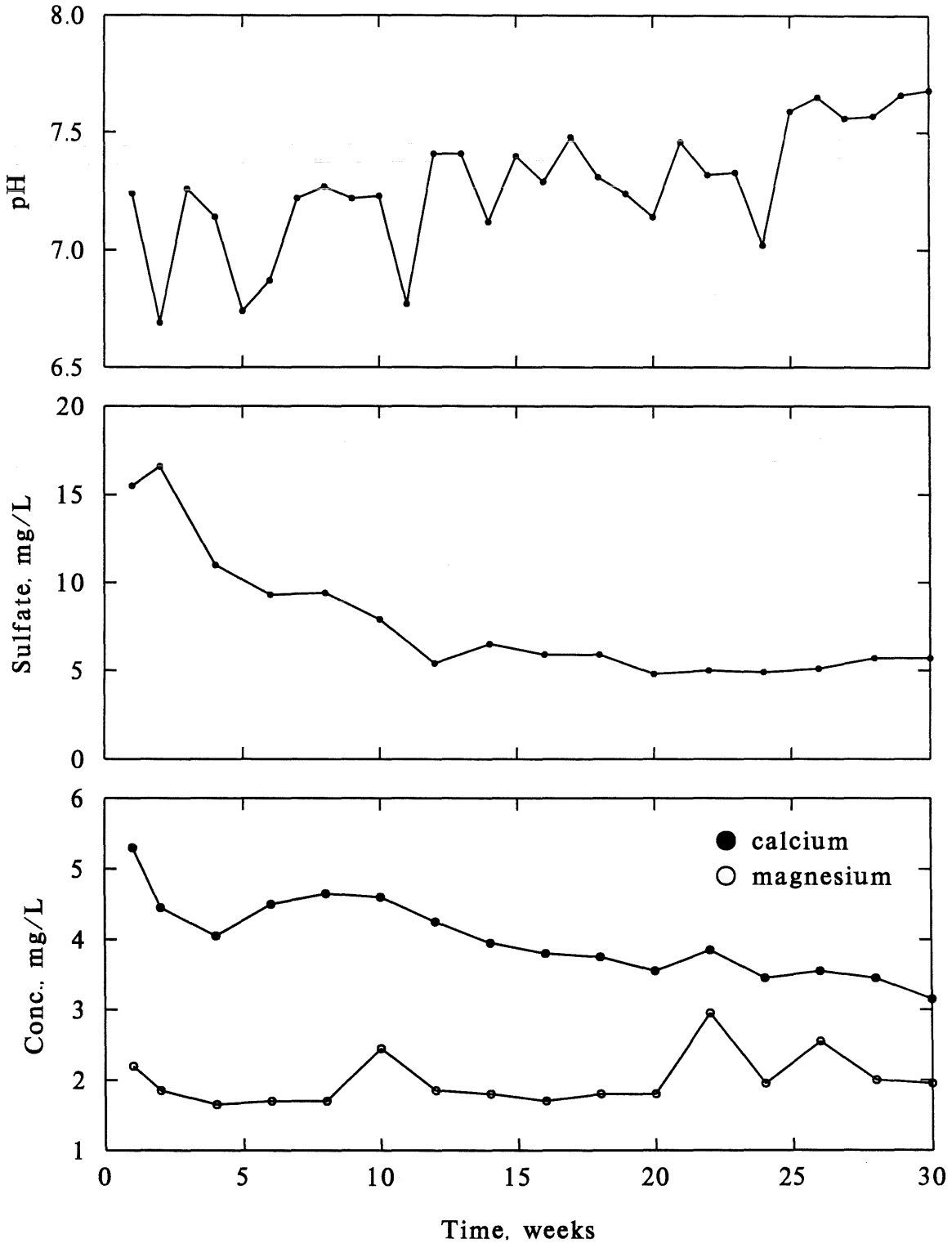

Figure D3.20. pH, sulfate, calcium, and magnesium concentrations for solid RK3, size fraction +100/−35 mesh (75 g) of the Particle Size Experiment (weeks 1 - 30).

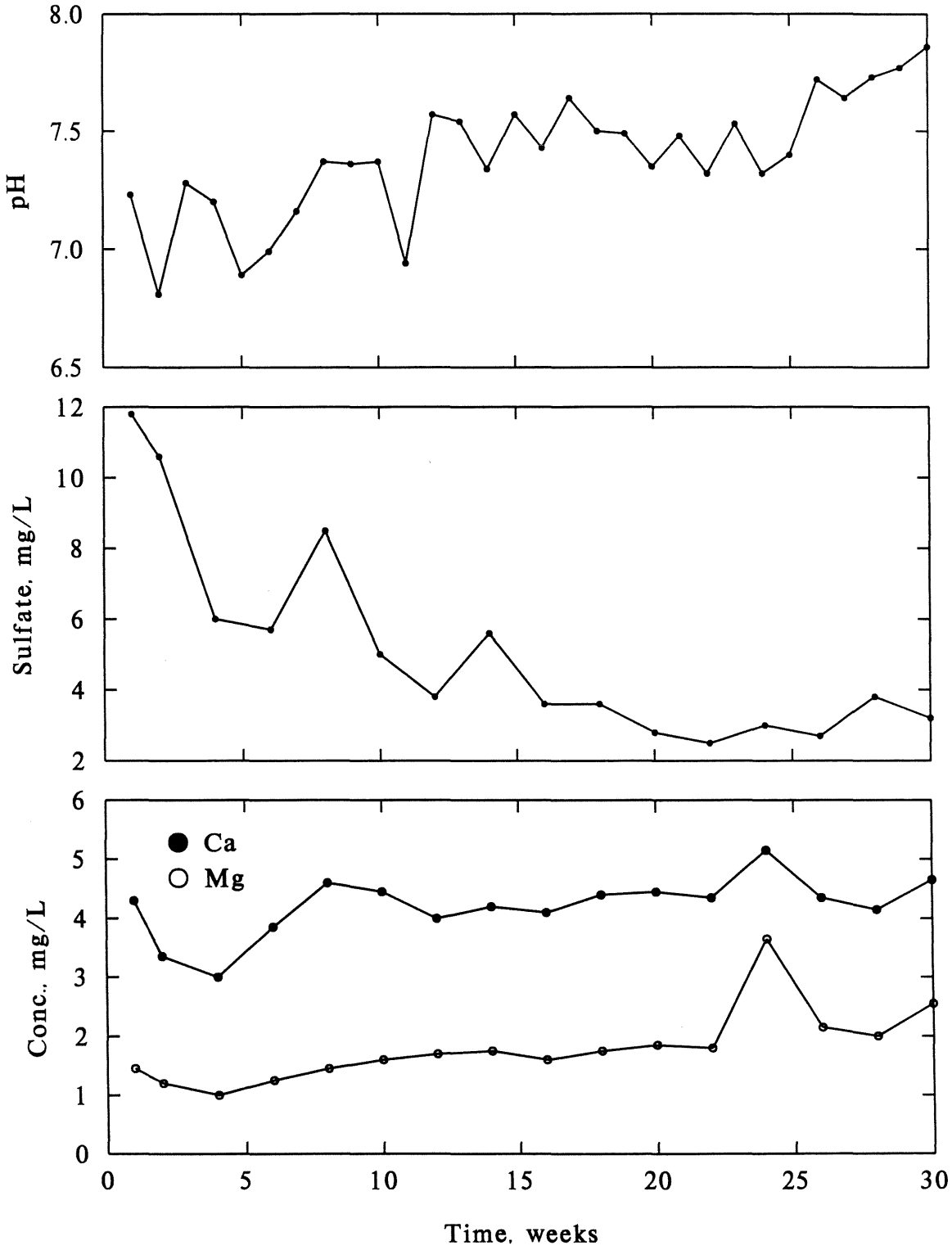

Figure D3.21. pH, sulfate, calcium, and magnesium concentrations for solid RK3, size fraction +35/−10 mesh (1000 g) of the Particle Size Experiment (weeks 1 - 30).

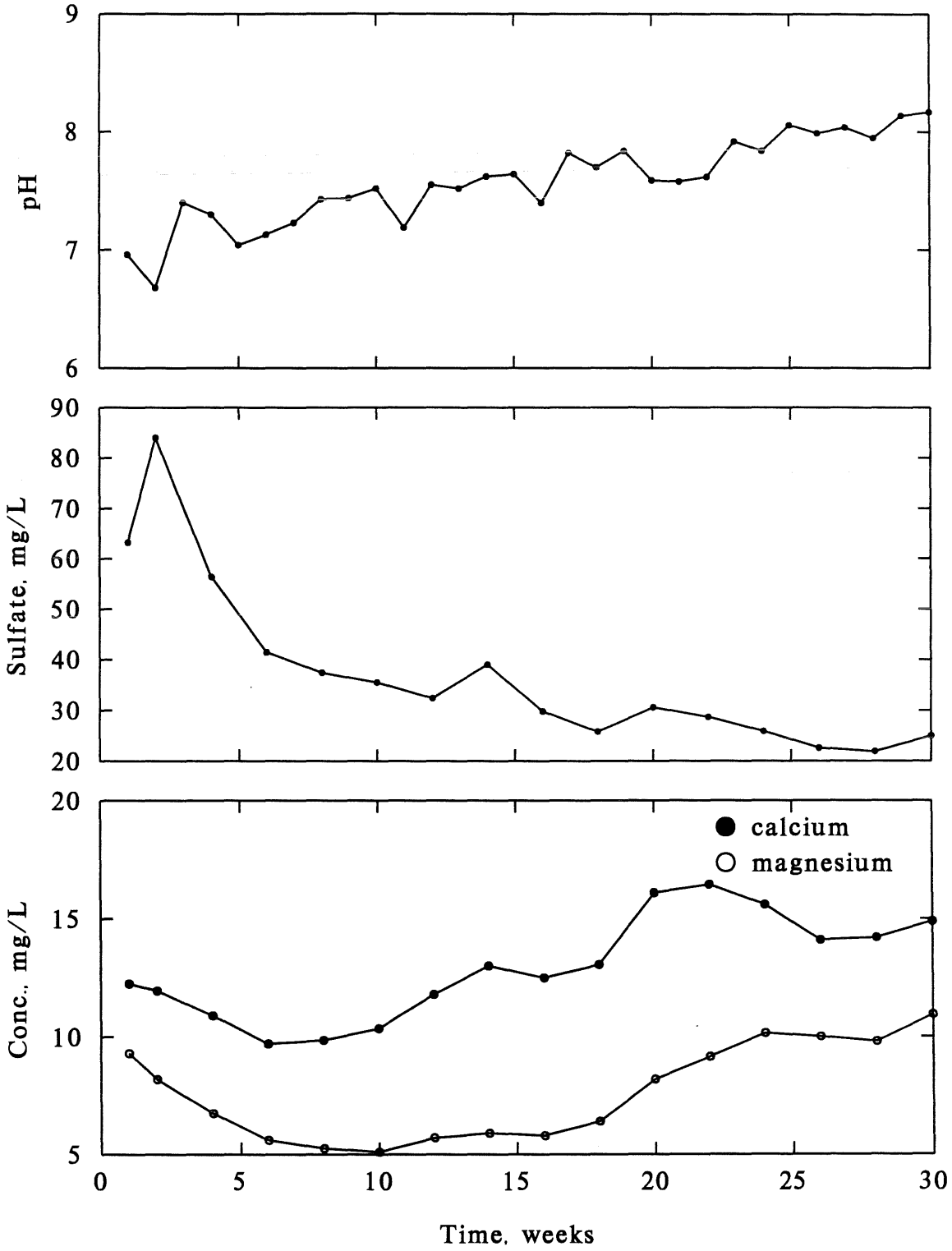

Figure D3.22. pH, sulfate, calcium, and magnesium concentrations for solid RK3, size fraction +10 mesh/−1/4" (500 g) of the Particle Size Experiment (weeks 1 – 30).

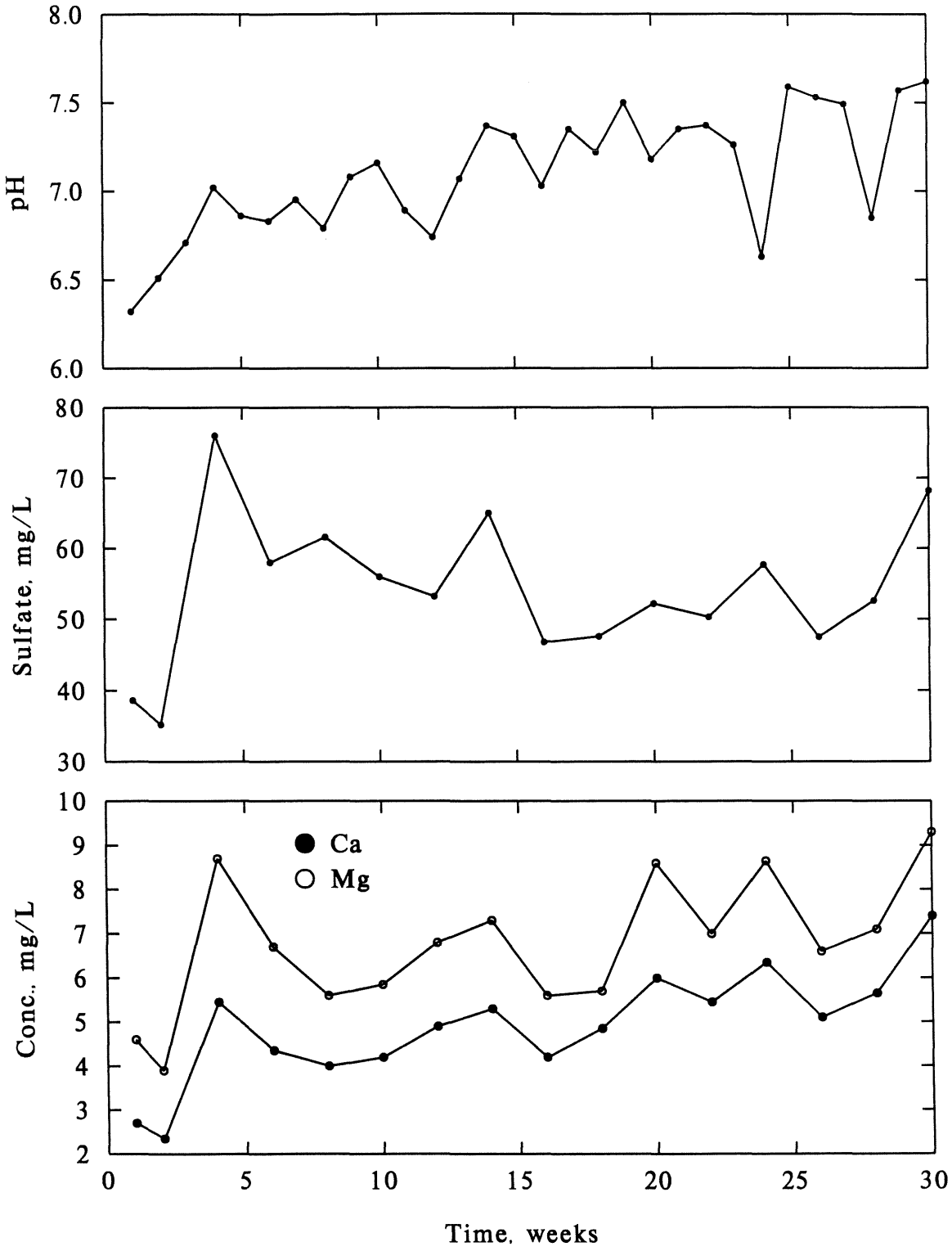

Figure D3.23. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction -270 mesh (75 g) of the Particle Size Experiment (weeks 1 - 30).

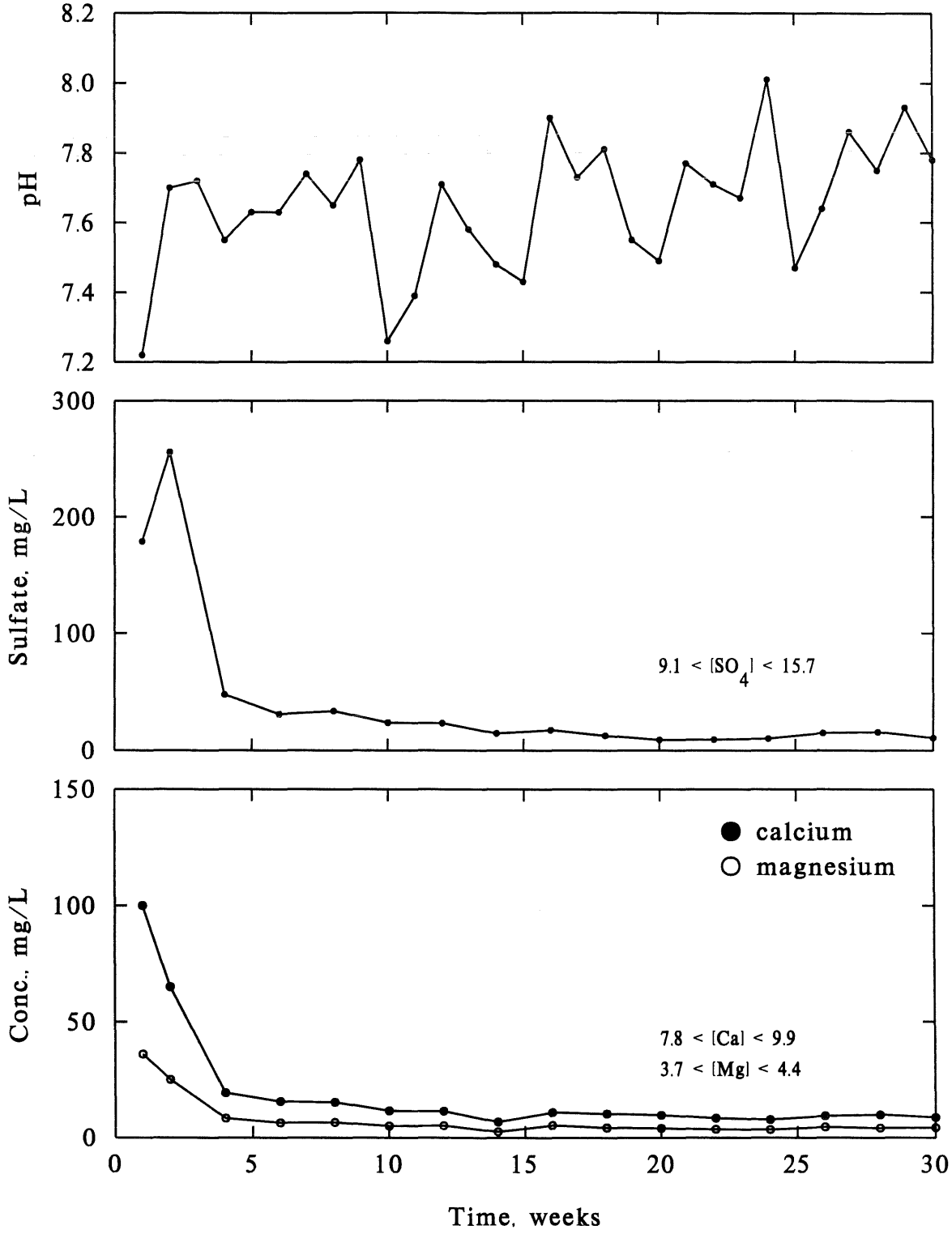

Figure D3.24. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +270/−100 mesh (75 g) of the Particle Size Experiment (weeks 1 – 30).

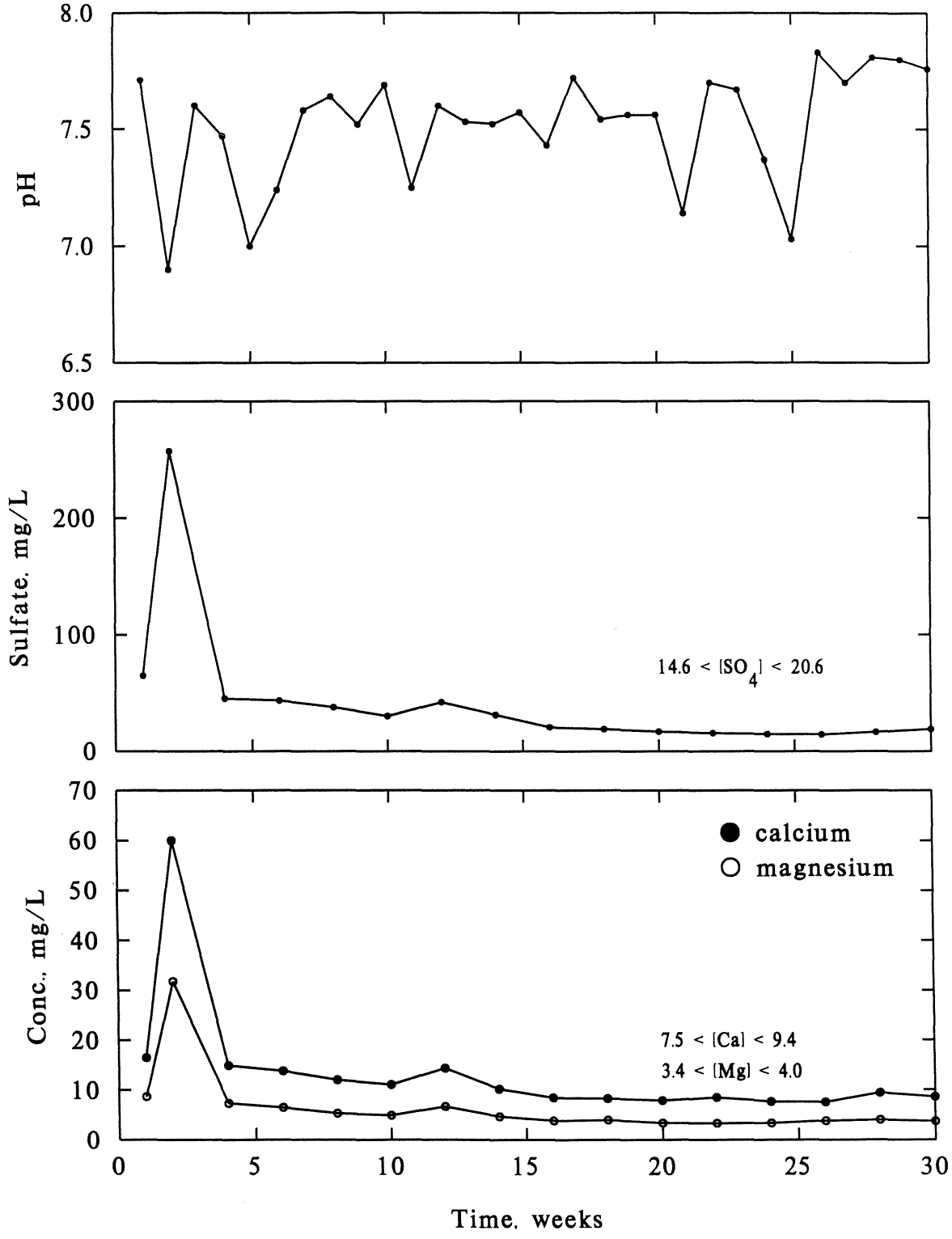

Figure D3.25. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +100/−35 mesh (75 g) of the Particle Size Experiment (weeks 1 – 30).

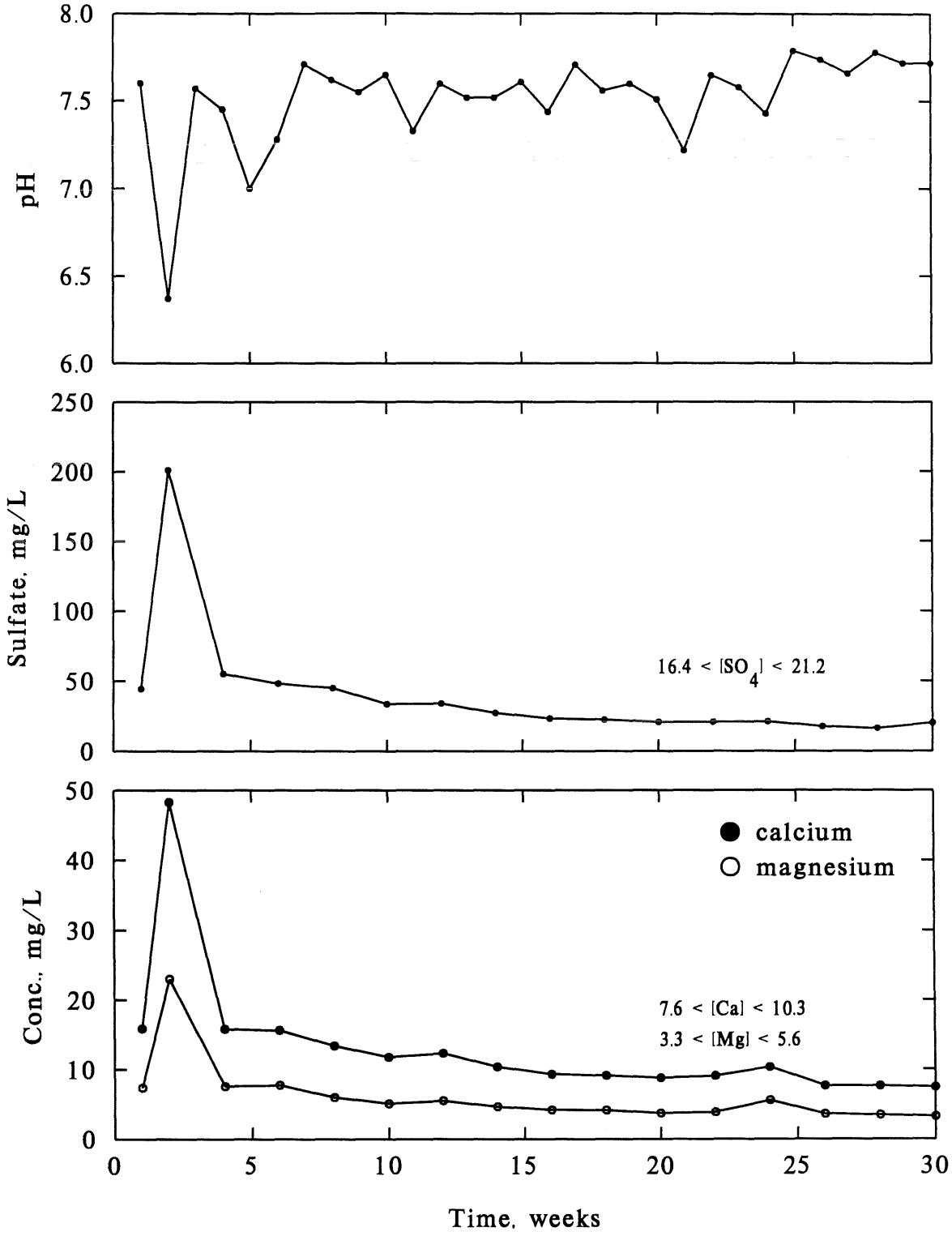

Figure D3.26. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +35/−10 mesh (1000 g) of the Particle Size Experiment (weeks 1 - 30).

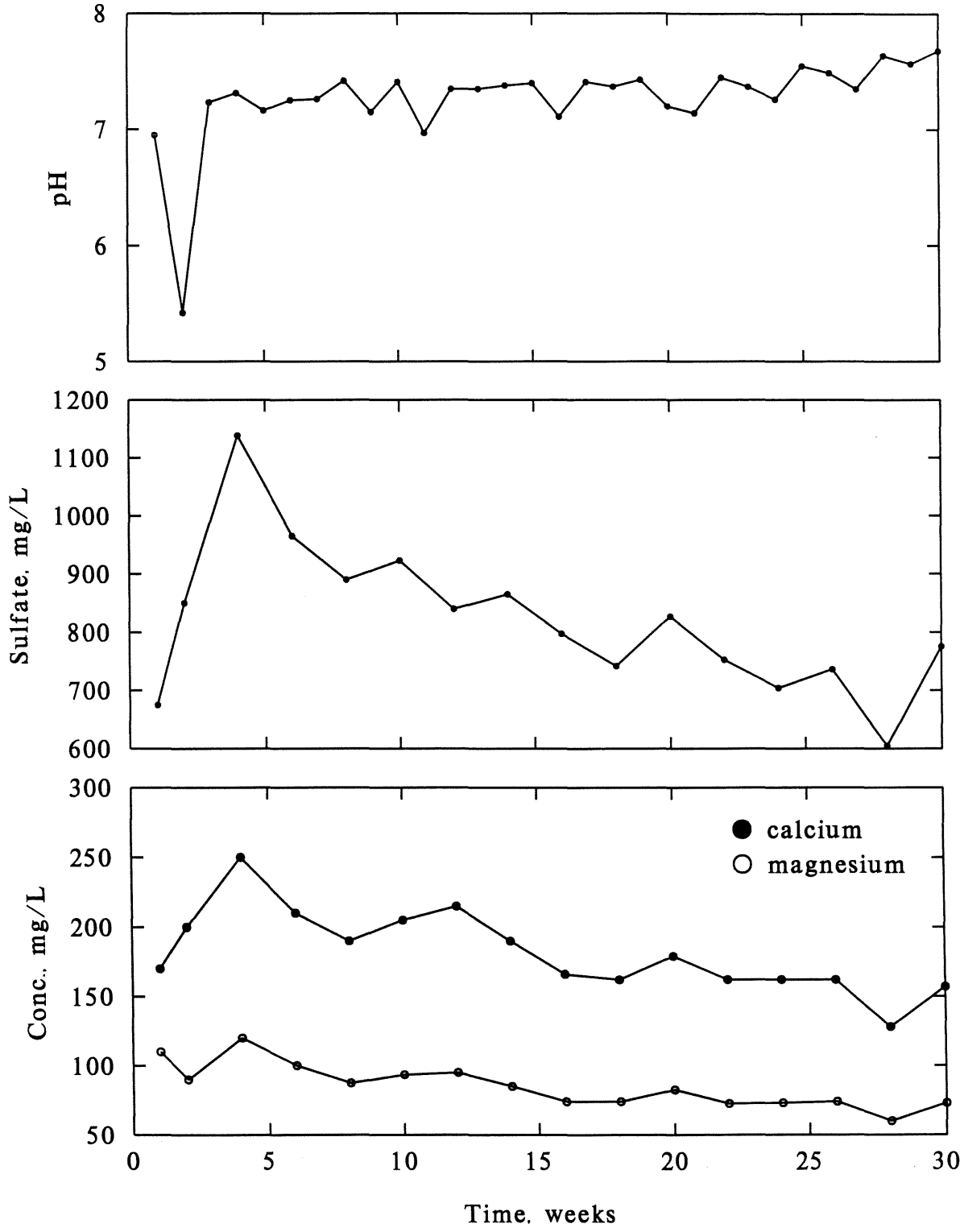

Figure D3.27. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +10 mesh/−1/4 inch (1000 g) of the Particle Size Experiment (weeks 1–30).

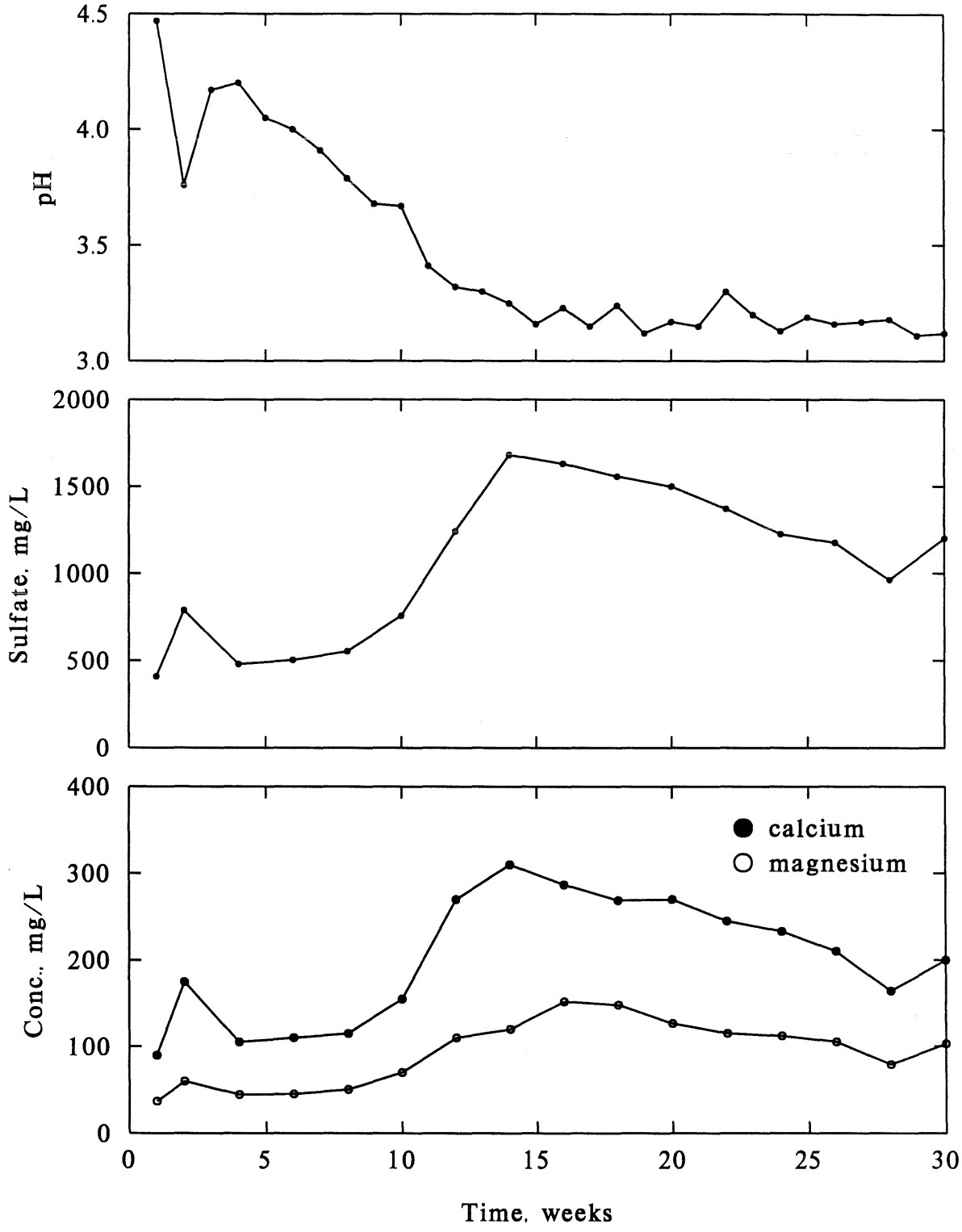

Figure D3.28. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +1/4/−3/4 inch (1000 g) of the Particle Size Experiment (weeks 1 – 30).

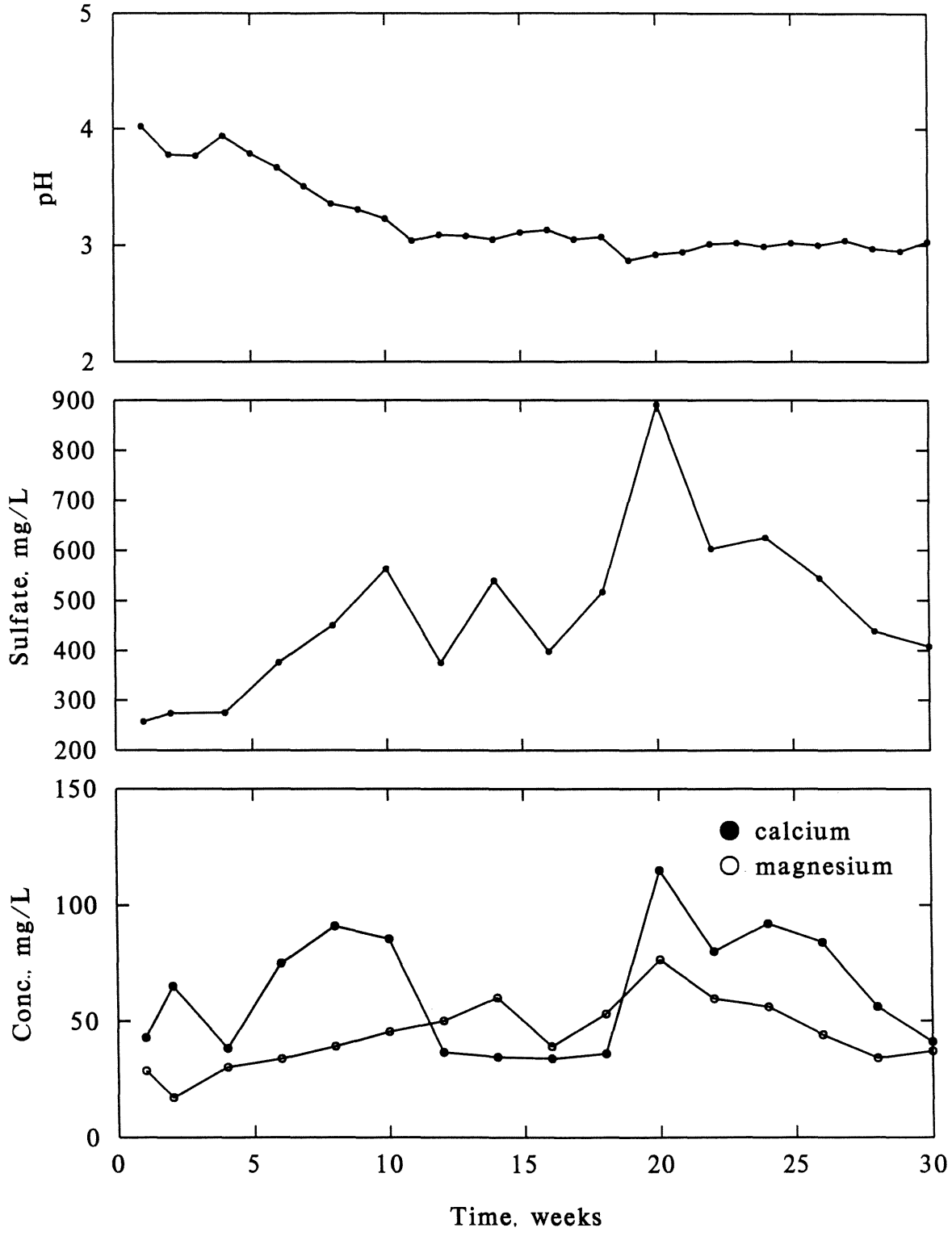

Figure D3.29. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction -270 mesh (75 g) of the Particle Size Experiment (weeks 1 - 30).

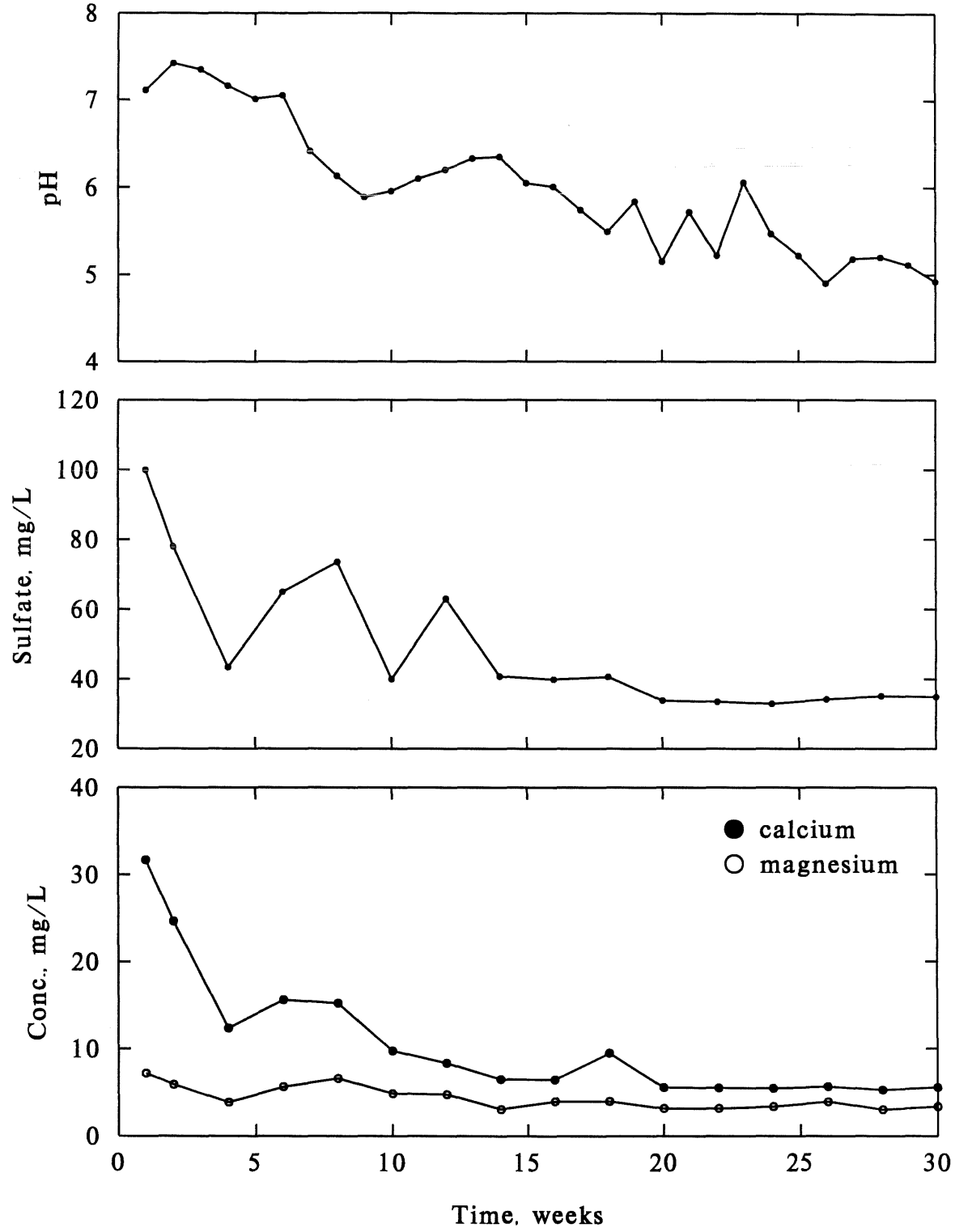

Figure D3.30. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +270/−100 mesh (75 g) of the Particle Size Experiment (weeks 1 - 30).

