



July 16, 2013

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Cc: deepak@rdiminerals.com; ebentzen@Lyntek.com

From: tom@rdiminerals.com

SUBJECT: RESULTS OF SCOPING BUCKET STATIC LEACH TEST

Dear Dan,

This memorandum is a summary of the scoping level investigations into the potential for heap leaching the Texas Rare Earth ore. Two separate series of tests were conducted on the Red Ryolite sample. Specifically, the first series was conducted on various crush sizes from plus two inch to minus one quarter inch at a 10 gram per liter (gpl) sulfuric acid strength. The second series was conducted on nominal one half inch crushed material to evaluate the extraction characteristics using various acid strengths between 5 and 100 g/l sulfuric acid.

The sample designated "Red Ryolite" was crushed in the RDi large jaw crusher and then screened into different size fractions for the "Static Leach Tests" (SLT). The screen analysis is included in Table 1.

Table 1. Screen Analysis of the Crushed Red Ryolite Sample	
Size Fraction Inches	Weight, %
+ 2 inch	10.3
2 X 1 inch	70.4
1 X ½ inch	10.8
½ X ¼ inch	4.0
- ¼ inch	4.5

A head analysis was run on the whole material. Selected assays are shown in Table 2. Calculated heads are included in Appendix A.

Table 2. Selected Head Assays			
Element	Level	Assay	⁽¹⁾ Calculated
Y	ppm	210	193
Dy	ppm	28	29
U	ppm	35.3	35.8
Be	ppm	19	
Ce	ppm	71	
Nd	ppm	29.1	
Th	ppm	182	
Hf	ppm	78.6	
Zn	ppm	580	
MnO	%	0.065	

Note: ⁽¹⁾ Based on Bucket Leach Tests SL-1 to SL-5.

The first series was conducted at about 50% solids for 63 days on the various size fractions. The test data are given in Appendices B and the results are summarized in Tables 3 and 4. The test results indicate the following:

1. Comparison of the calculated heads and the assayed heads for the elements of interest are similar. Hence, it is reasonable to conclude that the minerals are fairly uniformly distributed in the deposit.
2. Extractions for Yttrium varied from 20.8 to 61.1% for the different sizes with a combined extraction of 48.6%. Extractions for Dysprosium varied from 23.8% to 57.7% with a combined extraction of 44.5%.
3. The highest extractions for all minerals of interest were in the ½ in X ¼ in size fractions. The extractions dropped significantly in the minus ¼ in size fraction.
4. The acid consumption was reasonable for the coarse size fractions (>1/2 inch) and more than doubled for the minus ¼ inch material.

Table 3. Assays of the Different Size Fractions of the Ore									
Fraction	Weight, %	Yttrium		Dysprosium		Uranium		TREE +Y	
		Assay	Calc.	Assay	Calc.	Assay	Calc.	Assay	Calc.
Combined	100.0	210	193	28	29	35.3	35.8	499	495
+ 2"	10.3		196		28.1		35.4		482
1" X 2"	70.4		191		29.2		35.9		499
½" X 1"	10.8		198		29.1		36.3		489
¼" X ½"	4.0		189		27.9		35.7		470
-¼"	4.5		198		28.7		33.6		500

Table 4. Summary of Extractions of Selected Elements								
Size Fraction	Weight, %	Extraction, %						Acid Consumption Kg/mt
		Yttrium (Y)	Dysprosium (Dy)	Uranium (U)	Thorium (Th)	TREE +Y	HREE + Y	
Combined	100.0	48.6	44.5	12.5	40.8	42.5	44.0	15.2
+ 2"	10.3	32.3	27.5	7.7	22.4	28.0	29.0	13.2
1" X 2"	70.4	50.3	45.6	11.3	39.5	43.1	45.4	12.8
½" X 1"	10.8	61.1	57.3	18.5	56.7	54.4	55.5	18.4
¼" X ½"	4.0	57.6	57.7	22.0	65.5	53.6	52.9	23.8
-¼"	4.5	20.8	23.8	19.3	43.7	27.4	20.9	41.9

Based on these results, it is reasonable to conclude that heap leach could be run at nominal 1 inch crush size.

The second series was comprised of bucket static leach tests conducted at various acid strengths on nominal ½ inch crushed Red Ryolite ore. The test data are presented in Appendix C and the results are summarized in Tables 5 to 7. The test results indicate the following:

1. The higher acid strengths resulted in higher extractions for the metals of interest. Yttrium and dysprosium extractions varied from 24.6% and 21.4% to 84.0% and 79.4%, respectively. Total rare earth elements plus yttrium (TREE+Y) and heavy rare earth elements plus yttrium (HREE+Y) extractions varied from 24.8% and 27.3% to 73.4% and 79.9%, respectively.
2. The higher the initial acid concentration in solution, the higher the acid consumption in the tests.
3. Acid consumption generally drops off after 18 days of leaching thereby indicating that acid consumers in the ore were extracted as shown in Table 2.
4. Aluminum and iron levels in the 25/26 day solutions varied from 0.955 g/l to 3.52 g/l for aluminum and 0.069 g/l to 1.85 g/l for iron as shown in Table 3. A very distinct break occurred for iron between 10 g/l and 30 g/l acid strength. The aluminum appeared to be consistently increasing with acid concentration.

Table 5. Summary of Bucket Static Leach Tests							
Test No.	Acid Strength g/l	Extraction, %					Acid Consumption
		Y	Dy	U	TREE+Y	HREE+Y	Kg/mt
SL-10	5	24.6	21.4	4.8	24.8	27.3	9.2
SL-6	10	47.4	42.8	13.3	43.3	47.5	13.1
SL-7	30	70.5	64.9	21.2	62.2	68.4	19.4
SL-8	50	77.4	74.8	28.4	67.4	74.1	21.6
SL-9	100	84.0	79.4	30.7	73.4	79.9	29.6

Table 6. Relationship of Acid Strength vs. Acid Consumption						
Test No.	Acid Strength g/l	Residual Level, g/l				
		Day 4	Day 11/12	Day 18/19	Day 25/26	
10	5	2.50	3.76	3.75	3.76	
6	10	6.25	7.50	7.50	8.75	
7	30	25.0	26.3	28.8	28.8	
8	50	45.0	46.2	48.7	50.0	
9	100	91.2	96.2	97.5	100.0	

Table 7. Iron and Aluminum Levels in Solution					
Test No.	Acid Strength g/l	Extraction, %		Leachate, g/l	
		Al	Fe	Al	Fe
10	5	1.4	0.7	0.955	0.069
6	10	2.0	0.9	1.37	0.097
7	30	3.0	5.3	2.07	0.545
8	50	3.8	9.5	2.65	0.966
9	100	5.2	18.7	3.52	1.85

The next phase of the program consisting of preliminary column leach tests on crushed rock at two different sulfuric acid strengths was initiated. The preliminary assay results indicate the technical viability of the heap leach process appears to be positive.

Please contact me or Deepak Malhotra if you have any questions or comments on this report.

Sincerely Yours,

Tom Randall
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Cc: Deepak Malhotra

APPENDIX A
SUMMARY OF CALCULATED HEADS

Appendix A
 Resource Development Inc
 TRER Static Leach Tests
 June 24, 2013

Comparison of Assayed and Calculated Heads

Head	Wt g	Wt %	ppm													
			Y	Dy	U	Th.	Nd	Yb	Li	Be	TREE+Y	LREE	HREE+Y			
Assay	42,889		210	28	35.3	182	29.1	51.4	40	19	499	140	259			
Calc		100.0	193	29.0	35.8	191	29.5	54.8	48.3	19.3	495	148	349			
+2"	4,400	10.3	196	28.1	35.4	179	27.2	55.5	47.7	20.1	482	130	352			
1" X 2"	30,200	70.4	191	29.2	35.9	193	30.5	55.0	46.5	19.1	499	152	348			
1/2" X 1"	4,629	10.8	198	29.1	36.3	190	26.6	54.3	51.6	19.2	489	138	351			
1/4" x 1/2"	1,735	4.0	189	27.9	35.7	191	28.1	52.9	56.6	20.3	470	138	331			
-1/4"	1,925	4.5	198	28.7	33.6	181	26.4	53.3	62.6	19.4	500	149	360			

APPENDIX B
SUMMARY OF LEACH TEST DATA

Appendix B
 Resource Development Inc
 TRER Static Leach Tests
 June 24, 2013

Summary of Extractions vs. Time for Yttrium and Dysprosium

Fraction	Weight %	Day	Percent Extraction Yttrium									
			4	11	18	25	32	39	46	53	63	
Combined	100.0		6.9	15.7	22.0	29.2	33.6	37.4	43.0	46.2	48.6	
+2	10.3		4.3	9.6	13.8	18	20.9	23.9	28	30.6	32.2	
1" X 2"	70		6.6	15.2	21.8	29.7	34.5	38.8	44.6	48.3	50.3	
1/2" X 1"	10.8		12.1	24.9	32.9	40.1	45.3	47.9	53.8	56	61.1	
1/4" X 1/2"	4.0		11.7	23.9	32.1	39.3	42.6	45.5	54.1	53.7	57.6	
-1/4"	4.5		1.5	7.2	9.6	11.7	13.3	14.7	17.4	19.6	20.8	

