APPENDIX A

GEOTRANS MODEL SIMULATIONS



APPENDIX A.1

GEOTRANS DEWATERING MODEL SIMULATIONS

- GeoTrans was tasked with performing modeling simulations to evaluate the flow rates needed to dewater the four source areas and the associated volumes. The existing calibrated groundwater flow model and ZONEBUDGET were used for these simulations. The following list contains assumptions for these simulations:
 - Each source area has five days to start excavation before dewatering occurs;
 - Excavation time for each of the source areas are 55 days for Drip Track, 80 days for North Lagoon, 105 days for South Lagoon, and 110 days for Process Area;
 - Order of excavation occurs in a counter-clockwise fashion starting with the Drip Track Area;
 - Dewatering occurs 24 hours a day, 7 days a week;
 - The split between dewatering and quasi steady state approximately occurs when the water levels plateau; and
 - Given the time frame for excavation, true steady-state conditions cannot occur, thus, the term quasi steady state is used.
- 2. Figures A.1 through A.4 show the temporal water levels near the center of each of the four source areas. For the North Lagoon and Process Area, water levels decline a couple of feet before dewatering starts due to dewatering in the Drip Track and South Lagoon source areas. This influence of drains in other source areas is also evident in the dewatering flow rates, volumes, and times shown in Table 1. Table A.1 also presents quasi steady-state flow rates and volumes. Tables A.2 to A.5 show flow rates and volumes for each time step in the model where the drains for a particular source area were in operation. The total flow rate into the drains is a combination of horizontal flow in the Surficial Aquifer (flow rate into drains in Tables A.2 to A.5) and vertical flow from the underlying Hawthorn Clay (Upward flow from UHG Clay in Tables A.2 to A.5) due to a reversal in the vertical hydraulic gradient. The time step was decreased to 2 hours for the first stress period (2 days in duration) where dewatering was occurring to obtain a more accurate estimate of the dewatering flow rate. Note the model will tend to under predict dewatering flow rates, volumes, and times for the following reasons:
 - MODFLOW cannot account for gravity drainage during dewatering;



- Fine-grained sediment layers in the Surficial Aquifer will increase dewatering time; and
- Sediments will approach 100 percent saturation; therefore, drippage will occur while excavating.



TABLE A.1 SUMMARY OF DEWATERING/ QUASI STEADY-STATE RATES AND VOLUMES

Source Area	Average Dewatering Flow Rate (gpm)	Dewatering Volume (gallons)	Approximate Time for Dewatering (days)	Average Quasi Steady- State Flow Rate (gpm)	Quasi Steady-State Volume (gallons)
Drip Track	90	2,595,951	20	57	2,293,496
North Lagoon	70	2,010,093	20	38	2,863,887
South Lagoon	80	4,031,365	35	42	3,812,092
Process Area	51	1,257,904	17	29	3,581,920



TABLE A.2 DEWATERING RATES AND VOLUMES FROM DRIP TRACK AREA

Excavation Time	Flow Rate into	Upward flow	Total Flow Rate	Volume
(days)	Drains	from UHG Clay	(gpm)	(gallons)
(uays)	(gpm)	(gpm)	(gpiii)	(ganons)
2.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.08	371.90	0.00	371.90	44,627.72
5.17	342.79	0.00	342.79	41,134.92
5.25	319.37	0.00	319.37	38,324.11
5.33	299.91	0.01	299.92	35,990.43
5.42	283.34	0.04	283.38	34,005.37
5.50	268.95	0.06	269.01	32,280.76
5.58	256.25	0.08	256.32	30,758.65
5.67	244.91	0.09	245.00	29,399.84
5.75	234.69	0.12	234.80	28,176.45
5.83	225.40	0.13	225.53	27,063.32
5.92	216.90	0.14	217.05	26,045.46
6.00	209.10	0.15	209.25	25,110.39
6.08	201.91	0.16	202.07	24,248.15
6.17	195.24	0.17	195.41	23,449.39
6.25	189.05	0.18	189.23	22,707.28
6.33	183.29	0.18	183.47	22,016.83
6.42	177.91	0.19	178.10	21,372.44
6.50	172.88	0.20	173.08	20,769.76
6.58	168.17	0.21	168.38	20,205.95
6.67	163.75	0.21	163.97	19,675.89
6.75	159.60	0.22	159.81	19,177.72
6.83	155.69	0.22	155.91	18,709.43
6.92	152.01	0.23	152.23	18,267.92
7.00	148.53	0.24	148.77	17,851.87
8.00	122.89	0.25	123.14	177,321.46
9.00	106.39	0.27	106.66	153,587.67
10.00	95.29	0.28	95.57	137,623.60
12.00	82.94	0.29	83.23	239,689.75
15.00	73.32	0.29	73.61	317,978.90
17.00	69.06	0.29	69.35	199,713.85
20.00	65.03	0.28	65.32	282,171.36
22.00	63.03	0.28	63.31	182,340.11
25.00	60.87	0.28	61.15	264,154.04
27.00	59.72	0.28	60.00	172,795.24
30.00	58.39	0.28	58.67	253,439.25
32.00	56.83	0.27	57.10	164,447.73
35.00	54.94	0.27	55.21	238,499.60
37.00	53.87	0.27	54.13	155,900.07
40.00	52.50	0.26	52.76	227,935.39
42.00	51.69	0.26	51.95	149,621.71
45.00	50.63	0.26	50.89	219,858.48
47.00	50.02	0.26	50.28	144,806.46
50.00	50.02	0.26	50.27	217,184.36
52.00	48.65	0.26	48.91	140,846.77
55.00	47.93	0.25	48.19	208,161.18



TABLE A.3 DEWATERING RATES AND VOLUMES FROM NORTH LAGOON

2.00 5.00 5.08 5.17 5.25 5.33 5.42 5.50 5.58 5.67 5.75 5.83 5.92 6.00 6.08 6.17 6.25 6.33 6.42 6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00 37.00	(gpm) 0.00 0.00 269.88 250.19 234.09 221.07 209.76 200.30 191.98 184.56 177.89 171.82 166.27 161.15 156.41 152.00 147.87 144.01 140.37 136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39 76.90	(gpm) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.05 0.06	0.00 0.00 269.88 250.19 234.09 221.07 209.76 200.30 191.98 184.56 177.89 171.82 166.27 161.16 156.42 152.01 147.88 144.03 140.39 136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	0.00 0.00 32,385.17 30,022.57 28,090.71 26,527.90 25,171.43 24,036.26 23,037.60 22,147.62 21,346.73 20,618.76 19,952.48 19,338.67 18,769.81 18,240.85 17,746.06 17,283.10 16,846.90 16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44 124,494.48
5.08 5.17 5.25 5.33 5.42 5.50 5.58 5.67 5.75 5.83 5.92 6.00 6.08 6.17 6.25 6.33 6.42 6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	0.00 269.88 250.19 234.09 221.07 209.76 200.30 191.98 184.56 177.89 171.82 166.27 161.15 156.41 152.00 147.87 144.01 140.37 136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 269.88 250.19 234.09 221.07 209.76 200.30 191.98 184.56 177.89 171.82 166.27 161.16 156.42 152.01 147.88 144.03 140.39 136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	32,385.17 30,022.57 28,090.71 26,527.90 25,171.43 24,036.26 23,037.60 22,147.62 21,346.73 20,618.76 19,952.48 19,338.67 18,769.81 18,240.85 17,746.06 17,283.10 16,846.90 16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36
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5.17 5.25 5.33 5.42 5.50 5.58 5.67 5.75 5.83 5.92 6.00 6.08 6.17 6.25 6.33 6.42 6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	250.19 234.09 221.07 209.76 200.30 191.98 184.56 177.89 171.82 166.27 161.15 156.41 152.00 147.87 144.01 140.37 136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	250.19 234.09 221.07 209.76 200.30 191.98 184.56 177.89 171.82 166.27 161.16 156.42 152.01 147.88 144.03 140.39 136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	30,022.57 28,090.71 26,527.90 25,171.43 24,036.26 23,037.60 22,147.62 21,346.73 20,618.76 19,952.48 19,338.67 18,769.81 18,240.85 17,746.06 17,283.10 16,846.90 16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
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6.25 6.33 6.42 6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	147.87 144.01 140.37 136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.05	147.88 144.03 140.39 136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	17,746.06 17,283.10 16,846.90 16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.33 6.42 6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	144.01 140.37 136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.05	144.03 140.39 136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	17,283.10 16,846.90 16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.42 6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	140.37 136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.05	140.39 136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	16,846.90 16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.50 6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	136.95 133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.05	136.97 133.73 130.67 127.77 125.02 122.40 119.90 99.93	16,436.24 16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.58 6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	133.71 130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.02 0.02 0.02 0.02 0.03 0.03 0.05	133.73 130.67 127.77 125.02 122.40 119.90 99.93	16,048.00 15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.67 6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	130.66 127.75 124.99 122.37 119.88 99.88 86.39	0.02 0.02 0.02 0.03 0.03 0.05	130.67 127.77 125.02 122.40 119.90 99.93	15,680.94 15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.75 6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	127.75 124.99 122.37 119.88 99.88 86.39	0.02 0.02 0.03 0.03 0.05	127.77 125.02 122.40 119.90 99.93	15,332.73 15,001.92 14,687.96 14,388.36 143,894.44
6.83 6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	124.99 122.37 119.88 99.88 86.39	0.02 0.03 0.03 0.05	125.02 122.40 119.90 99.93	15,001.92 14,687.96 14,388.36 143,894.44
6.92 7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	122.37 119.88 99.88 86.39	0.03 0.03 0.05	122.40 119.90 99.93	14,687.96 14,388.36 143,894.44
7.00 8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	119.88 99.88 86.39	0.03 0.05	119.90 99.93	14,388.36 143,894.44
8.00 9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	99.88 86.39	0.05	99.93	143,894.44
9.00 10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	86.39	+		
10.00 12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00		0.06		124,494,48
12.00 15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	76.90		86.45	,
15.00 17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00		0.08	76.99	110,862.74
17.00 20.00 22.00 25.00 27.00 30.00 32.00 35.00	65.81	0.11	65.92	189,852.89
20.00 22.00 25.00 27.00 30.00 32.00 35.00	56.98	0.13	57.11	246,725.88
22.00 25.00 27.00 30.00 32.00 35.00	53.10	0.14	53.24	153,323.11
25.00 27.00 30.00 32.00 35.00	49.51	0.15	49.66	214,519.59
27.00 30.00 32.00 35.00	47.77	0.15	47.92	138,021.47
30.00 32.00 35.00	45.97	0.15	46.12	199,259.36
32.00 35.00	45.03	0.15	45.18	130,119.75
35.00	43.97	0.15	44.12	190,607.25
	43.40	0.15	43.55	125,433.93
	42.70	0.15	42.85	185,106.46
	41.11	0.15	41.26	118,827.17
40.00	39.51	0.14	39.66	171,322.22
42.00	38.65	0.14	38.79	111,724.55
45.00	37.59	0.14	37.73	162,997.22
47.00	36.96	0.13	37.10	106,845.93
50.00	36.14	0.13	36.27	156,673.50
52.00	35.63	0.13	35.76	102,988.30
55.00	34.94	0.13	35.06	151,470.02
57.00	34.50	0.13	34.63	99,724.33
60.00	33.90	0.13	34.02	146,973.11
62.00	33.52	0.12	33.64	96,870.35
65.00	32.98	0.12	33.09	
	32.98	+		142,968.85
67.00		0.12	32.36	93,210.07
70.00	31.42	0.11	31.53	136,203.55
72.00	20.02	0.11	31.03	89,368.75
75.00	30.92		30.37	131,212.10 86,282.39
77.00 80.00	30.92 30.27 29.85	0.11 0.10	29.96	



TABLE A.4 DEWATERING RATES AND VOLUMES FROM SOURTH LAGOON

Excavation Time (days)	Flow Rate into Drains	Upward flow from UHG Clay	Total Flow Rate (gpm)	Volume (gallons)
	(gpm)	(gpm)		
2.00 5.00	0.00	0.00	0.00	0.00
5.08	400.83	0.00	400.83	48,099.32
5.17	372.13	0.00	372.13	44,655.77
5.25	349.25	0.00	349.25	41,910.41
5.33	330.87	0.00	330.87	39,704.89
5.42	314.87	0.00	314.87	37,784.26
5.50	301.50	0.00	301.50	36,180.31
5.58	289.33	0.00	289.33	34,719.11
5.67	278.88	0.00	278.88	33,466.11
5.75	269.42	0.00	269.43	32,331.08
5.83	260.78	0.00	260.78	31,293.32
5.92	252.82	0.00	252.82	30,338.55
6.00	245.45	0.01	245.45	29,454.18
6.08	238.59	0.01	238.60	28,631.44
6.17	232.18	0.01	232.19	27,863.08
6.25	226.17	0.01	226.18	27,142.05
6.33	220.52	0.01	220.53	26,463.34
6.42	215.18	0.01	215.19	25,823.22
6.50	210.13	0.02	210.15	25,217.53
6.58	205.35	0.02	205.36	24,643.62
6.67	200.81	0.02	200.82	24,098.96
6.75	196.48	0.02	196.50	23,580.48
6.83	192.36	0.02	192.39	23,086.31
6.92	188.44	0.02	188.46	22,615.40
7.00	184.68	0.03	184.71	22,164.83
8.00	153.77	0.05	153.82	221,504.49
9.00	132.33	0.08	132.40	190,660.77
10.00	116.82	0.10	116.92	168,360.76
12.00	97.79	0.14	97.93	282,037.78
15.00	81.61	0.17	81.78	353,284.90
17.00	74.32	0.18	74.50	214,569.39
20.00	67.12	0.19	67.31	290,784.38
22.00 25.00	63.43 59.35	0.19 0.19	63.63 59.54	183,243.85 257,196.16
27.00	57.11	0.19	57.30	165,015.75
30.00	54.43	0.19	54.62	235,943.20
32.00	52.90	0.19	53.08	152,876.45
35.00	50.97	0.18	51.14	220,945.18
37.00	49.84	0.18	50.01	144,031.16
40.00	48.36	0.17	48.53	209,642.84
42.00	47.48	0.17	47.65	137,232.29
45.00	46.30	0.16	46.46	200,703.66
47.00	45.71	0.16	45.87	132,103.04
50.00	44.91	0.16	45.07	194,710.21
52.00	44.38	0.15	44.53	128,248.55
55.00	43.67	0.15	43.82	189,318.58
57.00	43.22	0.14	43.36	124,876.94
60.00	42.59	0.14	42.74	184,621.61
62.00	42.18	0.14	42.32	121,886.03
65.00	41.64	0.14	41.78	180,490.75
67.00	41.28	0.13	41.41	119,252.80
70.00	40.79	0.13	40.92	176,753.03
72.00	40.48	0.13	40.61	116,944.90
75.00	40.02	0.13	40.15	173,446.50
77.00	39.64	0.12	39.76	114,515.68
80.00	39.64	0.12	39.76	171,760.05
82.00	39.64	0.12	39.76	114,504.52
85.00	38.31	0.12	38.43	166,020.94
87.00	38.02	0.12	38.13	109,824.57
90.00	37.61	0.11	37.73	162,976.68
92.00 95.00	37.35	0.11	37.46	107,894.55
95.00	36.98 36.74	0.11 0.11	37.09 36.85	160,243.13 106,127.99
100.00	36.40	0.11	36.51	157,735.77
102.00	36.19	0.11	36.29	104,523.47
105.00	35.87	0.09	35.97	155,376.12
103.00	33.07	0.09	33.71	133,370.12