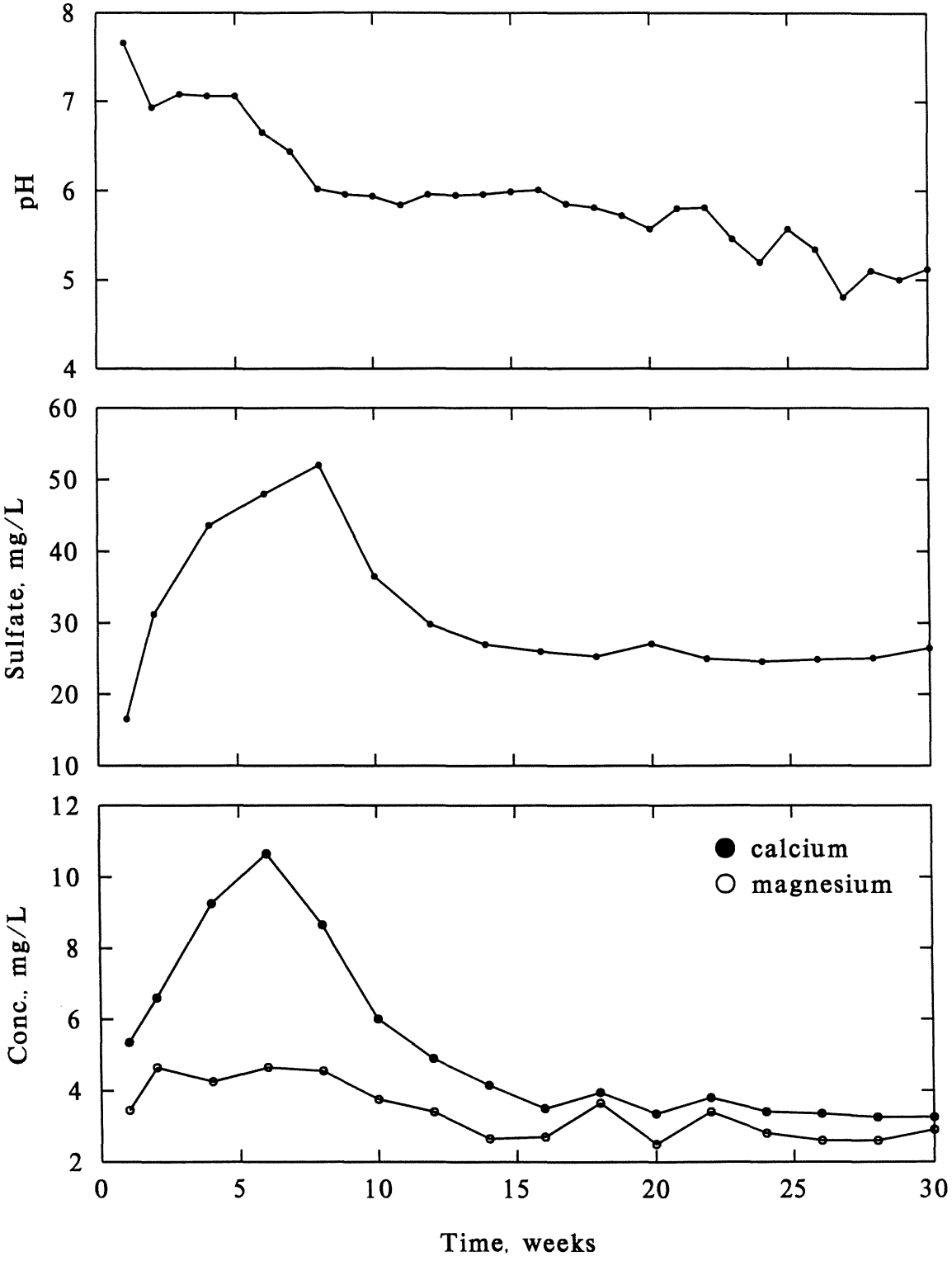

Figure D3.31. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +100/−35 mesh (75 g) of the Particle Size Experiment (weeks 1 – 30).

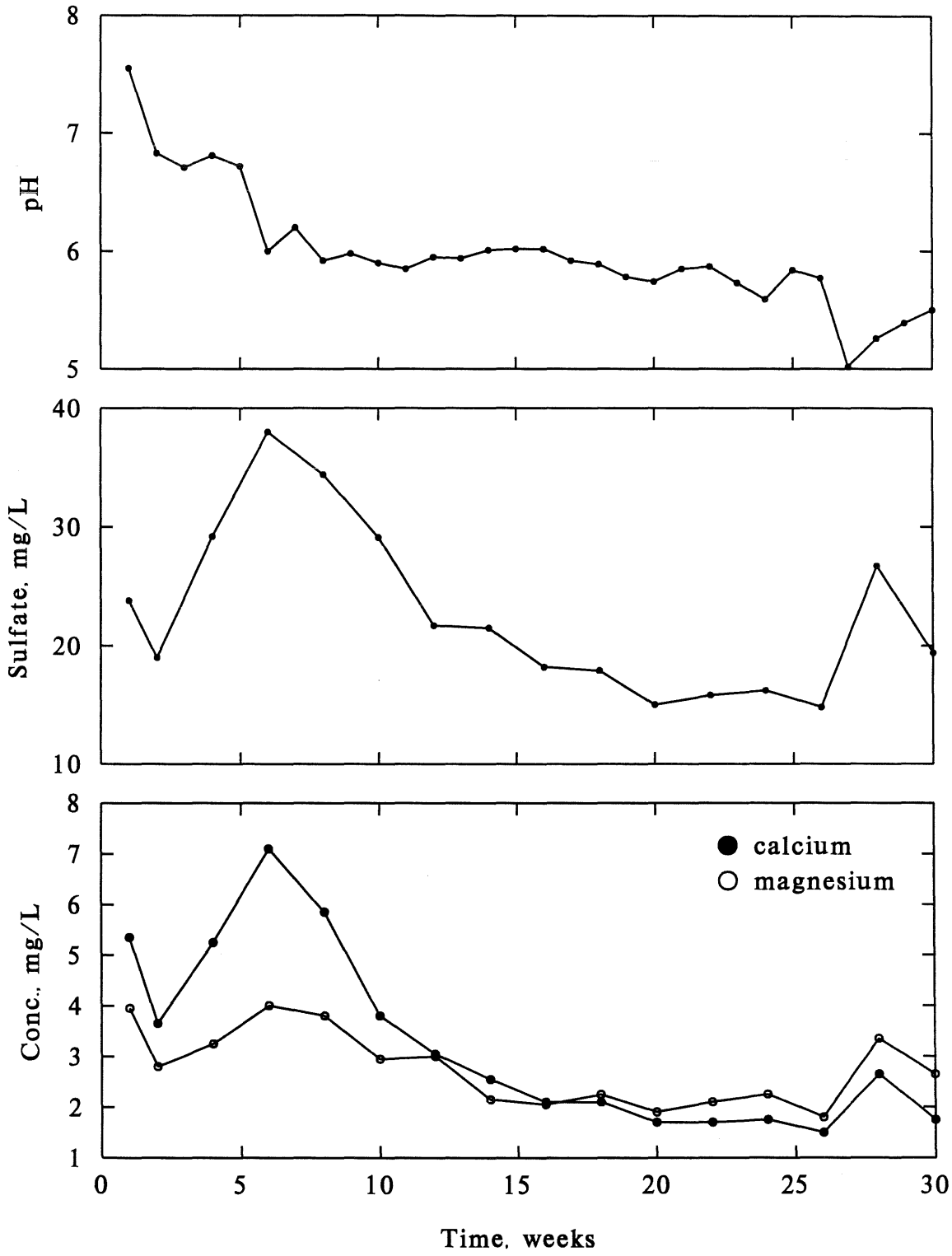

Figure D3.32. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +35/−10 mesh (1000 g) of the Particle Size Experiment (weeks 1 – 30).

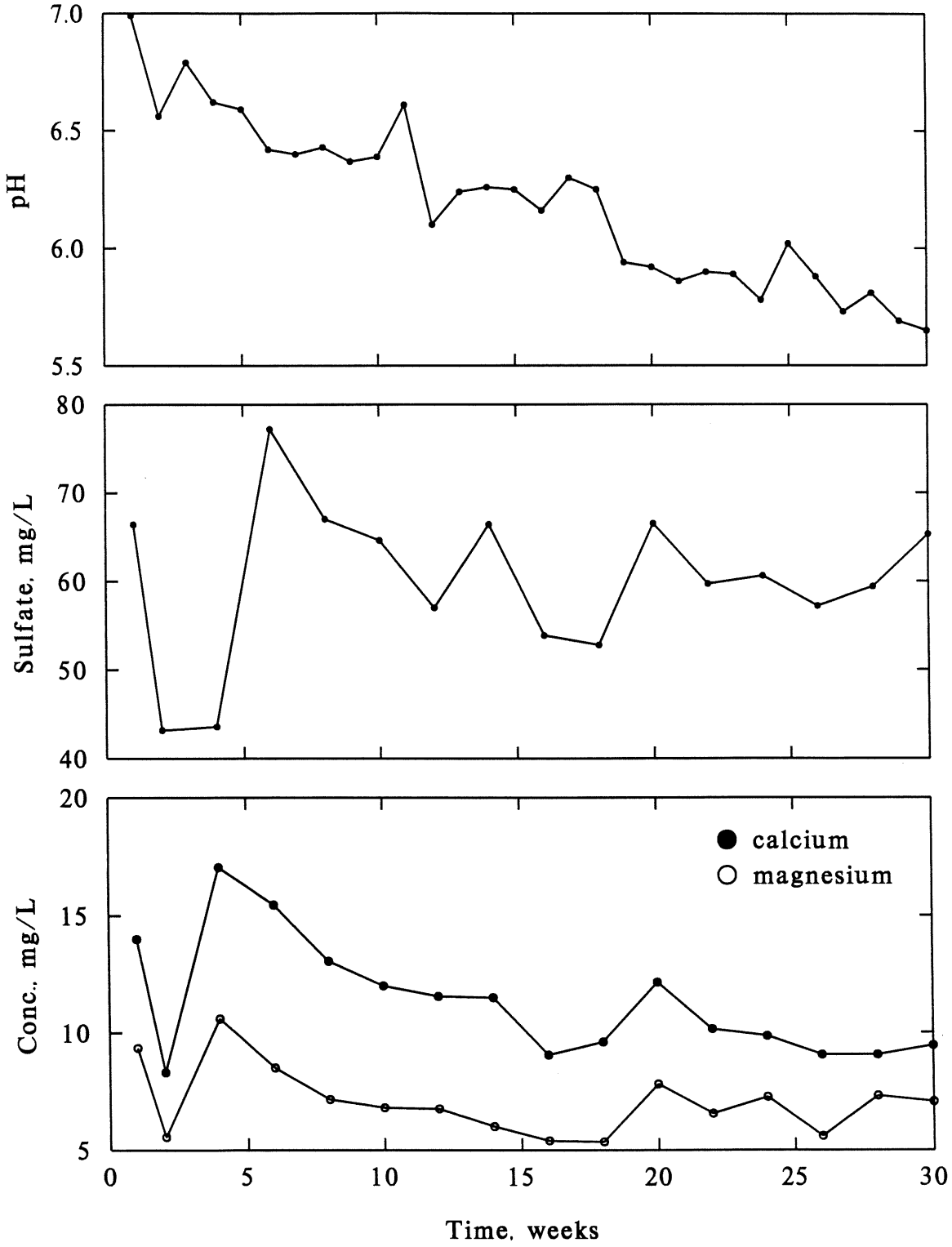

Figure D3.33. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +10 mesh/−1/4" (1000 g) of the Particle Size Experiment (weeks 1 - 30).

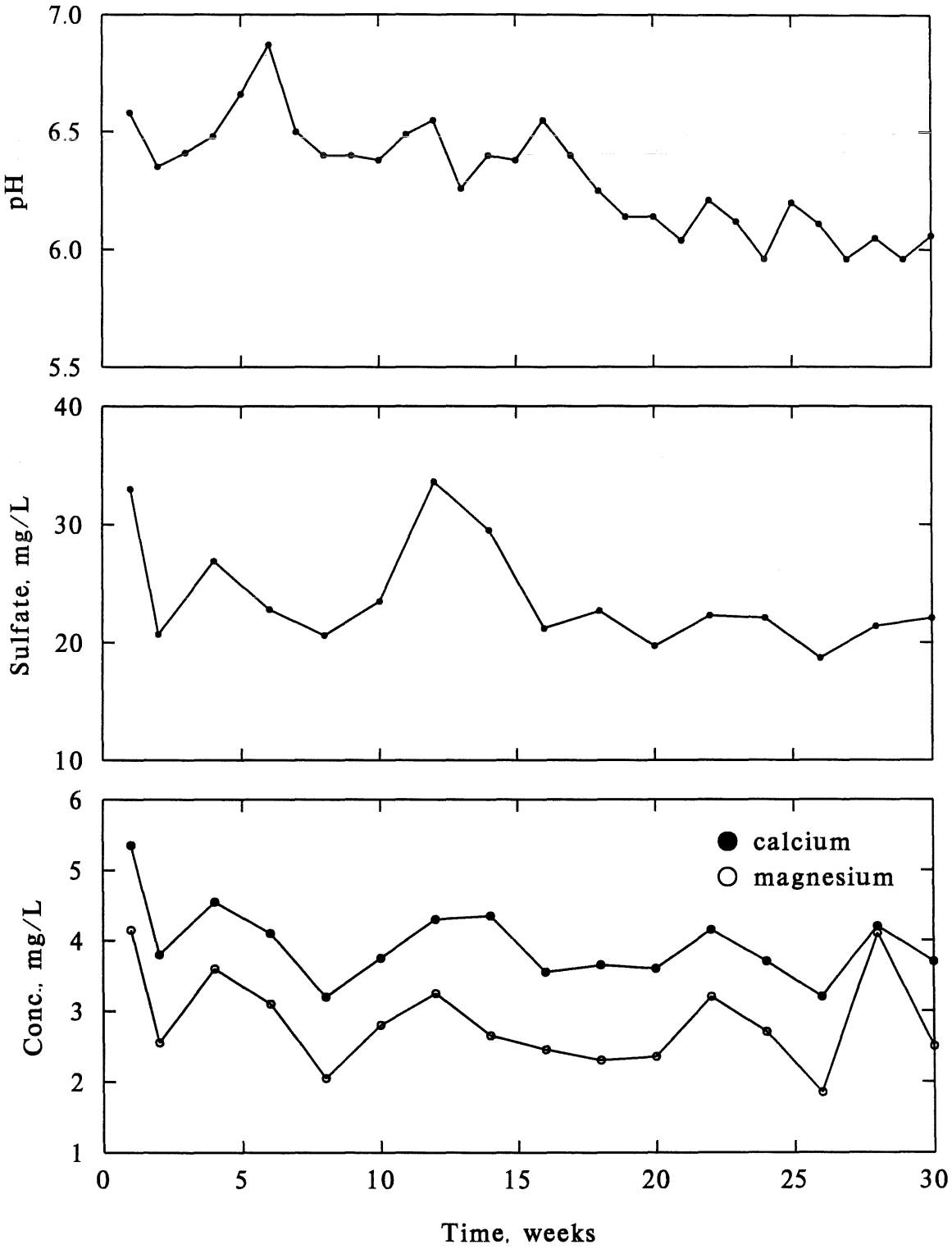

Figure D3.34. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +1/4"/-3/4" (1000 g) of the Particle Size Experiment (weeks 1 - 30).

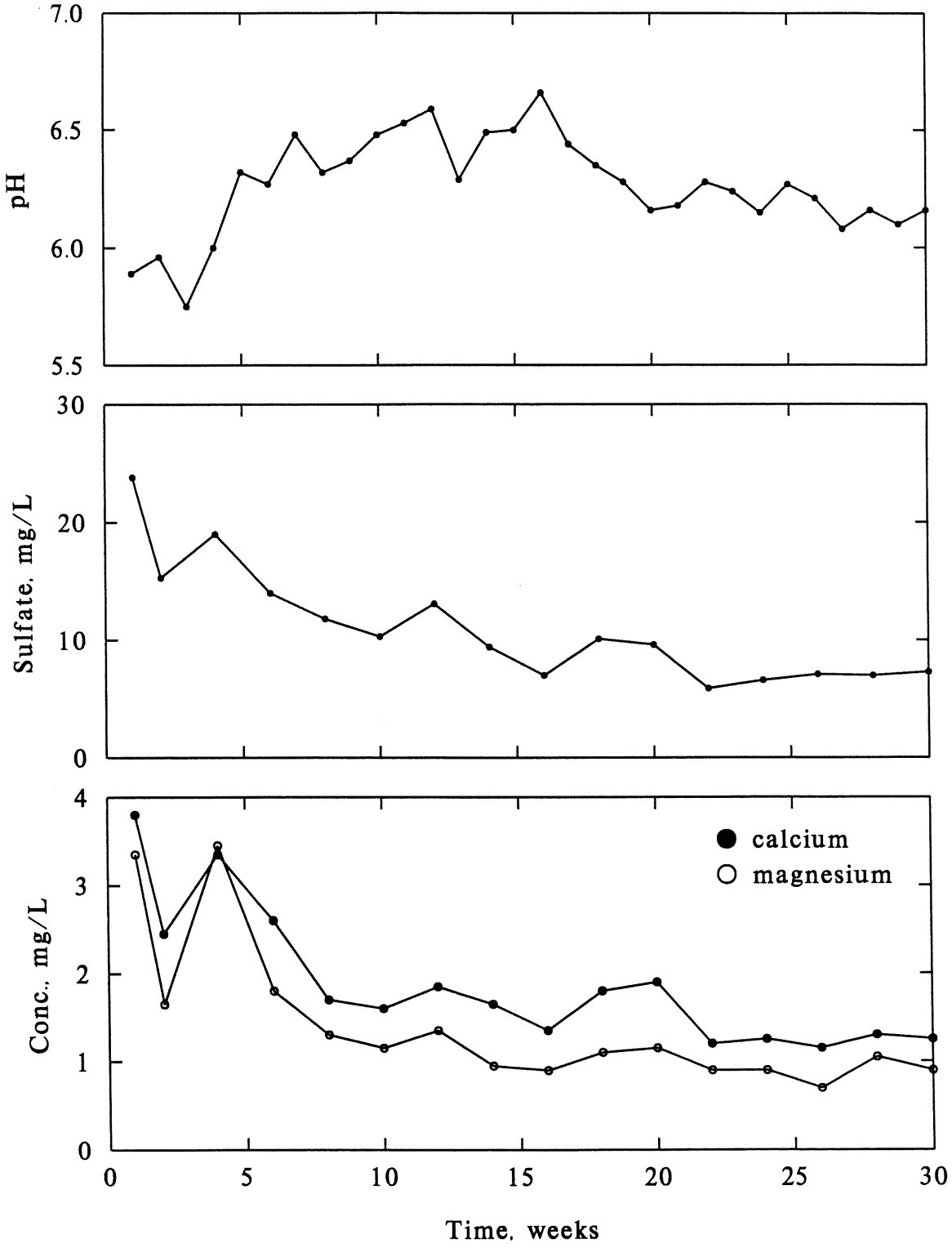

Table D4.0. Summary of cumulative mass release from the Particle Size Experiment (30 weeks).

Solid	Particle Size (mesh)[1]	Sample Mass (g)	Sulfate (mg/g)	Calcium (mg/g)	Magnesium (mg/g)
RK4	-270	75	2.620	1.081	0.446
	+270/-100	75	3.880	1.001	0.474
	+100/-35	75	3.964	1.066	0.496
	+35/-10	1000	8.928	2.014	0.936
	+10/-¼"	1000	11.581	2.186	1.009
	+¼"/-¾"	1000	5.613	0.753	0.524
RK3	-270	75	0.900	0.243	0.076
	+270/-100	75	0.604	0.312	0.156
	+100/-35	75	0.397	0.333	0.142
	+35/-10	1000	0.378	0.133	0.077
	+10/-¼"	500	0.485	0.044	0.059
FL6	-270	75	3.703	0.777	0.336
	+270/-100	75	2.427	0.409	0.266
	+100/-35	75	1.811	0.261	0.220
	+100/-35	225	1.541	0.247	0.201
	+35/-10	1000	0.499	0.094	0.058
	+10/-¼"[2]	1000	0.179	0.030	0.021
	+¼"/-¾"	1000	0.091	0.015	0.012

[1] unless otherwise indicated
[2] 26 weeks

Table D4.1. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK3, reactor 8, 75 gram sample, -270 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	137.2	29.6	0.054	0.054	10.95	0.020	0.020	0.85	0.002	0.002
2	154.3	25.0	0.051	0.106	8.15	0.017	0.037	1.10	0.002	0.004
3	133.1	.	0.138	0.243	.	0.025	0.062	.	0.011	0.014
4	167.6	19.0	0.042	0.286	6.80	0.015	0.077	0.80	0.002	0.016
5	144.5	.	0.099	0.385	.	0.020	0.096	.	0.008	0.024
6	138.3	10.9	0.020	0.405	4.55	0.008	0.105	0.70	0.001	0.025
7	143.3	.	0.070	0.475	.	0.014	0.119	.	0.006	0.031
8	142.8	9.7	0.018	0.494	3.60	0.007	0.126	0.60	0.001	0.032
9	142.8	.	0.052	0.546	.	0.011	0.137	.	0.004	0.036
10	132.8	5.7	0.010	0.556	2.50	0.004	0.142	0.45	0.001	0.037
11	146.2	.	0.043	0.599	.	0.009	0.151	.	0.004	0.041
12	143.2	7.9	0.015	0.614	2.55	0.005	0.156	0.55	0.001	0.042
13	146.9	.	0.036	0.650	.	0.008	0.164	.	0.003	0.045
14	164.9	5.7	0.013	0.663	2.60	0.006	0.170	1.05	0.002	0.048
15	168.6	.	0.034	0.697	.	0.008	0.178	.	0.004	0.051
16	142.7	4.6	0.009	0.705	2.10	0.004	0.182	0.70	0.001	0.053
17	176.5	.	0.030	0.735	.	0.008	0.190	.	0.003	0.056
18	136.3	4.3	0.008	0.743	2.05	0.004	0.194	0.40	0.001	0.056
19	142.8	.	0.021	0.764	.	0.006	0.199	.	0.002	0.058
20	131.7	3.9	0.007	0.771	2.05	0.004	0.203	0.35	0.001	0.059
21	172.6	.	0.023	0.793	.	0.006	0.209	.	0.002	0.061
22	144.6	4.0	0.008	0.801	1.55	0.003	0.212	0.40	0.001	0.062
23	146.4	.	0.017	0.819	.	0.005	0.217	.	0.002	0.064
24	150.9	3.8	0.008	0.826	1.55	0.003	0.220	0.65	0.001	0.065
25	170.3	.	0.019	0.845	.	0.005	0.225	.	0.003	0.068
26	145.2	4.6	0.009	0.854	1.90	0.004	0.229	1.30	0.003	0.071
27	160.9	.	0.017	0.871	.	0.005	0.234	.	0.002	0.073
28	156.3	2.5	0.005	0.876	1.05	0.002	0.236	0.30	0.001	0.074
29	155.8	.	0.017	0.893	.	0.005	0.241	.	0.002	0.076
30	147.7	3.4	0.007	0.900	1.25	0.002	0.243	0.35	0.001	0.076

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.2. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK3, reactor 9, 75 gram sample, +270/-100 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	197.9	15.5	0.041	0.041	5.30	0.014	0.014	2.20	0.006	0.006
2	158.1	16.6	0.035	0.076	4.45	0.009	0.023	1.85	0.004	0.010
3	198.2	.	0.037	0.113	.	0.011	0.035	.	0.005	0.014
4	198.3	11.0	0.029	0.142	4.05	0.011	0.045	1.65	0.004	0.019
5	195.3	.	0.031	0.173	.	0.011	0.057	.	0.005	0.023
6	187.1	9.3	0.023	0.196	4.50	0.011	0.068	1.70	0.004	0.028
7	199.4	.	0.028	0.224	.	0.012	0.080	.	0.005	0.033
8	193.0	9.4	0.024	0.248	4.65	0.012	0.092	1.70	0.004	0.037
9	191.0	.	0.025	0.273	.	0.012	0.103	.	0.005	0.042
10	197.1	7.9	0.021	0.294	4.60	0.012	0.116	2.45	0.006	0.049
11	197.0	.	0.021	0.315	.	0.012	0.127	.	0.006	0.054
12	197.4	5.4	0.014	0.329	4.25	0.011	0.138	1.85	0.005	0.059
13	190.2	.	0.018	0.347	.	0.011	0.149	.	0.005	0.064
14	198.6	6.5	0.017	0.364	3.95	0.010	0.159	1.80	0.005	0.069
15	196.3	.	0.018	0.383	.	0.010	0.170	.	0.005	0.073
16	197.7	5.9	0.016	0.398	3.80	0.010	0.180	1.70	0.004	0.078
17	197.5	.	0.017	0.415	.	0.010	0.190	.	0.005	0.083
18	197.8	5.9	0.016	0.431	3.75	0.010	0.200	1.80	0.005	0.087
19	196.6	.	0.016	0.447	.	0.010	0.210	.	0.005	0.092
20	197.0	4.8	0.013	0.459	3.55	0.009	0.219	1.80	0.005	0.097
21	197.3	.	0.015	0.474	.	0.010	0.229	.	0.006	0.103
22	195.6	5.0	0.013	0.487	3.85	0.010	0.239	2.95	0.008	0.111
23	196.6	.	0.014	0.501	.	0.010	0.248	.	0.006	0.117
24	198.4	4.9	0.013	0.514	3.45	0.009	0.258	1.95	0.005	0.122
25	198.7	.	0.014	0.529	.	0.009	0.267	.	0.006	0.128
26	197.8	5.1	0.013	0.542	3.55	0.009	0.276	2.55	0.007	0.135
27	192.8	.	0.015	0.557	.	0.009	0.285	.	0.006	0.140
28	197.1	5.7	0.015	0.572	3.45	0.009	0.295	2.00	0.005	0.145
29	197.4	.	0.017	0.589	.	0.009	0.304	.	0.005	0.151
30	196.3	5.7	0.015	0.604	3.15	0.008	0.312	1.95	0.005	0.156

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.3. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK3, reactor 10, 75 gram sample, +100/-35 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	198.2	11.8	0.031	0.031	4.30	0.011	0.011	1.45	0.004	0.004
2	167.7	10.6	0.024	0.055	3.35	0.007	0.019	1.20	0.003	0.007
3	195.8	.	0.021	0.076	.	0.009	0.028	.	0.003	0.010
4	194.8	6.0	0.016	0.091	3.00	0.008	0.035	1.00	0.003	0.012
5	197.9	.	0.016	0.108	.	0.009	0.045	.	0.003	0.016
6	193.9	5.7	0.015	0.122	3.85	0.010	0.055	1.25	0.003	0.019
7	195.4	.	0.017	0.140	.	0.010	0.065	.	0.004	0.022
8	198.0	8.5	0.022	0.162	4.60	0.012	0.077	1.45	0.004	0.026
9	193.2	.	0.016	0.179	.	0.011	0.088	.	0.004	0.030
10	197.4	5.0	0.013	0.192	4.45	0.012	0.100	1.60	0.004	0.034
11	195.7	.	0.012	0.204	.	0.011	0.111	.	0.004	0.039
12	192.7	3.8	0.010	0.214	4.00	0.010	0.121	1.70	0.004	0.043
13	194.4	.	0.012	0.226	.	0.011	0.132	.	0.004	0.047
14	196.1	5.6	0.015	0.241	4.20	0.011	0.143	1.75	0.005	0.052
15	196.0	.	0.012	0.252	.	0.011	0.153	.	0.004	0.056
16	197.2	3.6	0.009	0.262	4.10	0.011	0.164	1.60	0.004	0.060
17	194.8	.	0.010	0.271	.	0.011	0.175	.	0.004	0.065
18	198.2	3.6	0.010	0.281	4.40	0.012	0.187	1.75	0.005	0.070
19	196.0	.	0.009	0.290	.	0.011	0.198	.	0.005	0.074
20	197.7	2.8	0.007	0.297	4.45	0.012	0.210	1.85	0.005	0.079
21	196.7	.	0.008	0.305	.	0.012	0.222	.	0.005	0.084
22	195.6	2.5	0.007	0.312	4.35	0.011	0.233	1.80	0.005	0.089
23	196.2	.	0.008	0.320	.	0.012	0.245	.	0.007	0.095
24	195.7	3.0	0.008	0.328	5.15	0.013	0.259	3.65	0.010	0.105
25	199.4	.	0.010	0.338	.	0.013	0.272	.	0.007	0.112
26	194.3	2.7	0.007	0.345	4.35	0.011	0.283	2.15	0.006	0.117
27	197.0	.	0.012	0.357	.	0.012	0.295	.	0.006	0.123
28	190.4	3.8	0.010	0.367	4.15	0.011	0.306	2.00	0.005	0.129
29	199.5	.	0.022	0.388	.	0.015	0.320	.	0.007	0.135
30	198.7	3.2	0.008	0.397	4.65	0.012	0.333	2.55	0.007	0.142

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.4. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK3, reactor 12, 1000 gram sample, +35/-10 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	451.9	63.2	0.029	0.029	12.25	0.006	0.006	9.30	0.004	0.004
2	203.0	84.0	0.017	0.046	11.95	0.002	0.008	8.20	0.002	0.006
3	394.0	.	0.023	0.069	.	0.004	0.012	.	0.003	0.009
4	374.5	56.4	0.021	0.090	10.90	0.004	0.016	6.75	0.003	0.011
5	375.3	.	0.018	0.108	.	0.004	0.020	.	0.002	0.013
6	370.8	41.4	0.015	0.123	9.70	0.004	0.024	5.60	0.002	0.015
7	360.4	.	0.014	0.137	.	0.004	0.027	.	0.002	0.017
8	383.4	37.4	0.014	0.152	9.85	0.004	0.031	5.25	0.002	0.020
9	372.4	.	0.014	0.165	.	0.004	0.035	.	0.002	0.021
10	359.6	35.5	0.013	0.178	10.35	0.004	0.039	5.10	0.002	0.023
11	396.2	.	0.014	0.192	.	0.004	0.043	.	0.002	0.025
12	373.1	32.4	0.012	0.204	11.80	0.004	0.047	5.70	0.002	0.028
13	359.4	.	0.013	0.216	.	0.004	0.052	.	0.002	0.030
14	368.0	39.0	0.014	0.231	13.00	0.005	0.056	5.90	0.002	0.032
15	328.8	.	0.011	0.242	.	0.004	0.060	.	0.002	0.034
16	356.9	29.8	0.011	0.252	12.50	0.004	0.065	5.80	0.002	0.036
17	355.0	.	0.010	0.263	.	0.004	0.069	.	0.002	0.038
18	349.9	25.8	0.009	0.272	13.05	0.005	0.074	6.40	0.002	0.040
19	350.6	.	0.010	0.282	.	0.005	0.079	.	0.002	0.043
20	353.7	30.6	0.011	0.293	16.10	0.006	0.084	8.20	0.003	0.046
21	354.5	.	0.010	0.303	.	0.005	0.090	.	0.003	0.049
22	340.5	28.7	0.010	0.313	16.45	0.006	0.095	9.15	0.003	0.052
23	326.3	.	0.009	0.322	.	0.005	0.100	.	0.003	0.055
24	324.8	25.9	0.008	0.330	15.60	0.005	0.105	10.15	0.003	0.058
25	326.6	.	0.008	0.339	.	0.005	0.110	.	0.003	0.061
26	320.4	22.6	0.007	0.346	14.10	0.005	0.115	10.00	0.003	0.064
27	320.6	.	0.008	0.354	.	0.004	0.119	.	0.003	0.067
28	334.3	21.9	0.007	0.361	14.20	0.005	0.124	9.80	0.003	0.070
29	330.4	.	0.009	0.370	.	0.004	0.128	.	0.003	0.074
30	316.9	25.0	0.008	0.378	14.90	0.005	0.133	10.95	0.003	0.077

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.5. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK3, reactor 13, 500 gram sample, +10 mesh / -1/4".

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	201.0	38.6	0.016	0.016	2.70	0.001	0.001	4.60	0.002	0.002
2	119.3	35.2	0.008	0.024	2.35	0.001	0.002	3.90	0.001	0.003
3	178.3	.	0.018	0.042	.	0.002	0.003	.	0.002	0.005
4	222.6	76.0	0.034	0.076	5.45	0.002	0.006	8.70	0.004	0.009
5	204.1	.	0.024	0.100	.	0.002	0.008	.	0.003	0.012
6	157.7	58.0	0.018	0.118	4.35	0.001	0.009	6.70	0.002	0.014
7	200.2	.	0.023	0.141	.	0.002	0.011	.	0.003	0.017
8	194.3	61.6	0.024	0.165	4.00	0.002	0.013	5.60	0.002	0.019
9	190.9	.	0.022	0.187	.	0.002	0.015	.	0.002	0.021
10	193.2	56.0	0.022	0.209	4.20	0.002	0.016	5.85	0.002	0.023
11	188.0	.	0.020	0.229	.	0.002	0.018	.	0.002	0.026
12	182.4	53.2	0.019	0.248	4.90	0.002	0.020	6.80	0.002	0.028
13	173.3	.	0.020	0.268	.	0.002	0.022	.	0.002	0.031
14	166.0	65.0	0.022	0.290	5.30	0.002	0.023	7.30	0.002	0.033
15	152.8	.	0.017	0.306	.	0.002	0.025	.	0.002	0.035
16	169.9	46.8	0.016	0.322	4.20	0.001	0.026	5.60	0.002	0.037
17	153.2	.	0.015	0.337	.	0.001	0.028	.	0.002	0.039
18	155.9	47.6	0.015	0.352	4.85	0.002	0.029	5.70	0.002	0.040
19	140.3	.	0.014	0.366	.	0.002	0.031	.	0.002	0.042
20	139.8	52.2	0.015	0.381	6.00	0.002	0.032	8.60	0.002	0.045
21	137.7	.	0.014	0.395	.	0.002	0.034	.	0.002	0.047
22	137.5	50.3	0.014	0.409	5.45	0.001	0.036	7.00	0.002	0.049
23	114.5	.	0.012	0.421	.	0.001	0.037	.	0.002	0.050
24	122.6	57.7	0.014	0.435	6.35	0.002	0.038	8.65	0.002	0.053
25	104.8	.	0.011	0.446	.	0.001	0.040	.	0.002	0.054
26	95.0	47.5	0.009	0.455	5.10	0.001	0.041	6.60	0.001	0.055
27	81.0	.	0.008	0.463	.	0.001	0.042	.	0.001	0.057
28	77.1	52.6	0.008	0.471	5.65	0.001	0.043	7.10	0.001	0.058
29	62.4	.	0.008	0.479	.	0.001	0.044	.	0.001	0.059
30	42.6	68.2	0.006	0.485	7.40	0.001	0.044	9.30	0.001	0.059

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.6. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 1, 75 gram sample, -270 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	155.2	179.0	0.370	0.370	100.00	0.207	0.207	36.10	0.075	0.075
2	154.9	256.0	0.529	0.899	65.00	0.134	0.341	25.05	0.052	0.126
3	150.9	.	0.298	1.197	.	0.094	0.436	.	0.037	0.163
4	152.1	47.6	0.097	1.294	19.30	0.039	0.475	8.35	0.017	0.180
5	149.5	.	0.124	1.418	.	0.048	0.523	.	0.020	0.200
6	149.2	30.8	0.061	1.479	15.60	0.031	0.554	6.45	0.013	0.212
7	146.7	.	0.085	1.564	.	0.036	0.590	.	0.015	0.227
8	150.9	33.5	0.067	1.631	15.25	0.031	0.621	6.60	0.013	0.241
9	148.3	.	0.070	1.701	.	0.030	0.651	.	0.013	0.254
10	155.3	23.6	0.049	1.750	11.55	0.024	0.675	5.05	0.010	0.264
11	150.0	.	0.058	1.808	.	0.026	0.701	.	0.011	0.275
12	149.4	23.2	0.046	1.854	11.40	0.023	0.723	5.20	0.010	0.286
13	150.9	.	0.049	1.904	.	0.022	0.745	.	0.009	0.295
14	159.5	14.6	0.031	1.935	6.80	0.014	0.760	2.60	0.006	0.301
15	153.8	.	0.044	1.979	.	0.021	0.780	.	0.009	0.310
16	150.0	17.3	0.035	2.013	10.90	0.022	0.802	5.35	0.011	0.320
17	150.4	.	0.041	2.054	.	0.022	0.824	.	0.010	0.330
18	145.7	12.6	0.024	2.079	10.30	0.020	0.844	4.30	0.008	0.339
19	153.7	.	0.037	2.116	.	0.022	0.866	.	0.009	0.348
20	148.4	9.1	0.018	2.134	9.65	0.019	0.885	4.05	0.008	0.356
21	146.6	.	0.035	2.168	.	0.019	0.904	.	0.008	0.364
22	153.7	9.3	0.019	2.187	8.40	0.017	0.921	3.65	0.007	0.372
23	150.4	.	0.041	2.228	.	0.018	0.940	.	0.008	0.380
24	152.1	10.2	0.021	2.249	7.75	0.016	0.955	3.50	0.007	0.387
25	156.0	.	0.055	2.304	.	0.020	0.975	.	0.009	0.396
26	150.7	14.9	0.030	2.334	9.35	0.019	0.994	4.60	0.009	0.406
27	157.5	.	0.081	2.415	.	0.023	1.017	.	0.011	0.416
28	152.6	15.7	0.032	2.447	9.85	0.020	1.037	4.20	0.009	0.425
29	159.4	.	0.151	2.598	.	0.026	1.063	.	0.013	0.437
30	153.5	10.7	0.022	2.620	8.75	0.018	1.081	4.35	0.009	0.446

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.7. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 2, 75 gram sample, +270/-100 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	197.1	64.8	0.170	0.170	16.45	0.043	0.043	8.65	0.023	0.023
2	152.6	257.5	0.524	0.694	60.00	0.122	0.165	31.75	0.065	0.087
3	196.1	.	0.396	1.090	.	0.079	0.244	.	0.041	0.128
4	193.2	45.2	0.116	1.206	14.90	0.038	0.283	7.35	0.019	0.147
5	197.6	.	0.345	1.552	.	0.045	0.328	.	0.022	0.170
6	193.8	43.4	0.112	1.664	13.75	0.036	0.364	6.45	0.017	0.186
7	196.0	.	0.198	1.861	.	0.038	0.401	.	0.018	0.204
8	196.3	37.6	0.098	1.960	12.00	0.031	0.433	5.30	0.014	0.218
9	196.8	.	0.144	2.104	.	0.034	0.466	.	0.015	0.233
10	196.8	30.1	0.079	2.183	11.05	0.029	0.495	4.90	0.013	0.246
11	196.9	.	0.128	2.311	.	0.034	0.530	.	0.016	0.262
12	189.2	42.0	0.106	2.417	14.30	0.036	0.566	6.65	0.017	0.278
13	191.3	.	0.116	2.533	.	0.032	0.598	.	0.015	0.293
14	195.8	31.2	0.081	2.614	10.15	0.026	0.624	4.65	0.012	0.305
15	196.5	.	0.096	2.710	.	0.027	0.652	.	0.013	0.318
16	197.1	20.6	0.054	2.764	8.40	0.022	0.674	3.80	0.010	0.328
17	196.4	.	0.081	2.846	.	0.025	0.699	.	0.012	0.339
18	195.3	19.0	0.049	2.895	8.25	0.021	0.720	3.95	0.010	0.350
19	196.6	.	0.077	2.972	.	0.024	0.744	.	0.011	0.361
20	195.8	16.9	0.044	3.016	7.85	0.020	0.765	3.35	0.009	0.369
21	194.0	.	0.075	3.091	.	0.024	0.788	.	0.010	0.379
22	196.4	15.6	0.041	3.132	8.45	0.022	0.810	3.30	0.009	0.388
23	196.0	.	0.081	3.213	.	0.024	0.834	.	0.010	0.398
24	196.9	14.8	0.039	3.252	7.65	0.020	0.854	3.35	0.009	0.407
25	198.8	.	0.098	3.350	.	0.024	0.878	.	0.011	0.418
26	194.8	14.6	0.038	3.387	7.55	0.020	0.898	3.80	0.010	0.428
27	197.4	.	0.137	3.525	.	0.026	0.924	.	0.012	0.440
28	195.5	16.6	0.043	3.568	9.40	0.025	0.949	4.00	0.010	0.450
29	194.7	.	0.263	3.831	.	0.031	0.979	.	0.014	0.464
30	192.4	19.0	0.049	3.880	8.60	0.022	1.001	3.70	0.009	0.474

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.8. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 3, 75 gram sample, +100/-35 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	195.6	44.4	0.116	0.116	15.90	0.041	0.041	7.40	0.019	0.019
2	157.8	201.0	0.423	0.539	48.30	0.102	0.143	23.00	0.048	0.068
3	194.2	.	0.332	0.870	.	0.070	0.213	.	0.033	0.101
4	192.1	55.2	0.141	1.012	15.85	0.041	0.253	7.60	0.019	0.120
5	194.7	.	0.478	1.489	.	0.047	0.300	.	0.022	0.143
6	193.9	48.2	0.125	1.614	15.65	0.040	0.341	7.75	0.020	0.163
7	194.0	.	0.259	1.873	.	0.041	0.382	.	0.019	0.182
8	193.8	45.0	0.116	1.989	13.40	0.035	0.416	6.00	0.016	0.198
9	195.0	.	0.181	2.169	.	0.037	0.453	.	0.017	0.214
10	192.2	33.6	0.086	2.256	11.75	0.030	0.483	5.10	0.013	0.227
11	194.6	.	0.141	2.397	.	0.035	0.518	.	0.016	0.243
12	188.3	34.0	0.085	2.482	12.30	0.031	0.549	5.50	0.014	0.257
13	184.8	.	0.114	2.596	.	0.031	0.580	.	0.014	0.271
14	190.2	27.4	0.069	2.665	10.35	0.026	0.607	4.65	0.012	0.283
15	191.6	.	0.101	2.766	.	0.030	0.637	.	0.014	0.296
16	196.5	23.5	0.062	2.827	9.30	0.024	0.661	4.20	0.011	0.307
17	194.8	.	0.093	2.920	.	0.029	0.690	.	0.013	0.321
18	196.7	22.6	0.059	2.980	9.10	0.024	0.714	4.15	0.011	0.332
19	194.1	.	0.088	3.068	.	0.029	0.743	.	0.013	0.345
20	197.9	20.9	0.055	3.123	8.75	0.023	0.766	3.70	0.010	0.354
21	192.5	.	0.087	3.210	.	0.029	0.795	.	0.013	0.367
22	193.1	21.0	0.054	3.264	9.05	0.023	0.819	3.85	0.010	0.377
23	189.3	.	0.089	3.353	.	0.031	0.850	.	0.015	0.392
24	195.9	21.2	0.055	3.409	10.30	0.027	0.877	5.55	0.014	0.407
25	197.1	.	0.100	3.509	.	0.035	0.911	.	0.017	0.424
26	197.1	17.8	0.047	3.556	7.65	0.020	0.932	3.60	0.009	0.433
27	195.7	.	0.120	3.675	.	0.038	0.970	.	0.018	0.451
28	180.5	16.4	0.039	3.715	7.60	0.018	0.988	3.45	0.008	0.460
29	194.2	.	0.197	3.912	.	0.059	1.047	.	0.028	0.487
30	191.8	20.4	0.052	3.964	7.45	0.019	1.066	3.25	0.008	0.496

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.9. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 5, 1000 gram sample, +35/-10 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	395.2	675.0	0.267	0.267	170.00	0.067	0.067	110.00	0.043	0.043
2	213.2	850.0	0.181	0.448	200.00	0.043	0.110	90.00	0.019	0.063
3	390.2	.	0.189	0.637	.	0.076	0.186	.	0.036	0.099
4	376.6	1138.5	0.429	1.066	250.00	0.094	0.280	120.00	0.045	0.144
5	375.5	.	0.395	1.461	.	0.078	0.358	.	0.038	0.182
6	383.9	965.0	0.370	1.831	210.00	0.081	0.439	100.00	0.038	0.220
7	381.1	.	0.311	2.142	.	0.074	0.513	.	0.035	0.255
8	386.9	890.0	0.344	2.486	190.00	0.074	0.587	87.50	0.034	0.289
9	376.5	.	0.320	2.806	.	0.073	0.660	.	0.034	0.323
10	380.1	922.9	0.351	3.157	205.00	0.078	0.738	93.50	0.036	0.358
11	381.1	.	0.323	3.480	.	0.077	0.815	.	0.035	0.393
12	377.8	840.0	0.317	3.797	215.00	0.081	0.896	95.00	0.036	0.429
13	379.3	.	0.316	4.113	.	0.074	0.970	.	0.033	0.462
14	378.6	865.0	0.327	4.440	190.00	0.072	1.042	85.00	0.032	0.494
15	374.0	.	0.305	4.745	.	0.067	1.109	.	0.030	0.524
16	381.2	797.2	0.304	5.049	166.00	0.063	1.173	74.00	0.028	0.553
17	383.3	.	0.297	5.347	.	0.064	1.237	.	0.029	0.582
18	377.1	741.7	0.280	5.626	162.00	0.061	1.298	74.00	0.028	0.610
19	383.7	.	0.299	5.925	.	0.065	1.363	.	0.030	0.639
20	373.4	827.0	0.309	6.234	179.00	0.067	1.430	82.50	0.031	0.670
21	377.9	.	0.294	6.527	.	0.064	1.494	.	0.029	0.699
22	381.5	752.5	0.287	6.814	162.00	0.062	1.556	72.50	0.028	0.727
23	375.1	.	0.276	7.090	.	0.061	1.617	.	0.028	0.754
24	376.3	703.9	0.265	7.355	162.00	0.061	1.678	73.00	0.027	0.782
25	365.9	.	0.264	7.619	.	0.059	1.736	.	0.027	0.809
26	371.7	736.1	0.274	7.893	162.00	0.060	1.797	74.00	0.028	0.836
27	392.9	.	0.269	8.161	.	0.058	1.855	.	0.027	0.863
28	386.1	604.7	0.233	8.395	128.00	0.049	1.904	60.00	0.023	0.886
29	371.9	.	0.251	8.646	.	0.053	1.957	.	0.024	0.910
30	362.9	775.5	0.281	8.928	157.00	0.057	2.014	73.00	0.026	0.936

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.10. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 6, 1000 gram sample, +10 mesh/ -1/4".

