

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SH02-04C			SHOB-01R			SHOB-02R			SHOB-03R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	7.83	3.67	62.10	9.58	17.30	115.00	1.43	4.85	84.90	2.54	8.12	80.30
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	5.07	2.61	85.70	9.14	15.80	129.00	5.28	7.79	99.00	8.72	15.50	98.30
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	2.12	1.36	97.50	8.00	9.39	122.00	6.11	7.81	83.00	6.32	13.60	139.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	1.54	1.94	59.20	6.19	12.90	80.40	5.85	6.15	103.00	7.10	18.90	94.20
25.00	1.01	2.96	76.10	2.90	10.60	102.00	4.35	3.92	98.60	6.26	10.60	85.80
30.00	1.44	3.62	124.00	2.47	15.20	143.00	3.66	3.21	59.70	2.99	15.20	58.30
35.00	2.12	8.41	107.00	2.55	21.10	112.00		COAL		2.21	12.70	98.30
40.00	1.73	13.80	166.00	2.73	21.90	131.00	0.00	0.00	0.00	1.46	60.40	122.00
45.00	2.11	26.20	138.00	4.22	47.50	102.00	0.00	0.00	0.00	2.41	26.40	143.00
50.00	4.38	42.00	97.20	4.01	34.10	88.20	1.05	21.10	174.00	1.60	37.70	137.00
55.00	2.48	23.40	163.00	2.13	31.30	119.00	1.04	16.90	126.00	1.52	34.70	160.00
60.00	1.88	42.00	171.00		COAL	171.00	1.21	19.80	110.00	2.45	37.40	115.00
65.00	1.82	40.50	168.00	0.00	0.00	0.00	1.95	34.90	103.00		COAL	
70.00	1.74	24.40	178.00	0.00	0.00	0.00	1.89	30.30	101.00	0.00	0.00	0.00
75.00		COAL		0.00	0.00	0.00	1.37	30.60	139.00	0.00	0.00	0.00
80.00	2.60	32.90	121.00	2.00	21.60	149.00	1.28	18.60	156.00	1.29	50.80	107.00
85.00	1.63	21.20	155.00	1.52	18.80	161.00	0.72	10.30	176.00	3.66	43.20	113.00
90.00	1.55	27.20	151.00	0.00	0.00	0.00	0.93	12.90	131.00	3.09	54.00	98.90
95.00	1.58	20.30	165.00	0.00	0.00	0.00	1.07	16.40	136.00	0.00	0.00	0.00
100.00	2.23	33.40	136.00	0.00	0.00	0.00	0.88	0.00	121.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	4.30	2.09	49.27	6.24	11.03	81.33	2.24	4.21	61.30	3.75	7.87	59.53
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.64	36.98	149.80	3.27	33.70	110.05	3.99	4.22	68.86	1.75	39.80	140.50
Worst Case Percentage of Overburden	23.1%			27.3%			50.0%			27.3%		
Required Topsoil Replacement Thickness	48			48			24			48		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-04R			SHOB-05R			SHOB-06B			SHOB-06R			SHOB-07R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	6.37	6.50	97.10	2.00	0.49	100.00	3.81	6.02	102.00	3.11	4.64	113.00	2.86	5.01	112.00
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	4.93	4.50	107.00	3.62	1.26	93.30	5.88	9.02	97.00	4.26	7.95	120.00	7.03	9.38	94.50
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	5.29	8.07	100.00	5.80	4.37	103.00	5.23	9.12	111.00	4.57	12.50	130.00	6.35	8.05	113.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	2.89	8.55	120.00	8.30	8.36	55.80	5.68	10.20	124.00	5.85	9.31	135.00	6.32	7.37	66.90
25.00	5.70	10.40	57.10	8.72	9.28	48.90	7.66	10.00	90.50	6.37	8.00	86.30	5.38	7.43	85.00
30.00	4.52	8.09	73.30	6.89	15.00	96.90	9.26	12.50	103.00	6.52	9.50	91.00	7.04	10.50	88.30
35.00	2.62	8.82	133.00	4.18	18.90	113.00	7.97	10.40	103.00	5.59	14.40	92.00	3.04	13.00	142.00
40.00	2.89	14.90	128.00	4.51	34.80	125.00	7.91	10.10	92.40	4.89	20.80	99.90	2.44	18.50	151.00
45.00		COAL		4.43	29.30	148.00	7.71	10.00	73.20	7.17	13.20	86.00	5.19	12.80	105.00
50.00	0.00	0.00	0.00		COAL		8.46	10.90	67.20	5.34	13.80	135.00		COAL	
55.00	0.00	0.00	0.00	0.00	0.00	0.00		COAL			COAL		0.00	0.00	0.00
60.00	4.13	28.60	134.00	0.00	0.00	0.00	7.94	11.00	60.40	0.00	0.00	0.00	0.00	0.00	0.00
65.00	2.39	30.40	138.00	0.00	0.00	0.00	8.41	11.90	56.30	0.00	0.00	0.00	0.00	0.00	0.00
70.00	2.15	29.70	150.00	2.78	43.50	182.00	8.90	12.40	56.10	7.59	23.50	131.00	1.56	27.00	157.00
75.00	0.00	0.00	0.00	3.72	48.80	161.00	7.44	10.30	63.80	5.46	22.00	156.00	1.02	17.10	136.00
80.00	0.00	0.00	0.00	0.00	0.00	0.00	7.72	11.20	64.60	0.00	0.00	0.00	0.00	0.00	0.00
85.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	3.77	3.67	68.03	1.87	0.58	64.43	3.23	5.01	66.33	2.46	4.20	77.67	3.30	4.80	68.83
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	3.93	10.55	97.85	5.00	24.50	120.73	8.21	10.75	92.90	5.75	15.55	103.23	4.43	13.70	121.58
Worst Case Percentage of Overburden	37.5%			33.3%			33.3%			30.0%			33.3%		
Required Topsoil Replacement Thickness	24			48			24			42			42		

