

**Appendix C**  
**Frost Protection**

## **Appendix C**

### **Heap Leach Frost Protection Layer Quality Control Test Results**

**Table C.1. Daily Quantities and Quality Control Test Frequencies for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: This table lists only those days that fill was placed and/or testing performed. CY = Cubic Yards; NG = Nuclear Gauge (test), i.e., field compaction test.

Testing Frequency Requirements:

*Field Compaction Tests: 1: 500 CY*

*Proctors: 1: 5000 CY*

*Sand-Cones: 1:10 NG tests*

Date	Total Quantities Placed		Field Compaction Test Frequency			Proctor Test Frequency			Sand-Cone Test Frequency		
	Daily Yardage	Cumulative Yardage	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (/NG tests)
6/11/97	966	966	4	4	1: 242	1	1	1: 966		0	--
6/12/97	1,240	2,206	6	10	1: 221	1	2	1: 1103	1	1	1: 10
6/13/97	4,900	7,106		10	1: 711		2	1: 3553		1	1: 10
6/16/97	0	7,106	3	13	1: 547		2	1: 3553		1	1: 13
6/17/97	6,820	13,926	5	18	1: 774	3	5	1: 2785		1	1: 18
6/18/97	4,160	18,086	4	22	1: 822	2	7	1: 2584	1	2	1: 11
6/19/97	10,040	28,126	8	30	1: 938	2	9	1: 3125	1	3	1: 10
6/20/97	9,600	37,726	26	56	1: 674	3	12	1: 3144	3	6	1: 9
6/23/97	10,060	47,786	14	70	1: 683	2	14	1: 3413		6	1: 12
6/24/97	11,840	59,626	12	82	1: 727	2	16	1: 3727	1	7	1: 12
6/25/97	6,240	65,866	5	87	1: 757	3	19	1: 3467	3	10	1: 9
6/26/97	3,720	69,586	27	114	1: 610	2	21	1: 3314	3	13	1: 9
6/27/97	3,220	72,806	10	124	1: 587	1	22	1: 3309		13	1: 10
6/29/97	4,440	77,246	8	132	1: 585	2	24	1: 3219	1	14	1: 9
6/30/97	4,760	82,006	6	138	1: 594	2	26	1: 3154		14	1: 10
7/1/97	5,660	87,666	7	145	1: 605	1	27	1: 3247	1	15	1: 10
7/2/97	5,880	93,546	8	153	1: 611		27	1: 3465		15	1: 10
7/7/97	7,160	100,706	9	162	1: 622	1	28	1: 3597	1	16	1: 10
7/8/97	6,860	107,566	16	178	1: 604	3	31	1: 3470	1	17	1: 10
7/9/97	5,720	113,286	13	191	1: 593	1	32	1: 3540	1	18	1: 11
7/10/97	6,440	119,726	4	195	1: 614	1	33	1: 3628		18	1: 11
7/11/97	6,000	125,726	11	206	1: 610	1	34	1: 3698	1	19	1: 11
7/14/97	5,660	131,386	15	221	1: 595	1	35	1: 3754	1	20	1: 11
7/15/97	6,240	137,626	21	242	1: 569	1	36	1: 3823	2	22	1: 11
7/16/97	720	138,346	7	249	1: 556	1	37	1: 3739		22	1: 11
7/18/97	6,240	144,586	4	253	1: 571	1	38	1: 3805		22	1: 12
7/21/97	4,580	149,166	9	262	1: 569	1	39	1: 3825	2	24	1: 11
7/22/97	4,580	153,746	10	272	1: 565	1	40	1: 3844	2	26	1: 10
7/23/97	6,120	159,866	11	283	1: 565	1	41	1: 3899	2	28	1: 10
7/24/97	4,640	164,506	10	293	1: 561	1	42	1: 3917	1	29	1: 10
7/25/97	4,860	169,366	8	301	1: 563	1	43	1: 3939		29	1: 10
7/28/97	860	170,226		301	1: 566	1	44	1: 3869		29	1: 10
7/30/97	3,840	174,066	3	304	1: 573	1	45	1: 3868		29	1: 10
7/31/97	6,340	180,406	8	312	1: 578	1	46	1: 3922	2	31	1: 10

**Table C.1. Daily Quantities and Quality Control Test Frequencies for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: This table lists only those days that fill was placed and/or testing performed. CY = Cubic Yards; NG = Nuclear Gauge (test), i.e., field compaction test.

Testing Frequency Requirements:

*Field Compaction Tests: 1: 500 CY*

*Proctors: 1: 5000 CY*

*Sand-Cones: 1:10 NG tests*

Date	Total Quantities Placed		Field Compaction Test Frequency			Proctor Test Frequency			Sand-Cone Test Frequency		
	Daily Yardage	Cumulative Yardage	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (/NG tests)
8/1/97	5,840	186,246	10	322	1: 578	1	47	1: 3963		31	1: 10
8/2/97	200	186,446		322	1: 579		47	1: 3967		31	1: 10
8/4/97	6,240	192,686	8	330	1: 584	2	49	1: 3932		31	1: 11
8/5/97	1,240	193,926	7	337	1: 575	1	50	1: 3879		31	1: 11
8/7/97	7,540	201,466	12	349	1: 577	1	51	1: 3950	1	32	1: 11
8/8/97	6,420	207,886	17	366	1: 568	1	52	1: 3998	2	34	1: 11
8/11/97	5,920	213,806	9	375	1: 570	2	54	1: 3959	1	35	1: 11
8/12/97	4,080	217,886	16	391	1: 557	1	55	1: 3962	1	36	1: 11
8/13/97	0	217,886		391	1: 557	1	56	1: 3891		36	1: 11
8/14/97	3,540	221,426	24	415	1: 534	2	58	1: 3818	2	38	1: 11
8/15/97	6,480	227,906	18	433	1: 526	3	61	1: 3736	2	40	1: 11
8/18/97	6,500	234,406	15	448	1: 523	2	63	1: 3721	2	42	1: 11
8/19/97	5,480	239,886	17	465	1: 516	2	65	1: 3691	1	43	1: 11
8/20/97	7,780	247,666	11	476	1: 520	3	68	1: 3642	2	45	1: 11
8/21/97	9,600	257,266	25	501	1: 514	4	72	1: 3573	2	47	1: 11
8/22/97	9,680	266,946	28	529	1: 505	2	74	1: 3607	2	49	1: 11
8/25/97	5,220	272,166	12	541	1: 503	2	76	1: 3581	1	50	1: 11
8/26/97	10,380	282,546	22	563	1: 502	2	78	1: 3622	1	51	1: 11
8/27/97	8,040	290,586	17	580	1: 501	2	80	1: 3632	1	52	1: 11
8/28/97	6,500	297,086	21	601	1: 494	1	81	1: 3668	4	56	1: 11
8/29/97	4,420	301,506	9	610	1: 494		81	1: 3722	2	58	1: 11
9/2/97	3,880	305,386	10	620	1: 493	1	82	1: 3724	1	59	1: 11
9/3/97	3,420	308,806	7	627	1: 493	1	83	1: 3721	1	60	1: 10
9/4/97	2,960	311,766	6	633	1: 493	1	84	1: 3712	1	61	1: 10
9/5/97	6,500	318,266	8	641	1: 497	1	85	1: 3744	1	62	1: 10
9/8/97	6,560	324,826	7	648	1: 501	2	87	1: 3734	1	63	1: 10
9/9/97	6,780	331,606	6	654	1: 507	1	88	1: 3768	1	64	1: 10
9/10/97	7,280	338,886	9	663	1: 511	1	89	1: 3808	2	66	1: 10
9/11/97	7,700	346,586	11	674	1: 514	1	90	1: 3851	1	67	1: 10
9/12/97	0	346,586	4	678	1: 511		90	1: 3851	1	68	1: 10
9/15/97	0	346,586	7	685	1: 506		90	1: 3851		68	1: 10
9/16/97	0	346,586	10	695	1: 499		90	1: 3851	1	69	1: 10
9/17/97	2,840	349,426	2	697	1: 501	1	91	1: 3840		69	1: 10
9/18/97	0	349,426	10	707	1: 494	1	92	1: 3798	2	71	1: 10

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Note: This table lists only those days that fill was placed and/or testing performed. CY = Cubic Yards; NG = Nuclear Gauge (test), i.e., field compaction test.

Testing Frequency Requirements:

*Field Compaction Tests: 1: 500 CY*

*Proctors: 1: 5000 CY*

*Sand-Cones: 1:10 NG tests*

Date	Total Quantities Placed		Field Compaction Test Frequency			Proctor Test Frequency			Sand-Cone Test Frequency		
	Daily Yardage	Cumulative Yardage	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (/NG tests)
9/19/97	3,080	352,506		707	1: 499	1	93	1: 3790		71	1: 10
9/25/97	0	352,506	6	713	1: 494	1	94	1: 3750		71	1: 10
9/26/97	6,000	358,506	2	715	1: 501		94	1: 3814		71	1: 10
9/29/97	0	358,506	12	727	1: 493		94	1: 3814	1	72	1: 10
8/11/98	1,044	359,550		727	1: 495	1	95	1: 3785		72	1: 10
8/12/98	738	360,288		727	1: 496		95	1: 3793		72	1: 10
8/17/98	1,098	361,386		727	1: 497		95	1: 3804		72	1: 10
8/18/98	360	361,746		727	1: 498		95	1: 3808		72	1: 10
8/19/98	540	362,286		727	1: 498		95	1: 3814		72	1: 10
8/20/98	144	362,430		727	1: 499		95	1: 3815		72	1: 10
8/21/98	1,116	363,546		727	1: 500		95	1: 3827		72	1: 10
8/24/98	612	364,158		727	1: 501		95	1: 3833		72	1: 10
8/26/98	342	364,500		727	1: 501		95	1: 3837		72	1: 10
8/27/98	2,070	366,570		727	1: 504		95	1: 3859		72	1: 10
8/28/98	936	367,506		727	1: 506		95	1: 3868		72	1: 10
9/1/98	954	368,460		727	1: 507		95	1: 3879		72	1: 10
9/2/98	3,501	371,961		727	1: 512		95	1: 3915		72	1: 10
9/3/98	3,510	375,471	5	732	1: 513	1	96	1: 3911		72	1: 10
9/8/98	1,647	377,118	2	734	1: 514	1	97	1: 3888		72	1: 10
9/9/98	3,051	380,169	7	741	1: 513		97	1: 3919	1	73	1: 10
9/10/98	5,886	386,055	9	750	1: 515		97	1: 3980	1	74	1: 10
9/14/98	5,049	391,104	18	768	1: 509	1	98	1: 3991	1	75	1: 10
9/15/98	6,129	397,233	20	788	1: 504	1	99	1: 4012	2	77	1: 10
9/16/98	6,588	403,821	14	802	1: 504	2	101	1: 3998	1	78	1: 10
9/17/98	5,778	409,599	16	818	1: 501	3	104	1: 3938	1	79	1: 10
9/18/98	6,264	415,863	16	834	1: 499	1	105	1: 3961	2	81	1: 10
9/21/98	2,781	418,644	3	837	1: 500		105	1: 3987		81	1: 10
9/22/98	6,885	425,529	12	849	1: 501	1	106	1: 4014	1	82	1: 10
9/23/98	5,076	430,605	18	867	1: 497	2	108	1: 3987	2	84	1: 10
9/24/98	6,291	436,896	21	888	1: 492	1	109	1: 4008	1	85	1: 10
9/25/98	1,332	438,228	2	890	1: 492	1	110	1: 3984	1	86	1: 10
9/28/98	54	438,282	6	896	1: 489	1	111	1: 3948	1	87	1: 10
9/30/98	378	438,660	0	896	1: 490		111	1: 3952		87	1: 10
10/1/98	5,562	444,222	7	903	1: 492	1	112	1: 3966	1	88	1: 10

**Table C.1. Daily Quantities and Quality Control Test Frequencies for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: This table lists only those days that fill was placed and/or testing performed. CY = Cubic Yards; NG = Nuclear Gauge (test), i.e., field compaction test.

Testing Frequency Requirements:

*Field Compaction Tests: 1: 500 CY*

*Proctors: 1: 5000 CY*

*Sand-Cones: 1:10 NG tests*

Date	Total Quantities Placed		Field Compaction Test Frequency			Proctor Test Frequency			Sand-Cone Test Frequency		
	Daily Yardage	Cumulative Yardage	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (/NG tests)
10/2/98	4,185	448,407	7	910	1: 493		112	1: 4004	1	89	1: 10
10/5/98	0	448,407		910	1: 493	1	113	1: 3968		89	1: 10
10/8/98	3,942	452,349	9	919	1: 492	1	114	1: 3968	1	90	1: 10
10/9/98	4,644	456,993	8	927	1: 493	1	115	1: 3974	1	91	1: 10
10/12/98	0	456,993	6	933	1: 490	1	116	1: 3940	1	92	1: 10
10/13/98	945	457,938		933	1: 491		116	1: 3948		92	1: 10
10/15/98	540	458,478		933	1: 491		116	1: 3952		92	1: 10
5/15/00	729	459,207		933	1: 492		116	1: 3959		92	1: 10
5/16/00	3,510	462,717	5	938	1: 493	3	119	1: 3888		92	1: 10
5/17/00	756	463,473	5	943	1: 491		119	1: 3895	1	93	1: 10
6/23/00	1,092	464,565	7	950	1: 489	1	120	1: 3871		93	1: 10
6/26/00	2,205	466,770	7	957	1: 488	1	121	1: 3858	1	94	1: 10
6/27/00	0	466,770	3	960	1: 486		121	1: 3858		94	1: 10
6/30/00	231	467,001		960	1: 486		121	1: 3860		94	1: 10
7/5/00	1,029	468,030	2	962	1: 487		121	1: 3868	1	95	1: 10
7/6/00	0	468,030	1	963	1: 486		121	1: 3868		95	1: 10
7/10/00	525	468,555	1	964	1: 486	1	122	1: 3841		95	1: 10
7/11/00	2,373	470,928	3	967	1: 487		122	1: 3860		95	1: 10
7/12/00	1,596	472,524	1	968	1: 488		122	1: 3873		95	1: 10
7/13/00	2,331	474,855	4	972	1: 489		122	1: 3892	1	96	1: 10
7/14/00	882	475,737	3	975	1: 488	1	123	1: 3868		96	1: 10

**Total Quantities of Frost Protection Material Placed in the Heap Leach, Summary by Year:**

Year	Cu Yds Placed
1997	358,506
1998	99,972
1999	no work
2000	17,259
<b>Total:</b>	<b>475,737</b>

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
CFM-001	6/11/97	791860	837470	1	CF-01	101.5	20.0	110.3	18.0	108.7	P	Channel fill material on top of heap
CFM-002	6/11/97	791880	837540	1	CF-01	101.5	20.0	106.6	18.1	105.0	P	" "
FP-001	6/11/97	791830	837630	1	F-01	100.1	21.1	100.0	17.1	100.0	F Moist	Fails Moisture
FP-001-R	6/18/97	791830	837630	1	F-07	106.0	18.3	105.0	19.2	99.1	P	Retest
FPG-01	6/12/97	792095	837535	1	FSG-02	111.6	12.5	110.1	13.2	98.7	P	Existing frost material on top of heap
FPG-02	6/12/97	791850	837930	1	FSG-02	111.6	12.5	112.1	14.9	100.4	P	" "
FP-002	6/11/97	791780	837860	2	F-01	100.1	21.1	100.9	16.1	100.8	F Moist	Fails Moisture
FP-002-R	6/16/97	791780	837860	2	F-02	112.9	14.5	107.8	14.9	95.5	P	Retest
FP-003 *	6/12/97	792030	837940	1	F-01	100.1	21.1	102.2	16.5	102.1	F Moist	Fails Moisture
FP-003-R	6/16/97	792030	837940	1	F-02	112.9	14.5	105.3	22.7	93.3	F Comp	Retest Fails Compaction
FP-003-R2	6/18/97	792030	837940	1	F-07	106.0	18.3	107.6	17.0	101.5	P	Second Retest Passes
FP-004	6/12/97	792150	837540	1	F-01	100.1	21.1	97.4	15.0	97.3	F Moist	Fails Moisture
FP-004-R	6/16/97	792150	837540	1	F-02	112.9	14.5	108.0	16.4	95.7	P	Retest
FP-005	6/12/97	792220	837350	1	F-01	100.1	21.1	103.1	14.0	103.0	F Moist	Fails Moisture
FP-005-R	6/16/97	792220	837350	1	F-01	100.1	21.1	100.6	19.6	100.5	P	Retest
FP-006	6/12/97	791985	838075	1	F-02	112.9	14.5	109.6	10.2	97.1	F Moist	Fails Moisture
FP-006-R	6/16/97	791985	838075	1	F-01	100.1	21.1	102.8	25.3	102.7	F Moist	Retest Fails Moisture
FP-006-R2	6/18/97	791985	838075	1	F-07	106.0	18.3	109.1	19.0	102.9	P	Second Retest Passes
FP-007	6/16/97	791590	838080	1	F-01	100.1	21.1	97.0	19.6	96.9	P	
FP-008	6/16/97	791920	838120	1	F-01	100.1	21.1	102.2	21.3	102.1	P	
FP-009	6/16/97	792080	837630	1	F-01	100.1	21.1	104.1	22.2	103.9	P	
FP-010	6/17/97	791060	838080	1	F-01	100.1	21.1	102.0	22.6	101.9	P	
FP-011	6/17/97	791820	837920	1	F-07	106.0	18.3	100.8	15.8	95.1	F Moist	Fails Moisture
FP-011-R	6/19/97	791820	837920	1	F-07	106.0	18.3	105.8	18.1	99.8	P	Retest
FP-012	6/17/97	791905	837590	1	F-07	106.0	18.3	100.4	21.0	94.7	F Comp	Fails Compaction
FP-012-R	6/19/97	791905	837590	1	F-07	106.0	18.3	105.7	16.9	99.7	P	Retest
FP-013	6/17/97	791450	838110	1	F-03	111.5	16.2	106.1	18.0	95.2	P	
FP-014	6/17/97	791315	838070	1	F-03	111.5	16.2	101.9	11.4	91.4	F C & M	Fails Compaction and Moisture
FP-014-R	6/19/97	791315	838070	1	F-03	111.5	16.2	106.9	15.4	95.9	P	Retest
FP-015	6/18/97	791670	838025	1	F-03	111.5	16.2	111.4	15.0	99.9	P	
FP-016	6/18/97	791115	837980	1	F-03	111.5	16.2	105.1	14.5	94.3	F Comp	Fails Compaction
FP-016-R	6/19/97	791115	837980	1	F-03	111.5	16.2	107.2	14.4	96.1	P	Retest
FP-017 *	6/18/97	791510	837925	1	F-03	111.5	16.2	98.3	23.3	88.2	F Comp	Fails Compaction

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-017-R	6/19/97	791510	837925	1	F-03	111.5	16.2	109.9	14.3	98.6	P	Retest
FP-018	6/18/97	791270	837920	1	F-03	111.5	16.2	103.1	18.1	92.5	F Comp	Fails Compaction
FP-018-R	6/19/97	791270	837920	1	F-03	111.5	16.2	108.6	16.1	97.4	P	Retest
FP-019	6/19/97	791680	837915	1	F-03	111.5	16.2	105.6	18.6	94.7	F Comp	Fails Compaction
FP-019-R	6/19/97	791680	837915	1	F-03	111.5	16.2	111.4	15.0	99.9	P	Retest
FP-020	6/19/97	791485	837850	1	F-03	111.5	16.2	99.0	17.8	88.8	F Comp	Fails Compaction
FP-020-R	6/19/97	791485	837850	1	F-03	111.5	16.2	105.9	14.2	95.0	P	Retest
FP-021	6/19/97	791120	837830	1	F-03	111.5	16.2	106.4	14.4	95.4	P	
FP-022	6/19/97	791290	837805	1	F-03	111.5	16.2	110.9	16.0	99.5	P	
FP-023	6/19/97	791075	837800	1	F-04	110.4	16.0	108.1	17.4	97.9	P	
FP-024	6/19/97	791500	837755	1	F-10	109.8	16.9	104.8	17.2	95.4	P	
FP-025	6/19/97	791270	837720	1	F-10	109.8	16.9	107.1	18.4	97.5	P	
FP-026	* 6/19/97	791700	837860	1	F-10	109.8	16.9	106.1	19.3	96.6	P	
FP-027	6/20/97	791690	837800	1	F-04	110.4	16.0	107.4	14.2	97.3	P	
FP-028	6/20/97	791380	837710	1	F-04	110.4	16.0	109.6	14.3	99.3	P	
FP-029	6/20/97	791015	837660	1	F-04	110.4	16.0	107.7	16.3	97.6	P	
FP-030	6/20/97	791700	837730	1	F-04	110.4	16.0	107.4	13.2	97.3	F Moist	Fails Moisture
FP-030-R	6/23/97	791700	837730	1	F-08	119.3	12.6	113.6	10.6	95.2	P	Retest
FP-031	6/20/97	791650	837670	1	F-04	110.4	16.0	105.2	15.1	95.3	P	
FP-032	* 6/20/97	791880	837640	1	F-04	110.4	16.0	106.2	14.1	96.2	P	
FP-033	6/20/97	791050	837600	1	F-04	110.4	16.0	109.3	15.6	99.0	P	
FP-034	6/20/97	791750	837640	1	F-04	110.4	16.0	106.8	14.2	96.7	P	
FP-035	6/20/97	791795	837540	1	F-08	119.3	12.6	117.3	10.6	98.3	P	
FP-036	6/20/97	791790	837400	2	F-08	119.3	12.6	105.9	10.5	88.8	F C & M	Fails Compaction and Moisture
FP-036-R	6/23/97	791790	837400	2	F-08	119.3	12.6	113.2	10.6	95.0	P	Retest
FP-037	6/20/97	791700	837460	2	F-08	119.3	12.6	109.6	8.4	91.9	F C & M	Fails Compaction and Moisture
FP-037-R	6/23/97	791700	837460	2	F-08	119.3	12.6	113.6	12.0	95.2	P	Retest
FP-038	6/20/97	791550	837460	2	F-08	119.3	12.6	114.0	7.6	95.6	F Moist	Fails Moisture
FP-038-R	6/23/97	791550	837460	2	F-08	119.3	12.6	113.4	12.2	95.1	P	Retest
FP-039	6/20/97	791930	838150	2	F-09	119.7	11.5	114.6	11.2	95.7	P	
FP-040	6/20/97	791930	838070	2	F-09	119.7	11.5	115.7	9.7	96.7	P	
FP-041	6/20/97	791830	838120	2	F-09	119.7	11.5	117.1	13.0	97.8	P	
FP-042	* 6/20/97	791810	838010	2	F-09	119.7	11.5	114.3	10.2	95.5	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-043	6/20/97	791740	838050	2	F-09	119.7	11.5	114.3	9.3	95.5	P	Test passed by QC officer; moisture only 0.2% below requirement.
FP-044	6/20/97	791570	838100	2	F-09	119.7	11.5	113.7	13.8	95.0	P	
FP-045	6/20/97	791470	838080	2	F-09	119.7	11.5	114.2	10.2	95.4	P	
FP-046	6/20/97	791410	838020	2	F-09	119.7	11.5	114.4	12.3	95.6	P	
FP-047	6/20/97	791320	838060	2	F-09	119.7	11.5	114.8	9.8	95.9	P	
FP-048	6/20/97	791200	838100	2	F-11	120.5	11.6	113.7	13.1	94.4	F Comp	Fails Compaction
FP-048-R	6/20/97	791200	838100	2	F-11	120.5	11.6	115.2	13.1	95.6	P	Retest
FP-049	6/20/97	791100	838060	2	F-11	120.5	11.6	113.5	13.0	94.2	F Comp	Fails Compaction
FP-049-R	6/20/97	791100	838060	2	F-11	120.5	11.6	114.8	12.3	95.3	P	Retest
FP-050	6/20/97	791020	838110	2	F-11	120.5	11.6	114.2	12.1	94.8	F Comp	Fails Compaction
FP-050-R	6/20/97	791020	838110	2	F-11	120.5	11.6	115.9	11.9	96.2	P	Retest
FP-051	6/20/97	791060	838030	2	F-11	120.5	11.6	115.5	12.6	95.9	P	
FP-052 *	6/20/97	790940	838050	2	F-11	120.5	11.6	114.9	12.8	95.4	P	
FP-053	6/23/97	792230	837535	2	F-08	119.3	12.6	113.7	11.9	95.3	P	
FP-054	6/23/97	792080	837915	2	F-08	119.3	12.6	114.2	8.0	95.7	F Moist	Fails Moisture
FP-054-R	6/24/97	792080	837915	2	F-08	119.3	12.6	115.3	10.0	96.6	F Moist	Retest Fails Moisture
FP-054-R2	6/24/97	792080	837915	2	F-08	119.3	12.6	117.5	11.5	98.5	P	Second Retest Passes
FP-055	6/23/97	792120	837315	2	F-13	113.0	15.1	116.6	7.7	103.2	F Moist	Fails Moisture
FP-055-R *	6/24/97	792120	837315	2	F-13	113.0	15.1	108.5	14.5	96.0	P	Retest
FP-056	6/23/97	792025	837690	2	F-13	113.0	15.1	106.1	13.7	93.8	F Comp	Fails Compaction
FP-056-R	6/24/97	792025	837690	2	F-13	113.0	15.1	110.8	13.8	98.1	P	Retest
FP-057	6/23/97	791960	837360	2	F-13	113.0	15.1	115.3	10.1	102.0	F Moist	Fails Moisture
FP-057-R *	6/25/97	791960	837360	2	F-13	113.0	15.1	110.7	13.5	98.0	P	Retest
FP-058	6/23/97	791850	837810	2	F-13	113.0	15.1	105.1	13.6	93.0	F Comp	Fails Compaction
FP-058-R	6/25/97	791850	837810	2	F-13	113.0	15.1	107.6	13.3	95.2	P	Retest
FP-059	6/23/97	791710	837305	2	F-13	113.0	15.1	105.1	12.3	93.0	F C & M	Fails Compaction and Moisture
FP-059-R	6/25/97	791710	837305	2	F-13	113.0	15.1	108.8	14.9	96.3	P	Retest
FP-060	6/23/97	791590	837390	2	F-13	113.0	15.1	99.6	14.6	88.1	F Comp	Fails Compaction
FP-060-R	6/25/97	791590	837390	2	F-13	113.0	15.1	107.6	14.3	95.2	P	Retest
FP-061	6/23/97	791660	837480	2	F-13	113.0	15.1	110.0	9.1	97.3	F Moist	Fails Moisture

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-061-R	6/25/97	791660	837480	2	F-13	113.0	15.1	108.5	15.4	96.0	P	Retest
FP-062	6/23/97	791850	837640	2	F-13	113.0	15.1	109.6	9.6	97.0	F Moist	No RETEST; area was wetted, disked, and recompacted
FP-063	6/23/97	791560	837610	2	F-13	113.0	15.1	109.1	13.5	96.5	P	
FP-064	6/23/97	791400	837780	2	F-08	119.3	12.6	111.2	10.5	93.2	F C & M	Fails Compaction and Moisture
FP-064-R	6/24/97	791400	837780	2	F-08	119.3	12.6	115.1	10.7	96.5	P	Retest
FP-065	6/23/97	791325	837700	2	F-08	119.3	12.6	109.1	11.1	91.5	F Comp	Fails Compaction
FP-065-R	6/25/97	791325	837700	2	F-08	119.3	12.6	113.3	12.2	95.0	P	Retest
FP-066	6/23/97	791355	837600	2	F-08	119.3	12.6	116.2	9.4	97.4	F Moist	Fails Moisture
FP-066-R	6/25/97	791355	837600	2	F-08	119.3	12.6	113.5	11.1	95.1	P	Retest
FP-067	6/24/97	790980	838140	3	F-13	113.0	15.1	102.8	13.6	91.0	F Comp	Fails Compaction
FP-067-R	6/25/97	790980	838140	3	F-13	113.0	15.1	109.0	13.8	96.5	P	Retest
FP-068	6/24/97	791110	838135	3	F-14	113.5	14.6	110.9	13.4	97.7	P	
FP-069	6/24/97	791230	838130	3	F-14	113.5	14.6	107.8	10.0	95.0	F Moist	Fails Moisture
FP-069-R	6/25/97	791230	838130	3	F-14	113.5	14.6	111.8	14.5	98.5	P	Retest
FP-070	6/24/97	791285	838090	3	F-14	113.5	14.6	113.6	13.1	100.0	P	
FP-071	6/24/97	791070	838090	3	F-14	113.5	14.6	109.8	17.2	96.7	P	
FP-072	6/24/97	790980	838080	3	F-14	113.5	14.6	109.3	10.3	96.3	F Moist	Fails Moisture
FP-072-R	6/26/97	790980	838080	3	F-14	113.5	14.6	111.8	13.2	98.5	P	Retest
FP-073	6/24/97	791660	838070	3	F-14	113.5	14.6	107.0	15.2	94.3	F Comp	Fails Compaction
FP-073-R	6/26/97	791660	838070	3	F-14	113.5	14.6	110.5	13.8	97.4	P	Retest
FP-074	6/24/97	791910	838110	3	F-14	113.5	14.6	108.7	14.2	95.8	P	
FP-075	6/24/97	791910	838050	3	F-14	113.5	14.6	108.2	13.7	95.3	P	
FP-076	6/24/97	791800	838120	3	F-14	113.5	14.6	110.0	13.9	96.9	P	
FP-077	6/24/97	791790	838020	3	F-14	113.5	14.6	107.3	14.5	94.5	F Comp	Fails Compaction
FP-077-R *	6/25/97	791790	838020	3	F-14	113.5	14.6	109.9	14.6	96.8	P	Retest
FP-078	6/24/97	791730	838000	3	F-15	114.7	14.5	108.4	13.2	94.5	F Comp	Fails Compaction
FP-078-R	6/25/97	791730	838000	3	F-15	114.7	14.5	110.2	12.6	96.1	P	Retest
FP-079	6/25/97	791995	837720	3	F-20	109.7	16.9	103.8	20.0	94.6	F Comp	Fails Compaction
FP-079-R	6/27/97	791995	837720	3	F-20	109.7	16.9	105.7	15.3	96.4	P	Retest
FP-080	6/25/97	791880	837685	3	F-20	109.7	16.9	105.4	19.5	96.1	P	
FP-081	6/25/97	791980	837975	3	F-18	111.8	15.6	97.3	11.6	87.0	F C & M	Fails Compaction and Moisture