TABLE A.5 DEWATERING RATES AND VOLUMES FROM FORMER PROCESS AREA

Excavation Time (days)	Flow Rate into Drains	Upward flow from UHG Clay	Total Flow Rate (gpm)	Volume (gallons)
	(gpm)	(gpm)		. ,
2.00 5.00	0.00	0.00	0.00	0.00
5.08	218.04	0.00	218.04	26,165.10
5.17	198.91	0.00	198.91	23,869.19
5.25	183.26	0.00	183.26	21,990.95
5.33	170.24	0.00	170.24	20,429.38
5.42	159.28	0.00	159.28	19,113.43
5.50	149.91	0.00	149.91	17,988.85
5.58	141.82	0.00	141.82	17,018.25
5.67	134.76	0.00	134.76	16,171.08
5.75	128.54	0.00	128.54	15,424.90
5.83	123.02	0.00	123.02	14,762.87
5.92	118.09	0.00	118.09	14,170.66
6.00	113.65	0.00	113.65	13,637.67
6.08	109.63 105.96	0.00	109.63 105.96	13,155.17 12,715.69
6.25	103.96	0.00	103.96	12,713.69
6.33	99.53	0.00	99.53	11,943.32
6.42	96.68	0.00	96.68	11,601.71
6.50	94.05	0.00	94.05	11,285.66
6.58	91.60	0.00	91.60	10,991.44
6.67	89.31	0.00	89.31	10,717.20
6.75	87.17	0.00	87.17	10,460.41
6.83	85.16	0.00	85.16	10,219.20
6.92	83.27	0.00	83.27	9,992.96
7.00	81.49	0.00	81.49	9,779.18
8.00	67.96	0.01	67.96	97,868.51
9.00	58.86	0.02	58.87	84,777.98
10.00	52.45	0.02	52.47	75,563.36
12.00	44.89	0.04	44.93	129,387.85
15.00	38.85	0.06	38.92	168,122.06
17.00	36.23	0.08	36.31	104,574.64
20.00	33.90	0.10	34.00	146,865.44
22.00 25.00	32.81 31.79	0.11 0.12	32.93 31.92	94,826.53 137,873.14
27.00	31.31	0.12	31.44	90,560.62
30.00	30.84	0.13	30.97	133,797.04
32.00	30.25	0.13	30.38	87,501.89
35.00	29.68	0.14	29.81	128,794.23
37.00	29.35	0.14	29.49	84,933.29
40.00	28.97	0.14	29.11	125,754.17
42.00	28.75	0.14	28.88	83,183.87
45.00	28.45	0.14	28.59	123,509.43
47.00	28.27	0.13	28.40	81,800.99
50.00	28.02	0.13	28.15	121,606.10
52.00	27.86	0.13	27.99	80,620.80
55.00	27.64	0.13	27.77	119,962.19
57.00	27.49	0.13	27.62	79,555.40
60.00	27.29	0.13	27.41	118,424.46
62.00 65.00	27.10 26.87	0.13 0.12	27.23 26.99	78,422.86 116,612.88
67.00	26.69	0.12	26.82	77,231.51
70.00	26.46	0.12	26.58	114,810.61
72.00	26.31	0.12	26.42	76,103.01
75.00	26.09	0.12	26.21	113,226.73
77.00	25.95	0.11	26.07	75,071.66
80.00	25.75	0.11	25.86	111,732.52
82.00	25.62	0.11	25.73	74,116.40
85.00	25.43	0.11	25.54	110,337.88
87.00	25.31	0.11	25.42	73,195.84
90.00	25.12	0.11	25.23	108,992.03
92.00	26.02	0.10	26.12	75,222.10
95.00	26.83	0.10	26.93	116,324.10
97.00	27.30	0.10	27.39	78,894.57
100.00	27.92	0.10	28.02	121,031.17
	28.30	0.10	28.41	81,807.33
102.00				
102.00 105.00 107.00	28.86 29.23	0.10 0.11	28.97 29.33	125,138.35 126,721.45

Figure A.1
Drip Track Water Level Elevations

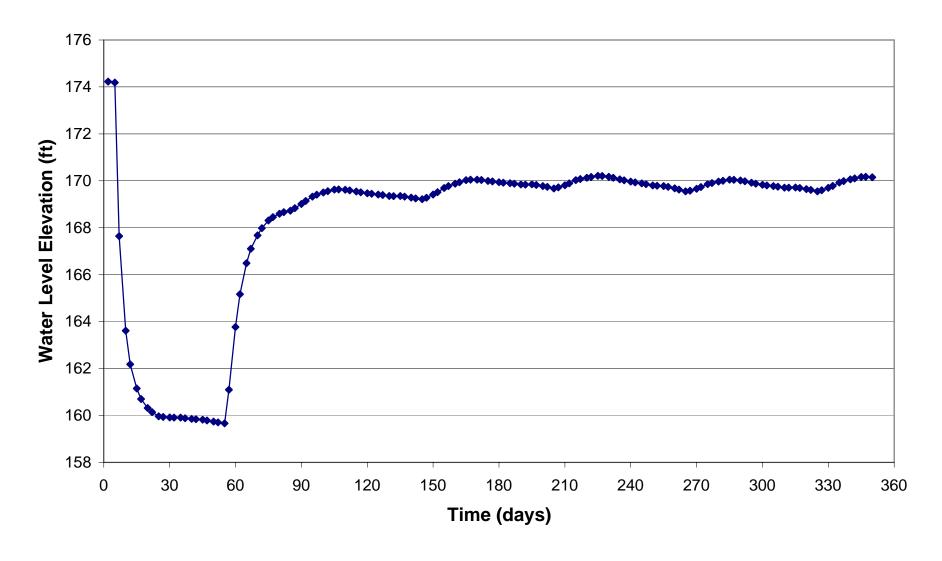


Figure A.2
North Lagoon Water Level Elevations

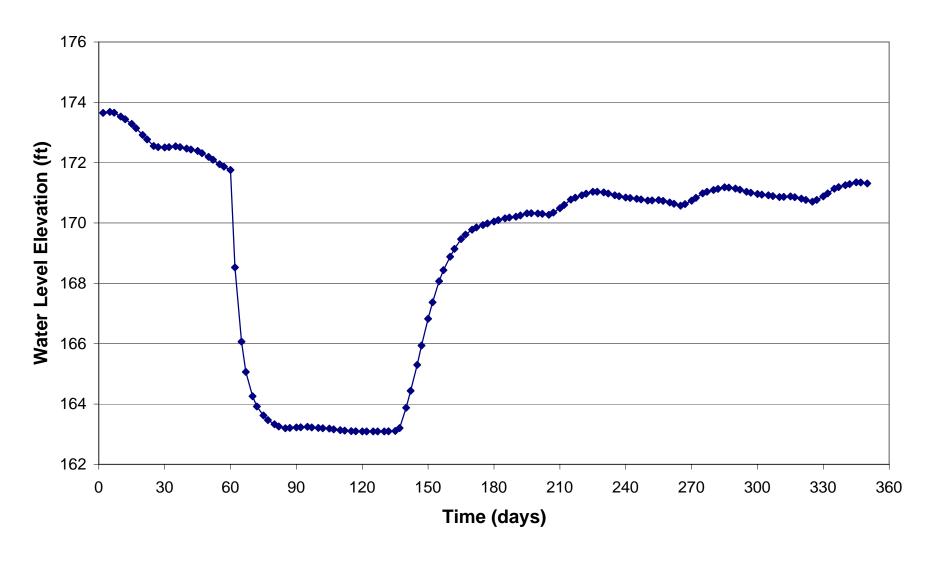


Figure A.3
South Lagoon Water Level Elevations

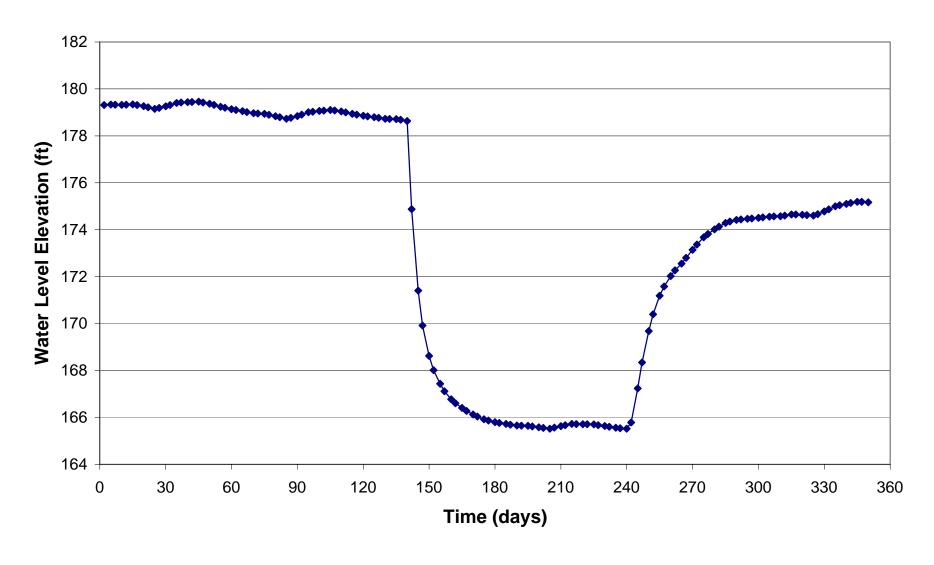
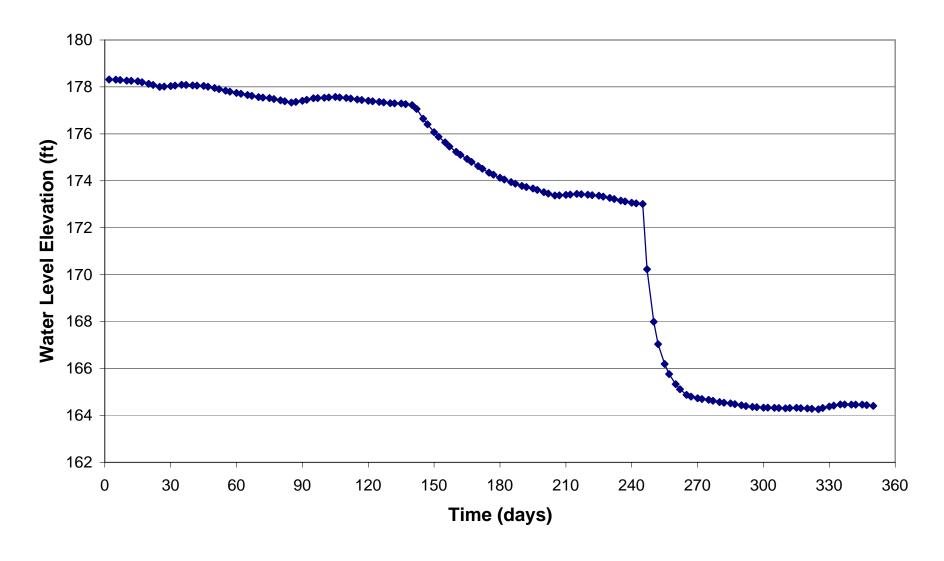


Figure A.4
Process Area Water Level Elevations



APPENDIX A.2

GEOTRANS RISK REDUCTION MODEL SIMULATIONS

GeoTrans was tasked with performing modeling simulations to evaluate COI concentrations after source removal. The existing calibrated groundwater flow and transport model was used for these simulations. The following list contains assumptions for the model simulations:

- A point source of $0.0~\mu g/L$ of naphthalene in the four source areas was simulated using the naphthalene steady-state distribution from the modeling report as an initial condition.
- A point source of $0.0 \,\mu\text{g/L}$ of arsenic in the Process Area was simulated using the arsenic distribution from the modeling report as an initial condition.
- Soil used as fill after excavation was "contaminant free" and fully saturated.

Figure 5.2 of the main report shows the naphthalene distribution after 15 years. Naphthalene has migrated toward the extraction well system and has biodegraded to less than 40 ppb on and offsite. Source removal in the Surficial Aquifer has a negligible effect on concentrations in the Upper Hawthorn, Lower Hawthorn, and Upper Floridan Aquifer due to the presence of DNAPL sources in Upper and Lower Hawthorn groups beneath the source areas.

Figure 5.3 of the main report shows the arsenic distribution after 100 years. Since arsenic does not biodegrade, the plume slowly migrates toward the extraction well system. The peak arsenic concentration has decreased from 5,280 to approximately 1,100 μ g/L in the Surficial Aquifer. Arsenic concentrations in the Hawthorn Group show a minimal reduction due to source removal in the Surficial Aquifer.



APPENDIX B

TRAFFIC SAFETY FACTS 2002



DOT HS 809 608

Traffic Safety Facts 2002

U.S. Department of Transportation
National Highway Traffic
Safety Administration



Large Trucks





"One out of nine traffic fatalities in 2002 resulted from a collision involving a large truck."

A Public Information Fact Sheet on Motor Vehicle and Traffic Safety Published by the National Highway Traffic Safety Administration's National Center for Statistics and Analysis

In 2002, 434,000 large trucks (gross vehicle weight rating greater than 10,000 pounds) were involved in traffic crashes in the United States; 4,542 were involved in fatal crashes. A total of 4,897 people died (11 percent of all the traffic fatalities reported in 2002) and an additional 130,000 were injured in those crashes.

In 2001, large trucks accounted for 4 percent of all registered vehicles and 7 percent of total vehicle miles traveled (2002 registered vehicle and vehicle miles traveled data not available). In 2002, large trucks accounted for 8 percent of all vehicles involved in fatal crashes and 4 percent of all vehicles involved in injury and property-damage-only crashes.