- Subsoil Supplement
- Worst Case Overburde
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-08R			SHOB-09R			SHOB-101R			SHOB-102R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.68	5.79	100.00	0.86	0.68	52.00
5.00	1.29	2.44	80.60	4.26	3.37	111.00	7.20	6.55	100.00	3.90	9.48	50.00
7.50	0.00	0.00	0.00	0.00	0.00	0.00	8.50	11.20	83.00	6.40	13.80	50.00
10.00	5.54	7.35	126.00	7.37	8.54	128.00	6.00	9.66	120.00	9.50	16.90	81.00
12.50	0.00	0.00	0.00	0.00	0.00	0.00	2.90	8.30	100.00	9.60	16.60	100.00
15.00	3.80	16.10	61.50	12.30	14.00	101.00	2.30	6.92	100.00	6.80	15.40	110.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	2.30	6.73	100.00	5.20	18.80	130.00
20.00	2.50	18.30	123.00	5.60	11.80	106.00	3.30	5.05	130.00	6.20	17.50	63.00
25.00	2.67	17.90	135.00	4.02	13.80	128.00	3.80	6.00	100.00	7.80	19.80	79.00
30.00	3.14	21.70	160.00	5.30	21.30	106.00	5.50	6.41	81.00	7.50	23.30	110.00
35.00	4.88	27.70	103.00	2.20	21.70	117.00	2.50	7.22	63.00	5.90	32.00	78.00
40.00	4.09	36.00	94.30	2.98	25.50	119.00	0.00	0.00	0.00		COAL	
45.00	2.78	32.30	108.00	2.33	28.10	134.00	1.90	18.00	110.00	0.00	0.00	0.00
50.00	3.11	33.80	80.00	2.49	32.50	153.00	1.90	24.60	120.00	0.00	0.00	0.00
55.00	2.98	38.10	126.00	2.22	54.60	142.00	1.90	30.60	140.00	1.90	33.90	70.00
60.00	2.91	41.50	131.00	2.82	37.80	120.00	2.90	41.40	78.00	1.40	47.80	130.00
65.00	2.02	32.10	123.00	4.61	55.10	87.00	2.80	45.30	79.00	1.40	16.40	92.00
70.00	1.87	32.50	157.00	4.08	53.40	54.90	3.00	46.90	65.00	0.00	0.00	0.00
75.00		COAL		5.09	57.80	66.00	3.70	55.80	59.00	0.00	0.00	0.00
80.00	0.00	0.00	0.00	7.65	65.00	68.20	3.80	48.50	62.00	0.00	0.00	0.00
85.00	0.00	0.00	0.00		COAL			COAL		0.00	0.00	0.00
90.00	2.37	38.50	104.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	2.61	45.90	112.00	0.00	0.00	0.00	2.10	34.90	150.00	0.00	0.00	0.00
100.00	1.73	32.40	124.00	2.73	48.50	140.00	1.40	28.90	120.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	2.28	3.26	68.87	3.88	3.97	79.67	7.23	9.14	101.00	6.60	13.39	60.33
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.95	36.43	111.25	5.36	57.83	69.03	3.33	49.13	66.25	6.85	23.15	82.50
Worst Case Percentage of Overburden	25.0%			18.8%			18.8%			42.9%		
Required Topsoil Replacement Thickness	48			48			48			48		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-103R			SHOB-104R			SHOB-105R			SHOB-106R			SHOB-107R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	1.00	2.24	59.00	0.67	1.15	84.00	2.90	0.51	64.00	0.48	0.71	69.00	0.49	1.70	48.00
5.00	1.80	3.99	41.00	4.00	2.19	78.00	4.60	1.61	73.00	3.50	0.98	90.00	0.95	5.12	68.00
7.50	5.50	5.24	44.00	5.80	5.36	66.00	7.40	6.59	80.00	4.70	3.60	89.00	5.80	8.66	54.00
10.00	13.00	15.00	62.00	8.20	8.62	67.00	0.00	0.00	0.00	7.30	11.10	59.00	8.60	8.13	53.00
12.50	0.00	0.00	0.00	0.00	0.00	0.00	4.50	4.92	76.00	8.30	13.90	89.00	11.00	9.41	82.00
15.00	8.40	11.60	85.00	0.00	0.00	0.00	5.70	5.82	96.00	5.80	12.40	110.00	0.00	0.00	0.00
17.50	12.00	15.80	56.00	15.00	12.90	86.00	5.10	6.83	98.00	3.40	12.60	120.00	0.00	0.00	0.00
20.00	7.90	11.40	84.00	9.90	10.20	82.00	0.00	0.00	0.00	2.70	12.90	130.00	6.80	7.85	87.00
25.00	8.30	13.30	120.00	6.40	8.63	110.00	8.10	18.80	100.00	3.90	12.10	100.00	4.60	5.38	100.00
30.00	7.90	17.80	83.00	5.20	20.10	110.00	4.00	24.30	81.00	2.40	14.90	94.00	4.70	10.10	92.00
35.00	5.00	25.70	80.00	6.70	19.30	61.00	4.30	13.60	45.00	2.80	20.70	61.00	4.30	20.60	120.00
40.00	3.20	23.30	120.00	4.90	27.90	72.00	2.50	26.00	56.00	2.20	28.30	90.00	2.30	29.50	110.00
45.00	3.20	38.80	110.00	5.30	34.40	94.00	2.80	30.70	84.00	2.20	37.50	76.00	2.20	32.30	130.00
50.00	3.30	44.80	130.00	3.20	40.00	100.00	5.60	17.30	21.00	2.80	39.70	87.00	9.10	46.80	89.00
55.00	2.60	40.80	140.00	2.60	45.60	130.00	6.30	33.10	42.00	1.80	37.40	110.00	3.40	43.60	100.00
60.00	2.50	42.30	97.00	3.40	47.40	93.00	3.10	39.20	90.00	1.60	42.20	120.00	2.40	44.40	100.00
65.00	2.70	46.10	87.00	4.60	63.20	100.00	2.70	49.70	110.00	1.40	36.20	140.00	3.00	32.90	100.00
70.00	2.00	51.20	94.00	2.80	46.30	80.00	2.20	42.40	100.00	1.60	39.00	130.00	3.80	34.00	94.00
75.00	1.80	39.60	130.00	2.50	47.60	71.00	1.90	50.80	140.00	1.90	45.00	110.00	2.60	39.50	110.00
80.00		COAL		2.60	43.70	64.00	2.10	42.20	110.00		COAL		1.50	39.60	150.00
85.00	0.00	0.00	0.00	7.80	40.90	49.00		COAL		0.00	0.00	0.00	1.70	45.40	160.00
90.00	0.00	0.00	0.00		COAL		0.00	0.00	0.00	0.00	0.00	0.00		COAL	
95.00	1.90	43.30	150.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	34.30	190.00	0.00	0.00	0.00
100.00	1.40	39.70	150.00	0.00	0.00	0.00	3.00	47.60	100.00	0.99	34.80	230.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	6.77	8.08	49.00	6.00	5.39	70.33	4.00	2.73	51.00	5.17	5.23	79.33	5.12	7.30	58.33
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.45	45.10	104.50	3.33	51.13	86.00	2.23	46.28	115.00	1.63	40.60	125.00	4.48	41.93	97.25
Worst Case Percentage of Overburden	21.4%			20.0%			18.8%			20.0%			23.1%		
Required Topsoil Replacement Thickness	48			48			48			48			48		

Subsoil Supplement

Worst Case Overburde

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-108R			SHOB-109R			SHOB-10R			SHOB-110R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.59	1.51	77.00	0.81	1.24	31.00	0.00	0.00	0.00	0.84	0.48	80.00
5.00	8.60	8.25	91.00	0.40	1.02	32.00	5.29	2.62	60.50	7.40	9.51	59.00
7.50	9.80	9.67	110.00	0.31	0.77	31.00	0.00	0.00	0.00	4.90	9.18	130.00
10.00	11.00	10.40	91.00	0.24	0.62	33.00	7.18	6.51	60.80	8.30	12.80	79.00
12.50	12.00	11.40	89.00	2.90	8.08	30.00	0.00	0.00	0.00	8.80	15.70	68.00
15.00	7.10	11.70	120.00	0.34	0.70	30.00	6.52	6.43	51.10	9.10	15.80	77.00
17.50	8.20	9.92	100.00	0.38	0.68	32.00	0.00	0.00	0.00	8.80	16.60	69.00
20.00	10.00	11.70	74.00	0.32	0.74	29.00	5.96	7.46	71.40	6.80	29.20	83.00
25.00	6.30	18.30	76.00	0.64	2.51	31.00	5.70	8.85	68.50	12.00	32.20	84.00
30.00	4.40	23.60	72.00	0.73	1.88	31.00	5.24	16.30	87.40	5.10	34.10	71.00
35.00	2.80	30.30	120.00	0.88	3.35	32.00	3.40	19.20	141.00	3.80	35.10	83.00
40.00	4.70	24.40	53.00	1.50	2.06	30.00	2.58	24.50	165.00	3.80	40.80	88.00
45.00	3.90	35.20	120.00	1.00	3.33	32.00	2.55	28.00	132.00	3.50	30.80	59.00
50.00	2.60	45.60	120.00	0.85	1.81	33.00	2.63	31.00	76.20	2.20	37.20	110.00
55.00	2.20	44.30	130.00	1.10	1.91	30.00	1.62	23.20	91.90	1.70	43.90	140.00
60.00	1.90	42.60	140.00	1.90	2.77	30.00	3.00	24.40	82.90	1.40	45.60	200.00
65.00	2.70	47.20	130.00	2.00	1.69	36.00		COAL		1.90	53.90	110.00
70.00		COAL		1.50	4.08	37.00	0.00	0.00	0.00	2.60	60.30	85.00
75.00	0.00	0.00	0.00		COAL		0.00	0.00	0.00	3.80	62.60	86.00
80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		COAL	
85.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	28.10	173.00	0.00	0.00	0.00
90.00	1.60	40.50	140.00	0.00	0.00	0.00	2.43	30.40	161.00	0.00	0.00	0.00
95.00	3.40	37.80	62.00	1.40	19.10	130.00	1.92	34.40	153.00	1.60	44.20	150.00
100.00	2.90	45.60	55.00	0.95	31.80	180.00	3.96	57.90	144.00	1.50	45.10	120.00
Subsoil Supplements Average SAR and SP	9.80	9.44	97.33	0.32	0.80	32.00	4.16	3.04	40.43	6.87	10.50	89.33
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.35	44.93	130.00	1.63	2.61	33.25	2.45	26.65	95.75	2.43	55.60	120.25
Worst Case Percentage of Overburden	23.1%			21.4%			25.0%			20.0%		
Required Topsoil Replacement Thickness	48			24			48			48		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-111R			SHOB-112R			SHOB-113R			SHOB-114R			SHOB-115R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	1.40	0.50	62.00	1.30	12.20	59.00	0.00	0.00	0.00	0.73	0.55	70.00
5.00	7.70	15.60	87.00	3.20	0.76	73.00	12.00	20.90	78.00	0.84	2.90	77.00	0.70	5.89	86.00
7.50	13.00	23.20	92.00	5.20	3.54	110.00	15.00	23.20	100.00	2.30	8.17	84.00	4.50	8.06	82.00
10.00	12.00	22.00	110.00	8.70	7.76	78.00	15.00	22.90	110.00	6.00	8.62	78.00	4.50	13.20	71.00
12.50	13.00	24.80	81.00	6.40	6.18	79.00	12.00	20.60	88.00	5.40	9.56	79.00	5.60	7.49	65.00
15.00	0.00	0.00	0.00	5.90	5.40	110.00	0.00	0.00	0.00	5.80	7.73	81.00	5.40	6.29	81.00
17.50	6.20	21.30	160.00	5.70	6.39	66.00	11.00	28.80	94.00	5.70	6.78	86.00	3.70	6.19	65.00
20.00	9.60	23.30	96.00	6.20	6.69	57.00	6.40	18.10	120.00	4.30	8.27	91.00	2.90	6.11	38.00
25.00	9.30	22.60	120.00	6.70	6.35	49.00	5.10	33.80	120.00	3.80	7.94	94.00	1.20	3.15	30.00
30.00	6.40	24.90	140.00	6.60	6.64	39.00	3.70	28.80	92.00	5.40	5.03	30.00	1.40	2.79	46.00
35.00	13.00	25.90	57.00	4.80	4.68	31.00	3.20	29.40	83.00	4.80	5.00	30.00	1.20	5.68	75.00
40.00	14.00	28.50	50.00	5.00	5.56	31.00	3.40	28.50	85.00	4.40	2.94	32.00	1.50	10.70	94.00
45.00		COAL		3.60	6.06	33.00	6.20	31.80	89.00	3.90	5.67	31.00	1.40	16.70	100.00
50.00	0.00	0.00	0.00	2.50	8.67	34.00	4.60	29.30	90.00		COAL		1.20	19.80	120.00
55.00	0.00	0.00	0.00	2.20	5.41	34.00	3.10	32.00	93.00	0.00	0.00	0.00	1.30	21.40	110.00
60.00	3.70	46.90	150.00	1.60	2.87	33.00	3.60	33.50	63.00	0.00	0.00	0.00	1.80	17.70	81.00
65.00	1.90	45.60	200.00	1.90	2.02	33.00	2.90	38.40	100.00	1.90	16.30	130.00		COAL	
70.00	2.30	53.60	90.00	1.00	1.80	32.00	2.50	36.60	120.00	1.90	18.50	95.00	0.00	0.00	0.00
75.00	0.00	0.00	0.00	1.00	1.65	35.00	2.30	46.00	130.00	3.00	20.90	49.00	0.00	0.00	0.00
80.00	0.00	0.00	0.00	1.20	1.55	34.00	2.90	47.20	110.00	0.00	0.00	0.00	3.00	21.40	80.00
85.00	0.00	0.00	0.00	3.20	1.15	30.00	2.70	49.90	120.00	0.00	0.00	0.00	1.30	31.30	120.00
90.00	0.00	0.00	0.00	2.40	1.54	31.00	2.50	51.10	120.00	0.00	0.00	0.00	1.60	31.20	140.00
95.00	0.00	0.00	0.00		COAL			COAL		0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	10.90	20.27	96.33	5.70	4.02	87.00	14.00	22.33	96.00	3.05	6.56	79.67	3.23	9.05	79.67
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	10.68	25.48	91.75	3.33	6.43	33.00	2.60	48.55	120.00	5.07	7.55	76.83	1.43	18.90	102.75
Worst Case Percentage of Overburden	37.5%			27.3%			16.7%			58.3%			25.0%		
Required Topsoil Replacement Thickness	48			24			48			24			42		