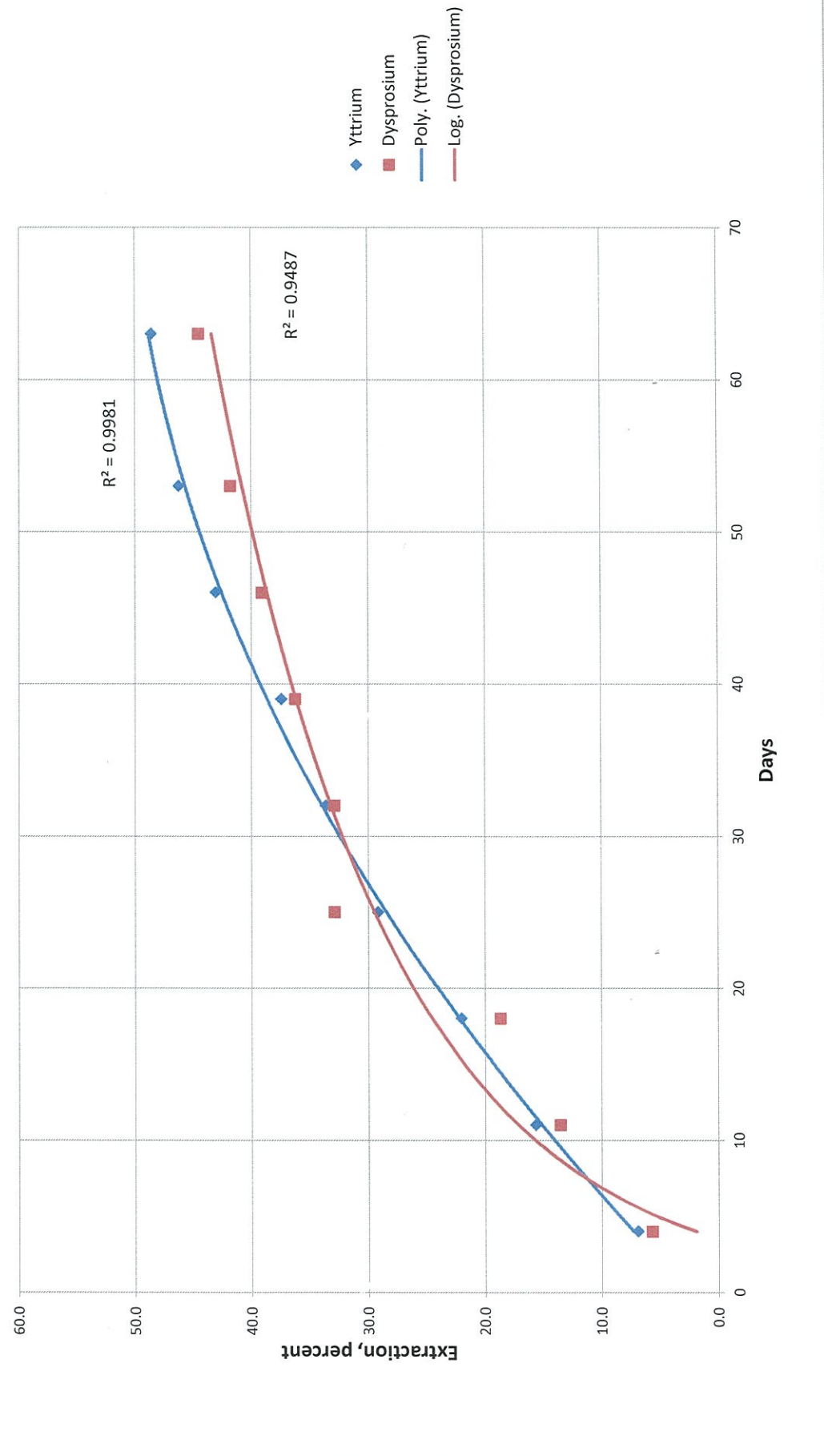
Fraction	Weight %	Day	Percent Extraction Dysprosium									
			4	11	18	25	32	39	46	53	63	
Combined	100		5.7	13.5	18.7	29.3	32.9	36.2	39.1	41.8	44.5	
+2	10.3		3.4	9.1	11.5	19.3	22.1	24.7	24.1	25.9	27.5	
1" X 2"	70.4		5.4	12.9	17.9	28.8	32.7	36.3	39.6	42.5	45.6	
1/2" X 1"	10.8		9.9	21.5	29.8	41.5	44.0	46.3	52.7	55.6	57.3	
1/4" X 1/2"	4.0		9.9	22.7	31.1	47.3	52.1	55.3	54.2	56.2	57.7	
-1/4"	4.5		1.2	6.3	9.2	14.7	16.8	20.4	18.8	20.8	23.8	

Appendix B
 Resource Development Inc
 TRER Static Leach Tests
 June 24, 2013

Summary of Extractions for Selected Elements

Fraction	Wt		Extraction, %														Acid Consumption kg/mt
	g	%	Y	Dy	U	Th	Nd	Yb	Li	Be	TREE+Y	LREE	HREE+Y				
Combined	42,889	100.0	48.6	44.5	12.5	40.8	42.2	35.7	16.7	0.8	42.5	38.9	44.0	15.2			
+2"	4,400	10.3	32.3	27.5	7.7	22.4	26.2	21.6	15.4	0.7	28.0	25.5	29.0	13.2			
1" X 2"	30,200	70.4	50.3	45.6	11.3	39.5	42.3	37.2	14.0	0.7	43.1	37.8	45.4	12.8			
1/2" X 1"	4,629	10.8	61.1	57.3	18.5	56.7	51.1	42.9	22.5	1.1	54.4	51.6	55.5	18.4			
1/4" x 1/2"	1,735	4.0	57.6	57.7	22.0	65.5	58.4	42.2	29.3	1.2	53.6	55.1	52.9	23.8			
-1/4"	1,925	4.5	20.8	23.8	19.3	43.7	40.1	21.0	36.1	1.9	27.4	41.2	20.9	41.9			

TRER - All Fractions Combined

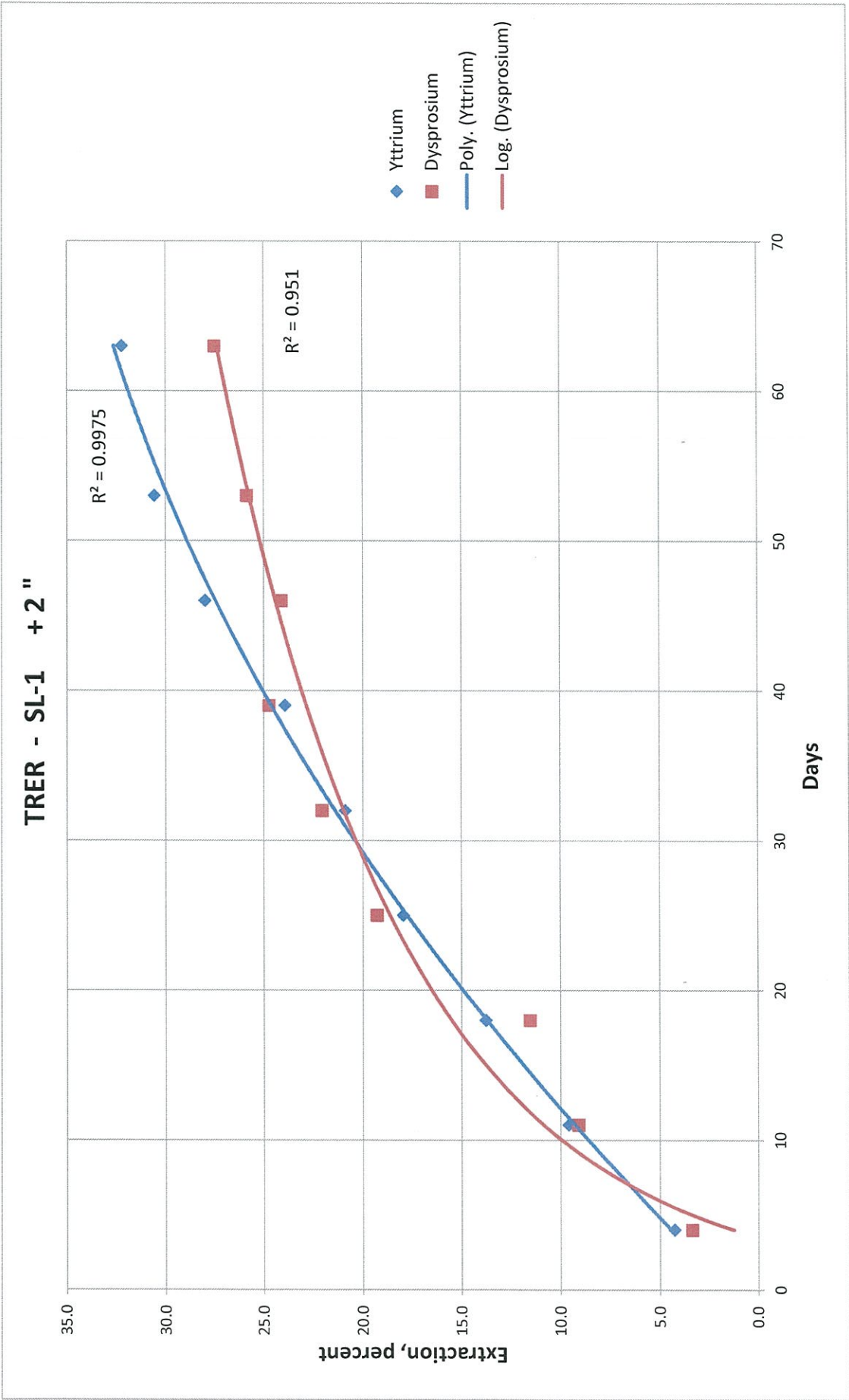


Appendix B
Resource Development Inc
TRER Static Leach Tests
June 24, 2013

SL-1

Plus 2 inch Fraction

Element	Head, ppm		Tails Assay ppm	Day 4		Day 11		Day 18		Day 25		Day 32		Day 39		Day 46		Day 53		Day 63	
	Assay	Calc		Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %
Y	210	196	133	8470	4.3	18800	9.6	26700	13.8	34500	18.0	39600	20.9	45000	23.9	52300	28.0	56600	30.6	58500	32.2
Dy	28.0	28.1	20.4	955	3.4	2560	9.1	3200	11.5	5340	19.3	6020	22.1	6690	24.7	6400	24.1	6800	25.9	7100	27.5
U	35.3	35.4	32.7	441	1.2	958	2.7	1400	4.0	1260	3.7	1440	4.2	2400	7.0	1920	5.8	2050	6.2	2540	7.7
Li	40	47.7	40	676	1.4	1450	3.1	2260	4.8	2580	5.5	3510	7.6	4250	9.2	5340	11.6	5360	11.9	7310	16.2
Be	19	20.1	20	24.3	0.1	44.5	0.2	66.3	0.3	63.1	0.3	75.3	0.4	85.8	0.4	102	0.5	119	0.6	139	0.7
Th	182	179	139	5550	3.1	12200	6.8	17900	10.1	21600	12.3	21900	12.7	28300	16.5	31800	18.7	34500	20.4	37300	22.4
Nd	29.1	27.2	20.1	1470	5.3	2490	9.2	3530	13.1	4420	16.6	4370	16.7	5310	20.4	5580	21.7	6120	24.0	6580	26.2
Yb	51.4	55.4	42.6	1650	2.9	3660	6.6	5470	10.0	7560	13.9	7540	14.1	9640	18.1	9910	18.9	10900	20.9	11900	23.2
TREE+Y	499	482	347	21918	4.5	44193	9.2	60639	12.8	80096	17.0	86751	18.7	100746	21.8	110306	24.2	118220	26.1	124480	28.0
LREE	140	130	96.6	8323	6.4	13684	10.6	17350	13.6	21550	17.1	22180	17.9	25310	20.5	27550	22.5	28500	23.6	30220	25.5
HREE+Y	359	352	250	13595	3.8	30509	8.7	43289	12.5	58546	17.0	64571	19.0	75436	22.3	82756	24.8	89720	27.1	94260	29.0