Table 1. Involvement in Fatal and Injury Crashes and Involvement Rates for Large Trucks, 1992-2002

Year	Number of Large Trucks involved in Fatal Crashes	Number of Large Trucks Registered	Vehicle Involvement Rate*	Vehicle Miles Traveled	Vehicle Involvement Rate**
		-		(millions)	
1992	4,035	6,045,205	66.75	153,384	2.63
1993	4,328	6,088,155	71.09	159,888	2.71
1994	4,644	6,587,885	70,49	170,216	2.73
1995	4,472	6,719,421	66.55	178,156	2.51
1996	4,755	7,012,615	67.81	182,971	2.60
1997	4,917	7,083,326	69.42	191,477	2.57
1998	4,955	7,732,270	64.08	196,380	2.52
1999	4,920	7,791,426	63.15	202,688	2.43
2000	4,995	8,022,649	62.26	205,520	2.43
2001	4,823	7,857,674	61.38	207,686	2.32
2002	4,542	_	_		
	day care in the annual entire and an annual entire	Onto Deliver Service Services	- 2/2002 A SECOND COMPANY AND ADDRESS OF THE PARTY OF THE	Position and Augustian Security (1974) 1972 (1974)	A STATE OF THE STA
	Number of Large	Number of	Vehicle	Vehicle Miles	Vehicle
V	Trucks Involved	Large Trucks	Involvement	Traveled	Involvement
Year	Trucks Involved in Injury Crashes	Large Trucks Registered	Involvement Rate*	Traveled (millions)	Involvement Rate**
1992	Trucks involved in Injury Crashes 95,000	Large Trucks Registered 6,045,205	Involvement Rate* 1,567	Traveled (millions) 153,384	Involvement Rate**
1992 1993	Trucks involved in Injury Crashes 95,000 97,000	Large Trucks Registered 6,045,205 6,088,155	Involvement Rate* 1,567 1,585	Traveled (millions) 153,384 159,888	Involvement Rate** 62 60
1992 1993 1994	Trucks Involved in Injury Crashes 95,000 97,000 96,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885	Involvement Rate* 1,567 1,585 1,452	Traveled (millions) 153,384 159,888 170,216	Involvement Rate** 62 60 56
1992 1993 1994 1995	Trucks Involved In Injury Crashes 95,000 97,000 96,000 84,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885 6,719,421	Involvement Rate* 1,567 1,585 1,452 1,244	Traveled (millions) 153,384 159,888	62 60 56 47
1992 1993 1994	Trucks Involved in Injury Crashes 95,000 97,000 96,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885	Involvement Rate* 1,567 1,585 1,452	Traveled (millions) 153,384 159,888 170,216	Involvement Rate** 62 60 56
1992 1993 1994 1995	Trucks Involved In Injury Crashes 95,000 97,000 96,000 84,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885 6,719,421	Involvement Rate* 1,567 1,585 1,452 1,244	Traveled (millions) 153,384 159,888 170,216 178,156	62 60 56 47
1992 1993 1994 1995 1996	Trucks Involved in Injury Crashes 95,000 97,000 96,000 84,000 94,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885 6,719,421 7,012,615	Involvement Rate* 1,567 1,585 1,452 1,244 1,339	Traveled (millions) 153,384 159,888 170,216 178,156 182,971	62 60 56 47 51
1992 1993 1994 1995 1996 1997	Trucks Involved in Injury Crashes, 95,000 97,000 96,000 84,000 94,000 96,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885 6,719,421 7,012,615 7,083,326	Involvement Rate* 1,567 1,585 1,452 1,244 1,339 1,349	Traveled (millions) 153,384 159,888 170,216 178,156 182,971 191,477	62 60 56 47 51 50
1992 1993 1994 1995 1996 1997	Trucks involved in injury Crashes 95,000 97,000 96,000 84,000 94,000 96,000 89,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885 6,719,421 7,012,615 7,083,326 7,732,270	Involvement Rate* 1,567 1,585 1,452 1,244 1,339 1,349 1,146	Traveled (millions) 153,384 159,888 170,216 178,156 182,971 191,477 196,380	62 60 56 47 51 50 45
1992 1993 1994 1995 1996 1997 1998 1999	Trucks involved in injury Crashes 95,000 97,000 96,000 84,000 94,000 96,000 89,000 101,000	Large Trucks Registered 6,045,205 6,088,155 6,587,885 6,719,421 7,012,615 7,083,326 7,732,270 7,791,426	Involvement Rate* 1,567 1,585 1,452 1,244 1,339 1,349 1,146 1,292	Traveled (millions) 153,384 159,888 170,216 178,156 182,971 191,477 196,380 202,688	62 60 56 47 50 45 50

^{*}Rate per 100,000 registered vehicles.

Source: Vehicle miles traveled and registered vehicles — Federal Highway Administration.

^{**}Rate per 100 million vehicle miles traveled.

^{--- =} not available.

One out of nine traffic fatalities in 2002 resulted from a collision involving a large truck.

Of the fatalities that resulted from crashes involving large trucks, 79 percent were occupants of another vehicle, 7 percent were nonoccupants, and 14 percent were occupants of a large truck.

Of the injuries that resulted from crashes involving large trucks, 77 percent were occupants of another vehicle, 3 percent were nonoccupants, and 20 percent were occupants of a large truck.

Table 2. Fatalities and Injuries in Crashes Involving Large Trucks, 2002

Type of Fatality	Number	Percentage of Total
Occupants of Large Trucks	684	14
Single-Vehicle Crashes	447	9
Multiple-Vehicle Crashes	237	5
Occupants of Other Vehicles in Crashes Involving Large Trucks	3,853	79
Nonoccupants (Pedestrians, Pedalcyclists, etc.)	360	7
Total	4,897	100
Type of Injury	Number	Percentage of Total
Type of Injury Occupants of Large Trucks	Number 26,000	Percentage of Total
Occupants of Large Trucks	26,000	20
Occupants of Large Trucks Single-Vehicle Crashes	26,000 12,000	20 9
Occupants of Large Trucks Single-Vehicle Crashes Multiple-Vehicle Crashes Occupants of Other Vehicles	26,000 12,000 14,000	20 9 11

Large trucks were much more likely to be involved in a fatal multiple-vehicle crash — as opposed to a fatal single-vehicle crash — than were passenger vehicles (84 percent of all large trucks involved in fatal crashes, compared with 61 percent of all passenger vehicles).

In 29 percent of the two-vehicle fatal crashes involving a large truck and another type of vehicle, both vehicles were impacted in the front. The truck was struck in the rear nearly 2.5 times as often as the other vehicle (17 percent and 7 percent, respectively).

Table 3. Principal Impact Points in Two-Vehicle Fatal Crashes Involving Large Trucks, 2002

	<u> </u>	lmpact	Point on Other	Vehicle	
Impact Point on Large Truck	Front	Left Side	Right Side	Rear	Total
Front	29%	18%	13%	6%	66%
Left Side	8%	1%	<1%	<1%	10%
Right Side	6%	<1%	<1%	<1%	7%
Rear	16%	<1%	<1%	<1%	17%
Total	59%	20%	14%	7%	100%

"In 2002, large trucks were nearly 2.5 times as likely as other vehicles to be struck in the rear in two-vehicle fatal crashes."

In 50 percent of the two-vehicle fatal crashes involving a large truck and another type of vehicle, both vehicles were proceeding straight at the time of the crash. In 9 percent of the crashes, the other vehicle was turning. In 9 percent, either the truck or the other vehicle was negotiating a curve. In 7 percent, either the truck or the other vehicle was stopped or parked in a traffic lane (5 percent and 2 percent, respectively).

Most of the fatal crashes involving large trucks occurred in rural areas (67 percent), during the daytime (67 percent), and on weekdays (80 percent). During the week, 75 percent of the crashes occurred during the daytime (6:00 AM to 5:59 PM). On weekends, 63 percent occurred at night (6:00 PM to 5:59 AM).

In 2001, NHTSA began using a revised method — multiple imputation to estimate missing information about blood alcohol concentration (BAC) levels for persons involved in fatal crashes. The alcohol estimates in this fact sheet are based on the new imputation method. More information on the new multiple imputation method, including detailed tabulations of alcohol involvement in various categories (age, sex, time of day, etc.), is available in NHTSA Technical Report DOT HS 809 403, Transitioning to Multiple Imputation: A New Method to Estimate Missing Blood Alcohol Concentration (BAC) Values in FARS.

motorcycles.

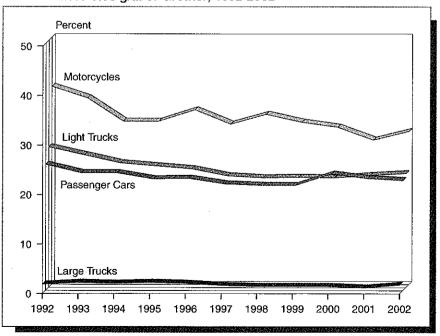
The percentage of large truck drivers involved in fatal crashes who were intoxicated — with blood alcohol concentrations (BAC) of 0.08 grams per deciliter (g/dl) or greater — was 2 percent in 2002. Intoxication rates for drivers of other types of vehicles involved in fatal crashes in 2002 were 22 percent for passenger cars, 23 percent for light trucks, and 31 percent for

of large trucks involved in fatal crashes in 2002 was 2 percent."

"The intoxication

rate for drivers

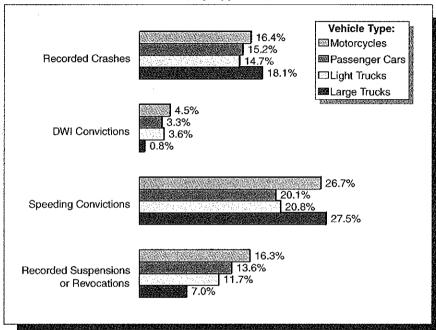
Figure 1. Estimated Proportions of Drivers in Fatal Crashes with BAC 0.08 g/dl or Greater, 1992-2002



Drivers of large trucks were less likely to have a previous license suspension or revocation than were passenger car drivers (7 percent and 14 percent, respectively).

Almost 28 percent of all large truck drivers involved in fatal crashes in 2002 had at least one prior speeding conviction, compared to 20 percent of the passenger car drivers involved in fatal crashes.

Figure 2. Previous Driving Records of Drivers Involved in Fatal Traffic Crashes, by Type of Vehicle, 2002



"Drivers of large trucks were less likely to have a previous license suspension or revocation than were passenger car drivers."

For more information:

Information on large truck traffic fatalities is available from the National Center for Statistics and Analysis, NPO-121, 400 Seventh Street, S.W., Washington, D.C. 20590, NCSA information can also be obtained by telephone or by fax-on-demand at 1-800-934-8517. FAX messages should be sent to (202) 366-7078. General information on highway traffic safety can be accessed by Internet users at http://www-nrd.nhtsa.dof.gov/people/ncsa. To report a safety related problem or to inquire about motor vehicle safety information, contact the Auto Safety Hotline at 1-800-424-9393.

Other fact sheets available from the National Center for Statistics and Analysis are Overview, Alcohol, Occupant Protection, Older Population, Speeding, Young Drivers, Children, Pedestrians, Pedalcyclists, Motorcycles, School Transportation-Related Crashes, State Traffic Data, and State Alcohol Estimates. Detailed data on motor vehicle traffic crashes are published annually in Traffic Safety Facts: A Compilation of Motor Vehicle Crash Data. Irom the Fatality Analysis Reporting System and the General Estimates System.

Table 4. Large Truck Involvement in Fatal Crashes by State, 2002

	Total Vehicles	Larg	e Trucks Involved in Fata	Crashes
State	Involved in Fatal Crashes	Number	Percentage of Total Vehicles	Percentage of U.S. Total for Large Trucks
Alabama	1,358	122	9.0	2.7
Alaska	111	4	3.6	0.1
Arizona	1,475	88	6.0	1.9
Arkansas	815	78	9.6	1.7
California	5,544	346	6.2	7.6
Colorado	975	50	5.1	1.1
Connecticut	416	17	4.1	0.4
Delaware	177	17	9.6	0.4
District of Columbia	73	0	0.0	0.0
Florida	4,431	351	7.9	7.7
Georgia	2,188	202	9.2	4.4
Hawaii	168	4	2.4	0.1
Idaho	353	30	8.5	0.7
Illinois	1,926	159	8.3	3.5
Indiana	1,157	120	10.4	2.6
lowa	596	67	11.2	1.5
Kansas	685	78	11.4	1.7
1	1,224	114	9.3	2.5
Kentucky Louisiana	1,173	102	9.3 8.7	2.2
1	272	21	7.7	0.5
Maine	+	*****		
Maryland	963	61	6.3	1.3
Massachusetts	626	22	3.5	0.5
Michigan	1,856	123	6.6	2.7
Minnesota	892	78	8.7	1.7
Mississippi	1,106	72	6.5	1,6
Missouri	1,650	151	9.2	3.3
Montana	309	22	. 7.1	0.5
Nebraska	413	59	14.3	1.3
Nevada	515	33	6.4	0.7
New Hampshire	184	15	8.2	0.3
New Jersey	1,025	48	4.7	1.1
New Mexico	571	57	10.0	1.3
New York	2,066	131	6.3	2.9
North Carolina	2,147	166	7.7	3.7
North Dakota	125	18	14.4	0.4
Ohio	2,000	186	9.3	4.1
Oklahoma	975	107	11.0	2.4
Oregon	557	45	8.1	1.0
Pennsylvania	2,198	174	7.9	3.8
Rhode Island	118	5	4.2	0.1
South Carolina	1,379	91	6.6	2.0
South Dakota	218	16	7.3	0.4
Tennessee	1,559	129	8.3	2.8
Texas	5,039	401	8.0	8.8
Utah	394	38	9.6	0.8
Vermont	109	10	9.2	0.2
Virginia	1,220	84	6.9	1.8
Washington	866	53	6.1	1.2
West Virginia	578	57	9.9	1.3
Wisconsin	1,135	93	8.2	2.0
Wyoming	203	27	13.3	0.6
U.S. Total	58,113	4,542	7.8	100.0
J.J. 10tal	657	4,542 36	5.5	100.0

Note: Totals may not equal sum of components due to independent rounding.