- Subsoil Supplement
- Worst Case Overburde
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-116R			SHOB-117R			SHOB-118R			SHOB-119R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	1.84	1.70	55.10	0.69	0.42	28.00	6.80	12.00	58.00	6.70	12.10	150.00
5.00	1.53	12.80	99.40	0.73	0.45	27.00	13.00	22.50	81.00	12.00	26.70	130.00
7.50	8.61	17.40	110.00	1.20	3.22	28.00	11.00	21.90	86.00	12.00	19.80	120.00
10.00	9.13	19.00	101.00	4.20	2.16	66.00	7.80	15.40	68.00	12.00	18.80	110.00
12.50	3.10	27.80	112.00	4.00	1.92	42.00	6.20	11.90	72.00	18.00	18.00	140.00
15.00	1.65	30.00	126.00	3.10	1.86	75.00	2.00	17.60	150.00	0.00	0.00	0.00
17.50	0.00	0.00	0.00	3.80	2.09	66.00	1.40	22.60	170.00	14.00	22.80	95.00
20.00	0.00	0.00	0.00	4.90	4.03	57.00	1.70	19.60	150.00	3.70	41.90	170.00
25.00	0.92	5.88	42.80	5.80	6.13	74.00	2.20	22.10	140.00	3.80	43.20	160.00
30.00	1.02	4.47	98.80	6.40	7.77	57.00	1.80	25.30	95.00	3.40	36.60	150.00
35.00	0.66	3.15	102.00	6.20	7.23	69.00	1.10	36.50	160.00	5.40	20.00	110.00
40.00	0.68	3.30	81.50	4.30	9.85	46.00	1.60	41.50	110.00	17.00	18.50	70.00
45.00		COAL		4.60	12.00	45.00	1.50	42.30	94.00	8.50	11.60	36.00
50.00	0.00	0.00	0.00	5.00	14.60	53.00	2.40	37.40	71.00	7.00	10.20	0.00
55.00	0.00	0.00	0.00		COAL			COAL		7.10	11.60	32.00
60.00	1.00	11.20	84.20	0.00	0.00	0.00	0.00	0.00	0.00	7.00	12.00	32.00
65.00	0.91	8.88	47.70	0.00	0.00	0.00	0.00	0.00	0.00	7.10	12.10	30.00
70.00	0.76	12.80	94.80	2.20	26.20	130.00	0.00	0.00	0.00	3.40	19.60	30.00
75.00	0.00	0.00	0.00	1.50	36.70	140.00	1.90	41.40	140.00	4.20	20.40	30.00
80.00	0.00	0.00	0.00	1.50	39.20	130.00	1.30	44.40	150.00	2.60	43.10	110.00
85.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	50.10	120.00	2.70	44.60	110.00
90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.30	46.40	120.00
95.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20	59.40	120.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	55.40	86.00
Subsoil Supplements Average SAR and SP	6.42	16.40	103.47	2.04	1.94	40.33	10.60	19.93	78.33	12.00	21.77	120.00
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	0.82	4.20	81.28	5.03	10.92	53.25	1.65	39.43	108.75	2.45	51.45	109.00
Worst Case Percentage of Overburden	37.5%			30.0%			25.0%			15.0%		
Required Topsoil Replacement Thickness	24			24			48			48		

Subsoil Supplement

Worst Case Overburden

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-11R			SHOB-121R			SHOB-122R			SHOB-123R			SHOB-124R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.46	1.19	57.10	0.00	0.00	0.00	0.76	1.12	41.00	1.10	4.84	51.00
5.00	7.33	12.70	107.00	0.44	0.89	46.60	0.74	7.34	94.00	2.00	1.74	38.00	3.80	9.43	91.00
7.50	0.00	0.00	0.00	0.71	4.04	16.30	2.88	15.00	78.60	0.94	1.80	33.00	4.20	11.80	58.00
10.00	11.20	17.10	102.00	3.92	10.30	49.70	8.06	18.00	103.00	1.20	6.80	73.00	3.20	20.00	150.00
12.50	0.00	0.00	0.00	6.44	6.95	67.10	3.43	18.00	71.50	1.70	7.43	61.00	6.30	16.00	100.00
15.00	11.50	20.50	109.00	6.15	7.08	80.00	1.64	15.20	96.30	1.60	8.10	88.00	10.00	19.00	93.00
17.50	0.00	0.00	0.00	6.78	9.09	87.40	1.20	8.63	85.70	1.60	8.40	88.00	7.10	14.90	140.00
20.00	11.20	21.10	107.00	0.00	0.00	0.00	3.53	2.85	148.00	2.10	10.70	100.00	5.60	32.80	170.00
25.00	11.10	18.90	73.40	3.81	10.80	128.00	0.00	0.00	0.00	1.40	15.20	100.00	3.80	30.30	120.00
30.00	10.80	19.30	51.60	4.33	11.00	106.00	0.72	4.63	41.40	1.80	22.10	130.00	3.60	35.90	100.00
35.00	7.26	18.90	98.60	3.30	12.80	102.00		COAL		2.40	30.70	100.00	2.60	42.60	92.00
40.00	6.53	20.40	108.00	3.37	14.90	90.00	0.00	0.00	0.00	2.90	33.80	90.00	2.20	38.30	100.00
45.00	3.53	22.80	171.00	3.08	14.10	111.00	0.00	0.00	0.00	2.60	33.40	90.00	1.90	34.20	82.00
50.00	4.35	33.40	179.00	3.09	12.70	88.60	0.00	0.00	0.00	2.80	31.30	74.00		COAL	
55.00	2.56	33.00	186.00		COAL		0.00	0.00	0.00		COAL		0.00	0.00	0.00
60.00	3.67	40.80	159.00	0.00	0.00	0.00	0.89	23.40	122.00	0.00	0.00	0.00	0.00	0.00	0.00
65.00	9.24	40.20	97.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00		COAL		0.00	0.00	0.00	0.00	0.00	0.00	1.90	32.40	130.00	1.60	33.40	150.00
75.00	0.00	0.00	0.00	1.77	10.10	109.00	0.00	0.00	0.00	1.70	35.90	140.00	1.60	35.40	150.00
80.00	0.00	0.00	0.00	1.16	18.60	96.70	0.00	0.00	0.00	1.70	42.40	140.00	1.60	39.90	140.00
85.00	4.12	35.90	137.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	3.33	44.10	152.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	6.18	9.93	69.67	1.69	5.08	37.53	3.89	13.45	91.87	1.38	3.45	48.00	3.73	13.74	99.67
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	4.96	36.85	155.48	3.21	13.63	97.90	1.75	8.22	73.82	2.68	32.30	88.50	2.58	37.75	93.50
Worst Case Percentage of Overburden	23.1%			30.0%			58.3%			30.0%			33.3%		
Required Topsoil Replacement Thickness	48			42			24			48			48		