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	401.2	410.0	0.164	0.164	90.00	0.036	0.036	37.00	0.015	0.015
2	290.5	790.0	0.229	0.394	175.00	0.051	0.087	60.00	0.017	0.032
3	389.2	.	0.246	0.639	.	0.053	0.140	.	0.021	0.053
4	388.5	480.0	0.186	0.826	105.00	0.041	0.181	44.50	0.017	0.071
5	390.1	.	0.217	1.043	.	0.047	0.228	.	0.020	0.090
6	389.8	504.0	0.196	1.239	110.00	0.043	0.271	45.20	0.018	0.108
7	388.5	.	0.227	1.466	.	0.048	0.319	.	0.020	0.128
8	386.7	554.0	0.214	1.680	115.00	0.044	0.363	50.50	0.020	0.148
9	380.3	.	0.265	1.945	.	0.055	0.418	.	0.024	0.172
10	383.3	759.3	0.291	2.236	155.00	0.059	0.477	70.00	0.027	0.199
11	386.4	.	0.373	2.609	.	0.078	0.555	.	0.033	0.232
12	384.3	1240.0	0.477	3.085	270.00	0.104	0.658	110.00	0.042	0.274
13	378.6	.	0.498	3.584	.	0.099	0.757	.	0.041	0.315
14	374.5	1680.0	0.629	4.213	310.00	0.116	0.873	120.00	0.045	0.359
15	332.1	.	0.499	4.712	.	0.092	0.965	.	0.042	0.401
16	379.2	1629.5	0.618	5.330	287.00	0.109	1.073	152.00	0.058	0.459
17	346.2	.	0.520	5.850	.	0.092	1.166	.	0.048	0.506
18	361.7	1556.4	0.563	6.413	269.00	0.097	1.263	148.00	0.054	0.560
19	357.5	.	0.523	6.935	.	0.093	1.356	.	0.047	0.607
20	370.0	1498.0	0.554	7.490	270.00	0.100	1.456	126.50	0.047	0.653
21	359.0	.	0.498	7.988	.	0.090	1.546	.	0.043	0.696
22	344.8	1370.0	0.472	8.460	245.00	0.084	1.630	115.00	0.040	0.736
23	326.8	.	0.417	8.877	.	0.076	1.707	.	0.037	0.772
24	331.7	1223.3	0.406	9.283	233.00	0.077	1.784	112.00	0.037	0.809
25	342.4	.	0.404	9.687	.	0.074	1.858	.	0.036	0.845
26	356.5	1174.1	0.419	10.105	210.00	0.075	1.933	105.00	0.037	0.883
27	359.3	.	0.380	10.485	.	0.067	2.000	.	0.033	0.916
28	375.0	963.0	0.361	10.846	164.00	0.062	2.061	79.00	0.030	0.946
29	347.5	.	0.337	11.183	.	0.058	2.119	.	0.029	0.974
30	332.0	1199.2	0.398	11.581	200.00	0.066	2.186	103.00	0.034	1.009

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.11. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 7, 1000 gram sample, +1/4" / -3/4".

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	409.3	257.0	0.105	0.105	42.90	0.018	0.018	28.65	0.012	0.012
2	365.7	274.0	0.100	0.205	65.00	0.024	0.041	17.10	0.006	0.018
3	389.1	.	0.151	0.357	.	0.027	0.069	.	0.013	0.031
4	389.6	275.0	0.107	0.464	38.30	0.015	0.084	30.25	0.012	0.043
5	395.2	.	0.154	0.617	.	0.027	0.111	.	0.014	0.058
6	394.1	376.0	0.148	0.766	75.00	0.030	0.140	33.80	0.013	0.071
7	392.0	.	0.171	0.937	.	0.032	0.172	.	0.015	0.086
8	390.4	450.0	0.176	1.113	91.00	0.036	0.208	39.10	0.015	0.101
9	386.6	.	0.192	1.304	.	0.033	0.241	.	0.017	0.118
10	388.0	563.3	0.219	1.523	85.50	0.033	0.274	45.40	0.018	0.136
11	390.3	.	0.187	1.710	.	0.026	0.299	.	0.018	0.154
12	388.1	375.0	0.146	1.856	36.50	0.014	0.314	50.00	0.019	0.174
13	386.9	.	0.182	2.038	.	0.018	0.332	.	0.020	0.194
14	385.1	540.0	0.208	2.246	34.50	0.013	0.345	60.00	0.023	0.217
15	383.4	.	0.183	2.429	.	0.016	0.361	.	0.019	0.236
16	385.4	397.6	0.153	2.582	33.85	0.013	0.374	39.00	0.015	0.251
17	384.4	.	0.186	2.768	.	0.017	0.391	.	0.019	0.270
18	383.6	517.0	0.198	2.967	35.95	0.014	0.405	53.00	0.020	0.290
19	383.1	.	0.245	3.212	.	0.027	0.431	.	0.023	0.313
20	381.9	890.8	0.340	3.552	115.00	0.044	0.475	76.50	0.029	0.342
21	383.9	.	0.262	3.814	.	0.033	0.509	.	0.024	0.366
22	385.9	602.8	0.233	4.046	80.00	0.031	0.539	59.50	0.023	0.389
23	391.2	.	0.236	4.282	.	0.032	0.572	.	0.022	0.411
24	384.8	624.9	0.240	4.522	92.00	0.035	0.607	56.00	0.022	0.433
25	377.6	.	0.212	4.734	.	0.031	0.638	.	0.018	0.451
26	388.2	544.4	0.211	4.945	84.00	0.033	0.670	44.00	0.017	0.468
27	400.5	.	0.192	5.137	.	0.027	0.697	.	0.016	0.484
28	394.4	438.0	0.173	5.310	56.00	0.022	0.719	34.00	0.013	0.497
29	380.9	.	0.146	5.456	.	0.018	0.738	.	0.012	0.510
30	385.4	407.7	0.157	5.613	41.00	0.016	0.753	37.00	0.014	0.524

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.12. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 14, 75 gram sample, -270 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	167.1	100.0	0.223	0.223	31.70	0.071	0.071	7.20	0.016	0.016
2	197.7	78.0	0.206	0.428	24.65	0.065	0.136	5.90	0.016	0.032
3	197.3	.	0.166	0.594	.	0.046	0.182	.	0.014	0.046
4	195.7	43.4	0.113	0.708	12.35	0.032	0.214	3.85	0.010	0.056
5	194.9	.	0.148	0.856	.	0.037	0.251	.	0.013	0.069
6	196.3	65.0	0.170	1.026	15.60	0.041	0.292	5.65	0.015	0.084
7	196.7	.	0.169	1.194	.	0.038	0.330	.	0.015	0.099
8	197.5	73.6	0.194	1.388	15.20	0.040	0.370	6.60	0.017	0.117
9	196.5	.	0.149	1.537	.	0.032	0.403	.	0.015	0.131
10	195.5	40.0	0.104	1.641	9.75	0.025	0.428	4.85	0.013	0.144
11	196.0	.	0.137	1.778	.	0.025	0.453	.	0.013	0.157
12	194.8	63.0	0.164	1.942	8.35	0.022	0.475	4.75	0.012	0.169
13	196.1	.	0.133	2.074	.	0.021	0.496	.	0.011	0.180
14	195.8	40.8	0.107	2.181	6.50	0.017	0.513	3.05	0.008	0.188
15	197.6	.	0.113	2.293	.	0.019	0.532	.	0.010	0.198
16	196.8	39.9	0.105	2.398	6.45	0.017	0.549	3.95	0.010	0.208
17	197.8	.	0.108	2.506	.	0.021	0.569	.	0.010	0.219
18	195.2	40.7	0.106	2.612	9.50	0.025	0.594	3.95	0.010	0.229
19	198.6	.	0.101	2.713	.	0.020	0.614	.	0.010	0.239
20	197.4	33.8	0.089	2.802	5.55	0.015	0.628	3.15	0.008	0.247
21	197.4	.	0.093	2.895	.	0.016	0.644	.	0.009	0.256
22	196.6	33.5	0.088	2.983	5.50	0.014	0.659	3.15	0.008	0.264
23	196.8	.	0.090	3.072	.	0.015	0.674	.	0.009	0.273
24	199.0	32.9	0.087	3.160	5.45	0.014	0.688	3.35	0.009	0.282
25	199.1	.	0.090	3.250	.	0.015	0.704	.	0.010	0.291
26	196.1	34.2	0.089	3.339	5.65	0.015	0.718	3.90	0.010	0.301
27	199.9	.	0.092	3.431	.	0.015	0.733	.	0.009	0.311
28	197.2	35.1	0.092	3.523	5.25	0.014	0.747	3.00	0.008	0.319
29	197.4	.	0.088	3.612	.	0.015	0.762	.	0.009	0.327
30	196.1	34.9	0.091	3.703	5.55	0.015	0.777	3.35	0.009	0.336

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.13. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 15, 75 gram sample, +270/-100 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	199.7	16.5	0.044	0.044	5.35	0.014	0.014	3.45	0.009	0.009
2	168.9	31.2	0.070	0.114	6.60	0.015	0.029	4.65	0.010	0.020
3	195.9	.	0.093	0.207	.	0.019	0.049	.	0.011	0.031
4	196.4	43.6	0.114	0.322	9.25	0.024	0.073	4.25	0.011	0.042
5	197.1	.	0.112	0.433	.	0.024	0.096	.	0.011	0.053
6	195.7	48.0	0.125	0.559	10.65	0.028	0.124	4.65	0.012	0.065
7	196.5	.	0.121	0.679	.	0.023	0.147	.	0.012	0.077
8	196.1	52.0	0.136	0.815	8.65	0.023	0.170	4.55	0.012	0.089
9	196.0	.	0.111	0.926	.	0.019	0.189	.	0.011	0.099
10	195.4	36.5	0.095	1.021	6.00	0.016	0.205	3.75	0.010	0.109
11	197.1	.	0.091	1.112	.	0.015	0.220	.	0.010	0.119
12	196.5	29.8	0.078	1.190	4.90	0.013	0.233	3.40	0.009	0.128
13	195.4	.	0.079	1.269	.	0.013	0.246	.	0.008	0.136
14	196.8	27.0	0.071	1.340	4.15	0.011	0.257	2.65	0.007	0.143
15	196.2	.	0.073	1.412	.	0.011	0.268	.	0.008	0.150
16	197.4	26.0	0.068	1.481	3.50	0.009	0.277	2.70	0.007	0.158
17	197.0	.	0.070	1.551	.	0.010	0.287	.	0.008	0.166
18	198.0	25.3	0.067	1.618	3.95	0.010	0.298	3.65	0.010	0.175
19	198.2	.	0.070	1.688	.	0.010	0.308	.	0.008	0.184
20	198.6	27.1	0.072	1.760	3.35	0.009	0.317	2.50	0.007	0.190
21	196.3	.	0.069	1.829	.	0.010	0.326	.	0.008	0.198
22	198.3	25.0	0.066	1.895	3.80	0.010	0.336	3.40	0.009	0.207
23	197.8	.	0.067	1.962	.	0.010	0.346	.	0.008	0.215
24	195.4	24.6	0.064	2.026	3.40	0.009	0.355	2.80	0.007	0.223
25	196.7	.	0.066	2.092	.	0.009	0.364	.	0.007	0.230
26	196.2	24.9	0.065	2.158	3.35	0.009	0.373	2.60	0.007	0.237
27	197.8	.	0.067	2.224	.	0.009	0.382	.	0.007	0.244
28	199.0	25.1	0.067	2.291	3.25	0.009	0.391	2.60	0.007	0.251
29	196.8	.	0.067	2.358	.	0.009	0.400	.	0.008	0.258
30	196.8	26.5	0.070	2.427	3.25	0.009	0.409	2.90	0.008	0.266

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.14. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 16, 75 gram sample, +100/-35 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	196.5	23.8	0.062	0.062	5.35	0.014	0.014	3.95	0.010	0.010
2	167.6	19.0	0.042	0.105	3.65	0.008	0.022	2.80	0.006	0.017
3	196.3	.	0.066	0.171	.	0.012	0.034	.	0.008	0.025
4	195.8	29.2	0.076	0.247	5.25	0.014	0.048	3.25	0.008	0.033
5	198.4	.	0.083	0.330	.	0.015	0.063	.	0.009	0.043
6	194.6	38.0	0.099	0.428	7.10	0.018	0.081	4.00	0.010	0.053
7	195.3	.	0.088	0.516	.	0.015	0.096	.	0.010	0.063
8	195.7	34.4	0.090	0.606	5.85	0.015	0.112	3.80	0.010	0.073
9	196.1	.	0.081	0.687	.	0.013	0.124	.	0.009	0.081
10	199.1	29.1	0.077	0.764	3.80	0.010	0.134	2.95	0.008	0.089
11	195.5	.	0.069	0.833	.	0.010	0.144	.	0.008	0.097
12	196.7	21.7	0.057	0.890	3.05	0.008	0.152	3.00	0.008	0.105
13	195.7	.	0.060	0.950	.	0.008	0.160	.	0.007	0.112
14	194.8	21.5	0.056	1.006	2.55	0.007	0.167	2.15	0.006	0.118
15	196.5	.	0.056	1.062	.	0.007	0.174	.	0.006	0.124
16	196.7	18.2	0.048	1.109	2.10	0.006	0.180	2.05	0.005	0.129
17	195.2	.	0.051	1.160	.	0.006	0.186	.	0.006	0.135
18	198.3	17.9	0.047	1.208	2.10	0.006	0.191	2.25	0.006	0.141
19	196.4	.	0.048	1.255	.	0.006	0.197	.	0.006	0.147
20	197.3	15.0	0.039	1.295	1.70	0.004	0.202	1.90	0.005	0.152
21	196.8	.	0.046	1.340	.	0.006	0.207	.	0.006	0.158
22	196.8	15.8	0.041	1.382	1.70	0.004	0.212	2.10	0.006	0.164
23	196.1	.	0.047	1.429	.	0.006	0.217	.	0.006	0.170
24	197.0	16.2	0.043	1.471	1.75	0.005	0.222	2.25	0.006	0.176
25	197.8	.	0.048	1.520	.	0.006	0.228	.	0.006	0.182
26	197.7	14.8	0.039	1.559	1.50	0.004	0.232	1.80	0.005	0.187
27	198.0	.	0.060	1.619	.	0.007	0.239	.	0.008	0.195
28	188.2	26.7	0.067	1.686	2.65	0.007	0.246	3.35	0.008	0.203
29	198.4	.	0.074	1.760	.	0.011	0.256	.	0.010	0.213
30	196.5	19.4	0.051	1.811	1.75	0.005	0.261	2.65	0.007	0.220

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.15. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 18, 1000 gram sample, +35/-10 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	320.3	66.4	0.021	0.021	14.00	0.004	0.004	9.35	0.003	0.003
2	176.7	43.2	0.008	0.029	8.30	0.001	0.006	5.55	0.001	0.004
3	278.7	.	0.013	0.042	.	0.003	0.009	.	0.002	0.006
4	271.9	43.6	0.012	0.054	17.05	0.005	0.014	10.60	0.003	0.009
5	278.0	.	0.016	0.070	.	0.004	0.018	.	0.002	0.012
6	278.9	77.2	0.022	0.092	15.45	0.004	0.022	8.49	0.002	0.014
7	273.9	.	0.018	0.110	.	0.004	0.026	.	0.002	0.016
8	276.2	67.0	0.019	0.129	13.05	0.004	0.030	7.15	0.002	0.018
9	280.0	.	0.018	0.147	.	0.003	0.033	.	0.002	0.020
10	286.5	64.6	0.019	0.165	12.00	0.003	0.036	6.80	0.002	0.022
11	300.2	.	0.018	0.183	.	0.004	0.040	.	0.002	0.024
12	283.9	57.0	0.016	0.200	11.55	0.003	0.043	6.75	0.002	0.026
13	283.5	.	0.017	0.217	.	0.003	0.047	.	0.002	0.028
14	289.3	66.4	0.019	0.236	11.50	0.003	0.050	6.00	0.002	0.030
15	279.9	.	0.017	0.253	.	0.003	0.053	.	0.002	0.031
16	281.6	53.9	0.015	0.268	9.05	0.003	0.055	5.40	0.002	0.033
17	278.6	.	0.015	0.283	.	0.003	0.058	.	0.002	0.034
18	278.5	52.8	0.015	0.298	9.60	0.003	0.061	5.35	0.001	0.036
19	279.7	.	0.016	0.314	.	0.003	0.064	.	0.002	0.038
20	277.1	66.5	0.018	0.333	12.15	0.003	0.067	7.80	0.002	0.040
21	282.4	.	0.017	0.350	.	0.003	0.070	.	0.002	0.042
22	279.4	59.7	0.017	0.366	10.15	0.003	0.073	6.55	0.002	0.043
23	278.7	.	0.016	0.383	.	0.003	0.076	.	0.002	0.045
24	281.3	60.6	0.017	0.400	9.85	0.003	0.078	7.25	0.002	0.047
25	274.9	.	0.016	0.416	.	0.003	0.081	.	0.002	0.049
26	281.8	57.2	0.016	0.432	9.05	0.003	0.084	5.60	0.002	0.051
27	283.4	.	0.016	0.448	.	0.003	0.086	.	0.002	0.053
28	291.4	59.4	0.017	0.465	9.05	0.003	0.089	7.30	0.002	0.055
29	277.3	.	0.016	0.481	.	0.002	0.091	.	0.002	0.056
30	283.6	65.3	0.019	0.499	9.45	0.003	0.094	7.05	0.002	0.058

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D4.16. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 19, 1000 gram sample, +10 mesh/ -1/4".

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	295.4	33.0	0.010	0.010	5.35	0.002	0.002	4.15	0.001	0.001
2	281.0	20.7	0.006	0.016	3.80	0.001	0.003	2.55	0.001	0.002
3	290.9	.	0.008	0.024	.	0.001	0.004	.	0.001	0.003
4	248.9	26.9	0.007	0.031	4.55	0.001	0.005	3.60	0.001	0.004
5	295.6	.	0.008	0.039	.	0.001	0.007	.	0.001	0.005
6	266.1	22.8	0.006	0.045	4.10	0.001	0.008	3.10	0.001	0.006
7	293.6	.	0.007	0.052	.	0.001	0.009	.	0.001	0.007
8	290.3	20.6	0.006	0.058	3.20	0.001	0.010	2.05	0.001	0.007
9	290.4	.	0.007	0.065	.	0.001	0.011	.	0.001	0.008
10	273.8	23.5	0.006	0.072	3.75	0.001	0.012	2.80	0.001	0.009
11	292.0	.	0.008	0.080	.	0.001	0.013	.	0.001	0.010
12	221.8	33.6	0.007	0.087	4.30	0.001	0.014	3.25	0.001	0.010
13	246.0	.	0.007	0.095	.	0.001	0.015	.	0.001	0.011
14	241.8	29.5	0.007	0.102	4.35	0.001	0.016	2.65	0.001	0.012
15	251.8	.	0.007	0.108	.	0.001	0.017	.	0.001	0.012
16	226.9	21.2	0.005	0.113	3.55	0.001	0.018	2.45	0.001	0.013
17	220.1	.	0.005	0.118	.	0.001	0.019	.	0.001	0.014
18	205.2	22.7	0.005	0.123	3.65	0.001	0.020	2.30	0.000	0.014
19	238.0	.	0.005	0.128	.	0.001	0.021	.	0.001	0.015
20	279.3	19.7	0.006	0.134	3.60	0.001	0.022	2.35	0.001	0.015
21	269.1	.	0.006	0.140	.	0.001	0.023	.	0.001	0.016
22	.[2]	22.3	0.005	0.145	4.15	0.001	0.024	3.20	0.001	0.017
23	223.4	.	0.005	0.150	.	0.001	0.024	.	0.001	0.017
24	208.9	22.1	0.005	0.155	3.70	0.001	0.025	2.70	0.001	0.018
25	192.3	.	0.004	0.159	.	0.001	0.026	.	0.000	0.018
26	212.4	18.7	0.004	0.163	3.20	0.001	0.027	1.85	0.000	0.019
27	193.3	.	0.004	0.167	.	0.001	0.027	.	0.001	0.019
28	206.3	21.4	0.004	0.171	4.20	0.001	0.028	4.10	0.001	0.020
29	191.3	.	0.004	0.175	.	0.001	0.029	.	0.001	0.021
30	176.3	22.1	0.004	0.179	3.70	0.001	0.030	2.50	0.000	0.021

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Missing volume estimated as average of immediately preceding and subsequent values.

Table D4.17. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 20, 1000 gram sample, +1/4" / -3/4".

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	321.2	23.8	0.008	0.008	3.80	0.001	0.001	3.35	0.001	0.001
2	289.2	15.3	0.004	0.012	2.45	0.001	0.002	1.65	0.000	0.002
3	292.9	.	0.005	0.017	.	0.001	0.003	.	0.001	0.002
4	289.8	19.0	0.006	0.023	3.35	0.001	0.004	3.45	0.001	0.003
5	296.6	.	0.005	0.028	.	0.001	0.005	.	0.001	0.004
6	295.3	14.0	0.004	0.032	2.60	0.001	0.005	1.80	0.001	0.005
7	296.4	.	0.004	0.036	.	0.001	0.006	.	0.001	0.005
8	291.8	11.8	0.003	0.040	1.70	0.000	0.007	1.30	0.000	0.006
9	292.2	.	0.004	0.043	.	0.001	0.007	.	0.000	0.006
10	271.4	10.3	0.003	0.046	1.60	0.000	0.008	1.15	0.000	0.006
11	295.5	.	0.004	0.050	.	0.001	0.008	.	0.000	0.007
12	240.4	13.1	0.003	0.053	1.85	0.000	0.009	1.35	0.000	0.007
13	208.2	.	0.002	0.056	.	0.000	0.009	.	0.000	0.007
14	242.0	9.4	0.002	0.058	1.65	0.000	0.009	0.95	0.000	0.007
15	242.3	.	0.002	0.060	.	0.000	0.010	.	0.000	0.008
16	269.8	7.0	0.002	0.062	1.35	0.000	0.010	0.90	0.000	0.008
17	217.9	.	0.002	0.064	.	0.000	0.011	.	0.000	0.008
18	219.1	10.1	0.002	0.066	1.80	0.000	0.011	1.10	0.000	0.008
19	302.4	.	0.003	0.070	.	0.001	0.012	.	0.000	0.009
20	199.5	9.6	0.002	0.071	1.90	0.000	0.012	1.15	0.000	0.009
21	318.1	.	0.003	0.074	.	0.001	0.012	.	0.000	0.009
22	.[2]	5.9	0.002	0.076	1.20	0.000	0.013	0.90	0.000	0.010
23	278.2	.	0.002	0.078	.	0.000	0.013	.	0.000	0.010
24	272.8	6.6	0.002	0.080	1.25	0.000	0.014	0.90	0.000	0.010
25	284.9	.	0.002	0.082	.	0.000	0.014	.	0.000	0.010
26	276.3	7.1	0.002	0.084	1.15	0.000	0.014	0.70	0.000	0.011
27	254.1	.	0.002	0.086	.	0.000	0.015	.	0.000	0.011
28	242.0	7.0	0.002	0.088	1.30	0.000	0.015	1.05	0.000	0.011
29	233.7	.	0.002	0.089	.	0.000	0.015	.	0.000	0.011
30	198.2	7.3	0.001	0.091	1.25	0.000	0.015	0.90	0.000	0.012

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Missing volume estimated as average of immediately preceding and subsequent values.

Figure D4.18. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 8, size −270 mesh.

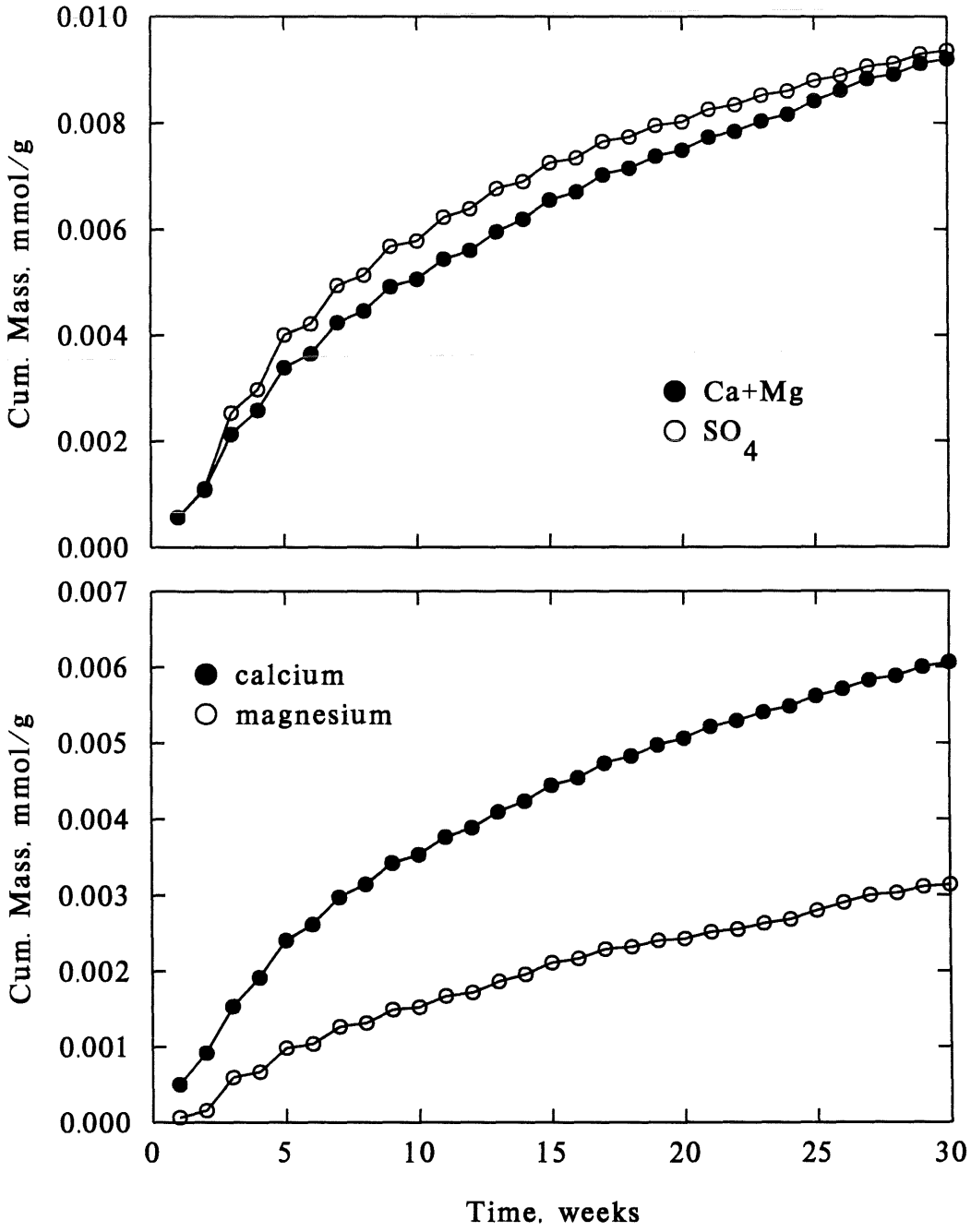

Figure D4.19. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 9, size +270/ −100 mesh.

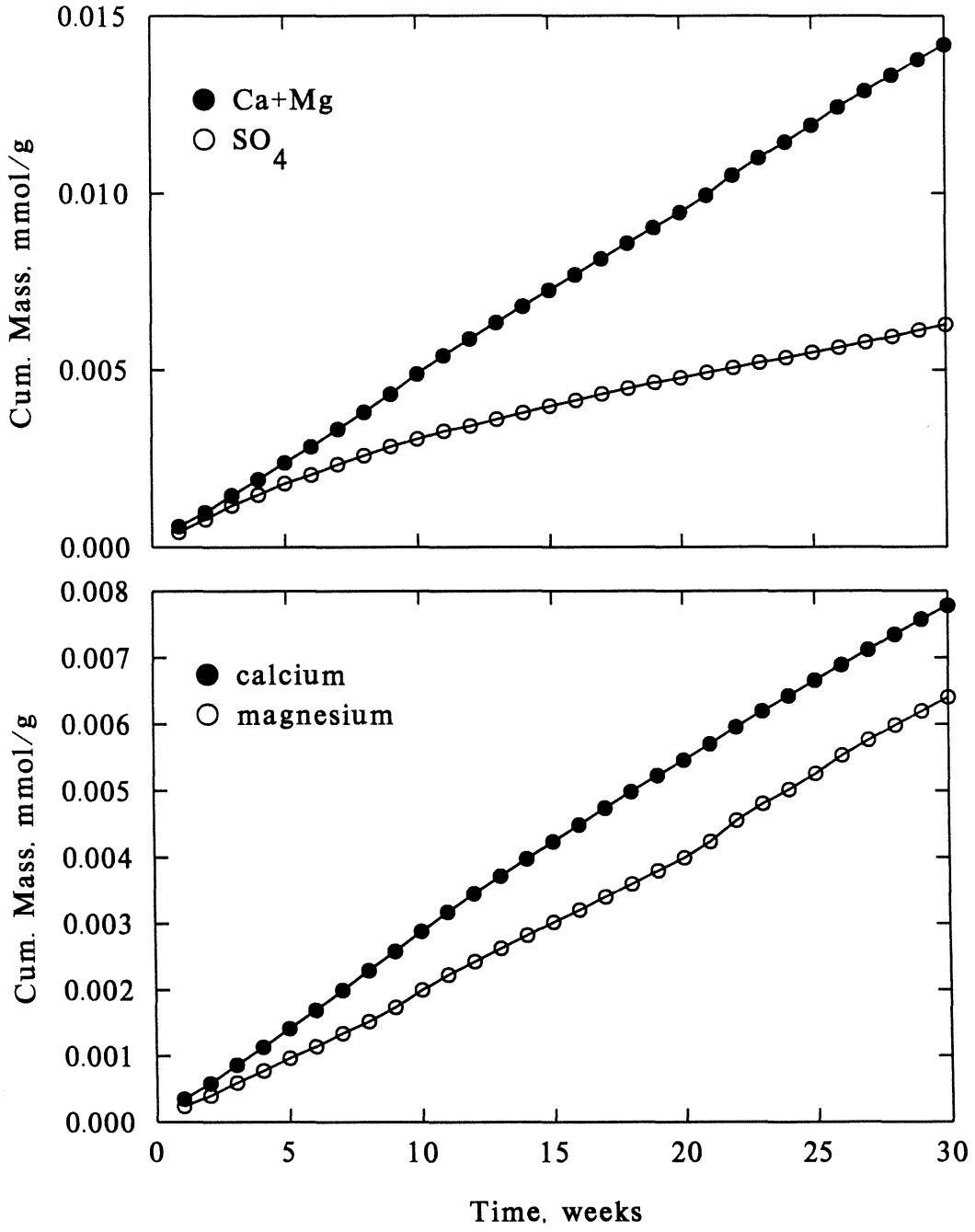

Figure D4.20. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 10, size +100/ -35 mesh.

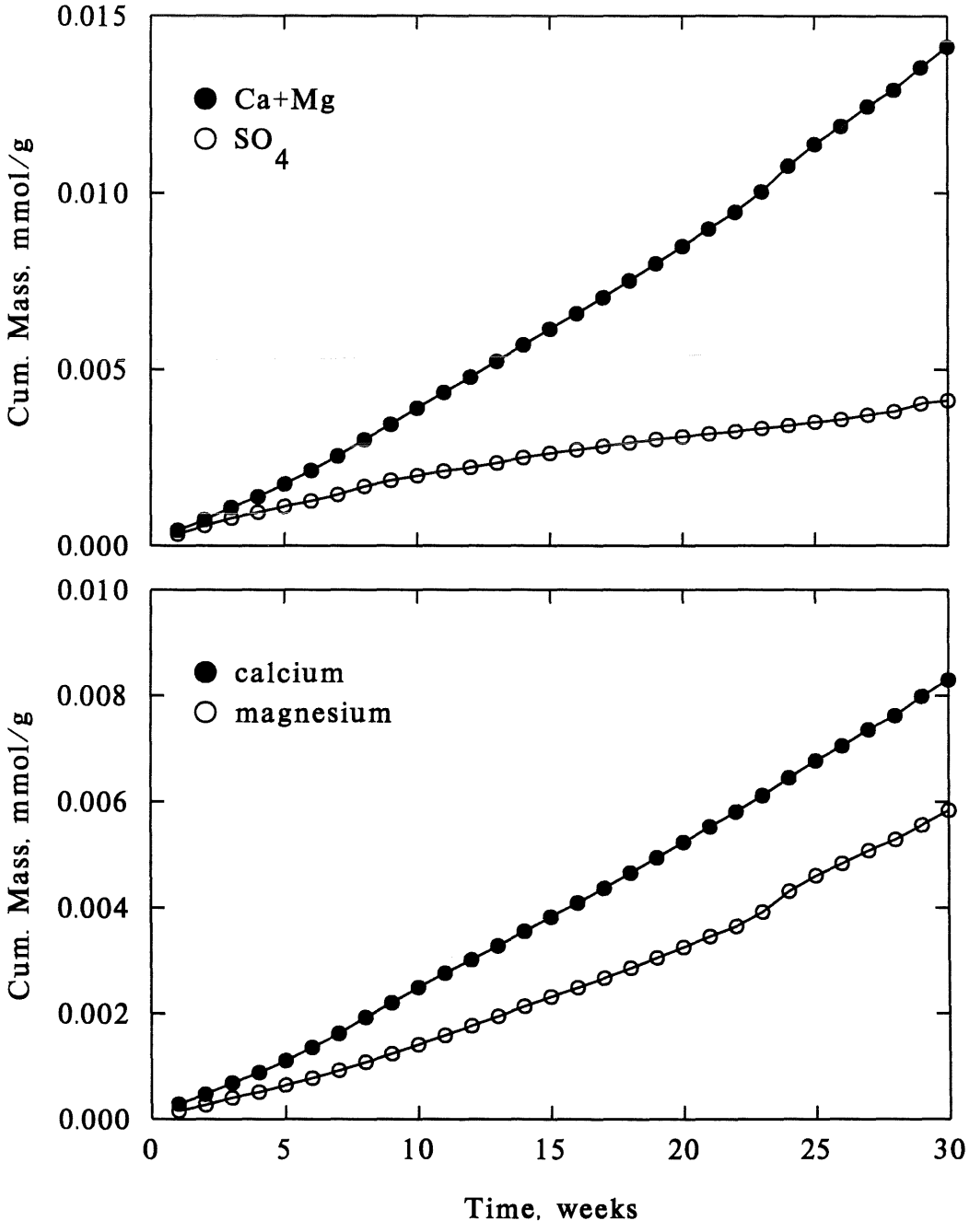

Figure D4.21. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 12, size +35/ −10 mesh.

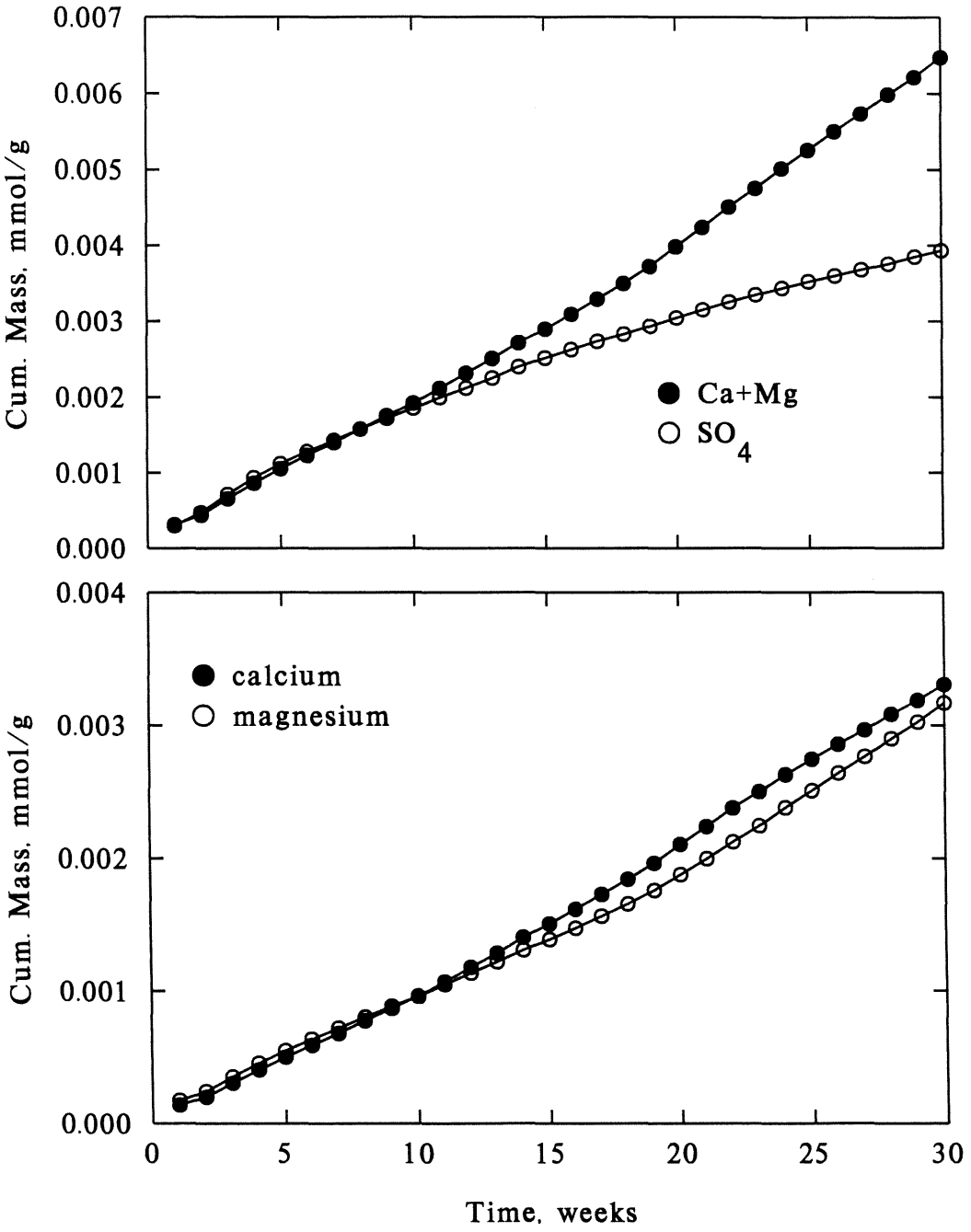

Figure D4.22. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 13, size +10 mesh/−1/4".

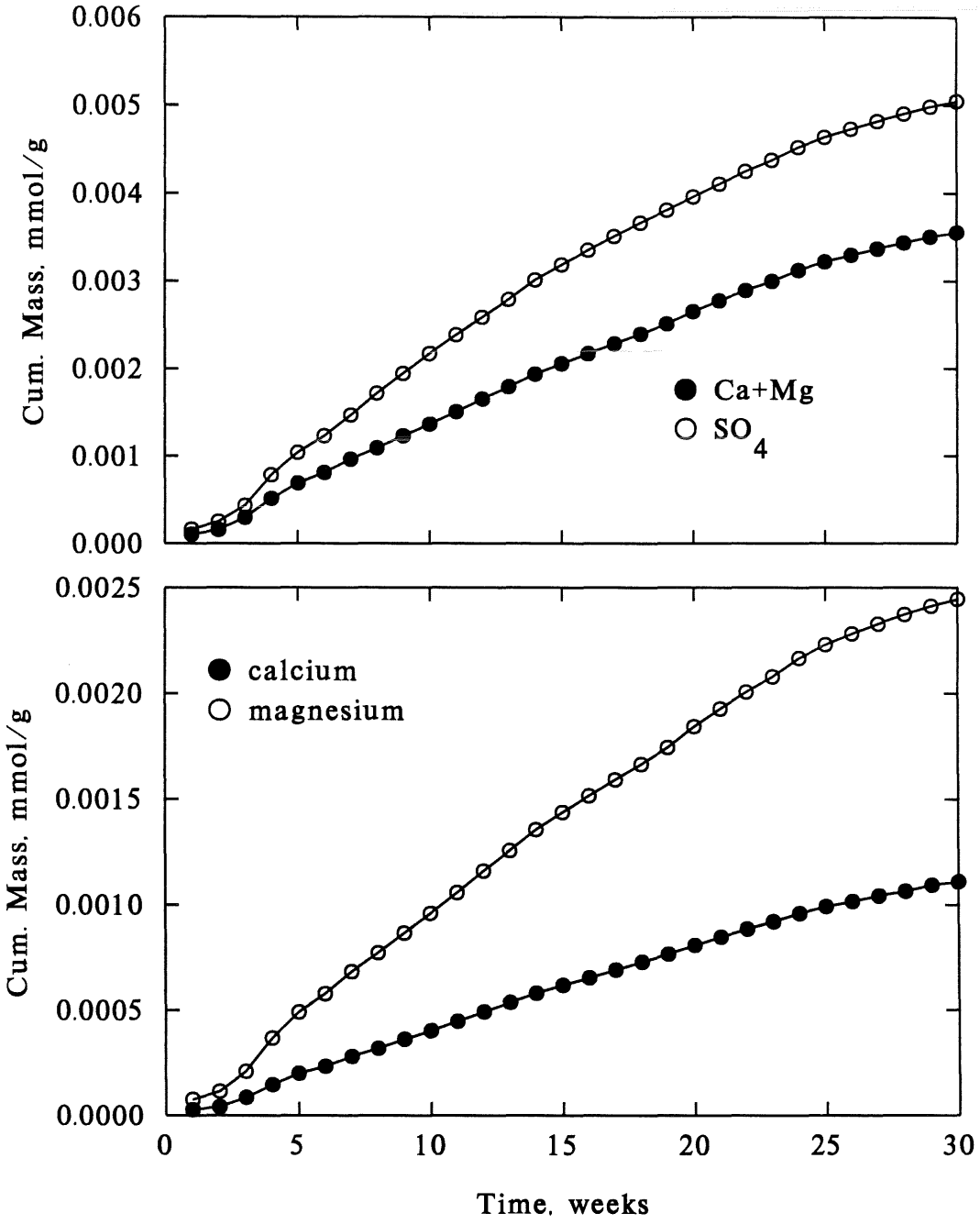

Figure D4.23. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 1, size −270 mesh.