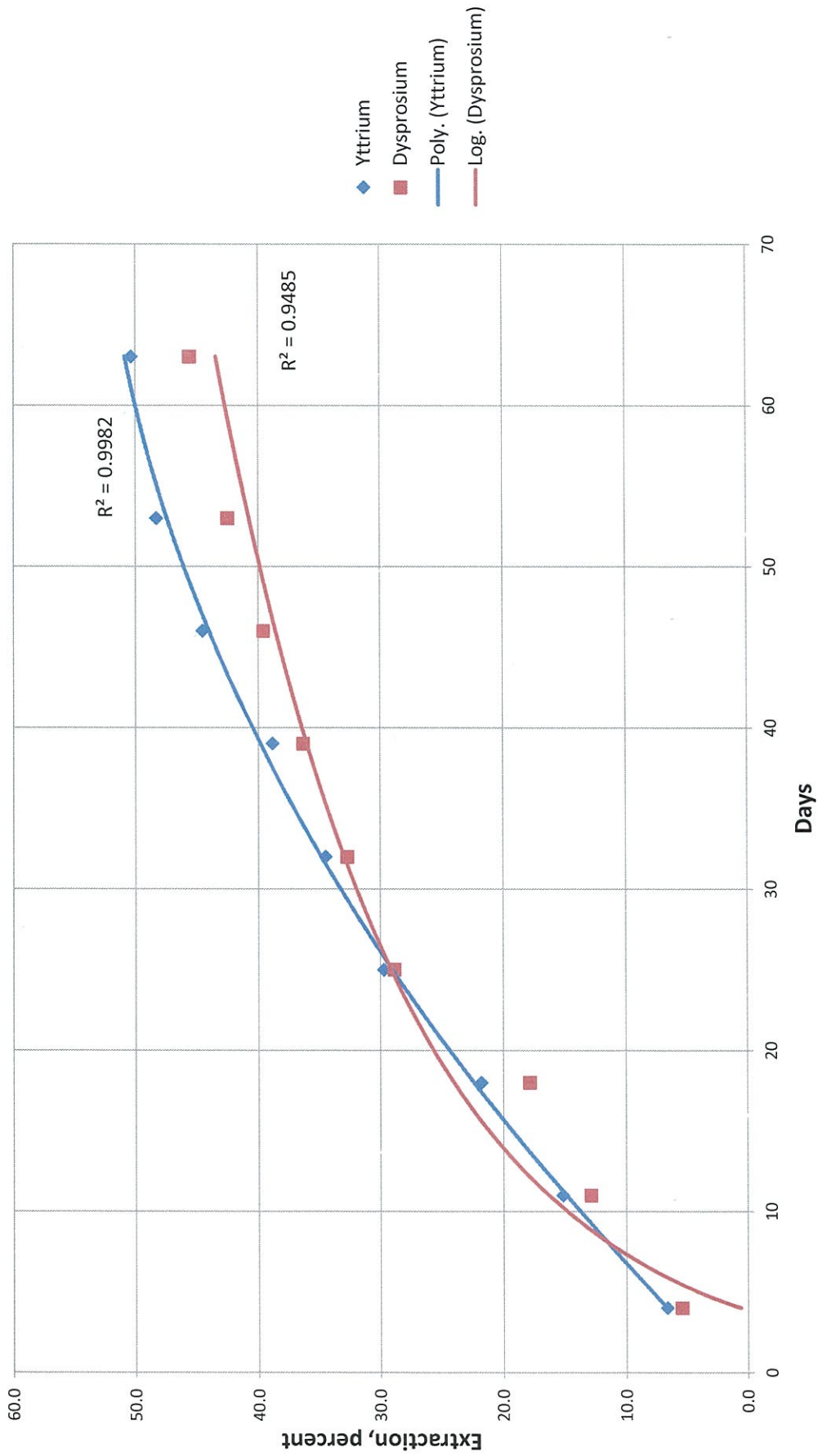
Appendix B
Resource Development Inc
TRER Static Leach Tests
June 24, 2013

2 inch by 1 inch

SI-2

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4		Day 11		Day 18		Day 25		Day 32		Day 39		Day 46		Day 53		Day 63	
	Assay	Calc			Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %
Y	210	191	95	1995.5	12800	6.6	29100	15.2	41100	21.8	55600	29.7	63800	34.5	71300	38.8	81200	44.6	86400	48.3	88800	50.3
Dy	28.0	29.2	15.9	1995.5	1600	5.4	3780	12.9	5150	17.9	8280	28.8	9270	32.7	10200	36.3	11000	39.6	11600	42.5	12300	45.6
U	35.3	35.9	31.9	1995.5	576	1.6	1370	3.8	1710	4.8	1680	4.8	2090	6.0	2540	7.4	3330	9.7	3560	10.5	3760	11.3
Li	40	46.5	40	1995.5	1060	2.3	1730	3.7	3050	6.6	3830	8.4	4630	10.3	5220	11.7	5140	11.7	5900	13.6	6000	14.0
Be	19	19.1	19	1995.5	28.9	0.1	50.6	0.3	75.3	0.4	75.3	0.4	93.9	0.5	106	0.6	113	0.6	124	0.7	121	0.7
Th	182	193	117	1995.5	10300	5.3	22200	11.5	35000	18.3	21100	11.5	46200	24.6	47500	25.6	61300	33.1	62400	34.4	71200	39.5
Nd	29.1	30.5	17.6	1995.5	2810	9.1	5120	16.8	7120	23.7	4570	15.8	9420	31.8	9920	33.9	10800	37.3	10800	38.1	11900	42.3
Yb	51.4	55.0	34.5	1995.5	2620	4.7	6030	11.0	9060	16.7	6410	12.2	14000	26.1	15000	28.3	16000	30.6	17000	33.1	19000	37.2
TREE+Y	499	499	284	1995.5	36267	7.2	72898	14.6	100677	20.5	111232	22.9	151420	31.3	165458	34.5	180712	38.1	189087	40.6	198081	43.1
LREE	140	152	94.5	1995.5	15370	10.0	25330	16.7	32580	21.8	31420	21.4	44080	30.1	46540	32.1	49970	34.9	50690	36.1	52290	37.8
HREE+Y	359	348	190	1995.5	20897	6.0	47568	13.7	68097	19.8	79812	23.5	107340	31.8	118918	35.6	130742	39.5	138397	42.6	145791	45.4