Subsoil Supplement

Worst Case Overburde

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-125R			SHOB-126R			SHOB-127R			SHOB-128R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.62	3.11	83.00	1.20	9.91	90.00	0.00	0.00	0.00	0.56	0.58	69.30
5.00	5.50	5.46	80.00	11.00	13.80	100.00	0.40	1.38	88.10	0.37	1.48	40.40
7.50	11.00	16.40	130.00	10.00	14.20	100.00	0.35	1.32	84.50	0.37	1.49	60.20
10.00	10.00	16.00	88.00	9.10	14.10	130.00	0.68	1.25	93.60	0.45	1.65	60.40
12.50	8.70	14.10	110.00	7.10	10.00	56.00	0.54	1.19	103.00	1.22	5.46	75.10
15.00	7.60	14.70	110.00	5.60	6.23	57.00	0.45	1.66	77.60	1.71	13.00	72.70
17.50	9.40	14.00	96.00	5.30	6.05	60.00	2.97	1.32	141.00	2.07	22.00	53.10
20.00	10.00	15.90	78.00	3.70	7.98	44.00	0.68	2.60	98.60	0.88	11.10	59.70
25.00	7.80	18.80	98.00	5.00	4.98	32.00	1.07	12.10	97.20	0.76	16.00	85.80
30.00	8.70	17.50	84.00	1.90	7.77	36.00	1.21	9.66	101.00	0.00	0.00	0.00
35.00	8.90	39.00	96.00	2.70	7.36	35.00	1.01	9.69	108.00	0.72	10.20	76.50
40.00	7.40	36.30	76.00	3.10	7.49	32.00	0.93	9.35	108.00	0.78	10.80	69.70
45.00	9.00	43.30	82.00	3.10	6.57	34.00	0.68	8.64	86.00	0.77	8.81	51.20
50.00	6.30	39.00	82.00	2.60	9.76	32.00	0.85	8.95	58.80		COAL	
55.00	5.40	55.10	110.00	3.50	6.06	34.00		COAL		1.01	11.50	51.40
60.00	7.10	30.30	46.00	3.00	7.95	32.00	1.12	10.70	67.20	1.52	17.00	52.80
65.00	3.60	41.60	72.00	2.60	10.10	34.00	1.18	14.40	59.70	0.00	0.00	0.00
70.00	2.60	0.00	0.00	5.50	6.60	32.00	5.20	7.50	61.70	0.00	0.00	0.00
75.00	2.10	49.80	93.00	4.90	6.32	33.00	4.24	8.35	48.90	0.00	0.00	0.00
80.00	2.30	53.00	130.00	5.30	8.33	32.00	1.23	18.10	42.50	0.00	0.00	0.00
85.00	2.30	48.20	130.00	5.70	7.18	42.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	1.90	52.70	130.00	5.40	6.61	46.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	1.80	42.30	130.00		COAL		0.00	0.00	0.00	0.00	0.00	0.00
100.00	1.90	40.20	130.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	8.83	12.62	99.33	10.03	14.03	110.00	0.48	1.32	88.73	0.40	1.54	53.67
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	1.98	45.85	130.00	2.93	8.47	33.00	1.06	10.20	103.55	1.02	12.05	57.97
Worst Case Percentage of Overburden	15.0%			23.1%			37.5%			57.1%		
Required Topsoil Replacement Thickness	48			24			24			36		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-129R			SHOB-12C			SHOB-130R			SHOB-131R			SHOB-132R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.67	2.08	91.00	0.78	1.66	77.00	1.00	3.98	57.00
5.00	0.00	0.00	0.00	7.78	6.62	90.50	0.68	1.65	63.00	0.61	6.07	73.00	8.30	21.10	69.00
7.50	0.44	2.03	53.20	0.00	0.00	0.00	0.60	1.80	55.00	4.10	7.40	66.00	13.00	18.50	53.00
10.00	1.59	3.22	61.50	7.38	7.62	63.10	0.63	1.52	59.00	4.40	9.19	71.00	14.00	15.70	66.00
12.50	2.30	7.38	47.00	0.00	0.00	0.00	0.72	1.58	38.00	6.00	9.35	55.00	10.00	13.80	92.00
15.00	0.00	0.00	0.00	4.28	10.80	50.40	0.69	1.40	44.00	5.60	8.18	63.00	9.90	13.60	80.00
17.50	2.21	10.60	48.20	0.00	0.00	0.00	0.86	1.36	40.00	5.40	8.52	57.00	9.20	13.00	98.00
20.00	0.99	18.30	34.60	3.73	10.40	90.90	0.73	1.37	39.00	5.70	8.12	64.00	8.20	12.00	97.00
25.00	4.07	3.92	115.00	1.38	10.90	141.00	0.88	1.55	28.00	6.10	7.47	52.00	8.10	12.60	78.00
30.00	3.61	4.64	56.00	1.28	11.60	159.00		COAL		5.70	5.95	61.00	5.00	14.70	64.00
35.00	1.15	7.53	35.30	1.13	10.70	160.00	0.00	0.00	0.00	4.90	4.44	73.00	3.00	24.30	150.00
40.00	0.00	0.00	0.00	1.94	11.00	101.00	0.00	0.00	0.00		COAL		2.60	30.70	130.00
45.00	2.19	5.08	40.80	1.40	13.60	107.00	1.00	1.38	32.00	1.70	3.36	67.00	3.40	34.20	150.00
50.00		COAL		1.21	18.20	116.00	0.94	1.55	31.00	1.70	3.20	44.00	2.70	41.20	140.00
55.00	1.65	7.19	37.00	1.46	20.50	118.00	0.98	2.37	34.00	1.70	5.83	35.00	2.40	42.70	130.00
60.00	1.35	8.41	61.50	1.58	23.10	125.00	1.10	4.24	36.00	3.10	13.20	62.00	4.40	48.10	110.00
65.00	1.71	7.82	39.20	1.71	21.40	122.00	0.00	0.00	0.00	1.30	12.80	62.00		COAL	
70.00	0.00	0.00	0.00	1.43	25.00	119.00	0.00	0.00	0.00	2.00	17.80	48.00	0.00	0.00	0.00
75.00	0.00	0.00	0.00	1.71	31.20	167.00	0.00	0.00	0.00	1.60	21.00	42.00	0.00	0.00	0.00
80.00	0.00	0.00	0.00	1.82	31.10	138.00	0.00	0.00	0.00	2.30	13.20	37.00	1.90	32.00	120.00
85.00	0.00	0.00	0.00		COAL		0.00	0.00	0.00	1.80	13.00	38.00	3.00	28.00	62.00
90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.30	17.40	39.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80	32.00	46.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	36.40	82.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	0.68	1.75	38.23	5.05	4.75	51.20	0.64	1.66	59.00	3.04	7.55	70.00	11.77	18.43	62.67
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.41	9.00	57.82	1.67	27.18	136.50	0.78	1.45	37.80	5.75	7.93	58.67	3.23	41.55	132.50
Worst Case Percentage of Overburden	50.0%			18.8%			50.0%			58.3%			25.0%		
Required Topsoil Replacement Thickness	24			48			24			24			48		