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Injuries and Fatalities

NATIONAL (2001)

injuries (including both minor and major, i.e. with and without lost work days)

Heavey construction, except building, except highway Industry:

0.0000385 injuries per working hour ò 7.7 total injuries per 200,000 work hours Rate:

0.000014 injuries per working hour 2.8 lost work days injuries per 200,000 work hours Rate:

0.0000195 injuries per working ho 3.9 lost work days and restricted activity injuries per 200,000 work hours Rate:

0.000019 injuries per working hour 3.8 injuries without lost work days per 200,000 hours Rate:

Fatalities (obtained from BLS)

38.5

Industry: Construction

Rate (1): 11.7 fatalities per 200,000,000 working hours or 5.85 x 10-8 fatalities per hour

Rate: 11.7 fatalities per 100,000 employees or 0.000117 fatalities per employee

(1) assuming 100,000 employees are full time working 40 hours a week, 50 weeks a year

FLORIDA (2001 Data)

Injuries (including both minor and major, i.e with and without lost work days)

Heavey construction, except building, except highway Industry:

0.000015 injuries per working hour 0.000044 injuries per working hour ់ ö 3.0 lost work days injuries per 200,000 work hours 8.8 total injuries per 200,000 work hours Rate: Rate:

0.0000195 injuries per working hour 3.9 lost work days and restricted activity injuries per 200,000 work hours 3.9 injuries without lost work days per 200,000 hours Rate: Rate:

0.0000195 injuries per working hou

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TABLE 1. Incidence rates of nonfatal occupational injuries and illnesses by industry and selected case types, 2001

<u> </u>				. <u></u>					
			Injuries an	d illnesse:	S		lnju	ries	
			l	orkday ses	Cases			orkday ses	Cases
Industry ²	SIC code ³	Total cases	Total ⁴	With days away from work ⁵	without lost work- days	Total cases	Total ⁴	With days away from work ⁵	without lost work- days
Private industry ⁶		5.7	2.8	1.7	2.9	5.4	2.6	1.6	2.7
Agriculture, forestry, and fishing ⁶		7.3	3.6	2.7	3.7	7.0	3.6	2.6	3.4
Agricultural production ⁶	01-02	7.6	3.7	2.5	4.0	7.3	3.6	2.4	3.7
Agricultural production—crops ⁶ Cash grains ⁶ Field crops, except cash grains ⁶ Vegetables and melons ⁶ Fruits and tree nuts ⁶ Horticultural specialties ⁶ General farms, primarily crop ⁶ Agricultural production—livestock ⁶ Livestock, except dairy and poultry ⁶ Dairy farms ⁶ Poultry and eggs ⁶ Animal specialties ⁶ Agricultural services Crop services Veterinary services Animal services, except veterinary Farm labor and management services Landscape and horticultural services Forestry Timber tracts Forestry services Fishing, hunting, and trapping	01 011 013 016 017 018 019 02 021 024 025 027 07 072 074 075 076 078 081 085 09	7.0 4.8 5.7 5.2 6.1 9.3 5.3 9.2 12.5 6.2 8.7 11.9 7.6 6.8 5.6 7.0 6.4 4.7 7.7 3.9	3.4 2.9 2.6 2.7 3.0 4.7 3.2 5.1 3.6 5.1 3.5 3.5 3.3 3.6 4.6 2.8	2.2 1.4 1.2 1.8 2.1 2.6 2.8 3.9 2.5 2.5 2.5 2.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.6 1.9 3.7 2.6 3.4 4.6 2.4 4.9 7.3 3.0 3.6 8.7 3.5 3.7 3.2 2.1 3.1 3.2 1.1	6.7 4.7 5.9 5.6 9.0 12.1 8.3 11.4 6.8 7.5 6.6 6.7 7.1 3.5	3.8 2.9 2.57 4.6 2.9 4.0 3.6 3.1 3.6 4.4 3.6 4.4 4.4	2.2 1.4 1.1 1.8 2.0 2.6 2.8 3.1 2.8 2.4 2.3 2.8 2.4 2.3 2.8 3.4 1.6 2.9 3.0 2.9 3.0 2.9	3.3 1.9 3.4 2.4 2.9 4.3 2.4 4.7 7.1 2.9 3.4 8.4 3.3 5.2 2.9 2.1 2.9 2.1 2.9
Mining ⁷ Metal mining ⁸ Iron ores ⁸ Copper ores ⁸ Lead and zinc ores ⁸ Gold and silver ores ⁸ Ferroalloy ores, except vanadium ⁸ Miscellaneous metal ores ⁸ Coal mining ⁸ Bituminous coal and lignite mining ⁸ Anthracite mining ⁸ Oil and gas extraction Crude petroleum and natural gas Oil and gas field services Nonmetallic minerals, except fuels ⁸ Dimension stone ⁸ Crushed and broken stone ⁸ Sand and gravel ⁸ Clay, ceramic, and refractory minerals ⁸ Chemical and fertilizer minerals ⁸ Miscellaneous nonmetallic minerals ⁸ Construction General building contractors Residential building construction Operative builders	104 106 109 12 122 123 131 131 138 14 141 142 144 145 147 149	4.0 4.2 4.6 5.3 6.5 6.9 6.9 6.0 3.2 3.8 4.0 4.3 6.8 4.4 7.9 6.5 5.5	2.4 2.8 1.2 3.5 2.4 1.9 4.9 4.3 1.7 1.1 2.8 4.6 2.3 2.5 3.1 4.0 3.5 3.5 4.0 3.5 4.0 3.5 4.0 3.5 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	1.8 1.3 2.1 .7 2.9 .7 2.4 4.5 3.7 1.2 9 1.4 1.7 3.5 1.6 1.5 1.5 2.4 3.0 2.6 2.8	1.6 1.9 2.8 1.1 3.0 1.7 1.6 2.5 2.0 2.0 1.7 1.4 1.4 1.5 1.3 1.3 2.0 3.9 3.5 2.9 2.1	3.9 3.9 4.9 5.6 3.7 6.4 5.7 2.4 5.6 4.1 5.8 6.4 5.7 6.8 6.4 5.7 6.8 6.4 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.5 6.6 6.7 6.7 6.8 6.8 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9	2.3 2.2 2.6 1.2 3.1 2.2 1.6 4.6 4.2 1.7 1.0 2.1 2.7 4.6 2.7 2.3 2.4 2.9 3.2 3.4 3.5 1.4	1.7 1.8 .7 2.5 8.7 2.2 4.3 3.6 1.2 9 1.3 1.6 3.5 1.6 1.5 2.2 3.0 2.5 2.7 1.1	1.5 1.7 2.4 1.1 2.6 1.6 1.6 1.7 1.7 1.5 1.6 1.4 1.7 1.2 1.2 1.2 1.9 3.9 3.4 2.9

TABLE 1. Incidence rates¹ of nonfatal occupational injuries and illnesses by industry and selected case types, 2001—Continued

		I	Injuries an	d illnesse:	5		lnju	ries	
<i>:</i>	SIC		Lost w	-	Cases		Lost w	orkday ses	Cases
Industry ²	code ³	Total cases	Total ⁴	With days away from work ⁵	without lost work- days	Total cases	Total ⁴	With days away from work ⁵	without lost work- days
Highway and street construction	161	7.7	4.2	3.1	3.5	7.6	4.1	<u>3.1</u>	3.5
Heavy construction, except highway	162	7.8	4.0	2.8	3.9	7.7	/3.9	2.8	3.8
Special trade contractors	17	8.2	4.1	3.2	4.1	8.1	4.0	3.2	4.1
Plumbing, heating, air-conditioning	171	9.7	4.6	3.4	5.1	9.6	4.5	3.3	5.0
Electrical work	173	6.9	2.9	2.3	3.9	6.8	2.9	2.3	3.9
Masonry, stonework, and plastering	174 175	9.7 9.8	5.2 4.9	4.2 4.2	4.5 4.9	9.6 9.7	5.1 4.9	4.1 4.1	4.4 4.9
Carpentry and floor work Roofing, siding, and sheet metal work	175 176	9.6	5.0	4.2	4.9	8.9	4.9	4.1	4.9
Concrete work	177	7.8	4.1	3.2	3.7	7.8	4.1	3.2	3.6
Water well drilling	178	8.0	5.6	4.8	2.4	8.0	5.6	4.8	2.4
Miscellaneous special trade contractors	179	7.2	3.8	3.0	3.3	7.1	3.8	3.0	3.3
Manufacturing		8.1	4,1	1.8	4.0	7.0	3.6	1.7	3.4
Durable goods		8.8	4.3	2.0	4.6	7.7	3.7	1.8	3.9
Lumber and wood products	24	10.6	5.5	3.0	5.1	10.1	5.3	2.9	4.9
Logging	241	6.5	3.5	3.3	3.1	6.4	3.4	3.2	3.0
Sawmills and planing mills	242	10.8	5.9	3.2	4.9	10.2	5.6	3.2	4.6
Sawmills and planing mills, general	2421	10.4	6.0	3.4	4.4	9.9	5.8	3.4	4.1
Hardwood dimension and flooring mills	2426	11.8	5.3	2.2	6.5	10.9	4.9	2.1	6.0
Millwork, plywood and structural						40.0			4.0
members	243	10.8	5.6	2.9	5.2	10.2	5.3	2.7	4.9
Millwork Wood kitchen cabinets	2431 2434	12.1 9.1	6.3 5.0	2.9 2.6	5.9 4.1	11.2 8.7	5.8 4.7	2.7 2.6	5.4 3.9
Hardwood veneer and plywood	2435	7.3	3.8	2.2	3.5	6.7	3.5	2.0	3.2
Softwood veneer and plywood	2436	6.3	3.3	1.5	3.0	6.0	3.2	1.4	2.8
Structural wood members, n.e.c	2439	15.7	7.7	4.6	7.9	15.4	7.6	4.5	7.8
Wood containers	244	8.6	5.1	3.5	3.5	8.5	5.0	3.5	3.4
Wood pallets and skids	2448	8.1	5.2	3.6	2.9	8.0	5.1	3.5	2.9
Wood buildings and mobile homes	245	16.3	7.8	3.0	8.6	16. 1	7.6	2.9	8.4
Mobile homes	2451	15.0	7.2	2.1	7.8	14.7	7.0	2.1	7.7
Prefabricated wood buildings	2452	19.1	9.0	4.8 2.3	10.1	19.0 8.0	9.0	4.8 2.2	10.1 4.3
Miscellaneous wood products	249 2491	8.6 10.1	3.9 3.8	2.0	4.7 6.3	9.5	3.6 3.5	1.9	6.0
Reconstituted wood products	2493	4.9	2.2	1.2	2.7	4.7	2.2	1.2	2.5
Wood products, n.e.c.	2499	9.9	4.7	2.9	5.1	9.1	4.4	2.8	4.7
Furniture and fixtures	25	11.0	5.7	2.4	5.3	10.0	5.1	2.2	4.8
Household furniture	251	11.1	5.7	2.6	5.4	10.1	5.2	2.3	4.9
Wood household furniture	2511	10.3	5.0	2.4	5.4	9.2	4.5	2.1	4.7
Upholstered household furniture	2512	10.2	5.4	2.1	4.8	9.2	4.8	1.8	4.3
Metal household furniture	2514	12.7	6.5 8.4	2.5 4.2	6.2 6.4	11.6 14.4	6.2 8.1	2.4 4.0	5.4 6.2
Mattresses and bedsprings Office furniture	2515 252	14.7 10.0	5.1	1.9	4.9	8.9	4.3	1.7	6.∠ 4.6
Wood office furniture	2521	9.6	3.8	1.9	5.8	8.9	3.3	1.6	5.6
Office furniture, except wood	2522	10.4	6.2	1.9	4.2	8.9	5.1	1.7	3.8
Public building and related furniture	253	14.4	8.7	2.6	5.7	11.9	7.1	2.2	4.8
Partitions and fixtures	254	10.5	5.4	2.8	5.1	10.1	5.1	2.7	5.0
Wood partitions and fixtures	2541	10.4	5.6	3.2	4.8	10.2	5.5	3.1	4.7
Partitions and fixtures, except wood	2542	10.6	5.0	2.3	5.6	9.9	4.5	2.0	5.4
Miscellaneous furniture and fixtures	259	9.0	4.0	1.7	5.0	8.2	3.7	1.5	4.5
Drapery hardware and blinds and	2504	7.	0.7	4.4	4.8	6.7	2.5	1.0	4.0
shadesFurniture and fixtures, n.e.c.	2591 2599	7.5 11.2	2.7 5.9	1.1 2.6	5.3	10.3	2.5 5.4	2.3	4.2 4.9
Stone, clay, and glass products	32	10.1	5.1	2.8	5.0	9.6	4.9	2.7	4.7
	321	12.3	4.0	1.1	8.3	11.0	3.6	1.0	7.4
Flat glass									
Flat glassGlass and glassware, pressed or blown	322	9.2	4.6	2.5	4.6	8.6	4.2	2.3	4.4

Kim, Jeffrey

From:

Drudi, Dino - BLS [Drudi.Dino@bls.gov]

Sent:

Wednesday, December 01, 2004 2:00 PM

To: Cc: Kim, Jeffrey CFOIINFO

Subject:

Fatality Rates for Excavation

Thank you for contacting the Bureau of Labor Statistics Census of Fatal Occupational Injuries. As I explained in our telecom, fatal injury rates are based on Current Population Survey, a measure of number of workers employed not hours worked. In this respect rates for fatal and nonfatal injuries differ. For 2003, the first year BLS introduced the North American Industry Classification System for fatal injuries, construction had an overall rate of 11.7 fatal injuries per 100,000 employed workers. Rates are not available for more detailed subcategories of construction such as excavation work.

Dino Drudi 202--691-6175

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Table 6. Incidence rates¹ of nonfatal occupational injuries and illnesses by industry and selected case types, 2001

Florida

		lı	njuries an	d Illnesse	es		Inju	ries	
	SIC		ŀ	orkday ses	Cases			orkday ses	Cases
Industry ²	code ³	Total cases	Total ⁴	With days away from work ⁵	without lost work- days	Total cases	Total⁴	With days away from work ⁵	without lost work- days
Private Industry ⁶		5.7	2.7	1.5	3.0	5.5	2.6	1.5	2.9
Agriculture, forestry, and fishing ⁶		7.0	3.4	2.4	3.6	6.6	3.3	2.3	3.3
Agricultural production ⁶ Agricultural production-crops ⁶ Vegetables and melons ⁶ Fruits and tree nuts ⁶ Horticultural specialties ⁶ Agricultural production - livestock ⁶ Agricultural services Farm labor and management services Landscape and horticultural services	01-02 01 016 017 018 02 07 076 078	9.5 7.5 11.8 6.9 7.6	2.7 3.8 4.3 6.1 3.1 3.4	2.5 1.9 2.8 2.7 4.4 2.3 3.0	3.1 2.0 5.6 3.2 5.7 3.8 4.3		3.9 3.7 2.7 3.8 4.1 6.1 3.0 2.6	2.4 1.9	2.5 1.8 4.7 2.4 5.5 3.7 4.1
Mining ⁷		2.9	2.1	0.9	0:8	2.8	2.1	8.0	0.7
Nonmetallic minerals, except fuels8	14	3.1	2.3	0.9	0.8	3.0	2.3	0.9	0.7
Construction		7.8	3.8	2.8	4.0	7.7	3.8	2.8	3.9
General building contractors Residential building construction Nonresidential building construction Heavy construction, except building Heavy construction, except highway Special trade contractors Plumbing, heating, air-conditioning Electrical work Masonry, stonework, and plastering Carpentry and floor work Roofing, siding, and sheet metal work Concrete work Miscellaneous special trade contractors	15 152 154 16 162 17 171 173 174 175 176 177	5.5 8.4 9.5 10.6	4.0 3.0 4.8 4.9 3.7 2.9 4.1 3.2 4.9 6.3 5.1	2.6 3.0 2.1 3.0 2.8 1.7 3.4 4.6 4.3 3.7 2.5	5.0 3.7 3.8		4.8	2.5 1.9 3.0 3.0 2.8 1.7 3.3 2.4 4.6 3.9 3.7 2.5	5.0 3.6 3.7 3.9 3.7 4.8 2.3 3.5 2.7 5.3
Manufacturing		7.1	3.6	1.6	3.5	6.7	3.4	1.6	3.3
Durable goods		7.5	3.6	1.7	3.9	7.1	3.4	1.6	3.7
Lumber and wood products Millwork, plywood and structural members Structural wood members, n.e.c. Furniture and fixtures Household furniture Stone, clay, and glass products Concrete, gypsum, and plaster products Concrete products, n.e.c. Ready-mixed concrete Primary metal industries Fabricated metal products Fabricated structural metal products Metal doors, sash, and trim Sheet metal work Miscellaneous fabricated metal products	24 2439 25 251 327 3272 3273 33 34 344 3442 3444 349	11.8 15.5 8.8 10.4 10.0 11.2 14.6 6.2 9.8 11.9 15.3	6.9 7.5 4.5 5.5 6.4 8.6 5.5 9.5 9.3 6.1 2.9	3.8 4.4 4.4 2.7 3.5 2.1 2.6 3.3 1.7 1.9 2.5 2.1 1.5	4.9 8.0 3.9 4.5 4.8 6.0 5.3 2.7 5.9 6.7	11.6 15.3 8.7 9.9	7.5 4.8 6.4 5.5 6.4 8.6 5.0 3.5 3.8 5.2 6.1 2.9	4.7 4.4 2.6 3.4 2.1 2.6 3.3 1.5 1.7 2.5 2.1	4.7 7.7 3.9 3.8 4.4 4.8 5.9 5.3 2.6 6.6 7.0

See footnotes at end of table.