TRER - SL-2 2 inch by 1 inch

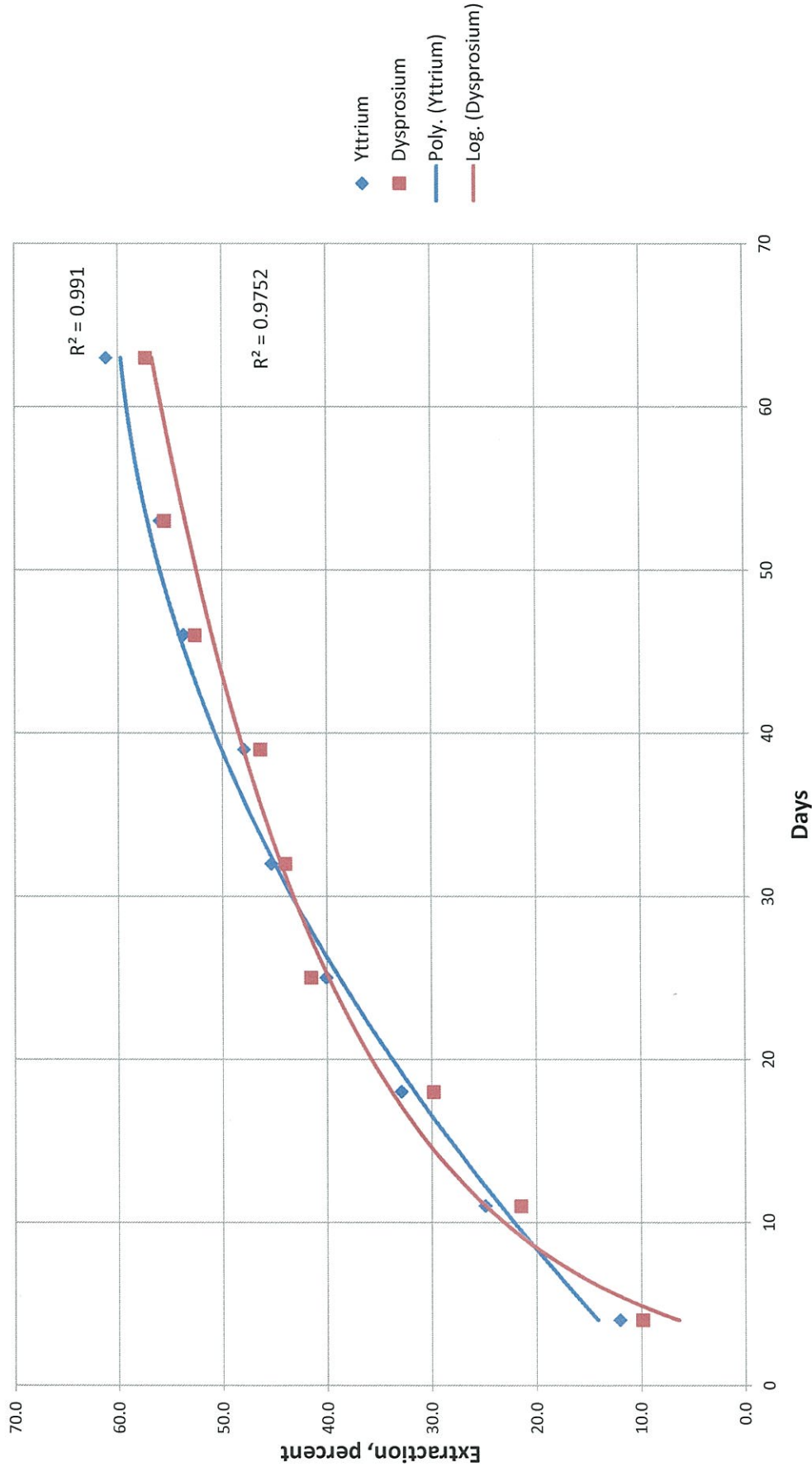


Appendix B
Resource Development Inc
TRER Static Leach Tests
June 24, 2013

SI-3 1 inch by 1/2 inch

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4		Day 11		Day 18		Day 25		Day 32		Day 39		Day 46		Day 53		Day 63	
	Assay	Calc			Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %
Y	210	198	77	1981.9	23900	12.1	48800	24.9	63700	32.9	76600	40.1	85600	45.3	89400	47.9	99300	53.8	102000	56.0	110000	61.1
Dy	28.0	29.1	12.4	1981.9	2870	9.9	6180	21.5	8470	29.8	11700	41.5	12200	44.0	12700	46.3	14300	52.7	14900	55.6	15100	57.3
U	35.3	36.3	29.6	1981.9	908	2.5	2530	7.0	3400	9.6	3120	9.0	3720	10.8	3970	11.6	5720	16.7	6040	17.8	6150	18.5
Li	40	51.6	40	1981.9	1810	3.5	3570	7.0	3940	7.9	5760	11.5	5640	11.5	6800	13.9	8920	18.3	10000	20.7	10700	22.5
Be	19	19.2	19	1981.9	50.9	0.3	90.1	0.5	116	0.6	123	0.7	111	0.6	109	0.6	165	0.9	180	1.0	192	1.1
Th	182	190	82.3	1981.9	16900	8.9	38800	20.6	49500	26.7	64200	34.9	73400	40.4	76600	42.7	85900	48.3	96500	54.7	98300	56.7
Nd	29.1	26.6	13	1981.9	5220	19.6	8800	33.5	9790	37.9	12600	49.2	13300	52.7	14700	58.8	13400	54.9	13500	56.1	11900	51.1
Yb	51.4	54.3	31	1981.9	4840	8.9	10500	19.6	13100	24.7	17300	33.0	19600	37.8	20600	40.2	19400	38.7	20400	41.1	20900	42.9
TREE+Y	499	489	223	1981.9	62356	12.7	121851	25.2	152206	31.9	190059	40.3	211727	45.4	219251	47.7	225267	49.7	231311	51.7	239398	54.4
LREE	140	139	67.1	1981.9	23680	17.1	41480	30.3	47850	35.5	58350	43.8	62440	47.5	65610	50.5	64310	50.4	64530	51.4	63410	51.6
HREE+Y	359	351	156	1981.9	38676	11.0	80371	23.2	104356	30.5	131709	38.9	149287	44.6	153641	46.5	160957	49.4	166781	51.9	175988	55.5

TRER - SL-3 1 inch by 1/2 inch



- ◆ Yttrium
- Dysprosium
- Poly. (Yttrium)
- Log. (Dysprosium)

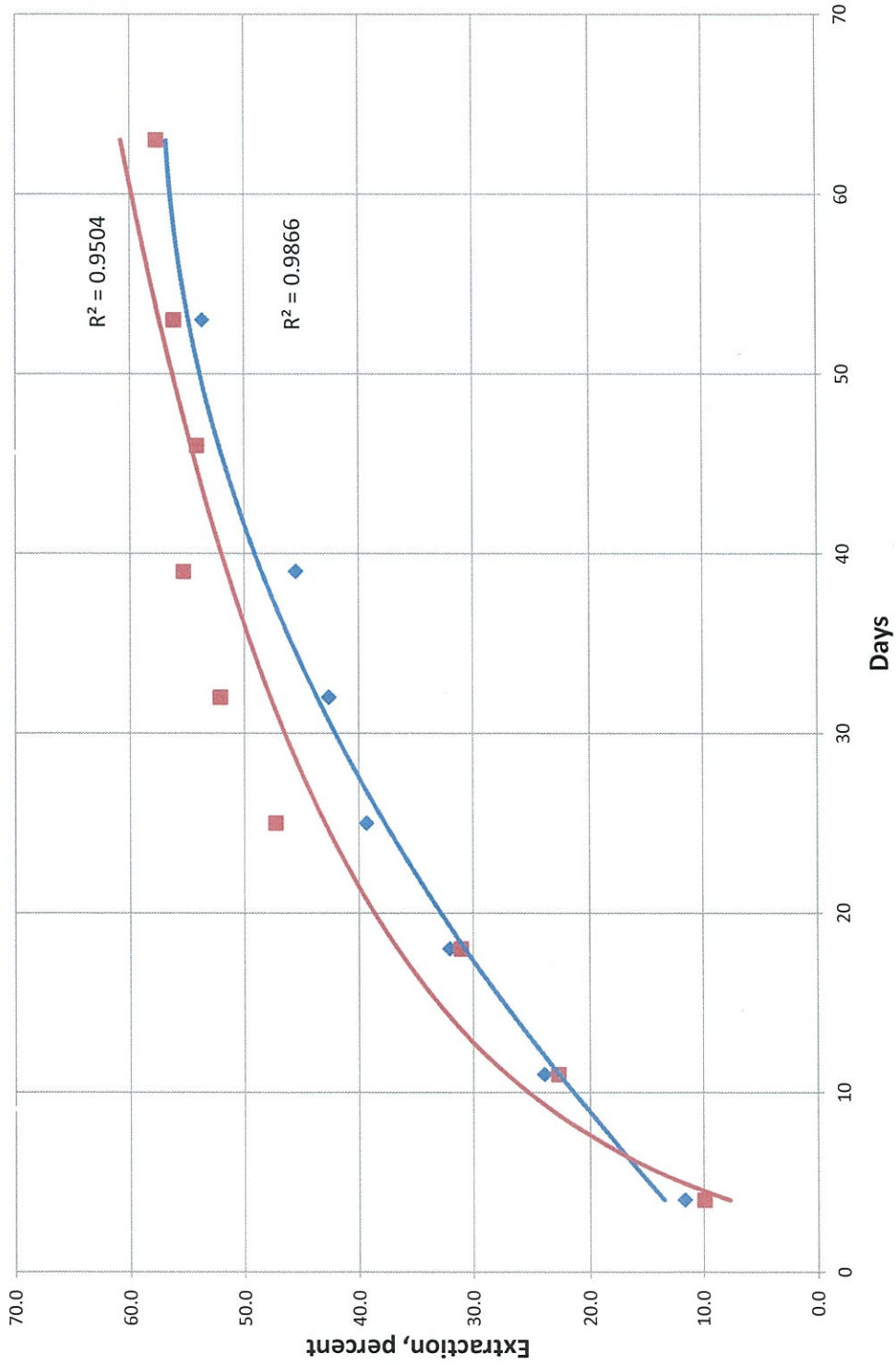
$R^2 = 0.991$

$R^2 = 0.9752$

SL-4
 1/2 inch by 1/4 inch

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4		Day 11		Day 18		Day 25		Day 32		Day 39		Day 46		Day 53		Day 63	
	Assay	Calc			Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %
Y	210	189	80	1975.0	22000	11.7	44600	23.9	58900	32.1	71700	39.3	76500	42.6	80800	45.5	95500	54.1	92900	53.7	98300	57.6
Dy	28.0	27.9	11.8	1975.0	2770	9.9	6250	22.7	8430	31.1	12800	47.3	13900	52.1	14600	55.3	14000	54.2	14300	56.2	14400	57.7
U	35.3	35.6	27.8	1975.0	548	1.5	2530	7.2	4740	13.6	4380	12.7	6090	17.8	5530	16.5	7160	21.3	6970	21.2	7110	22.0
Li	40	56.6	40	1975.0	1950	3.4	3750	6.7	4910	8.9	5460	10.0	6570	12.2	8440	15.7	10700	20.0	11900	22.4	15500	29.3
Be	19	20.3	20	1975.0	64.5	0.3	120	0.6	143	0.7	114	0.6	140	0.7	158	0.8	200	1.1	214	1.1	230	1.2
Th	182	191	65.9	1975.0	9720	5.1	36700	19.4	61200	32.7	81000	43.6	85500	46.7	88700	49.1	105000	58.5	112000	63.2	114000	65.5
Nd	29.1	28.1	11.7	1975.0	4860	17.3	8800	31.7	9790	36.0	14200	52.3	13900	52.2	13900	52.9	14000	54.2	14400	56.5	14600	58.4
Yb	51.4	52.9	30.6	1975.0	4300	8.1	9260	17.7	13400	26.0	17700	34.5	18500	36.7	19500	39.1	19300	39.4	19900	41.2	20000	42.2
TRREE+Y	499	470	218	1975.0	58990	12.6	119284	25.7	154528	33.9	193583	42.7	203138	45.5	209066	47.4	221360	50.9	222941	52.1	225000	53.6
LREE	140	138	61.9	1975.0	23130	16.8	45220	33.2	54320	40.6	64900	48.8	66730	51.1	65940	51.2	64710	51.2	67040	53.8	67500	55.1
HREE+Y	359	331	156	1975.0	35860	10.8	74064	22.7	100208	31.1	128683	40.2	136408	43.3	143126	45.9	156650	50.8	155901	51.5	157000	52.9