Subsoil Supplement

Worst Case Overburde

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-133R			SHOB-134R			SHOB-135R			SHOB-136R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.41	1.61	90.60	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.45	3.28	109.00	0.00	0.00	0.00	0.00	0.00	0.00
7.50	0.37	1.21	98.70	0.62	6.89	78.50	2.81	29.50	106.00	5.09	10.10	127.00
10.00	0.69	1.14	97.80	0.61	6.14	142.00	5.83	46.70	130.00	2.35	15.10	237.00
12.50	0.50	1.05	119.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43	11.00	183.00
15.00	0.34	1.28	131.00	0.72	10.80	100.00	0.00	0.00	0.00	2.12	15.40	105.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	4.21	38.50	104.00	1.04	17.70	92.50
20.00	0.69	2.44	84.20	0.86	14.60	69.40	2.58	18.80	42.40	1.07	16.50	88.40
25.00	1.27	8.96	96.70	0.70	9.09	67.90	1.82	14.30	56.30	0.00	0.00	0.00
30.00	3.05	21.10	162.00	0.66	8.12	72.70		COAL		0.00	0.00	0.00
35.00	2.38	20.30	154.00	0.74	7.36	74.80	0.00	0.00	0.00	0.00	0.00	0.00
40.00	1.63	13.70	137.00	0.66	10.40	70.60	0.00	0.00	0.00	0.97	6.81	80.90
45.00	2.04	13.60	129.00	0.94	13.50	54.80	1.89	17.10	39.10		COAL	
50.00		COAL			COAL		2.08	17.50	37.40	0.00	0.00	0.00
55.00	0.00	0.00	0.00	1.44	21.50	40.90	2.19	17.90	53.50	0.00	0.00	0.00
60.00	0.00	0.00	0.00	1.59	19.90	41.50	1.99	17.60	47.80	0.00	0.00	0.00
65.00	0.00	0.00	0.00	1.48	21.40	40.40	4.02	26.00	50.00	1.40	15.00	114.00
70.00	1.67	20.90	122.00	1.58	21.10	41.40	2.00	20.90	77.30	1.47	12.60	112.00
75.00	1.49	24.60	133.00	1.68	21.40	38.70	0.00	0.00	0.00	1.77	16.20	111.00
80.00	0.00	0.00	0.00	2.04	27.00	43.00	0.00	0.00	0.00	0.00	0.00	0.00
85.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	0.35	0.78	65.50	0.56	5.44	109.83	2.88	25.40	78.67	2.48	8.40	121.33
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.28	17.18	145.50	0.75	9.85	68.23	2.87	23.87	67.57	1.92	15.15	117.23
Worst Case Percentage of Overburden	33.3%			33.3%			50.0%			37.5%		
Required Topsoil Replacement Thickness	42			24			48			42		

Subsoil Supplement

Worst Case Overburden

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-137R			SHOB-138R			SHOB-139R			SHOB-13R			SHOB-140R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.67	6.83	148.00	0.31	1.13	92.80	0.58	5.00	151.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.83	2.35	73.10	0.22	0.93	52.60	0.71	5.14	91.10	1.34	10.20	93.20	0.00	0.00	0.00
7.50	1.10	3.91	73.60	0.78	9.28	84.40	0.53	2.75	83.10	0.00	0.00	0.00	7.89	28.90	173.00
10.00	0.73	2.93	75.70	1.28	17.80	94.70	1.30	10.20	67.30	6.11	8.51	79.30	6.10	21.10	229.00
12.50	0.71	3.63	73.70	1.37	21.00	111.00	0.74	14.20	105.00	0.00	0.00	0.00	4.80	25.50	240.00
15.00	1.66	8.44	138.00	1.16	10.60	67.50	0.00	0.00	0.00	3.42	11.80	90.20	0.00	0.00	0.00
17.50		COAL		0.83	7.99	66.90	0.84	20.90	40.20	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	1.04	9.25	53.10	0.79	9.82	105.00	4.00	15.30	75.70	0.00	0.00	0.00
25.00	0.00	0.00	0.00	1.38	9.58	43.90	0.96	8.87	120.00	6.51	15.30	54.10	0.64	11.10	126.00
30.00	2.20	9.38	193.00	1.29	9.83	44.00	1.02	11.80	130.00	7.68	13.70	111.00	0.56	8.81	177.00
35.00	2.59	7.52	149.00	1.37	9.66	43.40	0.94	13.90	114.00	5.14	16.60	137.00	0.69	8.91	178.00
40.00	0.00	0.00	0.00	1.28	10.30	51.60	0.61	6.56	127.00		COAL		0.91	12.20	173.00
45.00	0.00	0.00	0.00		COAL			COAL		0.00	0.00	0.00		COAL	
50.00	0.00	0.00	0.00	1.09	17.50	169.00	0.60	8.69	114.00	2.48	34.40	104.00	1.07	15.20	120.00
55.00	0.00	0.00	0.00	1.21	18.50	169.00	0.80	7.90	89.60	1.27	23.60	114.00	0.94	16.30	114.00
60.00	0.00	0.00	0.00	1.21	19.80	144.00	0.98	8.57	137.00	1.78	30.90	135.00	0.81	14.20	134.00
65.00	0.00	0.00	0.00	1.17	19.30	127.00	1.19	16.30	145.00	0.00	0.00	0.00	0.74	12.20	143.00
70.00	0.00	0.00	0.00	1.12	17.70	134.00	1.84	26.80	150.00	0.00	0.00	0.00	0.72	12.80	154.00
75.00	0.00	0.00	0.00	0.94	17.90	141.00	1.64	23.00	140.00	0.00	0.00	0.00	0.84	15.10	128.00
80.00	0.00	0.00	0.00	1.32	24.70	113.00	1.23	18.50	120.00	0.00	0.00	0.00	0.70	13.40	167.00
85.00	0.00	0.00	0.00	1.12	20.00	129.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	1.30	25.50	101.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	1.11	25.00	119.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	1.33	26.40	103.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	0.89	3.06	74.13	0.76	9.34	77.23	0.85	6.03	80.50	2.48	6.24	57.50	4.66	16.67	134.00
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	0.95	4.68	97.02	1.18	11.38	64.40	0.91	13.06	101.84	5.83	15.23	94.45	0.70	10.26	163.50
Worst Case Percentage of Overburden	83.3%			58.3%			50.0%			50.0%			37.5%		
Required Topsoil Replacement Thickness	24			24			42			36			24		

Subsoil Supplement

Worst Case Overburde

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-141R			SHOB-142R			SHOB-143R			SHOB-144R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.37	0.81	183.00	0.86	4.20	58.00	0.53	0.93	70.00	3.50	0.99	97.70
5.00	4.61	4.07	154.00	1.10	11.80	52.00	2.70	1.60	79.00	0.37	1.03	65.20
7.50	3.69	6.20	155.00	1.50	17.00	81.00	5.30	5.07	69.00	2.10	18.10	99.50
10.00	4.89	5.76	154.00	6.10	25.10	88.00	7.80	11.40	79.00	6.65	22.50	140.00
12.50	7.08	6.38	156.00	5.90	22.30	89.00	14.00	17.40	67.00	4.93	31.40	123.00
15.00	6.90	7.67	172.00	6.00	22.50	92.00	12.00	17.80	83.00	0.00	0.00	0.00
17.50	4.72	4.11	155.00	4.80	28.60	88.00	7.50	9.59	55.00	1.23	11.80	253.00
20.00	4.79	3.65	174.00	2.80	31.20	57.00	4.50	12.00	76.00	5.25	9.79	157.00
25.00	3.68	5.98	135.00	2.40	29.00	64.00	2.40	17.30	140.00	2.60	11.00	67.60
30.00	3.62	5.82	156.00	2.50	25.90	37.00	3.60	17.70	150.00	1.36	11.90	78.90
35.00	1.84	8.27	268.00	1.50	24.80	45.00	3.90	24.50	110.00	0.77	10.20	96.90
40.00	5.86	8.69	197.00	1.20	22.10	52.00	4.20	28.80	66.00	4.95	7.89	110.00
45.00	3.22	13.20	139.00	1.20	23.70	47.00	4.20	34.10	67.00	4.00	8.04	61.00
50.00	3.27	19.20	130.00		COAL		3.00	36.60	80.00	5.33	8.27	77.30
55.00	2.09	22.40	195.00	1.40	23.40	65.00	4.20	39.80	60.00	1.92	8.72	44.10
60.00	2.66	21.60	183.00	1.20	22.50	120.00	3.70	38.70	44.00		COAL	
65.00	1.12	23.20	260.00	0.00	0.00	0.00	2.20	29.10	82.00	1.81	14.30	48.20
70.00	0.64	10.90	634.00	1.50	29.80	150.00		COAL		1.32	16.30	46.00
75.00	1.01	19.80	410.00	1.40	35.50	150.00	0.00	0.00	0.00	1.28	15.00	66.60
80.00	1.30	19.70	231.00	1.70	39.00	94.00	0.00	0.00	0.00	1.62	16.20	50.40
85.00	1.19	63.70	106.00	0.00	0.00	0.00	1.30	38.70	150.00	1.93	16.50	63.00
90.00		COAL		0.00	0.00	0.00	1.50	38.50	140.00	1.75	17.00	62.60
95.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	40.40	94.00	1.81	15.80	56.60
100.00	4.40	24.30	97.50	0.00	0.00	0.00	0.00	0.00	0.00	1.76	15.60	46.80
Subsoil Supplements Average SAR and SP	4.40	5.34	154.33	2.90	17.97	73.67	5.27	6.02	75.67	3.04	13.88	101.57
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	1.04	28.53	345.25	2.80	27.90	58.20	3.78	37.30	62.75	2.24	10.94	130.68
Worst Case Percentage of Overburden	17.6%			50.0%			25.0%			50.0%		
Required Topsoil Replacement Thickness	48			48			48			24		