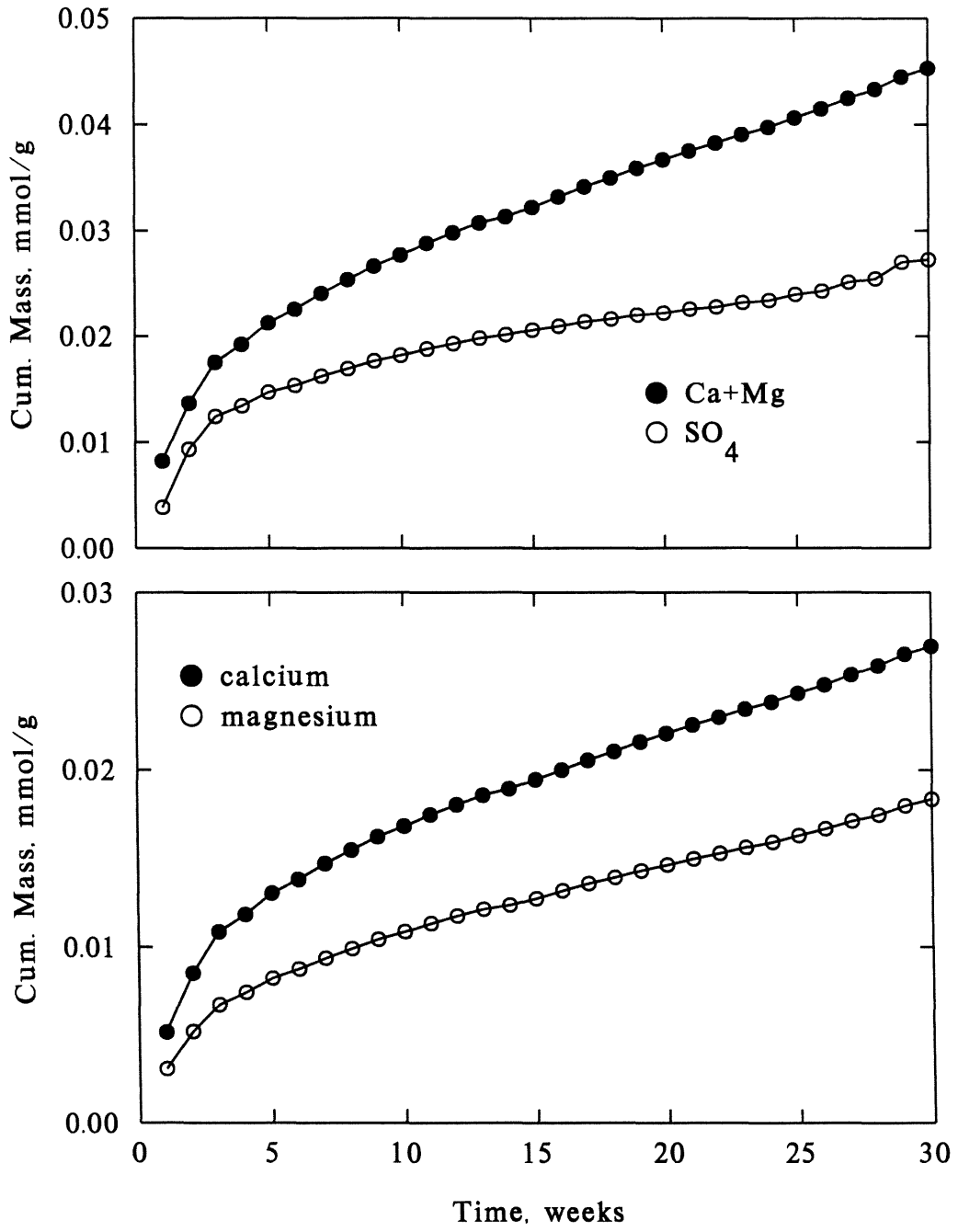

Figure D4.24. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 2, size +270/ −100 mesh.

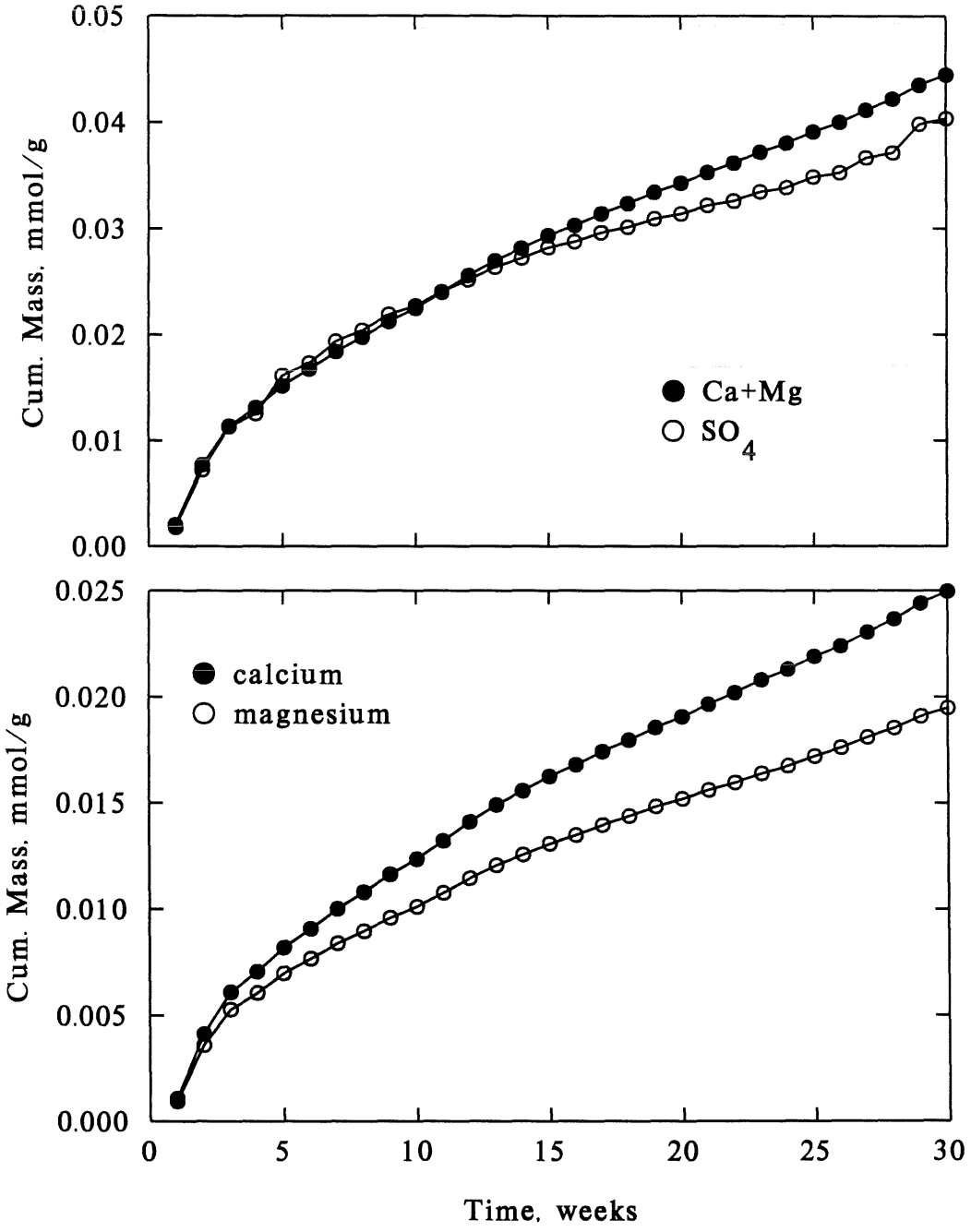

Figure D4.25. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 3, size +100/ −35 mesh.

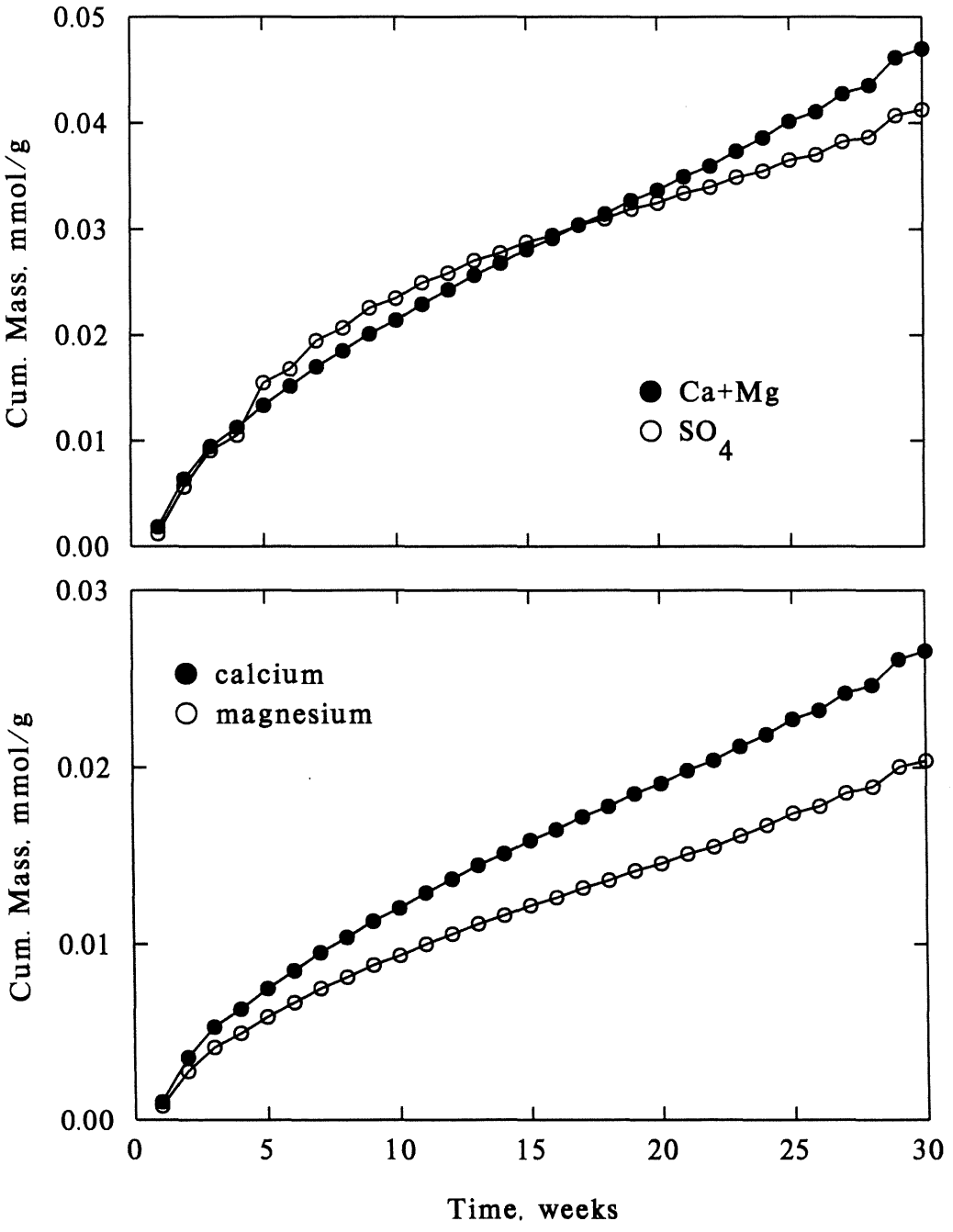

Figure D4.26. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 5, size +35/ -10 mesh.

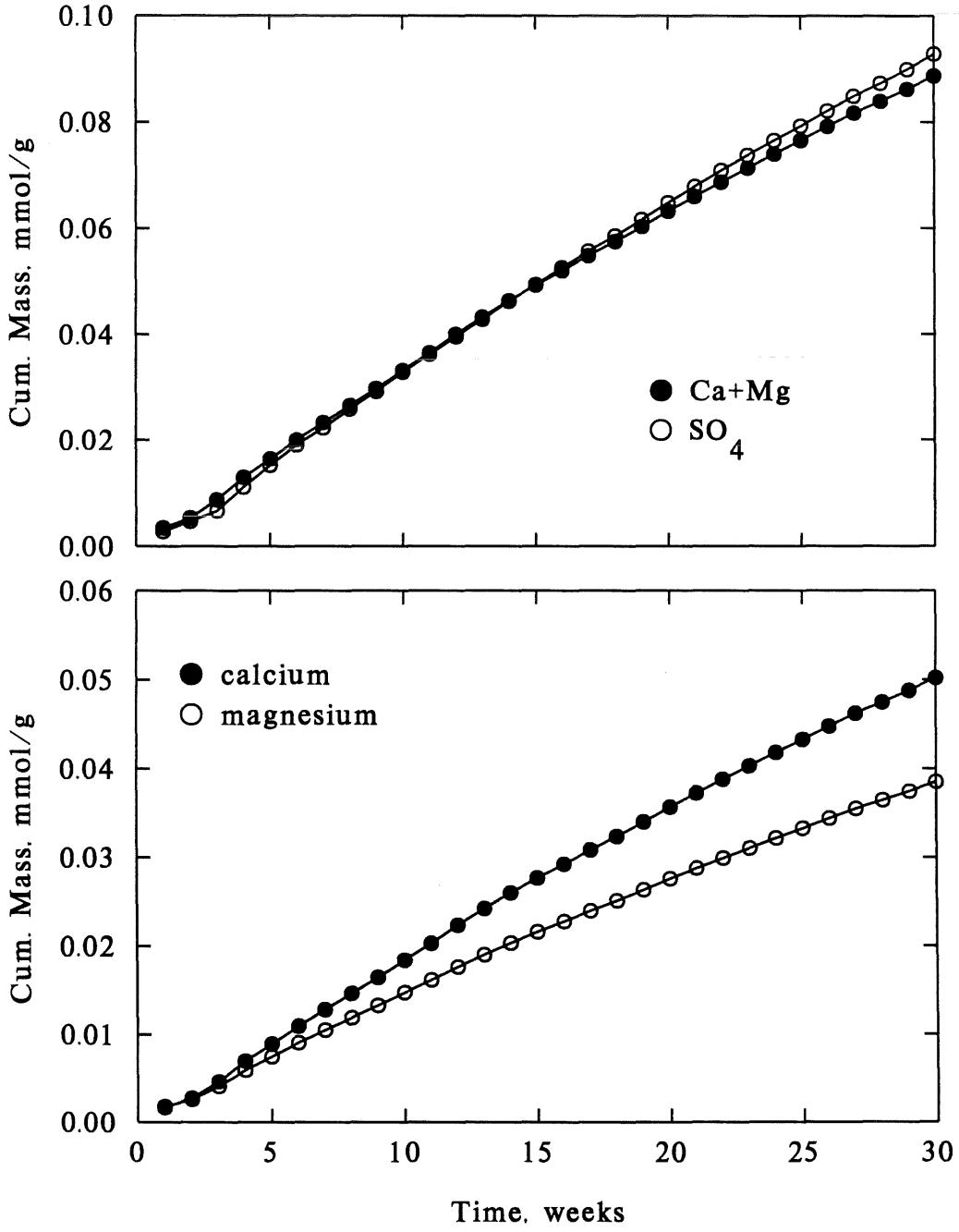

Figure D4.27. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 6, size +10 mesh/ -1/4".

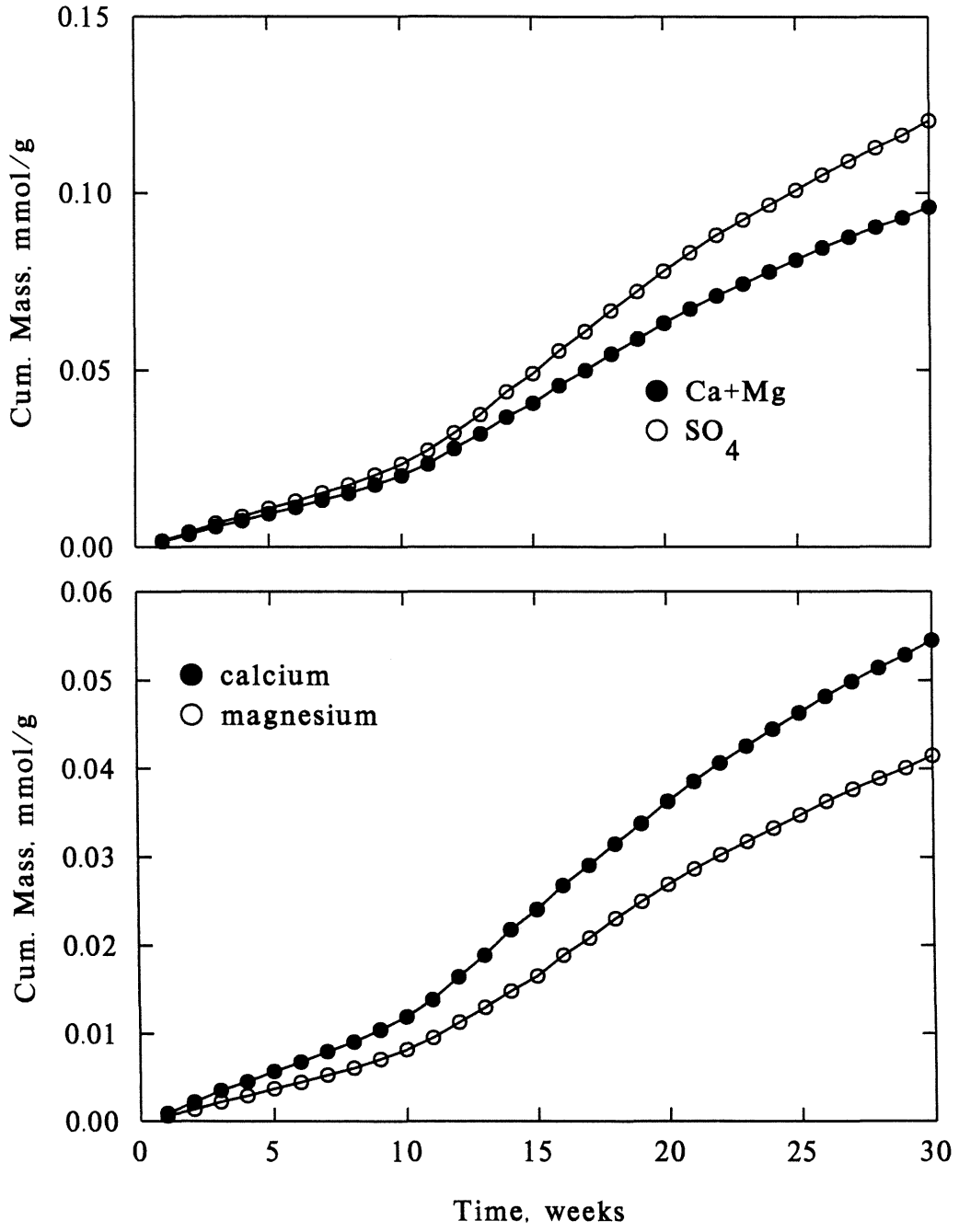

Figure D4.28. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 7, size +1/4"/ -3/4".

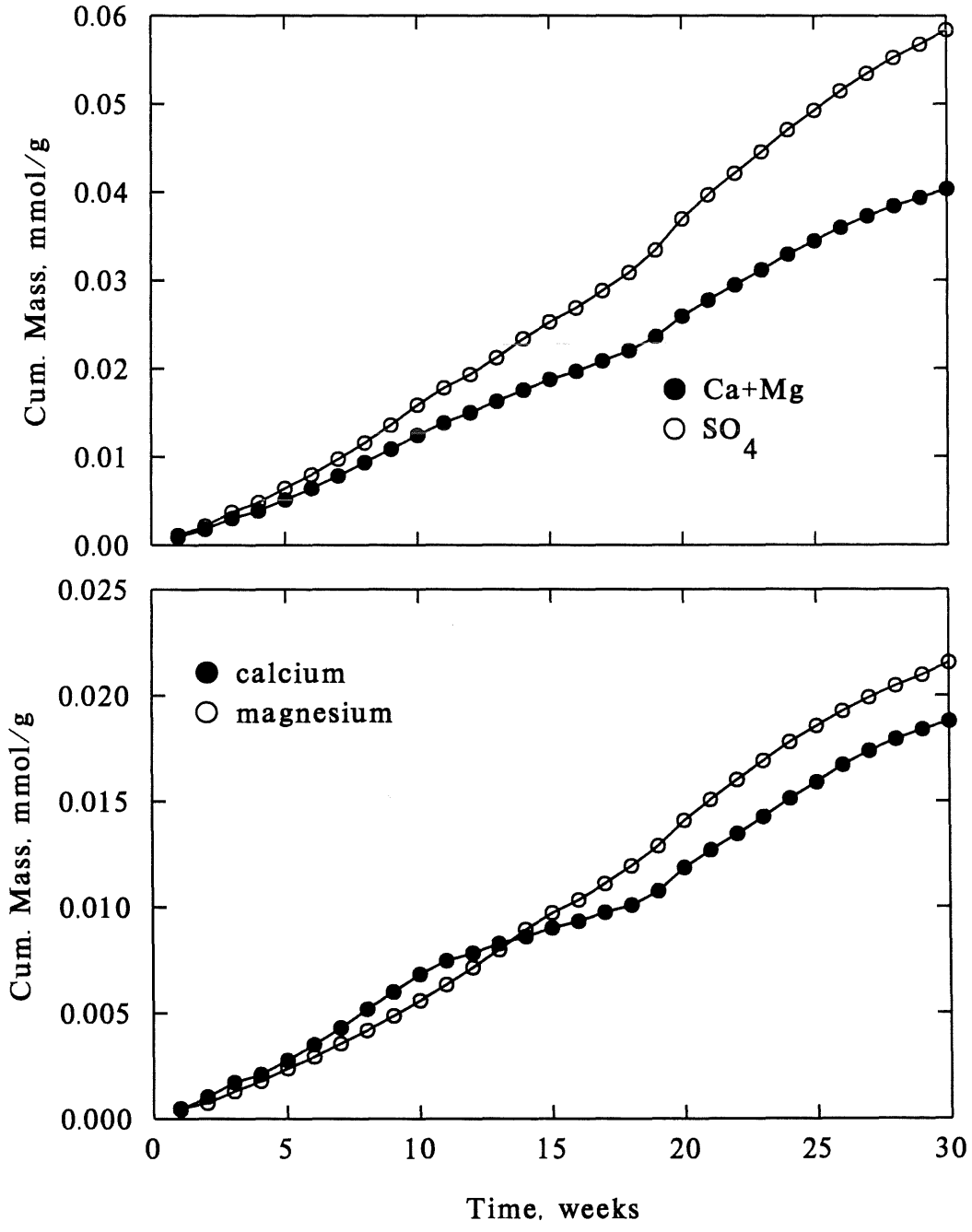

Figure D4.29. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 14, size −270 mesh.

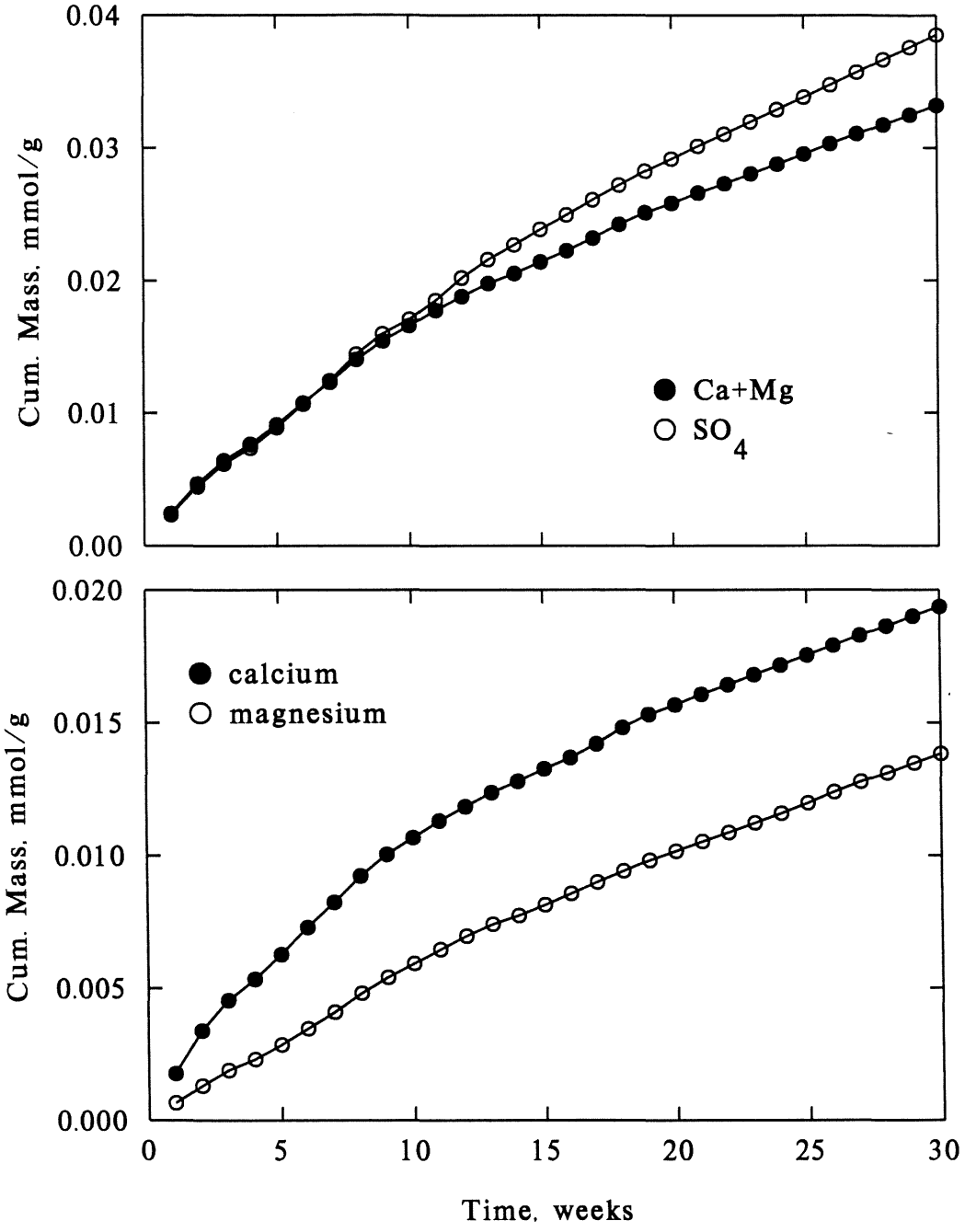

Figure D4.30. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 15, size +270/ −100 mesh.

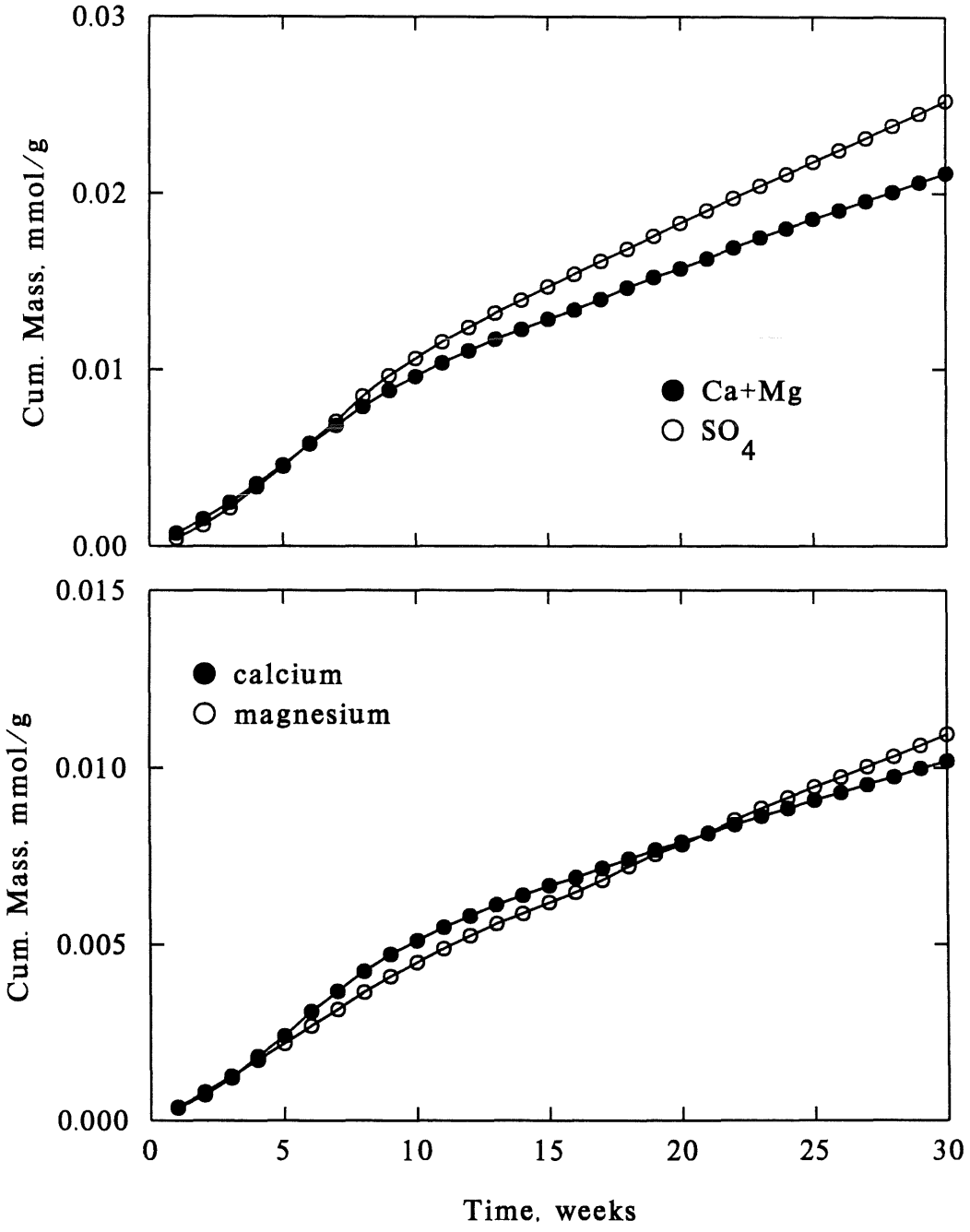

Figure D4.31. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 16, size +100/−35 mesh.

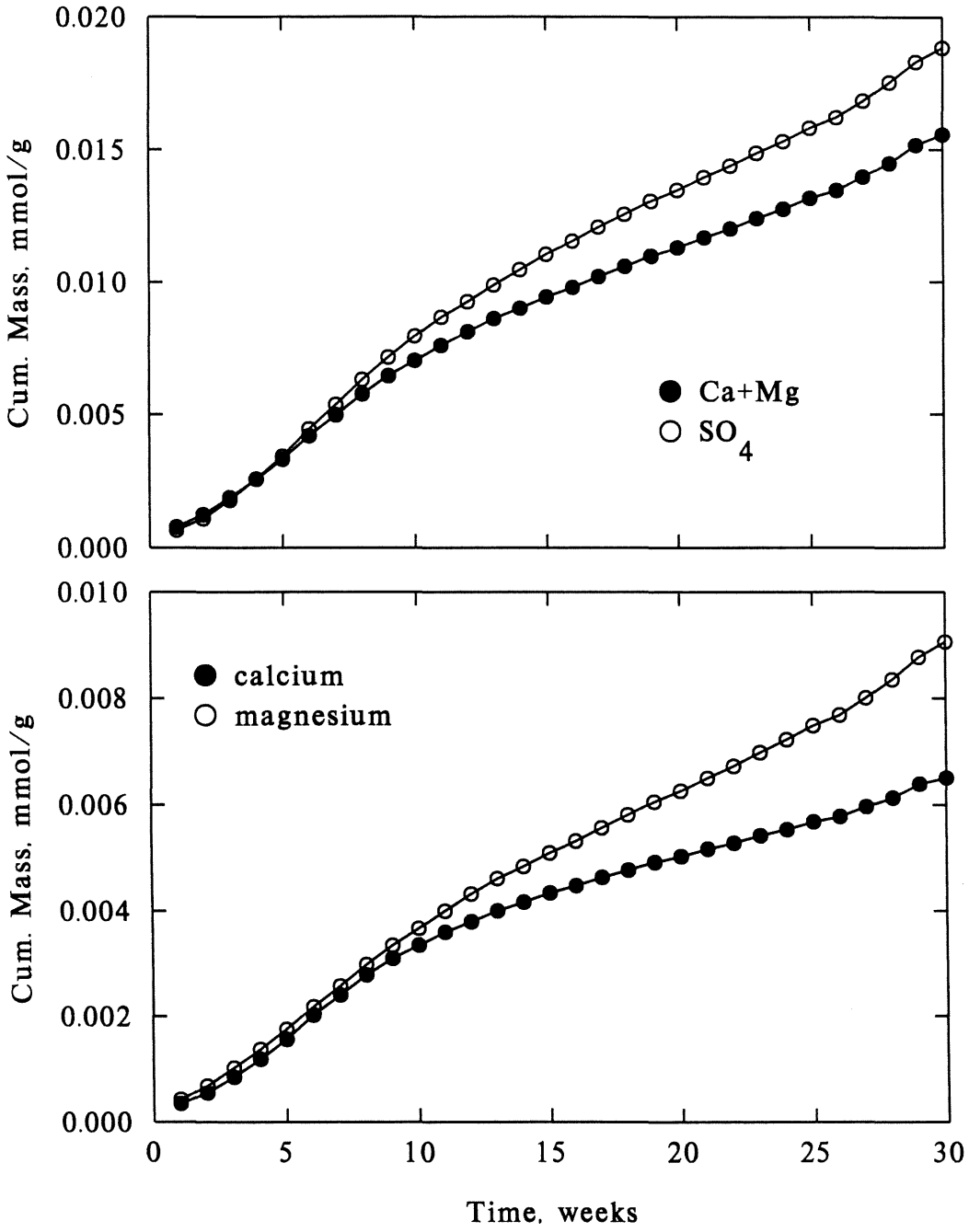

Figure D4.32. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 18, size +35/−10 mesh.

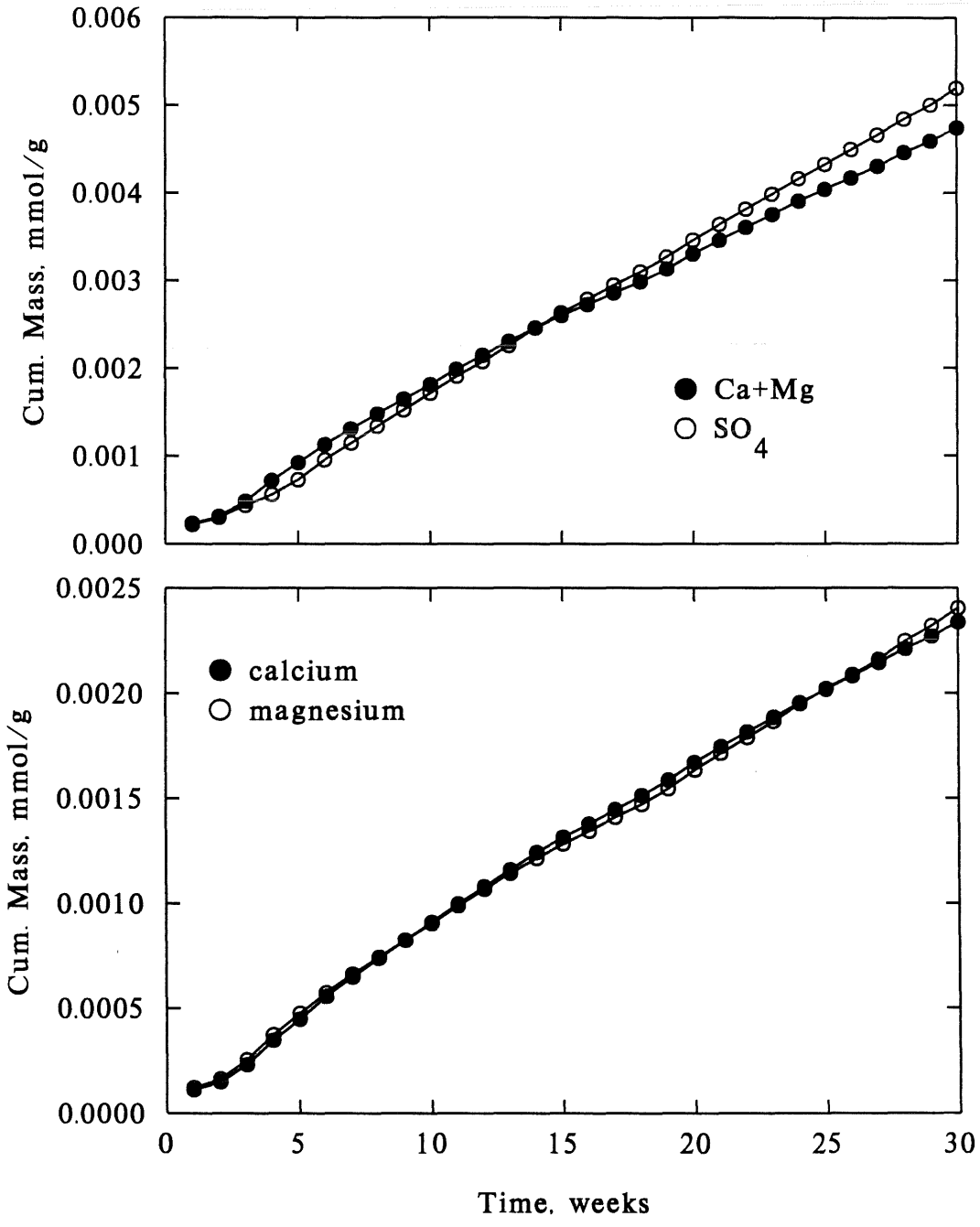

Figure D4.33. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 19, size -10 mesh/-1/4".

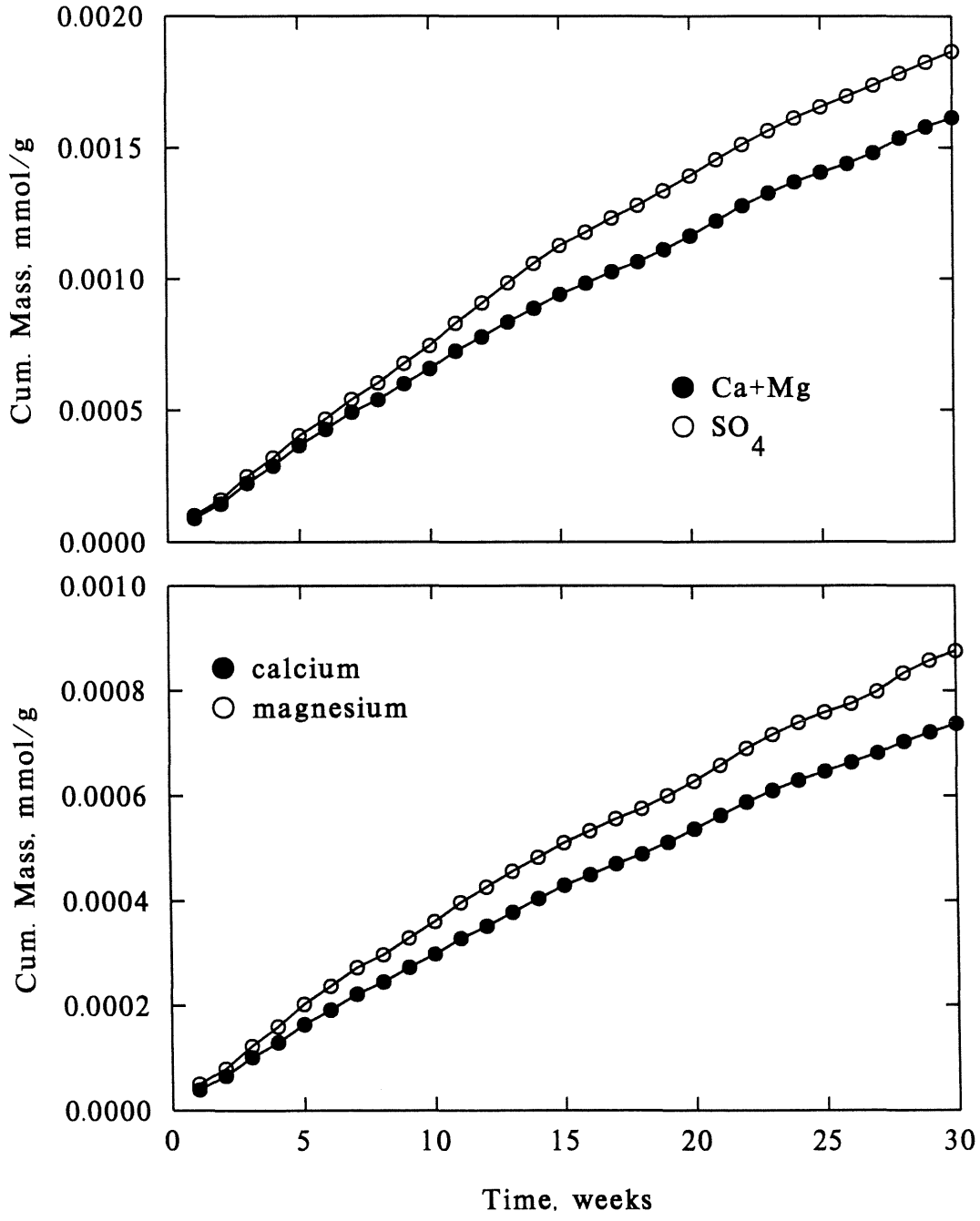

Figure D4.34. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 20, size +1/4"/ -3/4".

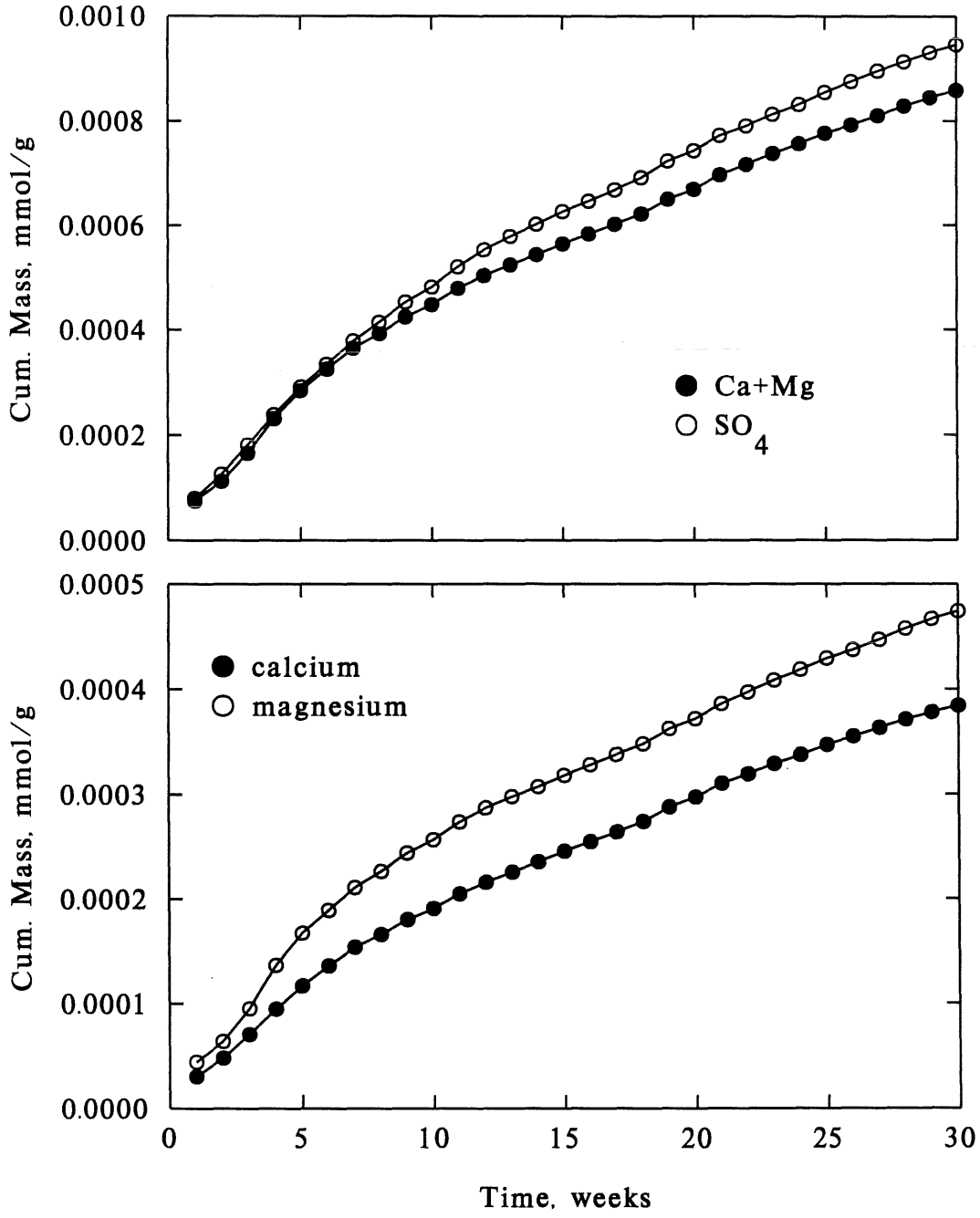

Table D5.1. Rates of release of sulfate, calcium plus magnesium, calcium, and magnesium for the Particle Size Experiment: Rock RK3.