TRER - SL-4 1/2 inch by 1/4 inch



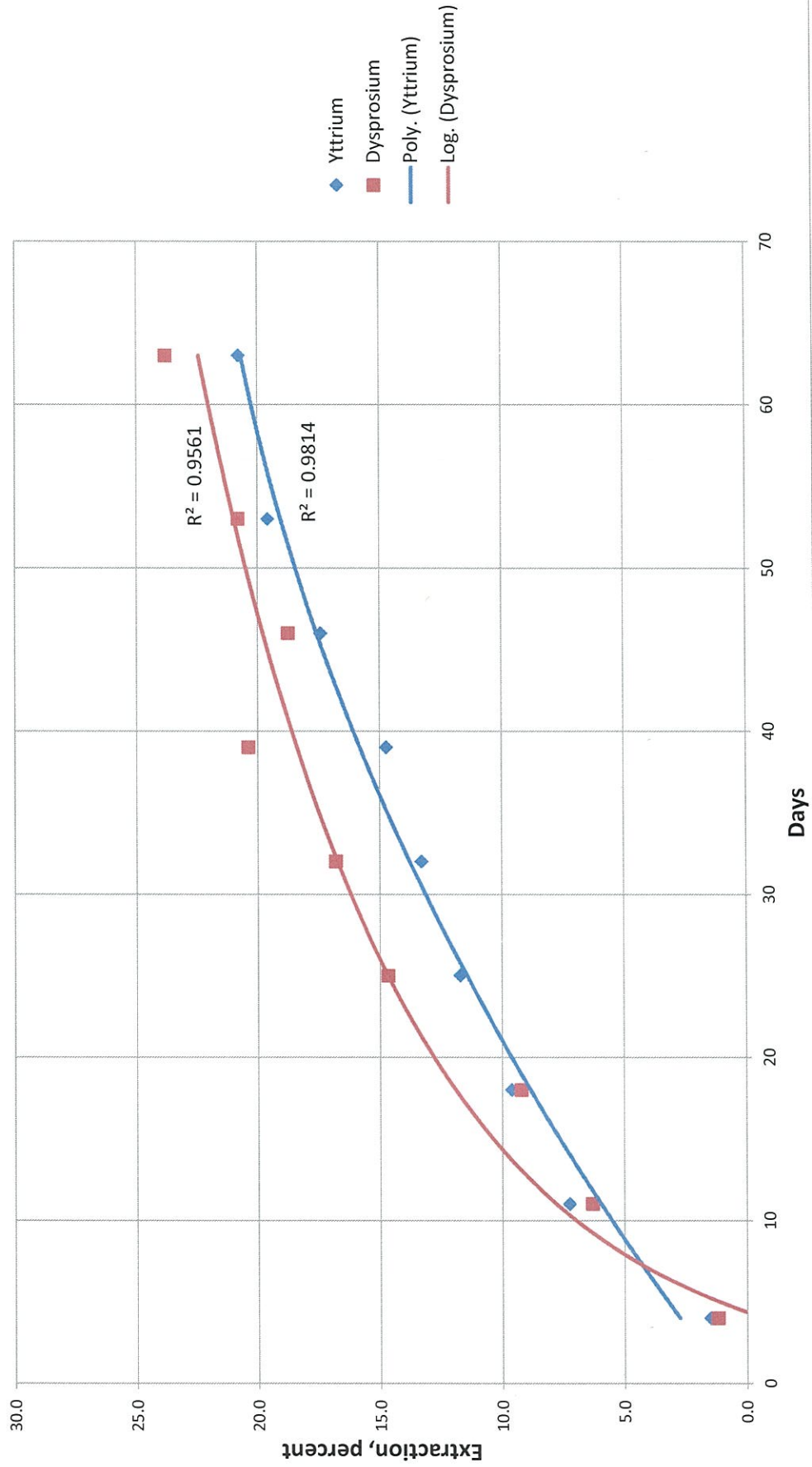
- ◆ Yttrium
- Dysprosium
- Poly. (Yttrium)
- Log. (Dysprosium)

Minus 1/4 inch

SI-5

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4		Day 11		Day 18		Day 25		Day 32		Day 39		Day 46		Day 53		Day 63	
	Assay	Calc			Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %	Solution ppb	extr %
Y	210	198	157	1995.3	3000	1.5	14400	7.2	18800	9.6	22700	11.7	25400	13.3	27900	14.7	32700	17.4	36500	19.6	38000	20.8
Dy	28.0	28.7	21.9	1995.3	349	1.2	1820	6.3	2620	9.2	4150	14.7	4690	16.8	5660	20.4	5080	18.8	5590	20.8	6320	23.8
U	35.3	33.6	27.1	1995.3	91.2	0.3	1230	3.6	2320	7.0	2800	8.5	3450	10.6	3820	11.8	4630	14.4	5560	17.4	6050	19.3
Li	40	62.6	40	1995.3	1480	2.4	3570	5.7	5780	9.3	8440	13.7	10500	17.3	12600	20.8	15900	26.4	18100	30.3	21300	36.1
Be	19	19.4	19	1995.3	43.7	0.2	133	0.7	178	0.9	249	1.3	293	1.6	237	1.3	269	1.5	325	1.8	337	1.9
Th	182	181	102	1995.3	149	0.1	6830	3.7	16600	9.2	26800	15.0	30600	17.3	50600	28.5	52400	30.1	59200	34.3	74800	43.7
Nd	29.1	26.4	15.8	1995.3	484	1.8	3130	11.8	4520	17.3	5900	22.8	6510	25.6	10300	40.2	7630	30.9	8550	34.8	9740	40.1
Yb	51.4	53.3	42.1	1995.3	581	1.1	2910	5.4	4510	8.6	6480	12.4	6940	13.5	11100	21.4	8180	16.4	9080	18.3	10300	21.0
TREE+Y	499	500	363	1995.3	9057	1.8	46573	9.3	61178	12.4	79628	16.3	86969	18.0	111230	23.1	105179	22.3	118554	25.3	125904	27.4
LREE	140	149	87.4	1995.3	4168	2.8	22890	15.3	28360	19.3	36530	25.1	39830	27.8	49940	34.9	47470	33.9	54320	39.0	56320	41.2
HREE+Y	359	360	285	1995.3	4889	1.4	23683	6.6	32818	9.2	43098	12.2	47139	13.6	61290	17.6	57709	17.0	64234	19.0	69584	20.9

TRER - SL-5 Minus 1/4 inch



APPENDIX C
RESULTS OF LEACHING TESTWORK

1/2 inch Crush Acid Strength 10 g/l

Purpose: To examine the rare earth elements from the Round Top Deposit

Sample: Approximately 3 kg of Red Rhyolite sample crushed to nominal one half inch

Procedure: The sample was crushed to a size of 80% passing 1/2". The material was loaded into a 2.5 gallon bucket and 3 kg of acidified solution (designated sulfuric acid strength) was added. At each designated sample interval (4, 12, 19, 26 days), the slurry was swirled to thoroughly mix the components and allowed to settle for about an hour. An aliquot was removed for a sample to be sent for analysis. The free acid was determined and the appropriate amount of concentrated sulfuric acid was added to restore the level to the original level. At the end of the test, a sample of the pure solution was removed for assay and residual free acid determination. The solids were then rinsed thoroughly and prepared for assay. Material balances were prepared for elements of interest.

General Conditions:

Crush	Leach Time	Sulfuric Acid Concentration	Percent Solids
P80 of 1/2 inch	26 days	10 g/l	50%
		0.936 Strength	

Summary of Results:

Parameter	Y	Dy	U	TREE+Y	HREE+Y
Extraction, % (1)	47.4	42.8	13.3	43.3	47.5
Assayed Head, g/mt	210	28.0	35.3	499	359
Calculated Head, g/mt	205	29.4	33.7	508	397
Final Tail Assay, g/mt	108	16.8	29.2	288	209
Sulfuric Acid Consumption	13.1		kg/mt		

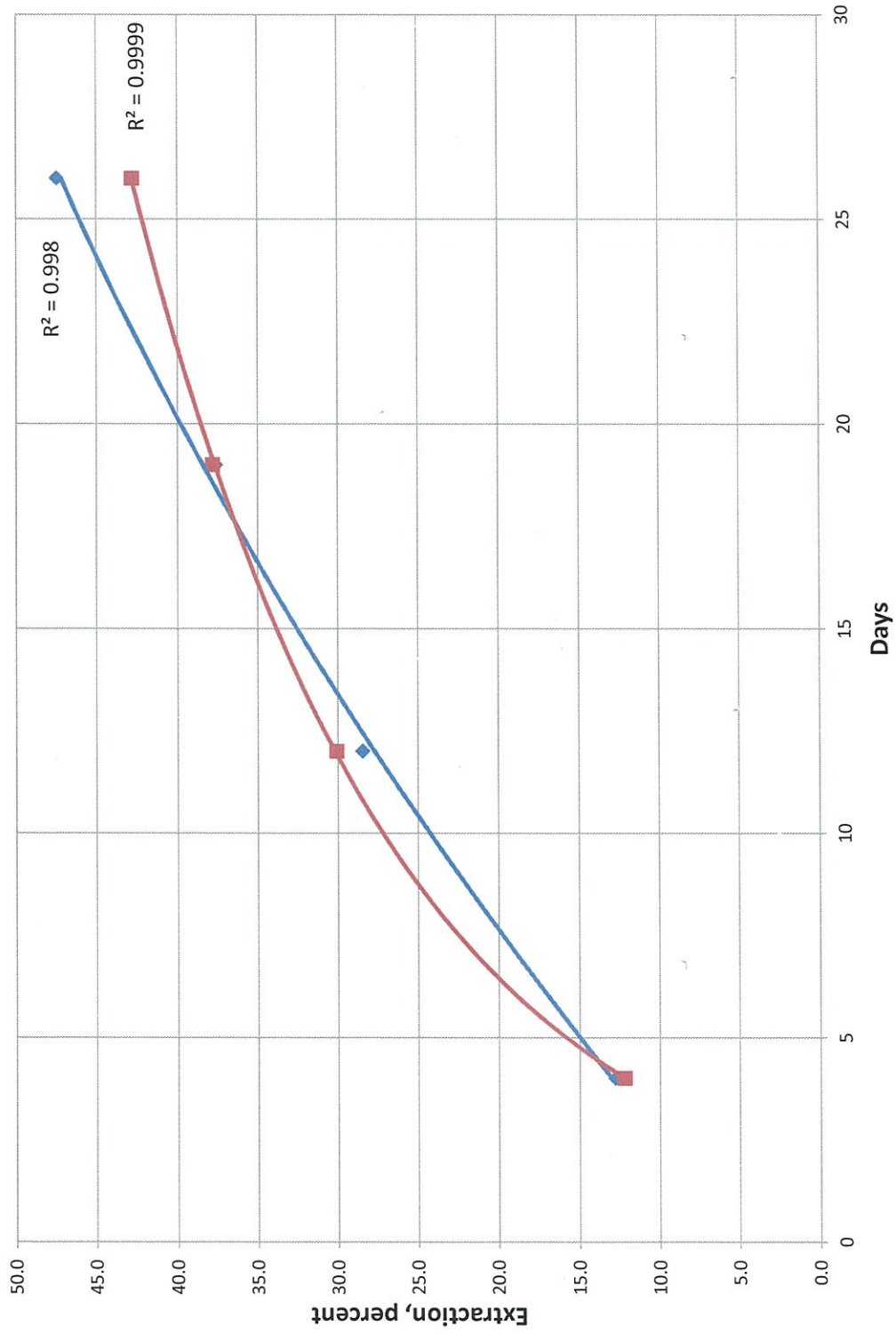
A. Leaching Conditions:

Time days	Net Pulp Weight grams	Net Soln Volume ml	Acid Added grams	Residual Acid g/l	pH
0	6003	3003	10.4		1.10
1	6000	3000	27.5	1.24	1.37
4	5993	2993	12.5	6.25	1.01
12	5991	2991	8.7	7.50	0.77
19	5981	2981	8.7	7.50	0.74
26	5987	2987		8.75	0.93
Total			67.8		