Subsoil Supplement

Worst Case Overburden

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-14R			SHOB-16R			SHOB-17R			SHOB-18R			SHOB-19R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	3.25	0.49	90.80	0.91	3.47	73.50	9.08	10.00	57.10	3.23	2.24	110.00	9.67	13.40	77.80
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	6.43	4.37	68.90	5.93	5.84	98.20	8.69	14.70	58.10	6.33	10.70	138.00	10.80	16.20	81.60
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	5.65	4.15	69.20	7.88	7.91	98.30	8.73	12.10	88.10	7.15	14.10	133.00	9.45	16.10	98.50
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	2.59	4.06	86.40	8.02	8.25	66.00	10.20	14.60	64.20	13.10	24.60	101.00	8.00	15.60	114.00
25.00	3.47	4.53	68.20	6.17	7.84	72.50	4.54	10.50	143.00	7.53	20.40	142.00	4.40	18.20	121.00
30.00	1.62	9.42	111.00	2.57	12.70	128.00	8.60	11.50	62.00	6.48	23.50	169.00	2.83	25.20	138.00
35.00	2.60	11.60	62.30	2.00	14.20	149.00	5.84	13.20	46.40	4.50	27.00	205.00	1.95	31.50	226.00
40.00	2.24	14.60	54.40	2.22	17.40	143.00	4.50	17.20	40.00	5.33	24.20	154.00	1.86	34.70	105.00
45.00	2.21	20.30	69.90	2.85	17.10	125.00	4.70	16.40	39.20	6.76	25.60	140.00	3.16	41.90	69.90
50.00	2.20	0.00	76.40	7.49	11.80	51.90	2.84	13.90	34.90	6.85	26.90	123.00		COAL	
55.00	1.82	22.30	80.70	5.67	19.30	54.30	4.46	14.00	36.00	6.53	27.70	114.00	0.00	0.00	0.00
60.00	1.87	26.90	80.90	3.82	24.80	63.80	3.81	15.30	35.10	9.17	31.40	109.00	2.74	49.50	77.60
65.00	1.98	33.10	91.20	8.08	13.40	43.70	4.49	11.70	37.60	6.44	35.00	125.00	1.03	18.40	227.00
70.00	2.59	35.00	94.60	5.31	11.20	43.40	2.89	12.20	38.60	6.23	35.50	121.00	1.08	18.50	169.00
75.00		COAL			COAL		3.20	9.13	37.60	5.87	34.20	185.00	0.00	0.00	0.00
80.00	3.70	31.50	78.90	7.20	14.60	69.00	2.43	10.00	42.60	6.95	37.30	152.00	0.00	0.00	0.00
85.00	5.43	43.00	83.90	8.94	17.10	64.70	3.35	7.56	44.00	5.46	39.70	160.00	0.00	0.00	0.00
90.00	1.54	31.20	153.00	3.73	22.60	149.00	1.69	10.20	94.30	5.59	40.80	170.00	0.00	0.00	0.00
95.00	1.71	29.60	174.00	2.38	25.00	161.00	1.38	7.29	129.00	26.50	44.10	64.30	0.00	0.00	0.00
100.00	2.28	37.70	174.00	2.51	28.20	159.00	1.63	18.00	129.00		COAL		0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	3.23	1.62	53.23	2.28	3.10	57.23	5.92	8.23	38.40	3.19	4.31	82.67	6.82	9.87	53.13
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.07	29.33	86.85	4.96	18.25	73.75	4.13	15.38	37.53	11.13	40.48	136.58	2.45	33.33	134.73
Worst Case Percentage of Overburden	21.4%			25.0%			27.3%			15.8%			33.3%		
Required Topsoil Replacement Thickness	48			36			36			48			48		

- Subsoil Supplement
- Worst Case Overburde
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-21C			SHOB-22R			SHOB-23R			SHOB-24R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	2.34	9.94	114.00	9.21	12.10	81.30	4.35	2.56	122.00	0.66	5.40	122.00
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	6.85	11.20	105.00	0.85	8.64	92.50	6.16	5.45	112.00	3.33	10.40	138.00
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	3.77	16.30	167.00	0.79	4.84	137.00	5.15	4.52	108.00	5.72	10.10	114.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	2.90	18.60	196.00	0.60	5.57	109.00	7.09	5.89	102.00	5.98	8.54	55.90
25.00	1.90	18.10	182.00	0.58	7.43	142.00	5.06	5.19	114.00	1.86	3.59	101.00
30.00	1.70	19.40	148.00	0.63	6.25	137.00	1.83	4.20	125.00	1.54	2.82	39.10
35.00	1.46	20.10	183.00	0.63	4.71	53.60	2.10	4.68	95.90	0.84	5.64	105.00
40.00	1.84	20.90	182.00	1.54	5.27	78.30	1.65	7.57	109.00	0.62	11.10	136.00
45.00	2.54	27.10	82.30		COAL		2.48	13.90	151.00	0.74	15.40	164.00
50.00	1.68	21.50	92.40	0.00	0.00	0.00	1.66	19.20	149.00	1.04	17.10	159.00
55.00		COAL		0.00	0.00	0.00	1.58	27.70	159.00	1.04	19.70	153.00
60.00	0.00	0.00	0.00	1.34	22.40	147.00	3.31	37.30	145.00	1.06	17.00	153.00
65.00	0.00	0.00	0.00	1.24	24.50	125.00	2.05	30.40	135.00	0.94	16.60	144.00
70.00	0.00	0.00	0.00	1.91	29.00	143.00	4.79	28.10	184.00		COAL	
75.00	0.00	0.00	0.00	0.00	0.00	0.00	5.22	30.20	154.00	0.00	0.00	0.00
80.00	1.46	25.40	126.00	0.00	0.00	0.00		COAL		0.00	0.00	0.00
85.00	1.48	26.20	119.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	17.10	159.00
90.00	1.99	31.20	87.10	0.00	0.00	0.00	0.00	0.00	0.00	1.13	18.10	163.00
95.00	1.88	29.50	74.00	0.00	0.00	0.00	2.62	31.60	181.00	0.94	15.80	135.00
100.00	1.48	25.70	141.00	0.00	0.00	0.00	3.26	39.70	179.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	3.06	7.05	73.00	3.35	6.91	57.93	3.50	2.67	78.00	1.33	5.27	86.67
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	1.88	22.40	134.93	0.85	5.92	102.73	3.84	31.50	154.50	1.02	17.60	152.25
Worst Case Percentage of Overburden	30.0%			37.5%			20.0%			23.1%		
Required Topsoil Replacement Thickness	48			24			48			42		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-26R			SHOB-27R			SHOB-28R			SHOB-29R			SHOB-31R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.35	0.23	85.90	2.69	1.45	84.00	2.43	3.68	94.60	0.54	0.46	49.60	8.28	11.70	130.00
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.43	0.68	60.80	3.25	1.87	69.80	4.14	6.02	93.50	0.38	0.76	100.00	2.77	24.10	173.00
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	0.43	1.06	54.90	3.39	4.72	55.00	4.90	4.74	87.90	0.58	1.71	46.90	3.37	21.50	164.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.55	0.92	48.00	3.24	8.19	44.20	4.60	4.31	64.40	0.57	5.04	42.40	6.82	14.40	99.80
25.00	0.78	0.82	49.20	3.75	9.35	44.20	1.39	3.68	69.40	0.42	4.67	33.80	14.20	26.10	85.90
30.00	0.35	0.78	45.50	1.79	15.30	48.10	0.79	2.10	57.70	0.88	5.16	81.00	2.96	37.00	160.00
35.00	0.45	0.90	50.60	2.25	12.70	75.60	0.95	1.45	52.50	0.70	6.87	128.00	2.31	30.20	109.00
40.00	0.76	1.12	43.70	2.27	14.00	188.00	1.06	1.10	45.40	1.32	8.05	129.00	1.64	29.40	130.00
45.00	1.96	5.01	53.10	2.38	20.10	138.00	2.97	2.03	53.10	1.17	9.82	149.00	2.02	32.70	107.00
50.00	1.28	5.85	161.00	2.25	23.00	115.00	0.72	0.81	46.40	1.07	14.30	124.00	2.32	37.20	103.00
55.00	1.36	6.39	128.00	2.23	26.30	87.50	0.64	0.77	48.50	1.32	14.00	115.00	1.35	24.50	72.40
60.00	4.90	3.51	60.80	3.28	27.20	80.80	0.56	0.75	60.50		COAL		1.15	20.30	75.30
65.00		COAL			COAL		0.95	1.23	63.10	0.00	0.00	0.00	1.67	25.40	74.80
70.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	1.71	40.20	0.00	0.00	0.00	1.32	21.00	58.80
75.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	2.06	41.50	0.74	16.20	150.00	1.60	30.60	21.60
80.00	3.14	15.80	106.00	2.58	27.90	148.00		COAL		0.90	27.80	162.00	1.94	25.70	56.70
85.00	1.58	18.90	128.00	1.91	24.50	139.00	0.00	0.00	0.00	1.62	34.40	166.00	1.91	27.00	46.60
90.00	1.46	18.70	159.00	0.00	0.00	103.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63	22.90	53.50
95.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78	19.30	152.00	0.00	0.00	0.00	1.91	26.40	43.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	19.20	147.00	0.00	0.00	0.00	1.72	23.80	46.10
Subsoil Supplements Average SAR and SP	0.26	0.30	48.90	1.98	1.11	51.27	2.19	3.23	62.70	0.31	0.41	49.87	3.68	11.93	101.00
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.38	5.19	62.93	2.54	24.15	105.33	2.34	2.97	55.88	1.22	11.54	129.25	2.07	32.38	112.25
Worst Case Percentage of Overburden	25.0%			25.0%			50.0%			27.3%			30.0%		
Required Topsoil Replacement Thickness	24			48			24			24			48		