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-081-R	6/26/97	791980	837975	3	F-18	111.8	15.6	109.7	14.8	98.1	P	Retest
FP-082	6/25/97	791925	837900	3	F-18	111.8	15.6	99.8	11.8	89.2	F C & M	Fails Compaction and Moisture
FP-082-R	6/26/97	791925	837900	3	F-18	111.8	15.6	107.4	14.0	96.1	P	Retest
FP-083	6/25/97	791845	837915	3	F-18	111.8	15.6	106.6	12.8	95.3	F Moist	Fails Moisture
FP-083-R	6/26/97	791845	837915	3	F-18	111.8	15.6	105.4	14.0	94.3	F Comp	Retest Fails Compaction
FP-083-R2	6/27/97	791845	837915	3	F-18	111.8	15.6	107.5	14.3	96.2	P	Second Retest Passes
FP-084	6/26/97	791925	837740	3	F-20	109.7	16.9	105.0	18.7	95.7	P	
FP-085	6/26/97	791830	837720	3	F-20	109.7	16.9	98.6	21.8	89.9	F Comp	Fails Compaction
FP-085-R	6/27/97	791830	837720	3	F-20	109.7	16.9	104.8	20.0	95.5	P	Retest
FP-086	6/26/97	791680	837670	3	F-20	109.7	16.9	108.2	17.2	98.6	P	
FP-087	6/26/97	791570	837680	3	F-16	111.8	15.5	108.2	14.6	96.8	P	
FP-088	6/26/97	791760	837770	3	F-16	111.8	15.5	109.3	14.6	97.8	P	
FP-089	6/26/97	792210	837315	3	F-16	111.8	15.5	108.9	11.0	97.4	F Moist	Fails Moisture
FP-089-R	6/27/97	792210	837315	3	F-16	111.8	15.5	107.7	16.1	96.3	P	Retest
FP-090	6/26/97	791750	837315	3	F-16	111.8	15.5	108.1	16.3	96.7	P	
FP-091	6/26/97	791710	837450	3	F-20	109.7	16.9	98.0	23.8	89.3	F Comp	Fails Compaction
FP-091-R	6/29/97	791710	837450	3	F-20	109.7	16.9	104.9	18.7	95.6	P	Retest
FP-092	6/26/97	792130	837470	3	F-20	109.7	16.9	98.3	23.4	89.6	F Comp	Fails Compaction
FP-092-R	6/29/97	792130	837470	3	F-20	109.7	16.9	104.4	17.2	95.2	P	Retest
FP-093	6/26/97	792085	837520	3	F-16	111.8	15.5	108.7	15.5	97.2	P	
FP-094	6/26/97	791800	837465	3	F-17	116.0	14.3	113.3	10.1	97.7	F Moist	Fails Moisture
FP-094-R	6/27/97	791800	837465	3	F-17	116.0	14.3	113.4	13.7	97.8	P	Retest
FP-095	6/26/97	791830	837530	3	F-16	111.8	15.5	109.6	16.7	98.0	P	
FP-096 *	6/26/97	792120	837610	3	F-21	108.9	15.2	113.1	12.4	103.9	F Moist	Fails Moisture
FP-096-R	6/27/97	792120	837610	3	F-21	108.9	15.2	103.7	13.7	95.2	P	Retest
FP-097	6/26/97	791890	837610	3	F-21	108.9	15.2	101.7	16.6	93.3	F Comp	Fails Compaction
FP-097-R	6/27/97	791890	837610	3	F-21	108.9	15.2	106.6	16.1	97.9	P	Retest
FP-098	6/26/97	791620	837590	3	F-21	108.9	15.2	99.2	12.7	91.1	F C & M	Fails Compaction and Moisture
FP-098-R	6/29/97	791620	837590	3	F-21	108.9	15.2	105.9	15.4	97.2	P	Retest
FP-099	6/26/97	791960	838005	3	F-18	111.8	15.6	107.1	13.9	95.8	P	
FP-100	6/26/97	791825	838065	3	F-18	111.8	15.6	108.9	13.7	97.4	P	
FP-101	6/26/97	791630	838015	3	F-18	111.8	15.6	107.5	14.1	96.2	P	
FP-102 *	6/26/97	791495	838050	3	F-18	111.8	15.6	108.7	14.8	97.2	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-103	6/26/97	791280	838015	3	F-18	111.8	15.6	106.9	13.7	95.6	P	
FP-104	6/26/97	791130	837920	3	F-18	111.8	15.6	106.4	13.6	95.2	P	
FP-105	6/26/97	791030	837950	3	F-15	114.7	14.5	109.5	13.0	95.5	P	
FP-106	6/26/97	791130	837800	3	F-15	114.7	14.5	109.4	13.3	95.3	P	
FP-107	6/26/97	791275	837880	3	F-15	114.7	14.5	112.1	7.4	97.7	F Moist	Fails Moisture
FP-107-R	6/26/97	791275	837880	3	F-15	114.7	14.5	110.4	13.2	96.3	P	Retest
FP-108	* 6/26/97	791445	837920	3	F-15	114.7	14.5	109.5	15.2	95.5	P	
FP-109	6/26/97	791615	837890	3	F-15	114.7	14.5	109.5	12.8	95.5	P	
FP-110	6/26/97	791765	837940	3	F-15	114.7	14.5	112.7	12.8	98.3	P	
FP-111	6/27/97	791130	838080	4	F-21	108.9	15.2	104.8	17.0	96.2	P	
FP-112	6/27/97	791515	838060	4	F-21	108.9	15.2	107.0	13.8	98.3	P	
FP-113	* 6/27/97	791870	838065	4	F-21	108.9	15.2	106.5	14.4	97.8	P	
FP-114	6/27/97	792000	837590	3	F-17	116.0	14.3	112.9	12.5	97.3	P	
FP-115	6/27/97	791940	837530	3	F-17	116.0	14.3	112.0	14.7	96.6	P	
FP-116	6/27/97	791725	837580	3	F-17	116.0	14.3	113.0	13.4	97.4	P	
FP-117	6/27/97	791625	837560	3	F-17	116.0	14.3	114.7	12.3	98.9	P	
FP-118	* 6/27/97	791520	837540	3	F-17	116.0	14.3	111.1	14.7	95.8	P	
FP-119	6/27/97	791860	837460	3	F-17	116.0	14.3	110.6	14.3	95.3	P	
FP-120	* 6/27/97	792020	837450	3	F-17	116.0	14.3	110.4	12.9	95.2	P	
FP-121	6/29/97	791050	838040	4	F-21	108.9	15.2	105.8	16.6	97.2	P	
FP-122	6/29/97	791340	838020	4	F-24	113.2	15.3	110.6	15.0	97.7	P	
FP-123	6/29/97	791805	838010	4	F-24	113.2	15.3	107.6	13.7	95.1	F	Test failed at discretion of QC officer.
FP-123-R	6/29/97	791805	838010	4	F-24	113.2	15.3	110.7	14.8	97.8	P	Retest
FP-124	6/29/97	791225	837990	4	F-24	113.2	15.3	112.7	14.6	99.6	P	
FP-125	* 6/29/97	790950	837900	4	F-24	113.2	15.3	109.8	16.1	97.0	P	
FP-126	6/29/97	791270	837855	4	F-24	113.2	15.3	112.1	16.7	99.0	P	
FP-127	6/29/97	791680	837890	4	F-24	113.2	15.3	109.7	17.8	96.9	P	
FP-128	6/29/97	792000	837910	4	F-24	113.2	15.3	106.6	12.0	94.2	F C & M	Fails Compaction and Moisture
FP-128-R	6/30/97	792000	837910	4	F-24	113.2	15.3	111.8	14.5	98.8	P	Retest
FP-129	6/30/97	791450	837850	4	F-24	113.2	15.3	111.0	15.2	98.1	P	
FP-130	6/30/97	791220	837800	4	F-24	113.2	15.3	111.8	15.5	98.8	P	
FP-131	6/30/97	791900	837770	4	F-24	113.2	15.3	109.9	15.9	97.1	P	
FP-132	6/30/97	791860	837800	4	F-25	113.8	14.2	111.0	16.9	97.5	P	
FP-133	6/30/97	791700	837760	4	F-25	113.8	14.2	109.5	15.1	96.2	P	
FP-134	6/30/97	792020	837770	4	F-25	113.8	14.2	109.9	17.8	96.6	P	
FP-135	7/1/97	791940	837730	4	F-25	113.8	14.2	110.5	14.1	97.1	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-136	7/1/97	791410	837690	4	F-25	113.8	14.2	114.5	14.6	100.6	P		
FP-137	7/1/97	791830	837710	4	F-25	113.8	14.2	113.1	16.1	99.4	P		
FP-138	7/1/97	791580	837635	4	F-25	113.8	14.2	110.2	13.8	96.8	P		
FP-139	7/1/97	791990	837670	4	F-25	113.8	14.2	112.3	13.4	98.7	P		
FP-140	7/1/97	791500	837590	4	F-25	113.8	14.2	111.7	15.3	98.2	P		
FP-141	*	7/1/97	791880	837610	4	F-25	113.8	14.2	109.4	16.4	96.1	P	
FP-142	7/2/97	792110	837640	4	F-26	113.0	15.1	109.8	13.5	97.2	P		
FP-143	7/2/97	791630	837460	4	F-26	113.0	15.1	110.2	13.2	97.5	P		
FP-144	7/2/97	792070	837580	4	F-27	117.4	12.5	111.7	10.5	95.1	P		
FP-145	7/2/97	791680	837420	4	F-27	117.4	12.5	112.8	10.7	96.0	P		
FP-146	7/2/97	791720	837310	4	F-27	117.4	12.5	112.0	12.1	95.4	P		
FP-147	7/2/97	792090	837500	4	F-27	117.4	12.5	112.6	12.2	95.9	P		
FP-148	7/2/97	791925	837440	4	F-27	117.4	12.5	107.3	14.4	91.4	F Comp	Fails Compaction	
FP-148-R	7/7/97	791925	837440	4	F-27	117.4	12.5	112.7	11.6	96.0	P	Retest	
FP-149	7/2/97	792170	837480	4	F-27	117.4	12.5	112.9	14.3	96.2	P		
FP-150	7/7/97	792025	837415	4	F-27	117.4	12.5	114.9	13.4	97.9	P		
FP-151	7/7/97	791875	837370	4	F-27	117.4	12.5	112.5	12.1	95.8	P		
FP-152	7/7/97	791965	837325	4	F-27	117.4	12.5	112.1	13.1	95.5	P		
FP-153	*	7/7/97	792140	837370	4	F-27	117.4	12.5	111.5	12.6	95.0	P	
FP-154	7/7/97	792065	837315	4	F-27	117.4	12.5	111.8	13.2	95.2	P		
FP-155	7/7/97	790920	838130	5	F-29	112.3	15.3	103.3	13.0	92.0	F C & M	Fails Compaction and Moisture	
FP-155-R	7/8/97	790920	838130	5	F-28	111.4	15.5	107.3	14.2	96.3	P	Retest	
FP-156	7/7/97	791230	838110	5	F-29	112.3	15.3	103.7	15.8	92.3	F Comp	Fails Compaction	
FP-156-R	7/8/97	791230	838110	5	F-28	111.4	15.5	107.4	13.9	96.4	P	Retest	
FP-157	7/7/97	792200	837315	4	F-26	113.0	15.1	108.8	13.2	96.3	P		
FP-158	7/7/97	791780	838115	5	F-29	112.3	15.3	103.3	16.0	92.0	F Comp	Fails Compaction	
FP-158-R	7/8/97	791780	838115	5	F-28	111.4	15.5	106.1	15.5	95.2	P	Retest	
FP-159	7/8/97	791860	838045	5	F-28	111.4	15.5	112.8	15.6	101.3	P		
FP-160	7/8/97	791625	838020	5	F-28	111.4	15.5	111.9	14.5	100.4	P		
FP-161	7/8/97	791160	837960	5	F-28	111.4	15.5	111.3	14.5	99.9	P		
FP-162	7/8/97	791050	837930	5	F-28	111.4	15.5	109.5	16.5	98.3	P		
FP-163	7/8/97	791300	837900	5	F-29	112.3	15.3	110.7	13.9	98.6	P		
FP-164	7/8/97	791130	838075	5	F-29	112.3	15.3	109.6	16.5	97.6	P		
FP-165	7/8/97	791370	838030	5	F-29	112.3	15.3	107.5	14.4	95.7	P		
FP-166	7/8/97	791080	837840	5	F-29	112.3	15.3	113.1	15.4	100.7	P		
FP-167	7/8/97	791335	837810	5	F-29	112.3	15.3	113.9	14.3	101.4	P		

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-168	*	7/8/97	791775	837825	5	F-29	112.3	15.3	112.4	15.3	100.1	P	
FP-169		7/8/97	791950	837780	5	F-29	112.3	15.3	107.4	18.4	95.6	P	
FP-170		7/8/97	791610	837750	5	F-29	112.3	15.3	107.4	19.2	95.6	P	
FP-171		7/8/97	791670	837950	5	F-29	112.3	15.3	112.2	14.5	99.9	P	
FP-172		7/8/97	791500	837800	5	F-28	111.4	15.5	105.8	16.2	95.0	P	
FP-173		7/8/97	791955	837850	5	F-28	111.4	15.5	109.1	14.9	97.9	P	
FP-174		7/8/97	792060	837790	5	F-28	111.4	15.5	107.0	13.9	96.1	P	
FP-175		7/9/97	791880	837700	5	F-30	114.2	14.4	111.5	17.8	97.6	P	
FP-176		7/9/97	792090	837710	5	F-30	114.2	14.4	109.3	17.9	95.7	P	
FP-177		7/9/97	791400	837720	5	F-30	114.2	14.4	106.7	17.1	93.4	F Comp	Fails Compaction
FP-177-R		7/10/97	791400	837720	5	F-30	114.2	14.4	110.4	13.7	96.7	P	Retest
FP-178		7/9/97	791440	837635	5	F-30	114.2	14.4	111.8	11.7	97.9	F Moist	Fails Moisture
FP-178-R		7/10/97	791440	837635	5	F-30	114.2	14.4	111.2	13.7	97.4	P	Retest
FP-179		7/9/97	792070	838120	1	F-23	107.1	16.4	104.7	18.9	97.8	P	
FP-180		7/9/97	792120	838005	1	F-23	107.1	16.4	107.5	16.7	100.4	P	
FP-181		7/9/97	792160	837900	1	F-23	107.1	16.4	105.1	20.6	98.1	P	
FP-182		7/9/97	792195	837750	1	F-23	107.1	16.4	104.9	14.8	97.9	P	
FP-183		7/9/97	792285	837520	1	F-23	107.1	16.4	106.6	14.7	99.5	P	
FP-184	*	7/9/97	792290	837490	2	F-30	114.2	14.4	106.3	10.8	93.1	F C & M	Fails Compaction and Moisture
FP-184-R		7/10/97	792290	837490	2	F-31	115.2	13.5	112.1	13.1	97.3	P	Retest
FP-185		7/9/97	791720	837600	5	F-30	114.2	14.4	107.8	14.2	94.4	F Comp	Fails Compaction
FP-185-R		7/10/97	791720	837600	5	F-31	115.2	13.5	111.9	13.1	97.1	P	Retest
FP-186		7/9/97	792200	837790	2	F-30	114.2	14.4	104.3	15.6	91.3	F Comp	Fails Compaction
FP-186-R		7/10/97	792200	837790	2	F-31	115.2	13.5	109.6	11.5	95.1	P	Retest
FP-187		7/9/97	792090	838100	2	F-30	114.2	14.4	103.1	15.4	90.3	F Comp	Fails Compaction
FP-187-R		7/10/97	792090	838100	2	F-30	114.2	14.4	108.5	12.9	95.0	P	Retest
FP-188		7/10/97	792310	837440	3	F-31	115.2	13.5	109.9	13.5	95.4	P	
FP-189		7/10/97	792220	837690	3	F-31	115.2	13.5	109.5	11.5	95.1	P	
FP-190		7/10/97	792150	837915	3	F-31	115.2	13.5	112.8	13.6	97.9	P	
FP-191		7/10/97	792100	838080	3	F-31	115.2	13.5	110.8	11.0	96.2	F Moist	Fails Moisture
FP-191-R		7/10/97	792100	838080	3	F-31	115.2	13.5	111.2	12.3	96.5	P	Retest
FP-192	*	7/11/97	792290	837505	4	F-31	115.2	13.5	113.0	12.2	98.1	P	
FP-193		7/11/97	792200	837720	4	F-31	115.2	13.5	110.9	15.1	96.3	P	
FP-194		7/11/97	792130	837970	4	F-31	115.2	13.5	110.1	16.1	95.6	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-195	7/11/97	792070	838140	4	F-31	115.2	13.5	110.4	14.1	95.8	P	
FP-196	7/11/97	791970	837650	5	F-30	114.2	14.4	109.6	14.8	96.0	P	
FP-197	7/11/97	791870	837610	5	F-30	114.2	14.4	108.4	11.3	94.9	F C & M	Fails Compaction and Moisture
FP-197-R	7/14/97	791870	837610	5	F-30	114.2	14.4	112.3	12.9	98.3	P	Retest
FP-198	7/11/97	791960	837600	5	F-30	114.2	14.4	106.2	12.9	93.0	F Comp	Fails Compaction
FP-198-R *	7/14/97	791960	837600	5	F-30	114.2	14.4	110.4	15.5	96.7	P	Retest
FP-199	7/11/97	792050	837630	5	F-30	114.2	14.4	113.4	14.2	99.3	P	
FP-200	7/11/97	791780	837540	5	F-30	114.2	14.4	111.1	14.5	97.3	P	
FP-201	7/11/97	791605	837520	5	F-32	115.4	13.0	110.6	14.9	95.8	P	
FP-202	7/11/97	791915	837560	5	F-32	115.4	13.0	109.7	12.3	95.1	P	
FP-203	7/14/97	791680	837480	5	F-32	115.4	13.0	110.1	13.5	95.4	P	
FP-204	7/14/97	791595	837435	5	F-32	115.4	13.0	110.5	15.6	95.8	P	
FP-205	7/14/97	791880	837510	5	F-32	115.4	13.0	110.4	11.8	95.7	P	
FP-206 *	7/14/97	791690	837400	5	F-32	115.4	13.0	114.3	12.4	99.0	P	
FP-207	7/14/97	792115	837545	5	F-32	115.4	13.0	110.7	11.0	95.9	P	
FP-208	7/14/97	792160	837500	5	F-32	115.4	13.0	114.7	13.7	99.4	P	
FP-209	7/14/97	792080	837480	5	F-33	117.2	12.9	113.5	11.4	96.8	P	
FP-210	7/14/97	791960	837470	5	F-33	117.2	12.9	112.7	12.1	96.2	P	
FP-211	7/14/97	791830	837435	5	F-33	117.2	12.9	112.1	11.7	95.6	P	
FP-212	7/14/97	791080	838120	6	F-33	117.2	12.9	111.3	12.0	95.0	P	
FP-213	7/14/97	791290	838090	6	F-34	112.9	15.0	109.8	13.3	97.3	P	
FP-214	7/14/97	791840	838115	6	F-34	112.9	15.0	110.8	16.0	98.1	P	
FP-215	7/14/97	791385	838060	6	F-34	112.9	15.0	111.0	13.5	98.3	P	
FP-216	7/14/97	791790	838070	6	F-34	112.9	15.0	112.2	13.4	99.4	P	
FP-217	7/14/97	791240	838045	6	F-34	112.9	15.0	110.7	14.5	98.1	P	
FP-218	7/15/97	791140	837860	6	F-35	117.7	13.2	113.0	13.0	96.0	P	
FP-219 *	7/15/97	791430	837890	6	F-35	117.7	13.2	114.1	13.9	96.9	P	
FP-220	7/15/97	791900	837925	6	F-35	117.7	13.2	113.2	13.9	96.2	P	
FP-221 *	7/15/97	792000	838000	6	F-35	117.7	13.2	114.5	13.3	97.3	P	
FP-222	7/15/97	792000	837940	6	F-36	113.9	14.0	111.0	15.5	97.5	P	
FP-223	7/15/97	791760	837890	6	F-36	113.9	14.0	109.5	13.7	96.1	P	
FP-224	7/15/97	791390	837825	6	F-36	113.9	14.0	109.3	13.1	96.0	P	
FP-225	7/15/97	791550	837800	6	F-36	113.9	14.0	107.3	13.1	94.2	F Comp	Fails Compaction
FP-225-R	7/16/97	791550	837800	6	F-36	113.9	14.0	108.4	15.5	95.2	P	Retest
FP-226	7/15/97	791980	837830	6	F-36	113.9	14.0	109.7	16.7	96.3	P	
FP-227	7/15/97	791050	838070	6	F-34	112.9	15.0	107.7	14.9	95.4	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-228	7/15/97	791080	838010	6	F-34	112.9	15.0	107.7	17.4	95.4	P	
FP-229	7/15/97	791260	837730	6	F-34	112.9	15.0	108.7	14.2	96.3	P	
FP-230	7/15/97	791460	837650	6	F-34	112.9	15.0	109.5	14.1	97.0	P	
FP-231	7/15/97	791140	837860	6	F-35	117.7	13.2	112.1	12.5	95.2	P	
FP-232	7/15/97	791170	838000	6	F-35	117.7	13.2	111.8	12.9	95.0	P	
FP-233	7/15/97	791270	837940	6	F-35	117.7	13.2	112.4	15.9	95.5	P	
FP-234	7/15/97	791670	837720	6	F-36	113.9	14.0	108.2	19.5	95.0	P	
FP-235 *	7/15/97	791800	837780	6	F-36	113.9	14.0	107.5	18.2	94.4	F Comp	Fails Compaction
FP-235-R	7/16/97	791800	837780	6	F-36	113.9	14.0	109.3	14.6	96.0	P	Retest
FP-236	7/15/97	791710	838040	6	F-36	113.9	14.0	108.4	16.7	95.2	P	
FP-237	7/15/97	791630	837890	6	F-36	113.9	14.0	107.4	13.6	94.3	F Comp	Fails Compaction
FP-237-R	7/16/97	791630	837890	6	F-36	113.9	14.0	110.8	12.4	97.3	P	Retest
FP-238	7/15/97	791810	837930	6	F-36	113.9	14.0	112.0	14.7	98.3	P	
FP-239	7/16/97	791960	837730	6	F-37	111.6	15.3	110.9	13.3	99.4	P	
FP-240	7/16/97	791520	837640	6	F-37	111.6	15.3	108.4	14.0	97.1	P	
FP-241	7/16/97	791820	837700	6	F-37	111.6	15.3	110.6	13.4	99.1	P	
FP-242	7/16/97	791170	838100	7	F-37	111.6	15.3	109.1	12.2	97.8	F Moist	Fails Moisture
FP-242-R *	7/16/97	791170	838100	7	F-37	111.6	15.3	108.3	13.4	97.0	P	Retest
FP-243	7/16/97	791015	838025	7	F-37	111.6	15.3	108.6	15.0	97.3	P	
FP-244	7/16/97	791765	838120	7	F-37	111.6	15.3	110.9	14.0	99.4	P	
FP-245	7/16/97	791240	838050	7	F-37	111.6	15.3	107.3	12.8	96.1	F Moist	Fails Moisture
FP-245-R *	7/17/97	791240	838050	7	F-37	111.6	15.3	110.0	15.2	98.6	P	Retest
FP-246	7/18/97	791900	837140	1	F-38	115.3	14.0	111.2	13.7	96.4	P	
FP-247	7/18/97	791815	837205	1	F-38	115.3	14.0	110.9	14.8	96.2	P	
FP-248	7/18/97	791860	837140	1	F-38	115.3	14.0	111.8	12.5	97.0	P	
FP-249	7/18/97	791710	837210	1	F-38	115.3	14.0	112.1	13.0	97.2	P	
FP-250 *	7/21/97	791720	837230	1	F-38	115.3	14.0	111.1	13.6	96.4	P	
FP-251	7/21/97	791740	837115	1	F-38	115.3	14.0	110.2	12.7	95.6	P	
FP-252	7/21/97	791680	837090	1	F-38	115.3	14.0	111.2	13.8	96.4	P	
FP-253	7/21/97	791935	837095	1	F-38	115.3	14.0	111.3	13.9	96.5	P	
FP-254	7/21/97	791970	837170	1	F-38	115.3	14.0	110.3	13.1	95.7	P	
FP-255 *	7/21/97	791710	837050	2	F-38	115.3	14.0	109.9	13.1	95.3	P	
FP-256	7/21/97	791760	837155	2	F-39	114.8	14.5	111.9	14.1	97.5	P	
FP-257	7/21/97	791835	837110	2	F-39	114.8	14.5	110.4	15.0	96.2	P	
FP-258	7/21/97	791900	837035	2	F-39	114.8	14.5	110.3	16.7	96.1	P	
FP-259	7/22/97	791980	837135	2	F-39	114.8	14.5	111.2	15.7	96.9	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-260	7/22/97	792005	837095	2	F-39	114.8	14.5	112.3	14.7	97.8	P		
FP-261	7/22/97	791700	837070	3	F-39	114.8	14.5	112.3	15.0	97.8	P		
FP-262	7/22/97	791780	837200	3	F-39	114.8	14.5	113.7	14.6	99.0	P		
FP-263	7/22/97	791825	837015	3	F-39	114.8	14.5	111.6	12.9	97.2	P		
FP-264	*	7/22/97	791960	837070	3	F-39	114.8	14.5	109.6	13.7	95.5	P	
FP-265	7/22/97	791980	837145	3	F-39	114.8	14.5	110.0	14.9	95.8	P		
FP-266	7/22/97	792030	837075	3	F-40	115.0	14.7	113.7	14.4	98.9	P		
FP-267	7/22/97	791880	837185	3	F-40	115.0	14.7	110.0	17.2	95.7	P		
FP-268	*	7/22/97	791710	837165	4	F-40	115.0	14.7	112.4	14.0	97.8	P	
FP-269	7/23/97	791745	837195	4	F-40	115.0	14.7	109.4	15.6	95.1	P		
FP-270	7/23/97	791780	837140	4	F-40	115.0	14.7	110.2	12.9	95.8	P		
FP-271	7/23/97	791880	837045	4	F-40	115.0	14.7	115.8	13.8	100.7	P		
FP-272	7/23/97	791890	837140	4	F-40	115.0	14.7	114.0	13.7	99.1	P		
FP-273	7/23/97	791960	837180	4	F-40	115.0	14.7	112.9	13.5	98.2	P		
FP-274	7/23/97	792090	837200	1	F-40	115.0	14.7	110.6	13.1	96.2	P		
FP-275	7/23/97	791905	837215	1	F-40	115.0	14.7	112.1	13.5	97.5	P		
FP-276	7/23/97	792015	837190	4	F-41	115.3	13.0	109.7	17.2	95.1	P		
FP-277	*	7/23/97	792120	837150	1	F-41	115.3	13.0	114.5	14.0	99.3	P	
FP-278	7/23/97	791810	837085	4	F-41	115.3	13.0	111.0	13.1	96.3	P		
FP-279	*	7/23/97	791850	837215	2	F-41	115.3	13.0	113.0	13.8	98.0	P	
FP-280	7/24/97	792230	837125	1	F-41	115.3	13.0	114.0	14.8	98.9	P		
FP-281	7/24/97	792310	837190	2	F-41	115.3	13.0	115.6	13.2	100.3	P		
FP-282	7/24/97	792210	837130	2	F-41	115.3	13.0	112.9	12.1	97.9	P		
FP-283	7/24/97	792085	837075	2	F-41	115.3	13.0	111.7	13.2	96.9	P		
FP-284	7/24/97	792170	837225	2	F-41	115.3	13.0	112.2	11.6	97.3	P		
FP-285	7/24/97	791740	837230	3	F-41	115.3	13.0	111.5	15.2	96.7	P		
FP-286	7/24/97	792110	837060	3	F-42	114.4	14.5	113.2	12.5	99.0	P		
FP-287	7/24/97	792140	837180	3	F-42	114.4	14.5	111.6	14.9	97.6	P		
FP-288	7/24/97	791560	837250	3	F-42	114.4	14.5	112.5	12.7	98.3	P		
FP-289	*	7/24/97	791885	837050	5	F-42	114.4	14.5	109.3	13.7	95.5	P	
FP-290	7/25/97	792130	837130	4	F-42	114.4	14.5	112.0	13.7	97.9	P		
FP-291	7/25/97	792190	837100	4	F-42	114.4	14.5	111.6	13.9	97.6	P		
FP-292	7/25/97	792230	837200	2	F-42	114.4	14.5	110.9	15.5	96.9	P		
FP-293	7/25/97	792100	837220	3	F-42	114.4	14.5	110.9	14.1	96.9	P		
FP-294	7/25/97	792305	837205	3	F-42	114.4	14.5	113.8	12.9	99.5	P		
FP-295	7/25/97	791360	837900	7	F-42	114.4	14.5	110.2	14.0	96.3	P		