B. Detailed Results:

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4			Day 12			Day 19			Day 26		
	Assay	Calc			Solution		extr %	Solution		extr %	Solution		extr %	Solution		extr %
					ppb	grams		ppb	grams		ppb	grams		ppb	grams	
Y	210	205	108	2971.8	26000	2999.8	12.8	57600	2998.1	28.4	75900	2988.1	37.6	94900	2993.9	47.4
Dy	28.0	29.4	16.8	2971.8	3550	2999.8	12.2	8710	2998.1	30.1	10900	2988.1	37.8	12200	2993.9	42.8
U	35.3	33.7	29.2	2971.8	780	2999.8	2.3	2050	2998.1	6.2	3750	2988.1	11.3	4370	2993.9	13.3
Al	67946	72112	70702	2971.8	474000	2999.8	0.7	898000	2998.1	1.3	1130000	2988.1	1.6	1370000	2993.9	2.0
Fe	11200	10459	10360	2971.8	22200	2999.8	0.2	48600	2998.1	0.5	81200	2988.1	0.8	96600	2993.9	0.9
Li	40	46.8	40.0	2971.8	1920	2999.8	4.1	4070	2998.1	8.8	4810	2988.1	10.5	6660	2993.9	14.6
Be	19	20.2	20.0	2971.8	65.8	2999.8	0.3	120	2998.1	0.6	152	2988.1	0.8	165	2993.9	0.8
Th	182	172	86.9	2971.8	16800	2999.8	9.9	45000	2998.1	26.5	65000	2988.1	38.4	82900	2993.9	49.5
Nd	29.1	28.8	15.4	2971.8	5340	2999.8	18.7	9480	2998.1	33.4	11600	2988.1	41.1	13000	2993.9	46.5
Yb	51.4	58.3	38.5	2971.8	4650	2999.8	8.0	11200	2998.1	19.5	15600	2988.1	27.2	19300	2993.9	34.0
TREE+Y	499	508	288	2971.8	68983	2999.8	13.7	139822	2998.1	27.9	180222	2988.1	36.2	213965	2993.9	43.3
LREE	140	111	79.1	2971.8	12650	2999.8	11.5	22490	2998.1	20.6	27360	2988.1	25.2	30760	2993.9	28.6
HREE+Y	359	397	209	2971.8	56333	2999.8	14.3	117332	2998.1	30.0	152802	2988.1	39.2	183205	2993.9	47.5

TRER - SL-6 10 g/l Sulfuric Acid



- ◆ Yttrium
- Dysprosium
- Poly. (Yttrium)
- Log. (Dysprosium)

1/2 inch Crush Acid Strength 30 g/l

Purpose: To examine the rare earth elements from the Round Top Deposit

Sample: Approximately 3 kg of Red Rhyolite sample crushed to nominal one half inch

Procedure: The sample was crushed to a size of 80% passing 1/2". The material was loaded into a 2.5 gallon bucket and 3 kg of acidified solution (designated sulfuric acid strength) was added. At each designated sample interval (4, 12, 19, 26 days), the slurry was swirled to thoroughly mix the components and allowed to settle for about an hour. An aliquot was removed for a sample to be sent for analysis. The free acid was determined and the appropriate amount of concentrated sulfuric acid was added to restore the level to the original level. At the end of the test, a sample of the pure solution was removed for assay and residual free acid determination. The solids were then rinsed thoroughly and prepared for assay. Material balances were prepared for elements of interest.

General Conditions:

Crush	Leach Time	Sulfuric Acid Concentration	Percent Solids
P80 of 1/2 inch	26 days	30 g/l	50%

Summary of Results:

Parameter	Y	Dy	U	TREE+Y	HREE+Y
Extraction, % (1)	70.5	64.9	21.2	62.2	68.4
Assayed Head, g/mt	210	28.0	35.3	499	359
Calculated Head, g/mt	210	27.4	34.0	516	405
Final Tail Assay, g/mt	62	9.6	26.8	195	128
Sulfuric Acid Consumption	19.4	kg/mt			

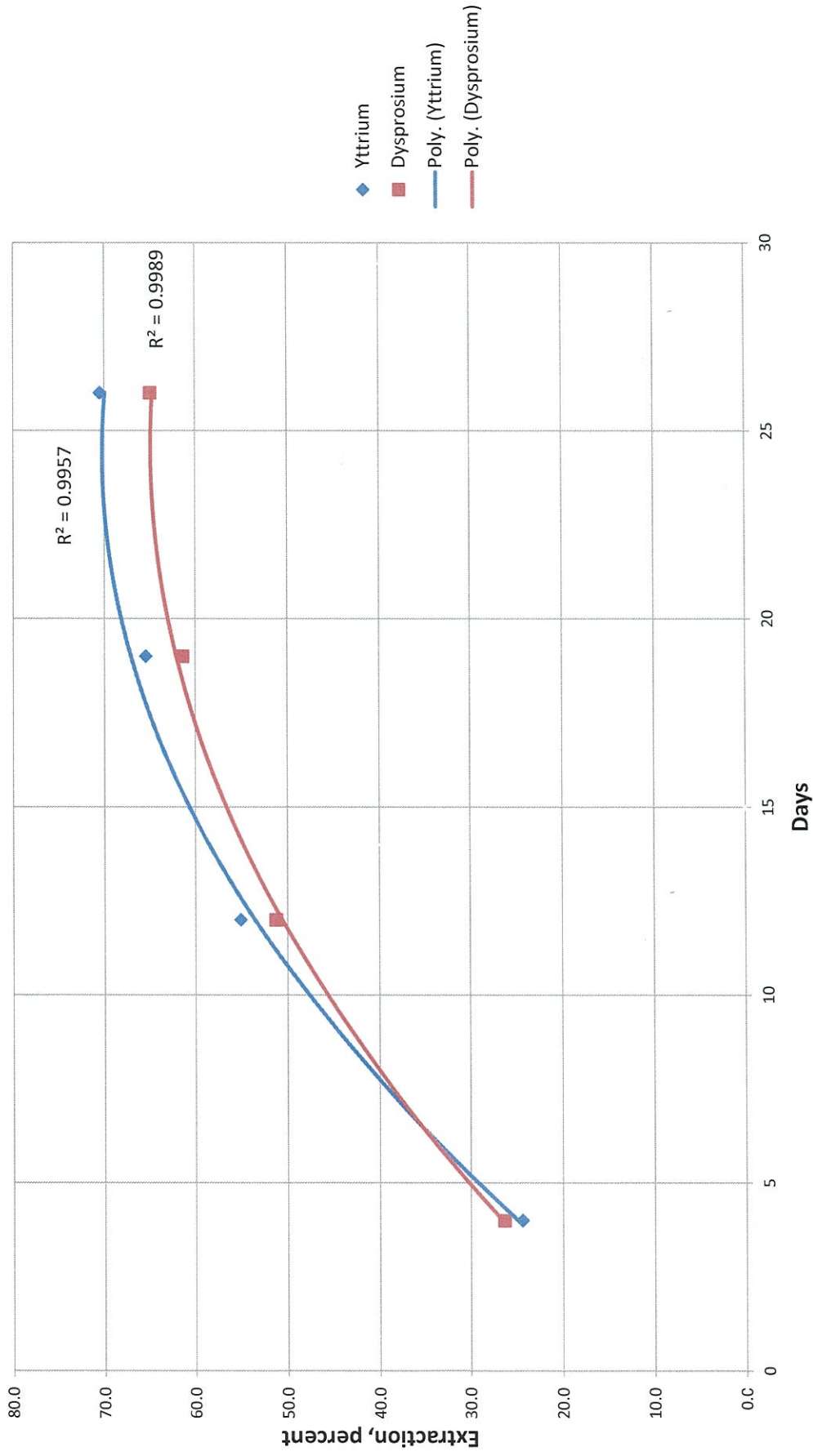
A. Leaching Conditions:

Time days	Net Pulp Weight grams	Net Soln Volume ml	Acid Added grams	Residual Acid g/l	pH
0	6006	3006	31.2		0.87
1	6053	3053	74.8	6.3	0.98
4	6046	3046	18.5	25.0	0.68
11	6019	3019	14.8	26.3	0.43
19	5978	2978	7.3	28.8	0.43
26	5956	2956		28.8	0.64
Total			146.6		

B. Detailed Results:

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4			Day 12			Day 19			Day 26		
	Assay	Calc			Solution		extr	Solution		extr	Solution		extr	Solution		extr
			ppb	grams	%	ppb	grams	%	ppb	grams	%	ppb	grams	%		
Y	210	210	62	2968.3	49900	3046.4	24.4	113000	3019.1	55.0	135000	2977.8	65.4	145000	2955.6	70.5
Dy	28.0	27.4	9.6	2968.3	7020	3046.4	26.3	13700	3019.1	51.2	16500	2977.8	61.4	17400	2955.6	64.9
U	35.3	34.0	26.8	2968.3	2970	3046.4	9.0	6360	3019.1	19.1	7250	2977.8	21.7	7040	2955.6	21.2
Al	67946	71223	69112	2968.3	795000	3046.4	1.1	1560000	3019.1	2.2	1860000	2977.8	2.7	2070000	2955.6	3.0
Fe	11200	10350	9800	2968.3	48900	3046.4	0.5	214000	3019.1	2.1	385000	2977.8	3.8	545000	2955.6	5.3
Li	40	72.9	40.0	2968.3	4150	3046.4	5.8	12100	3019.1	16.9	21800	2977.8	30.3	32600	2955.6	45.1
Be	19	20.5	20.0	2968.3	109	3046.4	0.5	234	3019.1	1.2	355	2977.8	1.8	445	2955.6	2.2
Th	182	178	45.3	2968.3	55900	3046.4	32.3	99400	3019.1	57.2	110000	2977.8	63.1	130000	2955.6	74.5
Nd	29.1	30.3	11.8	2968.3	9840	3046.4	33.3	14500	3019.1	49.0	18000	2977.8	60.5	18100	2955.6	61.1
Yb	51.4	58.9	27.4	2968.3	9900	3046.4	17.3	20500	3019.1	35.6	28300	2977.8	48.8	30900	2955.6	53.4
TREE+Y	499	516	195	2968.3	129991	3046.4	25.9	247228	3019.1	49.0	298072	2977.8	58.8	314136	2955.6	62.2
LREE	140	111	67.0	2968.3	23270	3046.4	21.6	34500	3019.1	31.9	41920	2977.8	38.6	42680	2955.6	39.4
HREE+Y	359	405	128	2968.3	106271	3046.4	26.9	212728	3019.1	53.7	256152	2977.8	64.3	271456	2955.6	68.4

TRER - SL-7 30 g/l Sulfuric Acid



1/2 inch Crush Acid Strength 50 g/l

Purpose: To examine the rare earth elements from the Round Top Deposit

Sample: Approximately 3 kg of Red Rhyolite sample crushed to nominal one half inch

Procedure: The sample was crushed to a size of 80% passing 1/2". The material was loaded into a 2.5 gallon bucket and 3 kg of acidified solution (designated sulfuric acid strength) was added. At each designated sample interval (4, 12, 19, 26 days), the slurry was swirled to thoroughly mix the components and allowed to settle for about an hour. An aliquot was removed for a sample to be sent for analysis. The free acid was determined and the appropriate amount of concentrated sulfuric acid was added to restore the level to the original level. At the end of the test, a sample of the pure solution was removed for assay and residual free acid determination. The solids were then rinsed thoroughly and prepared for assay. Material balances were prepared for elements of interest.