- Subsoil Supplement
- Worst Case Overburde
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-32R			SHOB-33R			SHOB-34R			SHOB-35R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	6.39	7.10	146.00	2.94	7.85	78.20	0.65	1.08	73.00	0.74	5.19	66.40
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	9.33	10.90	144.00	8.26	19.60	56.60	0.77	2.83	76.90	4.20	10.70	74.30
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	8.00	9.09	134.00	6.65	15.60	77.50	0.53	2.93	47.80	6.98	13.60	115.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	5.10	8.48	130.00	2.85	14.50	166.00	1.00	5.88	90.90	7.62	14.70	108.00
25.00	2.34	12.40	158.00	2.71	23.60	195.00	1.69	10.60	104.00	3.39	15.60	164.00
30.00	3.40	20.30	131.00	1.37	18.30	174.00	1.59	15.30	117.00	1.89	23.80	155.00
35.00	3.57	24.20	164.00	3.79	22.40	108.00	2.26	19.70	147.00	2.68	30.80	129.00
40.00	2.22	22.20	158.00	3.02	27.00	125.00	1.82	21.00	170.00	1.91	24.90	115.00
45.00	1.43	21.00	128.00	5.54	45.70	87.80	1.93	26.70	106.00	3.62	38.40	85.90
50.00	2.52	18.40	124.00		COAL		1.36	20.80	97.60		COAL	
55.00	1.92	21.20	80.20	0.00	0.00	0.00	1.84	23.00	53.50	0.00	0.00	0.00
60.00	1.63	26.40	80.00	0.00	0.00	0.00		COAL		0.00	0.00	0.00
65.00	1.76	23.80	73.00	2.64	42.00	133.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	1.91	26.40	80.00	1.61	29.20	149.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	1.56	24.70	78.60	1.33	26.80	102.00	0.00	0.00	0.00	2.02	32.00	176.00
80.00	1.93	26.40	96.30	0.00	0.00	0.00	0.80	17.90	169.00	1.27	29.80	159.00
85.00	2.26	32.90	103.00	0.00	0.00	0.00	2.24	31.70	103.00	1.37	25.90	142.00
90.00	2.11	34.50	121.00	0.00	0.00	0.00	3.62	47.70	57.50	0.00	0.00	0.00
95.00	1.06	17.30	147.00	0.00	0.00	0.00	2.98	48.30	52.60	0.00	0.00	0.00
100.00	1.29	28.50	146.00	0.00	0.00	0.00	2.79	45.20	43.30	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	5.24	6.00	96.67	3.73	9.15	44.93	0.47	1.30	49.97	1.65	5.30	46.90
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	1.97	29.63	99.73	3.43	28.35	123.70	1.74	22.88	106.78	0.00	29.48	121.23
Worst Case Percentage of Overburden	16.7%			33.3%			27.3%			33.3%		
Required Topsoil Replacement Thickness	48			48			48			48		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-36R			SHOB-37R			SHOB-38R			SHOB-39R			SHOB-40R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	2.96	4.81	98.60	4.15	2.16	117.30	10.50	15.10	77.10	4.93	5.96	70.10	0.42	0.42	33.70
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	7.51	12.40	134.00	6.90	7.67	115.20	7.19	14.50	68.70	8.67	12.90	65.60	0.94	6.08	101.00
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	5.82	8.53	86.00	10.60	11.70	99.10	7.14	16.40	87.40	6.24	13.50	98.40	1.55	7.17	110.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	8.27	10.60	76.50	11.00	10.50	97.40	5.50	13.50	176.00	6.43	14.50	148.00	5.33	5.08	92.50
25.00	2.47	5.69	35.80	8.81	9.70	87.40	2.11	18.60	142.00	2.65	21.00	155.00	7.72	9.73	88.10
30.00	1.26	3.66	36.50	12.30	12.80	54.30	3.52	17.50	72.60	1.87	21.90	144.00	0.00	0.00	0.00
35.00	1.30	3.76	31.20	9.53	15.30	50.40	2.82	17.20	55.10	2.12	29.70	169.00	0.00	0.00	0.00
40.00	2.76	3.63	33.40	5.39	26.60	59.20	6.94	12.90	68.20	3.22	38.00	135.00	3.10	32.60	174.00
45.00	1.61	6.19	39.00	5.74	27.60	129.80	9.56	15.50	98.00	1.39	25.60	94.40	2.96	37.20	166.00
50.00	1.66	9.64	39.40	3.10	31.00	141.30		COAL		2.30	32.70	82.20	2.00	34.10	161.00
55.00	1.70	14.40	112.00	4.47	43.00	69.50	0.00	0.00	0.00	1.69	19.80	71.60		COAL	
60.00	1.79	17.10	131.00	3.76	49.30	88.50	2.12	25.90	171.00		COAL		0.00	0.00	0.00
65.00	1.92	21.40	146.00	8.19	52.30	76.30	1.91	28.50	164.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	2.01	26.60	141.00		COAL		1.78	34.50	135.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	1.91	25.30	102.00	0.00	0.00	0.00	0.00	0.00	0.00	2.64	43.60	144.00	0.00	0.00	0.00
80.00	2.30	34.00	103.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	30.00	162.00	0.00	0.00	0.00
85.00		COAL		3.94	48.90	137.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	2.54	47.70	141.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	2.80	46.20	115.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	1.57	29.00	117.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsoil Supplements Average SAR and SP	3.49	5.74	77.53	3.68	3.28	77.50	5.90	9.87	48.60	4.53	6.29	45.23	0.45	2.17	44.90
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.04	26.83	123.00	4.88	43.90	93.90	3.49	16.70	111.43	2.26	31.50	120.15	2.69	34.63	167.00
Worst Case Percentage of Overburden	18.8%			23.1%			42.9%			30.0%			30.0%		
Required Topsoil Replacement Thickness	48			48			42			48			48		