Particle Size (mesh)[1]	Period (weeks)	No. of Measured Values	Sulfate		Calcium+Magnesium		Calcium		Magnesium		Ca+Mg / SO_4
			m*	r^2	m*	r^2	m*	r^2	m*	r^2	
-270	1-7	7	0.745	0.972	0.623	0.982	0.417	0.985	0.206	0.967	0.836
	8-14	7	0.288	0.975	0.279	0.989	0.177	0.991	0.102	0.982	0.969
	15-30	16	0.142	0.992	0.179	0.997	0.109	0.994	0.071	0.992	1.261
+270/-100	0-9	9	0.299	0.994	0.468	0.999	0.281	0.999	0.186	0.999	1.565
	10-14	5	0.181	0.997	0.478	0.999	0.273	0.999	0.205	0.999	2.641
	15-30	16	0.150	0.999	0.470	1.000	0.237	1.000	0.233	0.998	3.133
+100/-35	0-14	14	0.166	0.992	0.411	0.996	0.258	0.997	0.153	0.994	2.476
	15-30	16	0.095	0.989	0.540	0.998	0.299	0.999	0.241	0.993	5.684
+35/-10	0-8	8	0.186	0.993	0.185	0.998	0.093	0.998	0.092	0.997	0.995
	9-14	6	0.235	1.000	0.193	0.999	0.107	0.999	0.086	1.000	0.821
	15-30	16	0.094	0.996	0.243	0.999	0.122	0.999	0.121	0.996	2.585
+10/-¼"	0-3	3	0.137	0.958	0.096	0.935	0.029	0.916	0.067	0.943	0.701
	4-14	11	0.222	0.999	0.140	1.000	0.043	1.000	0.097	1.000	0.631
	15-30	16	0.127	0.986	0.104	0.987	0.034	0.991	0.070	0.985	0.819

[1] Unless otherwise indicated

* m = slope = release in μmol/gram/week

Table D5.2. Rates of release of sulfate, calcium plus magnesium, calcium, and magnesium for the Particle Size Experiment: Rock RK4.

Particle Size (mesh)[1]	Period (weeks)	No. of Measured Values	Sulfate		Calcium+Magnesium		Calcium		Magnesium		Ca+Mg / SO_4
			m*	r^2	m*	r^2	m*	r^2	m*	r^2	
-270	1-3	3	4.301	0.975	4.669	0.990	2.851	0.990	1.818	0.990	1.086
	4-14	11	0.651	0.980	1.197	0.985	0.702	0.984	0.495	0.987	1.839
	15-30	16	0.417	0.950	0.851	0.999	0.488	0.999	0.362	0.998	2.041
+270/-100	0-4	4	3.646	0.935	3.695	0.946	1.990	0.948	1.705	0.943	1.013
	5-14	10	1.233	0.933	1.444	0.999	0.823	0.999	0.621	0.999	1.171
	15-30	16	0.767	0.969	0.995	0.999	0.574	0.999	0.421	0.999	1.297
+100/-35	0-5	5	3.351	0.977	2.797	0.963	1.565	0.962	1.232	0.963	0.835
	6-14	9	1.316	0.975	1.440	0.997	0.827	0.998	0.613	0.997	1.094
	15-30	16	0.813	0.992	1.257	0.996	0.711	0.996	0.546	0.995	1.546
+35/-10	0-14	14	3.468	0.998	3.377	0.999	1.913	0.999	1.464	0.999	0.974
	15-30	16	2.897	0.999	2.651	0.999	1.515	0.999	1.137	0.999	0.915
+10/-¼"	0-11	11	2.425	0.993	2.092	0.994	1.233	0.995	0.859	0.992	0.863
	12-14	3	5.867	0.996	4.436	0.998	2.676	0.998	1.759	0.999	0.756
	15-30	16	4.717	0.993	3.667	0.992	2.025	0.993	1.641	0.991	0.777
+¼"/-¾"	0-14	14	1.750	0.994	1.327	0.997	0.675	0.991	0.652	0.989	0.758
	15-30	16	2.342	0.994	1.555	0.993	0.722	0.991	0.834	0.991	0.664

[1] Unless otherwise indicated

* m = slope = release in μmol/gram/week

Table D5.3. Rates of release of sulfate, calcium plus magnesium, calcium, and magnesium for the Particle Size Experiment: Rock RK5.

Particle Size (mesh)[1]	Period (weeks)	No. of Measured Values	Sulfate		Calcium+Magnesium		Calcium		Magnesium		Ca+Mg / SO_4
			m*	r^2	m*	r^2	m*	r^2	m*	r^2	
-270	1-14	14	1.574	0.997	1.400	0.990	0.838	0.980	0.562	0.997	0.890
	15-30	16	0.964	0.999	0.776	0.998	0.400	0.995	0.376	0.999	0.805
+270/-100	0-9	9	1.181	0.995	1.038	0.998	0.570	0.997	0.468	1.000	0.879
	10-14	5	0.826	0.998	0.671	0.997	0.322	0.996	0.349	0.997	0.812
	15-30	16	0.701	1.000	0.553	0.999	0.235	0.999	0.318	0.999	0.789
+100/-35	0-10	10	0.850	0.995	0.729	0.997	0.356	0.995	0.374	0.998	0.858
	11-14	4	0.603	1.000	0.474	0.996	0.191	0.998	0.283	0.994	0.786
	15-30	16	0.503	0.995	0.397	0.994	0.140	0.995	0.257	0.994	0.789
+35/-10	0-4	4	0.117	0.989	0.164	0.955	0.079	0.952	0.085	0.958	1.402
	5-14	10	0.189	0.999	0.169	0.999	0.087	0.999	0.082	0.999	0.894
	15-30	16	0.172	1.000	0.145	0.999	0.069	0.999	0.076	0.999	0.843
+10/-¼"	1-14	14	0.073	0.999	0.062	0.998	0.028	0.998	0.033	0.997	0.849
	15-30	16	0.050	0.996	0.046	0.998	0.021	0.997	0.025	0.998	0.920
+¼"/-¾"	0-7	7	0.051	0.998	0.050	0.994	0.021	0.998	0.029	0.990	0.980
	8-14	7	0.032	0.994	0.025	0.994	0.012	0.996	0.014	0.991	0.781
	15-30	16	0.022	0.996	0.020	0.996	0.010	0.994	0.011	0.997	0.909

[1] Unless otherwise indicated

* m = slope = release in μmol/gram/week

Table D6.1. Percent depletion of acid production potential (APP) for the Particle Size Experiment for weeks 0 - 30.

Solid	Particle Size (mesh)[1]	Initial Total Sulfur	Initial APP	APP Released	Percent Depletion
		%	mg $CaCO_3$/g	mg as $CaCO_3$	
RK3	-270	0.95	29.69	70.24	3.15
	+270/-100	1.98	61.88	47.14	1.02
	+100/-35	2.34	73.13	30.98	0.56
	+35/-10	1.90	59.38	393.34	0.66
	+10/-¼"	1.50	46.88	252.34	1.08
RK4	-270	2.83	88.44	204.47	3.08
	+270/-100	3.01	94.06	302.81	4.29
	+100/-35	2.61	81.56	309.37	5.06
	+35/-10	2.79	87.19	9290.32	10.66
	+10/-¼"	3.52	110.00	12050.99	10.96
	+¼"/-¾"	3.46	108.13	5840.79	5.40
RK5	-270	1.51	47.19	289.00	8.17
	+270/-100	0.87	27.19	189.41	9.29
	+100/-35	1.29	40.31	141.34	4.67
	+35/-10	0.88	27.50	519.25	1.89
	+10/-¼"	0.83	25.94	186.26	0.72
	+¼"/-¾"	0.93	29.06	94.69	0.33

[1] Unless otherwise indicated.

Table D6.2. Percent depletion of neutralization potential (NP) for the Particle Size Experiment for weeks 0 - 30.

Solid	Particle Size (mesh)[1]	Sample Mass	Initial NP[2]	Calcium Release	Magnesium Release	NP Released	Percent Depletion
		g	mg/g	mg/g	mg/g	mg as $CaCO_3$/g	
RK3	-270	75	21.82	0.24	0.08	0.92	4.21
	+270/-100	75	30.00	0.31	0.16	1.42	4.73
	+100/-35	75	36.37	0.33	0.14	1.41	3.89
	+35/-10	1000	39.32	0.13	0.08	0.65	1.65
	+10/-¼"	500	33.19	0.04	0.06	0.35	1.06
RK4	-270	75	20.00	1.08	0.45	4.53	22.7
	+270/-100	75	37.28	1.00	0.47	4.45	11.9
	+100/-35	75	38.19	1.07	0.50	4.70	12.3
	+35/-10	1000	31.82	2.01	0.94	8.87	27.9
	+10/-¼"	1000	28.87	2.19	1.01	9.60	33.3
	+¼"/-¾"	1000	42.96	0.75	0.52	4.03	9.39
RK5	-270	75	7.27	0.78	0.34	3.32	45.7
	+270/-100	75	2.27	0.41	0.27	2.11	93.0
	+100/-35	75	1.36	0.26	0.22	1.56	114
	+35/-10	1000	1.14	0.09	0.06	0.47	41.6
	+35/-10	1000	1.14	0.09	0.06	0.47	41.2
	+10/-¼"	1000	2.05	0.03	0.02	0.16	7.88
	+¼"/-¾"	1000	0.11	0.02	0.01	0.09	76.4

[1] Unless otherwise indicated.
[2] Initial NP = Initial CO_2 content × 22.73.

Text D7.1. Particle Size Experiment lab notes: Weekly procedure.

WEDNESDAY: Weigh all 25 reactors before filling. The solids in reactors 1 and 8 are removed and crushed. Fill all 25 reactors at the end of the day with the appropriate volume. All reactors can be filled using a 200 mL graduated cylinder. The drainage port on the large reactors should be capped while filling. After all reactors are filled, the caps are removed and the water is allowed to drain. After filling the reactors, the tops on reactors 2 - 7 and 9 - 21 are put back on. Record relative humidity.

THURSDAY: Weigh the reactor bottoms. The bottles for the large reactors are weighed with the caps on. Run analysis. Weigh the reactor tops with covers and record. Place reactors in humidity room. Wash sample containers three times with distilled water. Record relative humidity.

FRIDAY: Mix the solids in reactor 8 to allow for better drying. Record relative humidity.

MONDAY: Weigh reactor tops with covers. Record relative humidity.

TUESDAY: Record relative humidity.

Text D7.2. Particle Size Experiment lab notes: Week 1 reactor weights (in grams).

Reactor	12/09/93	12/10/93	12/13/93	12/14/93	12/15/93	12/16/93	Volume Retained (mL)
1	212.8	192.0	165.7	159.0	NA	NA	0.3
2	198.5	185.0	158.0	NA	NA	157.4	0
3	201.3	189.2	157.8	NA	NA	157.4	0
4	NA	1117.1	1048.1	1028.4	1018.5	1017.8	1.9
5	1957.2	1928.0	1876.6	1864.3	1850.2	1839.3	46.5
6	1851.6	1826.9	1806.3	1804.2	1800.8	1797.4	13.4
7	1843.0	1822.6	1809.5	1808.5	1805.0	1802.1	6.1
8	215.1	198.6	170.8	165.4	159.9	NA	0
9	186.5	179.2	152.6	NA	NA	150.8	1.0
10	189.3	175.8	158.4	NA	NA	158.3	.2
11	1094.9	1082.7	1023.2	1020.6	1020.4	1020.4	1.4
12	2144.9	2012.1	1942.3	1922.5	1890.9	1869.8	74.6
13	1330.2	1311.0	1292.0	1291.0	1290.6	1290.6	.3
14	183.9	174.2	159.0	NA	NA	158.1	.4
15	186.4	179.3	157.7	NA	NA	157.1	0
16	187.4	176.5	156.7	NA	NA	156.6	0
17	1103.8	1087.3	1027.1	1022.4	1022.2	1022.5	0
18	1948.3	1910.3	1856.6	1842.8	1828.7	1819.7	20.1
19	1815.9	1801.1	1791.9	1791.5	1791.3	1791.2	.6
20	1806.4	1798.5	1795	1794.9	1794.9	1793.8	0

NA = Not analyzed

Text D7.3. Particle Size Experiment lab notes: Initial rinse notes.

The number of initial rinses varied for each reactor based on rinsing efficiency. Rinsing efficiency was determined using specific conductance as an indicator parameter. In an effort to obtain maximum rinsing efficiency, a selected number of rinse volumes were allowed to sit overnight before draining. These were as follows: 1) rinse 2, 4, and 5 for reactors 1, 2, and 4, 2) rinse 6 for reactors 2, 3, 4, 5, and 8 3) rinses 2, 4, and 5 for reactor 14, 4) rinses 8 and 11 for reactor 23, and 5) rinses 2 and 4 for the remaining reactors. Twenty percent of the drainage volume from each initial rinse was composited for sulfate and metals analysis. Reactors 1 and 8 had one additional sample after the composite and reactor 22 had two additional samples. The first rinse for all reactors with the exception of reactors 1 and 8, drained within one hour. Due to the physical characteristics and the small particle size, these two reactors drained slowly (24 hours). After the first rinse, drainage slowed so as to require removal a portion of the rinse water by pipet. After pipeting, the water was added to the bottom of the reactor. Smaller volumes of rinse water were also necessary due to the volume of the remaining water and the size of the reactor. Rinse volumes and volumes pipeted are as follows.

	Rinse	Volume (mL)	Pipeted Volume (mL)
Reactor 1	2	100	24
	3	150	37
	4	150	18
	5	150	47
Reactor 8	3	100	78
	4	150	93
	5	150	100
	6	150	114
	7	113	87

When the second rinse volume was added to reactors 4, 11, and 12, it was noticed that there was a considerable amount of fine suspended solids present. As a result of the solids, these reactors drained more slowly than the others. Reactors 2-7, 9-13, and 15-20 were covered between weeks 0 and 1.

Text D7.4. Particle Size Experiment lab notes: Weekly comments.

12/09/93: All reactors were filled and analyzed. Due to the slow drainage of some of the reactors, they will be filled the day before the analysis and allowed to drain overnight. This will be standard procedure for the remainder of the experiment. The solids were removed from reactors 1 and 8, crushed, and replaced along with a new glass fiber filter. This will be standard procedure for these two reactors for the remainder of the experiment. All reactors were left uncovered between 12/09 and 12/16. The reactors were weighed on a daily basis to compare the extent of drying. Reactor 8 did not drain completely, pipeted 86 mL.

12/16/93: Pipeted 5 mL from reactor 1. All other reactors drained well. With the exception of reactor 20, all reactors with covers appeared to be under 100% humidity conditions. Reactor 20 had moisture throughout the solids but was dry on the walls and top above the solids. pH decreased on all reactors with the exception of reactors 1, 8, 13, 14, and 20.

12/23/93: The solids were not mixed in reactor 8 until 12/28. This resulted in poor drying and slow drainage. Pipeted 118 mL. Drying conditions were the same as the previous week. Drainage pH either increased or decreased by less than one tenth of a pH point in all reactors, except reactor 20. The drainage pH of this reactor decreased two tenths.

12/30/93: Pipeted 5 mL from reactor 1. Drying conditions were the same as the previous week. Drainage pH oscillated, no visible trend.

1/06/94: Drying conditions were the same as the previous week. Drainage pH decreased in all reactors with the exception of 15, 19, and 20.

1/13/94: Reactors did not appear to have as much moisture on the inside as previous weeks. Pipeted 28 mL from reactor 1 and 89 mL from reactor 8. For week six, duplicate reactors 7 and 23 had drainage pH of 3.67 and 3.45, respectively. For week six, duplicate reactors 15 and 22 had drainage pH of 6.65 and 5.90, respectively. No other noticeable trend in pH, with the exception of reactors 16 and 17, which appear to be on a steady decline.

1/20/94: This is week one for reactors 24 and 25, which are duplicates of reactors 18 and 20, respectively. Drying conditions were the same as noted on 1/06. Pipeted 36 mL from reactor 1 and 60 mL from reactor 8. Drainage pH decreased in reactors 6, 7, 8, 15, 18, and 19, and increased in all others. Heavy iron staining was observed on the filters of reactors 6 and 7; moderate iron staining was observed on the filter of reactor 20; and slight iron staining was observed on the filters of reactors 5, 17, 18, and 19.

Text D7.5. Particle Size Experiment lab notes: Weekly comments.

1/27/94: Drying conditions were the same as the previous week. Pipeted 34 mL from reactor 1 and 93 mL from reactor 8. No change in the extent of the iron staining noted on 1/20. Oxidation is occurring on the solids in reactors 5, 6, and 7. Observed a white crystalline buildup on the output ports on reactors 6 and 7. The material was collected for future analysis. The drainage of reactor 7 was cloudy and contained a small amount of precipitate, probably iron. During the last four weeks of pH data for the RK4 solids, reactors 2, 3, 4, and 5 have shown an upward trend, reactors 1 and 23 have been relatively stable, and reactors 6 and 7 have shown a downward trend. Drainage pH for the RK3 solids has indicated an upward trend for reactors 9, 10, 11, and 12, a relatively stable trend for reactor 13, and an erratic trend for reactor 8. Reactor 8 may be influenced by the fact that the drainage is erratic from week to week. Drainage pH for the RK5 solids has indicated a downward trend for reactors 14, 15, 16, and 17, while reactors 18, 19, 20, and 22 have been relatively stable. Reactors 24 and 25 have slightly lower drainage pH than their duplicates. More data is needed for these reactors before meaningful comparisons can be made.

2/03/94: Drying conditions were the same as the previous week. Pipeted 43 mL from reactor 1 and 104 mL from reactor 8. Slight iron staining showed up on the filter of reactor 24, all other iron staining was the same as the previous week. There was not much change in drainage pH for the RK4 solids. At week seven, the pH values for reactors 7 and 23 were 3.51 and 3.46, respectively. For the RK3 solids, drainage pH increased for reactors 8 and 13, and remained stable for reactors 9 - 12. The RK5 solids showed a slight decrease in drainage pH for all reactors with the exception of 20 and 24, which had slight increases. At week seven, duplicate reactors 15 and 22 had drainage pH of 6.44 and 5.80, respectively. At week three, duplicate reactors 18 and 24 had pH's of 7.79 and 6.29, respectively, and reactors 20 and 25 had drainage pH of 5.75 and 5.80, respectively.

2/10/94: There was not as much moisture on the insides of the small reactors. Drying conditions for the large reactors was the same as the previous week. Pipeted 65 mL from reactor 1 and 132 mL from reactor 8. There was slight iron staining on the filter of reactor 23, staining on the remaining reactors was unchanged. Oxidation on the solids in reactors 6 and 7 increased. A small amount of white crystalline material was scraped from the outlet ports of reactors 6 and 7. This material was added to the previous sample for future analysis. There were no significant changes in the drainage pH for the RK4 and RK3 solids. Drainage pH for the RK5 solids showed a continuing downward trend for reactors 14 and 15, and a relatively stable trend for reactors 16, 17, 18, 19, and 20. Drainage pH at week eight for reactors 15 and 22 was 6.02 and 5.79, respectively. Drainage pH at week four for reactors 18 and 24 was 6.62 and 6.44, and for reactors 20 and 25 was 6.00 and 5.87, respectively.

Text D7.6. Particle Size Experiment lab notes: Weekly comments.

2/17/94: Drying conditions were similar to the previous week. Iron staining on the filters was unchanged. Oxidation on the solids in reactors 6 and 7 increased. A small amount of white crystalline material was scraped from the outlet ports of reactors 6 and 7, and added to the previous sample. Pipeted 90 mL from reactor 1 and 115 mL (estimated) from reactor 8. With the exception of an increase in drainage pH for reactor 8, there were significant decreases in drainage pH for the RK3 and RK4 solids. Drainage pH for the RK5 solids showed a relatively stable trend for reactors 14, 15, 16, 22, and 25. There was a large increase in drainage pH for reactor 17 and smaller increases for reactors 18-20. Reactor 24 decreased to 6.04, a drop of 0.4, compared to 6.59 for reactor 18 on week five. On week five, duplicate reactors 20 and 25 had drainage pH of 6.32 and 5.96, respectively. On week nine, duplicate reactors 15 and 22 had drainage pH of 5.96 and 5.90, respectively. There was little change in drainage pH for reactors 7 and 23 on week nine.

2/24/94: The day five weights were taken on day six for all reactors. Drying conditions were similar to the previous week. Iron staining on the filters and oxidation on the solids increased in reactors 6 and 7. Removed white crystalline material from the outputs of reactors 6 and 7. Noticed white crystalline material on the output of reactor 23. Pipeted 65 mL from reactor 1 and 101 mL from reactor 8. Drainage pH values for reactors 2-5 increased to values similar to those reported on week 10. Reactors 1, 7, and 23 had slight increases, and reactor 6 continued a downward trend. Drainage pH for the RK3 solids showed a large increase in reactors 9, 10, and 12, a smaller increase in reactor 8, a continuing downward trend in reactor 11, and a relatively stable trend for reactor 13. The only appreciable pH change for the RK5 solids was large decrease in reactors 17 and 18.

3/03/94: Drying conditions were unchanged. Iron staining on the filters was similar to the previous week. Noticed oxidation on the surface of the solids in reactors 20, 23, and 25. Removed white crystalline material from the outputs of reactors 6 and 7. Pipeted 60 mL from reactor 1 and 110 mL from reactor 8. There were noticeable increases in drainage pH for reactors 1, 11, and 13, and decreases for reactors 19 and 20. All other reactors were relatively stable.

3/10/94: Drying conditions were unchanged. Iron staining on the filters was similar to the previous week. Noticed increased oxidation on the solids in reactor 6. Removed white crystalline material from the output of reactor 7. Pipeted 87 mL from reactor 1 and 124 mL from reactor 8. Reactor seven drained in about 5 minutes, assumed to be a hole in the filter. Reactors 19 and 20 are retaining much more water than previously recorded. This may be due to fine particles partially plugging the filter. No significant changes in drainage pH for RK4 solids. When running the pH for reactor 8, the pH meter had a very slow response time. Reactor 8 and 22 were the only reactors with significant changes in pH. All other reactors continued on a relatively stable trend.

Text D7.7. Particle Size Experiment lab notes: Weekly comments.

3/17/94: Drying conditions were unchanged with the exception of reactors 19 and 20. These two reactors are draining very slowly, and as a result are retaining more water. The filters may be partially plugged. Filled these two reactors about five hours earlier than usual to allow for a longer drainage time. Noticed slight oxidation on the solids in reactors 13, 18, 19, and 24. Oxidation on the solids in reactors 6, 7, 20, 23, and 25 was unchanged. Removed white crystalline material from the output of reactor 7. Noticed same material on the output of reactor 23. Pipeted 122 mL from reactor 1 and 101 mL from reactor 8. There was an increase in drainage pH for reactor 8, this may be caused by rinsing efficiency. There were no other significant changes in pH.

3/24/94: Drying conditions were unchanged. Iron staining and oxidation on the solids were unchanged. Removed white crystalline material from reactor 7. Pipeted 84 mL from reactor 1, reactor 8 drained completely. There were some fluctuations in drainage pH, but not noticing any definite trends.

3/31/94: Drying conditions were unchanged. Iron staining and oxidation on the solids were unchanged. Removed white crystalline material from reactor 7. This will be removed weekly for the remainder of the experiment. Pipeted 55 mL from reactor 1 and 105 mL from reactor 8. There were no significant changes in drainage pH.

4/07/94: Pipeted 71 mL from reactor 1 and 33 mL from reactor 8.

4/13/94: Plugged reactors 7 and 23 for 5 minutes because of bad filter (water filtered in approximately 10-15 seconds) and rinsed a second time with same leachate. Will plug these reactors for 10 minutes every time for the remainder of the experiment. Pipeted 29 mL from reactor 1 and 97 mL from reactor 8.

4/14/94: Shook solids in reactors 19 and 20 to open output port, assumed partial blockage.

4/21/94: Pipeted 66 mL from reactor 1 and 113 mL from reactor 8.

4/28/94: Oxidation on solids has increased in reactors 5, 6, and 7. Pipeted 71 mL from reactor 1 and 119 mL from reactor 8.

5/4/94: Overfilled reactor 23 (started to fill twice).

5/5/94: Pipeted 58 mL from reactor 1 and none from reactor 8.

5/12/94: Pipeted 70 mL from reactor 1 and 122 mL from reactor 8.

5/19/94: Pipeted 69 mL from reactor 1 and 149 mL from reactor 8.

5/25/94: Changed filter in reactor 21 (blank). Less than 100% humidity in reactors 4 and 13.

Text D7.8. Particle Size Experiment lab notes: Weekly comments.

5/26/94: Pipeted 69 mL from reactor 1 and 85 mL from reactor 8.

6/1/94: Less than 100% humidity in reactors 4 and 13.

6/2/94: Pipeted 94 mL from reactor 1 and 98 mL from reactor 8.

6/8/94: Changed filter in reactor 4, because there was a small amount of solids passing through the filter.

6/9/94: Pipeted 74 mL from reactor 1 and 102 mL from reactor 8. Drainage from reactor 7 continues to have a rust color.

6/15/94: Less than 100% humidity in reactors 4, 11, 13, 17, and 20. Rust colored leachate from reactor 7. Pipeted 78 mL from reactor 1 and 150 mL from reactor 8. Metal samples 70380-70401 sat out over weekend before acidified.

6/23/94: Rust colored leachate from reactor 7. Pipeted 52 mL from reactor 1 and 154 mL from reactor 8.

6/29/94: Not much condensation in reactors 4, 11, 13, 17, and 20. Decanted 72 mL from reactor 1 and 154 mL from reactor 8.

6/30/94: Rust colored leachate from reactor 7. Pipeted 72 mL from reactor 1 and 154 mL from reactor 8.

7/7/94: Pipeted 84 mL from reactor 1 and 136 mL from reactor 8. The oxidation on the solids in reactors 5, 6, and 7 steadily increased over the course of the experiment.

Table D7.9. Particle Size Experiment lab notes: Amount decanted from reactors 1 and 8 from weeks 1 - 32.

Week	Reactor	Amount Decanted (mL)
5	1	28
5	8	89
6	1	36
6	8	60
7	1	34
7	8	93
8	1	43
8	8	104
9	1	65
9	8	132
10	1	90
10	8	126
11	1	65
11	8	101
12	1	60
12	8	110
13	1	87
13	8	124
14	1	122
14	8	101
15	1	84
15	8	0
16	1	55
16	8	105
17	1	71
17	8	33
18	1	29
18	8	97
19	1	66
19	8	113
20	1	71
20	8	119
21	1	58
21	8	0
22	1	70
22	8	122
23	1	69
23	8	149
24	1	69
24	8	85
25	1	94
25	8	98
26	1	74
26	8	102
27	1	78
27	8	150
28	1	52
28	8	154
29	1	72
29	8	154
30	1	84
30	8	136
31	1	90
31	8	158
32	1	80
32	8	154

Table D8.1. Particle Size Experiment drainage quality from Solid RK3, reactor 11 (+100/-35 mesh, 225 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	198.2	140.	7.06	17.5	.	35.0	11.70	3.70	0.12	0.64	70031.	75.9	4.2	1.4	12	9	93
2	119.7	160.	6.61	7.5	.	45.0	12.90	4.15	0.60	4.40	70057.	78.1	72.4	71.0	12	16	93
3	182.5	174.	7.42	15.0	.	.	.	.	.	.	.	85.9	82.3	82.3	12	23	93
4	186.5	106.	7.40	.	.	27.4	10.35	3.35	0.30	1.70	70076.	90.1	81.3	81.3	12	30	93
5	186.1	100.	7.12	20.0	.	.	.	.	.	.	.	92.3	82.5	81.8	1	6	94
6	189.1	92.	7.23	.	.	16.3	9.15	3.00	0.40	1.55	70105.	89.6	.	83.0	1	13	94
7	193.5	89.	7.33	28.0	.	.	.	.	.	.	.	87.2	84.7	84.0	1	20	94
8	190.9	95.	7.54	.	.	16.0	9.65	3.20	0.60	1.30	70133.	87.7	85.7	85.0	1	27	94
9	183.8	100.	7.63	35.0	.	.	.	.	.	.	.	92.4	90.2	90.2	2	3	94
10	191.7	93.	7.67	.	.	14.7	10.15	3.45	0.25	1.70	70158.	93.2	83.5	83.3	2	10	94
11	188.1	95.	7.34	30.0	.	.	.	.	.	.	.	90.2	88.8	88.8	2	17	94
12	196.4	112.	7.14	.	.	9.8	11.70	4.65	0.25	2.75	70184.	88.8	87.5	87.5	2	24	94
13	186.1	112.	7.58	35.0	.	.	.	.	.	.	.	96.3	91.2	91.2	3	3	94
14	192.6	105.	7.65	.	.	23.0	11.45	4.05	0.40	1.75	70209.	95.0	94.1	91.4	3	10	94
15	191.4	100.	7.78	40.0	.	.	.	.	.	.	.	93.2	91.3	90.8	3	17	94
16	187.2	90.	7.49	.	.	14.4	9.85	3.75	0.35	1.00	70235.	98.7	97.3	97.1	3	24	94
17	190.9	110.	7.79	35.0	.	.	.	.	.	.	.	98.8	84.5	84.5	3	31	94
18	187.2	100.	7.58	.	.	15.5	10.40	4.00	.	.	70260.	89.1	84.7	84.7	4	7	94
19	191.2	113.	7.67	38.0	.	.	.	.	.	.	.	89.7	.	83.9	4	14	94
20	185.3	100.	7.31	.	.	14.4	10.10	3.90	.	.	70286.	120.2	92.5	91.0	4	20	94
21	190.3	112.	7.41	35.0	.	.	.	.	.	.	.	94.8	86.3	85.6	4	28	94
22	196.5	100.	7.69	.	.	11.7	10.50	4.00	.	.	70312.	87.7	87.0	86.5	5	5	94
23	194.3	85.	7.65	38.0	.	.	.	.	.	.	.	94.9	82.5	83.8	5	12	94
24	184.2	90.	7.40	.	.	9.3	8.50	3.50	0.40	0.95	70337.	92.0	88.0	86.5	5	19	94
25	182.0	100.	7.78	35.0	.	.	.	.	.	.	.	96.0	86.5	86.5	5	26	94
26	186.8	98.	7.72	.	.	8.9	8.60	3.65	0.40	1.30	70363.	91.3	85.7	83.5	6	2	94
27	196.7	110.	7.69	40.0	.	.	.	.	.	.	.	88.5	84.5	86.0	6	9	94
28	196.6	110.	7.89	.	.	9.7	9.85	4.15	0.40	0.85	70388.	91.5	86.5	85.5	6	16	94
29	190.7	100.	7.84	40.0	.	.	.	.	.	.	.	92.5	84.0	84.5	6	23	94
30	189.8	70.	7.78	.	.	5.5	4.90	2.20	0.15	1.05	70414.	88.5	.	88.5	6	30	94

Table D8.2. Particle Size Experiment drainage quality from Solid RK4, reactor 4 (+100/-35 mesh, 225 grams).

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	200.7	322.	7.92	55.0	.	84.1	34.85	16.30	0.19	0.44	70024.	101.2	32.2	1.9	12	9	93
2	89.6	1900.	6.68	12.5	.	1050.0	265.00	130.00	0.45	1.55	70050.	108.7	103.6	102.6	12	16	93
3	175.9	1580.	7.60	25.0	.	.	.	.	.	.	.	124.2	118.7	118.2	12	23	93
4	185.0	620.	7.73	.	.	292.0	75.00	33.90	0.65	5.40	70070.	127.5	117.3	117.2	12	30	93
5	182.2	505.	7.45	35.0	.	.	.	.	.	.	.	129.3	115.6	114.9	1	6	94
6	181.4	410.	7.58	.	.	152.0	39.95	18.15	0.45	1.90	70099.	124.9	.	116.1	1	13	94
7	187.8	422.	7.63	38.0	.	.	.	.	.	.	.	124.0	118.9	119.3	1	20	94
8	190.6	395.	7.77	.	.	148.0	39.50	16.30	0.95	1.85	70127.	123.5	122.5	121.8	1	27	94
9	186.2	352.	7.73	40.0	.	.	.	.	.	.	.	128.6	127.2	119.2	2	3	94
10	193.4	300.	7.82	.	.	99.6	30.50	13.35	0.70	1.65	70152.	131.0	119.2	119.2	2	10	94
11	195.5	272.	7.48	35.0	.	.	.	.	.	.	.	123.2	121.6	121.5	2	17	94
12	191.8	348.	7.79	.	.	94.8	32.00	14.40	0.35	2.90	70178.	124.5	124.0	123.2	2	24	94
13	184.1	310.	7.65	35.0	.	.	.	.	.	.	.	137.2	123.2	120.9	3	3	94
14	185.0	299.	7.81	.	.	104.8	31.50	13.70	0.60	1.65	70203.	132.9	131.9	121.9	3	10	94
15	191.1	235.	7.80	35.0	.	.	.	.	.	.	.	132.3	119.7	119.4	3	17	94
16	192.1	292.	7.72	.	.	98.2	29.70	13.20	0.60	1.85	70229.	122.0	121.4	120.6	3	24	94
17	185.4	275.	7.91	40.0	.	.	.	.	.	.	.	131.5	118.7	118.4	3	31	94
18	183.7	218.	7.72	.	.	65.3	21.40	9.60	0.50	2.55	70254.	128.6	122.2	122.5	4	7	94
19	186.7	262.	7.83	43.0	.	.	.	.	.	.	.	128.5	.	119.7	4	14	94
20	197.7	240.	7.60	.	.	71.8	25.05	10.30	.	.	70280.	143.9	116.2	115.2	4	20	94
21	178.6	225.	7.54	40.0	.	.	.	.	.	.	.	131.9	118.5	122.7	4	28	94
22	162.6	198.	7.80	.	.	47.4	20.35	8.30	.	.	70306.	155.1	117.9	117.2	5	5	94
23	155.6	182.	7.81	43.0	.	.	.	.	.	.	.	157.7	114.7	117.7	5	12	94
24	142.0	171.	7.63	.	.	45.6	19.10	8.15	3.75	1.35	70331.	167.7	115.2	115.2	5	19	94
25	179.3	170.	7.79	40.0	.	.	.	.	.	.	.	129.2	115.2	116.0	5	26	94
26	294.4	90.	7.79	.	.	24.9	8.25	3.75	1.60	0.90	70357.	15.7	114.2	57.7	6	2	94
27	127.4	280.	7.48	40.0	.	.	.	.	.	.	.	118.7	117.7	116.7	6	9	94
28	198.7	300.	7.92	.	.	81.7	25.45	10.35	0.70	1.40	70382.	124.7	113.7	109.7	6	16	94
29	183.1	220.	7.93	35.0	.	.	.	.	.	.	.	114.7	112.7	113.7	6	23	94
30	185.6	180.	8.00	.	.	53.9	18.80	7.85	1.95	9.35	70408.	115.7	.	111.7	6	30	94

Table D8.3. Particle Size Experiment drainage quality from Solid RK4, reactor 23 (+1/4" / -3/4", 1000 grams, uncovered).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	362.9	880.	3.74	.	105.0	406.0	80.00	25.75	0.95	0.95	70092.	24.5	7.8	3.2	12	23	93
2	362.6	775.	3.64	.	120.0	400.0	70.00	26.15	0.65	1.00	70087.	24.4	6.1	1.2	12	30	93
3	364.5	900.	3.53	.	145.0	.	.	.	.	.	.	24.1	6.6	1.7	1	6	94
4	363.3	900.	3.52	.	.	362.0	66.50	29.50	0.90	0.70	70116.	26.7	.	3.0	1	13	94
5	365.6	800.	3.51	.	180.0	.	.	.	.	.	.	25.4	6.9	1.0	1	20	94
6	357.8	1050.	3.45	.	.	520.4	70.00	39.15	0.95	0.55	70144.	23.6	6.2	0.4	1	27	94
7	360.4	820.	3.46	.	145.0	.	.	.	.	.	.	24.5	7.9	2.6	2	3	94
8	361.5	1000.	3.46	.	.	503.2	65.00	41.00	0.25	0.60	70169.	25.6	10.7	4.4	2	10	94
9	365.1	1100.	3.39	.	230.0	.	.	.	.	.	.	26.3	6.2	4.3	2	17	94
10	363.0	1080.	3.46	.	.	528.0	63.00	41.00	0.30	0.40	70195.	25.9	8.9	4.2	2	24	94
11	363.1	1060.	3.45	.	230.0	.	.	.	.	.	.	27.8	9.1	4.0	3	3	94
12	363.3	920.	3.43	.	.	470.0	52.50	31.75	0.35	0.25	70220.	26.2	9.0	4.4	3	10	94
13	362.0	950.	3.44	.	240.0	.	.	.	.	.	.	27.2	6.7	3.9	3	17	94
14	362.0	890.	3.50	.	.	476.2	51.00	37.00	0.35	0.25	70246.	27.3	7.5	1.8	3	24	94
15	364.0	1005.	3.45	.	205.0	.	.	.	.	.	.	27.9	5.7	1.8	3	31	94
16	361.8	550.	3.54	.	.	204.6	20.65	14.40	.	.	70271.	27.8	8.7	3.2	4	7	94
17	361.8	720.	3.38	.	155.0	.	.	.	.	.	.	28.5	.	4.0	4	14	94
18	354.1	750.	3.35	.	.	375.1	44.30	24.00	.	.	70297.	27.2	9.7	4.0	4	20	94
19	356.1	1110.	3.27	.	265.0	.	.	.	.	.	.	26.8	10.7	4.4	4	28	94
20	454.5	580.	3.51	.	.	252.4	25.20	18.05	0.60	0.30	70323.	19.4	11.2	5.2	5	5	94
21	362.8	685.	3.44	.	240.0	.	.	.	.	.	.	31.1	10.7	4.6	5	12	94
22	362.1	690.	3.29	.	.	378.6	38.50	29.70	1.20	0.35	70348.	27.2	11.7	0.2	5	19	94
23	350.5	760.	3.37	.	220.0	.	.	.	.	.	.	34.2	2.7	4.4	5	26	94
24	360.1	1000.	3.25	.	.	524.9	53.00	34.00	<0.05	0.35	70374.	29.2	0.2	0.0	6	2	94
25	357.9	750.	3.36	.	150.0	.	.	.	.	.	.	29.2	5.2	0.0	6	9	94
26	365.9	750.	3.31	.	.	337.6	27.00	26.00	0.95	0.20	70399.	30.7	7.7	4.2	6	16	94
27	356.4	700.	3.30	.	175.0	.	.	.	.	.	.	31.2	2.2	0.0	6	23	94
28	361.9	900.	3.26	.	.	420.8	38.00	33.00	0.65	0.15	70425.	32.2	.	1.2	6	30	94
29	359.9	1000.	3.26	.	223.0	.	.	.	.	.	.	30.2	7.2	1.2	7	7	94
30	366.9	800.	3.23	.	.	375.5	36.00	32.00	<0.05	0.05	70450.	32.2	.	0.0	7	14	94

Table D8.4. Particle Size Experiment drainage quality from Solid RK5, reactor 22 (+270/-100 mesh, 75 grams, uncovered).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	168.7	105.	6.66	<5.0	.	35.0	7.05	4.50	1.15	2.65	70091.	24.1	0.0	0.0	12	23	93
2	166.2	162.	6.08	.	<5.0	63.4	12.40	7.75	0.65	3.35	70086.	27.5	0.2	0.0	12	30	93
3	166.3	182.	6.04	.	<2.5	.	.	.	.	.	.	25.9	0.0	0.0	1	6	94
4	165.0	132.	5.95	.	.	47.2	9.55	5.00	1.05	4.75	70115.	25.9	.	0.0	1	13	94
5	165.0	110.	6.17	.	<5.0	.	.	.	.	.	.	27.1	0.0	0.0	1	20	94
6	166.6	142.	5.90	.	.	55.8	10.05	4.75	0.85	4.45	70143.	23.1	0.0	0.0	1	27	94
7	169.1	112.	5.80	.	<5.0	.	.	.	.	.	.	22.6	0.0	0.0	2	3	94
8	172.9	101.	5.79	.	.	41.4	6.50	3.55	0.30	5.05	70168.	23.8	0.0	0.0	2	10	94
9	166.0	105.	5.90	.	5.0	.	.	.	.	.	.	24.7	0.0	0.0	2	17	94
10	166.4	110.	5.78	.	.	41.6	6.80	6.10	0.40	3.50	70194.	26.7	0.0	0.0	2	24	94
11	166.6	110.	5.70	.	<5.0	.	.	.	.	.	.	25.9	0.0	0.0	3	3	94
12	166.1	108.	5.58	.	.	43.8	6.80	3.65	0.45	3.00	70219.	24.5	6.0	0.0	3	10	94
13	165.3	120.	5.57	.	5.0	.	.	.	.	.	.	23.7	2.1	0.0	3	17	94
14	166.5	111.	5.52	.	.	45.7	6.25	4.15	0.65	2.75	70245.	25.7	0.6	0.0	3	24	94
15	166.2	100.	5.54	.	<5.0	.	.	.	.	.	.	26.8	7.4	0.0	3	31	94
16	166.9	105.	5.50	.	.	48.8	5.80	4.30	.	.	70270.	24.8	0.0	0.0	4	7	94
17	168.0	83.	5.43	.	5.0	.	.	.	.	.	.	21.4	.	0.0	4	14	94
18	167.9	80.	5.46	.	.	28.7	3.95	2.85	.	.	70296.	23.7	0.0	0.0	4	20	94
19	168.6	88.	5.39	.	5.0	.	.	.	.	.	.	24.1	0.3	0.0	4	28	94
20	166.4	85.	5.37	.	.	35.5	4.15	3.25	3.30	2.15	70322.	25.3	0.0	0.0	5	5	94
21	165.7	90.	5.35	.	5.0	.	.	.	.	.	.	25.8	0.0	0.0	5	12	94
22	167.2	85.	5.23	.	.	31.7	3.95	3.25	0.80	2.15	70347.	.	0.0	0.0	5	19	94
23	165.9	75.	5.41	.	5.0	.	.	.	.	.	.	0.0	1.3	0.0	5	26	94
24	167.9	100.	5.33	.	.	40.1	4.70	3.40	0.35	1.75	70373.	23.0	0.0	0.0	6	2	94
25	199.2	70.	5.54	.	<5.0	.	.	.	.	.	.	27.9	4.1	0.0	6	9	94
26	168.6	80.	5.28	.	.	31.0	3.90	4.45	0.40	1.70	70398.	25.7	0.0	0.0	6	16	94
27	166.5	70.	5.34	.	5.0	.	.	.	.	.	.	25.1	0.0	0.0	6	23	94
28	167.6	65.	5.40	.	.	23.4	2.85	2.55	0.60	1.15	70424.	27.8	.	0.0	6	30	94
29	163.8	70.	5.33	.	2.5	.	.	.	.	.	.	24.5	0.0	0.0	7	7	94
30	171.8	70.	5.33	.	.	25.1	2.95	2.70	0.25	1.25	70449.	26.7	.	0.0	7	14	94