APPENDIX C

ESTIMATED PROJECT MAN-HOURS TREATMENT AND DISPOSAL ALTERNATIVES CABOT CARBON/KOPPERS SUPERFUND SITE



APPENDIX C

ESTIMATED PROJECT MAN-HOURS TREATMENT AND DISPOSAL ALTERNATIVES CABOT CARBON/KOPPERS SUPERFUND SITE

PURPOSE

This appendix has been prepared to provide and estimate the number of construction man-hours that would be required to complete the Cabot Carbon/Koppers Superfund Site source removal Interim Remedial Measure project. These estimates provide a basis for estimating the risk of accidents and fatalities that could result from implementation of the alternatives.

METHODOLOGY

The estimates contained in this appendix are based on Alternative 2: excavation, with direct disposal in an onsite RCRA landfill. This is the simplest alternative to implement, as it requires the minimum amount of handling for the excavated soils. Other alternatives and testing could require twice the level of effort for handling (although the level of effort for excavation is the same for all alternatives).

Activities contained in this estimate are taken from the Project Schedule included in this report as Figure 5.3. The list of Tasks in Table C.1 of this appendix have been expanded due to various sub-tasks which require a different crew, equipment, or activity that is operating for only a portion of the main Task. Added to the table are overhead items that are generally not shown in project schedules, such as Project Management and CQA activities.

CALCULATIONS

Excavator-Trucks

For the purposes of this appendix, production rate for the various excavation and disposal activities is 2,500 tons per day (i.e. 1,563 cubic yards per day) although the total construction man-hours is relatively insensitive to production rate. The production rates and equipment were developed in consultation with an experienced construction contractor who has worked in the



environmental remediation business for many years (Sevenson Environmental Services of Pittsburg, Pennsylvania). Sevenson reviewed the project, considered implementation constraints and developed workable approach to complete the project.

Using the construction schedule, expected daily production rates, and equipment capacities, it is clear that a one-excavator and two-truck fleet can provide the necessary production. This fleet size was used to calculated operator-hours for all excavation and disposal tasks. These rates are reflected in the Table C.1. Actual number of hours operating equipment are estimated to establish employee levels required onsite during the task, not to reflect the number of units.

GEOSYNTHETIC INSTALLATION

TRC experience in liner construction indicates that most geosynthetic liner systems can be deployed and tested at a rate of 1 acre per day using a ten-man crew. There are six layers of geosynthetics in the liner system and three layers in the cover system. Using the onsite landfill area of approximately 10 acres for the liner and cover systems results in time requirements for installation of 60 days for the six-layer bottom liner and 30 days for the three-layer cover.

All other equipment requirements and employee loading numbers are estimated by Task and are based on TRC construction experience. The number of days required for sub-tasks are estimated in the same manner. In those cases without sub-tasks, the Project Schedule task duration rates determine the number of days a particular group of employees are onsite. No estimating contingency has been added to the results of the calculations.

To obtain the mechanical maintenance employees onsite, a ratio of 1 mechanic hour for each 9 equipment operator man-hours is used.

See Table C.1 for the results of the calculations of total man-hours. The total is 112,280 man-hours.



APPENDIX D COST ESTIMATE DETAILS AND BACKUP CALCULATIONS



Appendix D Cost Estimate Summary of Costs

Task		Alt 1		Alt 2		Alt 3		Alt 4
Description]	Off-Site Incineration	Or	n-Site Landfill	t	se thermally- reated soil to backfill excavations	Oi	ff-site landfill disposal
Demolition	\$	160,600	\$	160,600	\$	160,600	\$	160,600
Excavation	\$	16,968,925	\$	16,662,431	\$	7,813,988	\$	16,968,925
On-site Treatment of Soil	\$	126,305	\$	-	\$	59,286,430	\$	126,305
On-site Landfill	\$	-	\$	5,267,804	\$	-	\$	-
Lined Excavation Bottoms Backfill	\$	-	\$	-	\$	3,150,934	\$	-
Off-site Treatment/Disposal	\$	441,720,600	\$	-	\$	-	\$	188,879,424
Site Restoration	\$	1,426,580	\$	1,392,920	\$	1,193,000	\$	1,426,580
O+M	\$	-	\$	-	\$	-	\$	-
Miscellaneous ⁽¹⁾	\$	39,134,256	\$	11,976,715	\$	36,518,525	\$	17,642,756
Total	\$	499,537,266	\$	35,460,470	\$	108,123,477	\$	225,204,590

⁽¹⁾ Includes permitting, engineering, construction management, QA/QC, sampling and analytical, contingency, etc.

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
1	Demolition	Demolish Buildings	7,800	sf	\$4.25	\$33,150	
		Demolish Paving	15,300	sf	\$3.00	\$45,900	
		Demolish/Recycle Rail Road Tracks		lf	\$0.00	\$0	
		Locate Utilities Geophysical	1	ls	\$8,000.00	\$8,000	
		Remove/Relocate Utilities	1	A lot	\$25,000.00	\$25,000	
					\$0.00	\$0	i
					\$0.00	\$0	İ
					\$0.00	\$0	1
		Clear and Grub Treed Areas	1.30	Acre	\$3,500.00	\$4,550	İ
					\$0.00	\$0	Ī
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
		Remove Wood Fired Boiler	1	ls	\$40,000.00	\$40,000	
		Demolish Fence	400	lf	\$10.00	\$4,000	1
		Demonstratic	400	- 11	\$0.00	\$0	\$160,600
2	Excavation	Install Dewatering Trench Bio Slurry Type	128,900	sf	\$15.50	\$1,997,950	Ψ100,000
	Lacavation	Install Dewatering Piping System	5,850	lf	\$26.75	\$156,488	1
		Install Dewatering Fifting System Install Dewatering Sumps and Pumps (Every 200 lf)	28.00		\$7,500.00	\$210,000	1
				ea			1
		Install Dewatering Treatment System	22 500 000	ls	\$1,200,000.00	\$1,200,000	1
		Operate Dewatering System	22,500,000	gal	\$0.015	\$337,500	1
		Install/Later Remove Silt Fence	5,350	lf	\$5.00	\$26,750	4
		Install/Remove Shoring	17,940	sf	\$32.50	\$583,050	4 !
Ī		Decontamination Pad	1	ls	\$35,000.00	\$35,000	4
		Excavate Soil (Covers Direct Load of Trucks Option)	441,000	cy	\$4.50	\$1,984,500	4
		Transport Soil to Stockpile	441,000	cy	\$2.75	\$1,212,750	1
		Transport Soil to Site Landfill or Lined Excav., place and compact		cy	\$4.85	\$0]
		Import Soil to Fill in Excavations	441,000	cy	\$18.00	\$7,938,000	1
		Place and Compact Soil	441,000	cy	\$2.85	\$1,256,850	
		Reseed Excavated Areas If Not Used as Cell	17.19	acre	\$1,750.00	\$30,087	
					\$0.00	\$0	\$16,968,925
3	On-site Treatment of Soil	Tons per Cubic Yard		ton	1.60	\$0	
		Lined Stockpile/Treatment Area with Elevated Berm/Barrier	175,424	sf	\$0.72	\$126,305	
		Stabilize Soil On-site	-	ton	\$25.00	\$0	
		Pre-Treatment Processing	-	ton	\$0.00	\$0	
		Thermal Treat Soil On-site	-	ton	\$75.00	\$0	
		Load, Transport and Compact Treated Soil On-Site	-	cy	\$7.25	\$0	
		Load, Transport and Load for Off-site Disposal		cy	\$10.10	\$0	
		Pre/Post Treatment Sampling	_	samp	\$250.00	\$0	
		On-site Incineration with Mob/Demob Allocation	-	ton	\$2,000.00	\$0	
					0%	\$0	\$126,305
4	On-site Landfill	CELL				·	
		Install Replacement Storm water Control Ditch		cy	\$7.15	\$0	
		Excavate, Transport and Stockpile Bottom Foundation of Landfill		cy	\$4.00	\$0	
		Import Soil for Containment Berms		cy	\$18.00	\$0	
		Place and Compact Containment Berms		cy	\$2.85	\$0	1
		Grade Bottom Before Lining		sf	\$0.35	\$0	1
		Anchor Trench		lf	\$2.73	\$0	
		Install GCL (Sump)		sf	\$0.68	\$0	
		Install 60 mil HDPE Liner Textured Both Sides (Sump)	+	sf	\$0.60	\$0 \$0	1
		17	+	si sf	\$0.31	\$0 \$0	1
		Install 16 oz. Geotextile (Sump)	+		· ·		-
I		Install Drain Rock (Sump)		ton	\$22.50	\$0	4
I		Install 4" PVC Sump Pipe (Sump)		lf	\$4.00	\$0	4
I		Install Geotextile 16 oz (Sump)	1	sf	\$0.31	\$0	1
		Install GCL	+	sf	\$0.68	\$0	1
		Install 60 mil HDPE Liner Textured Both Sides		sf	\$0.60	\$0	4
		Install Double Sided Geocomposite		sf	\$0.83	\$0	4
		Install 60 mil HDPE Liner Textured Both Sides	-	sf	\$0.60	\$0	
		Install Double Sided Geocomposite		sf	\$0.83	\$0]
		Install 6" Corrugated Perforated HDPE Pipe Drain		lf	\$13.00	\$0	j
		Install 4" Corrugated Perforated HDPE Pipe Drain		lf	\$10.00	\$0]
		Install Drain Rock		ton	\$22.50	\$0]
		Install 8 oz Geotextile		sf	\$0.20	\$0]
I		CAP		0	\$0.00	\$0]
		Import Structural Wedge Soil		cy	\$18.00	\$0]
I		Place and Compact Structural Wedge Soil		cy	\$2.85	\$0	1
I		Anchor Trench		lf	\$2.73	\$0	1
I		Install GCL		sf	\$0.68	\$0	1
		Install 60 mil HDPE Liner Textured Both Sides		sf	\$0.60	\$0	1
			1	sf	\$0.83	\$0	1
		Install Double Sided Geocomposite				70	4
		Install Double Sided Geocomposite Install 8 oz Geotextile CAP Drain				\$0	
		Install 8 oz Geotextile CAP Drain		sf	\$0.20	\$0 \$0	
		Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain		sf lf	\$0.20 \$10.00	\$0	<u>.</u> -
		Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain		sf lf ton	\$0.20 \$10.00 \$22.50	\$0 \$0	
		Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover		sf lf ton cy	\$0.20 \$10.00 \$22.50 \$30.00	\$0 \$0 \$0	
		Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover Place Vegetative Cover		sf If ton cy cy	\$0.20 \$10.00 \$22.50 \$30.00 \$1.85	\$0 \$0 \$0 \$0	
		Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover Place Vegetative Cover Seed Cap		sf If ton cy cy acre	\$0.20 \$10.00 \$22.50 \$30.00 \$1.85 \$1,750.00	\$0 \$0 \$0 \$0 \$0	
		Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover Place Vegetative Cover		sf If ton cy cy	\$0.20 \$10.00 \$22.50 \$30.00 \$1.85	\$0 \$0 \$0 \$0	\$0

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
5	Lined Excavation/Backfill	CELL			\$0.00	\$0	
		Grade Bottom Before Lining		sf	\$0.35	\$0	
		Install 60 mil HDPE Liner Textured Both Sides		sf	\$0.60	\$0	
		Install 16 oz. Geotextile		sf	\$0.31	\$0	
		Install Drain Rock		ton	\$22.50	\$0	
		Install 8 oz Geotextile		sf	\$0.20	\$0	
		CAP			\$0.00	\$0	
		Sump with Pump 30' Deep		ea	\$6,450.00	\$0	
		Import Soil		cy	\$18.00	\$0	
		Place and Compact Import Cover Soil		cy	\$2.85	\$0	İ
		Seed Cap		acre	\$1,750.00	\$0	
		Additional Sampling for Leaving Soil On-sit		ea	\$0.00	\$0	\$0
6	Off-site Treatment/Disposal	Tons per Cubic Yard		ton	1.60	\$0	
	•	Load, Transport and Incinerate Soil Off-site (Trucks)	352,800	ton	\$704.33	\$248,487,624	İ
		Load, Transport and Dispose at Subtitle "C" (Trucks)	=	ton	\$286.33	\$0	İ
		Load, Transport and Incinerate Soil Off-site (Rail)	352,800	ton	\$547.67	\$193,217,976	
		Load, Transport and Dispose at Subtitle "C" (Rail)	-	ton	\$249.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
		Transloading Facility	1	ls	\$15,000.00	\$15,000	
		Import Soil to Replace Removed Contaminated Soil		cy	\$18.00	\$0	
		Place and Compact Soil in Removal Locations	-	cy	\$2.85	\$0	\$441,720,600
7	Site Restoration	Install Railroad Tracks 100 lb Rail, Wood Ties	2,290	lf	\$102.00	\$233,580	
		Install Tram		ls	\$0.00	\$0	
		Reinstall Fence	400	lf	\$13.00	\$5,200	
		Reinstall Asphalt/Concrete	15,300	sf	\$6.00	\$91,800	
		Building	7,800	sf	\$70.00	\$546,000	
		Gas Fired Boiler	1	ls	\$550,000.00	\$550,000	İ
					\$0.00	\$0	İ
					\$0.00	\$0	İ
					\$0.00	\$0	
					\$0.00	\$0	\$1,426,580
		Subtotal:					\$460,403,010
	Miscellaneous	Engineering (Including Field Investigations)	1.33%			\$6,138,707	
		Local Permitting	0.83%	1	ļ	\$3,836,692	1
		Plan Checks	0.00%			\$0	1
		Construction Management/Project Management	1.33%			\$6,138,707	1
		QA/QC	0.83%	1	ļ	\$3,836,692	1
		Contingency	2.50%	1	•	\$11,510,075	1
		Fee	1.67%	1	•	\$7,673,384	\$39,134,256
			•	•		Total:	\$499,537,266