General Conditions: Crush Leach Time Sulfuric Acid Concentration Percent Solids
P80 of 1/2 inch 26 days 50 g/l 0.936 Strength 50%

Summary of Results:

Parameter	Y	Dy	U	TREE+Y	HREE+Y
Extraction, % (1)	77.4	74.8	28.4	67.4	74.1
Assayed Head, g/mt	210	28.0	35.3	499	359
Calculated Head, g/mt	221	33.4	34.5	527	421
Final Tail Assay, g/mt	50	8.4	24.7	172	109
Sulfuric Acid Consumption	21.6		kg/mt		

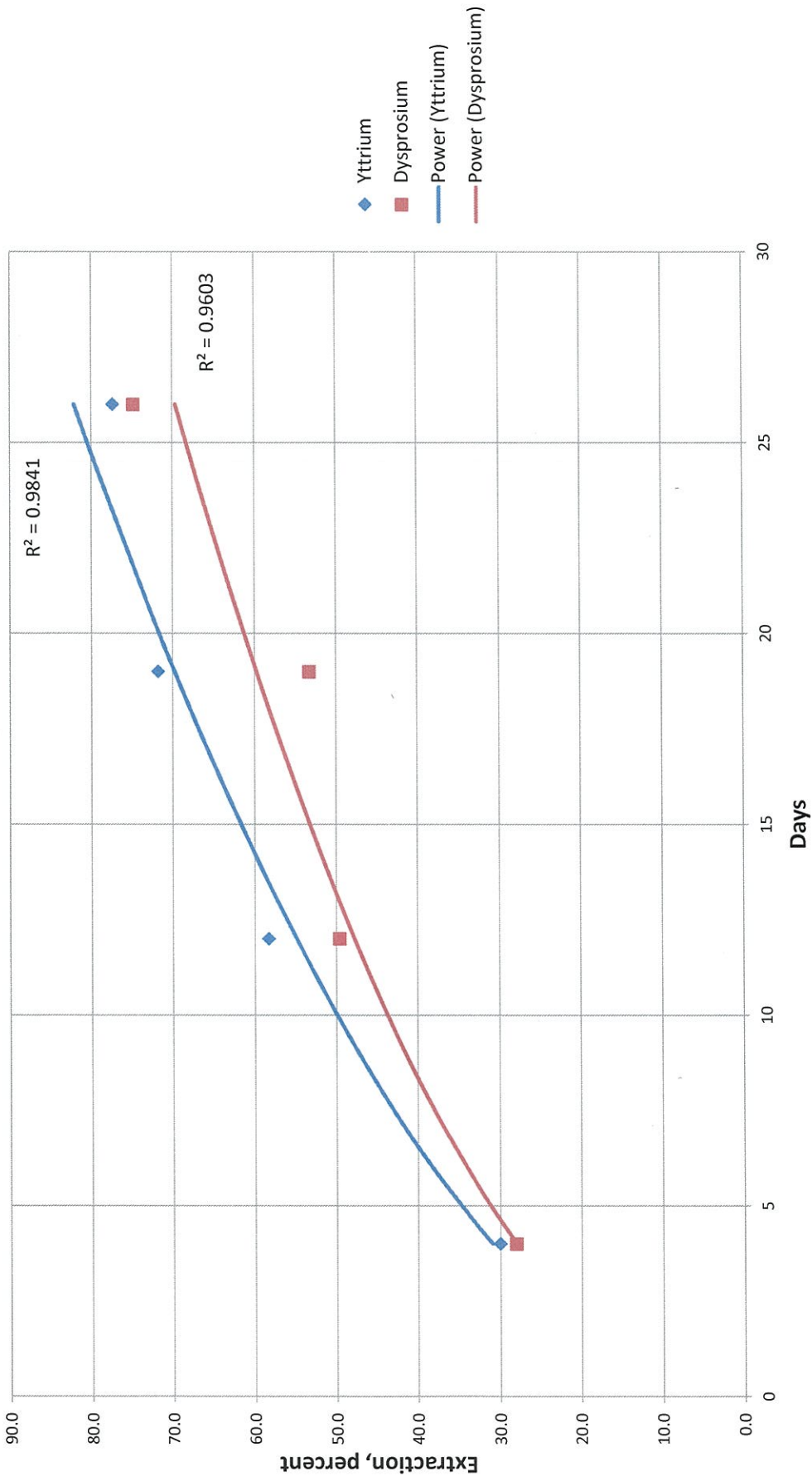
A. Leaching Conditions:

Time days	Net Pulp Weight grams	Net Soln Volume ml	Acid Added grams	Residual Acid g/l	pH
0	6001	3001	51.9		0.76
1	6098	3098	118.3	12.5	0.83
4	6086	3086	20.8	45.0	0.61
11	6064	3064	17.1	46.2	0.36
19	6031	3031	9.6	48.7	0.31
26	5985	2985		50.0	0.52
Total			217.7		

B. Detailed Results:

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4			Day 12			Day 19			Day 26		
	Assay	Calc			Solution		extr %	Solution		extr %	Solution		extr %	Solution		extr %
			ppb	grams		ppb	grams		ppb	grams		ppb	grams		ppb	grams
Y	210	221	50	2961.4	63800	3086.4	30.0	124000	3063.8	58.3	153000	3030.6	71.7	166000	2984.7	77.4
Dy	28.0	33.4	8.4	2961.4	8990	3086.4	28.1	15900	3063.8	49.6	17100	3030.6	53.3	24300	2984.7	74.8
U	35.3	34.5	24.7	2961.4	4170	3086.4	12.6	6560	3063.8	19.8	6990	3030.6	21.1	9520	2984.7	28.4
Al	67946	72213	69483	2961.4	986000	3086.4	1.4	1750000	3063.8	2.5	2270000	3030.6	3.3	2650000	2984.7	3.8
Fe	11200	10444	9450	2961.4	754000	3086.4	7.5	343000	3063.8	3.5	640000	3030.6	6.4	966000	2984.7	9.5
Li	40	102.4	40.0	2961.4	5920	3086.4	6.0	22700	3063.8	23.0	42400	3030.6	42.7	61100	2984.7	60.9
Be	19	19.6	19.0	2961.4	146	3086.4	0.8	351	3063.8	1.9	541	3030.6	2.8	624	2984.7	3.3
Th	182	172	37.4	2961.4	78900	3086.4	47.7	124000	3063.8	75.0	131000	3030.6	79.2	130000	2984.7	78.3
Nd	29.1	28.7	10.5	2961.4	12200	3086.4	44.3	16300	3063.8	59.3	17000	3030.6	61.8	17500	2984.7	63.4
Yb	51.4	56.2	24.7	2961.4	13900	3086.4	25.8	25200	3063.8	46.7	28400	3030.6	52.5	30500	2984.7	56.1
TREE+Y	499	527	172	2961.4	162100	3086.4	32.1	272427	3063.8	53.8	315012	3030.6	62.1	343888	2984.7	67.4
LREE	140	106	62.3	2961.4	28970	3086.4	28.6	39240	3063.8	38.7	40510	3030.6	40.0	41800	2984.7	41.1
HREE+Y	359	421	109	2961.4	133130	3086.4	32.9	233187	3063.8	57.6	274502	3030.6	67.7	302088	2984.7	74.1

TRER - SL-8 50 g/l Sulfuric Acid



- ◆ Yttrium
- Dysprosium
- Power (Yttrium)
- Power (Dysprosium)

1/2 inch Crush Acid Strength 100 g/l

Purpose: To examine the rare earth elements from the Round Top Deposit

Sample: Approximately 3 kg of Red Rhyolite sample crushed to nominal one half inch

Procedure: The sample was crushed to a size of 80% passing 1/2". The material was loaded into a 2.5 gallon bucket and 3 kg of acidified solution (designated sulfuric acid strength) was added. At each designated sample interval (4, 12, 19, 26 days), the slurry was swirled to thoroughly mix the components and allowed to settle for about an hour. An aliquot was removed for a sample to be sent for analysis. The free acid was determined and the appropriate amount of concentrated sulfuric acid was added to restore the level to the original level. At the end of the test, a sample of the pure solution was removed for assay and residual free acid determination. The solids were then rinsed thoroughly and prepared for assay. Material balances were prepared for elements of interest.