Table D8.5. Particle Size Experiment drainage quality from Solid RK5, reactor 17 (+100/-35 mesh, 225 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	199.7	184.	7.11	10.0	.	52.8	12.70	9.35	0.42	0.41	70037.	81.8	5.1	0.0	12	9	93
2	119.8	185.	6.48	2.5	.	63.4	11.85	8.25	1.45	1.35	70063.	77.8	75.8	73.9	12	16	93
3	180.6	410.	6.72	<5.0	.	.	.	.	.	.	.	91.7	89.8	89.2	12	23	93
4	191.6	285.	6.74	.	.	56.4	22.05	13.40	1.75	3.00	70081.	85.7	84.4	84.3	12	30	93
5	193.7	220.	6.55	5.0	.	.	.	.	.	.	.	89.2	85.0	84.2	1	6	94
6	188.2	245.	6.24	.	.	94.0	18.75	10.60	1.80	2.65	70110.	94.1	.	84.4	1	13	94
7	192.0	205.	6.36	3.8	.	.	.	.	.	.	.	89.7	85.4	85.0	1	20	94
8	193.0	245.	6.14	.	.	95.2	17.15	10.75	1.55	2.85	70138.	89.1	88.5	88.2	1	27	94
9	187.9	225.	6.10	.	2.5	.	.	.	.	.	.	94.1	90.2	90.1	2	3	94
10	189.7	200.	6.13	.	.	86.1	13.00	9.15	1.05	4.05	70163.	95.3	87.6	87.3	2	10	94
11	194.0	232.	6.92	.	2.5	.	.	.	.	.	.	88.7	87.8	87.5	2	17	94
12	192.3	198.	6.07	.	.	70.4	10.90	8.70	1.05	4.10	70189.	94.6	93.8	93.8	2	24	94
13	189.4	195.	6.20	.	5.0	.	.	.	.	.	.	97.2	92.0	91.5	3	3	94
14	191.6	158.	6.04	.	.	69.0	8.60	7.00	1.00	3.75	70214.	101.8	95.8	95.0	3	10	94
15	191.4	132.	6.19	.	5.0	.	.	.	.	.	.	99.2	98.0	96.8	3	17	94
16	198.3	125.	6.06	.	.	54.4	6.60	6.30	0.90	3.45	70240.	96.3	95.5	95.2	3	24	94
17	188.2	120.	6.29	.	<5.0	.	.	.	.	.	.	99.0	97.3	97.3	3	31	94
18	190.2	115.	5.87	.	.	51.5	5.35	5.30	.	.	70265.	100.8	96.2	95.6	4	7	94
19	195.9	177.	5.89	.	5.0	.	.	.	.	.	.	96.3	.	95.0	4	14	94
20	190.0	178.	5.62	.	.	70.3	8.30	9.10	.	.	70291.	126.0	96.8	97.0	4	20	94
21	192.4	158.	5.82	.	5.0	.	.	.	.	.	.	98.3	94.8	94.7	4	28	94
22	199.7	132.	6.17	.	.	48.7	5.50	6.80	2.85	3.60	70317.	96.5	95.8	95.3	5	5	94
23	189.5	96.	5.98	.	5.0	.	.	.	.	.	.	97.6	91.8	97.8	5	12	94
24	189.0	85.	5.91	.	.	34.4	3.80	4.85	2.30	2.75	70342.	99.5	95.3	94.3	5	19	94
25	184.3	100.	6.19	.	<5.0	.	.	.	.	.	.	102.8	95.3	94.8	5	26	94
26	191.4	110.	6.01	.	.	38.1	4.25	5.00	0.30	2.65	70368.	95.6	92.3	92.3	6	2	94
27	187.8	120.	5.70	.	2.5	.	.	.	.	.	.	102.3	94.8	93.3	6	9	94
28	196.3	130.	5.88	.	.	47.4	4.85	6.50	0.90	3.45	70393.	98.8	92.8	91.8	6	16	94
29	184.2	115.	5.73	.	2.5	.	.	.	.	.	.	97.8	94.8	93.8	6	23	94
30	191.0	135.	5.91	.	.	49.8	5.55	9.30	0.80	3.05	70419.	100.8	.	97.8	6	30	94

Table D8.6. Particle Size Experiment drainage quality from Solid RK5, reactor 24 (+35/-10 mesh, 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	174.9	207.	5.27	.	5.0	98.8	14.50	10.05	3.20	1.15	70123.	158.2	70.6	40.5	1	20	94
2	161.8	265.	6.25	.	.	98.1	17.20	12.00	2.90	1.70	70145.	157.7	73.2	41.0	1	27	94
3	160.5	265.	6.29	.	<5.0	.	.	.	.	.	.	161.2	82.3	49.2	2	3	94
4	154.1	330.	6.44	.	.	138.7	22.85	17.20	2.70	2.05	70170.	177.3	110.2	77.3	2	10	94
5	189.0	385.	6.04	.	5.0	.	.	.	.	.	.	174.7	91.1	79.1	2	17	94
6	190.9	345.	6.02	.	.	129.2	24.05	17.25	2.70	2.45	70196.	169.5	97.0	68.0	2	24	94
7	183.9	283.	6.14	.	<5.0	.	.	.	.	.	.	170.3	94.3	63.5	3	3	94
8	178.8	320.	6.06	.	.	134.4	23.35	13.50	2.30	1.40	70221.	171.2	87.0	61.0	3	10	94
9	168.9	280.	6.20	.	5.0	.	.	.	.	.	.	177.0	76.7	60.2	3	17	94
10	170.7	300.	6.04	.	.	128.6	20.70	15.30	1.95	1.50	70247.	172.6	81.5	53.6	3	24	94
11	165.2	278.	6.11	.	<5.0	.	.	.	.	.	.	174.1	78.7	54.3	3	31	94
12	174.5	375.	5.90	.	.	157.0	26.40	19.10	.	.	70272.	163.5	88.5	62.2	4	7	94
13	178.7	330.	5.89	.	5.0	.	.	.	.	.	.	170.6	.	69.6	4	14	94
14	173.1	290.	5.94	.	5.0	123.0	21.35	14.50	.	.	70298.	174.9	101.5	73.8	4	20	94
15	172.7	308.	5.96	.	.	.	.	.	.	.	.	179.6	121.0	97.0	4	28	94
16	190.6	282.	6.14	.	.	118.2	19.30	13.60	2.55	2.80	70324.	193.1	132.0	112.5	5	5	94
17	207.9	270.	5.91	.	5.0	.	.	.	.	.	.	193.4	129.0	110.0	5	12	94
18	193.2	220.	5.94	.	.	88.4	13.30	9.95	4.05	3.00	70349.	199.2	139.5	109.0	5	19	94
19	189.7	215.	6.11	.	<5.0	.	.	.	.	.	.	196.8	104.0	95.0	5	26	94
20	180.8	220.	5.98	.	.	91.1	13.75	8.25	1.55	3.35	70375.	204.2	114.0	91.5	6	2	94
21	168.6	240.	5.92	.	5.0	.	.	.	.	.	.	209.0	109.0	91.5	6	9	94
22	172.2	220.	5.99	.	.	94.7	13.70	9.95	1.80	4.35	70400.	213.0	119.0	97.0	6	16	94
23	177.3	220.	5.86	.	2.5	.	.	.	.	.	.	202.0	108.0	89.0	6	23	94
24	158.3	260.	5.94	.	.	108.7	15.60	11.40	2.00	4.90	70426.	216.0	.	95.0	6	30	94
25	158.5	310.	5.87	.	5.0	.	.	.	.	.	.	221.0	116.5	97.0	7	7	94
26	164.2	270.	5.76	.	.	115.1	16.75	12.75	1.75	5.80	70451.	128.0	.	105.0	7	14	94
27	164.8	280.	5.59	.	7.5	.	.	.	.	.	.	226.0	.	90.9	7	21	94
28	148.8	255.	5.58	.	.	.	.	.	.	.	70477.	227.2	.	96.8	7	28	94
29	165.7	280.	5.81	.	5.0	.	.	.	.	.	.	214.0	.	83.5	8	4	94
30	147.5	245.	5.66	.	.	.	.	.	.	.	70504.	221.0	.	102.0	8	11	94

Table D8.7. Particle Size Experiment drainage quality from Solid RK5, reactor 25 (+1/4" / -3/4", 1000 grams).

Week	Volume (mL)	S.C. (µS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	286.5	59.	5.76	.	5.0	27.3	4.70	1.70	1.45	0.25	70124.	3.7	0.9	0.5	1	20	94
2	283.8	68.	5.87	.	.	22.5	4.20	3.10	1.00	0.55	70146.	5.2	0.9	0.9	1	27	94
3	279.8	41.	5.80	.	<5.0	.	.	.	.	.	.	5.8	0.9	0.9	2	3	94
4	283.7	50.	5.87	.	.	14.0	2.85	1.75	0.45	0.75	70171.	7.1	1.6	1.3	2	10	94
5	284.9	44.	5.96	.	<5.0	.	.	.	.	.	.	6.6	1.5	1.5	2	17	94
6	284.9	37.	5.92	.	.	13.3	1.85	1.30	0.40	0.40	70197.	6.9	2.1	1.6	2	24	94
7	282.0	41.	5.86	.	.	.	.	.	.	.	.	8.3	2.2	2.2	3	3	94
8	285.0	38.	5.96	.	.	13.1	2.05	1.15	0.60	0.75	70222.	7.8	2.3	1.7	3	10	94
9	280.7	39.	6.12	.	<5.0	.	.	.	.	.	.	8.1	41.2	1.7	3	17	94
10	281.5	37.	5.99	.	.	11.2	2.00	1.85	0.60	0.25	70248.	8.1	2.4	2.1	3	24	94
11	281.3	36.	6.07	.	<5.0	.	.	.	.	.	.	7.9	1.8	1.4	3	31	94
12	278.4	32.	5.97	.	.	10.2	1.55	1.15	.	.	70273.	8.1	2.1	1.3	4	7	94
13	278.0	35.	5.94	.	<5.0	.	.	.	.	.	.	9.4	.	1.8	4	14	94
14	276.2	34.	5.97	.	<5.0	10.3	1.70	1.10	.	.	70299.	8.1	2.2	1.6	4	20	94
15	276.7	35.	6.03	.	.	.	.	.	.	.	.	7.8	3.6	2.6	4	28	94
16	280.9	29.	6.12	.	.	9.0	1.45	1.05	2.75	0.40	70325.	9.3	4.1	2.1	5	5	94
17	279.3	29.	6.09	.	<5.0	.	.	.	.	.	.	9.6	4.6	5.1	5	12	94
18	284.1	27.	6.09	.	.	7.9	1.25	1.05	2.45	0.35	70350.	10.1	4.6	2.1	5	19	94
19	273.7	27.	6.20	.	<5.0	.	.	.	.	.	.	15.1	3.1	3.3	5	26	94
20	284.4	34.	6.06	.	.	8.4	1.25	0.90	0.20	0.30	70376.	9.6	2.6	4.1	6	2	94
21	284.3	31.	6.13	.	<5.0	.	.	.	.	.	.	10.1	4.1	4.1	6	9	94
22	289.0	27.	6.10	.	.	8.4	1.35	1.05	0.40	0.25	70401.	11.1	4.6	3.1	6	16	94
23	277.3	26.	6.10	.	2.5	.	.	.	.	.	.	11.1	4.6	6.1	6	23	94
24	284.4	32.	6.16	.	.	8.6	1.55	1.85	0.45	0.15	70427.	12.1	.	4.1	6	30	94
25	279.3	28.	6.14	.	2.5	.	.	.	.	.	.	11.1	5.1	5.1	7	7	94
26	285.7	28.	6.03	.	.	8.7	1.40	1.00	0.45	0.30	70452.	12.1	.	4.6	7	14	94
27	281.9	30.	5.88	.	2.5	.	.	.	.	.	.	13.1	.	3.8	7	21	94
28	279.4	26.	5.97	.	.	.	.	.	.	.	70478.	10.9	.	4.1	7	28	94
29	278.7	27.	6.03	.	2.5	.	.	.	.	.	.	11.7	.	4.2	8	4	94
30	276.4	29.	5.98	.	.	.	.	.	.	.	70505.	12.3	.	4.6	8	11	94

Table D8.8. Particle Size Experiment drainage quality from blank, reactor 21.

Week	Volume (mL)	S.C. (μS/cm)	pH	Alk. (mg/L)	Acy. (mg/L)	SO_4 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Sample	Volume 1 (mL)	Volume 2 (mL)	Volume 3 (mL)	Month	Day	Year
1	297.8	5.	6.25	.	<2.5	3.0	0.15	0.90	0.24	0.05	70041.	.	.	.	12	9	93
2	295.4	3.	5.86	.	.	4.0	0.05	0.10	0.15	0.20	70067.	.	.	.	12	16	93
3	293.5	1.	5.84	.	.	.	.	.	.	.	.	.	.	.	12	23	93
4	.	2.	5.87	.	.	2.5	<0.05	0.15	0.15	2.45	70085.	.	.	.	12	30	93
5	294.7	1.	5.88	.	<2.5	.	.	.	.	.	.	.	.	.	1	6	94
6	296.6	1.	5.95	.	.	<2.0	0.05	0.05	0.10	0.20	70114.	.	.	.	1	13	94
7	292.5	2.	6.01	.	<2.5	.	.	.	.	.	.	.	.	.	1	20	94
8	295.2	1.	6.02	.	.	<0.5	<0.05	<0.05	0.40	0.20	70142.	.	.	.	1	27	94
9	295.9	1.	6.10	.	<2.5	.	.	.	.	.	.	.	.	.	2	3	94
10	293.5	1.	5.99	.	.	<0.5	<0.05	<0.05	0.35	0.65	70167.	.	.	.	2	10	94
11	298.7	1.	6.16	.	<2.5	.	.	.	.	.	.	.	.	.	2	17	94
12	294.9	1.	6.50	.	.	3.6	<0.05	0.05	0.05	0.45	70193.	.	.	.	2	24	94
13	296.3	1.	5.95	.	<5.0	.	.	.	.	.	.	.	.	.	3	3	94
14	294.3	1.	6.22	.	.	2.0	0.15	0.25	0.20	0.05	70218.	.	.	.	3	10	94
15	294.3	1.	5.96	.	<5.0	.	.	.	.	.	.	.	.	.	3	17	94
16	297.3	1.	6.10	.	.	<0.5	0.15	0.15	0.20	0.30	70244.	.	.	.	3	24	94
17	295.7	1.	6.20	.	<5.0	.	.	.	.	.	.	.	.	.	3	31	94
18	294.4	2.	5.92	.	.	<0.5	0.30	0.20	.	.	70269.	.	.	.	4	7	94
19	295.8	1.	6.05	.	<5.0	.	.	.	.	.	.	.	.	.	4	14	94
20	195.7	1.	6.07	.	.	<0.5	<0.05	<0.05	.	.	70295.	.	.	.	4	20	94
21	297.1	1.	6.06	.	<5.0	.	.	.	.	.	.	.	.	.	4	28	94
22	298.1	1.	6.05	.	.	<0.0	<0.05	<0.05	2.05	0.20	70321.	.	.	.	5	5	94
23	294.8	1.	6.01	.	<5.0	.	.	.	.	.	.	.	.	.	5	12	94
24	259.0	1.	6.03	.	.	<0.0	0.10	<0.05	0.30	0.20	70346.	.	.	.	5	19	94
25	284.4	2.	6.26	.	<5.0	.	.	.	.	.	.	.	.	.	5	26	94
26	300.7	2.	6.52	.	.	<0.5	<0.05	<0.05	0.20	0.15	70372.	.	.	.	6	2	94
27	298.6	1.	6.46	.	<5.0	.	.	.	.	.	.	.	.	.	6	9	94
28	304.6	2.	6.16	.	.	<0.0	0.50	1.60	0.45	0.15	70397.	.	.	.	6	16	94
29	291.6	1.	6.37	.	2.5	.	.	.	.	.	.	.	.	.	6	23	94
30	296.7	2.	6.36	.	.	<0.0	0.25	0.20	0.50	0.10	70423.	.	.	.	6	30	94

Figure D8.9. pH, sulfate, calcium, and magnesium concentrations for solid RK3, size fraction +100/−35 (225 g) of the Particle Size Experiment (weeks 1 – 30).

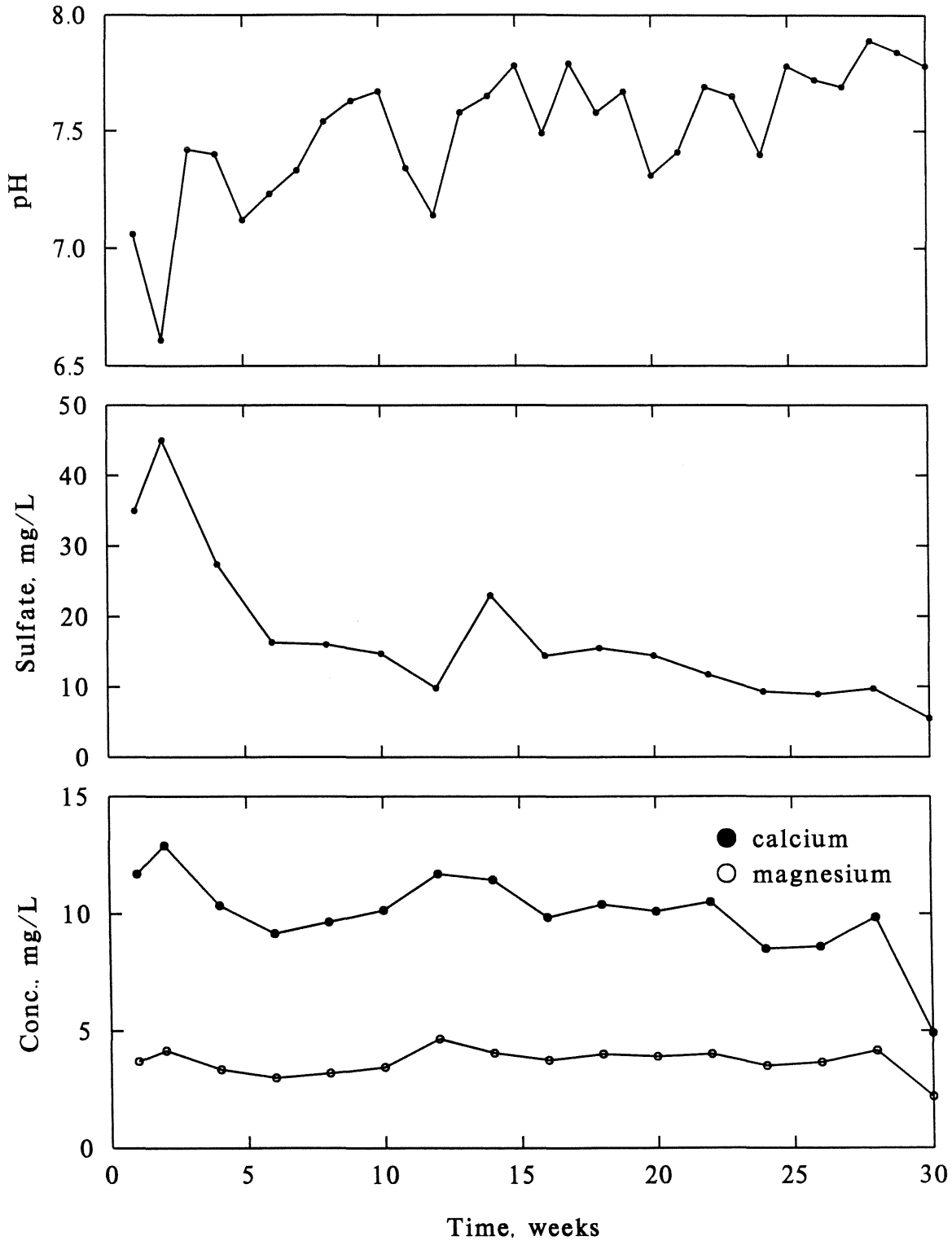

Figure D8.10. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +100/−35 (225 g) of the Particle Size Experiment (weeks 1 – 30).

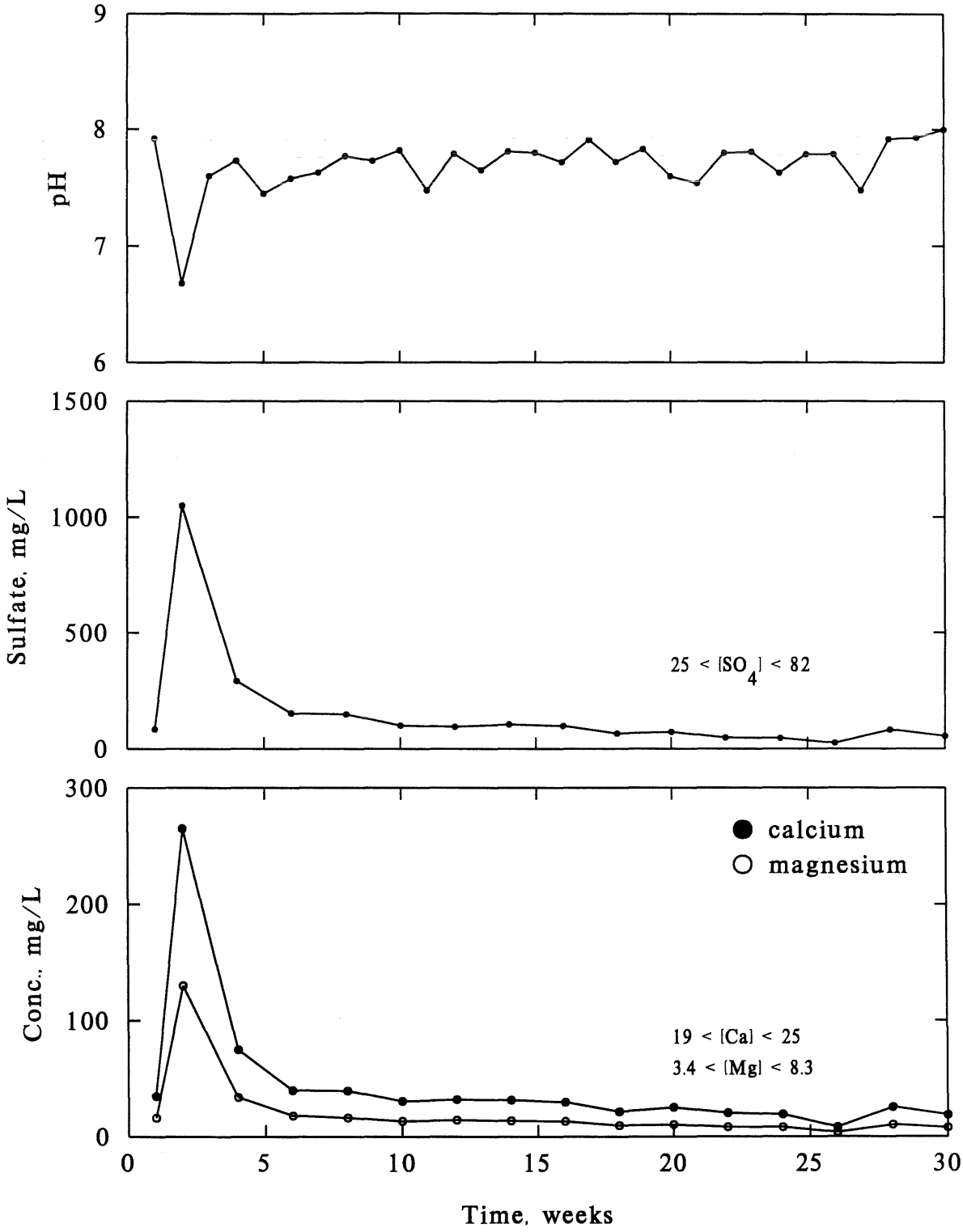

Figure D8.11. pH, sulfate, calcium, and magnesium concentrations for solid RK4, size fraction +1/4 /-3/4 (1000 g, uncovered) of the Particle Size Experiment (weeks 1 - 30).

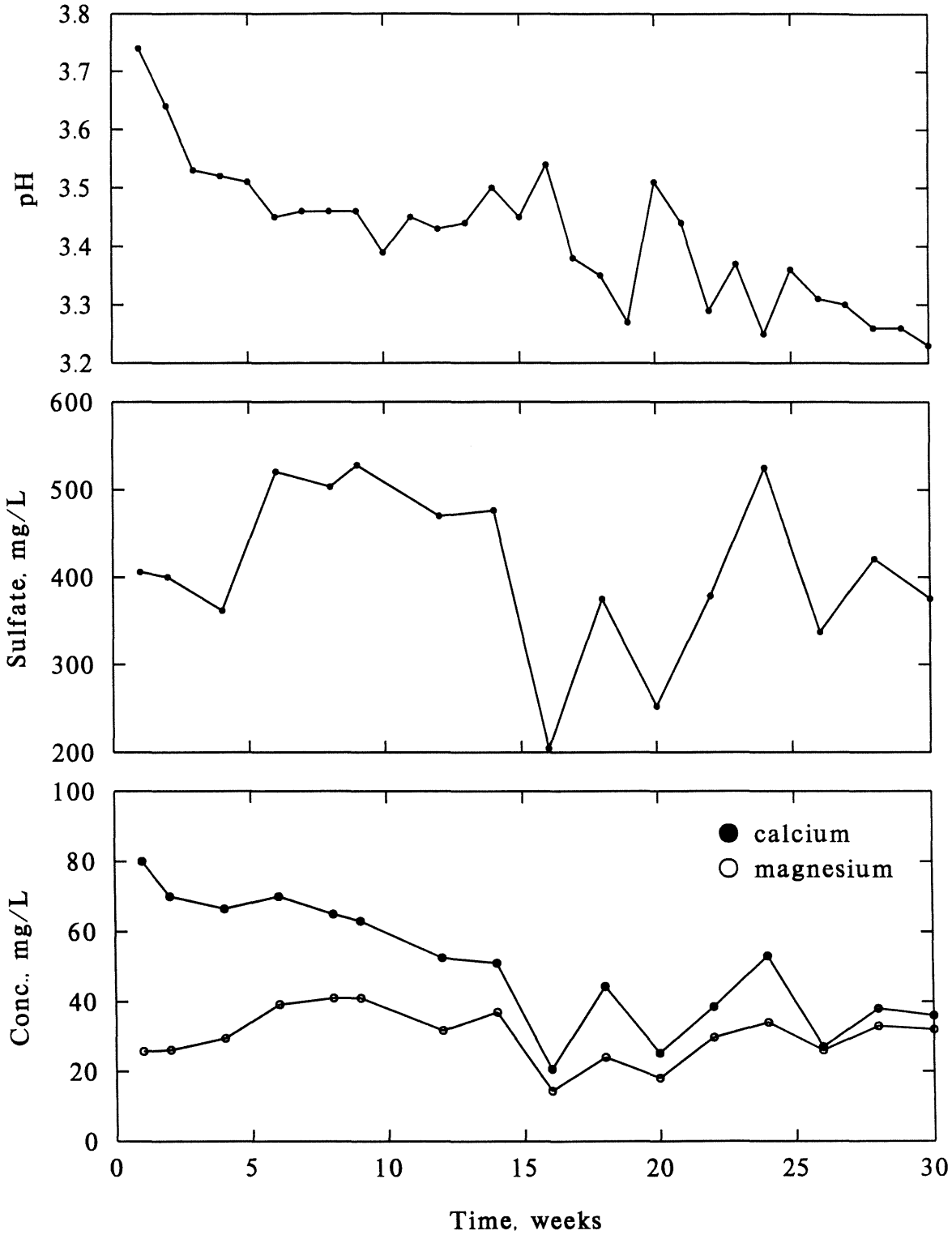

Figure D8.12. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +270/−100 (75 g, uncovered) of the Particle Size Experiment (weeks 1 – 30).

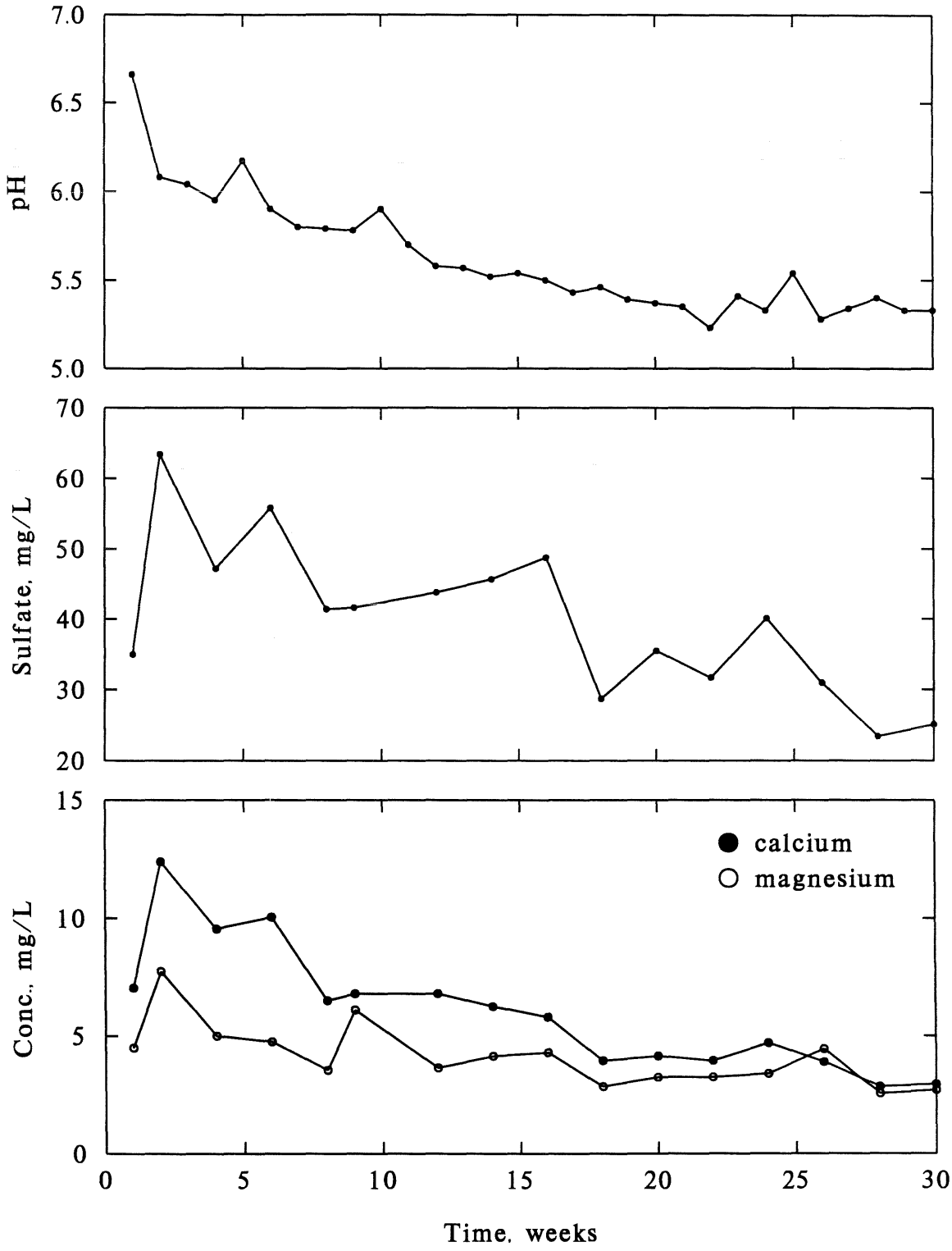

Figure D8.13. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +100/−35 (225 g) of the Particle Size Experiment (weeks 1 - 30).

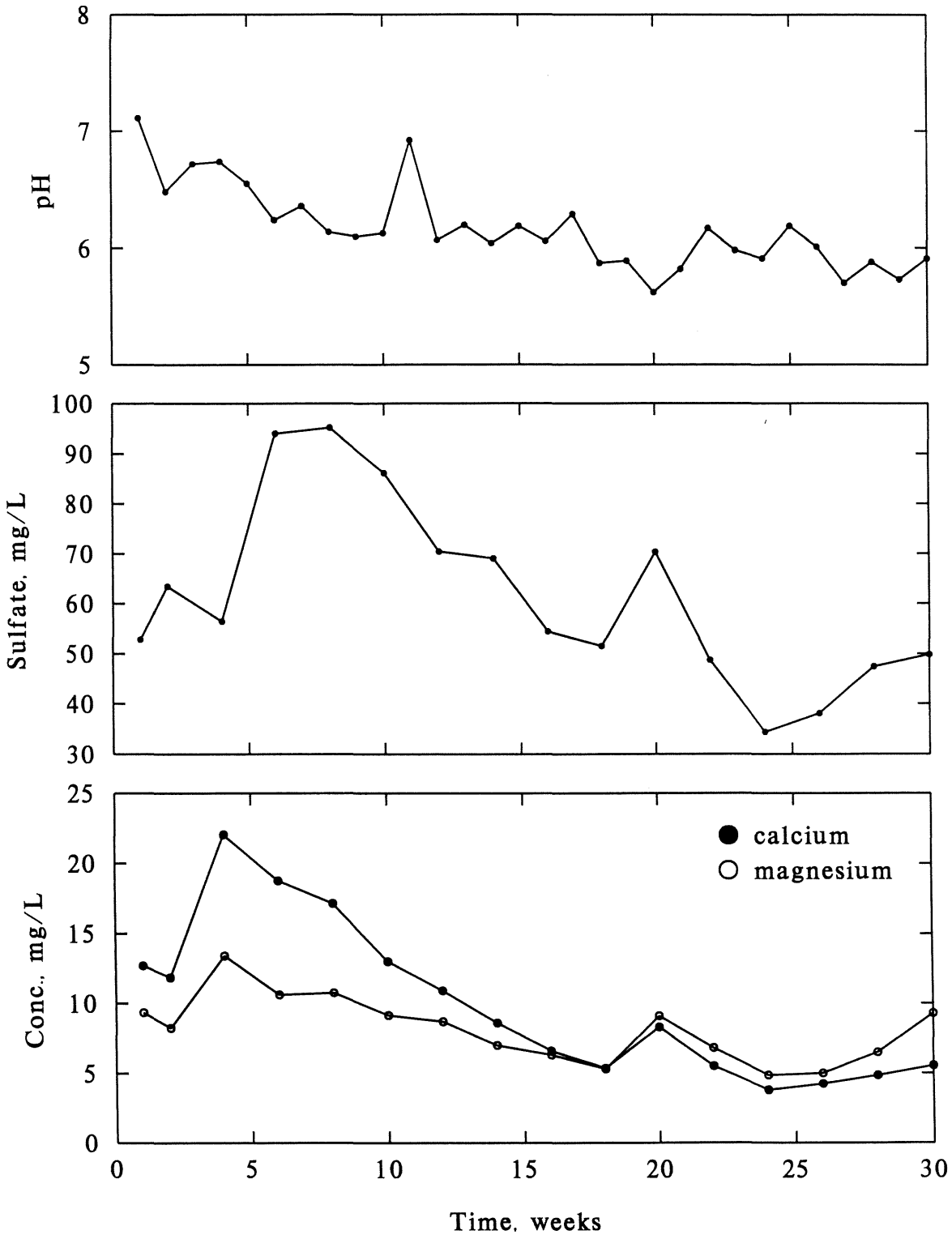

Figure D8.14. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +35/−10 (225 g) of the Particle Size Experiment (weeks 1 – 30).

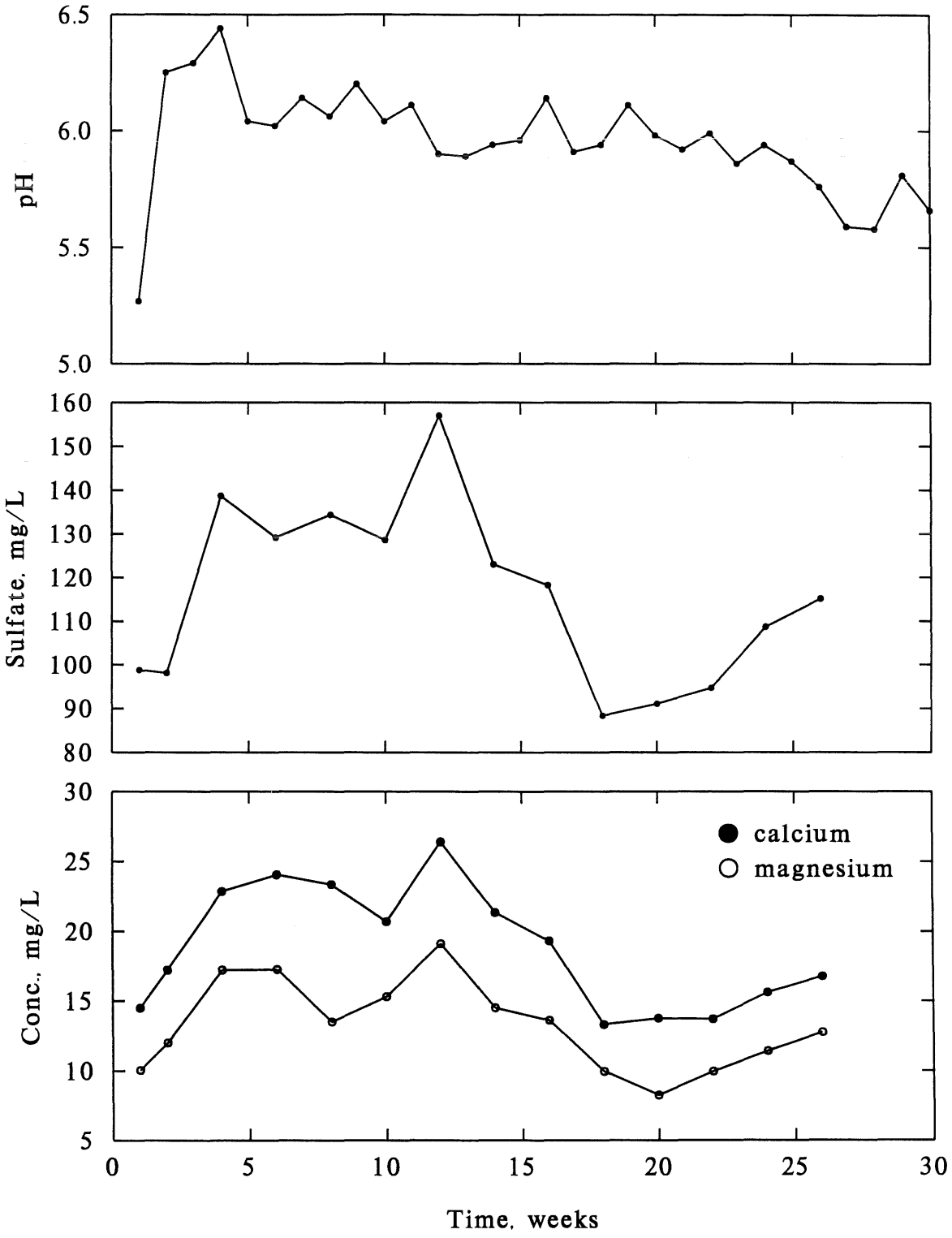

Figure D8.15. pH, sulfate, calcium, and magnesium concentrations for solid RK5, size fraction +1/4/ -3/4 (1000 g) of the Particle Size Experiment (weeks 1 - 30).

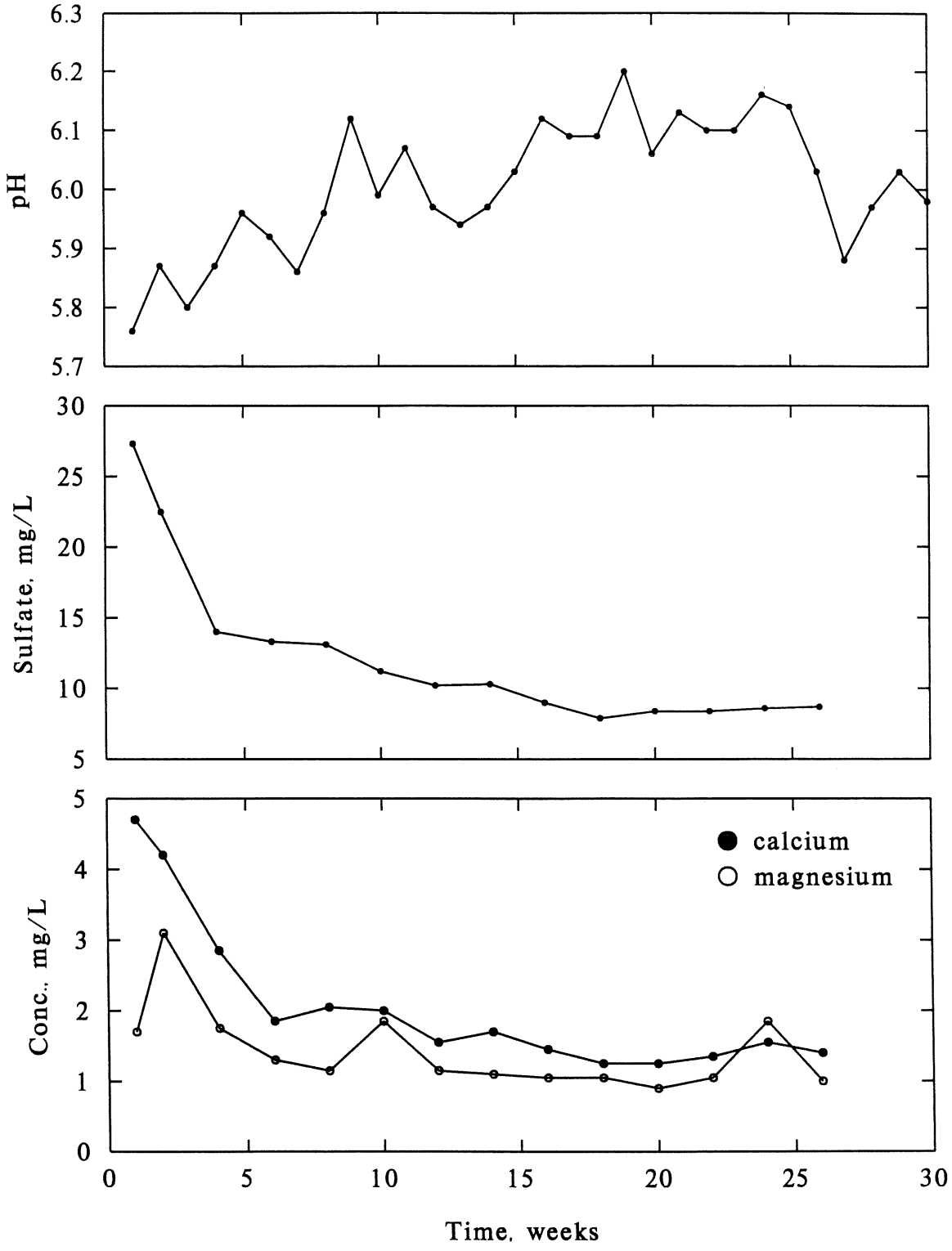

Figure D8.16. pH, sulfate, calcium, and magnesium concentrations for the blank of the Particle Size Experiment (weeks 1 – 30).