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-296	7/25/97	792195	837495	7	F-43	113.0	14.2	109.6	15.7	97.0	P	
FP-297	7/25/97	791170	837960	7	F-43	113.0	14.2	111.4	13.2	98.6	P	
FP-298	7/30/97	791470	837400	1	F-43	113.0	14.2	110.6	15.5	97.9	P	
FP-299	7/30/97	791325	837440	1	F-43	113.0	14.2	110.0	13.7	97.3	P	
FP-300	7/30/97	791350	837345	1	F-43	113.0	14.2	109.2	12.7	96.6	P	
FP-301	7/31/97	791290	837450	1	F-43	113.0	14.2	108.0	12.3	95.6	P	
FP-302	7/31/97	791260	837450	1	F-43	113.0	14.2	111.9	12.9	99.0	P	
FP-303	7/31/97	791260	837380	1	F-44	115.9	13.5	113.6	12.0	98.0	P	
FP-304	7/31/97	791300	837590	1	F-44	115.9	13.5	115.9	12.2	100.0	P	
FP-305	7/31/97	791220	837490	1	F-44	115.9	13.5	116.3	12.0	100.3	P	
FP-306	7/31/97	791180	837495	1	F-44	115.9	13.5	113.7	14.8	98.1	P	
FP-307	* 7/31/97	791330	837570	1	F-44	115.9	13.5	112.1	16.7	96.7	P	
FP-308	* 7/31/97	791395	837510	1	F-44	115.9	13.5	110.7	12.8	95.5	P	
FP-309	8/1/97	791005	838005	7	F-44	115.9	13.5	112.0	12.6	96.6	P	
FP-310	8/1/97	791190	837870	7	F-44	115.9	13.5	112.2	12.5	96.8	P	
FP-311	8/1/97	791420	837415	2	F-44	115.9	13.5	113.3	11.6	97.8	P	
FP-312	8/1/97	791390	837350	2	F-44	115.9	13.5	112.0	12.8	96.6	P	
FP-313	8/1/97	791130	837565	1	F-45	116.6	13.5	113.3	12.5	97.2	P	
FP-314	8/1/97	791080	837505	1	F-45	116.6	13.5	113.3	11.6	97.2	P	
FP-315	8/1/97	791055	837560	1	F-45	116.6	13.5	115.2	12.5	98.8	P	
FP-316	8/1/97	791260	837830	7	F-45	116.6	13.5	112.9	12.1	96.8	P	
FP-317	8/1/97	791230	837580	1	F-45	116.6	13.5	110.1	11.9	94.4	F Comp	Fails Compaction
FP-317-R	8/4/97	791230	837580	1	F-45	116.6	13.5	115.2	11.7	98.8	P	Retest
FP-318	8/1/97	791165	837585	1	F-45	116.6	13.5	114.0	13.6	97.8	P	
FP-319	8/4/97	791770	837340	7	F-45	116.6	13.5	112.8	12.2	96.7	P	
FP-320	8/4/97	792150	837290	7	F-45	116.6	13.5	111.8	12.9	95.9	P	
FP-321	8/4/97	791650	837370	7	F-45	116.6	13.5	111.6	11.7	95.7	P	
FP-322	8/4/97	791970	837370	7	F-45	116.6	13.5	113.1	15.8	97.0	P	
FP-323	8/4/97	792580	837400	7	F-46	117.8	13.4	114.9	11.6	97.5	P	
FP-324	8/4/97	791640	837475	7	F-46	117.8	13.4	111.8	12.8	94.9	F Comp	Fails Compaction
FP-324-R	* 8/7/97	791640	837475	7	F-46	117.8	13.4	113.8	14.3	96.6	P	Retest
FP-325	8/4/97	791800	837500	7	F-46	117.8	13.4	112.5	11.7	95.5	P	
FP-326	8/4/97	791560	837520	7	F-46	117.8	13.4	111.3	12.5	94.5	F Comp	Fails Compaction
FP-326-R	8/7/97	791560	837520	7	F-46	117.8	13.4	112.1	15.0	95.2	P	Retest
FP-327	8/5/97	791990	837495	7	F-48	116.7	13.2	111.3	11.5	95.4	P	
FP-328	8/5/97	791930	837545	7	F-48	116.7	13.2	111.3	12.0	95.4	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-329	8/5/97	791860	837600	7	F-48	116.7	13.2	115.3	15.2	98.8	P	
FP-330	8/5/97	791555	837385	7	F-48	116.7	13.2	110.5	14.8	94.7	F Comp	Fails Compaction
FP-330-R	8/7/97	791555	837385	7	F-48	116.7	13.2	114.0	14.7	97.7	P	Retest
FP-331	8/5/97	792180	837525	7	F-48	116.7	13.2	111.4	13.0	95.5	P	
FP-332	8/5/97	792130	837610	7	F-48	116.7	13.2	111.7	15.5	95.7	P	
FP-333	8/5/97	791120	837980	7	F-48	116.7	13.2	111.9	12.0	95.9	P	
FP-334	8/7/97	791780	837940	7	F-48	116.7	13.2	116.6	12.8	99.9	P	
FP-335	8/7/97	791130	837820	7	F-48	116.7	13.2	113.8	14.7	97.5	P	
FP-336	8/7/97	791030	837920	7	F-48	116.7	13.2	111.4	11.1	95.5	P	Test passed by QC officer; moisture only 0.1% below requirement.
FP-337	8/7/97	791370	838020	7	F-49	116.0	14.1	112.9	12.4	97.3	P	
FP-338	8/7/97	791480	838025	7	F-49	116.0	14.1	113.4	15.3	97.8	P	
FP-339	8/7/97	791440	837540	2	F-49	116.0	14.1	112.8	13.4	97.2	P	
FP-340	8/7/97	791270	837445	2	F-49	116.0	14.1	111.6	15.4	96.2	P	
FP-341	8/7/97	791215	837445	2	F-49	116.0	14.1	111.1	13.1	95.8	P	
FP-342	8/7/97	791220	837540	2	F-49	116.0	14.1	110.9	13.4	95.6	P	
FP-343	8/7/97	791120	837440	2	F-49	116.0	14.1	110.2	17.0	95.0	P	
FP-344	8/7/97	791170	837635	2	F-49	116.0	14.1	110.8	13.4	95.5	P	
FP-345	8/7/97	791950	837530	2	F-49	116.0	14.1	109.3	17.7	94.2	F Comp	Fails Compaction
FP-345-R	8/8/97	791950	837530	2	F-49	116.0	14.1	113.4	13.1	97.8	P	Retest
FP-346	8/8/97	791470	837400	3	F-49	116.0	14.1	112.5	13.1	97.0	P	
FP-347	8/8/97	791410	837365	3	F-50	114.0	14.6	109.4	12.8	96.0	P	
FP-348	8/8/97	791320	837320	3	F-50	114.0	14.6	108.7	16.1	95.4	P	
FP-349	8/8/97	791370	837400	3	F-50	114.0	14.6	109.1	17.0	95.7	P	
FP-350	8/8/97	791340	837500	3	F-50	114.0	14.6	111.7	18.0	98.0	P	
FP-351	8/8/97	791200	837545	3	F-50	114.0	14.6	113.4	14.1	99.5	P	
FP-352	8/8/97	791160	837415	TOE	F-50	114.0	14.6	111.2	13.7	97.5	P	
FP-353	8/8/97	791160	837610	3	F-50	114.0	14.6	118.4	13.1	103.9	P	
FP-354	8/8/97	790930	837455	3	F-50	114.0	14.6	112.2	14.0	98.4	P	
FP-355	8/8/97	791460	837370	4	F-50	114.0	14.6	107.5	16.5	94.3	F Comp	Fails Compaction - No RETEST
FP-356	8/8/97	791350	837440	2	F-50	114.0	14.6	108.7	18.5	95.4	P	
FP-357	8/8/97	791250	837375	2	F-51	113.9	15.4	106.2	15.1	93.2	F Comp	Fails Compaction
FP-357-R	8/11/97	791250	837375	2	F-51	113.9	15.4	110.9	13.4	97.4	P	Retest
FP-358	8/8/97	791375	837300	4	F-51	113.9	15.4	113.0	13.5	99.2	P	
FP-359	* 8/8/97	791440	837450	4	F-51	113.9	15.4	113.5	13.6	99.6	P	
FP-360	8/8/97	791295	837330	4	F-51	113.9	15.4	113.5	14.1	99.6	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

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Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-361	8/8/97	791360	837380	4	F-51	113.9	15.4	108.6	16.4	95.3	P	
FP-362	8/8/97	791530	837390	4	F-51	113.9	15.4	109.6	17.2	96.2	P	
FP-363	8/11/97	791200	837465	4	F-51	113.9	15.4	114.3	13.4	100.4	P	
FP-364	8/11/97	791330	837475	4	F-51	113.9	15.4	112.7	13.3	98.9	P	Test passed by QC officer; moisture only 0.1% below requirement.
FP-365	8/11/97	791220	837410	4	F-51	113.9	15.4	113.4	15.6	99.6	P	
FP-366	8/11/97	791330	837530	4	F-52	111.9	16.0	110.3	15.6	98.6	P	
FP-367	8/11/97	791255	837530	4	F-52	111.9	16.0	112.4	14.1	100.4	P	
FP-368	8/11/97	791380	837360	4	F-52	111.9	16.0	107.4	18.9	96.0	P	
FP-369	8/11/97	791105	837600	4	F-52	111.9	16.0	115.5	14.8	103.2	P	
FP-370	8/11/97	790980	837490	4	F-52	111.9	16.0	111.6	16.0	99.7	P	
FP-371	8/11/97	791110	837490	4	F-52	111.9	16.0	107.6	16.0	96.2	P	
FP-371D	8/12/97	791930	837400	FG	F-53	117.3	14.7	112.4	14.2	95.8	P	Field test number duplicated.
FP-372	8/12/97	792090	837345	FG	F-53	117.3	14.7	115.9	14.7	98.8	P	
FP-373	8/12/97	791760	837370	FG	F-53	117.3	14.7	114.0	15.1	97.2	P	
FP-374	8/12/97	792150	837475	FG	F-53	117.3	14.7	114.1	13.9	97.3	P	
FP-375	8/12/97	792040	837840	FG	F-53	117.3	14.7	113.1	12.8	96.4	P	
FP-376	8/12/97	792115	837720	FG	F-53	117.3	14.7	112.2	13.0	95.6	P	
FP-377	8/12/97	792070	837610	FG	F-53	117.3	14.7	112.8	14.8	96.2	P	
FP-378	8/12/97	790810	837960	1	F-53	117.3	14.7	111.6	14.5	95.1	P	
FP-379	8/12/97	790930	837890	1	F-53	117.3	14.7	112.3	15.6	95.7	P	
FP-380	8/12/97	790930	837690	1	F-53	117.3	14.7	116.0	13.9	98.9	P	
FP-381	8/12/97	790890	837640	1	F-54	117.1	13.3	112.4	15.3	96.0	P	
FP-382	8/12/97	790795	837575	1	F-54	117.1	13.3	112.8	16.6	96.3	P	
FP-383	8/12/97	790760	837630	1	F-54	117.1	13.3	114.2	15.8	97.5	P	
FP-384	8/12/97	790860	837665	1	F-54	117.1	13.3	113.2	16.1	96.7	P	
FP-385	8/12/97	790910	837765	1	F-54	117.1	13.3	111.5	15.4	95.2	P	
FP-386	8/12/97	790870	837800	1	F-54	117.1	13.3	113.7	13.9	97.1	P	
FP-387	8/14/97	792200	837600	FG	F-54	117.1	13.3	117.3	13.0	100.2	P	
FP-388	8/14/97	791995	837690	FG	F-54	117.1	13.3	114.6	12.9	97.9	P	
FP-389	8/14/97	791910	837750	FG	F-54	117.1	13.3	114.4	16.2	97.7	P	
FP-390	8/14/97	791900	837570	FG	F-54	117.1	13.3	114.9	14.2	98.1	P	
FP-391	8/14/97	791580	837750	FG	F-55	114.0	15.5	112.1	15.4	98.3	P	
FP-392	8/14/97	792095	837930	FG	F-55	114.0	15.5	112.9	17.0	99.0	P	
FP-393	8/14/97	791720	837620	FG	F-55	114.0	15.5	114.6	15.3	100.5	P	
FP-394	8/14/97	791370	837710	FG	F-55	114.0	15.5	108.8	15.8	95.4	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-395	8/14/97	791810	837630	FG	F-55	114.0	15.5	114.4	13.6	100.4	P	
FP-396	* 8/14/97	791450	837430	FG	F-55	114.0	15.5	110.2	17.5	96.7	P	
FP-397	8/14/97	791430	837340	FG	F-55	114.0	15.5	114.0	15.7	100.0	P	
FP-398	8/14/97	790730	837515	1	F-55	114.0	15.5	115.6	13.9	101.4	P	
FP-399	* 8/14/97	790930	837665	FG	F-55	114.0	15.5	112.8	13.5	98.9	P	
FP-400	8/14/97	791015	837740	FG	F-55	114.0	15.5	113.8	14.7	99.8	P	
FP-401	8/14/97	790780	838145	1	F-59	111.0	15.0	103.7	17.4	93.4	F Comp	Fails Compaction
FP-401-R	8/15/97	790780	838145	1	F-59	111.0	15.0	106.7	12.9	96.1	P	Retest passed by QC officer; moisture only 0.1% below requirement.
FP-402	8/14/97	791700	837540	FG	F-56	116.0	13.4	111.0	16.6	95.7	P	
FP-403	8/14/97	791785	837850	FG	F-56	116.0	13.4	111.9	15.5	96.5	P	
FP-404	8/14/97	790795	837780	1	F-56	116.0	13.4	114.6	13.0	98.8	P	
FP-405	8/14/97	790650	837630	1	F-56	116.0	13.4	111.3	14.6	95.9	P	
FP-406	8/14/97	790610	837710	1	F-56	116.0	13.4	117.8	11.8	101.6	P	
FP-407	8/14/97	790700	837845	1	F-56	116.0	13.4	109.5	14.9	94.4	F Comp	Fails Compaction
FP-407-R	8/14/97	790700	837845	1	F-56	116.0	13.4	110.3	12.3	95.1	P	Retest
FP-408	8/14/97	790760	838005	1	F-56	116.0	13.4	113.3	12.0	97.7	P	
FP-409	8/14/97	790960	837705	2	F-56	116.0	13.4	110.6	16.4	95.3	P	
FP-410	8/14/97	790775	837545	2	F-56	116.0	13.4	112.5	14.3	97.0	P	
FP-411	8/15/97	790740	837590	3	F-56	116.0	13.4	113.9	14.4	98.2	P	
FP-412	8/15/97	790920	837845	3	F-57	117.8	13.4	116.6	16.5	99.0	P	
FP-413	8/15/97	790685	837615	3	F-57	117.8	13.4	114.4	15.5	97.1	P	
FP-414	8/15/97	790850	837830	3	F-60	114.5	14.8	109.4	12.5	95.5	F Moist	Fails Moisture
FP-414-R	8/15/97	790850	837830	3	F-60	114.5	14.8	110.9	16.3	96.9	P	Retest
FP-415	8/15/97	790805	837800	3	F-60	114.5	14.8	110.4	15.5	96.4	P	
FP-416	8/15/97	790600	837710	2	F-57	117.8	13.4	115.9	13.3	98.4	P	
FP-417	8/15/97	790710	837820	2	F-57	117.8	13.4	109.9	18.4	93.3	F Comp	Fails Compaction
FP-417-R	8/15/97	790710	837820	2	F-57	117.8	13.4	112.5	16.9	95.5	P	Retest
FP-418	8/15/97	790825	837910	2	F-57	117.8	13.4	112.8	14.7	95.8	P	
FP-419	8/15/97	790580	837700	2	F-57	117.8	13.4	112.3	13.8	95.3	P	
FP-420	8/15/97	790680	837720	2	F-57	117.8	13.4	115.1	15.5	97.7	P	
FP-421	* 8/15/97	790850	837570	3	F-57	117.8	13.4	113.5	11.4	96.4	P	
FP-422	8/15/97	790980	837765	3	F-58	116.9	12.0	112.8	10.6	96.5	P	
FP-423	8/15/97	790810	837570	3	F-58	116.9	12.0	111.4	16.3	95.3	P	
FP-424	8/15/97	790870	837630	3	F-58	116.9	12.0	111.1	14.0	95.0	P	
FP-425	8/15/97	791100	837795	2	F-60	114.5	14.8	110.7	13.0	96.7	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-426	8/15/97	790930	837775	2	F-60	114.5	14.8	108.8	17.8	95.0	P	
FP-427	* 8/15/97	790990	837720	3	F-58	116.9	12.0	113.4	11.7	97.0	P	
FP-428	8/15/97	790900	837640	3	F-58	116.9	12.0	112.8	12.9	96.5	P	
FP-429	8/18/97	790895	837945	3	F-58	116.9	12.0	116.2	12.7	99.4	P	
FP-430	8/18/97	790640	837695	3	F-58	116.9	12.0	114.8	14.3	98.2	P	
FP-431	8/18/97	790665	837825	3	F-58	116.9	12.0	114.4	13.8	97.9	P	
FP-432	8/18/97	790820	837930	3	F-58	116.9	12.0	114.1	15.6	97.6	P	
FP-433	8/18/97	790615	837800	3	F-58	116.9	12.0	112.8	14.2	96.5	P	
FP-434	8/18/97	790890	837875	3	F-61	112.6	14.9	111.8	16.3	99.3	P	
FP-435	8/18/97	790615	837690	3	F-61	112.6	14.9	110.1	16.3	97.8	P	
FP-436	* 8/18/97	790865	837930	4	F-61	112.6	14.9	107.0	16.1	95.0	P	
FP-437	8/18/97	790770	837790	3	F-61	112.6	14.9	108.5	18.5	96.4	P	
FP-438	8/18/97	790830	837960	3	F-61	112.6	14.9	110.3	18.5	98.0	P	
FP-439	8/18/97	790635	837815	3	F-61	112.6	14.9	112.0	13.6	99.5	P	
FP-440	8/18/97	792330	837260	4	F-61	112.6	14.9	114.4	17.1	101.6	P	
FP-441	8/18/97	791010	837770	4	F-61	112.6	14.9	113.7	14.5	101.0	P	
FP-442	* 8/18/97	790950	837760	4	F-61	112.6	14.9	110.9	16.0	98.5	P	
FP-443	8/18/97	790835	837695	4	F-61	112.6	14.9	107.6	18.1	95.6	P	
FP-444	8/18/97	790720	837570	4	F-61	112.6	14.9	108.1	15.3	96.0	P	
FP-444D	8/19/97	790820	837640	4	F-62	117.0	13.5	112.8	16.6	96.4	P	Field test number duplicated.
FP-445	8/19/97	790650	837805	4	F-62	117.0	13.5	113.1	16.7	96.7	P	
FP-446	8/19/97	790660	837665	4	F-62	117.0	13.5	113.0	16.2	96.6	P	
FP-447	8/19/97	790710	837720	4	F-62	117.0	13.5	110.9	17.5	94.8	F Comp	Fails Compaction
FP-447R	9/5/97	790710	837720	4	F-62	117.0	13.5	112.4	11.8	96.1	P	Retest
FP-448	8/19/97	791000	837580	1	F-62	117.0	13.5	112.8	11.8	96.4	P	
FP-449	8/19/97	791085	837635	4	F-62	117.0	13.5	112.3	11.6	96.0	P	
FP-450	8/19/97	790930	837630	4	F-62	117.0	13.5	111.4	14.6	95.2	P	
FP-451	8/19/97	790865	837495	4	F-62	117.0	13.5	114.8	11.8	98.1	P	
FP-452	8/19/97	791300	837600	FG	F-62	117.0	13.5	113.8	13.5	97.3	P	
FP-453	8/19/97	790940	837520	4	F-62	117.0	13.5	114.2	13.2	97.6	P	
FP-454	8/19/97	791385	837630	FG	F-63	117.0	13.0	113.6	15.1	97.0	P	
FP-455	8/19/97	791505	837510	FG	F-63	117.0	13.0	112.1	14.7	95.8	P	
FP-456	8/19/97	791510	837645	FG	F-66	112.3	14.9	109.8	16.6	97.8	P	
FP-457	8/19/97	791280	837665	FG	F-66	112.3	14.9	110.8	14.2	98.7	P	
FP-458	8/19/97	791615	837460	FG	F-66	112.3	14.9	110.2	15.0	98.1	P	
FP-459	8/19/97	791090	837710	FG	F-66	112.3	14.9	109.0	13.4	97.1	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-460	*	8/19/97	790910	837900	FG	F-66	112.3	14.9	108.5	15.6	96.6	P	
FP-461		8/20/97	792300	837105	1	F-63	117.0	13.0	111.6	14.5	95.4	P	
FP-462		8/20/97	792400	837175	1	F-63	117.0	13.0	112.9	11.2	96.5	P	
FP-463		8/20/97	791560	837295	1	F-63	117.0	13.0	111.8	15.7	95.6	P	
FP-464		8/20/97	791415	837240	1	F-63	117.0	13.0	116.0	14.1	99.1	P	
FP-465	*	8/20/97	792080	837225	1	F-63	117.0	13.0	114.8	15.2	98.1	P	
FP-466		8/20/97	792320	837340	1	F-63	117.0	13.0	113.2	14.2	96.8	P	
FP-467		8/20/97	792365	837195	1	F-63	117.0	13.0	113.1	11.8	96.7	P	
FP-468		8/20/97	792270	837550	1	F-63	117.0	13.0	111.4	17.1	95.2	P	
FP-469		8/20/97	792225	837560	1	F-65	116.0	13.5	115.4	13.0	99.5	P	
FP-470		8/20/97	791050	837710	2	F-65	116.0	13.5	111.4	13.3	96.0	P	
FP-471	*	8/20/97	791640	837240	1	F-65	116.0	13.5	110.4	18.8	95.2	P	
FP-472		8/21/97	791715	837050	FG	F-67	106.0	19.0	105.5	17.6	99.5	P	
FP-473		8/21/97	791640	837055	1	F-67	106.0	19.0	106.5	17.9	100.5	P	
FP-474		8/21/97	791600	837110	1	F-65	116.0	13.5	113.2	14.2	97.5	P	
FP-475		8/21/97	791550	837130	1	F-65	116.0	13.5	114.4	13.4	98.6	P	
FP-476		8/21/97	791550	837190	1	F-65	116.0	13.5	110.9	19.0	95.6	P	
FP-477		8/21/97	791460	837160	1	F-65	116.0	13.5	113.5	15.7	97.8	P	
FP-478		8/21/97	792390	837160	2	F-67	106.0	19.0	106.6	18.5	100.6	P	
FP-479	*	8/21/97	791630	837230	2	F-65	116.0	13.5	116.5	13.4	100.4	P	
FP-479D		8/21/97	792400	837100	2	F-67	106.0	19.0	106.7	18.7	100.7	P	Field test number duplicated.
FP-480		8/21/97	791400	837215	2	F-65	116.0	13.5	112.0	15.8	96.6	P	
FP-480D		8/21/97	792330	837090	2	F-67	106.0	19.0	105.4	21.7	99.4	P	Field test number duplicated.
FP-481		8/21/97	791440	837175	2	F-67	106.0	19.0	106.0	18.3	100.0	P	
FP-481D		8/21/97	792285	837130	2	F-67	106.0	19.0	103.0	22.4	97.2	P	Field test number duplicated.
FP-482		8/21/97	790840	837525	2	F-59	111.0	15.0	104.0	13.9	93.7	F Comp	Fails Compaction
FP-482-R		8/21/97	790840	837525	2	F-59	111.0	15.0	111.7	13.2	100.6	P	Retest
FP-482D		8/21/97	792310	837170	2	F-67	106.0	19.0	104.9	23.7	99.0	P	Field test number duplicated.
FP-483		8/21/97	791015	837680	2	F-59	111.0	15.0	103.8	14.5	93.5	F Comp	Fails Compaction
FP-483-R		8/21/97	792420	837240	2	F-59	111.0	15.0	108.7	13.8	97.9	P	Retest
FP-483D		8/21/97	791015	837680	2	F-67	106.0	19.0	103.8	21.7	97.9	P	Field test number duplicated.
FP-484		8/21/97	791100	837680	2	F-59	111.0	15.0	106.5	14.9	95.9	P	
FP-484D		8/21/97	792370	837250	2	F-67	106.0	19.0	105.1	17.4	99.2	P	Field test number duplicated.
FP-485		8/21/97	790980	837820	2	F-66	112.3	14.9	108.5	13.0	96.6	P	
FP-485D		8/21/97	791480	837320	1	F-65	116.0	13.5	116.3	13.3	100.3	P	Field test number duplicated.
FP-486		8/21/97	790880	837950	2	F-66	112.3	14.9	109.2	12.9	97.2	P	