Subsoil Supplement

Worst Case Overburde

Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-41R			SHOB-42R			SHOB-43R			SHOB-120R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	5.85	4.26	77.30	0.79	3.09	93.60	2.51	8.57	56.70	0.43	1.03	47.70
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	1.04	47.40
10.00	7.43	7.14	82.80	0.84	1.61	102.00	7.11	8.34	116.00	0.53	1.24	52.10
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	1.16	49.00
15.00	6.84	6.76	84.60	0.66	1.36	84.40	6.15	7.32	105.00	0.33	1.27	47.60
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.36	50.10
20.00	6.83	7.41	80.00	0.51	3.00	67.00	8.99	18.40	102.00	0.28	1.66	42.80
25.00	9.35	14.50	89.70	0.66	3.57	57.50	5.98	9.77	75.50	0.27	1.94	43.00
30.00	3.49	17.00	124.00	0.73	4.07	60.70	6.74	16.00	90.00	0.28	2.27	42.10
35.00	1.96	14.50	166.00	1.12	4.94	73.80	3.16	17.20	155.00	0.73	8.30	51.40
40.00	1.65	16.70	144.00		COAL		3.99	23.40	165.00	1.17	11.00	80.60
45.00	3.15	22.90	117.00	0.00	0.00	0.00	3.58	23.50	164.00	1.66	12.10	110.00
50.00		COAL		0.00	0.00	0.00	4.25	26.90	136.00	1.38	15.10	107.00
55.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75	26.30	119.00	1.63	14.00	94.10
60.00	0.00	0.00	0.00	1.07	17.70	172.00	6.43	29.60	104.00	1.29	14.90	124.00
65.00	1.79	20.50	152.00	1.24	20.50	163.00	4.62	21.00	99.80	1.62	12.00	54.40
70.00	1.14	17.20	114.00	1.54	26.00	159.00	8.19	34.20	69.80		COAL	
75.00	1.49	21.60	121.00	0.00	0.00	0.00		COAL		0.00	0.00	0.00
80.00	1.60	19.90	113.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85.00	2.71	26.60	121.00	0.00	0.00	0.00	0.00	0.00	0.00	2.31	14.70	76.30
90.00	2.05	26.30	104.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	15.40	125.00
95.00	1.06	16.40	117.00	0.00	0.00	0.00	3.15	34.90	141.00	1.10	17.70	127.00
100.00	1.15	24.90	70.80	0.00	0.00	0.00	1.84	30.80	144.00	1.22	25.10	151.00
Subsoil Supplements Average SAR and SP	4.43	3.80	53.37	0.54	1.57	65.20	3.21	5.64	57.57	0.44	1.10	49.07
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	2.56	17.78	137.75	0.76	3.90	64.75	5.75	27.78	98.15	1.49	14.03	108.78
Worst Case Percentage of Overburden	33.3%			42.9%			21.4%			25.0%		
Required Topsoil Replacement Thickness	42			24			48			42		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-44R			SHOB-45R			SHOB-46R			SHOB-47R			SHOB-48R		
	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT	EC	SAR	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	6.02	5.24	65.50	0.81	2.09	45.70	3.96	7.65	110.00	4.97	8.92	76.80	11.30	15.80	106.00
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	4.79	8.34	87.00	0.98	3.31	55.00	5.73	9.20	123.00	9.30	16.30	143.00	9.58	16.30	71.50
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	5.80	6.57	65.30	0.98	3.43	100.00	5.63	6.08	154.00	9.34	16.60	120.00	2.89	24.50	168.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	3.59	5.64	73.40	4.01	3.22	86.50	14.50	13.00	79.80	6.36	19.10	153.00	3.51	36.20	153.00
25.00	3.48	5.19	52.70	1.80	5.89	82.80	6.19	8.74	73.00	7.65	26.90	98.90	3.48	39.20	129.00
30.00	2.66	4.77	57.80	1.90	7.90	83.60	2.66	14.90	177.00	6.76	34.30	254.00	4.87	39.90	121.00
35.00	1.12	8.14	60.60	1.99	13.50	91.30	3.14	25.20	174.00	3.24	28.40	96.80	3.44	40.90	149.00
40.00	0.93	9.19	82.60	1.27	13.10	112.00	2.10	24.30	170.00	3.10	29.10	88.10	4.09	47.40	139.00
45.00	1.02	13.00	77.70		COAL		3.14	35.60	107.00		COAL		3.84	41.30	122.00
50.00		COAL		0.00	0.00	0.00	3.88	34.80	77.90	0.00	0.00	0.00	3.81	49.70	154.00
55.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	27.80	76.60	0.00	0.00	0.00	2.36	37.80	151.00
60.00	0.00	0.00	0.00	1.42	18.00	145.00	2.01	22.80	65.90	1.89	26.20	148.00	5.80	56.40	163.00
65.00	0.00	14.50	102.00	2.26	23.50	171.00	2.36	17.80	88.10	1.97	29.40	146.00	6.27	63.20	124.00
70.00	4.32	16.10	84.90	1.40	24.00	160.00		COAL		2.12	32.20	130.00	10.90	62.60	103.00
75.00	1.43	22.20	165.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	33.20	105.00	7.45	42.70	106.00
80.00	2.39	39.90	152.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	12.60	158.00	3.18	44.00	156.00
85.00	1.69	32.80	137.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	22.40	154.00	2.45	35.50	158.00
90.00	1.63	37.20	162.00	0.00	0.00	0.00	2.70	42.30	153.00	1.53	29.20	144.00	3.35	54.10	198.00
95.00	1.55	41.70	169.00	0.00	0.00	0.00	2.44	42.00	192.00	1.93	30.20	113.00	2.27	40.10	173.00
100.00	4.12	32.80	86.90	0.00	0.00	0.00	3.93	46.50	162.00	1.94	28.10	106.00	9.88	70.60	109.00
Subsoil Supplements Average SAR and SP	3.60	4.53	50.83	0.60	1.80	33.57	3.23	5.62	77.67	4.76	8.41	73.27	6.96	10.70	59.17
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	1.43	8.78	69.68	1.74	10.10	92.43	2.79	30.63	107.88	5.19	29.68	134.45	4.49	50.08	159.50
Worst Case Percentage of Overburden	33.3%			37.5%			27.3%			37.5%			15.0%		
Required Topsoil Replacement Thickness	24			24			48			48			48		

- Subsoil Supplement
- Worst Case Overburde
- Outside Pit Boundary

TABLE 4.1-1

OVERBURDEN QUALITY SAMPLE HOLES WITHIN PERMIT BOUNDARY

Sample Segment (feet)	SHOB-20R			SHOB-201R			SHOB-202R		
	EC	SAR	SAT	EC	SAT	SAT	EC	SAT	SAT
2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	2.69	3.01	62.10	0.27	0.84	36.90	4.20	2.10	116.00
7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	5.84	18.70	42.10	0.46	1.10	43.50	8.20	7.10	125.00
12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	1.98	18.90	164.00	0.40	1.60	40.60	7.60	6.60	104.00
17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	2.26	21.20	127.00	0.43	1.70	44.00	6.70	6.20	104.00
25.00	4.27	19.20	116.00	0.39	2.10	44.00	5.50	6.50	174.00
30.00	2.47	26.20	155.00	0.57	1.90	46.20	4.10	11.90	205.00
35.00	3.46	36.40	168.00	1.20	4.20	90.20	3.80	14.10	149.00
40.00	2.42	32.10	142.00	0.97	6.00	132.00	2.90	18.60	135.00
45.00		COAL		1.30	7.20	165.00	3.90	24.10	125.00
50.00	0.00	0.00	0.00	1.30	7.80	179.00	2.40	21.80	151.00
55.00	0.00	0.00	0.00	1.00	12.10	170.00	1.80	24.30	178.00
60.00	4.10	36.60	83.00	5.90	13.00	183.00	2.70	32.20	135.00
65.00	2.75	41.00	109.00	0.00	0.00	0.00	1.70	20.90	146.00
70.00	2.38	39.70	140.00	1.20	15.40	201.00	3.40	39.10	92.60
75.00	0.00	0.00	0.00	6.20	13.80	246.00	2.10	28.10	119.00
80.00	0.00	0.00	0.00	1.50	22.90	191.00	COAL		
85.00	0.00	0.00	0.00	1.60	24.30	194.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	1.60	22.00	182.00	0.00	0.00	0.00
95.00	0.00	0.00	0.00	1.80	24.80	126.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	1.20	21.40	137.00	1.60	16.50	185.00
Subsoil Supplements Average SAR and SP	2.84	7.24	34.73	0.24	0.65	26.80	4.13	3.07	80.33
Available Subsoil Supplement in 10 Acre Area (5 foot depth)	80,700			80,700			80,700		
Projected Worst Case OB Average EC, SAR and SAT	3.16	28.48	145.25	1.55	23.13	159.75	2.48	30.08	123.15
Worst Case Percentage of Overburden	37.5%			15.0%			20.0%		
Required Topsoil Replacement Thickness	48			48			48		

- Subsoil Supplement
- Worst Case Overburden
- Outside Pit Boundary