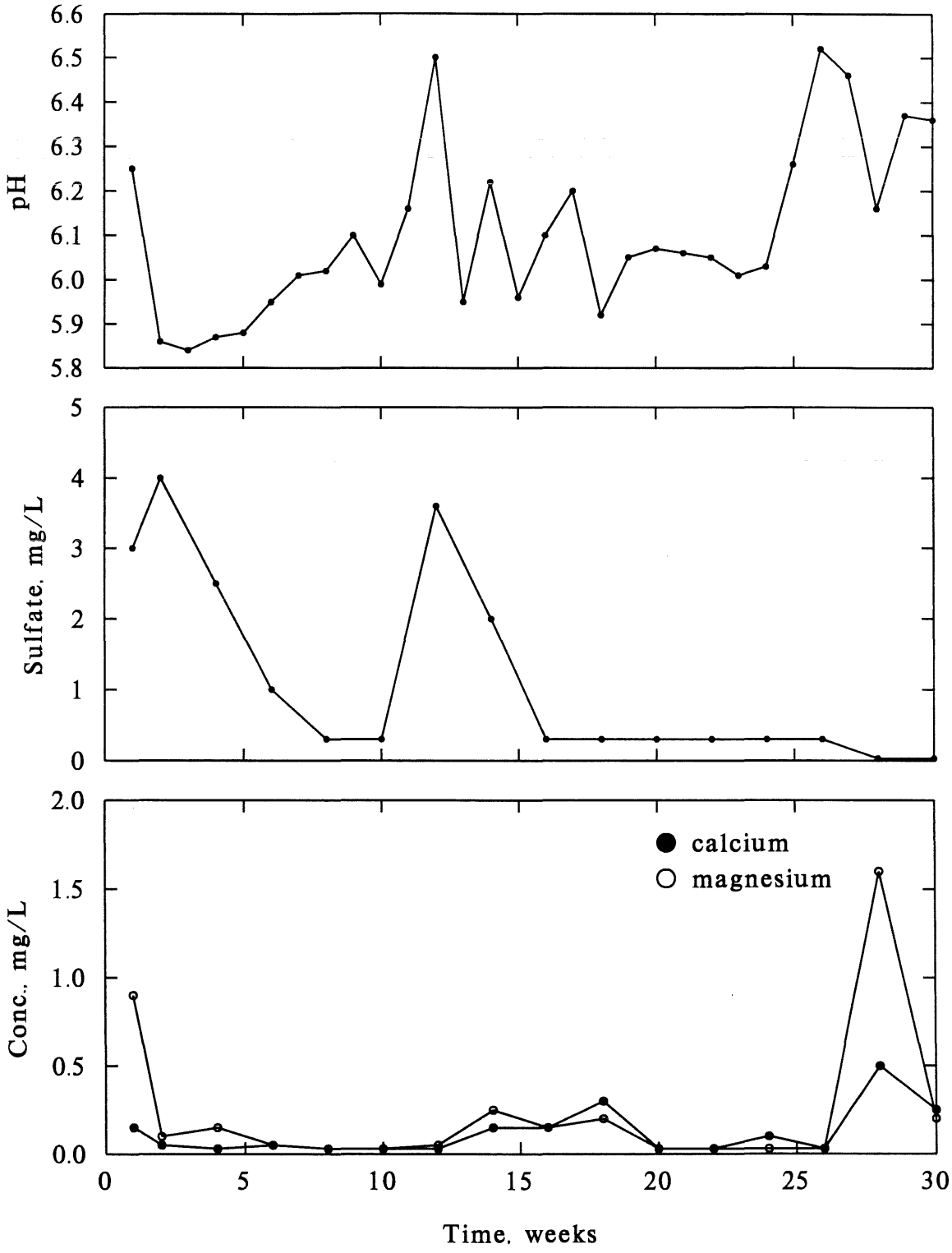

Table D9.1. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK3, reactor 11, 225 gram sample, +100/-35 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	198.2	35.0	0.031	0.031	11.70	0.010	0.010	3.70	0.003	0.003
2	119.7	45.0	0.024	0.055	12.90	0.007	0.017	4.15	0.002	0.005
3	182.5	.	0.024	0.079	.	0.008	0.026	.	0.003	0.008
4	186.5	27.4	0.023	0.102	10.35	0.009	0.034	3.35	0.003	0.011
5	186.1	.	0.018	0.120	.	0.008	0.042	.	0.003	0.014
6	189.1	16.3	0.014	0.133	9.15	0.008	0.050	3.00	0.003	0.016
7	193.5	.	0.015	0.148	.	0.008	0.058	.	0.003	0.019
8	190.9	16.0	0.014	0.162	9.65	0.008	0.066	3.20	0.003	0.022
9	183.8	.	0.013	0.174	.	0.008	0.074	.	0.003	0.024
10	191.7	14.7	0.013	0.187	10.15	0.009	0.083	3.45	0.003	0.027
11	188.1	.	0.011	0.198	.	0.009	0.091	.	0.003	0.030
12	196.4	9.8	0.009	0.206	11.70	0.010	0.102	4.65	0.004	0.035
13	186.1	.	0.013	0.219	.	0.009	0.111	.	0.003	0.038
14	192.6	23.0	0.020	0.239	11.45	0.010	0.120	4.05	0.003	0.041
15	191.4	.	0.015	0.254	.	0.009	0.129	.	0.003	0.045
16	187.2	14.4	0.012	0.266	9.85	0.008	0.137	3.75	0.003	0.048
17	190.9	.	0.013	0.278	.	0.009	0.146	.	0.003	0.051
18	187.2	15.5	0.013	0.291	10.40	0.009	0.155	4.00	0.003	0.054
19	191.2	.	0.013	0.304	.	0.009	0.163	.	0.003	0.058
20	185.3	14.4	0.012	0.316	10.10	0.008	0.171	3.90	0.003	0.061
21	190.3	.	0.011	0.327	.	0.008	0.180	.	0.003	0.064
22	196.5	11.7	0.010	0.337	10.50	0.009	0.189	4.00	0.003	0.068
23	194.3	.	0.010	0.348	.	0.008	0.197	.	0.003	0.071
24	184.2	9.3	0.008	0.355	8.50	0.007	0.204	3.50	0.003	0.074
25	182.0	.	0.009	0.364	.	0.007	0.211	.	0.003	0.077
26	186.8	8.9	0.007	0.372	8.60	0.007	0.218	3.65	0.003	0.080
27	196.7	.	0.011	0.383	.	0.008	0.226	.	0.003	0.083
28	196.6	9.7	0.008	0.391	9.85	0.009	0.235	4.15	0.004	0.087
29	190.7	.	0.014	0.405	.	0.007	0.242	.	0.003	0.090
30	189.8	5.5	0.005	0.410	4.90	0.004	0.246	2.20	0.002	0.092

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.2. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 4, 225 gram sample, +100/-35 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	200.7	84.1	0.075	0.075	34.85	0.031	0.031	16.30	0.015	0.015
2	89.6	1050.0	0.418	0.493	265.00	0.106	0.137	130.00	0.052	0.066
3	175.9	.	0.391	0.884	.	0.100	0.237	.	0.048	0.114
4	185.0	292.0	0.240	1.124	75.00	0.062	0.299	33.90	0.028	0.142
5	182.2	.	0.210	1.334	.	0.054	0.353	.	0.025	0.168
6	181.4	152.0	0.123	1.457	39.95	0.032	0.385	18.15	0.015	0.182
7	187.8	.	0.151	1.607	.	0.040	0.425	.	0.018	0.200
8	190.6	148.0	0.125	1.733	39.50	0.033	0.458	16.30	0.014	0.214
9	186.2	.	0.120	1.853	.	0.033	0.492	.	0.015	0.228
10	193.4	99.6	0.086	1.939	30.50	0.026	0.518	13.35	0.011	0.240
11	195.5	.	0.104	2.043	.	0.031	0.549	.	0.014	0.254
12	191.8	94.8	0.081	2.123	32.00	0.027	0.576	14.40	0.012	0.266
13	184.1	.	0.094	2.217	.	0.028	0.605	.	0.013	0.279
14	185.0	104.8	0.086	2.304	31.50	0.026	0.631	13.70	0.011	0.290
15	191.1	.	0.096	2.399	.	0.028	0.659	.	0.013	0.303
16	192.1	98.2	0.084	2.483	29.70	0.025	0.684	13.20	0.011	0.314
17	185.4	.	0.081	2.565	.	0.025	0.709	.	0.011	0.325
18	183.7	65.3	0.053	2.618	21.40	0.017	0.726	9.60	0.008	0.333
19	186.7	.	0.074	2.692	.	0.023	0.750	.	0.010	0.343
20	197.7	71.8	0.063	2.755	25.05	0.022	0.772	10.30	0.009	0.352
21	178.6	.	0.065	2.820	.	0.022	0.794	.	0.009	0.361
22	162.6	47.4	0.034	2.854	20.35	0.015	0.808	8.30	0.006	0.367
23	155.6	.	0.052	2.906	.	0.018	0.826	.	0.008	0.375
24	142.0	45.6	0.029	2.935	19.10	0.012	0.838	8.15	0.005	0.380
25	179.3	.	0.060	2.995	.	0.019	0.858	.	0.009	0.389
26	294.4	24.9	0.033	3.027	8.25	0.011	0.869	3.75	0.005	0.394
27	127.4	.	0.058	3.085	.	0.017	0.886	.	0.008	0.402
28	198.7	81.7	0.072	3.157	25.45	0.022	0.908	10.35	0.009	0.411
29	183.1	.	0.140	3.298	.	0.040	0.948	.	0.020	0.431
30	185.6	53.9	0.044	3.342	18.80	0.016	0.964	7.85	0.006	0.438

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.3. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK4, reactor 23, 1000 gram sample, +1/4" / -3/4", uncovered.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	362.9	406.0	0.147	0.147	80.00	0.029	0.029	25.75	0.009	0.009
2	362.6	400.0	0.145	0.292	70.00	0.025	0.054	26.15	0.009	0.019
3	364.5	.	0.128	0.420	.	0.022	0.077	.	0.009	0.028
4	363.3	362.0	0.132	0.552	66.50	0.024	0.101	29.50	0.011	0.039
5	365.6	.	0.150	0.701	.	0.023	0.124	.	0.011	0.050
6	357.8	520.4	0.186	0.887	70.00	0.025	0.149	39.15	0.014	0.064
7	360.4	.	0.169	1.057	.	0.023	0.172	.	0.013	0.078
8	361.5	503.2	0.182	1.239	65.00	0.023	0.195	41.00	0.015	0.092
9	363.0	528.0	0.192	1.430	63.00	0.023	0.218	41.00	0.015	0.107
10	365.1	.	0.174	1.604	.	0.021	0.239	.	0.013	0.121
11	363.1	.	0.167	1.771	.	0.020	0.259	.	0.012	0.133
12	363.3	470.0	0.171	1.941	52.50	0.019	0.278	31.75	0.012	0.144
13	362.0	.	0.162	2.103	.	0.018	0.296	.	0.012	0.156
14	362.0	476.2	0.172	2.276	51.00	0.018	0.315	37.00	0.013	0.170
15	364.0	.	0.130	2.405	.	0.014	0.329	.	0.010	0.179
16	361.8	204.6	0.074	2.479	20.65	0.007	0.336	14.40	0.005	0.184
17	361.8	.	0.113	2.593	.	0.013	0.349	.	0.008	0.192
18	354.1	375.1	0.133	2.725	44.30	0.016	0.365	24.00	0.008	0.201
19	356.1	.	0.113	2.839	.	0.013	0.377	.	0.008	0.209
20	454.5	252.4	0.115	2.954	25.20	0.011	0.389	18.05	0.008	0.217
21	362.8	.	0.118	3.072	.	0.012	0.401	.	0.009	0.226
22	362.1	378.6	0.137	3.209	38.50	0.014	0.415	29.70	0.011	0.236
23	350.5	.	0.144	3.352	.	0.015	0.430	.	0.010	0.247
24	360.1	524.9	0.189	3.542	53.00	0.019	0.449	34.00	0.012	0.259
25	357.9	.	0.144	3.686	.	0.014	0.463	.	0.010	0.269
26	365.9	337.6	0.124	3.809	27.00	0.010	0.472	26.00	0.010	0.279
27	356.4	.	0.131	3.940	.	0.012	0.484	.	0.010	0.289
28	361.9	420.8	0.152	4.092	38.00	0.014	0.498	33.00	0.012	0.301
29	359.9	.	0.124	4.216	.	0.012	0.510	.	0.010	0.311
30	366.9	375.5	0.138	4.354	36.00	0.013	0.523	32.00	0.012	0.323

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.4. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 22, 75 gram sample, +270/-100 mesh, uncovered.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	168.7	35.0	0.079	0.079	7.05	0.016	0.016	4.50	0.010	0.010
2	166.2	63.4	0.140	0.219	12.40	0.027	0.043	7.75	0.017	0.027
3	166.3	.	0.107	0.327	.	0.021	0.064	.	0.012	0.039
4	165.0	47.2	0.104	0.430	9.55	0.021	0.085	5.00	0.011	0.050
5	165.0	.	0.109	0.539	.	0.020	0.105	.	0.011	0.061
6	166.6	55.8	0.124	0.663	10.05	0.022	0.128	4.75	0.011	0.072
7	169.1	.	0.109	0.772	.	0.019	0.146	.	0.010	0.082
8	172.9	41.4	0.095	0.867	6.50	0.015	0.161	3.55	0.008	0.090
9	166.4	41.6	0.092	0.960	6.80	0.015	0.176	6.10	0.014	0.104
10	166.0	.	0.103	1.063	.	0.016	0.193	.	0.012	0.115
11	166.6	.	0.104	1.167	.	0.016	0.209	.	0.010	0.126
12	166.1	43.8	0.097	1.264	6.80	0.015	0.224	3.65	0.008	0.134
13	165.3	.	0.105	1.369	.	0.015	0.239	.	0.009	0.143
14	166.5	45.7	0.101	1.471	6.25	0.014	0.253	4.15	0.009	0.152
15	166.2	.	0.110	1.580	.	0.015	0.268	.	0.010	0.162
16	166.9	48.8	0.109	1.689	5.80	0.013	0.281	4.30	0.010	0.172
17	168.0	.	0.100	1.789	.	0.013	0.294	.	0.009	0.181
18	167.9	28.7	0.064	1.853	3.95	0.009	0.303	2.85	0.006	0.187
19	168.6	.	0.092	1.945	.	0.012	0.315	.	0.008	0.196
20	166.4	35.5	0.079	2.024	4.15	0.009	0.324	3.25	0.007	0.203
21	165.7	.	0.095	2.119	.	0.012	0.337	.	0.009	0.212
22	167.2	31.7	0.071	2.189	3.95	0.009	0.345	3.25	0.007	0.219
23	165.9	.	0.103	2.293	.	0.013	0.359	.	0.009	0.228
24	167.9	40.1	0.090	2.382	4.70	0.011	0.369	3.40	0.008	0.236
25	199.2	.	0.135	2.517	.	0.018	0.387	.	0.013	0.248
26	168.6	31.0	0.070	2.587	3.90	0.009	0.396	4.45	0.010	0.258
27	166.5	.	0.124	2.711	.	0.018	0.414	.	0.012	0.270
28	167.6	23.4	0.052	2.763	2.85	0.006	0.420	2.55	0.006	0.276
29	163.8	.	0.195	2.958	.	0.032	0.452	.	0.015	0.291
30	171.8	25.1	0.057	3.016	2.95	0.007	0.459	2.70	0.006	0.297

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.5. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 17, 225 gram sample, +100/-35 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	199.7	52.8	0.047	0.047	12.70	0.011	0.011	9.35	0.008	0.008
2	119.8	63.4	0.034	0.081	11.85	0.006	0.018	8.25	0.004	0.013
3	180.6	.	0.045	0.126	.	0.012	0.029	.	0.008	0.020
4	191.6	56.4	0.048	0.174	22.05	0.019	0.048	13.40	0.011	0.032
5	193.7	.	0.060	0.234	.	0.015	0.063	.	0.009	0.041
6	188.2	94.0	0.079	0.312	18.75	0.016	0.079	10.60	0.009	0.050
7	192.0	.	0.072	0.384	.	0.014	0.093	.	0.009	0.059
8	193.0	95.2	0.082	0.466	17.15	0.015	0.108	10.75	0.009	0.068
9	187.9	.	0.070	0.536	.	0.012	0.120	.	0.008	0.076
10	189.7	86.1	0.073	0.609	13.00	0.011	0.131	9.15	0.008	0.084
11	194.0	.	0.066	0.675	.	0.010	0.141	.	0.008	0.091
12	192.3	70.4	0.060	0.735	10.90	0.009	0.151	8.70	0.007	0.099
13	189.4	.	0.058	0.793	.	0.009	0.159	.	0.007	0.105
14	191.6	69.0	0.059	0.852	8.60	0.007	0.166	7.00	0.006	0.111
15	191.4	.	0.053	0.905	.	0.007	0.173	.	0.006	0.117
16	198.3	54.4	0.048	0.953	6.60	0.006	0.179	6.30	0.006	0.123
17	188.2	.	0.047	1.000	.	0.006	0.185	.	0.005	0.128
18	190.2	51.5	0.044	1.043	5.35	0.005	0.190	5.30	0.004	0.132
19	195.9	.	0.052	1.095	.	0.006	0.196	.	0.006	0.139
20	190.0	70.3	0.059	1.154	8.30	0.007	0.203	9.10	0.008	0.146
21	192.4	.	0.049	1.203	.	0.006	0.209	.	0.006	0.153
22	199.7	48.7	0.043	1.247	5.50	0.005	0.213	6.80	0.006	0.159
23	189.5	.	0.039	1.285	.	0.005	0.218	.	0.005	0.164
24	189.0	34.4	0.029	1.314	3.80	0.003	0.221	4.85	0.004	0.168
25	184.3	.	0.033	1.348	.	0.004	0.225	.	0.005	0.172
26	191.4	38.1	0.032	1.380	4.25	0.004	0.229	5.00	0.004	0.177
27	187.8	.	0.037	1.417	.	0.004	0.233	.	0.005	0.182
28	196.3	47.4	0.041	1.458	4.85	0.004	0.237	6.50	0.006	0.187
29	184.2	.	0.040	1.499	.	0.005	0.243	.	0.006	0.194
30	191.0	49.8	0.042	1.541	5.55	0.005	0.247	9.30	0.008	0.201

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.6. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 24, 1000 gram sample, +35/-10 mesh.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	174.9	98.8	0.017	0.017	14.50	0.003	0.003	10.05	0.002	0.002
2	161.8	98.1	0.016	0.033	17.20	0.003	0.005	12.00	0.002	0.004
3	160.5	.	0.023	0.057	.	0.003	0.009	.	0.003	0.006
4	154.1	138.7	0.021	0.078	22.85	0.004	0.012	17.20	0.003	0.009
5	189.0	.	0.027	0.105	.	0.004	0.017	.	0.003	0.012
6	190.9	129.2	0.025	0.130	24.05	0.005	0.021	17.25	0.003	0.015
7	183.9	.	0.026	0.156	.	0.004	0.026	.	0.003	0.018
8	178.8	134.4	0.024	0.180	23.35	0.004	0.030	13.50	0.002	0.021
9	168.9	.	0.023	0.203	.	0.004	0.034	.	0.003	0.023
10	170.7	128.6	0.022	0.225	20.70	0.004	0.037	15.30	0.003	0.026
11	165.2	.	0.023	0.248	.	0.004	0.041	.	0.003	0.029
12	174.5	157.0	0.027	0.276	26.40	0.005	0.046	19.10	0.003	0.032
13	178.7	.	0.025	0.301	.	0.004	0.050	.	0.003	0.035
14	173.1	123.0	0.021	0.322	21.35	0.004	0.053	14.50	0.003	0.037
15	172.7	.	0.021	0.343	.	0.004	0.057	.	0.002	0.040
16	190.6	118.2	0.023	0.366	19.30	0.004	0.061	13.60	0.003	0.042
17	207.9	.	0.022	0.388	.	0.004	0.064	.	0.003	0.045
18	193.2	88.4	0.017	0.405	13.30	0.003	0.067	9.95	0.002	0.047
19	189.7	.	0.018	0.423	.	0.003	0.069	.	0.002	0.049
20	180.8	91.1	0.016	0.440	13.75	0.002	0.072	8.25	0.001	0.050
21	168.6	.	0.016	0.456	.	0.002	0.074	.	0.002	0.052
22	172.2	94.7	0.016	0.472	13.70	0.002	0.077	9.95	0.002	0.054
23	177.3	.	0.018	0.490	.	0.003	0.079	.	0.002	0.055
24	158.3	108.7	0.017	0.507	15.60	0.002	0.082	11.40	0.002	0.057
25	158.5	.	0.017	0.524	.	0.002	0.084	.	0.002	0.059
26	164.2	115.1	0.019	0.543	16.75	0.003	0.087	12.75	0.002	0.061
27	164.8	.	.	.	.	.	.	.	.	.
28	148.8	.	.	.	.	.	.	.	.	.
29	165.7	.	.	.	.	.	.	.	.	.
30	147.5	.	.	.	.	.	.	.	.	.

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.7. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: RK5, reactor 25, 1000 gram sample, +1/4" / -3/4".

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	286.5	27.3	0.008	0.008	4.70	0.001	0.001	1.70	0.000	0.000
2	283.8	22.5	0.006	0.014	4.20	0.001	0.003	3.10	0.001	0.001
3	279.8	.	0.007	0.021	.	0.001	0.004	.	0.001	0.002
4	283.7	14.0	0.004	0.025	2.85	0.001	0.005	1.75	0.000	0.003
5	284.9	.	0.005	0.030	.	0.001	0.005	.	0.001	0.003
6	284.9	13.3	0.004	0.034	1.85	0.001	0.006	1.30	0.000	0.004
7	282.0	.	0.004	0.039	.	0.001	0.007	.	0.000	0.004
8	285.0	13.1	0.004	0.042	2.05	0.001	0.007	1.15	0.000	0.004
9	280.7	.	0.004	0.046	.	0.001	0.008	.	0.000	0.005
10	281.5	11.2	0.003	0.049	2.00	0.001	0.008	1.85	0.001	0.005
11	281.3	.	0.003	0.053	.	0.001	0.009	.	0.000	0.006
12	278.4	10.2	0.003	0.055	1.55	0.000	0.009	1.15	0.000	0.006
13	278.0	.	0.003	0.058	.	0.000	0.010	.	0.000	0.006
14	276.2	10.3	0.003	0.061	1.70	0.000	0.010	1.10	0.000	0.007
15	276.7	.	0.003	0.064	.	0.000	0.011	.	0.000	0.007
16	280.9	9.0	0.003	0.066	1.45	0.000	0.011	1.05	0.000	0.007
17	279.3	.	0.002	0.069	.	0.000	0.012	.	0.000	0.008
18	284.1	7.9	0.002	0.071	1.25	0.000	0.012	1.05	0.000	0.008
19	273.7	.	0.002	0.073	.	0.000	0.012	.	0.000	0.008
20	284.4	8.4	0.002	0.075	1.25	0.000	0.013	0.90	0.000	0.008
21	284.3	.	0.002	0.077	.	0.000	0.013	.	0.000	0.009
22	289.0	8.4	0.002	0.080	1.35	0.000	0.013	1.05	0.000	0.009
23	277.3	.	0.002	0.082	.	0.000	0.014	.	0.000	0.009
24	284.4	8.6	0.002	0.084	1.55	0.000	0.014	1.85	0.001	0.010
25	279.3	.	0.002	0.086	.	0.000	0.014	.	0.000	0.010
26	285.7	8.7	0.002	0.088	1.40	0.000	0.015	1.00	0.000	0.011
27	281.9	.	.	.	.	.	.	.	.	.
28	279.4	.	.	.	.	.	.	.	.	.
29	278.7	.	.	.	.	.	.	.	.	.
30	276.4	.	.	.	.	.	.	.	.	.

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.

Table D9.8. Cumulative mass release[1] of sulfate, calcium, and magnesium for the Particle Size Experiment: Reactor 21, blank.

Week	Volume	Sulfate			Calcium			Magnesium		
	(mL)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)	(mg/L)	(mg/g)	(mg/g)
1	297.8	3.0	0.893	0.893	0.15	0.045	0.045	0.90	0.268	0.268
2	295.4	4.0	1.182	2.075	0.05	0.015	0.060	0.10	0.030	0.298
3	293.5	.	1.336	3.411	.	0.102	0.162	.	0.110	0.408
4	.[2]	2.5	0.735	4.146	<0.05	0.009	0.171	0.15	0.044	0.452
5	294.7	.	1.016	5.162	.	0.089	0.259	.	0.084	0.536
6	296.6	<2.0	0.297	5.458	0.05	0.015	0.274	0.05	0.015	0.551
7	292.5	.	0.749	6.207	.	0.083	0.357	.	0.064	0.615
8	295.2	<0.5	0.089	6.296	<0.05	0.009	0.366	<0.05	0.009	0.624
9	295.9	.	0.674	6.970	.	0.082	0.448	.	0.059	0.683
10	293.5	<0.5	0.088	7.058	<0.05	0.009	0.457	<0.05	0.009	0.692
11	298.7	.	0.992	8.050	.	0.085	0.542	.	0.063	0.754
12	294.9	3.6	1.062	9.111	<0.05	0.009	0.551	0.05	0.015	0.769
13	296.3	.	1.177	10.288	.	0.100	0.651	.	0.085	0.855
14	294.3	2.0	0.589	10.877	0.15	0.044	0.695	0.25	0.074	0.928
15	294.3	.	0.915	11.792	.	0.119	0.814	.	0.100	1.028
16	297.3	<0.5	0.089	11.881	0.15	0.045	0.859	0.15	0.045	1.073
17	295.7	.	0.764	12.645	.	0.142	1.001	.	0.101	1.174
18	294.4	<0.5	0.088	12.733	0.30	0.088	1.090	0.20	0.059	1.233
19	295.8	.	0.785	13.518	.	0.142	1.232	.	0.095	1.328
20	195.7	<0.5	0.059	13.576	<0.05	0.006	1.238	<0.05	0.006	1.334
21	297.1	.	0.856	14.432	.	0.132	1.369	.	0.087	1.421
22	298.1	<0.0	0.089	14.522	<0.05	0.009	1.378	<0.05	0.009	1.430
23	294.8	.	0.961	15.483	.	0.155	1.533	.	0.099	1.528
24	259.0	<0.0	0.078	15.560	0.10	0.026	1.559	<0.05	0.008	1.536
25	284.4	.	1.108	16.668	.	0.186	1.745	.	0.126	1.663
26	300.7	<0.5	0.090	16.758	<0.05	0.009	1.754	<0.05	0.009	1.672
27	298.6	.	1.522	18.280	.	0.308	2.062	.	0.323	1.995
28	304.6	<0.0	0.009	18.289	0.50	0.152	2.214	1.60	0.487	2.482
29	291.6	.	2.641	20.930	.	0.552	2.766	.	0.474	2.957
30	296.7	<0.0	0.009	20.939	0.25	0.074	2.840	0.20	0.059	3.016

[1] Missing concentrations calculated by quadratically smoothing preceding and subsequent values.
[2] Missing volume estimated as average of immediately preceding and subsequent values.

Figure D9.9. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 11, size +100/ −35 mesh.

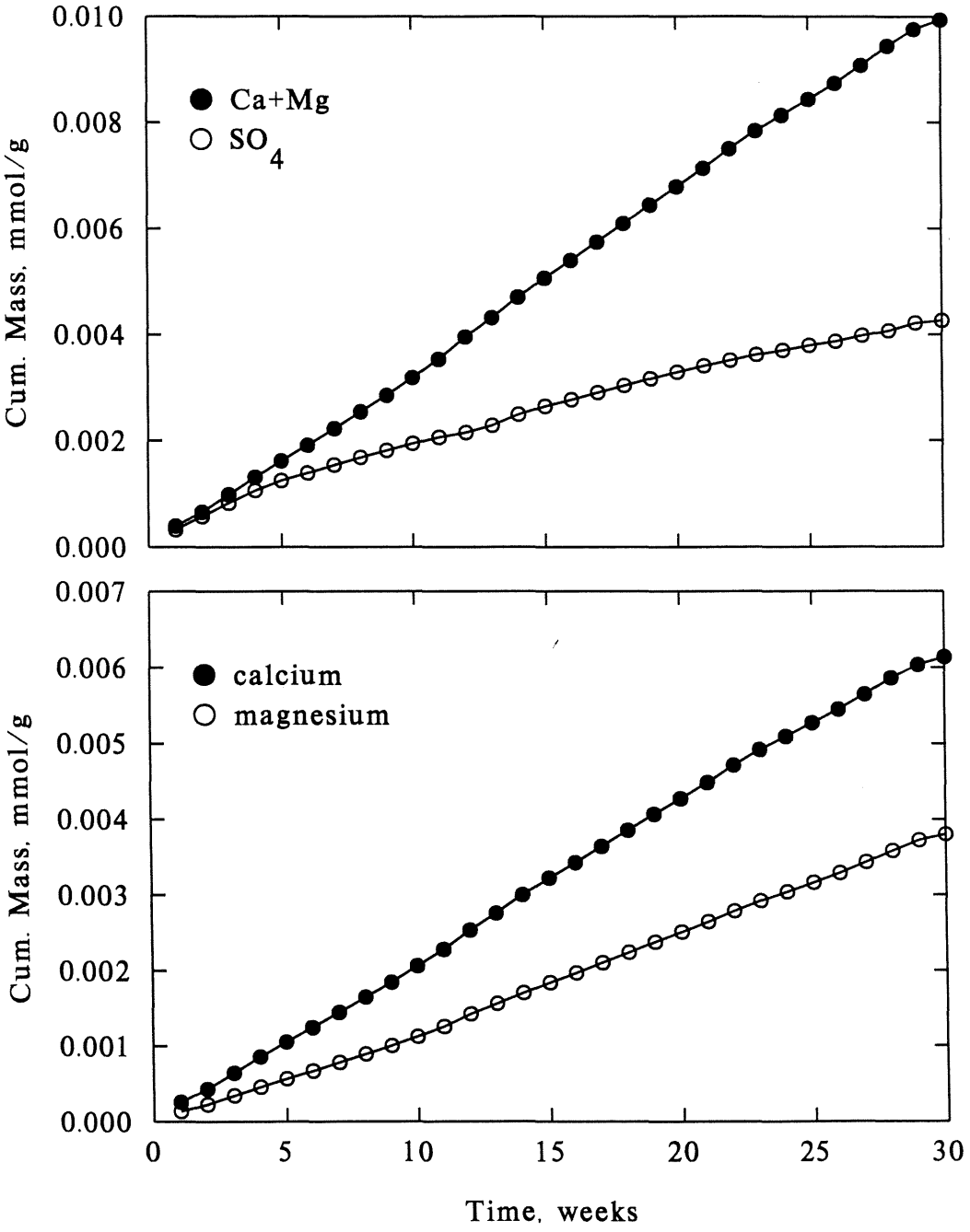

Figure D9.10. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 4, size +100/ −35 mesh.

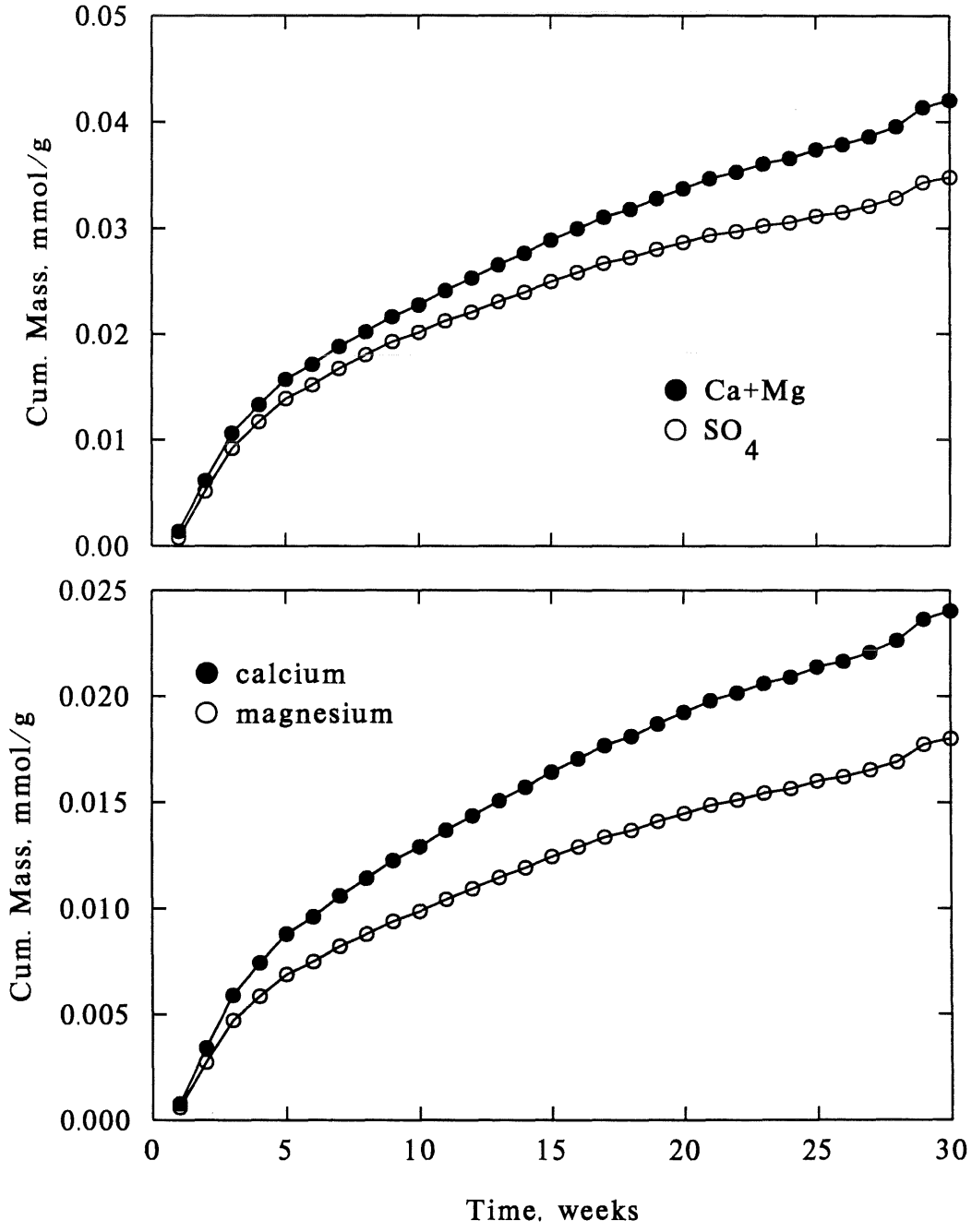

Figure D9.11. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 23, size +1/4" /-3/4".

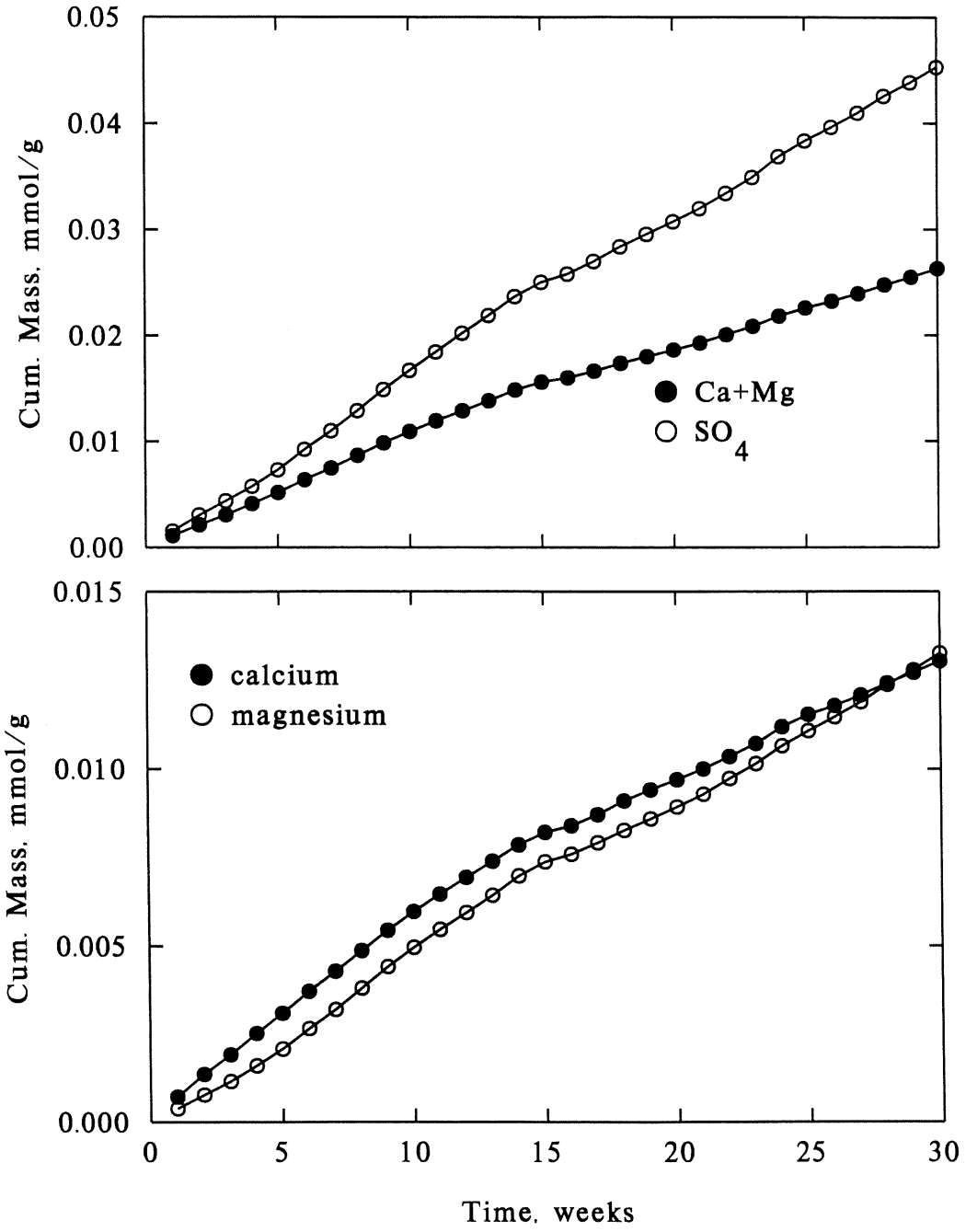

Figure D9.12. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 22, size +270/ −100 mesh.

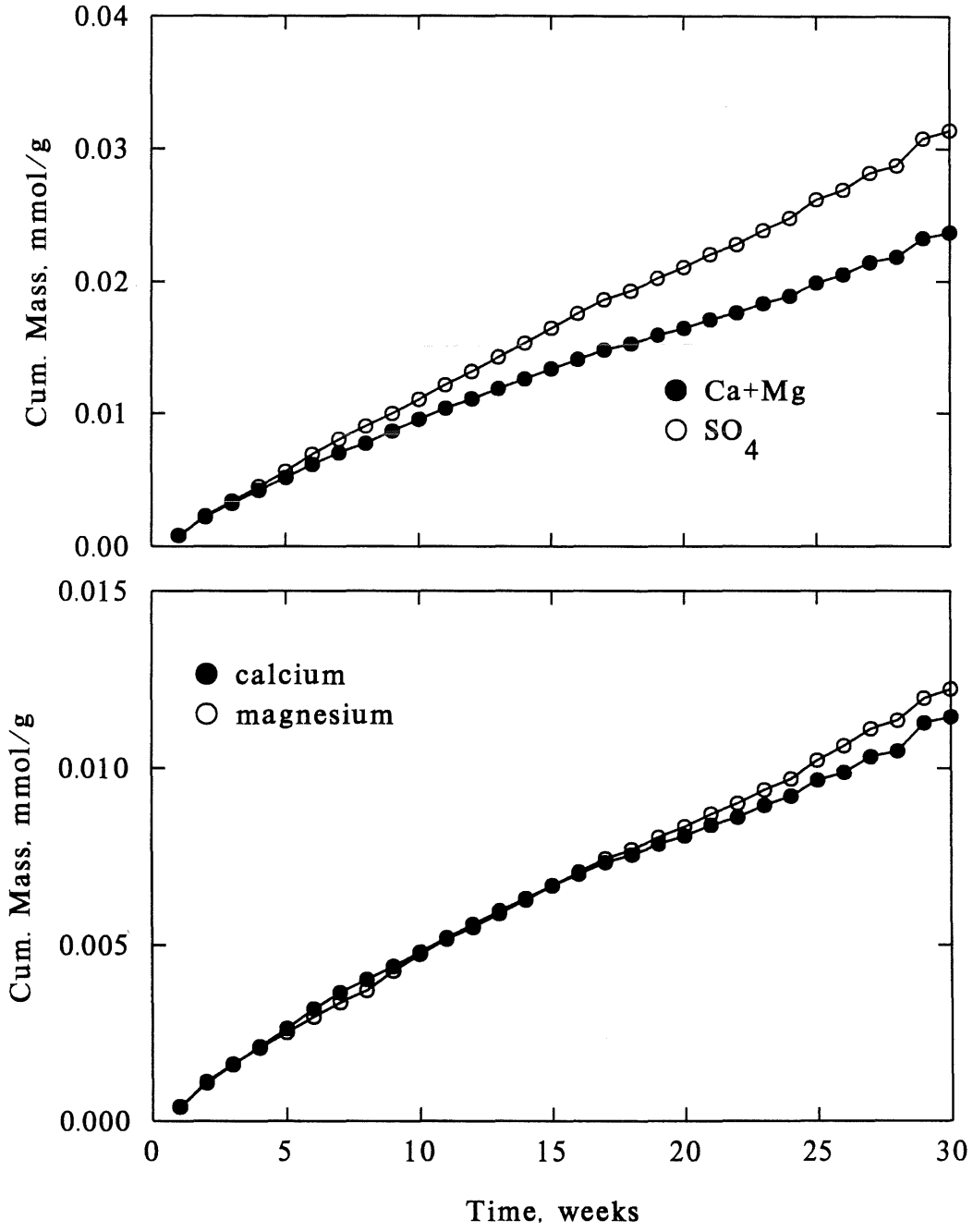

Figure D9.13. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 17, size +100/−35 mesh.