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Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-487	8/21/97	790985	838160	1	F-59	111.0	15.0	107.6	14.7	96.9	P	
FP-488	8/21/97	791350	838170	1	F-59	111.0	15.0	108.5	16.7	97.7	P	
FP-489	* 8/21/97	791680	838180	1	F-59	111.0	15.0	109.5	14.6	98.6	P	
FP-490	8/22/97	791000	837640	3	F-59	111.0	15.0	107.5	15.7	96.8	P	
FP-491	8/22/97	790815	837515	3	F-59	111.0	15.0	110.1	14.6	99.2	P	
FP-492	8/22/97	790850	837470	3	F-59	111.0	15.0	108.2	17.5	97.5	P	
FP-493	8/22/97	790890	837515	3	F-69	112.6	15.6	108.4	15.3	96.3	P	
FP-494	8/22/97	790920	837905	FG	F-68	116.0	14.5	116.1	14.0	100.1	P	
FP-495	8/22/97	791100	837745	FG	F-68	116.0	14.5	112.0	15.8	96.6	P	
FP-496	8/22/97	791290	837610	FG	F-69	112.6	15.6	107.6	17.3	95.6	P	
FP-497	8/22/97	791425	837480	FG	F-69	112.6	15.6	111.0	17.0	98.6	P	
FP-498	8/22/97	790890	837985	FG	F-68	116.0	14.5	110.8	12.5	95.5	P	
FP-499	8/22/97	791230	837595	FG	F-68	116.0	14.5	110.5	12.7	95.3	P	
FP-500	8/22/97	790530	837770	1	F-68	116.0	14.5	115.0	13.0	99.1	P	
FP-501	8/22/97	790635	838030	1	F-69	112.6	15.6	106.0	16.3	94.1	F Comp	Fails Compaction
FP-501R	8/25/97	790635	838030	1	F-69	112.6	15.6	108.5	16.6	96.4	P	Retest
FP-502	* 8/22/97	790700	838130	1	F-69	112.6	15.6	108.3	18.6	96.2	P	
FP-503	8/22/97	790705	837965	1	F-69	112.6	15.6	108.3	17.5	96.2	P	
FP-504	8/22/97	790870	838200	2	F-69	112.6	15.6	107.4	17.4	95.4	P	
FP-505	8/22/97	791140	838170	2	F-69	112.6	15.6	109.5	15.4	97.2	P	
FP-506	8/22/97	791520	838170	2	F-69	112.6	15.6	110.8	15.3	98.4	P	
FP-507	8/22/97	791430	837130	2	F-71	113.2	15.6	107.6	18.9	95.1	P	
FP-508	8/22/97	791580	837280	2	F-68	116.0	14.5	112.4	13.8	96.9	P	
FP-509	8/22/97	791575	837135	2	F-71	113.2	15.6	107.0	19.5	94.5	F Comp	Fails Compaction
FP-509-R	8/22/97	791575	837135	2	F-71	113.2	15.6	111.3	12.6	98.3	F Moist	Fails Moisture
FP-509-R2	8/25/97	791575	837135	2	F-71	113.2	15.6	108.0	19.4	95.4	P	Second Retest Passes
FP-510	8/22/97	791630	837165	2	F-68	116.0	14.5	110.5	16.1	95.3	P	
FP-511	8/22/97	791610	837085	2	F-68	116.0	14.5	111.6	13.5	96.2	P	
FP-512	8/22/97	792360	837230	3	F-71	113.2	15.6	105.5	22.0	93.2	F Comp	Fails Compaction
FP-512-R	8/22/97	792360	837230	3	F-71	113.2	15.6	110.5	13.0	97.6	F Moist	Retest Fails Moisture
FP-512-R2	8/25/97	792360	837230	3	F-71	113.2	15.6	108.7	16.7	96.0	P	Second Retest Passes
FP-513	8/22/97	792425	837240	3	F-71	113.2	15.6	104.7	17.4	92.5	F Comp	Fails Compaction
FP-513-R	8/22/97	792425	837240	3	F-71	113.2	15.6	112.0	14.1	98.9	P	Retest
FP-514	8/22/97	792250	837320	2	F-68	116.0	14.5	112.6	13.1	97.1	P	
FP-515	* 8/22/97	792340	837240	2	F-68	116.0	14.5	114.0	13.2	98.3	P	
FP-516	8/22/97	792445	837220	2	F-71	113.2	15.6	108.7	15.4	96.0	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-517	8/22/97	791545	837325	3	F-70	114.5	14.3	110.5	13.5	96.5	P	
FP-518	8/25/97	791404	837240	3	F-70	114.5	14.3	109.9	14.9	96.0	P	
FP-519	8/25/97	791620	837140	3	F-70	114.5	14.3	112.5	14.1	98.3	P	
FP-520	8/25/97	791650	837230	3	F-70	114.5	14.3	109.4	13.3	95.5	P	
FP-521	8/25/97	792430	837200	3	F-70	114.5	14.3	111.0	15.4	96.9	P	
FP-522	8/25/97	791535	837210	3	F-70	114.5	14.3	108.9	14.4	95.1	P	
FP-523	8/25/97	791510	837125	3	F-70	114.5	14.3	109.2	15.1	95.4	P	
FP-524	8/25/97	790740	837980	2	F-69	112.6	15.6	107.9	13.9	95.8	P	
FP-525	8/25/97	790590	838020	2	F-75	112.3	15.5	108.1	15.9	96.3	P	
FP-526	8/25/97	790630	838130	2	F-75	112.3	15.5	107.7	14.5	95.9	P	
FP-527	* 8/25/97	790850	838180	3	F-75	112.3	15.5	110.4	14.5	98.3	P	
FP-528	8/25/97	791315	838170	3	F-75	112.3	15.5	107.2	16.2	95.5	P	
FP-529	8/25/97	791700	838170	3	F-75	112.3	15.5	113.4	14.1	100.9	P	
FP-530	8/26/97	791540	837910	FG	F-73	115.9	14.0	115.7	14.8	99.8	P	
FP-531	8/26/97	791665	837870	FG	F-70	114.5	14.3	109.2	14.6	95.4	P	
FP-532	8/26/97	791855	837830	FG	F-73	115.9	14.0	115.3	13.5	99.5	P	
FP-533	8/26/97	791640	837795	FG	F-70	114.5	14.3	110.9	16.1	96.9	P	
FP-534	8/26/97	791410	837850	FG	F-73	115.9	14.0	112.1	14.6	96.7	P	
FP-535	8/26/97	791760	838030	FG	F-73	115.9	14.0	115.4	13.5	99.6	P	
FP-536	8/26/97	792340	837230	4	F-74	101.0	21.8	96.9	21.5	95.9	P	
FP-537	8/26/97	792420	837200	4	F-74	101.0	21.8	96.0	24.9	95.1	P	
FP-538	8/26/97	792330	837075	4	F-74	101.0	21.8	97.1	24.6	96.1	P	
FP-539	8/26/97	792345	837185	4	F-72	112.4	14.5	111.2	16.3	98.9	P	
FP-540	8/26/97	792445	837175	4	F-72	112.4	14.5	108.2	17.2	96.3	P	
FP-541	8/26/97	792390	837095	4	F-72	112.4	14.5	109.6	16.6	97.5	P	
FP-542	8/26/97	790640	838060	1	F-75	112.3	15.5	108.6	13.9	96.7	P	
FP-543	8/26/97	790670	837945	3	F-75	112.3	15.5	110.8	13.9	98.7	P	
FP-544	8/26/97	790550	837980	3	F-75	112.3	15.5	110.7	14.6	98.6	P	
FP-545	8/26/97	790670	838120	3	F-75	112.3	15.5	110.5	15.1	98.4	P	
FP-546	8/26/97	790890	838175	4	F-75	112.3	15.5	109.7	15.1	97.7	P	
FP-547	8/26/97	791205	838170	4	F-77	113.8	15.0	112.0	15.4	98.4	P	
FP-548	8/26/97	791630	838175	4	F-77	113.8	15.0	113.6	15.2	99.8	P	
FP-549	8/26/97	790450	837830	2	F-77	113.8	15.0	109.3	15.7	96.1	P	
FP-550	* 8/26/97	790730	838185	3	F-77	113.8	15.0	111.4	15.6	97.9	P	
FP-551	8/26/97	790530	837810	3	F-77	113.8	15.0	109.6	13.9	96.3	P	
FP-552	8/27/97	791555	837315	4	F-78	113.4	14.5	109.7	17.5	96.7	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-553	8/27/97	791445	837270	4	F-74	101.0	21.8	97.6	25.2	96.6	P		
FP-554	8/27/97	791580	837265	4	F-78	113.4	14.5	109.7	14.8	96.7	P		
FP-555	8/27/97	791490	837270	4	F-78	113.4	14.5	109.7	14.0	96.7	P		
FP-556	8/27/97	791560	837085	4	F-74	101.0	21.8	98.4	18.6	97.4	F Moist	Fails Moisture	
FP-556-R	8/28/97	791680	837130	4	F-74	101.0	21.8	96.5	21.0	95.5	P	Retest	
FP-557	8/27/97	791625	837230	4	F-78	113.4	14.5	108.0	13.7	95.2	P		
FP-558	8/27/97	791020	837665	4	F-78	113.4	14.5	112.7	13.4	99.4	P		
FP-559	8/27/97	791360	838180	4	F-78	113.4	14.5	110.8	13.1	97.7	P		
FP-560	8/27/97	791360	838180	5	F-77	113.8	15.0	107.7	13.4	94.6	F Comp	Fails Compaction	
FP-560-R	8/27/97	790910	838180	5	F-77	113.8	15.0	110.1	16.3	96.8	P	Retest	
FP-561	8/27/97	791195	838160	5	F-77	113.8	15.0	109.1	18.5	95.9	P		
FP-562	8/27/97	791050	837630	5	F-77	113.8	15.0	110.5	16.1	97.1	P		
FP-563	8/27/97	790920	837500	4	F-78	113.4	14.5	112.2	14.2	98.9	P		
FP-564	8/27/97	790780	837500	4	F-78	113.4	14.5	114.1	15.2	100.6	P		
FP-565	*	8/27/97	790910	837570	4	F-78	113.4	14.5	109.8	16.1	96.8	P	
FP-566		8/27/97	791560	837085	4	F-78	113.4	14.5	109.2	14.1	96.3	P	
FP-567		8/27/97	790720	837980	4	F-77	113.8	15.0	108.4	17.6	95.3	P	
FP-568		8/27/97	790580	837860	4	F-77	113.8	15.0	108.4	15.6	95.3	P	
FP-569	*	8/28/97	792380	837230	FG	F-81	115.1	14.3	111.9	14.3	97.2	P	
FP-570	*	8/28/97	792445	837190	FG	F-74	101.0	21.8	102.8	22.2	101.8	P	
FP-571	*	8/28/97	792370	837070	FG	F-81	115.1	14.3	110.2	12.6	95.7	P	
FP-572		8/28/97	792275	837100	FG	F-81	115.1	14.3	110.6	12.3	96.1	P	
FP-573		8/28/97	791540	837280	5	F-81	115.1	14.3	112.7	14.4	97.9	P	
FP-574		8/28/97	791420	837215	5	F-81	115.1	14.3	110.4	13.1	95.9	P	
FP-575		8/28/97	791620	837160	5	F-81	115.1	14.3	110.5	16.4	96.0	P	
FP-576		8/28/97	791645	837055	5	F-81	115.1	14.3	110.8	13.0	96.3	P	
FP-577		8/28/97	791690	837140	5	F-81	115.1	14.3	115.2	13.3	100.1	P	
FP-578		8/28/97	790660	838175	4	F-79	113.8	14.5	110.7	15.9	97.3	P	
FP-579		8/28/97	790590	838040	3	F-79	113.8	14.5	109.3	16.5	96.1	P	
FP-580		8/28/97	790970	837955	FG	F-76	116.1	14.3	114.9	12.3	99.0	P	
FP-581		8/28/97	791015	837840	FG	F-76	116.1	14.3	114.0	13.0	98.2	P	
FP-582		8/28/97	791225	837670	FG	F-76	116.1	14.3	110.5	15.6	95.2	P	
FP-583		8/28/97	791885	837700	FG	F-76	116.1	14.3	114.5	14.7	98.6	P	
FP-584	8/28/97	791880	837700	FG	F-76	116.1	14.3	114.3	11.4	98.5	F Moist	Fails Moisture	
FP-584-R	9/9/97	791880	837700	FG	F-76	116.1	14.3	112.3	13.8	96.7	P	Retest	
FP-585	8/28/97	791610	837630	FG	F-76	116.1	14.3	115.7	12.5	99.7	P		

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-586	8/28/97	791540	837690	FG	F-76	116.1	14.3	117.1	14.0	100.9	P	
FP-587	8/28/97	791840	837775	FG	F-76	116.1	14.3	115.3	14.1	99.3	P	
FP-588	8/28/97	791910	837260	FG	F-76	116.1	14.3	111.2	14.0	95.8	P	
FP-589	* 8/28/97	792140	837225	FG	F-76	116.1	14.3	112.3	13.8	96.7	P	
FP-590	8/29/97	791390	837495	FG	F-80	117.5	12.5	114.2	13.1	97.2	P	
FP-591	8/29/97	791500	837375	FG	F-80	117.5	12.5	115.6	14.6	98.4	P	
FP-592	8/29/97	791700	837250	FG	F-81	115.1	14.3	111.2	12.8	96.6	P	
FP-593	* 8/29/97	792175	837210	FG	F-80	117.5	12.5	114.4	12.8	97.4	P	
FP-594	8/29/97	792070	837235	FG	F-81	115.1	14.3	112.7	13.3	97.9	P	
FP-595	8/29/97	791580	837340	5	F-79	113.8	14.5	109.3	17.4	96.1	P	
FP-596	8/29/97	790830	838180	5	F-79	113.8	14.5	109.8	15.9	96.5	P	
FP-597	8/29/97	791075	838190	5	F-79	113.8	14.5	113.3	14.7	99.6	P	
FP-598	* 8/29/97	791630	838155	5	F-79	113.8	14.5	113.1	13.1	99.4	P	
FP-599	9/2/97	791905	837220	5	F-80	117.5	12.5	112.7	14.5	95.9	P	
FP-600	9/2/97	791780	837505	5	F-80	117.5	12.5	113.0	15.9	96.2	P	
FP-601	9/2/97	790600	838090	5	F-79	113.8	14.5	108.9	14.4	95.7	P	
FP-602	9/2/97	790540	837795	5	F-79	113.8	14.5	109.1	12.6	95.9	P	
FP-603	9/2/97	790870	837530	5	F-80	117.5	12.5	116.0	13.9	98.7	P	
FP-604	9/2/97	790750	837960	5	F-79	113.8	14.5	110.4	12.6	97.0	P	
FP-605	9/2/97	791410	838155	5	F-79	113.8	14.5	112.1	13.5	98.5	P	
FP-606	9/2/97	791955	838260	5	F-82	109.9	17.3	114.1	15.8	103.8	P	
FP-607	9/2/97	790700	838195	5	F-82	109.9	17.3	109.5	17.8	99.6	P	
FP-608	* 9/2/97	792300	837180	5	F-80	117.5	12.5	108.1	12.2	92.0	F Comp	Fails Compaction
FP-608-R	9/4/97	792300	837180	5	F-80	117.5	12.5	112.2	14.2	95.5	P	Retest
FP-609	9/3/97	790735	838045	4	F-82	109.9	17.3	105.3	18.1	95.8	P	
FP-610	9/3/97	790735	837965	4	F-82	109.9	17.3	104.5	17.4	95.1	P	
FP-611	9/3/97	790550	837835	4	F-82	109.9	17.3	105.8	16.1	96.3	P	
FP-612	9/3/97	791900	838230	4	F-82	109.9	17.3	108.3	17.3	98.5	P	
FP-613	9/3/97	791370	838170	4	F-82	109.9	17.3	105.6	17.8	96.1	P	
FP-614	9/3/97	790640	838190	4	F-82	109.9	17.3	109.5	15.6	99.6	P	
FP-615	* 9/3/97	792370	837210	4	F-82	109.9	17.3	108.4	19.5	98.6	P	
FP-616	9/4/97	790810	838155	FG	F-82	109.9	17.3	108.1	18.3	98.4	P	
FP-617	9/4/97	790610	838000	FG	F-84	112.0	15.8	109.0	17.9	97.3	P	
FP-618	9/4/97	790460	837815	FG	F-84	112.0	15.8	103.9	21.7	92.8	F Comp	Fails Compaction
FP-618-R	9/5/97	790460	837815	FG	F-84	112.0	15.8	110.4	14.9	98.6	P	Retest
FP-619	9/4/97	790910	838165	FG	F-84	112.0	15.8	109.1	18.0	97.4	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-620	9/4/97	791530	838145	FG	F-84	112.0	15.8	109.7	17.2	98.0	P	
FP-621	* 9/4/97	791160	838160	FG	F-84	112.0	15.8	110.8	18.3	98.9	P	
FP-622	9/5/97	790630	837930	FG	F-84	112.0	15.8	110.4	14.3	98.6	P	
FP-623	9/5/97	790910	838160	4	F-84	112.0	15.8	109.4	18.3	97.7	P	
FP-624	9/5/97	791290	838160	2	F-84	112.0	15.8	109.3	15.7	97.6	P	
FP-625	9/5/97	791770	838190	3	F-84	112.0	15.8	107.5	19.8	96.0	P	
FP-626	9/5/97	790895	837870	FG	F-84	112.0	15.8	106.9	17.1	95.4	P	
FP-627	* 9/5/97	790825	838155	FG	F-85	115.2	14.1	111.1	16.0	96.4	P	
FP-628	9/5/97	791370	838150	4	F-85	115.2	14.1	110.1	15.4	95.6	P	
FP-629	9/5/97	791630	838145	2	F-85	115.2	14.1	110.4	14.9	95.8	P	
FP-630	9/8/97	790840	838150	FG	F-85	115.2	14.1	110.5	15.3	95.9	P	
FP-631	9/8/97	791025	838140	FG	F-86	112.2	15.2	107.9	14.0	96.2	P	
FP-632	9/8/97	791580	838135	3	F-86	112.2	15.2	105.7	15.7	94.2	F Comp	Fails Compaction
FP-632-R	9/8/97	791580	838135	3	F-86	112.2	15.2	109.3	16.5	97.4	P	Retest
FP-633	9/8/97	791720	838160	4	F-86	112.2	15.2	108.0	13.4	96.3	P	
FP-634	9/8/97	792325	837220	2	F-86	112.2	15.2	108.9	14.7	97.1	P	
FP-635	9/8/97	792360	837205	2	F-86	112.2	15.2	105.4	16.7	93.9	F Comp	Fails Compaction
FP-635-R	9/8/97	792360	837205	2	F-86	112.2	15.2	111.5	16.0	99.4	P	Retest
FP-636	* 9/8/97	792270	837205	2	F-85	115.2	14.1	114.8	14.2	99.7	P	
FP-637	9/9/97	791485	838130	FG	F-85	115.2	14.1	116.8	12.9	101.4	P	
FP-638	9/9/97	791240	838155	FG	F-87	108.0	17.6	107.0	18.2	99.1	P	
FP-639	9/9/97	791790	838090	FG	F-85	115.2	14.1	109.4	14.3	95.0	P	
FP-640	9/9/97	791930	838130	FG	F-85	115.2	14.1	109.5	12.8	95.1	P	
FP-641	9/9/97	790975	838145	FG	F-87	108.0	17.6	104.8	16.4	97.0	P	
FP-642	* 9/9/97	792260	837220	FG	F-85	115.2	14.1	113.2	13.6	98.3	P	
FP-643	* 9/10/97	792340	837250	FG	F-85	115.2	14.1	111.8	14.8	97.0	P	
FP-644	9/10/97	792085	837210	FG	F-88	115.2	13.9	114.0	14.3	99.0	P	
FP-645	9/10/97	791180	837775	4	F-88	115.2	13.9	109.5	14.4	95.1	P	
FP-646	9/10/97	791520	837350	4	F-88	115.2	13.9	108.7	13.7	94.4	F Comp	Fails Compaction
FP-646-R	9/11/97	791520	837350	4	F-88	115.2	13.9	109.4	14.3	95.0	P	Retest
FP-647	9/10/97	791360	837565	4	F-88	115.2	13.9	115.7	14.4	100.4	P	
FP-648	9/10/97	791185	837665	4	F-88	115.2	13.9	117.0	13.4	101.6	P	
FP-649	9/10/97	791060	837700	4	F-88	115.2	13.9	113.0	15.3	98.1	P	
FP-650	9/10/97	791030	837760	FG	F-88	115.2	13.9	109.7	14.8	95.2	P	
FP-651	* 9/10/97	792320	837250	FG	F-88	115.2	13.9	112.6	15.9	97.7	P	
FP-652	9/11/97	791690	837255	FG	F-88	115.2	13.9	109.6	15.6	95.1	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-653	9/11/97	791540	837315	FG	F-88	115.2	13.9	110.4	18.0	95.8	P		
FP-654	9/11/97	791620	837270	FG	F-89	114.0	15.1	109.9	14.3	96.4	P		
FP-655	9/11/97	791660	837290	FG	F-89	114.0	15.1	110.4	14.7	96.8	P		
FP-656	9/11/97	791515	837475	2	F-89	114.0	15.1	110.4	14.5	96.8	P		
FP-657	9/11/97	791470	838215	2	F-89	114.0	15.1	108.5	13.1	95.2	P		
FP-658	9/11/97	792000	838200	4	F-89	114.0	15.1	109.4	14.3	96.0	P		
FP-659	9/11/97	792310	837240	4	F-89	114.0	15.1	111.4	13.7	97.7	P		
FP-660	9/11/97	792330	837270	4	F-89	114.0	15.1	115.0	14.3	100.9	P		
FP-661	9/11/97	791070	837780	4	F-89	114.0	15.1	113.9	13.8	99.9	P		
FP-662	*	9/11/97	790870	837945	4	F-89	114.0	15.1	109.1	15.8	95.7	P	
FP-663		9/12/97	792025	838170	FG	F-89	114.0	15.1	113.9	13.8	99.9	P	
FP-664	*	9/12/97	791985	838180	FG	F-90	112.4	15.5	107.3	13.7	95.5	P	
FP-665		9/12/97	791470	837530	FG	F-90	112.4	15.5	110.8	13.8	98.6	P	
FP-666		9/12/97	791616	837330	FG	F-90	112.4	15.5	109.9	15.8	97.8	P	
FP-667		9/15/97	790850	837900	FG	F-90	112.4	15.5	111.7	13.6	99.4	P	
FP-668		9/15/97	790815	837875	FG	F-90	112.4	15.5	109.7	14.0	97.6	P	
FP-669		9/15/97	790700	838020	FG	F-90	112.4	15.5	109.7	14.5	97.6	P	
FP-670		9/15/97	790730	837840	FG	F-90	112.4	15.5	113.9	13.8	101.3	P	
FP-671		9/15/97	790840	837800	FG	F-90	112.4	15.5	113.1	15.0	100.6	P	
FP-672		9/15/97	790805	837750	FG	F-90	112.4	15.5	109.9	15.3	97.8	P	
FP-673		9/15/97	790720	837675	FG	F-90	112.4	15.5	111.6	17.1	99.3	P	
FP-674		9/16/97	790590	837765	FG	F-87	108.0	17.6	103.9	17.1	96.2	P	
FP-675		9/16/97	790620	837640	FG	F-87	108.0	17.6	106.6	17.5	98.7	P	
FP-676		9/16/97	790925	837740	FG	F-91	112.2	15.1	111.2	15.2	99.1	P	
FP-677	*	9/16/97	790830	837685	FG	F-91	112.2	15.1	109.0	14.7	97.2	P	
FP-678		9/16/97	790760	837580	FG	F-87	108.0	17.6	104.3	19.8	96.6	P	
FP-679		9/16/97	790980	837670	FG	F-87	108.0	17.6	103.0	20.4	95.4	P	
FP-680		9/16/97	790760	837525	FG	F-91	112.2	15.1	108.2	17.3	96.4	P	
FP-681		9/16/97	791030	837585	FG	F-87	108.0	17.6	106.4	16.4	98.5	P	
FP-682		9/16/97	790925	837555	FG	F-91	112.2	15.1	112.3	14.6	100.1	P	
FP-683		9/16/97	790790	837480	FG	F-87	108.0	17.6	106.0	15.8	98.2	P	
FP-684		9/17/97	792050	837190	FG	F-91	112.2	15.1	108.4	16.5	96.6	P	
FP-685		9/17/97	791925	837195	FG	F-91	112.2	15.1	107.5	19.3	95.8	P	
FP-686		9/18/97	791700	838105	FG	F-92	115.4	13.5	109.7	13.2	95.1	P	
FP-687		9/18/97	791385	838105	FG	F-92	115.4	13.5	110.3	12.6	95.6	P	
FP-688		9/18/97	791090	838120	FG	F-92	115.4	13.5	114.2	12.9	99.0	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-689	9/18/97	792200	837190	FG	F-91	112.2	15.1	108.9	17.3	97.1	P	
FP-690	* 9/18/97	792040	837200	FG	F-91	112.2	15.1	108.7	18.2	96.9	P	
FP-691	9/18/97	791825	837210	FG	F-91	112.2	15.1	111.7	16.8	99.6	P	
FP-692	9/18/97	791725	837215	FG	F-91	112.2	15.1	108.3	15.8	96.5	P	
FP-693	9/18/97	791620	837225	FG	F-93	112.0	16.0	108.5	16.3	96.9	P	
FP-694	9/18/97	791525	837305	FG	F-93	112.0	16.0	103.1	18.7	92.1	F Comp	Fails Compaction
FP-694-R	9/26/97	791525	837305	FG	F-93	112.0	16.0	109.3	16.5	97.6	P	Retest
FP-695	* 9/18/97	791305	837575	FG	F-93	112.0	16.0	104.6	17.0	93.4	F Comp	Fails Compaction
FP-695-R	9/26/97	791305	837575	FG	F-93	112.0	16.0	109.6	17.2	97.9	P	Retest
FP-696	9/25/97	791155	837550	FG	F-93	112.0	16.0	106.4	12.9	95.0	F Moist	Fails Moisture
FP-696-R	9/29/97	791155	837550	FG	F-93	112.0	16.0	107.2	17.8	95.7	P	Retest
FP-697	9/25/97	791085	837445	FG	F-93	112.0	16.0	107.0	13.5	95.5	F Moist	Fails Moisture
FP-697-R	9/29/97	791085	837445	FG	F-93	112.0	16.0	109.4	15.5	97.7	P	Retest
FP-698	9/25/97	791100	837545	FG	F-93	112.0	16.0	106.5	15.0	95.1	P	
FP-699	9/25/97	791945	837150	FG	F-93	112.0	16.0	107.2	18.2	95.7	P	
FP-700	9/25/97	791870	837060	FG	F-93	112.0	16.0	108.0	14.2	96.4	P	
FP-701	9/25/97	791795	837045	FG	F-92	115.4	13.5	110.9	15.7	96.1	P	
FP-702	9/26/97	791745	837165	FG	F-93	112.0	16.0	107.9	16.7	96.3	P	
FP-703	9/26/97	791420	837440	FG	F-93	112.0	16.0	104.9	18.4	93.7	F Comp	Fails Compaction
FP-703-R	9/30/97	791420	837440	FG	F-93	112.0	16.0	109.1	18.5	97.4	P	Retest
FP-704	9/29/97	791530	837250	FG	F-94	111.0	15.5	106.1	16.7	95.6	P	
FP-705	9/29/97	790680	837870	FG	F-92	115.4	13.5	111.6	15.2	96.7	P	
FP-706	9/29/97	790910	837800	FG	F-94	111.0	15.5	109.9	17.3	99.0	P	
FP-707	9/29/97	790750	837690	FG	F-94	111.0	15.5	109.1	14.5	98.3	P	
FP-708	9/29/97	790730	837600	FG	F-94	111.0	15.5	110.7	15.2	99.7	P	
FP-709	9/29/97	790610	837760	FG	F-94	111.0	15.5	108.1	15.8	97.4	P	
FP-710	9/29/97	790855	837895	FG	F-94	111.0	15.5	107.1	20.0	96.5	P	
FP-711	9/29/97	791810	837480	FG	F-92	115.4	13.5	112.9	13.5	97.8	P	
FP-712	9/29/97	791210	837530	FG	F-94	111.0	15.5	103.1	15.5	92.9	F Comp	Fails Compaction
FP-712-R	* 9/30/97	791210	837530	FG	F-94	111.0	15.5	109.8	15.9	98.9	P	Retest
FP-713	9/29/97	791480	837130	FG	F-94	111.0	15.5	106.6	17.1	96.0	P	
FP-714	* 9/29/97	791540	837075	FG	F-94	111.0	15.5	106.7	18.6	96.1	P	
FP-715	9/29/97	791600	837185	FG	F-94	111.0	15.5	111.9	14.3	100.8	P	
FP-716	9/3/98	792472	837935	1	F-95	114.9	14.6	109.8	12.6	95.6	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-717	9/3/98	792407	838170	1	F-95	114.9	14.6	111.3	15.7	96.9	P		
FP-718	9/3/98	792338	838466	1	F-95	114.9	14.6	112.7	15.7	98.1	P		
FP-719	9/3/98	792270	838487	1	F-95	114.9	14.6	112.2	16.3	97.7	P		
FP-720	9/3/98	792327	838289	1	F-95	114.9	14.6	113.1	14.8	98.4	P		
FP-721	9/8/98	792347	838035	1	F-95	114.9	14.6	110.0	17.0	95.7	P		
FP-722	9/8/98	792228	838359	1	F-95	114.9	14.6	114.1	15.3	99.3	P		
FP-723	*	9/9/98	792457	838012	2	F-95	114.9	14.6	111.7	14.7	97.2	P	
FP-724	9/9/98	792362	838215	2	F-95	114.9	14.6	111.9	12.7	97.4	P		
FP-725	9/9/98	792348	838406	2	F-95	114.9	14.6	114.1	15.0	99.3	P		
FP-726	9/9/98	792398	837882	2	F-97	114.3	13.8	112.1	12.9	98.1	P		
FP-727	9/9/98	792292	838250	2	F-97	114.3	13.8	113.0	14.8	98.9	P		
FP-728	9/9/98	792278	838160	2	F-97	114.3	13.8	114.4	13.0	100.1	P		
FP-729	9/9/98	792332	837943	2	F-97	114.3	13.8	111.5	13.1	97.6	P		
FP-730	9/10/98	792480	837792	1	F-97	114.3	13.8	114.6	13.4	100.3	P		
FP-731	9/10/98	792442	837569	1	F-97	114.3	13.8	112.8	15.3	98.7	P		
FP-732	*	9/10/98	792583	837400	1	F-97	114.3	13.8	112.2	12.4	98.2	P	
FP-733	9/10/98	792562	837213	1	F-97	114.3	13.8	112.3	12.9	98.3	P		
FP-734	9/10/98	792725	837300	1	F-97	114.3	13.8	109.1	12.9	95.5	P		
FP-735	9/10/98	792255	838089	1	F-96	120.7	10.8	115.0	9.1	95.3	P		
FP-736	9/10/98	792495	837393	1	F-96	120.7	10.8	117.7	10.2	97.5	P		
FP-737	9/10/98	792338	837772	1	F-96	120.7	10.8	121.6	10.2	100.7	P		
FP-738	9/10/98	792205	838145	1	F-96	120.7	10.8	115.0	9.5	95.3	P		
FP-739	9/14/98	792500	837280	1	F-96	120.7	10.8	118.9	10.7	98.5	P		
FP-740	9/14/98	792417	837550	1	F-96	120.7	10.8	118.5	11.9	98.2	P		
FP-741	9/14/98	792333	837725	1	F-96	120.7	10.8	118.2	11.9	97.9	P		
FP-742	9/14/98	792270	837960	1	F-96	120.7	10.8	116.6	12.0	96.6	P		
FP-743	9/14/98	792200	838220	1	F-96	120.7	10.8	115.6	12.7	95.8	P		
FP-744	9/14/98	792222	838010	1	F-96	120.7	10.8	119.6	10.6	99.1	P		
FP-745	9/14/98	792295	837757	1	F-98	116.4	13.7	117.9	11.8	101.3	P		
FP-746	9/14/98	792390	837480	1	F-98	116.4	13.7	111.0	13.0	95.4	P		
FP-747	9/14/98	792395	837300	1	F-98	116.4	13.7	110.0	15.0	94.5	F Comp	Fails Compaction	
FP-747R	9/14/98	792395	837300	1	F-98	116.4	13.7	115.9	11.8	99.6	P	Retest	
FP-748	9/14/98	792305	837560	1	F-98	116.4	13.7	115.1	11.7	98.9	P		
FP-749	9/14/98	792210	837876	1	F-98	116.4	13.7	111.5	12.2	95.8	P		
FP-750	*	9/14/98	792420	838140	3	F-98	116.4	13.7	111.0	15.3	95.4	P	
FP-751	9/14/98	792470	837971	3	F-98	116.4	13.7	113.1	13.2	97.2	P		