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
1	Demolition	Demolish Buildings	7,800	sf	\$4.25	\$33,150	
		Demolish Paving	15,300	sf	\$3.00	\$45,900	4
		Demolish/Recycle Rail Road Tracks Locate Utilities Geophysical	1,000	lf ls	\$0.00 \$8,000.00	\$0 \$8,000	1
		Remove/Relocate Utilities	1	A lot	\$25,000.00	\$25,000	1
		Temo to retocate curies	1	11100	\$0.00	\$0	1
					\$0.00	\$0	1
					\$0.00	\$0	
		Clear and Grub Treed Areas	1.30	Acre	\$3,500.00	\$4,550	
					\$0.00	\$0	4
					\$0.00	\$0	4
			_		\$0.00 \$0.00	\$0 \$0	4
		Remove Wood Fired Boiler	1	ls	\$40,000.00	\$40,000	-
		Demolish Fence	400	lf	\$10.00	\$4,000	1
					\$0.00	\$0	\$160,600
2	Excavation	Install Dewatering Trench Bio Slurry Type	128,900	sf	\$15.50	\$1,997,950	
	•	Install Dewatering Piping System	5,850	lf	\$26.75	\$156,488	
		Install Dewatering Sumps and Pumps (Every 200 lf)	28.00	ea	\$7,500.00	\$210,000	
		Install Dewatering Treatment System	1	ls	\$1,200,000.00	\$1,200,000	
		Operate Dewatering System	22,500,000	gal	\$0.015	\$337,500	
		Install/Later Remove Silt Fence	5,350	lf	\$5.00	\$26,750	4
		Install/Remove Shoring	17,940	sf	\$32.50	\$583,050	4
		Decontamination Pad Everyote Soil (Covers Direct Load of Trucks Option)	441,000	ls	\$35,000.00 \$4.50	\$105,000 \$1,984,500	-
		Excavate Soil (Covers Direct Load of Trucks Option) Transport Soil to Stockpile	110,250	cy cy	\$4.50 \$2.75	\$1,984,500 \$303,188	┨
		Transport Soil to Site Landfill or Lined Excav., place and compact	110,250	cy	\$4.85	\$534,713	1
		Import Soil to Fill in Excavations	441,000	cy	\$18.00	\$7,938,000	1
		Place and Compact Soil	441,000	cy	\$2.85	\$1,256,850	1
		Reseed Excavated Areas If Not Used as Cell	16.25	acre	\$1,750.00	\$28,444	1
					\$0.00	\$0	\$16,662,431
3	On-site Treatment of Soil	Tons per Cubic Yard		ton	1.60	\$0	
		Lined Stockpile/Treatment Area with Elevated Berm/Barrier		sf	\$0.72	\$0	
		Stabilize Soil On-site	-	ton	\$25.00	\$0	
		Pre-Treatment Processing	-	ton	\$0.00	\$0	4
		Thermal Treat Soil On-site Load, Transport and Compact Treated Soil On-Site	-	ton	\$75.00 \$7.25	\$0 \$0	4
		Load, Transport and Compact Treated Son On-Site Load, Transport and Load for Off-site Disposal	-	cy cy	\$10.10	\$0 \$0	
		Pre/Post Treatment Sampling		samp	\$250.00	\$0	1
		On-site Incineration with Mob/Demob Allocation	-	ton	\$2,000.00	\$0	
					0%	\$0	\$0
4	On-site Landfill	CELL					
		Install Replacement Storm water Control Ditch	2,204	cy	\$7.15	\$15,759	4
		Excavate, Transport and Stockpile Bottom Foundation of Landfill	17,508	cy	\$4.00	\$70,032	4
		Import Soil for Containment Berms	54,484	cy	\$18.00	\$980,708	4
		Place and Compact Containment Berms Grade Bottom Before Lining	54,484 472,717	cy sf	\$2.85 \$0.35	\$155,279 \$165,451	-
		Anchor Trench	3,015	lf	\$2.73	\$8,231	1
		Install GCL (Sump)	13,720	sf	\$0.68	\$9,329	1
		Install 60 mil HDPE Liner Textured Both Sides (Sump)	13,720	sf	\$0.60	\$8,232	1
		Install 16 oz. Geotextile (Sump)	13,720	sf	\$0.31	\$4,253	1 !
		Install Drain Rock (Sump)	504	ton	\$22.50	\$11,339	
		Install 4" PVC Sump Pipe (Sump)	1,193	lf	\$4.00	\$4,772	_
		Install Geotextile 16 oz (Sump)	23,264	sf	\$0.31	\$7,212	4
		Install GCL	472,717	sf	\$0.68	\$321,447	-
		Install 60 mil HDPE Liner Textured Both Sides	472,717	sf	\$0.60	\$283,630	-
		Install Double Sided Geocomposite	472,717	sf	\$0.83 \$0.60	\$392,355	4
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite	472,717 472,717	sf sf	\$0.60 \$0.83	\$283,630 \$392,355	┪ !
		Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain	1,193	lf	\$13.00	\$15,509	1
		Install 4" Corrugated Perforated HDPE Pipe Drain	7,226	lf	\$10.00	\$72,262	1 .
				ton	\$22.50	\$118,075	1
		Install Drain Rock	5,248	ton			7
		Install Drain Rock Install 8 oz Geotextile	5,248 472,717	sf	\$0.20	\$94,543	
		Install 8 oz Geotextile CAP		sf 0	\$0.20 \$0.00	\$0	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil		sf 0 cy	\$0.20 \$0.00 \$18.00	\$0 \$0	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil	472,717	sf 0 cy cy	\$0.20 \$0.00 \$18.00 \$2.85	\$0 \$0 \$0	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench	472,717 - 3,095	sf 0 cy cy lf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73	\$0 \$0 \$0 \$0 \$8,449	- - - -
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL	3,095 458,165	sf 0 cy cy lf sf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68	\$0 \$0 \$0 \$8,449 \$311,552	-
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides	3,095 458,165 458,165	sf 0 cy cy lf sf sf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899	-
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite	- 3,095 458,165 458,165 458,165	sf 0 cy cy lf sf sf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277	-
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 8 oz Geotextile CAP Drain	472,717 - 3,095 458,165 458,165 458,165 12,824	sf 0 cy cy If sf sf sf sf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277 \$2,565	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite	- 3,095 458,165 458,165 458,165	sf 0 cy cy lf sf sf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain	472,717 - 3,095 458,165 458,165 458,165 12,824 3,206	sf 0 cy cy lf sf sf sf lf	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277 \$2,565 \$32,060	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain	472,717 3,095 458,165 458,165 458,165 12,824 3,206 767	sf 0 cy cy lf sf sf sf sf lf ton	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00 \$22.50	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277 \$2,565 \$32,060 \$17,248	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover	472,717 3,095 458,165 458,165 458,165 12,824 3,206 767 25,252	sf 0 cy cy lf sf sf sf sf ton cy	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00 \$22.50 \$30.00	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277 \$2,565 \$32,060 \$17,248 \$757,548	
		Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover Place Vegetative Cover	472,717 3,095 458,165 458,165 458,165 12,824 3,206 767 25,252 25,252	sf 0 cy cy lf sf sf sf sf cy cy cy cy cy cy cy cy cy cy cy cy cy	\$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00 \$22.50 \$30.00 \$1.85	\$0 \$0 \$0 \$8,449 \$311,552 \$274,899 \$380,277 \$2,565 \$32,060 \$17,248 \$757,548 \$46,715	\$5,267,804

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
5	Lined Excavation/Backfill	CELL			\$0.00	\$0	
		Grade Bottom Before Lining		sf	\$0.35	\$0	
		Install 60 mil HDPE Liner Textured Both Sides		sf	\$0.60	\$0	
		Install 16 oz. Geotextile		sf	\$0.31	\$0	
		Install Drain Rock		ton	\$22.50	\$0	
		Install 8 oz Geotextile		sf	\$0.20	\$0	
		CAP			\$0.00	\$0	
		Sump with Pump 30' Deep		ea	\$6,450.00	\$0	
		Import Soil		cy	\$18.00	\$0	
		Place and Compact Import Cover Soil		cy	\$2.85	\$0	
		Seed Cap		acre	\$1,750.00	\$0	
		Additional Sampling for Leaving Soil On-site		ea	\$0.00	\$0	\$0
6	Off-site Treatment/Disposal	Tons per Cubic Yard		ton	1.60	\$0	
	•	Load, Transport and Incinerate Soil Off-site (Trucks)	-	ton	\$704.33	\$0	
		Load, Transport and Dispose at Subtitle "C" (Trucks)		ton	\$286.33	\$0	
		Load, Transport and Incinerate Soil Off-site (Rail)	-	ton	\$547.67	\$0	
		Load, Transport and Dispose at Subtitle "C" (Rail)		ton	\$249.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
		Transloading Facility		ls	\$15,000.00	\$0	
		Import Soil to Replace Removed Contaminated Soil		cy	\$18.00	\$0	
		Place and Compact Soil in Removal Locations		cy	\$2.85	\$0	\$0
7	Site Restoration	Install Railroad Tracks 100 lb Rail, Wood Ties	1,960	lf	\$102.00	\$199,920	
		Install Tram		ls	\$0.00	\$0	
		Reinstall Fence	400	lf	\$13.00	\$5,200	
		Reinstall Asphalt/Concrete	15,300	sf	\$6.00	\$91,800	
		Building	7,800	sf	\$70.00	\$546,000	
		Gas Fired Boiler	1	ls	\$550,000.00	\$550,000	
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	\$1,392,920
		Subtotal:					\$23,483,755
	Miscellaneous	Engineering (Including Field Investigations)	8%			\$1,878,700	
	<u>, </u>	Local Permitting	5%		ļ	\$1,174,188	1
		Plan Checks	0%		ļ	\$0	1
		Construction Management/Project Management	8%		ļ	\$1,878,700	1
		QA/QC	5%		ļ	\$1,174,188	1
		Contingency	15%		ļ	\$3,522,563	1
		Fee	10%		ļ	\$2,348,375	\$11,976,715
				ļi.	ľ	Total:	\$35,460,470