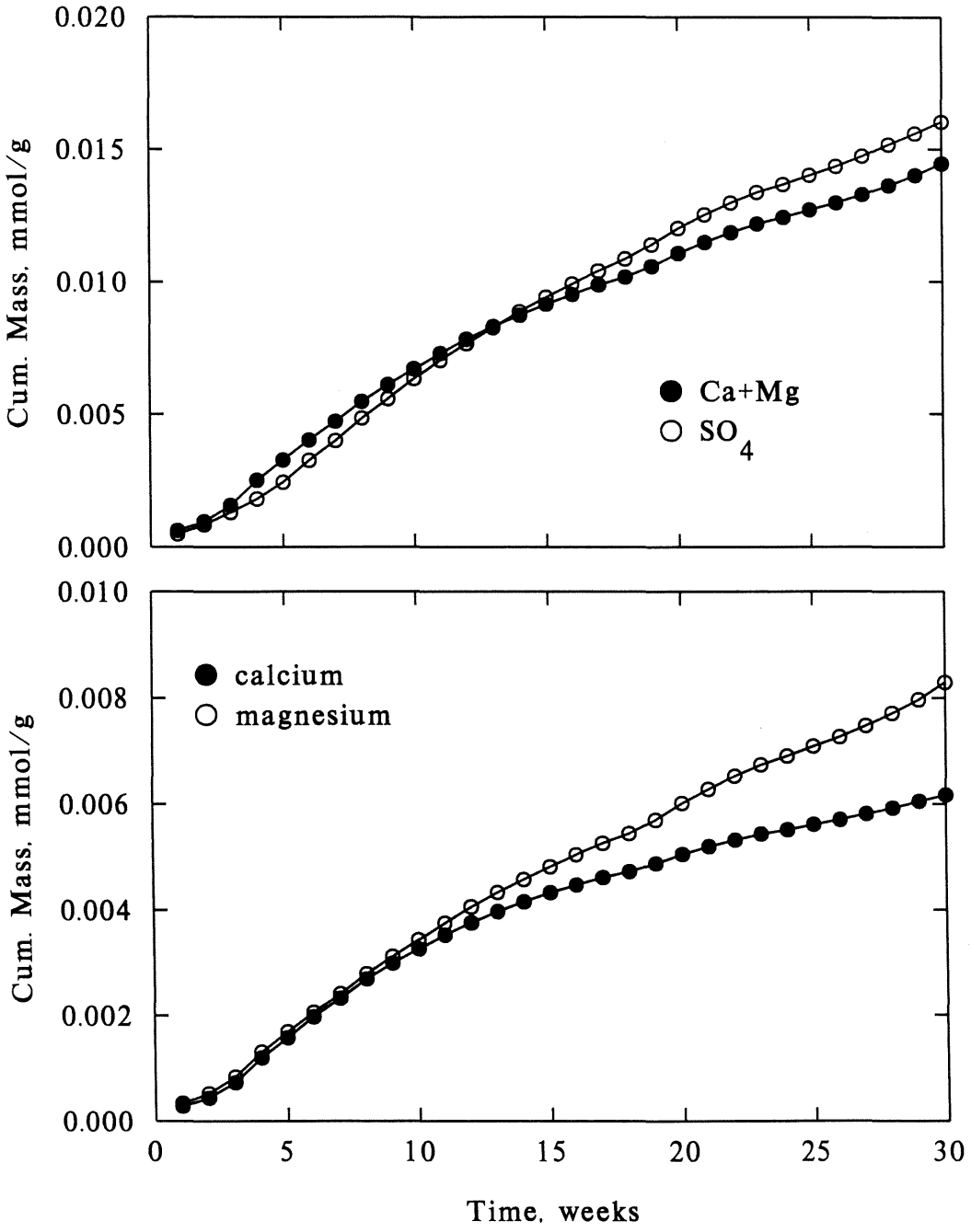

Figure D9.14. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 24, size +35/−10 mesh.

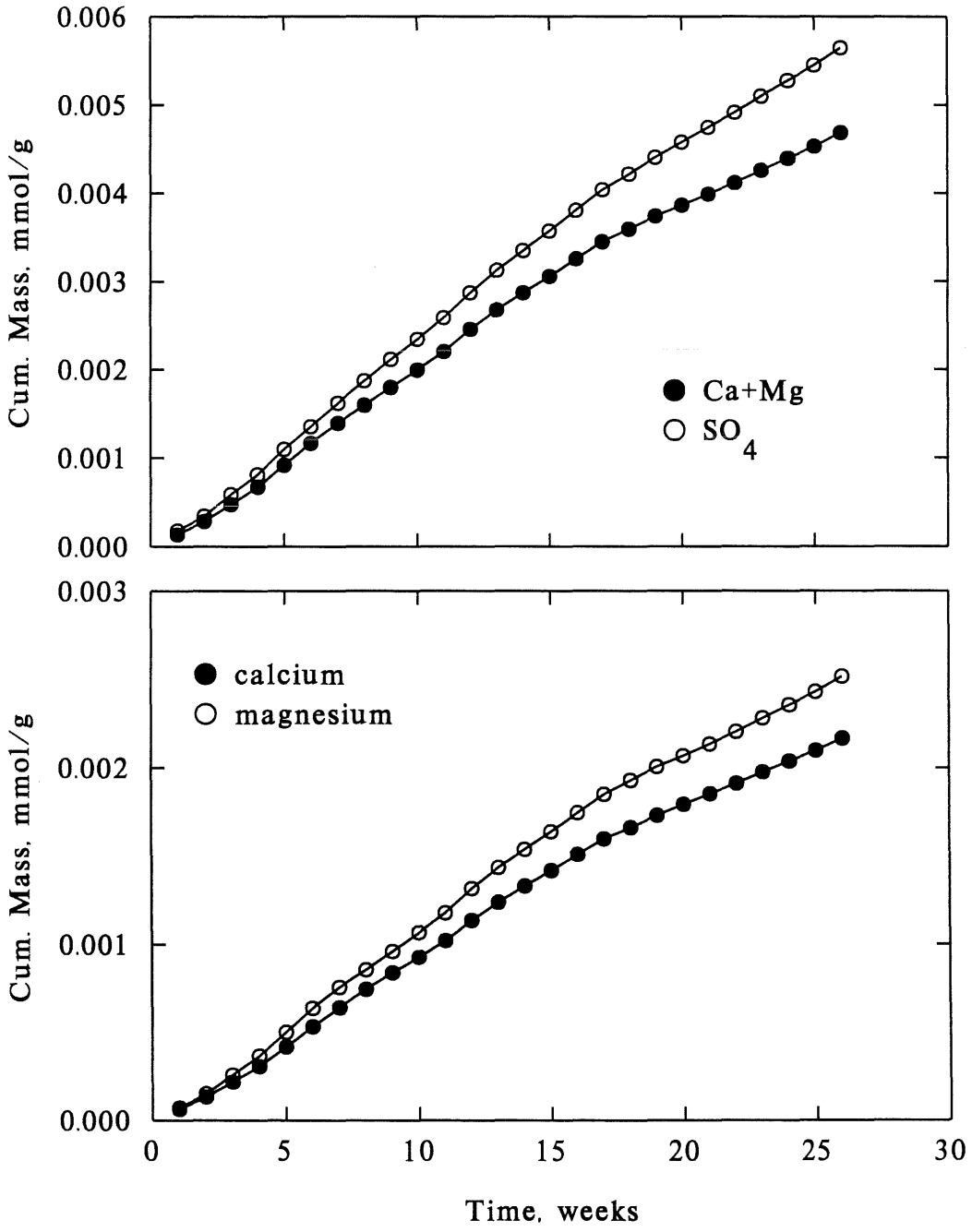

Figure D9.15. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 25, size +1/4"/ -3/4".

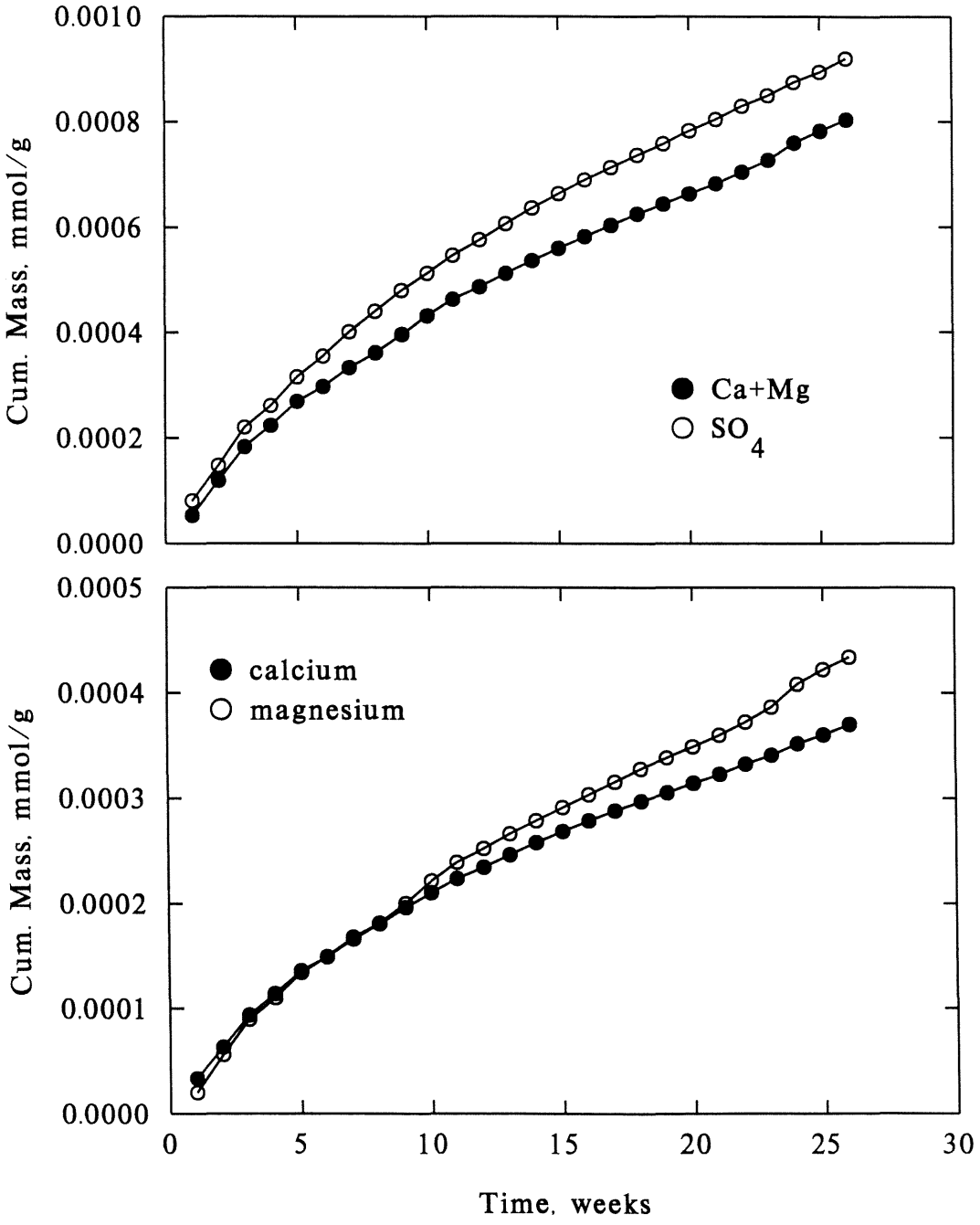

Figure D9.16. Cumulative mass release for sulfate, calcium, magnesium, and calcium plus magnesium for the Particle Size Experiment: Reactor 21, blank.

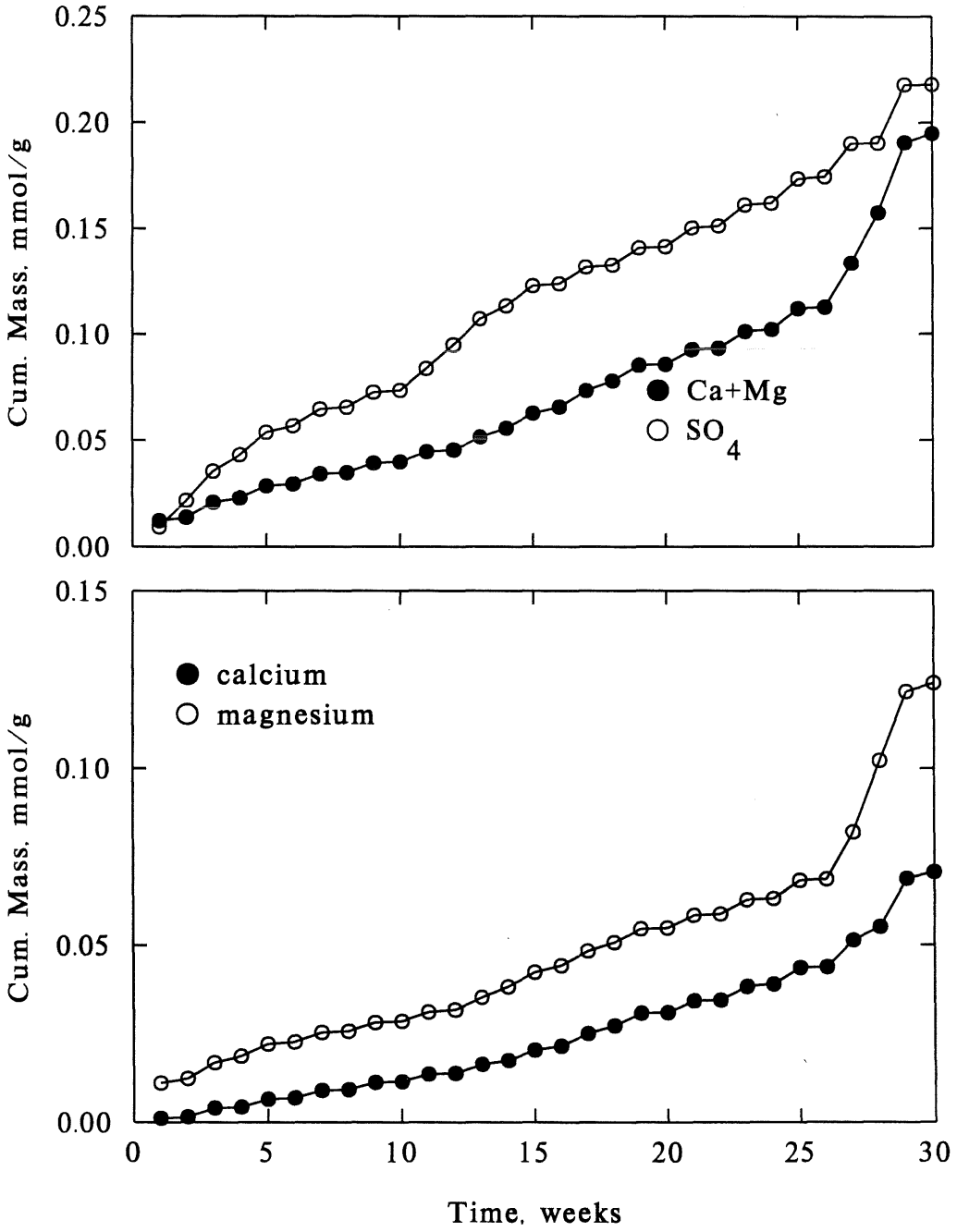

Table D10.1 Rates of release of sulfate, calcium plus magnesium, calcium, and magnesium for the Particle Size Experiment.

Solid	Particle Size (mesh)[1]	Period (weeks)	No. of Measured Values	Sulfate		Calcium+Magnesium		Calcium		Magnesium		Ca+Mg / SO_4
				m*	r^2	m*	r^2	m*	r^2	m*	r^2	
RK3	+100/-35	0-4	4	0.247	1.000	0.309	0.997	0.200	0.997	0.108	0.997	1.251
		5-14	10	0.132	0.996	0.343	0.997	0.216	0.998	0.127	0.995	2.599
		15-30	16	0.108	0.994	0.331	0.999	0.198	0.998	0.133	1.000	3.065
RK4	+100/-35	0-4	5	3.278	0.977	3.582	0.976	2.009	0.978	1.572	0.973	1.093
		5-14	9	1.073	0.991	1.301	0.997	0.754	0.997	0.547	0.997	1.213
		15-30	16	0.603	0.987	0.826	0.992	0.478	0.993	0.347	0.991	1.370
	+¼"/-¾"	0-4	5	3.278	0.977	3.582	0.976	2.009	0.978	1.572	0.973	1.093
		5-14	9	1.073	0.991	1.301	0.997	0.754	0.997	0.547	0.997	1.213
		15-30	16	0.603	0.987	0.826	0.992	0.478	0.993	0.347	0.991	1.370
RK5	+270/-100	0-14	14	1.096	0.999	0.887	0.995	0.447	0.992	0.441	0.997	0.809
		15-30	16	0.984	0.996	0.681	0.994	0.311	0.991	0.370	0.995	0.692
	+100/-35	0-4	4	0.444	0.994	0.627	0.956	0.305	0.950	0.322	0.961	1.412
		5-9	5	0.789	1.000	0.714	0.999	0.355	0.998	0.360	1.000	0.905
		10-14	5	0.629	0.999	0.507	0.997	0.222	0.996	0.286	0.998	0.806
		15-30	16	0.434	0.993	0.347	0.996	0.121	0.993	0.226	0.997	0.800
	+35/-10	0-14	14	0.249	0.999	0.215	0.999	0.100	0.999	0.115	0.999	0.864
		15-26	12	0.183	0.998	0.142	0.996	0.066	0.996	0.076	0.996	0.776
	+¼"/-¾"	0-8	8	0.050	0.989	0.043	0.976	0.021	0.978	0.022	0.973	0.860
		9-15	6	0.031	0.999	0.028	0.994	0.012	0.998	0.015	0.989	0.903
		15-30	12	0.023	1.000	0.022	0.997	0.009	0.999	0.013	0.992	0.957

[1] Unless otherwise indicated

* m = slope = release in μmol/gram/week

Table D10.2. Percent depletion of acid production potential (APP) for the Particle Size Experiment for weeks 0 - 30.

Solid	Particle Size (mesh)[1]	Initial Total Sulfur	Initial APP	APP Released	Percent Depletion
		%	mg $CaCO_3$/g	mg as $CaCO_3$	
RK3	+100/-35	2.34	73.13	95.99	0.58
RK4	+100/-35	2.61	81.56	782.47	4.26
	+¼"/-¾"	3.46	108.13	4530.70	4.19
RK5	+270/-100	0.87	27.19	235.38	11.54
	+100/-35	1.29	40.31	360.80	3.98
	+35/-10	0.88	27.50	565.04	2.05
	+¼"/-¾"	0.93	29.06	91.57	0.32

[1] Unless otherwise indicated.

Table D10.3. Percent depletion of neutralization potential (NP) for the Particle Size Experiment for weeks 0 - 30.

Solid	Particle Size (mesh)[1]	Sample Mass	Initial NP[2]	Calcium Release	Magnesium Release	NP Released	Percent Depletion
		g	mg/g	mg/g	mg/g	mg as $CaCO_3$/g	
RK3	+100/-35	75	36.37	0.25	0.09	0.99	2.73
RK4	+100/-35	75	38.19	0.96	0.44	4.21	11.0
	+¼"/-¾"	1000	42.96	0.52	0.32	2.63	6.13
RK5	+270/-100	75	2.27	0.46	0.30	2.37	104
	+100/-35	75	1.36	0.25	0.20	1.44	106
	+35/-10	1000	1.14	0.09	0.06	0.47	41.2
	+¼"/-¾"	1000	0.11	0.02	0.01	0.08	72.7

[1] Unless otherwise indicated.
[2] Initial NP = Initial CO_2 content × 22.73.

Table D11.1. Solid phase analysis for Particle Size Experiment: Chemical assays (Midland Research Center).

Solid	Size Fraction (mesh)[1]	Assays (%)		
		S (total)	S as SO_4	CO_2
RK3	-270	0.95	0.16	0.96
	-100/+270	1.98	0.04	1.32
	-35/+100	2.34	0.03	1.60
	-10/+35	1.90	0.05	1.73
	-¼"/+10	1.50	0.04	1.46
RK4	-270	2.83	0.28	0.88
	-100/+270	3.01	0.08	1.64
	-35/+100	2.61	0.07	1.68
	-10/+35	2.79	0.11	1.40
	-¼"/+10	3.52	0.13	1.27
	-¾"/+¼"	3.46	0.14	1.89
RK5	-270	1.51	0.08	0.32
	-100/+270	0.87	0.08	0.10
	-35/+100	1.29	0.09	0.06
	-10/+35	0.88	0.07	0.05
	-¼"/+10	0.83	0.06	0.09
	-¾"/+¼"	0.93	0.03	<0.01

[1] Unless otherwise indicated

Table D11.2. Solid phase analysis for Particle Size Experiment: 6N hydrochloric acid leach (Midland Research Center).

Solid	Size Fraction (mesh)[1]	Assays (%)				
		S (total)	Fe	CaO	MgO	SiO_2
RK3	-270	0.18	1.13	0.39	0.15	0.07
	-100/+270	0.02	1.09	0.22	0.15	0.03
	-35/+100	0.01	0.94	0.24	0.15	0.02
	-10/+35	0.01	0.83	0.29	0.15	0.01
	-¼"/+10	0.01	0.51	0.11	0.08	<0.01
RK4	-270	0.29	0.47	1.13	0.60	0.08
	-100/+270	0.06	0.37	1.54	0.82	0.06
	-35/+100	0.06	0.30	1.50	0.77	0.04
	-10/+35	0.09	0.26	1.25	0.65	0.02
	-¼"/+10	0.05	0.18	1.24	0.67	0.01
	-¾"/+¼"	0.02	0.05	0.07	0.03	<0.01
RK5	-270	0.06	3.13	0.90	2.23	0.58
	-100/+270	0.02	1.68	0.41	1.14	0.36
	-35/+100	0.01	1.52	0.33	1.01	0.29
	-10/+35	0.01	0.89	0.27	0.63	0.16
	-¼"/+10	<0.01	0.37	0.21	0.29	0.06
	-¾"/+¼"	<0.01	0.11	0.05	0.07	0.02

[1] Unless otherwise indicated

Table D11.3. Solid phase analysis for Particle Size Experiment: Acid producing and acid neutralizing minerals (Midland Research Center).

Solid	Acid Producing Minerals	Acid Neutralizing Minerals	
		Carbonates	Other
RK3	pyrite other sulfides	calcite siderite	chlorite mica iron oxides
RK4	pyrite other sulfides	dolomite	chlorite clay mica iron oxides
RK5	pyrrhotite cubanite	calcite	chlorite mica serpentine iron oxides

APPENDIX E

QUALITY ASSURANCE AND QUALITY CONTROL

Table E1.1.EPA quality assurance summary, weeks 0 - 134.

Statistic	Calcium		Magnesium		Sulfate	
	% RR[1]	% Recovery[2]	% RR	% Recovery	% RR	% Recovery
n[3]	121	121	121	120	36	59
min	0	95.3	0	95.3	0	83
max	28.57	111.8	66.67	109.0	40.80	137
mean	2.65	101.03	3.09	100.57	5.01	99.12
SD[4]	4.23	2.42	8.06	2.21	7.12	12.02
95% CI[5]	6.65	96.2-105.8	7.76	96.2-105.0	12.56	75.0-123.3

[1] % RR = percent relative range of duplicate samples
[2] % Recovery = percent recovery of laboratory spikes
[3] n = number of samples in data set
[4] SD = standard deviation
[5] 95% CI = 95% confidence level

Table E1.2. Stem and leaf plot summary.

Statistic	Calcium	Magnesium	Sulfate
sample size	121	121	59
minimum	0.01	0.01	3.6
25th percentile	0.18	0.12	21.2
median	0.32	0.18	60.7
75th percentile	2.43	0.25	124.0
maximum	9.32	3.40	1900.0

Table E1.3. Particle Size Experiment quality assurance summary (weeks 0 - 30).

Statistics	Calcium		Magnesium		Sodium		Potassium		Sulfate	
	% RR[1]	% Recovery[2]	% RR	% Recovery	% RR	% Recovery	% RR	% Recovery	% RR	% Recovery
n[3]	42	41	42	41	36	35	34	33	33	35
min	0	93.30	0	93.80	0	97.00	0	87.00	0	93.00
max	100.0	104.0	21.92	104.7	33.33	104.6	66.67	103.6	9.375	116.0
mean	4.053	99.99	2.236	99.89	8.379	100.1	5.407	99.44	2.562	100.7
sd[4]	15.571	2.036	4.276	2.062	10.03	1.596	11.71	2.659	2.628	3.997
95% CI[5]	10.17	95.9-104.1	5.612	95.7-104.1	21.03	96.9-103.3	13.57	94.04-104.8	6.431	92.6-108.8

[1] % RR = percent relative range of duplicate samples
[2] % recovery = percent recovery of laboratory spikes
[3] n = number of samples in data set
[4] sd = standard deviation
[5] 95% CI = 95% confidence level

Table E1.4. Particle Size Experiment: Stem and leaf plot summary (weeks 0-30).

Statistic	Calcium	Magnesium	Sodium	Potassium	Sulfate
sample size	42	42	36	34	35
minimum	0.010	0.010	0.010	0.010	3.200
25th percentile	0.680	0.037	0.040	0.080	14.35
median	1.100	0.715	0.080	0.265	31.20
75th percentile	2.280	1.410	0.160	0.470	60.70
maximum	38.00	17.50	0.360	1.220	850.0

Table E1.5. Masked chemical standards.

A suite of metals in a range of known concentrations were sent with the water samples collected from the EPA prediction experiments as the masked standard portion of the quality control program. The following tables list the element, the known concentration in the standard, and the analytical result obtained by the independent laboratory (X-Ray Assay Laboratory).

Element	Std 1[1]	Lab	Std 2	Lab	Std 3	Lab	Std 4	Lab
antimony	20	30	40	20	100	30	200	180
cadmium	2	<2	4	<2	10	11	20	26
calcium	800	454	1600	2110	4000	4740	8000	9240
chromium	6	<5	12	9	30	26	60	58
cobalt	6	8	12	<5	30	13	60	43
copper	2	<2	4	<2	10	<2	20	10
iron	10	15	20	<10	50	23	100	140
lead	30	38	60	<30	150	49	300	300
magnesium	400	120	800	820	2000	2460	4000	4550
manganese	6	<5	12	<5	30	<5	60	32
molybdenum	6	21	12	8	30	15	60	17
nickel	6	16	12	<5	30	22	60	35
silver	10	<5	20	<5	100	<5	200	<5
sodium	20	40	40	60	100	240	200	740
titanium	6	<5	12	<5	30	31	60	59
vanadium	10	<10	20	11	50	49	100	107
zinc	6	6	12	<5	30	28	60	76

[1] concentrations in parts per billion

Table E1.6. Masked chemical standards (continued).

Element	Std 5[1]	Lab	Std 6	Lab	Std 7	Lab
antimony	400	417	1000	958	2000	2130
cadmium	40	44	100	127	200	271
calcium	16000	15800	40000	38300	80000	77800
chromium	120	115	300	294	600	598
cobalt	120	123	300	291	600	578
copper	40	34	100	95	200	184
iron	200	190	500	510	1000	1050
lead	600	585	1500	1570	3000	3140
magnesium	8000	8200	20000	20100	40000	40500
manganese	120	74	300	266	600	569
molybdenum	120	81	300	235	600	501
nickel	120	123	300	307	600	569
silver	200	<5	500	<5	1000	<5
sodium	400	540	1000	1040	2000	2040
titanium	120	109	300	309	600	585
vanadium	200	216	500	499	1000	1020
zinc	120	130	300	309	600	586

[1] concentrations in parts per billion

APPENDIX F

CONTRACT AND MODIFICATIONS

Original Contract
Letters related to contract modifications

Original Contract

FOR YOUR FILE

I-2396

U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA ASSISTANCE AGREEMENT / AMENDMENT

PART I - ASSISTANCE NOTIFICATION INFORMATION

1. ASSISTANCE ID NO.	2. LOG NUMBER
X 820322-01-0	
3. DATE OF AWARD	**4. MAILING DATE**
SEP 21 1992	

5. AGREEMENT TYPE		6. PAYMENT METHOD	7. TYPE OF ACTION
Cooperative Agreement		[X] Advance [ ] Reimbursement [ ] Letter of Credit	
Grant Agreement	X	Send Payment Request to: LAS VEGAS, FINANCIAL MANAGEMENT CENTER	NEW
Assistance Amendment			

RECIPIENT ORG

8. RECIPIENT
MINNESOTA DEPT OF NAT RESOURCES
500 LAFAYETTE ROAD, BOX 45
ST. PAUL, MN 55155

9. PAYEE
ASST COMMISSIONER, ADMIN
MINNESOTA DEPT OF NAT RESOURCES
500 LAFAYETTE ROAD, BOX 45
ST. PAUL, MN 55155

EIN NO.	CONGRESSIONAL DISTRICT	10. RECIPIENT TYPE
416007162	ALL	STATE/COMMONWEALTH/TERR. GOVT.

11. PROJECT MANAGER AND TELEPHONE NO. (218) 262-6767
KIM LAPAKKO
MINNESOTA DEPT OF NAT RESOURCES
ST. PAUL, MN 55155

12. ADMINISTERING OFFICE / LAB
OSWER/HQ

EPA CONTACT

13. ISSUING OFFICE (CITY / STATE)
WASHINGTON, DC 20460
Grant Specialist for this project:
CHERIE BARRY
(202) 260-6292

14. EPA PROJECT / STATE OFFICER AND TELEPHONE NO.
PAT WHITING (OS323W)
OFFICE OF SOLID WASTE
US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460
(703) 308-8421

15. EPA CONGRESSIONAL LIAISON & PHONE	16. STATE APPL ID (Clearinghouse)	17. SCIENCE FIELD	18. PROJECT STEP (WWT Construction Grants Only)
BARBARA BROOKS, (202) 260-5660	N/A	99	N/A

19. STATUTORY AUTHORITY	20. REGULATORY AUTHORITY	21. STEP 2 + 3 & STEP 3 (WWT Construction Grants Only)		
SOLID WASTE DISPOSAL ACT: SEC. 8001	40 CFR PART 31	a. Treatment Level		
		b. Project Type	N/A	
		c. Treatment Process		
		d. Studge Design		

22. PROJECT TITLE AND DESCRIPTION LONG TERM DISSOLUTION TESTING OF MINE WASTE

This project will provide a description of the longer term dissolution behavior of mine wastes to provide data which will aid interpretation of shorter term predictive tests and examine the extent to which acid producing and acid consuming components of mine wastes will dissolve.

23. PROJECT LOCATION (Areas Impacted by Project)

City / Place	County	State	Congressional District
ST. PAUL	N/A	MN	ALL

24. ASSISTANCE PROGRAM (CFDA Program No. & Title)	25. PROJECT PERIOD	26. BUDGET PERIOD
SURVEYS, STUDIES, INVESTIGATIONS	10/01/92 - 03/31/94	10/01/92 - 03/31/94

27. COMMUNITY POPULATION (WWT Construction Grants Only)	28. TOTAL BUDGET PERIOD COST	29. TOTAL PROJECT PERIOD COST
N/A	$50,000	$50,000

FUNDS	FORMER AWARD	THIS ACTION	AMENDED TOTAL
30. EPA Amount This Action	$0	$50,000	$50,000
31. EPA In-Kind Amount	0	0	0
32. Unexpended Prior Year Balance	0	0	0
33. Other Federal Funds	0	0	0
34. Recipient Contribution	0	0	0
35. State Contribution	0	0	0
36. Local Contribution	0	0	0
37. Other Contribution	0	0	0
38. Allowable Project Cost	$0	$50,000	$50,000

FISCAL

39. Program Element	FY	Appropriation	Doc. Control No.	Account Number	Object Class	Obligation / Deobligation
01) B80D2D	92	682/30108	MW0005	2B8031W002	4183	$50,000

TABLE A - OBJECT CLASS CATEGORY (Non-construction)	TOTAL APPROVED ALLOWABLE BUDGET PERIOD COST
1. PERSONNEL	$18,050
2. FRINGE BENEFITS	2,023
3. TRAVEL	3,916
4. EQUIPMENT	3,000
5. SUPPLIES	3,900
6. CONTRACTUAL	7,500
7. CONSTRUCTION	0
8. OTHER	892
9. TOTAL DIRECT CHARGES	$39,281
10. INDIRECT COSTS: RATE 53.40% BASE SW & FB	10,719
11. TOTAL (Share: Recipient 0.00 % Federal 100.00 %.)	$50,000
12. TOTAL APPROVED ASSISTANCE AMOUNT	$50,000
TABLE B - PROGRAM ELEMENT CLASSIFICATION (Non-construction)	
1.	0
2.	0
3.	0
4.	0
5.	0
6.	0
7.	0
8.	0
9.	0
10.	0
11.	0
12. TOTAL (Share: Recipient 0.00 % Federal 0.00 %.)	0
13. TOTAL APPROVED ASSISTANCE AMOUNT	0
TABLE C - PROGRAM ELEMENT CLASSIFICATION (Construction)	
1. ADMINISTRATION EXPENSE	
2. PRELIMINARY EXPENSE	
3. LAND STRUCTURES, RIGHT-OF-WAY	
4. ARCHITECTURAL ENGINEERING BASIC FEES	
5. OTHER ARCHITECTURAL ENGINEERING FEES	
6. PROJECT INSPECTION FEES	
7. LAND DEVELOPMENT	
8. RELOCATION EXPENSE	
9. RELOCATION PAYMENTS TO INDIVIDUALS AND BUSINESS	
10. DEMOLITION AND REMOVAL	
11. CONSTRUCTION AND PROJECT IMPROVEMENT	
12. EQUIPMENT	
13. MISCELLANEOUS	
14. TOTAL (Lines 1 thru 13)	
15. ESTIMATED INCOME (If applicable)	
16. NET PROJECT AMOUNT (Line 14 minus 15)	
17. LESS: INELIGIBLE EXCLUSIONS	
18. ADD: CONTINGENCIES	
19. TOTAL (Share: Recipient _____% Federal _____%.)	
20. TOTAL APPROVED ASSISTANCE AMOUNT	

SPECIAL CONDITIONS

1. In accordance with Section 2(d) of the Prompt Payment Act (P.L. 97-177), Federal funds may not be used by the recipient for the payment of interest penalties to contractors when bills are paid late nor may interest penalties be used to satisfy cost sharing requirements. Obligations to pay such interest penalties will not be obligations of the United States.

2. As required by EPA regulations, the recipient agrees to submit a Financial Status Report (FSR) (Standard Form 269) within 90 days after the end of this budget period. When the recipient submits its final FSR, it will in one of the following ways make an adjustment for the amount of Federal funds, if any, received in excess of the EPA share of the reported total budget period costs:

   (a) If the recipient is paid through EPA-ACH, it shall, in accordance with the enclosed payment instructions dated March 1991, refund excess assistance funds by either submitting a credit on a current EPA-ACH Payment Request or by sending a check to the lockbox address: U.S. Environmental Protection Agency, Financial Management Center, P.O. Box 371293M, Pittsburgh, Pennsylvania 15251.

   (b) If the recipient is paid by treasury check, it shall, in accordance with the enclosed payment instructions dated March 1991, refund excess assistance funds by submitting a check to the lockbox address in (a) above.

   If funds are due to the recipient at the time of submission of the final FSR, the recipient shall follow the procedures as outlined on the enclosed payment instructions to request the appropriate amount of funds from EPA.

3. The recipient is authorized to charge allowable costs on this award effective October 1, 1992, provided this agreement is accepted without change within three calendar weeks of its receipt.

4. EPA participation in the salary rate (excluding overhead) paid to individual consultants is limited to the maximum daily rate for a GS-18, which is currently $401.72.

5. Rights to inventions made under this assistance agreement are subject to the provisions of Title 37 Code of Federal Regulations (CFR), Part 401 (1988). (For Part 30 recipients, this regulation supersedes OMB Circular A-124 cited in the EPA patent regulation at 40 CFR Part 30, Subpart K.)

6. The recipient understands that none of the funds for this project (including funds contributed by the recipient as cost sharing) may be used to pay for the travel of Federal employees or for other costs associated with Federal participation in this project.

7. Pursuant to EPA Order 1000.25, dated January 24, 1990, the recipient agrees to use recycled paper for all reports which are prepared as a part of this agreement and delivered to the Agency. This requirement does not apply to Standard Forms. These forms are printed on recycled paper as available through the General Services Administration.

8. If a contract is awarded under this assistance agreement, the recipient agrees and is required to utilize the following affirmative steps to the maximum extent practicable:

   a) Placing Small Businesses in Rural Areas (SBRAs) on solicitation lists;

   b) Making sure that SBRAs are solicited whenever they are potential sources;

   c) Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation by SBRAs;

   d) Establishing delivery schedules, where the requirements of work will permit, which would encourage participation by SBRAs;

   e) Using the service of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce, as appropriate; and

   f) Requiring the contractor to take the affirmative steps in subparagraphs a. through e. of this part if subcontracts are awarded.

9. In accordance with EPA's policy on the utilization of socially and economically disadvantaged individuals and disadvantaged business enterprises (DBE) in procurement under assistance programs, the recipient agrees to:

   a) Ensure to the fullest extent possible that at least 8% of Federal funds for prime contracts or subcontracts for supplies, construction, equipment or services are made available to organizations owned or controlled by socially and economically disadvantaged individuals.

   b) Include in its bid documents a requirement that prime contractors and subcontractors meet the same 8% requirement as noted in the above paragraph.

   c) Follow the six affirmative steps stated in 40 CFR 33.240 or 40 CFR 31.36(e), as appropriate.

   d) Submit a SF-334 "MBE/WBE Utilization Under Federal Grants, Cooperative Agreements, and other Federal Financial Assistance", to the EPA award official by October 30 of each year to report on the progress made toward meeting the fair share objective.

10. The recipient agrees to submit to the EPA Project Officer within 90 days after the expiration or termination of the approved project period a final report and at least

SPECIAL CONDITIONS (continued)

one reproducible copy suitable for printing. The final report shall document project activities over the entire project period and shall describe the recipient's achievements with respect to stated project purposes and objectives.

PART IV

NOTE: **The Agreement must be completed in duplicate and the Original returned to the Grants Administration Division for Headquarters awards and to the appropriate Grants Administration Office for State and local awards within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA.**

Receipt of a written refusal or failure to return the properly executed document within the prescribed time, may result in the withdrawal of the offer by the Agency. Any change to the Agreement by the recipient subsequent to the document being signed by the EPA Award Official, which the Award Official determines to materially alter the Agreement, shall void the Agreement.

OFFER AND ACCEPTANCE

The United States of America, acting by and through the U.S. Environmental Protection Agency (EPA), hereby offers assistance/amendment to the MINNESOTA DEPT OF NAT RESOURCES **(RECIPIENT ORGANIZATION) for** 100.00 **% of all approved costs incurred up to and not exceeding $** 50,000 **(ASSISTANCE AMOUNT) for the support of approved budget period effort described in application (including all application modifications) cited in Item 22 of this Agreement**

Signed: 04/23/92 **(DATE AND TITLE), included herein by reference.**

ISSUING OFFICE (Grants Administration Office)	AWARD APPROVAL OFFICE
ORGANIZATION / ADDRESS GRANTS ADMINISTRATION DIVISION US ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460	ORGANIZATION / ADDRESS OFFICE OF SOLID WASTE US ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460

THE UNITED STATES OF AMERICA BY THE U.S ENVIRONMENTAL PROTECTION AGENCY

SIGNATURE OF AWARD OFFICIAL	TYPED NAME AND TITLE	DATE
Mildred Lee	MILDRED LEE CHIEF, GRANTS OPERATIONS BRANCH (PM-216F)	9/21/92

This agreement is subject to applicable U.S. Environmental Protection Agency statutory provisions and assistance regulations. In accepting this award or amendment and any payments made pursuant thereto, (1) the undersigned represents that he is duly authorized to act on behalf of the recipient organization, and (2) the recipient agrees (a) that the award is subject to the applicable provisions of 40 CFR Chapter I, Subchapter B and of the provisions of this agreement (Parts I thru IV), and (b) that acceptance of any payments constitutes an agreement by the payee that the amounts, if any found by EPA to have been overpaid will be refunded or credited in full to EPA.

BY AND ON BEHALF OF THE DESIGNATED RECIPIENT ORGANIZATION

SIGNATURE	TYPED NAME AND TITLE	DATE

Letters related to contract modifications

STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

500 LAFAYETTE ROAD • ST. PAUL, MINNESOTA • 55155-40 45

DNR INFORMATION
(612) 296-6157

March 4, 1994

Ms. Patricia B. Whiting
Special Waste Branch
U.S. Environmental Protection Agency
Office of Solid Waste
401 M Street, S.W. (OS-320W)
Washington, D.C. 20460

Re: Contract modification for Grant X-820322-01-0, Long Term Dissolution Testing of Mine Waste.

Ms. Whiting:

I am requesting a contract modification, at no additional cost, for Grant X-820322-01-0. The project was proposed to extend for eighteen months, with an end date of March 31, 1994 specified in the contract. However, as mentioned in the May 1993 progress report, funding was not finalized until February 9, 1993. I request that the end date be changed to September 6, 1994. Although no additional cost will be incurred, the distribution of expenditures within the initial budget will be modified.

As is indicated in the January 1994 progress report, we have conducted the Wet-Dry Cycle Test and the Elevated Temperature Test for 112 weeks (a total of 132 weeks when including the 20 weeks for the WGA project), considerably longer than the 50 weeks experimental duration stated in the proposal. Water quality analyses described in the proposal have been completed for the extended duration. Data management and analysis described in the proposal is presently in progress.

Although data analysis is not presently complete, it is apparent that the lack of agreement between the laboratory and field results for waste rock is partly due to differences in the particle size used in the laboratory and field. The importance of particle size on the quality of drainage from waste rock was an issue raised at the EPA workshop in July 1992 (Predicting Acid Generation from Non-Coal Mining Wastes) and at the International Waste Rock Modelling Workshop in Toronto (September 29 to October 1, 1992).

Due to the influence of particle size in the present experiment and to prediction of waste rock drainage quality in general, an experiment was initiated to examine the effect of particle size on the quality of drainage from two of the waste rock samples examined (RK3, RK4). A rock similar to RK2 is also being examined in this experiment.

I believe the extension is justifiable for the following reasons.

1. The funding for the project was finalized much later than anticipated when the original end date of March 31, 1994 was proposed.
2. The amount of data presented on the long-term dissolution tests will be in excess of twice that proposed.
3. The extension will allow a longer period of record (30 vs 10 weeks) for the particle size experiment.

In order to affect these changes it will be necessary to reduce funding allotted to equipment ($3000 alotted initially), supplies ($3900), contracts ($7500), travel ($3916) and increase funding allotted to personnel ($30,792) and supplies ($3900). (Note: $892 was initially budgeted for utilities, communications, and printing.) There will be no increase in the total cost.

If this is acceptable, please send the paperwork necessary to complete the modification to:

Phil Pippo
MN Department of Natural Resources
Division of Minerals
Box 45 500 Lafayette Road
St. Paul, MN 55155-4045

Any questions regarding this modification should also be directed to Phil.

Thank you.

Sincerely,

Kim Lapakko
Principal Engineer

STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

500 LAFAYETTE ROAD • ST. PAUL, MINNESOTA • 55155-4045

DNR INFORMATION
(612) 296-6157

May 3, 1994

Ms. Patricia B. Whiting
Special Waste Branch
U.S. Environmental Protection Agency
Office of Solid Waste
401 M Street, S.W. (OS-320W)
Washington, D.C. 20460

Re: Contract modification for Grant X-820322-01-0, Long Term Dissolution Testing of Mine Waste.

Ms. Whiting:

In a letter dated March 4, 1994 I requested a contract modification, at no additional cost, for Grant X-820322-01-0. This modification, a change of the end date from March 31, 1994 to September 6, 1994, was agreed to by telephone, however, we have received no written confirmation. We were recently informed by Anedia Feaster of the Las Vegas office that we could not bill for expenses incurred after March 31, 1994. Will you please contact Phil Pippo with the requirements for completing the modification.

Mr. Phil Pippo
MN Department of Natural Resources
Division of Minerals
500 Lafayette Road, Box 45
St. Paul, MN 55155-4045

Thank you.

Sincerely,

Kim Lapakko

Kim Lapakko
Division of Minerals

cc: Phil Pippo
Jennifer Wessels

J:\kim\mdfy9405.epa

STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
1525 3rd Avenue East, Hibbing, Minnesota 55746-1461
PHONE NO. 218/262-6767 FAX: 218/263-5420 FILE NO.

September 19, 1994

Mr. Steve Hoffman
Special Waste Branch
U.S. Environmental Protection Agency
Office of Solid Waste
401 M Street S.W. (OS-320W)
Washington, D.C. 20460

Dear Mr. Hoffman:

Re: Final Report on Long Term Dissolution Testing of Mine Waste (Grant X-820322-01-0)

Due to unforeseen circumstances, the final report will be delayed. We only recently received the results of the analysis of leached solids and are presently incorporating these results into the report. I am requesting an extension, at no additional cost, until November 14, 1994. I will be out of the office this week; if you have any questions, please contact Jennifer Wessels at 612/296-1051 (FAX 612/296-5939).

Thank you.

Sincerely,

DIVISION OF MINERALS

Kim Lapakko

Kim Lapakko
Principal Engineer

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