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

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Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-752	9/14/98	792474	837793	3	F-98	116.4	13.7	111.7	14.9	96.0	P		
FP-753	9/14/98	792470	837770	3	F-98	116.4	13.7	113.6	12.4	97.6	P		
FP-754	9/14/98	792440	837932	3	F-98	116.4	13.7	117.0	13.7	100.5	P		
FP-755	9/14/98	792390	838120	3	F-99	118.3	13.4	112.0	16.6	94.7	F Comp	Fails Compaction	
FP-755R	9/14/98	792390	838120	3	F-99	118.3	13.4	116.2	13.0	98.2	P	Retest	
FP-756	9/14/98	792340	838360	3	F-99	118.3	13.4	119.0	12.1	100.6	P		
FP-757	9/15/98	792409	837831	2	F-99	118.3	13.4	117.5	12.4	99.3	P		
FP-758	9/15/98	792463	837688	2	F-99	118.3	13.4	116.8	11.7	98.7	P		
FP-759	9/15/98	792523	837548	2	F-99	118.3	13.4	114.8	11.7	97.0	P		
FP-760	9/15/98	792350	838105	3	F-99	118.3	13.4	115.5	13.7	97.6	P		
FP-761	9/15/98	792305	838298	3	F-99	118.3	13.4	116.0	12.9	98.1	P		
FP-762	9/15/98	792205	838470	3	F-99	118.3	13.4	112.6	13.9	95.2	P		
FP-763	9/15/98	792220	838291	2	F-99	118.3	13.4	117.1	12.5	99.0	P		
FP-764	9/15/98	792284	838053	2	F-100	114.7	14.5	108.4	11.9	94.5	F C & M	Fails Compaction and Moisture	
FP-764R	9/15/98	792284	838053	2	F-100	114.7	14.5	110.5	13.2	96.3	P	Retest	
FP-765	9/15/98	792348	837805	2	F-100	114.7	14.5	111.8	14.0	97.5	P		
FP-766	9/15/98	792432	837512	2	F-100	114.7	14.5	113.1	13.0	98.6	P		
FP-767	9/15/98	792470	837254	2	F-100	114.7	14.5	111.2	13.2	96.9	P		
FP-768	9/15/98	792397	837526	2	F-100	114.7	14.5	110.7	13.0	96.5	P		
FP-769	9/15/98	792315	837782	2	F-100	114.7	14.5	110.7	17.1	96.5	P		
FP-770	9/15/98	792237	838050	2	F-100	114.7	14.5	113.8	13.6	99.2	P		
FP-771	9/15/98	792168	838271	2	F-101	119.1	12.1	116.2	13.0	97.6	P		
FP-772	*	9/15/98	792361	837860	2	F-101	119.1	12.1	114.9	13.5	96.5	P	
FP-773	9/15/98	792777	837307	2	F-101	119.1	12.1	116.8	13.9	98.1	P		
FP-774	9/15/98	792611	837293	2	F-101	119.1	12.1	117.0	13.6	98.2	P		
FP-775	9/15/98	792563	837465	2	F-101	119.1	12.1	116.7	13.2	98.0	P		
FP-776	9/15/98	792493	837492	2	F-101	119.1	12.1	117.8	12.9	98.9	P		
FP-777	9/16/98	792298	837632	2	F-101	119.1	12.1	113.1	11.8	95.0	P		
FP-778	9/16/98	792233	837853	2	F-101	119.1	12.1	113.9	11.5	95.6	P		
FP-779	9/16/98	792152	838104	2	F-101	119.1	12.1	116.3	12.8	97.6	P		
FP-780	9/16/98	792452	838033	4	F-101	119.1	12.1	117.6	11.6	98.7	P		
FP-781	9/16/98	792495	837848	4	F-102	118.5	12.6	114.7	11.5	96.8	P		
FP-782	9/16/98	792486	837760	4	F-102	118.5	12.6	112.7	12.2	95.1	P		
FP-783	9/16/98	792426	838018	4	F-102	118.5	12.6	113.2	13.5	95.5	P		
FP-784	9/16/98	792367	838320	4	F-102	118.5	12.6	118.3	12.2	99.8	P		
FP-785	9/16/98	792687	837333	3	F-102	118.5	12.6	114.1	15.7	96.3	P		

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-786	*	9/16/98	792580	837331	3	F-102	118.5	12.6	116.8	12.8	98.6	P	
FP-787		9/16/98	792500	837584	3	F-102	118.5	12.6	118.2	12.5	99.7	P	
FP-788		9/16/98	792430	837844	3	F-102	118.5	12.6	116.4	13.0	98.2	P	
FP-789		9/16/98	792352	838093	4	F-102	118.5	12.6	119.7	11.6	101.0	P	
FP-790		9/16/98	792292	838346	4	F-102	118.5	12.6	113.5	15.8	95.8	P	
FP-791		9/17/98	792494	837334	3	F-103	119.7	12.4	118.0	10.9	98.6	P	
FP-792	*	9/17/98	792423	837596	3	F-103	119.7	12.4	116.1	11.8	97.0	P	
FP-793		9/17/98	792353	837856	3	F-103	119.7	12.4	117.3	13.3	98.0	P	
FP-794		9/17/98	792280	838130	3	F-103	119.7	12.4	114.7	10.3	95.8	P	Test passed by QC officer; moisture only 0.1% below requirement.
FP-795		9/17/98	792212	838238	3	F-103	119.7	12.4	115.5	11.1	96.5	P	
FP-796		9/17/98	792288	837973	3	F-103	119.7	12.4	115.8	13.2	96.7	P	
FP-797		9/17/98	792358	837729	3	F-103	119.7	12.4	116.0	14.8	96.9	P	
FP-798		9/17/98	792425	837470	3	F-103	119.7	12.4	115.2	14.3	96.2	P	
FP-799		9/17/98	792420	837349	3	F-103	119.7	12.4	114.0	12.8	95.2	P	
FP-800		9/17/98	792358	837586	3	F-103	119.7	12.4	115.9	13.6	96.8	P	
FP-801		9/17/98	792278	837860	3	F-104	115.6	13.4	113.9	14.7	98.5	P	
FP-802		9/17/98	792200	838132	3	F-104	115.6	13.4	115.1	13.3	99.6	P	
FP-803		9/17/98	792100	838221	3	F-104	115.6	13.4	113.9	12.4	98.5	P	
FP-804		9/17/98	792180	838000	3	F-104	115.6	13.4	114.8	14.6	99.3	P	
FP-805		9/17/98	792207	837738	3	F-104	115.6	13.4	114.7	12.7	99.2	P	
FP-806		9/17/98	792338	837438	3	F-104	115.6	13.4	114.4	12.4	99.0	P	
FP-807	*	9/18/98	792432	838130	5	F-104	115.6	13.4	117.4	12.5	101.6	P	
FP-808		9/18/98	792490	837753	5	F-104	115.6	13.4	114.7	13.0	99.2	P	
FP-809		9/18/98	792487	837692	5	F-104	115.6	13.4	114.0	14.1	98.6	P	
FP-810		9/18/98	792409	838096	5	F-104	115.6	13.4	116.9	12.8	101.1	P	
FP-811	*	9/18/98	792452	837714	5	F-105	114.6	14.1	109.9	14.5	95.9	P	
FP-812		9/18/98	792430	837951	5	F-105	114.6	14.1	114.2	10.7	99.7	F Moist	Fails Moisture - NO RETEST
FP-813		9/18/98	792353	837262	5	F-105	114.6	14.1	114.3	14.7	99.7	P	
FP-814		9/18/98	792428	837740	4	F-105	114.6	14.1	111.1	15.7	96.9	P	
FP-815		9/18/98	792350	838022	5	F-105	114.6	14.1	110.9	15.4	96.8	P	
FP-816		9/18/98	792300	838274	5	F-105	114.6	14.1	114.3	12.9	99.7	P	
FP-817		9/18/98	792720	837287	4	F-105	114.6	14.1	114.8	13.1	100.2	P	
FP-818		9/18/98	792567	837310	4	F-105	114.6	14.1	109.5	15.7	95.6	P	
FP-819		9/18/98	792524	837483	4	F-105	114.6	14.1	114.0	14.3	99.5	P	
FP-820		9/18/98	792455	837650	4	F-105	114.6	14.1	114.8	13.5	100.2	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-821	9/18/98	792241	838438	5	F-106	115.7	13.4	113.3	13.6	97.9	P	
FP-822	9/18/98	792247	838291	4	F-106	115.7	13.4	114.1	12.8	98.6	P	
FP-823	9/21/98	792310	838030	4	F-106	115.7	13.4	112.4	14.3	97.1	P	
FP-824	9/21/98	792378	837768	4	F-106	115.7	13.4	112.5	13.3	97.2	P	
FP-825	9/21/98	792450	837480	4	F-106	115.7	13.4	112.7	12.9	97.4	P	
FP-826	* 9/22/98	792510	837240	4	F-106	115.7	13.4	112.1	12.8	96.9	P	
FP-827	9/18/98	792411	837353	4	F-106	115.7	13.4	115.0	11.6	99.4	P	
FP-828	9/22/98	792277	837819	4	F-106	115.7	13.4	115.4	13.2	99.7	P	
FP-829	9/22/98	792226	838057	4	F-106	115.7	13.4	113.9	13.3	98.4	P	
FP-830	9/22/98	792341	837613	4	F-106	115.7	13.4	113.8	12.1	98.4	P	
FP-831	9/22/98	792390	837312	4	F-107	114.7	14.8	112.0	11.9	97.6	F Moist	Fails Moisture
FP-831R	9/22/98	792390	837312	4	F-107	114.7	14.8	114.1	12.8	99.5	P	Retest
FP-832	9/22/98	792354	837352	4	F-107	114.7	14.8	114.1	13.5	99.5	P	
FP-833	9/22/98	792327	837500	4	F-107	114.7	14.8	114.1	14.4	99.5	P	
FP-834	9/22/98	792270	837586	4	F-107	114.7	14.8	109.1	13.2	95.1	P	
FP-835	9/22/98	792236	837791	4	F-107	114.7	14.8	110.9	12.8	96.7	P	
FP-836	9/22/98	792275	837778	4	F-107	114.7	14.8	111.6	14.0	97.3	P	
FP-837	9/22/98	792222	837913	4	F-107	114.7	14.8	111.7	12.3	97.4	F Moist	Fails Moisture - NO RETEST
FP-838	9/23/98	792495	837805	5	F-107	114.7	14.8	113.4	15.2	98.9	P	
FP-839	9/23/98	792625	837368	5	F-107	114.7	14.8	113.2	12.1	98.7	F Moist	Fails Moisture
FP-839R	9/23/98	792625	837368	5	F-107	114.7	14.8	113.8	13.3	99.2	P	Retest
FP-840	9/23/98	792541	837446	5	F-107	114.7	14.8	115.6	13.2	100.8	P	
FP-841	9/23/98	792393	837693	3	F-108	115.9	14.0	115.5	12.9	99.7	P	
FP-842	9/23/98	792200	838045	3	F-108	115.9	14.0	113.6	13.2	98.0	P	
FP-843	9/23/98	792423	837439	3	F-108	115.9	14.0	113.4	12.5	97.8	P	
FP-844	9/23/98	792419	837528	3	F-108	115.9	14.0	110.4	17.6	95.3	P	
FP-845	9/23/98	792462	837382	3	F-108	115.9	14.0	113.8	14.9	98.2	P	
FP-846	9/23/98	792521	837326	3	F-108	115.9	14.0	110.0	11.8	94.9	F C & M	Fails Compaction and Moisture
FP-846R	9/23/98	792521	837326	3	F-108	115.9	14.0	113.0	12.5	97.5	P	Retest
FP-847	9/23/98	792372	837281	3	F-108	115.9	14.0	116.8	14.2	100.8	P	
FP-848	* 9/23/98	792378	837412	3	F-108	115.9	14.0	111.7	14.4	96.4	P	
FP-849	9/23/98	792297	837469	4	F-108	115.9	14.0	113.5	12.6	97.9	P	
FP-850	9/23/98	792538	837308	4	F-108	115.9	14.0	110.8	14.8	95.6	P	
FP-851	9/23/98	792532	837427	4	F-109	116.3	13.4	110.6	15.9	95.1	P	
FP-852	9/23/98	792478	837580	FG	F-109	116.3	13.4	110.4	17.1	94.9	P	Test passed by QC officer; compaction only 0.1% below requirement.

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed. Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-853	9/23/98	792432	837496	FG	F-109	116.3	13.4	110.7	16.2	95.2	P		
FP-854	9/23/98	792482	837374	4	F-109	116.3	13.4	112.1	13.7	96.4	P		
FP-855	9/23/98	792432	837419	4	F-109	116.3	13.4	112.8	13.8	97.0	P		
FP-856	9/24/98	792488	837468	4	F-109	116.3	13.4	115.2	14.6	99.1	P		
FP-857	9/24/98	792500	837310	4	F-109	116.3	13.4	114.9	13.8	98.8	P		
FP-858	9/24/98	792380	837255	4	F-109	116.3	13.4	111.0	13.2	95.4	P		
FP-859	*	9/24/98	792361	837416	4	F-109	116.3	13.4	112.5	13.3	96.7	P	
FP-860	9/24/98	792574	837418	4	F-109	116.3	13.4	116.1	13.3	99.8	P		
FP-861	9/24/98	792501	837569	4	F-110	116.7	13.8	116.5	13.1	99.8	P		
FP-862	9/24/98	792505	837467	4	F-110	116.7	13.8	110.9	13.5	95.0	P		
FP-863	9/24/98	792523	837326	4	F-110	116.7	13.8	111.7	12.3	95.7	P		
FP-864	9/24/98	792445	837570	FG	F-110	116.7	13.8	113.4	13.2	97.2	P		
FP-865	9/24/98	792483	837400	4	F-110	116.7	13.8	112.6	13.8	96.5	P		
FP-866	9/24/98	792468	837307	1	F-110	116.7	13.8	114.1	13.7	97.8	P		
FP-867	9/24/98	792147	838000	1	F-110	116.7	13.8	111.0	14.9	95.1	P		
FP-868	9/24/98	792271	837561	1	F-110	116.7	13.8	111.9	13.0	95.9	P		
FP-869	9/24/98	792413	837421	FG	F-110	116.7	13.8	112.8	12.9	96.7	P		
FP-870	9/24/98	792287	838072	FG	F-110	116.7	13.8	116.9	13.1	100.2	P		
FP-871	9/24/98	792355	837842	FG	F-111	116.9	13.1	116.2	12.7	99.4	P		
FP-872	9/24/98	792347	837710	FG	F-111	116.9	13.1	112.0	13.7	95.8	P		
FP-873	9/24/98	792279	837955	FG	F-111	116.9	13.1	114.9	14.0	98.3	P		
FP-874	9/24/98	792195	837803	1	F-111	116.9	13.1	112.5	17.1	96.2	P		
FP-875	9/24/98	792243	838106	FG	F-111	116.9	13.1	109.6	12.9	93.8	F Comp	Fails Compaction	
FP-875R	9/28/98	792243	838106	FG	F-111	116.9	13.1	112.0	12.9	95.8	P	Retest	
FP-876	9/24/98	792228	838246	FG	F-111	116.9	13.1	106.8	19.6	91.4	F Comp	Fails Compaction	
FP-876R	9/28/98	792228	838246	FG	F-111	116.9	13.1	112.9	12.4	96.6	P	Retest	
FP-877	*	9/25/98	792110	838113	1	F-111	116.9	13.1	111.7	16.9	95.6	P	
FP-878	9/25/98	792232	837681	FG	F-111	116.9	13.1	113.9	16.0	97.4	P		
FP-879	9/28/98	792308	837830	FG	F-112	116.2	14.4	115.0	13.0	99.0	P		
FP-880	9/28/98	792368	837549	FG	F-112	116.2	14.4	114.2	14.4	98.3	P		
FP-881	*	9/28/98	792152	838172	FG	F-112	116.2	14.4	115.8	13.6	99.7	P	
FP-882	9/28/98	792202	837922	FG	F-112	116.2	14.4	111.6	15.6	96.0	P		
FP-883	9/28/98	792278	837647	FG	F-112	116.2	14.4	114.6	12.6	98.6	P		
FP-884	9/28/98	792354	837385	FG	F-112	116.2	14.4	112.8	13.7	97.1	P		
FP-885	10/1/98	792120	838114	1	F-112	116.2	14.4	111.4	13.6	95.9	P		
FP-886	10/1/98	792077	838418	1	F-112	116.2	14.4	112.1	12.9	96.5	P		

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Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-887	10/1/98	792215	838333	1	F-112	116.2	14.4	112.1	16.5	96.5	P	
FP-888	10/1/98	792151	838342	1	F-112	116.2	14.4	113.5	16.0	97.7	P	
FP-889	10/1/98	792197	838451	2	F-113	114.5	14.2	110.5	16.0	96.5	P	
FP-890	10/1/98	792186	838295	2	F-113	114.5	14.2	111.4	13.5	97.3	P	
FP-890D *	10/1/98	792203	838380	2	F-113	114.5	14.2	113.8	14.2	99.4	P	
FP-891	10/2/98	792086	838404	3	F-113	114.5	14.2	110.4	14.4	96.4	P	
FP-892	10/2/98	792175	838308	3	F-113	114.5	14.2	111.0	14.9	96.9	P	
FP-893	10/2/98	792204	838420	3	F-113	114.5	14.2	110.0	15.4	96.1	P	
FP-894	10/2/98	792122	838292	4	F-113	114.5	14.2	113.3	15.9	99.0	P	
FP-895	10/2/98	792158	838326	4	F-113	114.5	14.2	112.9	14.2	98.6	P	
FP-896 *	10/2/98	792178	838439	4	F-113	114.5	14.2	114.1	15.2	99.7	P	
FP-897	10/2/98	792819	837267	1	F-113	114.5	14.2	110.7	16.0	96.7	P	
FP-898	10/8/98	792510	837211	1	F-114	115.6	14.5	115.2	15.1	99.7	P	
FP-899	10/8/98	792592	837183	1	F-114	115.6	14.5	114.4	14.5	99.0	P	
FP-900	10/8/98	792430	837159	1	F-114	115.6	14.5	110.0	15.0	95.2	P	
FP-901	10/8/98	792415	837168	2	F-114	115.6	14.5	109.1	13.3	94.4	F Comp	Fails Compaction
FP-901R	10/8/98	792415	837168	2	F-114	115.6	14.5	110.0	16.0	95.2	P	Retest
FP-902	10/8/98	792525	837183	2	F-114	115.6	14.5	111.2	13.2	96.2	P	
FP-903 *	10/8/98	792563	837182	2	F-114	115.6	14.5	111.6	12.8	96.5	P	
FP-904	10/8/98	792308	837277	2	F-114	115.6	14.5	110.7	13.0	95.8	P	
FP-905	10/8/98	792516	837192	3	F-114	115.6	14.5	110.6	16.9	95.7	P	
FP-906	10/8/98	792219	837247	3	F-114	115.6	14.5	111.2	13.2	96.2	P	
FP-907	10/9/98	792618	837177	3	F-115	117.0	13.0	109.3	10.9	93.4	F C & M	Fails Compaction and Moisture
FP-907R	10/9/98	792618	837177	3	F-115	117.0	13.0	114.2	12.3	97.6	P	Retest
FP-908	10/9/98	792570	837232	3	F-115	117.0	13.0	112.5	13.2	96.2	P	
FP-909	10/9/98	792423	837211	3	F-115	117.0	13.0	111.1	11.2	95.0	P	
FP-910	10/9/98	792605	837256	4	F-115	117.0	13.0	112.5	12.1	96.2	P	
FP-911	10/9/98	792772	837255	4	F-115	117.0	13.0	111.2	11.1	95.0	P	
FP-912	10/9/98	792547	837170	4	F-115	117.0	13.0	111.1	13.3	95.0	P	
FP-913 *	10/9/98	792465	837170	4	F-115	117.0	13.0	114.1	11.9	97.5	P	
FP-914	10/9/98	792698	837268	4	F-115	117.0	13.0	114.9	11.3	98.2	P	
FP-915	10/12/98	792450	837208	5	F-115	117.0	13.0	116.7	11.7	99.7	P	
FP-916	10/12/98	792672	837268	5	F-116	113.2	14.8	110.7	15.5	97.8	P	
FP-917	10/12/98	792109	838285	5	F-116	113.2	14.8	111.2	16.7	98.2	P	
FP-918	10/12/98	792172	838370	5	F-116	113.2	14.8	113.2	15.0	100.0	P	
FP-919 *	10/12/98	792187	838424	5	F-116	113.2	14.8	113.3	14.6	100.1	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
FP-920	10/12/98	792583	837170	5	F-115	117.0	13.0	114.9	11.5	98.2	P	
FP-921	5/16/00	792385	838470	4	F-117	118.2	11.5	115.2	9.0	97.5	F Moist	Fails Moisture
FP-921R	5/17/00	792385	838470	4	F-117	118.2	11.5	112.5	10.0	95.2	P	Retest
FP-922	5/16/00	792445	838370	4	F-117	118.2	11.5	112.4	9.6	95.1	P	
FP-922R	5/17/00	792445	838370	4	F-117	118.2	11.5	112.3	11.0	95.0	P	Retest done at discretion of QC officer.
FP-923	5/16/00	792600	838080	4	F-117	118.2	11.5	111.0	16.9	93.9	F Comp	Fails Compaction
FP-923R	5/17/00	792600	838080	4	F-117	118.2	11.5	116.2	15.6	98.3	P	Retest
FP-924	5/16/00	792540	837610	4	F-117	118.2	11.5	121.8	8.6	103.0	F Moist	Fails Moisture
FP-924R	5/17/00	792540	837610	4	F-117	118.2	11.5	114.8	12.7	97.1	P	Retest
FP-925	5/16/00	792680	837390	4	F-117	118.2	11.5	115.8	7.1	98.0	F Moist	Fails Moisture
FP-925R	5/17/00	792680	837390	4	F-117	118.2	11.5	116.1	13.1	98.2	P	Retest
FP-926	5/17/00	792570	837500	FG	F-118	121.1	10.1	120.6	9.8	99.0	P	
FP-927	* 5/17/00	792550	837650	FG	F-118	121.1	10.1	117.6	9.6	96.6	P	
FP-928	5/17/00	792620	838000	FG	F-118	121.1	10.1	120.8	9.2	99.2	P	
FP-929	5/17/00	792480	838300	FG	F-118	121.1	10.1	116.9	12.3	96.5	P	
FP-930	5/17/00	792400	838480	FG	F-118	121.1	10.1	119.1	12.2	98.3	P	
FP-931	6/23/00	792850	837355	4	F-120	114.5	14.1	109.8	15.0	95.9	P	
FP-932	6/23/00	792865	837275	4	F-120	114.5	14.1	109.2	16.6	95.4	P	
FP-933	6/23/00	792815	837340	4	F-120	114.5	14.1	110.8	16.9	96.8	P	
FP-934	6/23/00	792870	837278	4	F-120	114.5	14.1	109.2	17.0	95.4	P	
FP-935	6/23/00	792830	837245	4	F-120	114.5	14.1	113.4	16.6	99.0	P	
FP-936	6/23/00	792460	837450	FG	F-120	114.5	14.1	109.0	15.1	95.2	P	
FP-937	6/23/00	792260	838090	FG	F-120	114.5	14.1	108.8	12.1	95.0	P	
FP-938	6/26/00	792280	838420	FG	F-120	114.5	14.1	111.0	13.1	96.9	P	
FP-939	* 6/26/00	792135	838465	FG	F-120	114.5	14.1	110.5	15.7	96.5	P	
FP-940	6/26/00	792600	837400	FG	F-120	114.5	14.1	113.2	12.9	98.9	P	
FP-941	6/26/00	792200	838360	FG	F-121	117.8	12.0	114.3	12.7	97.0	P	
FP-942	6/26/00	792230	838160	FG	F-121	117.8	12.0	113.1	12.2	96.0	P	
FP-943	6/26/00	792240	838460	FG	F-121	117.8	12.0	114.0	15.8	96.8	P	
FP-944	6/26/00	792180	838475	FG	F-121	117.8	12.0	113.9	15.0	96.7	P	
FP-945	6/27/00	792810	837240	FG	F-121	117.8	12.0	113.5	12.5	96.3	P	
FP-946	6/27/00	792900	837295	FG	F-121	117.8	12.0	112.1	16.3	95.2	P	
FP-947	6/27/00	792865	837305	FG	F-121	117.8	12.0	113.6	13.5	96.4	P	
FP-948	7/5/00	792100	838090	1	F-121	117.8	12.0	115.1	11.4	97.7	P	

**Table C.2. Field Compaction Test Results for the Heap Leach Frost Protection Layer: 1997-1998, 2000**

Note: R denotes Re-Test sample. To facilitate review, re-tests are shown directly under the corresponding failed test result (note dates). \* Indicates that Sand-Cone Correlation performed.  
 Max.= Maximum; FG = Finish Grade; P = Pass; F Comp = Fails Compaction; F Moist = Fails Moisture; F C & M = Fails both test endpoints. See Notes and summary statistics at the end of this table.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
FP-949	*	7/5/00	792070	838195	2	F-121	117.8	12.0	113.5	12.0	96.3	P	
FP-950		7/6/00	792000	838260	3	F-121	117.8	12.0	112.1	11.8	95.2	P	
FP-951		7/10/00	792095	838155	4	F-122	116.6	13.4	115.7	12.2	99.2	P	
FP-952		7/11/00	792050	838200	4	F-122	116.6	13.4	114.8	11.9	98.5	P	
FP-953		7/11/00	791975	838270	5	F-122	116.6	13.4	119.0	11.7	102.1	P	
FP-954		7/11/00	792100	838170	5	F-122	116.6	13.4	113.5	13.7	97.3	P	
FP-955		7/12/00	792030	838215	6	F-122	116.6	13.4	115.4	12.3	99.0	P	
FP-956		7/13/00	791950	838260	6	F-122	116.6	13.4	113.6	14.5	97.4	P	
FP-957	*	7/13/00	792025	838260	6	F-122	116.6	13.4	112.8	13.9	96.7	P	
FP-958		7/13/00	792010	838270	7	F-122	116.6	13.4	114.1	14.4	97.9	P	
FP-959		7/13/00	791970	838250	7	F-122	116.6	13.4	112.8	15.5	96.7	P	
FP-960		7/14/00	791980	838250	FG	F-122	116.6	13.4	115.3	13.8	98.8	P	
FP-961		7/14/00	792040	838260	FG	F-123	115.3	13.5	109.6	14.6	95.1	P	
FP-962		7/14/00	792015	838265	FG	F-123	115.3	13.5	112.9	15.1	97.9	P	

Field density and moisture tests were taken using a nuclear density gauge. The gauge was field standardized at each test location and was correlated by a Sand Cone Test at a frequency of one for every five nuclear gauge tests. Field rock corrections were performed at each compaction test location.

68 tests failed compaction (only); 43 tests failed moisture (only), and 15 tests failed both endpoints. One test technically passed but was failed at the discretion of the QC officer. Only one of the failed compaction tests and three of the failed moisture tests were not re-tested (these are not included in the frequency or summary statistics).