General Conditions:

Crush	Leach Time	Sulfuric Acid Concentration	Percent Solids
P80 of 1/2 inch	26 days	100 g/l 0.936 Strength	50%

Summary of Results:

Parameter	Y	Dy	U	TREE+Y	HREE+Y
Extraction, % (1)	84.0	79.8	30.7	73.4	79.9
Assayed Head, g/mt	210	28.0	35.3	499	359
Calculated Head, g/mt	231	34.1	25.2	556	448
Final Tail Assay, g/mt	37	6.9	24.7	148	90
Sulfuric Acid Consumption	29.6 kg/mt				

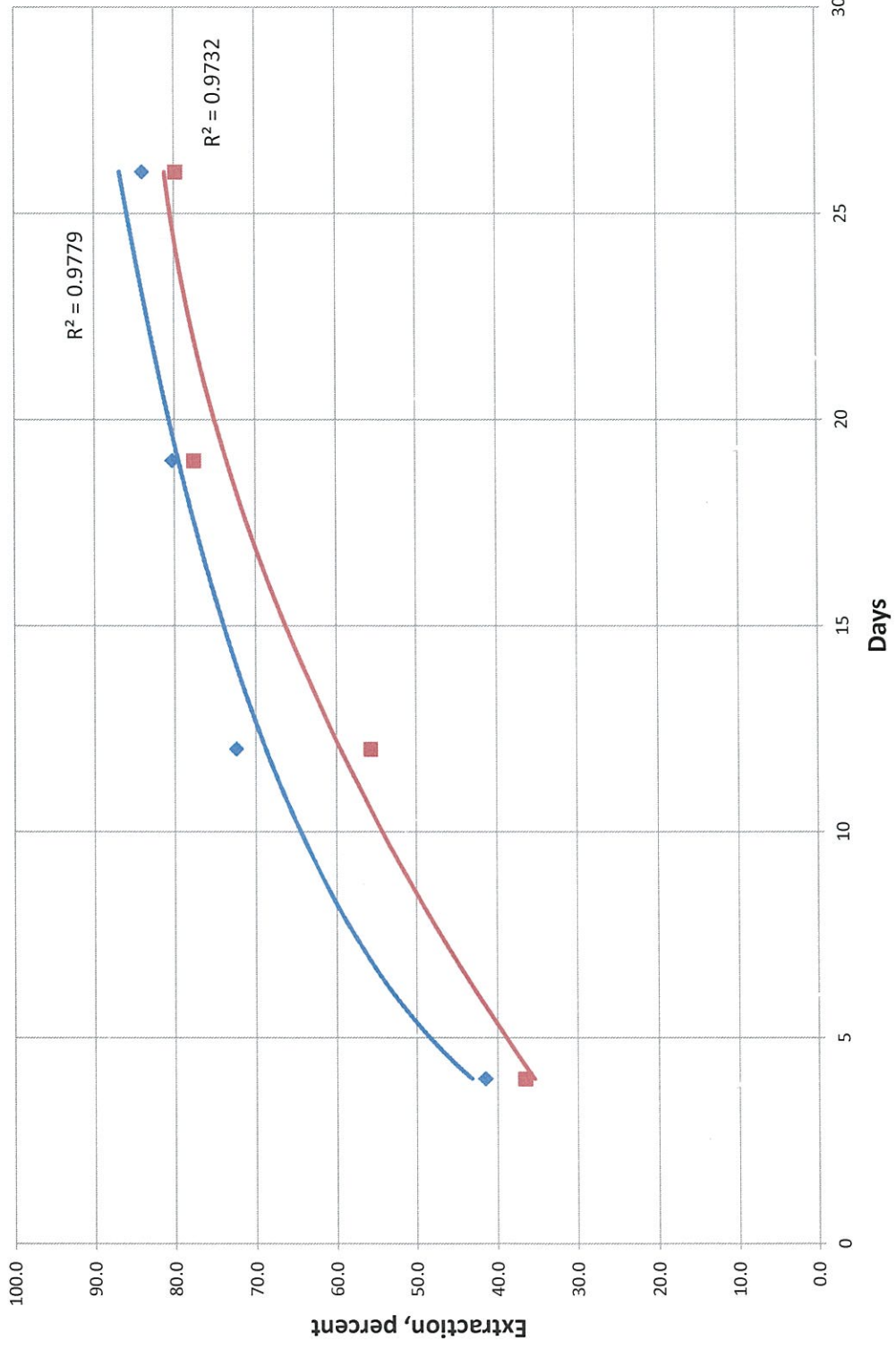
A. Leaching Conditions:

Time days	Net Pulp Weight grams	Net Soln Volume ml	Acid Added grams	Residual Acid g/l	pH
0	6003	3003	103.6		0.64
1	6209	3209	221.5	30.0	0.68
4	6199	3199	37.8	91.2	0.53
11	6184	3184	22.8	96.2	0.19
19	6148	3148	19.1	97.5	0.16
26	6115	3115		100.0	0.37
Total			404.8		

B. Detailed Results:

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4			Day 12			Day 19			Day 26		
	Assay	Calc			Solution		extr %	Solution		extr %	Solution		extr %	Solution		extr %
					ppb	grams		ppb	grams		ppb	grams		ppb	grams	
Y	210	231	37	2950.3	88400	3199.4	41.5	154000	3183.6	72.4	171000	3148.1	80.3	179000	3114.9	84.0
Dy	28.0	34.1	6.9	2950.3	11500	3199.4	36.5	17500	3183.6	55.7	24500	3148.1	77.6	25200	3114.9	79.8
U	35.3	25.2	24.7	2950.3	5640	3199.4	17.2	7250	3183.6	22.1	9670	3148.1	29.4	10100	3114.9	30.7
Al	67946	25.2	69059	2950.3	1330000	3199.4	2.0	2370000	3183.6	3.5	2950000	3148.1	4.4	3520000	3114.9	5.2
Fe	112000	25.2	8610	2950.3	211000	3199.4	2.2	796000	3183.6	8.1	1320000	3148.1	13.4	1850000	3114.9	18.7
Li	40	154.2	30.0	2950.3	13900	3199.4	9.8	52800	3183.6	37.0	83000	3148.1	57.9	116000	3114.9	80.6
Be	19	19.1	18.0	2950.3	263	3199.4	1.5	686	3183.6	3.9	792	3148.1	4.5	1050	3114.9	5.9
Th	182	185	29.4	2950.3	96700	3199.4	56.6	131000	3183.6	76.9	97800	3148.1	57.8	144000	3114.9	84.1
Nd	29.1	31.2	9.9	2950.3	13600	3199.4	47.2	17000	3183.6	59.3	12900	3148.1	45.3	19700	3114.9	68.3
Yb	51.4	63.3	23.2	2950.3	18500	3199.4	31.7	30200	3183.6	51.8	24000	3148.1	41.3	37200	3114.9	63.4
TREE+Y	499	556	148	2950.3	207001	3199.4	40.4	320936	3183.6	62.7	332614	3148.1	65.0	376551	3114.9	73.4
LREE	140	108	58.2	2950.3	33160	3199.4	33.3	40810	3183.6	41.1	37990	3148.1	38.4	45900	3114.9	46.1
HREE+Y	359	448	90	2950.3	173841	3199.4	42.1	280126	3183.6	68.0	294624	3148.1	71.4	330651	3114.9	79.9

TRER - SL-9 100 g/l Sulfuric Acid



- ◆ Yttrium
- Dysprosium
- Log. (Yttrium)
- Poly. (Dysprosium)

1/2 inch Crush Acid Strength 5 g/l

Purpose: To examine the rare earth elements from the Round Top Deposit

Sample: Approximately 3 kg of Red Rhyolite sample crushed to nominal one half inch

Procedure: The sample was crushed to a size of 80% passing 1/2". The material was loaded into a 2.5 gallon bucket and 3 kg of acidified solution (designated sulfuric acid strength) was added. At each designated sample interval (4, 11, 18, 25 days), the slurry was swirled to thoroughly mix the components and allowed to settle for about an hour. An aliquot was removed for a sample to be sent for analysis. The free acid was determined and the appropriate amount of concentrated sulfuric acid was added to restore the level to the original level. At the end of the test, a sample of the pure solution was removed for assay and residual free acid determination. The solids were then rinsed thoroughly and prepared for assay. Material balances were prepared for elements of interest.

General Conditions:

Crush	Leach Time	Sulfuric Acid Concentration	Percent Solids
P80 of 1/2 inch	25 days	5 g/l	50%
		0.936 Strength	

Summary of Results:

Parameter	Y	Dy	U	TREE+Y	HREE+Y
Extraction, % (1)	24.6	21.4	4.8	24.8	27.3
Assayed Head, g/mt	210	28.0	35.3	499	359
Calculated Head, g/mt	204	29.3	35.1	500	385
Final Tail Assay, g/mt	154	23.0	33.4	376	280
Sulfuric Acid Consumption	9.2		kg/mt		

A. Leaching Conditions:

Time days	Net Pulp Weight grams	Net Soln Volume ml	Acid Added grams	Residual Acid g/l	pH
0	6006	3006	15.6		
1	6001	3001	8.1	2.5	0.95
4	5985	2985	8.1	2.5	1.27
11	5973	2973	4.3	3.8	0.91
19	5968	2968	4.4	3.8	0.93
26	5980	2980		3.8	1.13
Total			40.5		

B. Detailed Results:

Element	Head, ppm		Tails Assay ppm	Solids grams	Day 4			Day 11			Day 18			Day 25		
	Assay	Calc			Solution		extr %	Solution		extr %	Solution		extr %	Solution		extr %
					ppb	grams		ppb	grams		ppb	grams		ppb	grams	
Y	210	204	154	2974.7	16000	2984.9	7.9	31400	2972.9	15.5	41300	2968.3	20.5	49000	2979.7	24.6
Dy	28.0	29.3	23.0	2974.7	1990	2984.9	6.8	3850	2972.9	13.2	5050	2968.3	17.4	6140	2979.7	21.4
U	35.3	35.1	33.4	2974.7	386	2984.9	1.1	841	2972.9	2.4	1240	2968.3	3.6	1660	2979.7	4.8
Al	67946	72368	71391	2974.7	353000	2984.9	0.5	608000	2972.9	0.8	790000	2968.3	1.1	955000	2979.7	1.4
Fe	11200	10150	10080	2974.7	28700	2984.9	0.3	43800	2972.9	0.4	53500	2968.3	0.5	68600	2979.7	0.7
Li	40	45.0	40.0	2974.7	1150	2984.9	2.6	2480	2972.9	5.5	3650	2968.3	8.2	4950	2979.7	11.2
Be	19	19.1	19.0	2974.7	46.4	2984.9	0.2	74.9	2972.9	0.4	97.4	2968.3	0.5	109	2979.7	0.6
Th	182	174	144	2974.7	8190	2984.9	4.7	15800	2972.9	9.1	21000	2968.3	12.2	29100	2979.7	17.1
Nd	29.1	27.8	19.8	2974.7	3320	2984.9	12.0	5360	2972.9	19.4	6300	2968.3	23.0	7780	2979.7	28.7
Yb	51.4	54.8	45.5	2974.7	2790	2984.9	5.1	5580	2972.9	10.2	7060	2968.3	13.0	9060	2979.7	16.9
TREE+Y	499	500	376	2974.7	45568	2984.9	9.1	81299	2972.9	16.4	102112	2968.3	20.7	121065	2979.7	24.8
LREE	140	114	95.2	2974.7	7640	2984.9	6.7	12600	2972.9	11.1	15040	2968.3	13.4	18470	2979.7	16.6
HREE+Y	359	385	280	2974.7	37928	2984.9	9.9	68699	2972.9	17.9	87071	2968.3	22.9	102595	2979.7	27.3

TRER - SL-10 5 g/l Sulfuric Acid