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
1	Demolition	Demolish Buildings	7,800	sf	\$4.25	\$33,150	
		Demolish Paving	15,300	sf	\$3.00	\$45,900	
		Demolish/Recycle Rail Road Tracks		lf	\$0.00	\$0	
		Locate Utilities Geophysical	1	ls	\$8,000.00	\$8,000	4
		Remove/Relocate Utilities	1	A lot	\$25,000.00	\$25,000	4
			_		\$0.00 \$0.00	\$0 \$0	4
			_		\$0.00	\$0	4
		Clear and Grub Treed Areas	1.30	Acre	\$3,500.00	\$4,550	-
		Cicai and Grab Freed Areas	1.30	Acic	\$0.00	\$0	1
					\$0.00	\$0	1
					\$0.00	\$0	
					\$0.00	\$0	1
		Remove Wood Fired Boiler	1	ls	\$40,000.00	\$40,000	
		Demolish Fence	400	lf	\$10.00	\$4,000	
					\$0.00	\$0	\$160,600
2	Excavation	Install Dewatering Trench Bio Slurry Type	128,900	sf	\$15.50	\$1,997,950	
		Install Dewatering Piping System	5,850	lf	\$26.75	\$156,488	
		Install Dewatering Sumps and Pumps (Every 200 lf)	28.00	ea	\$7,500.00	\$210,000	
		Install Dewatering Treatment System	1	ls	\$1,200,000.00	\$1,200,000	
		Operate Dewatering System	22,500,000	gal	\$0.015	\$337,500	1
		Install/Later Remove Silt Fence	5,350	lf	\$5.00	\$26,750	1
		Install/Remove Shoring	17,940	sf	\$32.50	\$583,050	4
1		Decontamination Pad	3	ls	\$35,000.00	\$105,000	4
		Excavate Soil (Covers Direct Load of Trucks Option)	441,000	cy	\$4.50	\$1,984,500	4
		Transport Soil to Stockpile	441,000	cy	\$2.75	\$1,212,750	4
		Transport Soil to Site Landfill or Lined Excav., place and compact	+	cy	\$4.85	\$0	4 l
		Import Soil to Fill in Excavations Place and Compact Soil		cy	\$18.00 \$2.85	\$0 \$0	- I
		Reseed Excavated Areas If Not Used as Cell		cy	\$1,750.00	\$0	1
		Reseed Excavated Afeas II Not Used as Cell		acre	\$0.00	\$0	\$7,813,988
3	On-site Treatment of Soil	Tons per Cubic Yard		ton	1.60	\$0	\$7,013,700
	On-site Treatment of 3011	Lined Stockpile/Treatment Area with Elevated Berm/Barrier	119.194	sf	\$0.72	\$85,820	
		Stabilize Soil On-site	106,400	ton	\$25.00	\$2,660,000	
		Pre-Treatment Processing	705,600	ton	\$0.00	\$0	
		Thermal Treat Soil On-site	705,600	ton	\$75.00	\$52,920,000	
		Load, Transport and Compact Treated Soil On-Site	441,000	cy	\$7.25	\$3,197,250	
		Load, Transport and Load for Off-site Disposal		cy	\$10.10	\$0	
		Pre/Post Treatment Sampling	1,693	samp	\$250.00	\$423,360	
		On-site Incineration with Mob/Demob Allocation	-	ton	\$2,000.00	\$0	
						\$0	\$59,286,430
4	On-site Landfill	CELL					
		Install Replacement Storm water Control Ditch		cy	\$7.15	\$0	
		Excavate, Transport and Stockpile Bottom Foundation of Landfill		cy	\$4.00	\$0	
							-
		Import Soil for Containment Berms		cy	\$18.00	\$0	
i		Place and Compact Containment Berms		cy	\$2.85	\$0	-
		Place and Compact Containment Berms Grade Bottom Before Lining		cy sf	\$2.85 \$0.35	\$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench		cy sf lf	\$2.85 \$0.35 \$2.73	\$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump)		cy sf lf sf	\$2.85 \$0.35 \$2.73 \$0.68	\$0 \$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump)		cy sf lf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60	\$0 \$0 \$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump)		cy sf lf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31	\$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump)		cy sf lf sf sf sf ton	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump)		cy sf lf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31	\$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump)		cy sf lf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 1 prain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump)		cy sf lf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install GCL		cy sf If sf sf sf ton If sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install Got Sump Install Got Install GCL Install 60 mil HDPE Liner Textured Both Sides		cy sf If sf sf sf ton If sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install GCL Install GCL Install GCL Install Double Sided Geocomposite		cy sf If sf sf sf sf sf sf sf sf ton If sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install Grade Pipe (Sump) Install Geotextile 16 oz (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install 90 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides		cy sf If sf sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 17 mil Nock (Sump) Install Prain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 50 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite		cy sf If sf sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 1 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install Goutestile 16 oz (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install 10 ouble Sided Geocomposite Install Double Sided Geocomposite Install Double Sided Geocomposite Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock		cy sf If sf sf sf sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$13.00 \$110.00 \$22.50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 10 roz. Geotextile (Sump) Install 11 prain Rock (Sump) Install 12 prain Rock (Sump) Install Gotextile 16 oz (Sump) Install Gotextile 16 oz (Sump) Install Got Install 60 mil HDPE Liner Textured Both Sides Install 50 mil HDPE Liner Textured Both Sides Install 50 mil HDPE Liner Textured Both Sides Install 50 mil HDPE Liner Textured Both Sides Install 50 mil HDPE Piner Textured Both Sides Install 50 mil HDPE Piner Textured Both Sides Install 50 mil HDPE Piner Textured Both Sides Install 50 mil HDPE Piner Proriated Proriated HDPE Piner Drain Install 7" Corrugated Perforated HDPE Piner Drain Install Drain Rock Install 8 oz Geotextile		cy sf If sf sf sf sf sf ton If sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$13.00 \$10.00 \$22.50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install drain Proceeding (Sump) Install 4" PVC Sump Pipe (Sump) Install Gotextile 16 oz (Sump) Install GOL Install 60 mil HDPE Liner Textured Both Sides Install 10 omil HDPE Liner Textured Both Sides Install Omil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install Drain Rock Install 8 oz Geotextile CAP		cy sf If sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.20	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Brain Rock (Sump) Install Geotextile 16 oz (Sump) Install 60 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 60 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 50 mil HDPE Liner Textured Both Sides Install 60 mil HDPE Liner Textured Both Sides Install 10 Touble Sided Geocomposite Install 4" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Brain Rock Install Brain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil		cy sf If sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.83	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install Grade Proceed Composite Install GCL Install 60 mil HDPE Liner Textured Both Sides Install GOL Install 60 mil HDPE Liner Textured Both Sides Install Bouble Sided Geocomposite Install Double Sided Geocomposite Install Double Sided Geocomposite Install Double Sided Geocomposite Install G" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install J Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil		cy sf If sf sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$13.00 \$110.00 \$22.50 \$0.20 \$0.20 \$0.20 \$0.20 \$0.20 \$0.20 \$0.20	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 10 rain Rock (Sump) Install 10 rain Rock (Sump) Install Grade Proceeding Proceeding State (Sump) Install Grade Proceding State (Sump) Install Governity 16 oz (Sump) Install GOV Install 60 mil HDPE Liner Textured Both Sides Install 10 ouble Sided Geocomposite Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench		cy sf If sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 17 mil Tozu (Sump) Install 18 mil Tozu (Sump) Install 19 mil HDPE Liner Textured Both Sides Install Got (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install 10 mil HDPE Liner Textured Both Sides Install Omble Sided Geocomposite Install 60 mil HDPE Liner Textured Both Sides Install 50 mil HDPE Liner Textured Both Sides Install 5 mil HDPE Piner Textured Both Sides Install 5 mil HDPE Piner Textured Both Sides Install 5 mil HDPE Piner Textured Both Sides Install 5 mil HDPE Piner Textured Both Sides Install 5 mil HDPE Piner Textured Both Sides Install 5 mil HDPE Piner Textured Both Sides Install 8 or Corrugated Perforated HDPE Piner Drain Install 7 mil Torrugated Perforated HDPE Piner Drain Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL		cy sf If sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.00 \$18.00 \$22.50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
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		Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install Grade Por (Sump) Install Governous Both Sides Install GOVERNOUS Both Sides Install GOVERNOUS Both Sides Install GOVERNOUS Both Sides Install Bouble Sided Geocomposite Install Bouble Sided Geocomposite Install G°Corrugated Perforated HDPE Pipe Drain Install G°Corrugated Perforated HDPE Pipe Drain Install G°Corrugated Perforated HDPE Pipe Drain Install Bouble Sided Geocomposite Install Soz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install GOL Install B Om Il HDPE Liner Textured Both Sides Install Soz Geotextile CAP Drain Install Soz Geotextile CAP Drain Install Double Sided Geocomposite Install Soz Geotextile CAP Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover		cy sf If sf sf sf sf ton If sf sf sf sf sf sf sf sf sf sf sf sf sf	\$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$22.50 \$4.00 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$13.00 \$110.00 \$22.50 \$0.00 \$18.00 \$0.83 \$0.66 \$0.83 \$0.20 \$0.00 \$18.00 \$10.00 \$22.50 \$0.00 \$18.00 \$30.83	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
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NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
5	Lined Excavation/Backfill	CELL			\$0.00	\$0	
		Grade Bottom Before Lining	813,500	sf	\$0.35	\$284,725	
		Install 60 mil HDPE Liner Textured Both Sides	813,500	sf	\$0.60	\$488,100	
		Install 16 oz. Geotextile	813,500	sf	\$0.31	\$252,185	
		Install Drain Rock	49,714	ton	\$22.50	\$1,118,563	
		Install 8 oz Geotextile	813,500	sf	\$0.20	\$162,700	
		CAP			\$0.00	\$0	
		Sump with Pump 30' Deep	8	ea	\$6,450.00	\$51,600	
		Import Soil	36,156	cy	\$18.00	\$650,800	
		Place and Compact Import Cover Soil	36,156	cy	\$2.85	\$103,043	İ
		Seed Cap	22.41	acre	\$1,750.00	\$39,218	
		Additional Sampling for Leaving Soil On-sit		ea	\$0.00	\$0	\$3,150,934
6	Off-site Treatment/Disposal	Tons per Cubic Yard		ton	1.60	\$0	
		Load, Transport and Incinerate Soil Off-site (Trucks)	-	ton	\$704.33	\$0	
		Load, Transport and Dispose at Subtitle "C" (Trucks)		ton	\$286.33	\$0	
		Load, Transport and Incinerate Soil Off-site (Rail)	-	ton	\$547.67	\$0	
		Load, Transport and Dispose at Subtitle "C" (Rail)		ton	\$249.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
		Transloading Facility		ls	\$15,000.00	\$0	
		Import Soil to Replace Removed Contaminated Soil		cy	\$18.00	\$0	
		Place and Compact Soil in Removal Locations		cy	\$2.85	\$0	\$0
7	Site Restoration	Install Railroad Tracks 100 lb Rail, Wood Ties		lf	\$102.00	\$0	
		Install Tram		ls	\$0.00	\$0	
		Reinstall Fence	400	lf	\$13.00	\$5,200	
		Reinstall Asphalt/Concrete	15,300	sf	\$6.00	\$91,800	
		Building	7,800	sf	\$70.00	\$546,000	
		Gas Fired Boiler	1	ls	\$550,000.00	\$550,000	
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	\$1,193,000
]		Subtotal:					\$71,604,951
	Miscellaneous	Engineering (Including Field Investigations)	8%			\$5,728,396	
· '		Local Permitting	5%			\$3,580,248	1
		Plan Checks	0%		ĺ	\$0	1
		Construction Management/Project Management	8%			\$5,728,396	1
		QA/QC	5%			\$3,580,248	1
		Contingency	15%		ļ	\$10,740,743	1
		Fee	10%		ļ	\$7,160,495	\$36,518,525
			•		İ	Total:	\$108,123,477

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
1	Demolition	Demolish Buildings	7,800	sf	\$4.25	\$33,150	
		Demolish Paving	15,300	sf	\$3.00	\$45,900	
		Demolish/Recycle Rail Road Tracks		lf	\$0.00	\$0	
		Locate Utilities Geophysical	1	ls	\$8,000.00	\$8,000	
		Remove/Relocate Utilities	1	A lot	\$25,000.00	\$25,000	
					\$0.00	\$0	1
					\$0.00	\$0	1
					\$0.00	\$0	
		Clear and Grub Treed Areas	1.30	Acre	\$3,500.00	\$4,550	1
					\$0.00	\$0	1
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
		Remove Wood Fired Boiler	1	ls	\$40,000.00	\$40,000	
		Demolish Fence	400	lf	\$10.00	\$4,000	
		Bellionish Tenee			\$0.00	\$0	\$160,600
2	Excavation	Install Dewatering Trench Bio Slurry Type	128,900	sf	\$15.50	\$1,997,950	4.00,000
	Excavation	Install Dewatering Piping System	5,850	lf	\$26.75	\$156,488	
		Install Dewatering Sumps and Pumps (Every 200 lf)	28.00	ea	\$7,500.00	\$210,000	
			20.00	ls	\$1,200,000.00	\$1,200,000	-
		Install Dewatering Treatment System Operate Dewatering System	22,500,000		\$1,200,000.00	\$337,500	┨
		Operate Dewatering System Install/Later Remove Silt Fence		gal			-
		Install/Later Remove Silt Fence Install/Remove Shoring	5,350	lf of	\$5.00	\$26,750 \$583,050	-
		0	17,940	sf	\$32.50		-
		Decontamination Pad	141,000	ls	\$35,000.00	\$35,000	- I
		Excavate Soil (Covers Direct Load of Trucks Option)	441,000	cy	\$4.50	\$1,984,500	-
		Transport Soil to Stockpile	441,000	cy	\$2.75	\$1,212,750	-
		Transport Soil to Site Landfill or Lined Excav., place and compact		cy	\$4.85	\$0	-
		Import Soil to Fill in Excavations	441,000	cy	\$18.00	\$7,938,000	4 !
		Place and Compact Soil	441,000	cy	\$2.85	\$1,256,850	_
		Reseed Excavated Areas If Not Used as Cell	17.19	acre	\$1,750.00	\$30,087	
					\$0.00	\$0	\$16,968,925
3	On-site Treatment of Soil	Tons per Cubic Yard		ton	1.60	\$0	
		Lined Stockpile/Treatment Area with Elevated Berm/Barrier	175,424	sf	\$0.72	\$126,305	
		Stabilize Soil On-site	-	ton	\$25.00	\$0	
		Pre-Treatment Processing	-	ton	\$0.00	\$0	
		Thermal Treat Soil On-site	-	ton	\$75.00	\$0	
		Load, Transport and Compact Treated Soil On-Site	-	cy	\$7.25	\$0	
		Load, Transport and Load for Off-site Disposal		cy	\$10.10	\$0	
		Pre/Post Treatment Sampling	-	samp	\$250.00	\$0	
		On-site Incineration with Mob/Demob Allocation	-	ton	\$2,000.00	\$0	
						\$0	\$126,305
4	On-site Landfill	CELL					
	•	Install Replacement Storm water Control Ditch		cy	\$7.15	\$0	1
		Excavate, Transport and Stockpile Bottom Foundation of Landfill		cy	\$4.00	\$0	
		Import Soil for Containment Berms		cy	\$18.00	\$0	1
		Place and Compact Containment Berms		cy	\$2.85	\$0	
		Grade Bottom Before Lining		sf	\$0.35	\$0	
		Anchor Trench		lf	\$2.73	\$0	
		Install GCL (Sump)		sf	\$0.68	\$0	
		Install 60 mil HDPE Liner Textured Both Sides (Sump)	Ì	sf	\$0.60	\$0	1
		Install 16 oz. Geotextile (Sump)		sf	\$0.31	\$0	1 !
		Install Drain Rock (Sump)	+	ton	\$22.50	\$0	1
		Install 4" PVC Sump Pipe (Sump)	-	lf	\$4.00	\$0	┪ !
		Install 4 PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump)	-	sf	\$0.31	\$0 \$0	1
		Install GCL	-	sf	\$0.68	\$0	1
		Install GCL Install 60 mil HDPE Liner Textured Both Sides	+	sf	\$0.60	\$0 \$0	┧ !
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite			\$0.60 \$0.83		-
l					50.83	\$0	1
				sf		60	
		Install 60 mil HDPE Liner Textured Both Sides		sf	\$0.60	\$0	4 !
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite		sf sf	\$0.60 \$0.83	\$0	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain		sf sf lf	\$0.60 \$0.83 \$13.00	\$0 \$0	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain		sf sf lf lf	\$0.60 \$0.83 \$13.00 \$10.00	\$0 \$0 \$0	- - - -
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock		sf sf lf lf ton	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50	\$0 \$0 \$0 \$0	- - - -
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install 8 oz Geotextile		sf sf lf lf ton	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20	\$0 \$0 \$0 \$0 \$0	-
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install 8 oz Geotextile CAP		sf sf lf lf ton sf 0	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil		sf sf lf lf ton sf 0 cy	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 1" Corrugated Perforated HDPE Pipe Drain Install 1 Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil		sf sf lf lf ton sf 0 cy	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 1" Corrugated Perforated HDPE Pipe Drain Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench		sf sf If If ton sf 0 cy cy If	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL		sf sf lf lf ton sf 0 cy	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install Soz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides		sf sf If If ton sf 0 cy cy If	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL		sf sf If If ton sf 0 cy cy If sf	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install Soz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides		sf sf lf lf ton sf o cy lf sf sf	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Boza Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install GCL Install GO mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite		sf sf lf lf ton sf o cy cy lf sf sf	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Soz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain		sf sf sf If ton sf 0 cy cy If sf sf sf	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 1" Corrugated Perforated HDPE Pipe Drain Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install 1 ouble Sided Geocomposite Install 8 oz Geotextile CAP Drain		sf sf sf lf lf ton sf 0 cy lf sf sf sf sf lf	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 1 Drain Rock Install 1 Drain Rock Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install 6 CL Install 6 O mil HDPE Liner Textured Both Sides Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 14" Corrugated Perforated HDPE Pipe Drain Install Train Rock for Perimeter CAP Drain Import Vegetative Cover		sf sf sf If ton sf o cy cy ff sf sf sf sf	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install B oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install bouble Sided Geocomposite Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover Place Vegetative Cover		sf sf sf If ton sf 0 cy cy If sf sf sf sf sf cy cy	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00 \$22.50 \$30.00 \$18.50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install 19 corrugated Perforated HDPE Pipe Drain Install 8 oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install 60 mil HDPE Liner Textured Both Sides Install 10 ouble Sided Geocomposite Install 1 ouble Sided Geocomposite Install 1 oval Forman Install 1 oval Forman Install 1 oval Forman Install 1 oval Perforated HDPE Pipe Drain Install 1 oval Forman Install 1		sf sf sf If ton sf 0 cy cy If sf sf sf sf sf cy cy cy acre	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00 \$22.50 \$30.00 \$1.85	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
		Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install B oz Geotextile CAP Import Structural Wedge Soil Place and Compact Structural Wedge Soil Anchor Trench Install GCL Install 60 mil HDPE Liner Textured Both Sides Install bouble Sided Geocomposite Install 8 oz Geotextile CAP Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock for Perimeter CAP Drain Import Vegetative Cover Place Vegetative Cover		sf sf sf If ton sf 0 cy cy If sf sf sf sf sf cy cy	\$0.60 \$0.83 \$13.00 \$10.00 \$22.50 \$0.20 \$0.00 \$18.00 \$2.85 \$2.73 \$0.68 \$0.60 \$0.83 \$0.20 \$10.00 \$22.50 \$30.00 \$18.50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0