Total Number of Tests (N): 973 (N reflects passing tests only)  
 Total Quantities placed: 475,737 cubic yards (CY)  
 Frequency: 1: 489 CY Meets the required frequency of 1:500 CY.

average:	111.4	14.5	97.4
minimum:	96.0	9.1	94.9
maximum:	121.6	25.2	108.7
standard deviation:	3.2	2.2	1.7
# Failed:	NA	57	83
# Retested:	NA	54	82

**Table C.3. Laboratory Standard Proctor Test Results for the Heap Leach Frost Protection Layer**

Date	Laboratory Standard Proctor		
	Proctor ID	Maximum Dry Density (lbs/cu ft)	Optimum Moisture (%)
6/11/97	CF-01	101.5	20.0
6/12/97	FSG-02	111.6	12.5
6/11/97	F-01	100.1	21.1
6/12/97	F-02	112.9	14.5
6/17/97	F-03	111.5	16.2
6/17/97	F-04	110.4	16.0
6/17/97	F-05	112.2	15.1
6/18/97	F-06	109.2	16.1
6/18/97	F-07	106.0	18.3
6/19/97	F-08	119.3	12.6
6/20/97	F-09	119.7	11.5
6/19/97	F-10	109.8	16.9
6/20/97	F-11	120.5	11.6
6/20/97	F-12	122.6	11.0
6/23/97	F-13	113.0	15.1
6/23/97	F-14	113.5	14.6
6/24/97	F-15	114.7	14.5
6/24/97	F-16	111.8	15.5
6/25/97	F-17	116.0	14.3
6/25/97	F-18	111.8	15.6
6/25/97	F-19	117.8	13.8
6/26/97	F-20	109.7	16.9
6/26/97	F-21	108.9	15.2
6/27/97	F-22	113.7	14.7
6/29/97	F-23	107.1	16.4
6/29/97	F-24	113.2	15.3
6/30/97	F-25	113.8	14.2
6/30/97	F-26	113.0	15.1
7/1/97	F-27	117.4	12.5
7/7/97	F-28	111.4	15.5
7/8/97	F-29	112.3	15.3
7/8/97	F-30	114.2	14.4
7/8/97	F-31	115.2	13.5
7/9/97	F-32	115.4	13.0
7/10/97	F-33	117.2	12.9
7/11/97	F-34	112.9	15.0
7/14/97	F-35	117.7	13.2
7/15/97	F-36	113.9	14.0
7/16/97	F-37	111.6	15.3
7/18/97	F-38	115.3	14.0
7/21/97	F-39	114.8	14.5
7/22/97	F-40	115.0	14.7
7/23/97	F-41	115.3	13.0
7/24/97	F-42	114.4	14.5
7/25/97	F-43	113.0	14.2
7/28/97	F-44	115.9	13.5
7/30/97	F-45	116.6	13.5
7/31/97	F-46	117.8	13.4

**Table C.3. Laboratory Standard Proctor Test Results for the Heap Leach Frost Protection Layer**

Date	Laboratory Standard Proctor		
	Proctor ID	Maximum Dry Density (lbs/cu ft)	Optimum Moisture (%)
8/1/97	F-47	121.1	10.3
8/4/97	F-48	116.7	13.2
8/4/97	F-49	116.0	14.1
8/5/97	F-50	114.0	14.6
8/7/97	F-51	113.9	15.4
8/8/97	F-52	111.9	16.0
8/11/97	F-53	117.3	14.7
8/11/97	F-54	117.1	13.3
8/12/97	F-55	114.0	15.5
8/13/97	F-56	116.0	13.4
8/14/97	F-57	117.8	13.4
8/14/97	F-58	116.9	12.0
8/15/97	F-59	111.0	15.0
8/15/97	F-60	114.5	14.8
8/15/97	F-61	112.6	14.9
8/18/97	F-62	117.0	13.5
8/18/97	F-63	117.0	13.0
8/19/97	F-64	118.2	13.1
8/19/97	F-65	116.0	13.5
8/20/97	F-66	112.3	14.9
8/20/97	F-67	106.0	19.0
8/20/97	F-68	116.0	14.5
8/21/97	F-69	112.6	15.6
8/21/97	F-70	114.5	14.3
8/21/97	F-71	113.2	15.6
8/21/97	F-72	112.4	14.5
8/22/97	F-73	115.9	14.0
8/22/97	F-74	101.0	21.8
8/25/97	F-75	112.3	15.5
8/25/97	F-76	116.1	14.3
8/26/97	F-77	113.8	15.0
8/26/97	F-78	113.4	14.5
8/27/97	F-79	113.8	14.5
8/27/97	F-80	117.5	12.5
8/28/97	F-81	115.1	14.3
9/2/97	F-82	109.9	17.3
9/3/97	F-83	106.8	19.2
9/4/97	F-84	112.0	15.8
9/5/97	F-85	115.2	14.1
9/8/97	F-86	112.2	15.2
9/8/97	F-87	108.0	17.6
9/9/97	F-88	115.2	13.9
9/10/97	F-89	114.0	15.1
9/11/97	F-90	112.4	15.5
9/17/97	F-91	112.2	15.1
9/18/97	F-92	115.4	13.5
9/19/97	F-93	112.0	16.0
9/25/97	F-94	111.0	15.5

**Table C.3. Laboratory Standard Proctor Test Results for the Heap Leach Frost Protection Layer**

Date	Laboratory Standard Proctor		
	Proctor ID	Maximum Dry Density (lbs/cu ft)	Optimum Moisture (%)
8/11/98	F-95	114.9	14.6
9/3/98	F-96	120.7	10.8
9/8/98	F-97	114.3	13.8
9/14/98	F-98	116.4	13.7
9/15/98	F-99	118.3	13.4
9/16/98	F-100	114.7	14.5
9/16/98	F-101	119.1	12.1
9/17/98	F-102	118.5	12.6
9/17/98	F-103	119.7	12.4
9/18/98	F-104	115.6	13.4
9/17/98	F-105	114.6	14.1
9/22/98	F-106	115.7	13.4
9/23/98	F-107	114.7	14.8
9/23/98	F-108	115.9	14.0
9/24/98	F-109	116.3	13.4
9/25/98	F-110	116.7	13.8
9/28/98	F-111	116.9	13.1
10/1/98	F-112	116.2	14.4
10/5/98	F-113	114.5	14.2
10/8/98	F-114	115.6	14.5
10/9/98	F-115	117.0	13.0
10/12/98	F-116	113.2	14.8
5/15/00	F-117	118.2	11.5
5/16/00	F-118	121.1	10.1
5/16/00	F-119	114.9	11.7
6/23/00	F-120	114.5	14.1
6/28/00	F-121	117.8	12.0
7/10/00	F-122	116.6	13.4
7/14/00	F-123	115.3	13.5

<i>count:</i>	125	125
<i>average:</i>	<b>114.3</b>	<b>14.4</b>

<i>minimum:</i>	100.1	10.1
<i>maximum:</i>	122.6	21.8
<i>standard deviation:</i>	3.7	1.9

*Total cubic yards placed:* 475,737

*Proctor Frequency:* 1: 3806 CY Exceeds the required frequency of 1:5000 CY placed.

**Table C.4. Sand-Cone Correlation Documentation for the Heap Leach Frost Protection Layer**

Date	Compaction Test ID	Nuclear Gauge Test		Sand-Cone Compaction Tests		Sand-Cone Correlation Results	
		In-Place Wet Unit Weight (lbs/cu ft)	Moisture Content (%)	In-Place Wet Unit Weight (lbs/cu ft)	Moisture Content (%)	Wet Unit Weight Variation (%)	Moisture Content Variation (%)
6/12/97	FPS-003	119.0	16.5	116.3	16.9	-2.3	0.4
6/18/97	FPS-017	121.2	23.3	119.9	20.9	-1.1	-2.4
6/19/97	FPS-026	126.6	19.3	124.5	18.3	-1.7	-1.0
6/20/97	FPS-032	122.9	13.5	122.0	13.7	-0.7	0.2
6/20/97	FPS-042	128.0	9.7	128.5	10.4	0.4	0.7
6/20/97	FPS-052	129.6	12.8	130.8	12.0	0.9	-0.8
6/24/97	FPS-055-R	124.2	14.5	127.3	16.6	2.5	2.1
6/24/97	FPS-074	124.2	14.2	123.3	13.8	-0.7	-0.4
6/25/97	FPS-057-R	125.7	13.5	124.2	13.3	-1.2	-0.2
6/25/97	FPS-077-R	127.7	13.1	130.8	11.8	2.4	-1.3
6/26/97	FPS-096	129.1	11.7	127.0	12.5	-1.6	0.8
6/26/97	FPS-102	124.5	14.8	127.5	16.4	2.4	1.6
6/26/97	FPS-108	126.1	15.2	124.0	13.6	-1.7	-1.6
6/27/97	FPS-113	121.8	14.4	121.3	13.8	-0.4	-0.6
6/27/97	FPS-118	127.4	14.7	130.2	16.3	2.2	1.6
6/27/97	FPS-120	124.6	12.9	126.5	13.3	1.5	0.4
6/29/97	FPS-125	127.5	16.1	130.7	14.3	2.5	-1.8
7/1/97	FPS-141	127.3	16.4	132.3	13.6	3.9	-2.8
7/7/97	FPS-153	127.4	12.0	125.4	10.8	-1.6	-1.2
7/8/97	FPS-168	131.6	14.4	127.6	15.5	-3.0	1.1
7/9/97	FPS-184	123.1	9.5	124.0	8.8	0.7	-0.7
7/11/97	FPS-192	128.5	11.7	132.5	10.7	3.1	-1.0
7/14/97	FPS-198-R	127.6	15.5	130.3	14.7	2.1	-0.8
7/14/97	FPS-206	128.5	12.4	128.8	11.5	0.2	-0.9
7/15/97	FPS-219	130.0	13.9	129.9	14.0	-0.1	0.1
7/15/97	FPS-221	131.4	12.6	133.4	12.7	1.5	0.1
7/15/97	FPS-235	127.1	18.2	129.8	15.7	2.1	-2.5
7/16/97	FPS-242-R	124.6	12.8	128.2	11.0	2.9	-1.8
7/17/97	FPS-245-R	126.7	15.2	127.3	13.8	0.5	-1.4
7/21/97	FPS-250	126.2	13.6	123.9	13.6	-1.8	0.0
7/21/97	FPS-255	126.6	12.3	125.9	11.4	-0.6	-0.9
7/22/97	FPS-264	126.3	13.1	128.5	11.7	1.7	-1.4
7/22/97	FPS-268	128.2	14.0	127.1	12.8	-0.9	-1.2
7/23/97	FPS-277	130.5	14.0	125.1	10.2	-4.1	-3.8
7/23/97	FPS-279	128.6	13.8	130.7	11.8	1.6	-2.0
7/24/97	FPS-289	126.0	13.1	125.9	11.4	-0.1	-1.7
7/31/97	FPS-307	130.8	16.7	125.7	10.7	-3.9	-6.0
7/31/97	FPS-308	127.2	12.0	127.4	12.3	0.2	0.3
8/7/97	FPS-324-R	130.2	14.3	128.0	12.9	-1.7	-1.4
8/7/97	FPS-344	125.7	13.4	128.9	11.9	2.5	-1.5
8/8/97	FPS-359	129.0	13.6	124.7	12.8	-3.3	-0.8
8/8/97	FPS-362	128.5	17.2	125.5	15.4	-2.3	-1.8
8/11/97	FPS-370	129.5	16.0	130.6	13.4	0.8	-2.6
8/12/97	FPS-386	132.5	12.7	132.9	11.4	0.3	-1.3
8/14/97	FPS-396	129.5	17.5	133.2	18.9	2.9	1.4
8/14/97	FPS-399	128.1	13.5	129.6	14.9	1.2	1.4
8/15/97	FPS-421	126.3	11.4	127.3	9.8	0.8	-1.6
8/15/97	FPS-427	126.6	11.7	129.0	10.1	1.9	-1.6
8/18/97	FPS-436	126.5	15.1	129.8	13.0	2.6	-2.1
8/18/97	FPS-442	128.6	16.0	131.1	14.3	1.9	-1.7
8/19/97	FPS-460	125.5	15.6	128.2	13.7	2.2	-1.9
8/20/97	FPS-465	132.3	15.2	131.2	14.1	-0.8	-1.1
8/20/97	FPS-471	131.2	18.8	131.4	17.0	0.2	-1.8
8/21/97	FPS-479	132.1	13.4	124.7	13.2	-5.6	-0.2
8/21/97	FPS-489	125.5	14.6	128.2	12.1	2.2	-2.5
8/22/97	FPS-502	128.4	18.6	129.4	16.3	0.8	-2.3
8/22/97	FPS-515	129.1	13.2	134.4	11.9	4.1	-1.3

**Table C.4. Sand-Cone Correlation Documentation for the Heap Leach Frost Protection Layer**

Date	Compaction Test ID	Nuclear Gauge Test		Sand-Cone Compaction Tests		Sand-Cone Correlation Results	
		In-Place Wet Unit Weight (lbs/cu ft)	Moisture Content (%)	In-Place Wet Unit Weight (lbs/cu ft)	Moisture Content (%)	Wet Unit Weight Variation (%)	Moisture Content Variation (%)
8/25/97	FPS-527	126.6	14.5	127.9	14.3	1.0	-0.2
8/26/97	FPS-550	128.7	15.6	129.9	18.8	0.9	3.2
8/27/97	FPS-565	127.5	16.1	129.5	15.2	1.6	-0.9
8/28/97	FPS-569	127.9	14.3	125.4	14.1	-2.0	-0.2
8/28/97	FPS-570	125.7	22.2	123.5	18.3	-1.8	-3.9
8/28/97	FPS-571	125.1	12.2	121.5	11.0	-2.9	-1.2
8/28/97	FPS-589	127.8	13.8	129.1	12.3	1.0	-1.5
8/29/97	FPS-593	129.0	12.8	132.6	11.1	2.8	-1.7
8/29/97	FPS-598	128.0	13.1	130.8	12.9	2.2	-0.2
9/2/97	FPS-608	123.7	11.5	128.2	11.5	3.6	0.0
9/3/97	FPS-615	129.6	19.5	125.9	16.7	-2.9	-2.8
9/4/97	FPS-621	131.1	18.3	131.1	17.4	0.0	-0.9
9/5/97	FPS-627	128.9	16.0	130.9	16.3	1.6	0.3
9/8/97	FPS-636	131.1	14.2	129.3	12.9	-1.4	-1.3
9/9/97	FPS-642	128.6	13.6	132.1	15.4	2.7	1.8
9/10/97	FPS-643	129.9	14.1	127.5	14.3	-1.8	0.2
9/10/97	FPS-651	130.5	15.9	129.8	17.5	-0.5	1.6
9/11/97	FPS-662	126.3	15.8	126.0	14.6	-0.2	-1.2
9/12/97	FPS-664	123.1	13.2	124.9	12.3	1.5	-0.9
9/16/97	FPS-677	125.0	14.7	122.1	13.6	-2.3	-1.1
9/18/97	FPS-690	128.5	18.2	127.5	16.7	-0.8	-1.5
9/18/97	FPS-695	122.5	17.0	123.5	16.8	0.8	-0.2
9/29/97	FPS-714	126.6	18.6	125.9	17.4	-0.6	-1.2
9/30/97	FPS-712-R	127.2	15.9	126.9	15.0	-0.2	-0.9
9/9/98	FPS-723	130.1	13.9	132.7	14.3	2.0	0.4
9/10/98	FPS-732	126.0	12.4	128.9	11.2	2.3	-1.2
9/14/98	FPS-750	128.0	15.3	131.9	13.6	3.0	-1.7
9/15/98	FPS-766	127.8	13.0	127.3	14.5	-0.4	1.5
9/15/98	FPS-772	130.4	13.5	133.9	12.0	2.7	-1.5
9/16/98	FPS-786	131.8	12.8	132.9	11.8	0.8	-1.0
9/17/98	FPS-792	129.8	11.8	130.7	9.2	0.7	-2.6
9/18/98	FPS-807	132.1	12.5	135.7	11.3	2.7	-1.2
9/18/98	FPS-811	125.9	14.5	124.6	13.6	-1.0	-0.9
9/22/98	FPS-826	128.3	12.2	126.7	13.4	-1.2	1.2
9/23/98	FPS-848	127.7	14.4	126.8	13.2	-0.7	-1.2
9/23/98	FPS-852	129.2	17.1	133.1	15.4	3.0	-1.7
9/24/98	FPS-859	127.4	13.3	126.4	12.8	-0.8	-0.5
9/25/98	FPS-877	132.1	16.0	134.5	16.7	1.8	0.7
9/28/98	FPS-881	131.5	13.6	134.4	13.0	2.2	-0.6
10/1/98	FPS-890D	129.9	14.2	129.8	13.9	-0.1	-0.3
10/2/98	FPS-896	131.5	15.2	133.9	14.2	1.8	-1.0
10/8/98	FPS-903	125.9	12.8	124.3	13.1	-1.3	0.3
10/9/98	FPS-913	127.6	11.9	129.7	12.4	1.6	0.5
10/12/98	FPS-919	129.8	14.6	130.0	15.2	0.2	0.6
5/17/00	FPS-927	132.1	8.6	133.5	8.3	1.1	-0.3
6/26/00	FPS-939	127.9	15.7	131.5	15.8	2.8	0.1
7/5/00	FPS-949	127.1	12.0	129.6	11.6	2.0	-0.4
7/13/00	FPS-957	128.5	13.9	126.6	12.7	-1.5	-1.2

Number of sand-cone tests: 105  
 average percent variation (on absolute value): 1.7 1.3  
 standard deviation: 1.1 0.9

Sand-cone correlations were deemed acceptable if the average of ten nuclear test results vs. sand cone test results comparisons met the following criteria: wet density: +/- 3%; and moisture content: +/- 2%.

**Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer**

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		Seive Size (% Passing)												Liquid Limit	Plastic Index	
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200		Plan Requirements:		SC or SC-SM
6/11/97	F-01			100.0	100	99.6	99.1	98.2	96.1	92.3	85.0	70.7	F-01	38	19	CL
6/12/97	F-02		100	98.1	96.8	95.8	89.4	80.1	66.1	53.9	44.5	36.5	F-02	33	11	SC
6/12/97	FG-01				100	92.0	89.8	86.0	79.1	72.0	64.3	54.7	FA-01	39	17	CL
6/13/97	FG-02				100	98.8	97.4	95.3	91.6	86.8	79.7	64.8	FA-02	35	17	CL
6/13/97	FG-03				100	98.8	97.7	95.5	90.5	85.2	78.0	64.8	FA-03	33	14	CL
6/17/97	F-03		100	96.2	93.4	91.2	87.9	82.3	73.9	65.6	56.3	45.9	F-03	35	19	SC
6/17/97	F-04		100	98.5	97.1	95.7	94.4	91.7	86.7	79.9	71.2	57.9	F-04	32	13	CL
6/17/97	F-05		100	99.0	97.1	94.3	90.3	82.4	67.1	50.7	38.8	30.9	F-05	30	7	SM
6/18/97	F-06		100	98.5	96.9	95.0	93.0	90.4	86.0	80.3	72.7	59.4	F-06	34	17	CL
6/18/97	F-07				100	99.6	99.2	98.1	94.8	89.5	83.0	68.9	F-07	33	19	CL
6/18/97	FG-04				100	99.2	98.6	97.3	94.5	88.4	78.6	65.1	FA-04	36	20	CL
6/19/97	F-08		100	89.8	82.6	75.7	67.9	58.3	44.9	33.2	23.8	18.0	F-08	NV	NP	SM
6/19/97	F-10				100	99.8	99.1	97.5	93.9	86.8	74.1	56.8	F-10	31	12	CL
6/19/97	FG-05			100	93.4	87.1	79.3	69.3	54.5	41.2	30.5	23.2	FA-05	31	15	SC
6/20/97	F-09		100	86.2	79.4	69.0	54.8	46.5	36.5	28.2	21.1	16.2	F-09	30	13	SM
6/20/97	F-11	100	90.9	80.2	70.5	61.0	51.8	40.8	27.4	18.4	12.4	9.2	F-11	NV	NP	SW-SM
6/20/97	F-12	100	97.7	90.8	83.8	75.3	62.9	54.2	42.8	33.4	25.9	19.7	F-12	27	9	SC
6/20/97	FG-06			100	95.2	88.7	80.6	70.7	58.5	48.4	39.3	31.6	FA-06	34	18	SC
6/20/97	FG-07				100	98.6	94.7	89.1	80.6	70.8	59.8	47.9	FA-07	36	18	SC
6/23/97	F-13		100	98.8	97.9	96.8	95.3	92.8	86.6	75.4	62.8	49.4	F-13	32	15	SC
6/23/97	F-14		100	98.8	98.2	96.8	94.3	90.2	81.2	68.4	55.1	41.5	F-14	26	8	SC
6/23/97	FG-08		100	97.0	91.1	84.2	79.0	70.3	57.4	45.8	35.0	26.3	FA-08	28	11	SC
6/23/97	FG-09					100	98.8	96.1	90.7	83.0	70.8	52.5	FA-09	27	5	CL-ML
6/24/97	F-15		100	98.8	97.5	95.2	92.5	88.3	79.5	66.4	50.9	37.9	F-15	27	10	SC
6/24/97	F-16			100	99.4	98.8	97.4	94.7	97.7	77.2	64.8	50.9	F-16	31	16	CL
6/24/97	FG-10			100	98.5	95.8	94.4	91.8	86.8	80.2	73.3	61.4	FA-10	32	16	CL
6/24/97	FG-11		100	96.2	92.3	88.1	83.3	77.1	67.2	56.7	44.4	33.8	FA-11	32	16	SC
6/25/97	F-17		100	93.9	92.2	89.1	84.0	76.9	66.9	57.4	48.8	39.0	F-17	26	8	SC
6/25/97	F-18		100	98.8	98.4	97.5	96.4	94.4	90.0	79.3	63.0	47.5	F-18	28	9	SC
6/25/97	F-19		100	93.0	89.7	86.2	82.9	79.5	73.4	64.8	53.7	40.9	F-19	39	12	SM
6/25/97	FG-12		100	99.5	98.9	92.3	87.5	81.3	71.3	58.9	47.0	36.2	FA-12	34	18	SC
6/25/97	FG-13		100	95.7	93.1	90.5	87.0	83.1	76.5	68.3	58.0	45.3	FA-13	26	10	SC
6/26/97	F-20				100	95.7	92.1	88.6	85.4	73.7	62.5	48.8	F-20	31	16	SC
6/26/97	F-21		100	98.7	96.6	93.7	88.3	81.1	69.9	60.1	52.2	42.9	F-21	35	17	SC
6/26/97	FG-14			100	99.4	97.7	95.5	91.6	84.1	75.7	67.4	55.8	FA-14	39	21	CL
6/27/97	F-22		100	99.1	98.5	97.5	96.1	93.2	86.4	76.0	64.9	51.5	F-22	47	31	CL
6/27/97	FG-15			100	99.3	97.7	95.9	90.9	78.7	63.6	49.5	39.1	FA-15	39	24	SC

**Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer**

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		Seive Size (% Passing)												Liquid Limit	Plastic Index	
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200				
														Plan Requirements:		SC or SC-SM
6/29/97	F-23			100	99.6	98.6	96.1	91.7	83.0	73.2	63.3	51.4	F-23	33	15	CL
6/29/97	F-24		100	99.6	99.1	98.3	95.8	89.7	75.8	59.3	44.9	33.9	F-24	NV	NP	SM
6/29/97	FG-16		100	99.9	99.6	99.1	97.8	94.9	88.4	76.3	57.8	42.4	FA-16	29	7	SC-SM
6/30/97	F-25		100	98.1	97.3	96.4	93.8	88.4	76.3	62.8	50.3	40.4	F-25	31	11	SC
6/30/97	F-26		100	97.9	96.7	94.9	91.7	84.6	72.1	57.9	46.2	37.9	F-26	38	22	SC
6/30/97	FG-17		100	99.4	99.2	97.8	96.0	91.5	80.8	68.9	57.3	46.7	FA-17	39	22	SC
6/30/97	FG-18		100	97.7	91.9	85.3	79.3	69.0	49.5	32.9	21.9	16.2	FA-18	32	17	SC
7/1/97	F-27		100	99.5	97.3	95.0	89.9	78.1	55.1	36.1	24.2	18.3	F-27	NV	NP	SM
7/1/97	FG-19		100	98.7	97.9	97.0	95.0	90.8	80.8	68.9	56.2	45.1	FA-19	39	24	SC
7/1/97	FG-20		100	99.6	98.5	96.6	92.1	80.6	56.8	36.6	25.7	20.2	FA-20	NV	NP	SM
7/1/97	FG-21			100	99.8	96.8	91.7	83.0	66.0	48.2	31.9	18.0	FA-21	29	13	SC
7/2/97	FG-22			100	99.7	98.7	97.9	96.1	92.3	86.3	92.9	53.7	FA-22	33	24	CL
7/7/97	F-28		100	99.6	99.2	98.6	96.8	92.7	83.1	69.3	54.6	42.3	F-28	38	21	SC
7/7/97	FG-23		100	99.4	97.9	95.0	90.7	81.1	63.2	48.0	36.8	28.9	FA-23	30	14	SC
7/8/97	F-29		100	99.4	99.1	97.0	94.3	88.9	77.9	65.4	53.2	42.8	F-29	38	23	SC
7/8/97	F-30		100	99.5	97.5	95.5	92.1	84.3	67.8	52.1	40.2	31.5	F-30	37	20	SC
7/8/97	F-31		100	99.0	97.7	94.5	90.8	80.5	55.7	32.4	21.2	16.2	F-31	29	NP	SM
7/9/97	F-32		100	99.4	98.6	96.9	94.1	86.4	69.0	50.1	35.1	26.3	F-32	NV	NP	SM
7/9/97	FG-24	100	96.5	96.4	95.9	94.8	92.6	86.4	73.8	61.4	50.0	39.5	FA-24	31	15	SC
7/10/97	F-33		100	98.8	97.8	95.8	92.2	83.2	61.8	39.6	26.6	20.3	F-33	NV	NP	SM
7/10/97	FG-25		100	99.5	98.2	95.7	89.6	79.7	61.0	38.4	23.7	17.2	FA-25	37	21	SC
7/11/97	F-34		100	98.5	97.6	96.0	93.0	86.9	75.2	62.4	51.0	10.9	F-34	35	16	SW-SC
7/11/97	FG-26		100	99.8	98.9	95.7	91.4	80.7	60.0	41.0	28.3	21.2	FA-26	NV	NP	SM
7/11/97	FG-27		100	99.7	98.6	96.9	92.5	83.8	67.1	49.6	33.0	24.5	FA-27	32	12	SC
7/14/97	F-35	100	98.4	96.7	95.2	92.2	88.0	78.1	58.3	40.2	28.8	22.1	F-35	30	13	SC
7/14/97	FG-28	100	90.8	90.1	89.5	87.9	85.1	77.5	62.9	49.4	39.0	31.1	FA-28	38	20	SC
7/15/97	F-36		100	99.0	98.6	96.9	92.6	81.6	57.6	29.1	19.1	13.7	F-36	25	NP	SM
7/15/97	FG-29		100	99.9	98.5	96.4	93.4	84.9	66.4	47.2	35.2	28.5	FA-29	34	16	SC
7/16/97	F-37		100	99.7	99.4	98.5	96.4	91.0	75.7	57.5	44.4	35.8	F-37	35	18	SC
7/16/97	FG-30		100	99.1	98.3	96.3	92.4	83.6	65.5	46.2	32.0	24.2	FA-30	32	10	SC
7/18/97	F-38	100	99.2	98.3	97.3	94.9	91.1	81.7	61.0	38.4	24.2	18.1	F-38	30	11	SC
7/18/97	FG-31		100	98.0	96.7	94.3	90.4	81.5	62.9	44.8	32.3	24.7	FA-31	NV	NP	SM
7/21/97	F-39	100	98.7	98.6	98.2	97.4	95.5	89.5	71.8	51.0	38.0	29.9	F-39	34	17	SC
7/21/97	FG-32		100	99.9	98.4	96.7	93.4	83.9	63.3	43.8	31.4	24.6	FA-32	33	15	SM
7/22/97	F-40			100	99.9	99.3	97.3	91.9	78.6	62.4	41.2	37.8	F-40	35	9	SM
7/22/97	FG-33		100	99.8	99.0	97.3	94.8	87.9	72.3	56.1	43.9	35.4	FA-33	34	15	SC
7/22/97	FG-34		100	99.9	98.4	95.9	91.3	81.8	61.2	40.9	27.7	21.0	FA-34	30	7	SM

Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS Sieve Size (% Passing)											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200		Liquid Limit	Plastic Index	
														Plan Requirements:		SC or SC-SM
7/23/97	F-41	100	99.0	97.8	97.0	94.6	88.2	76.9	55.5	34.6	22.7	17.2	F-41	NV	NP	SM
7/23/97	FG-35	100	96.8	96.5	95.2	93.3	89.8	83.0	68.5	52.1	37.7	27.8	FA-35	32	12	SC
7/23/97	FG-36		100	99.6	99.4	99.0	97.4	91.4	77.0	61.2	49.3	40.9	FA-36	36	16	SC
7/24/97	F-42		100	99.9	99.7	99.1	97.0	90.5	74.8	57.1	43.2	33.5	F-42	36	20	SC
7/24/97	FG-37		100	99.7	99.2	98.3	96.6	91.8	78.0	58.3	39.5	28.5	FA-37	34	13	SC
7/24/97	FG-38		100	99.0	98.1	96.3	92.9	84.5	65.6	44.3	30.0	22.5	FA-38	NV	NP	SM
7/25/97	F-43	100	99.3	98.3	96.7	94.4	90.2	80.9	61.9	44.9	34.1	27.9	F-43	34	16	SC
7/25/97	FG-39		100	99.2	98.4	96.8	93.5	85.2	66.4	47.0	33.6	26.0	FA-39	32	15	SC
7/25/97	FG-40		100	98.1	96.3	93.9	89.0	78.6	57.4	38.5	26.2	20.0	FA-40	31	10	SC
7/28/97	F-44		100	99.1	98.6	97.5	94.5	87.0	69.9	45.8	28.2	19.8	F-44	30	NP	SM
7/30/97	F-45		100	99.3	98.7	97.6	94.6	87.3	69.8	51.7	38.7	30.8	F-45	32	13	SC
7/30/97	FG-41		100	99.3	98.1	95.9	92.4	84.4	67.7	51.4	39.6	31.0	FA-41	32	13	SC
7/31/97	F-46	100	99.3	98.8	96.8	94.3	88.3	78.4	58.8	41.6	29.7	21.8	F-46	33	17	SC
7/31/97	FG-42		100	99.8	98.8	97.8	94.6	87.2	69.6	48.6	33.5	25.1	FA-42	28	NP	SM
7/31/97	FG-43		100	98.9	97.6	95.7	91.8	83.6	66.1	47.7	33.5	25.6	FA-43	30	8	SC
8/1/97	F-47	100	96.3	94.8	93.7	91.1	86.5	74.7	56.0	39.8	28.2	20.4	F-47	30	10	SC
8/1/97	FG-44		100	97.5	95.8	92.8	87.7	76.2	56.4	37.6	25.7	19.3	FA-44	30	10	SC
8/1/97	FG-45		100	99.7	98.4	96.5	93.3	85.8	69.0	52.7	39.1	28.9	FA-45	34	16	SC
8/4/97	F-48		100	99.1	98.6	97.6	94.5	88.7	75.4	54.4	33.7	23.4	F-48	28	NP	SM
8/4/97	F-49	100	98.8	98.0	97.4	96.0	92.2	82.9	64.8	47.3	33.7	25.2	F-49	35	16	SC
8/4/97	FG-46		100	99.5	97.8	94.4	88.1	76.8	59.1	45.0	34.7	27.0	FA-46	35	16	SC
8/4/97	FG-47		100	99.3	98.6	96.8	93.9	87.8	74.2	60.0	48.8	40.1	FA-47	37	19	SC
8/4/97	FG-48		100	99.8	99.5	98.8	96.5	90.4	75.0	52.2	35.9	27.0	FA-48	33	15	SC
8/5/97	F-50	100	99.4	99.4	99.1	98.3	95.7	89.8	75.7	58.9	44.2	33.5	F-50	32	13	SC
8/5/97	FG-49		100	99.6	98.7	96.5	92.3	83.5	64.0	43.7	30.0	22.9	FA-49	30	NP	SM
8/5/97	FG-50		100	98.9	97.6	95.0	90.9	80.8	61.0	43.4	30.6	23.7	FA-50	35	17	SC
8/5/97	FG-51		100	99.2	97.7	94.9	89.7	80.5	61.1	40.7	27.6	21.3	FA-51	33	14	SC
8/7/97	F-51	100	99.5	99.0	98.5	97.4	95.2	90.4	81.0	69.3	55.8	43.7	F-51	37	16	SC
8/7/97	FG-52		100	98.4	97.0	94.1	90.0	80.7	62.5	47.2	36.8	30.0	FA-52	37	20	SC
8/7/97	FG-53		100	99.1	98.0	96.0	92.0	80.4	57.5	36.0	24.4	18.7	FA-53	34	14	SC
8/7/97	FG-54		100	98.5	97.9	97.1	92.1	84.0	66.3	45.4	29.7	22.7	FA-54	31	12	SC
8/8/97	F-52	100	98.8	98.0	97.5	96.7	95.1	92.0	84.8	75.6	64.3	51.8	F-52	37	19	CL
8/8/97	FG-55		100	98.9	98.0	95.7	90.7	81.6	63.6	45.7	34.8	28.4	FA-55	34	17	SC
8/8/97	FG-56		100	99.8	98.5	96.4	93.5	87.2	74.3	60.6	48.3	38.9	FA-56	34	17	SC
8/8/97	FG-57		100	98.5	96.7	94.9	92.1	85.6	68.9	50.5	38.6	31.1	FA-57	34	18	SC
8/11/97	F-53		100.0	98.9	97.6	95.0	90.8	80.9	61.7	44.1	32.3	25.2	FA-53	34	16	SC
8/11/97	F-54	100	98.3	97.5	96.4	94.8	91.1	82.8	63.8	47.1	36.0	28.7	F-54	33	13	SC

**Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer**

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		Seive Size (% Passing)												Liquid Limit	Plastic Index	
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200		Plan Requirements:		SC or SC-SM
8/11/97	FG-58		100	97.0	96.5	95.0	92.3	86.3	74.0	62.8	53.2	44.9	FA-58	37	20	SC
8/11/97	FG-59		100	99.1	98.3	96.6	93.2	85.2	67.7	51.5	40.3	32.8	FA-59	35	17	SC
8/12/97	F-55	100	97.7	96.0	94.6	93.1	90.7	85.6	75.2	63.9	52.5	42.5	F-55	35	18	SC
8/12/97	FG-60		100	99.3	98.5	96.5	92.4	83.7	66.2	50.5	39.2	31.6	FA-60	36	19	SC
8/12/97	FG-61		100	99.6	98.1	95.6	91.4	81.4	61.2	42.8	30.2	22.9	FA-61	32	12	SC
8/13/97	F-56	100	98.8	97.0	94.6	91.2	85.0	74.0	52.9	33.8	23.9	18.3	F-56	32	NP	SM
8/14/97	F-57	97	96.4	95.7	94.6	92.3	87.7	76.7	55.3	37.5	26.4	19.8	F-57	32	12	SC
8/14/97	F-58		100	98.9	97.8	95.9	90.9	79.6	60.7	44.6	32.6	24.2	F-58	33	14	SC
8/14/97	FG-62	100	97.6	97.2	96.4	94.3	90.6	81.4	63.9	48.5	37.7	30.4	FA-62	36	19	SC
8/14/97	FG-63			100	99.2	97.2	91.8	81.2	62.6	43.0	27.9	20.3	FA-63	31	11	SC
8/15/97	F-59		100	99.0	98.5	97.5	94.8	89.7	80.8	70.6	61.0	50.3	F-59	38	20	CL
8/15/97	F-60		100	99.3	98.3	97.0	94.6	89.1	76.4	62.8	50.0	34.3	F-60	35	17	SC
8/15/97	F-61	100	98.9	97.0	95.5	94.1	92.3	87.9	77.4	64.8	51.8	41.1	F-61	37	21	SC
8/18/97	F-62	100	99.4	97.4	96.3	94.3	91.2	84.7	70.8	55.3	41.5	31.7	F-62	35	18	SC
8/18/97	F-63		100	99.2	98.0	96.0	91.1	81.1	63.0	44.9	32.4	24.9	F-63	33	15	SC
8/18/97	FG-64		100	99.7	98.6	98.5	96.9	92.9	84.3	73.9	63.1	53.0	FA-64	39	21	CL
8/18/97	FG-65		100	98.1	96.6	94.3	93.4	87.1	77.4	66.3	54.9	44.2	FA-65	37	20	SC
8/19/97	F-64		100	95.9	93.7	90.2	84.3	74.0	55.6	39.6	28.3	21.8	F-64	32	12	SC
8/19/97	F-65	91	91.3	88.0	85.2	82.2	77.3	67.7	52.8	40.4	31.8	25.4	F-65	36	18	SC
8/19/97	FG-66		100	99.1	97.7	95.9	92.0	83.7	67.3	52.6	42.5	35.6	FA-66	39	22	SC
8/20/97	F-66		100	99.8	99.3	98.8	96.9	91.5	78.3	63.4	49.6	39.7	F-66	38	21	SC
8/20/97	F-67		100	99.8	99.7	99.6	98.8	97.0	93.4	88.9	81.7	72.4	F-67	45	24	CL
8/20/97	F-68	100	98.9	97.4	95.5	93.6	90.6	85.5	74.4	61.8	48.9	37.7	F-68	37	22	SC
8/20/97	FG-67		100	96.3	93.8	90.7	87.2	76.8	54.9	34.9	23.1	17.9	FA-67	33	16	SC
8/20/97	FG-68		100	99.4	98.2	96.0	92.6	82.8	62.0	41.9	28.4	21.2	FA-68	38	20	SC
8/21/97	F-69		100	99.2	98.3	97.1	94.7	88.8	68.6	67.2	58.7	51.7	F-69	38	21	CL
8/21/97	F-70		100	99.4	98.8	98.0	95.9	92.0	83.0	72.3	62.1	51.5	F-70	36	19	CL
8/21/97	F-71	100	98.8	96.6	94.8	92.5	90.0	84.0	71.7	59.8	49.5	40.3	F-71	35	18	SC
8/21/97	F-72		100	98.0	97.6	96.9	94.6	90.1	80.6	70.6	59.5	49.0	FA-71	38	20	SC
8/21/97	FG-69		100	99.3	98.0	96.6	91.4	85.3	71.7	57.9	46.8	38.5	FA-69	34	17	SC
8/22/97	F-73	100	99.3	98.7	97.7	95.9	92.2	81.9	59.3	37.1	23.6	17.5	F-73	30	10	SC
8/22/97	F-74		100	99.7	99.5	99.1	97.4	93.4	83.6	73.6	64.6	55.5	F-74	45	26	CL
8/22/97	FG-70		100	97.1	94.7	92.3	90.6	87.6	81.5	73.6	59.8	45.7	FA-70	36	18	SC
8/22/97	FG-71		100	99.1	98.1	96.7	92.5	85.4	73.0	60.7	50.1	40.9	FA-71	37	21	SC
8/22/97	FG-72		100	99.3	97.7	96.4	94.4	89.5	80.0	70.2	59.4	48.6	FA-72	38	22	SC
8/25/97	F-75	100	99.6	99.0	98.4	97.5	95.9	92.5	84.6	75.2	64.8	54.7	F-75	40	22	CL
8/25/97	F-76	100	98.2	97.7	96.9	95.3	92.5	88.4	78.9	69.0	56.4	44.2	F-76	30	13	SC

Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		Seive Size (% Passing)												Liquid Limit	Plastic Index	
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200		Plan Requirements:		SC or SC-SM
8/25/97	FG-73	100	98.5	98.1	97.1	96.6	95.1	92.5	86.5	77.5	63.5	51.4	FA-73	37	20	CL
8/26/97	F-77	100	97.0	96.3	95.5	94.2	91.5	85.7	76.2	65.8	55.3	46.2	F-77	37	20	SC
8/26/97	F-78		100	98.7	97.4	96.2	93.8	88.6	77.2	65.6	55.2	45.9	F-78	37	20	SC
8/26/97	FG-74			100	99.9	99.5	98.5	94.4	80.5	62.7	46.5	37.4	FA-74	36	20	SC
8/26/97	FG-75			100	98.7	96.5	93.5	88.2	77.5	66.0	55.3	45.6	FA-75	35	18	SC
8/27/97	F-79		100	99.1	98.7	97.5	95.2	90.5	81.0	71.0	61.3	47.9	F-79	35	18	SC
8/27/97	F-80	100	99.0	97.7	96.0	93.5	88.2	76.7	58.3	41.2	30.0	23.8	F-80	32	14	SC
8/27/97	FG-76		100	99.6	98.0	96.0	92.9	87.2	76.0	64.1	52.3	42.2	FA-76	36	20	SC
8/27/97	FG-77		100	99.8	99.5	98.7	96.8	93.6	86.2	76.2	66.6	55.8	FA-77	35	18	CL
8/27/97	FG-78		100	98.8	97.0	95.1	92.7	86.4	73.1	59.6	48.0	38.7	FA-78	36	20	SC
8/28/97	F-81		100	99.7	99.1	98.0	94.8	86.1	69.7	53.8	43.2	36.1	F-81	36	21	SC
8/28/97	FG-79			100	98.3	95.8	90.8	81.0	62.2	45.8	34.5	27.3	FA-79	35	18	SC
8/28/97	FG-80		100	99.5	98.8	97.8	95.9	90.2	78.9	67.1	56.9	48.4	FA-80	38	21	SC
8/28/97	FG-81		100	98.8	97.6	95.6	91.4	81.4	61.8	43.2	31.8	25.2	FA-81	33	16	SC
8/29/97	FG-82		100	98.8	98.0	96.9	94.5	87.7	71.4	55.6	44.5	36.9	FA-82	37	19	SC
8/29/97	FG-83		100	99.3	98.7	98.1	96.8	94.1	87.6	78.3	68.4	56.2	FA-83	33	16	CL
9/2/97	F-82		100	99.8	99.6	99.1	97.7	95.1	88.6	79.9	70.1	57.9	F-82	36	19	CL
9/2/97	FG-84			100	99.1	97.7	95.3	91.2	82.2	71.5	61.0	50.0	FA-84	34	17	CL
9/3/97	F-83		100	99.6	99.2	98.7	97.7	95.9	91.7	85.4	75.8	62.5	F-83	39	22	CL
9/3/97	FG-85			100	98.9	97.7	96.1	93.6	86.9	77.0	66.2	54.4	FA-85	33	16	CL
9/4/97	F-84		100	99.7	99.0	98.1	96.4	92.8	84.5	74.5	63.9	52.4	F-84	36	18	CL
9/4/97	FG-86		100	99.4	99.3	98.8	97.9	96.2	92.5	86.3	76.9	63.0	FA-86	36	19	CL
9/5/97	F-85		100	99.8	99.2	98.3	96.2	91.0	77.7	63.6	50.9	40.0	F-85	34	16	SC
9/5/97	FG-87			100	99.5	98.6	96.8	93.7	86.1	74.9	60.8	47.4	FA-87	35	19	SC
9/5/97	FG-88			100	99.0	97.9	95.9	92.2	83.9	74.2	64.1	53.7	FA-88	38	22	CL
9/8/97	F-86		100	99.2	98.1	96.9	93.9	87.1	72.8	57.7	43.6	34.6	F-86	35	18	SC
9/8/97	F-87		100	99.8	99.5	99.0	98.2	96.2	90.5	82.9	74.7	63.0	F-87	37	19	CL
9/8/97	FG-89		100	99.8	99.4	98.6	96.6	92.6	83.2	72.4	62.0	51.8	FA-89	36	20	CL
9/9/97	F-88		100	98.8	97.7	96.1	93.1	89.2	81.0	69.6	56.6	45.7	F-88	36	20	SC
9/9/97	FG-90		100	98.6	97.0	95.2	92.2	87.4	78.2	68.5	58.7	48.6	FA-90	38	21	SC
9/9/97	FG-91			100	98.3	96.7	94.2	89.0	79.1	69.8	60.2	50.6	FA-91	41	24	CL
9/10/97	F-89		100	98.9	97.4	96.1	94.7	92.5	97.7	79.1	67.1	54.8	F-89	35	20	CL
9/10/97	FG-92		100	99.3	96.7	93.6	89.0	82.8	72.3	61.5	51.2	42.7	FA-92	36	20	SC
9/10/97	FG-93		100	99.7	98.2	95.8	92.5	87.7	79.3	68.1	54.7	43.5	FA-93	34	20	SC
9/11/97	F-90		100	99.9	99.4	98.4	97.2	95.7	92.1	84.5	65.7	47.5	F-90	33	16	SC
9/11/97	FG-94		100	99.5	97.1	94.8	92.2	88.2	79.6	67.5	53.6	42.3	FA-94	35	21	SC
9/11/97	FG-95		100	99.5	98.7	97.4	95.8	93.1	85.7	69.8	49.9	36.7	FA-95	31	16	SC

Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		Seive Size (% Passing)												Liquid Limit	Plastic Index	
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200		Plan Requirements:		SC or SC-SM
9/12/97	FG-96		100	99.9	98.8	95.1	91.4	86.1	76.1	62.5	47.6	35.5	FA-96	31	17	SC
9/17/97	F-91		100	99.6	99.0	98.4	97.2	94.2	84.0	69.5	56.3	46.4	F-91	38	23	SC
9/18/97	F-92	100	99.3	96.4	95.0	93.1	90.2	85.2	73.8	58.1	44.0	34.3	F-92	35	20	SC
9/18/97	FG-97			100	99.6	98.8	97.4	94.0	84.6	72.7	62.8	53.8	FA-97	39	24	CL
9/18/97	FG-98		100	98.4	97.6	96.8	95.2	91.9	81.8	69.6	59.9	50.8	FA-98	39	22	CL
9/19/97	F-93			100	99.9	99.6	98.7	96.0	87.4	75.3	59.4	46.7	F-93	37	21	SC
9/25/97	F-94		100	99.6	98.9	98.4	97.7	94.6	84.4	73.4	59.6	49.2	F-94	41	25	SC
9/25/97	FG-99			100	99.5	98.6	97.0	90.2	69.1	50.9	40.5	33.7	FA-99	38	22	SC
8/11/98	F-95		100.0	99.2	98	96.6	93.9	88.6	78.1	65.7	51.6	39.7	F-95	35	18	SC
8/18/98	FG-100		100.0	98.5	97	96.5	92.8	85.3	73.0	59.6	48.6	40.2	FA-100	38	21	SC
9/3/98	F-96		100.0	98.9	98	95.6	90.9	81.3	64.1	47.0	35.4	28.2	F-96	30	13	SC
9/3/98	FG-101				100	98.6	96.7	90.7	79.2	65.2	51.8	41.7	FA-101	36	20	SC
9/8/98	F-97	100.0	99.3	98.1	97	95.9	94.0	89.5	80.3	68.7	57.5	48.3	F-97	38	22	SC
9/9/98	FG-102		100.0	98.2	97	95.6	93.8	88.6	77.7	64.1	51.2	41.6	FA-102	37	23	SC
9/10/98	FG-103		100.0	98.0	96	94.0	90.9	82.7	67.9	52.8	41.1	33.1	FA-103	35	19	SC
9/10/98	FG-104			100.0	99	97.1	92.5	82.4	64.2	46.5	34.6	27.4	FA-104	28	11	SC
9/14/98	F-98	100.0	97.5	95.9	95	93.4	90.5	83.7	71.5	57.3	44.3	35.1	F-98	37	21	SC
9/14/98	FG-105			100.0	100	97.7	93.6	83.9	68.0	53.5	43.5	35.3	FA-105	36	21	SC
9/14/98	FG-106		100.0	99.5	98	95.7	91.5	80.8	63.0	47.1	37.1	30.6	FA-106	32	16	SC
9/14/98	FG-107		100.0	99.6	99	97.0	92.8	82.4	63.9	46.3	34.4	27.0	FA-107	34	18	SC
9/14/98	FG-108		100.0	98.8	98	96.4	93.2	85.6	72.7	58.6	47.0	38.4	FA-108	39	23	SC
9/14/98	FG-109		100.0	98.0	97	95.4	90.9	79.8	60.4	41.4	29.9	23.5	FA-109	31	15	SC
9/15/98	F-99		100.0	99.1	98	97.2	93.8	85.6	71.0	55.4	42.9	34.1	F-99	36	22	SC
9/15/98	FG-110		100.0	97.9	96	95.4	92.9	86.1	72.5	56.8	43.7	35.3	FA-110	35	17	SC
9/15/98	FG-111			100.0	99	97.3	94.6	87.3	74.4	60.1	47.8	38.2	FA-111	37	23	SC
9/15/98	FG-112		100.0	98.2	96	93.5	90.0	81.1	65.6	49.1	36.3	28.1	FA-112	33	17	SC
9/15/98	FG-113	100.0	98.1	97.9	98	95.9	92.2	83.1	67.6	52.1	40.0	31.7	FA-113	36	21	SC
9/16/98	F-100	100.0	96.4	96.3	96	93.3	89.1	78.9	61.5	45.1	33.7	26.6	F-100	32	16	SC
9/16/98	F-101	100.0	99.3	98.2	97	95.4	92.0	84.6	72.6	59.3	47.6	37.6	F-101	37	22	SC
9/16/98	FG-114		100.0	99.7	98	94.8	89.2	78.2	61.2	45.3	34.4	27.5	FA-114	33	18	SC
9/16/98	FG-115		100.0	98.2	96	94.1	91.1	83.6	70.5	56.5	45.2	36.7	FA-115	37	22	SC
9/16/98	FG-116		100.0	98.4	97	95.3	91.7	83.0	67.7	52.0	40.4	32.7	FA-116	36	19	SC
9/16/98	FG-117			100.0	98	94.3	89.8	81.2	64.5	45.0	31.5	24.3	FA-117	30	10	SC
9/17/98	F-102	100.0	99.3	98.6	97	93.8	90.5	82.0	67.1	51.5	39.5	31.4	F-102	35	19	SC
9/17/98	F-103		100.0	97.0	95	93.8	89.7	80.3	64.5	48.6	36.7	28.5	F-103	34	19	SC
9/17/98	F-105	100.0	99.4	99.0	98	97.0	95.5	90.8	81.6	69.5	56.9	45.4	F-105	39	23	SC
9/17/98	FG-118		100.0	99.3	99	97.3	93.7	84.2	67.4	50.5	38.4	30.3	FA-118	34	17	SC

**Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer**

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS Seive Size (% Passing)											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200		Liquid Limit	Plastic Index	
														Plan Requirements:		SC or SC-SM
9/17/98	FG-119			100.0	99	98.4	95.4	88.5	75.6	60.5	47.6	38.1	FA-119	37	21	SC
9/17/98	FG-120	100.0	96.8	96.5	96	92.8	89.0	80.5	66.2	51.4	40.0	31.6	FA-120	35	20	SC
9/18/98	F-104		100.0	99.6	99	97.9	94.6	86.9	73.1	58.6	46.9	38.1	F-104	36	20	SC
9/18/98	FG-121			100.0	99	96.7	93.4	85.4	71.1	55.7	43.0	34.1	FA-121	35	19	SC
9/18/98	FG-122		100.0	99.7	98	96.4	93.6	86.5	74.0	60.8	49.4	39.5	FA-122	38	21	SC
9/18/98	FG-123			100.0	99	97.4	95.3	90.2	80.8	69.8	58.6	48.5	FA-123	42	25	SC
9/18/98	FG-124		100.0	98.6	98	96.9	95.0	89.7	78.3	62.3	47.1	36.0	FA-124	33	17	SC
9/21/98	FG-125		100.0	97.9	95	93.5	90.6	84.4	72.8	58.6	46.0	36.1	FA-125	34	19	SC
9/22/98	F-106	100.0	99.4	97.5	96	94.2	91.0	83.3	68.7	52.3	39.6	30.5	F-106	32	16	SC
9/22/98	FG-126			100.0	99	97.0	94.5	88.7	76.8	62.1	47.1	35.7	FA-126	34	18	SC
9/22/98	FG-127			100.0	96	94.8	92.2	84.9	69.4	53.8	42.0	31.9	FA-127	34	19	SC
9/22/98	FG-128			100.0	99	97.3	94.5	87.1	74.5	61.2	49.5	39.4	FA-128	36	20	SC
9/23/98	F-107	100.0	97.2	85.7	94	91.4	87.8	81.6	70.5	57.5	45.8	35.7	F-107	35	19	SC
9/23/98	F-108				100	96.9	93.2	86.8	75.2	61.5	48.2	36.8	F-108	35	20	SC
9/23/98	FG-129		100.0	97.0	95	93.6	91.4	86.1	75.7	61.5	47.7	36.7	FA-129	37	20	SC
9/23/98	FG-130		100.0	98.6	98	97.1	95.4	90.6	81.5	70.8	59.1	46.5	FA-130	39	22	SC
9/23/98	FG-131		100.0	99.2	98	96.7	93.6	84.2	66.2	48.2	35.4	26.5	FA-131	31	13	SC
9/23/98	FG-132			100.0	100	99.6	97.5	91.5	79.6	66.1	53.8	43.3	FA-132	39	22	SC
9/24/98	F-109	100.0	98.1	95.9	94	93.7	91.0	84.7	73.6	61.4	49.9	39.6	F-109	38	22	SC
9/24/98	FG-133		100.0	99.6	98	96.0	93.6	86.2	70.4	53.7	41.5	32.5	FA-133	34	19	SC
9/24/98	FG-134			100.0	99	98.1	95.1	87.7	73.0	55.6	41.4	30.5	FA-134	33	18	SC
9/24/98	FG-135		100.0	96.5	94	92.4	89.3	83.4	73.4	62.7	52.6	43.2	FA-135	41	25	SC
9/24/98	FG-136			100.0	100	98.4	96.1	90.0	78.1	63.9	51.0	39.8	FA-136	36	20	SC
9/24/98	FG-137		100.0	96.4	95	92.4	89.4	83.6	73.5	61.8	50.7	39.9	FA-137	39	23	SC
9/25/98	F-110		100.0	98.0	96	94.4	91.4	84.5	71.9	58.7	46.8	36.6	F-110	36	20	SC
9/28/98	F-111	100.0	98.2	95.8	94	92.2	88.8	82.2	69.7	55.9	42.8	31.9	F-111	34	18	SC
9/28/98	FG-138			100.0	99	96.5	93.5	86.6	74.4	61.7	49.8	39.7	FA-138	38	22	SC
9/28/98	FG-139		100.0	99.3	98	96.1	92.8	85.1	71.1	56.8	45.6	36.6	FA-139	37	21	SC
10/1/98	F-112	100.0	98.9	96.7	95	93.3	90.3	83.9	72.2	60.0	49.1	38.8	F-112	37	21	SC
10/1/98	FG-140		100.0	99.4	98	97.2	94.6	88.7	77.6	64.4	52.6	42.4	FA-140	37	22	SC
10/1/98	FG-141		100.0	98.9	98	95.6	92.7	83.6	66.8	51.8	41.6	33.0	FA-141	36	20	SC
10/2/98	FG-142		100.0	97.1	96	94.0	90.7	81.8	66.1	50.1	38.2	29.7	FA-142	35	19	SC
10/2/98	FG-143		100.0	98.6	97	95.2	92.1	86.1	75.4	64.0	53.2	42.7	FA-143	39	23	SC
10/2/98	FG-144				100	98.5	95.6	88.7	75.6	60.7	48.9	39.4	FA-144	36	21	SC
10/5/98	F-113	100.0	97.9	96.9	95	92.9	90.2	84.4	74.1	63.5	53.0	42.8	F-113	40	23	SC
10/8/98	F-114	100.0	98.2	96.7	96	94.0	91.4	84.3	70.5	55.5	44.0	35.3	F-114	36	21	SC
10/8/98	FG-145		100.0	95.9	95	93.2	89.6	80.1	64.0	48.3	35.7	27.2	FA-145	34	18	SC

**Table C.5. Soil Classification Test Results for the Heap Leach Frost Protection Layer**

Date Sampled	Gradation Sample ID	PARTICLE SIZE ANALYSIS											Atterberg Sample ID	Atterberg Limits		Unified Soil Classification
		Seive Size (% Passing)												Liquid Limit	Plastic Index	
		3"	1 1/2"	3/4"	3/8"	#4	#8	#16	#30	#50	#100	#200				
														Plan Requirements:		SC or SC-SM
10/8/98	FG-146		100.0	99.5	99	97.8	94.2	85.3	69.3	53.7	41.7	32.3	FA-146	36	20	SC
10/9/98	F-115		100.0	97.8	97	94.8	90.8	80.8	62.6	43.5	31.4	24.7	F-115	33	16	SC
10/9/98	FG-147		100.0	99.8	99	97.5	93.6	84.3	67.2	50.0	37.5	29.6	FA-147	36	19	SC
10/9/98	FG-148			100.0	100	98.8	95.7	85.6	67.7	51.4	40.7	30.9	FA-148	35	20	SC
10/12/98	F-116	100.0	99.5	99.1	98	96.3	93.5	87.3	77.3	66.5	56.4	46.6	F-116	39	23	SC
10/12/98	FG-149			100.0	99	97.5	94.1	84.4	66.3	49.2	38.0	30.3	FA-149	34	16	SC
5/15/00	F-117	-	-	-	100	97.4	93.0	83.8	65.7	43.7	28.9	19.8	F-117	NV	NP	SM
5/16/00	F-118	-	100.0	94.3	91	87.8	84.3	76.6	64.1	48.7	38.0	31.7	F-118	35	18	SC
5/16/00	F-119	-	-	100.0	100	95.0	89.7	81.6	70.1	56.7	45.3	36.8	F-119	35	18	SC
5/17/00	FG-150	-	-	-	100	96.5	92.8	85.3	72.0	55.5	44.0	37.3	FA-150	34	17	SC
5/17/00	FG-151	-	-	-	100	97.1	92.3	83.3	67.5	41.7	26.7	21.1	FA-151	28	7	SC-SM
5/17/00	FG-152	-	-	-	100	99.9	99.3	96.5	86.4	52.0	27.8	22.5	FA-152	NP	NP	SM
6/23/00	F-120	-	-	-	100	98.9	95.3	86.9	74.4	61.0	47.8	37.1	F-120	36	15	SC
6/23/00	FG-153	-	-	100.0	99	98.7	96.5	90.8	79.5	64.2	48.8	39.4	FA-153	33	17	SC
6/23/00	FG-154	-	100.0	99.7	98	96.9	94.1	88.6	79.1	65.7	49.6	37.3	FA-154	34	17	SC
6/28/00	F-121	-	-	100.0	100	98.3	94.7	87.5	74.9	59.1	46.5	38.4	F-121	37	19	SC
6/26/00	FG-155	-	100.0	99.8	99	97.6	95.1	89.9	77.9	64.5	50.7	38.8	FG-155	36	19	SC
6/26/00	FG-156	-	-	100.0	99	97.9	95.2	89.3	77.9	62.7	47.6	37.7	FG-156	31	17	SC
6/27/00	FG-157	100.0	92.0	91.4	91	89.2	86.4	79.7	67.2	53.0	41.4	34.1	FG-157	35	19	SC
7/10/00	F-122	-	-	100.0	99	97.6	93.8	86.0	72.9	56.8	44.0	35.4	F-122	36	17	SC
7/10/00	FG-158	-	100.0	99.3	98	95.9	92.9	85.4	72.2	56.6	43.4	35.0	FA-158	33	18	SC
7/12/00	FG-159	100.0	97.3	94.2	93	91.4	88.0	80.2	66.2	50.6	38.2	30.6	FA-159	32	19	SC
7/13/00	FG-160	-	-	100.0	99	96.3	92.8	84.7	71.5	57.2	43.9	33.6	FA-160	35	21	SC
7/14/00	FG-161	-	-	100.0	99	98.0	94.6	87.2	74.1	59.1	45.6	35.2	FA-161	36	25	SC
7/14/00	F-123	-	-	100.0	98	96.7	93.1	85.2	72.0	56.9	44.6	36.2	F-123	36	18	SC

*averages:* 99.8 99.5 98.4 97.4 95.4 92.3 85.6 72.4 58.1 46.1 36.5

**Unified Soil Classification Summary**

Type	Defined	Number (%)	
SC	Clayey Sand	215	75.7%
CL	Lean Clay	39	13.7%
SM	Silty Sand	25	8.8% <i>(most were non-plastic)</i>
SC-SM	Silty, Clayey Sand	2	0.7%
CL-ML	Silty Clay	1	0.4%
SW-SC	Well-Graded Sand w/ Clay	1	0.4%
SW-SM	Well-Graded Sand w/ Silt	1	0.4%

Total Number of Tests (N): 284

<b>average:</b>	<b>34.6</b>	<b>17.7</b>
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*minimum:* 25.0 5.0

*maximum:* 47.0 31.0

*standard deviation:* 3.3 4.1

Total Quantities placed: 475,737

Testing Frequency: 1 test for every 1,675 CY placed  
(Frequency exceeds the 1:2000 requirement.)

## Appendix D

## **Appendix D**

### **Heap Leach Toe Quality Control Test Results**

**Table D.1. Daily Quantities and Quality Control Test Frequencies for the Heap Leach Gap Toe: 2001-2002**

*Note:* This table lists only those days on which material was placed and/or testing performed. CY = Cubic Yards; FC = Field Compaction (tests).

Testing Frequency Requirements:

*Field Compaction Tests: 1: 500 CY*

*Proctors: 1: 5000 CY*

*Sand-Cones: 1:10 FC tests*

Date	<u>Total Quantities Placed</u>		<u>Field Compaction Test Frequency</u>			<u>Proctor Test Frequency</u>			<u>Sand-Cone Test Frequency</u>		
	Daily CY	Cumulative Yardage	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (/FC tests)
8/21/01	0	0		0	--	1	1	1: 0		0	--
8/28/01	540	540		0	--		1	1: 540		0	--
8/29/01	180	720	3	3	1: 240		1	1: 720		0	--
9/7/01	0	720	4	7	1: 103	1	2	1: 360	1	1	1: 7
10/10/01	0	720		7	1: 103	1	3	1: 240		1	1: 7
10/17/01	924	1,644	9	16	1: 103		3	1: 548		1	1: 16
10/18/01	1,218	2,862	2	18	1: 159		3	1: 954		1	1: 18
10/19/01	777	3,639	7	25	1: 146	2	5	1: 728	1	2	1: 13
10/22/01	918	4,557	1	26	1: 175		5	1: 911		2	1: 13
10/23/01	1,545	6,102	4	30	1: 203		5	1: 1220		2	1: 15
10/24/01	1,530	7,632	6	36	1: 212	1	6	1: 1272	1	3	1: 12
10/25/01	612	8,244	1	37	1: 223		6	1: 1374		3	1: 12
10/26/01	126	8,370	2	39	1: 215		6	1: 1395		3	1: 13
10/29/01	1,584	9,954	4	43	1: 231		6	1: 1659		3	1: 14
10/30/01	666	10,620		43	1: 247		6	1: 1770		3	1: 14
10/31/01	0	10,620	1	44	1: 241		6	1: 1770		3	1: 15
11/2/01	54	10,674		44	1: 243		6	1: 1779		3	1: 15
5/30/02	0	10,674	3	47	1: 227	1	7	1: 1525		3	1: 16
5/31/02	210	10,884		47	1: 232		7	1: 1555		3	1: 16
6/3/02	1,638	12,522	2	49	1: 256		7	1: 1789	1	4	1: 12
6/5/02	630	13,152	3	52	1: 253		7	1: 1879		4	1: 13
6/6/02	672	13,824	2	54	1: 256		7	1: 1975		4	1: 14
6/7/02	567	14,391		54	1: 267		7	1: 2056		4	1: 14
6/10/02	0	14,391	6	60	1: 240	1	8	1: 1799		4	1: 15
6/11/02	945	15,336	2	62	1: 247		8	1: 1917		4	1: 16
6/12/02	1,176	16,512	9	71	1: 233	1	9	1: 1835	3	7	1: 10
6/13/02	2,010	18,522	2	73	1: 254		9	1: 2058		7	1: 10
6/14/02	1,287	19,809	9	82	1: 242	1	10	1: 1981		7	1: 12
6/21/02	1,680	21,489		82	1: 262		10	1: 2149		7	1: 12
6/24/02	0	21,489	3	85	1: 253	1	11	1: 1954		7	1: 12
7/15/02	2,541	24,030	6	91	1: 264		11	1: 2185	2	9	1: 10
7/16/02	1,512	25,542		91	1: 281		11	1: 2322		9	1: 10
7/17/02	966	26,508	4	95	1: 279	1	12	1: 2209	1	10	1: 10
7/19/02	2,172	28,680		95	1: 302		12	1: 2390		10	1: 10

**Table D.1. Daily Quantities and Quality Control Test Frequencies for the Heap Leach Gap Toe: 2001-2002**

*Note:* This table lists only those days on which material was placed and/or testing performed. CY = Cubic Yards; FC = Field Compaction (tests).

Testing Frequency Requirements:

*Field Compaction Tests: 1: 500 CY*

*Proctors: 1: 5000 CY*

*Sand-Cones: 1:10 FC tests*

Date	<u>Total Quantities Placed</u>		<u>Field Compaction Test Frequency</u>			<u>Proctor Test Frequency</u>			<u>Sand-Cone Test Frequency</u>		
	Daily CY	Cumulative Yardage	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (per CY)	Daily Tests Performed	Cumulative No. of Tests	Ratio (/FC tests)
7/22/02	3,675	32,355	11	106	1: 305	1	13	1: 2489		10	1: 11
7/25/02	2,541	34,896	2	108	1: 323		13	1: 2684		10	1: 11
7/26/02	3,003	37,899	4	112	1: 338		13	1: 2915		10	1: 11
7/29/02	0	37,899	2	114	1: 332		13	1: 2915	1	11	1: 10
8/19/02	0	37,899	3	117	1: 324	1	14	1: 2707		11	1: 11

**Total Quantities of Material Placed for the Heap Leach Gap Toe Protection, Summary by Year**

<u>Year</u>	<u>Cu Yds Placed</u>
2001	10,674
2002	27,225
<b>TOTAL:</b>	<b>37,899</b>

**Table D.2. Field Compaction Test Results for the Heap Leach Toe: 2001-2002**

\* Indicates that Sand-Cone Correlation performed. Tests not meeting plan requirements are highlighted below (shaded rows).

Max.= Maximum; FG = Finish Grade; P = Pass; F Moist = Fails Moisture; F C & M = Fails Compaction & Moisture. See notes and summary statistics on page 4.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								Requirements:	PM ≥ Opt. - 2	≥ 95		
H-01-01	8/29/01	791345	838180	1	HL-1-01	115.8	12.8	113.0	13.8	97.6	P	
H-02-01	8/29/01	791365	838210	1	HL-1-01	115.8	12.8	110.3	13.8	95.3	P	
H-03-01	8/29/01	790847	838207	1	HL-1-01	115.8	12.8	114.5	10.6	98.9	P	Moisture accepted by QC officer.
H-04-01	9/7/01	792110	838520	1	HL-2-01	104.1	19.3	102.6	19.0	98.6	P	
H-05-01	9/7/01	792250	838550	1	HL-2-01	104.1	19.3	101.0	19.4	97.0	P	
H-06-01	* 9/7/01	792200	838720	1	HL-2-01	104.1	19.3	104.4	19.3	100.3	P	
H-07-01	9/7/01	792060	838710	1	HL-2-01	104.1	19.3	104.1	19.9	100.0	P	
H-08-01	10/17/01	791200	838200	1	HL-1-01	115.8	12.8	110.2	13.7	95.2	P	
H-09-01	10/17/01	792155	838670	1	HL-3-01	105.2	18.2	101.7	23.0	96.7	P	
H-10-01	10/17/01	792085	838635	1	HL-3-01	105.2	18.2	101.8	21.6	96.8	P	
H-11-01	10/17/01	791990	838640	1	HL-3-01	105.2	18.2	104.2	18.7	99.0	P	
H-12-01	10/17/01	792175	838730	2	HL-3-01	105.2	18.2	106.8	20.6	101.5	P	
H-13-01	10/17/01	791995	838720	2	HL-3-01	105.2	18.2	103.7	21.5	98.6	P	
H-15-01	10/17/01	792120	838715	2	HL-3-01	105.2	18.2	107.4	19.8	102.1	P	
H-16-01	10/17/01	792060	838685	2	HL-3-01	105.2	18.2	107.2	16.8	101.9	P	
H-17-01	10/17/01	792070	838735	3	HL-3-01	105.2	18.2	105.2	23.3	100.0	P	
H-18-01	10/18/01	792070	838700	4	HL-3-01	105.2	18.2	107.5	16.8	102.2	P	
H-19-01	10/18/01	791050	838200	1	HL-1-01	115.8	12.8	110.1	13.2	95.1	P	
H-20-01	10/19/01	791350	838200	1	HL-4-01	118.6	12.3	114.5	10.9	96.5	P	
H-21-01	10/19/01	791030	838220	2	HL-4-01	118.6	12.3	116.3	11.0	98.1	P	
H-22-01	10/19/01	790970	838230	2	HL-4-01	118.6	12.3	117.1	12.2	98.7	P	
H-23-01	10/19/01	792045	838690	5	HL-3-01	105.2	18.2	106.9	19.5	101.6	P	
H-24-01	* 10/19/01	792185	838700	5	HL-5-01	110.7	16.5	109.3	17.8	98.7	P	
H-25-01	10/19/01	792015	838610	6	HL-5-01	110.7	16.5	110.7	16.7	100.0	P	
H-26-01	10/19/01	792155	838665	6	HL-5-01	110.7	16.5	107.5	18.8	97.1	P	
H-27-01	10/22/01	791130	838200	7	HL-5-01	110.7	16.5	107.4	15.4	97.0	P	
H-28-01	10/23/01	791400	838200	3	HL-4-01	118.6	12.3	113.8	11.6	96.0	P	
H-29-01	10/23/01	792095	838730	7	HL-5-01	110.7	16.5	106.1	16.3	95.8	P	
H-30-01	10/23/01	792035	838640	7	HL-5-01	110.7	16.5	106.0	17.7	95.8	P	
H-31-01	10/23/01	792010	838725	7	HL-5-01	110.7	16.5	106.8	18.8	96.5	P	
H-32-01	10/24/01	791965	838695	1	HL-5-01	110.7	16.5	107.2	19.5	96.8	P	
H-33-01	10/24/01	792215	838690	1	HL-5-01	110.7	16.5	110.9	15.6	100.2	P	
H-34-01	* 10/24/01	792075	838615	8	HL-5-01	110.7	16.5	110.8	15.4	100.1	P	
H-35-01	10/24/01	792210	838740	2	HL-6-01	110.2	17.3	109.7	15.8	99.5	P	
H-36-01	10/24/01	792040	838740	8	HL-6-01	110.2	17.3	109.4	18.6	99.3	P	
H-37-01	10/24/01	791275	838160	3	HL-4-01	118.6	12.3	113.9	14.1	96.0	P	

**Table D.2. Field Compaction Test Results for the Heap Leach Toe: 2001-2002**

\* Indicates that Sand-Cone Correlation performed. Tests not meeting plan requirements are highlighted below (shaded rows).

Max.= Maximum; FG = Finish Grade; P = Pass; F Moist = Fails Moisture; F C & M = Fails Compaction & Moisture. See notes and summary statistics on page 4.

Compaction Test ID	Date	Location			Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting	Lift	Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								<i>Requirements:</i>	<b>PM ≥ Opt. - 2</b>	<b>≥ 95</b>		
H-38-01	10/25/01	792205	838790	3	HL-6-01	110.2	17.3	114.1	17.3	103.5	P	
H-39-01	10/26/01	792110	838735	8	HL-6-01	110.2	17.3	111.8	15.4	101.5	P	
H-40-01	10/26/01	792045	838640	8	HL-6-01	110.2	17.3	107.8	15.6	97.8	P	
H-41-01	10/29/01	792135	838715	8	HL-6-01	110.2	17.3	112.9	15.4	102.5	P	
H-42-01	10/29/01	792070	838675	8	HL-6-01	110.2	17.3	107.3	15.8	97.4	P	
H-43-01	10/29/01	790970	838210	4	HL-4-01	118.6	12.3	114.8	12.5	96.8	P	
H-44-01	10/29/01	791340	838230	4	HL-4-01	118.6	12.3	114.9	14.2	96.9	P	
H-45-01	10/31/01	792160	838720	9	HL-6-01	110.2	17.3	109.6	15.5	99.5	P	
H-01-02	5/30/02	791720	838260	1	HL-1-02	116.5	13.9	111.8	13.1	96.0	P	
H-02-02	5/30/02	791640	838220	1	HL-1-02	116.5	13.9	111.4	14.4	95.6	P	
H-03-02	5/30/02	791480	838160	1	HL-1-02	116.5	13.9	112.8	13.1	96.8	P	
H-04-02 *	6/3/02	791520	838140	2	HL-1-02	116.5	13.9	113.0	16.7	97.0	P	
H-05-02	6/3/02	791870	838250	2	HL-1-02	116.5	13.9	112.7	14.0	96.7	P	
H-06-02	6/5/02	791500	838160	3	HL-1-02	116.5	13.9	112.3	12.2	96.4	P	
H-07-02	6/5/02	791840	838250	3	HL-1-02	116.5	13.9	112.9	14.1	96.9	P	
H-08-02	6/5/02	791590	838170	4	HL-1-02	116.5	13.9	111.0	13.6	95.3	P	
H-09-02	6/6/02	791500	838180	5	HL-1-02	116.5	13.9	113.7	14.2	97.6	P	
H-10-02	6/6/02	791650	838200	5	HL-1-02	116.5	13.9	110.7	16.9	95.0	P	
H-11-02	6/10/02	792000	838350	1	HL-2-02	114.9	13.7	117.8	11.9	102.5	P	
H-12-02	6/10/02	792000	838350	2	HL-2-02	114.9	13.7	116.8	13.1	101.7	P	
H-13-02	6/10/02	792000	838350	3	HL-2-02	114.9	13.7	110.0	16.6	95.7	P	
H-14-02	6/10/02	792000	838350	4	HL-2-02	114.9	13.7	119.1	13.3	103.7	P	
H-15-02	6/10/02	792000	838350	5	HL-2-02	114.9	13.7	116.6	12.9	101.5	P	
H-16-02	6/10/02	792000	838350	6	HL-2-02	114.9	13.7	117.1	13.2	101.9	P	
H-17-02	6/11/02	791590	838190	5	HL-2-02	114.9	13.7	110.2	12.8	95.9	P	
H-18-02	6/11/02	791870	838270	6	HL-2-02	114.9	13.7	110.1	12.2	95.8	P	
H-19-02	6/12/02	791440	838190	6	HL-2-02	114.9	13.7	109.2	15.8	95.0	P	
H-20-02	6/12/02	791800	838210	2	HL-2-02	114.9	13.7	115.4	12.8	100.4	P	
H-21-02 *	6/12/02	791730	838200	1	HL-3-02	114.3	13.9	114.1	13.7	99.8	P	
H-22-02 *	6/12/02	791890	838240	1	HL-3-02	114.3	13.9	110.5	12.1	96.7	P	
H-23-02	6/12/02	791920	838290	1	HL-3-02	114.3	13.9	112.1	14.0	98.1	P	
H-24-02	6/12/02	791840	838250	2	HL-3-02	114.3	13.9	110.7	12.3	96.9	P	
H-25-02	6/12/02	791680	838200	2	HL-3-02	114.3	13.9	113.4	12.1	99.2	P	
H-26-02	6/12/02	791600	838180	2	HL-3-02	114.3	13.9	114.5	12.6	100.2	P	
H-27-02 *	6/12/02	791480	838160	3	HL-3-02	114.3	13.9	109.2	16.8	95.5	P	
H-28-02	6/13/02	791520	838200	3	HL-3-02	114.3	13.9	111.3	14.8	97.4	P	

**Table D.2. Field Compaction Test Results for the Heap Leach Toe: 2001-2002**

\* Indicates that Sand-Cone Correlation performed. Tests not meeting plan requirements are highlighted below (shaded rows).

Max.= Maximum; FG = Finish Grade; P = Pass; F Moist = Fails Moisture; F C & M = Fails Compaction & Moisture. See notes and summary statistics on page 4.

Compaction Test ID	Date	Location		Lift	Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments
		Northing	Easting		Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction		
								<i>Requirements:</i>	PM ≥ Opt. - 2	≥ 95		
H-29-02	6/13/02	791620	838180	3	HL-3-02	114.3	13.9	112.0	12.9	98.0	P	
H-30-02	6/14/02	791460	838160	FG	HL-3-02	114.3	13.9	108.9	11.9	95.3	P	
H-31-02	6/14/02	791520	838180	FG	HL-4-02	111.1	15.2	112.5	13.6	101.3	P	
H-32-02	6/14/02	791600	838200	FG	HL-4-02	111.1	15.2	112.6	13.6	101.4	P	
H-33-02	6/14/02	791700	838220	FG	HL-4-02	111.1	15.2	114.9	14.8	103.4	P	
H-34-02	6/14/02	791840	838270	FG	HL-4-02	111.1	15.2	115.3	15.7	103.8	P	
H-35-02	6/14/02	791480	838160	FG	HL-4-02	111.1	15.2	111.8	15.8	100.6	P	
H-36-02	6/14/02	791600	838180	FG	HL-4-02	111.1	15.2	111.1	13.8	100.0	P	
H-37-02	6/14/02	791740	838240	FG	HL-4-02	111.1	15.2	110.7	15.5	99.6	P	
H-38-02	6/14/02	791860	838290	FG	HL-4-02	111.1	15.2	111.9	15.2	100.7	P	
H-39-02	6/24/02	791110	837370	FG	HL-4-02	111.1	15.2	114.0	6.5	102.6	F Moist	Fails Moisture - No Retest
H-40-02	6/24/02	791090	837350	FG	HL-4-02	111.1	15.2	111.7	5.4	100.5	F Moist	Fails Moisture - No Retest
H-41-02	6/24/02	791420	837120	FG	HL-5-02	117.6	12.5	110.4	7.1	93.8	F C & M	Fails Compaction & Moisture - No Retest
H-42-02	7/15/02	791400	838200	FG	HL-5-02	117.6	12.5	115.3	11.6	98.0	P	
H-43-02	7/15/02	791600	838220	FG	HL-5-02	117.6	12.5	118.8	10.7	101.0	P	
H-44-02	* 7/15/02	791420	838210	FG	HL-5-02	117.6	12.5	113.8	12.2	96.8	P	
H-45-02	7/15/02	791400	838220	FG	HL-5-02	117.6	12.5	112.4	10.6	95.6	P	
H-46-02	7/15/02	791020	838210	FG	HL-5-02	117.6	12.5	112.7	13.3	95.8	P	
H-47-02	* 7/15/02	791800	838250	FG	HL-5-02	117.6	12.5	115.0	12.1	97.8	P	
H-48-02	7/17/02	791450	838215	FG	HL-5-02	117.6	12.5	112.1	12.0	95.3	P	
H-49-02	7/17/02	791620	838145	FG	HL-5-02	117.6	12.5	112.5	13.5	95.7	P	
H-50-02	* 7/17/02	791950	838310	FG	HL-5-02	117.6	12.5	112.7	13.0	95.8	P	
H-51-02	7/17/02	791870	838240	FG	HL-6-02	116.3	13.0	115.4	11.2	99.2	P	
H-52-02	7/22/02	791380	837120	1	HL-6-02	116.3	13.0	118.9	12.9	102.2	P	
H-53-02	7/22/02	791200	837340	1	HL-6-02	116.3	13.0	114.0	11.5	98.0	P	
H-54-02	7/22/02	790850	837350	1	HL-6-02	116.3	13.0	115.1	13.5	99.0	P	
H-55-02	7/22/02	791300	837260	2	HL-6-02	116.3	13.0	114.7	11.7	98.6	P	
H-56-02	7/22/02	791160	837400	2	HL-6-02	116.3	13.0	112.7	13.0	96.9	P	
H-57-02	7/22/02	790950	837370	2	HL-6-02	116.3	13.0	110.9	13.1	95.4	P	
H-58-02	7/22/02	791250	837300	3	HL-6-02	116.3	13.0	118.4	12.8	101.8	P	
H-59-02	7/22/02	791200	837400	3	HL-6-02	116.3	13.0	115.7	11.6	99.5	P	
H-60-02	7/22/02	790750	837400	3	HL-6-02	116.3	13.0	113.0	11.9	97.2	P	
H-61-02	7/22/02	791010	837400	4	HL-7-02	118.8	11.5	113.7	12.3	95.7	P	
H-62-02	7/22/02	791400	837100	4	HL-7-02	118.8	11.5	113.8	13.9	95.8	P	
H-63-02	7/25/02	791300	837260	5	HL-7-02	118.8	11.5	121.3	10.5	102.1	P	
H-64-02	7/25/02	791160	837400	5	HL-7-02	118.8	11.5	122.2	11.5	102.9	P	

**Table D.2. Field Compaction Test Results for the Heap Leach Toe: 2001-2002**

\* Indicates that Sand-Cone Correlation performed. Tests not meeting plan requirements are highlighted below (shaded rows).

Max.= Maximum; FG = Finish Grade; P = Pass; F Moist = Fails Moisture; F C & M = Fails Compaction & Moisture. See notes and summary statistics on page 4.

Compaction Test ID	Date	Location			Laboratory Standard Proctor			Field Compaction Tests			Pass/Fail	Comments	
		Northing	Easting	Lift	Proctor ID	Max. Dry Density (lbs/cu ft)	Optimum Moisture (%)	Dry Density (lbs/cu ft)	Percent Moisture (PM)	Percent Compaction			
								Requirements:	PM ≥ Opt. - 2	≥ 95			
H-65-02	7/26/02	790500	838000	1	HL-7-02	118.8	11.5	118.7	12.6	99.9	P		
H-66-02	7/26/02	790520	838040	2	HL-7-02	118.8	11.5	119.2	11.4	100.3	P		
H-67-.02	7/26/02	790490	837990	3	HL-7-02	118.8	11.5	120.3	12.8	101.3	P		
H-68-02	7/26/02	790530	838060	3	HL-7-02	118.8	11.5	119.4	12.9	100.5	P		
H-69-02	*	7/29/02	790720	838180	4	HL-7-02	118.8	11.5	121.9	10.8	102.6	P	
H-70-02	7/29/02	790560	838100	4	HL-7-02	118.8	11.5	123.4	11.8	103.9	P		
H-71-02	8/19/02	791430	837100	FG	HL-8-02	118.7	11.9	116.3	11.9	98.0	P		
H-72-02	8/19/02	791300	837200	FG	HL-8-02	118.7	11.9	119.9	11.8	101.0	P		
H-73-02	8/19/02	791200	837350	FG	HL-8-02	118.7	11.9	116.6	11.4	98.2	P		

Field density and moisture tests were taken using a nuclear density gauge. The gauge was field standardized at each test location and was correlated by a Sand Cone Test at a frequency of one for every five nuclear gauge tests. Field rock corrections were performed at each compaction test location.

*Total Number of Tests (N):* 114 (N reflects passing tests only)  
*Total Quantities placed:* 37,899 cubic yards (CY)  
*Frequency:* 1: 332 CY Exceeds the required frequency of 1:500 CY.

<b>average:</b>	<b>112.2</b>	<b>14.5</b>	<b>98.6</b>
<i>minimum:</i>	101.0	10.5	95.0
<i>maximum:</i>	123.4	23.3	103.9
<i>standard deviation:</i>	4.6	2.9	2.5

**Table D.3. Standard Proctor Test Results for the Heap Leach Toe**

Date	Laboratory Standard Proctor		
	Proctor ID	Maximum Dry Density (lbs/cu ft)	Optimum Moisture (%)
8/29/01	HL-1-01	115.8	12.8
9/7/01	HL-2-01	104.1	19.3
10/17/01	HL-3-01	105.2	18.2
10/19/01	HL-4-01	118.6	12.3
10/19/01	HL-5-01	110.7	16.5
10/24/01	HL-6-01	110.2	17.3
5/30/02	HL-1-02	116.5	13.9
6/10/02	HL-2-02	114.9	13.7
6/12/02	HL-3-02	114.3	13.9
6/14/02	HL-4-02	111.1	15.2
6/24/02	HL-5-02	117.6	12.5
7/17/02	HL-6-02	116.3	13.0
7/22/02	HL-7-02	118.8	11.5
8/19/02	HL-8-02	118.7	11.9

*count:* 14 14

*average:* **113.8** **14.4**

*minimum:* 104.1 11.5

*maximum:* 118.8 19.3

*standard deviation:* 4.8 2.5

Total cubic yards placed: 37,899

Proctor Frequency: 1: 2707 CY This frequency is well above the required frequency of 1:5000 CY placed.

**Table D.4. Sand-Cone Correlation Documentation for the Heap Leach Toe**

Date	Compaction Test ID	Nuclear Gauge Test		Sand-Cone Compaction Tests		Sand-Cone Correlation Results	
		In-Place Wet Unit Weight (pcf)	Moisture Content (%)	In-Place Wet Unit Weight (pcf)	Moisture Content (%)	Wet Unit Weight Variation (%)	Moisture Content Variation (%)
9/7/01	H-6-01	124.5	19.3	126.6	18.8	1.7	-0.5
10/19/01	H-24-01	128.8	17.8	130.7	18.7	1.5	0.9
10/24/01	H-34-01	127.9	15.4	130.4	16.5	2.0	1.1
6/3/02	H-04-02	131.8	16.7	132.0	14.1	0.2	-2.6
6/12/02	H-21-02	129.7	13.7	128.4	11.8	-1.0	-1.9
6/12/02	H-22-02	123.9	12.1	120.7	11.3	-2.6	-0.8
6/12/02	H-27-02	130.1	15.2	134.3	15.2	3.2	0.0
7/15/02	H-44-02	127.6	12.2	129.1	11.3	1.2	-0.9
7/15/02	H-47-02	128.9	12.1	131.6	9.9	2.1	-2.2
7/17/02	H-50-02	127.4	13.0	130.7	12.2	2.6	-0.8
7/29/02	H-69-02	135.0	10.8	136.9	9.9	1.4	-0.9

pcf - pounds per cubic foot

<i>Number of sand-cone tests:</i>	11	
<i>average percent variation (on absolute value):</i>	1.8	1.1
<i>standard deviation:</i>	0.8	0.8

**Note:**

For the Heap Leach toe, a sand-cone correlation test was performed for every ten nuclear gauge tests. Correlations were deemed acceptable if the average of ten nuclear test results vs. sand cone test results comparisons met the following criteria:

sand-cone method wet density: +/- 3%  
sand-cone method moisture content: +/- 2%

As indicated above, these criteria were met even for discrete results (vs. running average).