NO.	ELEMENTS	ACTIVITIES	US Quantity	US Units	US UNIT RATE	SUBTOTAL	ELEMENT SUBTOTALS
5	Lined Excavation/Backfill	CELL			\$0.00	\$0	
		Grade Bottom Before Lining		sf	\$0.35	\$0	
		Install 60 mil HDPE Liner Textured Both Sides		sf	\$0.60	\$0	
		Install 16 oz. Geotextile		sf	\$0.31	\$0	
		Install Drain Rock		ton	\$22.50	\$0	
		Install 8 oz Geotextile		sf	\$0.20	\$0	
		CAP			\$0.00	\$0	
		Sump with Pump 30' Deep		ea	\$6,450.00	\$0	
		Import Soil		cy	\$18.00	\$0	
		Place and Compact Import Cover Soil		cy	\$2.85	\$0	
		Seed Cap		acre	\$1,750.00	\$0	
		Additional Sampling for Leaving Soil On-site		ea	\$0.00	\$0	\$0
6	Off-site Treatment/Disposal	Tons per Cubic Yard		ton	1.60	\$0	
	•	Load, Transport and Incinerate Soil Off-site (Trucks)	-	ton	\$704.33	\$0	
		Load, Transport and Dispose at Subtitle "C" (Trucks)	352,800	ton	\$286.33	\$101,017,224	
		Load, Transport and Incinerate Soil Off-site (Rail)	-	ton	\$547.67	\$0	
		Load, Transport and Dispose at Subtitle "C" (Rail)	352,800	ton	\$249.00	\$87,847,200	
					\$0.00	\$0	
					\$0.00	\$0	
		Transloading Facility	1	ls	\$15,000.00	\$15,000	
		Import Soil to Replace Removed Contaminated Soil		cy	\$18.00	\$0	
		Place and Compact Soil in Removal Locations	-	cy	\$2.85	\$0	\$188,879,424
7	Site Restoration	Install Railroad Tracks 100 lb Rail, Wood Ties	2,290	lf	\$102.00	\$233,580	
		Install Tram		ls	\$0.00	\$0	
		Reinstall Fence	400	lf	\$13.00	\$5,200	
		Reinstall Asphalt/Concrete	15,300	sf	\$6.00	\$91,800	
		Building	7,800	sf	\$70.00	\$546,000	
		Gas Fired Boiler	1	ls	\$550,000.00	\$550,000	
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	
					\$0.00	\$0	\$1,426,580
		Subtotal:					\$207,561,834
	Miscellaneous	Engineering (Including Field Investigations)	1.33%			\$2,767,491	
	<u>, </u>	Local Permitting	0.83%		ļ	\$1,729,682	1
		Plan Checks	0.00%			\$0	
		Construction Management/Project Management	1.33%			\$2,767,491	
		QA/QC	0.83%		ļ	\$1,729,682	1
		Contingency	2.50%		ľ	\$5,189,046	1
		Fee	1.67%		ľ	\$3,459,364	\$17,642,756
				ļi.		Total:	\$225,204,590

Appendix D Landfill Backup

Category	Item	Quantity	Unit	Description			
	Waste Volume	441,000	yard ³	(excluding cover, liner, and berm)			
	Waste Mass	700,000	ton	(assuming 1.6 ton / yard ³)			
	Waste Height	34	feet	(above 1' liner)			
Waste	Total Height	37	feet	(including 2' cover & 1' liner)			
wasie	Dimension: South	350	feet	at elevation 10' above liner			
	Dimension: North	370	feet	at elevation 10' above liner			
	Dimension: East	1,295	feet	at elevation 10' above liner			
	Dimension: West	1,175	feet	at elevation 10' above liner			
	Soil Cover Thickness	2	feet	Design Specified			
	Soil Cover Volume	25,252	yard ³	Rough Calculation			
	Soir Cover Surface Area	7.826	acre	Rough Calculation			
	Double Sided Geocomposite	10.52	acre	extra 8' to all sides for anchoring (2'x 2' anchor trench)			
Cover	60-mil. Textured HDPE	10.52	acre	extra 8' to all sides for anchoring (2'x 2' anchor trench)			
	Geosynthetic Clay Liner	10.52	acre	extra 8' to all sides for anchoring (2'x 2' anchor trench)			
	8 oz. Filter Geotextile	0.294	acre	2' x 2' anchor trench			
	4" HDPE Pipe	3,206	feet	2' from waste dimension show above			
	Gravel Fill	465	yard ³	excluding space for 4" HDPE Pipe			
Berm	Import Soil Volume	54,484	yard ³	Estimating middle point 6.3' from waste edge, excluding space for two anchor trenches			
	8 oz. Geotextile Filter	10.85	acre	Middle of 2'x2' anchor trench located 5' from the top of berm edge			
	Drain Rock	3,180	yard ³	Only to side of the berm + gravel fill in anchor trench			
	8 oz. Geotextile Filter	0.137	acre	Cover for 6" Pipe running through middle of the landfill bottom			
	6" HDPE Pipe	1,193	feet	Distance from mid point of South end to mid point of North end			
	4" HDPE Pipe	7,226	feet	Placed every 50' from North and South Ends - including 22 pipes 310' long, and 137' and 270' long pipes			
	Double Sided Geocomposite	10.85	acre	Estimated to be similar in size to the 8 oz. Geotextile Filter at the very top of liner			
	60-mil. Textured (both sides)HDPE	10.85	acre	Estimated to be similar in size to the 8 oz. Geotextile Filter at the very top of liner			
Liner (from top to	Single-sided Geocomposite	10.85	acre	Estimated to be similar in size to the 8 oz. Geotextile Filter at the very top of liner			
bottom)	Double-sided Geocomposite	10.85	acre	Estimated to be similar in size to the 8 oz. Geotextile Filter at the very top of liner			
	60-mil. Textured (both sides)HDPE	10.85	acre	Estimated to be similar in size to the 8 oz. Geotextile Filter at the very top of liner			
	Geosynthetic Clay Liner	10.85	acre	Estimated to be similar in size to the 8 oz. Geotextile Filter at the very top of liner			
	16 oz. Geotextile	0.53	acre	Including 1' overlapp, the drainage trench runs underneath 6" HDPE Pipe			
	Drain Rock	305.4	yard ³	1' deep trench, excluding space for 4" HDPE Pipe			
	4" HDPE Pipe	1,193	yard ³	Same length as 6" HDPE Pipe			
	60-mil. Textured (both sides)HDPE	0.315	acre	Extra foot both sides			
	Geosynthetic Clay Liner	0.315	acre	Estimated to be same area as above (60-mil. HDPE)			
Landfill Overlap	Drip Trap Overlap Volume	28,000	yard ³				
on Excavation	Drip Trap Surface Area Overlap	33,000	sf				
	North Lagoon Overlap Volume	910	yard ³				
Areas	North Lagoon Surface Area Overlap	1,100	sf				

Appendix D Excavation Area Backup

Category	Item	Quantity	Unit	Description
Court I amaza Charian	Length	330 23	feet feet	East of South Lagoon excavation area (measured off figure 3.1) Based on excavation plan (ch.3)
South Lagoon Shoring	Depth Area	7,590	feet ²	Length x Depth
	Length	7,590 450	feet	West of Process Area excavation (measured off figure 3.1)
Process Area Shoring	Depth	23		Based on excavation plan (ch.3)
Process Area Shoring	Area	10.350	feet feet ²	Length x Depth
		- /		
Runoff Ditch (around onsite	Length	1,000	feet	Estimated from figure 3.1
Landfill)	X-Area	75	feet ²	Trapezoidal Trench: 5' deep, 5' wide bottom, 2:1 slope both sides
·	Excavation Volume	2,778	yard ³	Volme of soil to be excavated
	Total Excavation Goal	136,000	yard ³	Calculation by Ken and Yasser
Į.	Excavation Area	156,000	feet ²	Jeff
	Excavation Liner Area	207,500	feet ²	Jeff
	Trench Total Length	1,400	feet	Estimated from figure 3.1
Process Area	Trench Width	1.5	feet	Figure 3.2
	Trench Depth	24.1	feet	For each side - averaged depth considering 2% grading
ļ	Trench	33,740	SF	
	Gravel Fill	1,874	yard ³	Total volume of gravel required to fill all four trenches, no top soil cove
ļ	4" Well	7	Well	Total Length divided by 200 feet
	Total 4" Drainage Pipe Length	1,400	feet	All four sides summed
	Total Excavation Goal	70,000	yard ³	Calculation by Ken and Yasser
	Excavation Area	112,100	feet ²	Jeff
	Excavation Liner Area	152,400	feet ²	Jeff
	Trench Total Length	1,200	feet	Estimated from figure 3.1
	Trench Width	1.5	feet	Figure 3.2
Drip Track Area	Trench Depth (West and East)	24.1	feet	West and East sides - averaged depth considering 2% grading
	Trench Depth (North and South)	24.5	feet	North and South sides - averaged depth considering 2% grading
ļ	Trench	29,160	SF	
	Gravel Fill	1,611	yard ³	Total volume of gravel required to fill all four trenches, no top soil cover
ļ	4" Well	6	Well	Total Length divided by 200 feet
	Total 4" Drainage Pipe Length	1,200	feet	All four sides summed
	Total Excavation Goal	130,000	yard ³	Calculation by Ken and Yasser
Į.	Excavation Area	192,000	feet ²	Jeff
	Excavation Liner Area	240,400	feet ²	Jeff
Į.	Trench Total Length	1,440	feet	Estimated from figure 3.1
South Lagoon Area	Trench Width	1.5	feet	Figure 3.2
	Average Trench Depth	24	feet	Averaged depth considering 2% grading
ļ	Trench	34,560	SF	
	Gravel Fill	1,920	yard ³	Total volume of gravel required to fill all four trenches, no top soil cover
ļ	4" Well	8	Well	Total Length divided by 200 feet
	Total 4" Drainage Pipe Length	1,440	feet	All four sides summed
	Total Excavation Goal	105,000	yard ³	Calculation by Ken and Yasser
	Excavation Area	164,000	feet ²	
	Excavation Liner Area	213,200		
ļ	Trench Total Length	1,310	feet	Estimated from figure 3.1
North Lagoon Area	Trench Width	1.5	feet	Figure 3.2
	Average Trench Depth	24.0	feet	Averaged depth considering 2% grading
	Trench	31,440	SF	
	Gravel Fill	1,747	yard ³	Total volume of gravel required to fill all four trenches, no top soil cover
ŀ	4" Well	7	Well	Total Length divided by 200 feet
	Total 4" Drainage Pipe Length	1,310	feet	All four sides summed
ļ	Total Excavation Goal	441,000	yard ³	
ļ	Total Excavation Area	624,100	feet ²	
tel (Neeth - Courth - Dec	Total Excavation Liner Area	813,500	feet ²	
tal (North + South + Process +	Trench Total Length	5,350	feet	
Drip Track)	Gravel Fill	7,152	yard ³	
	Total Trench	128,900	SF	
ļ	4" Well	28	Well	
	Total 4" Drainage Pipe Length	5,350	feet	i l

Appendix D Cost Estimate Detail Unit Costs

					-
NO.	ELEMENTS	ACTIVITIES	US Units		SOURCE
1	Demolition	Demolish Buildings	sf	\$4.25	LVI
		Demolish Paving	sf	\$3.00	LVI
		Demolish/Recycle Rail Road Tracks	1f	\$0	
		Locate Utilities Geophysical	1s	\$8,000	Past Experience
		Remove/Relocate Utilities	A lot	\$25,000	Alottment
				\$0	
				\$0	
				\$0	
		Clear and Grub Treed Areas	Acre	\$3,500	Past Experience
		Cicia and Grab Freed Areas	ricic	\$0	r ast Experience
			+	\$0	
			_		
			1	\$0	
			1	\$0	
		Remove Wood Fired Boiler	ls	\$40,000	
		Demolish Fence	lf	\$10	Past Experience
				\$0	
2	Excavation	Install Dewatering Trench Bio Slurry Type	sf	\$16	Sevenson
		Install Dewatering Piping System	1f	\$26.75	Sevenson
		Install Dewatering Sumps and Pumps (Every 200 lf)	ea	\$7,500	Sevenson
					150 gpm cap vs. 500 gpm cap/permanent vs temporary
		Install Dewatering Treatment System	ls	\$1,200,000	system
			_	\$0.015	
	1	Operate Dewatering System	gal		Based on Site GW treatment system costs
1	1	Install/Later Remove Silt Fence	lf .	\$5	Sevenson
	1	Install/Remove Shoring	sf	\$33	Sevenson
	1	Decontamination Pad	ls	\$35,000	Estimated Price
	1	Excavate Soil (Covers Direct Load of Trucks Option)	cy	\$4.50	Sevenson
1	1	Transport Soil to Stockpile	су	\$2.75	Sevenson
	1	Transport Soil to Site Landfill or Lined Excav., place and compact	cy	\$4.85	Sevenson
1	1	Import Soil to Fill in Excavations	cy	\$18.00	Estimated Price
	1	Place and Compact Soil	cy	\$2.85	Sevenson
	1	Reseed Excavated Areas If Not Used as Cell	acre	\$1,750	Sevenson
	1	TOSSEE ESCAPARED FILOROS II TWO COOD AS CEII	acic	\$1,730	Devensori
3	On-site Treatment of Soil	Tons per Cubic Yard	t	1.60	
3	On-site Treatment of Soil	*	ton		
		Lined Stockpile/Treatment Area with Elevated Berm/Barrier	sf	\$0.72	Estimated Price
		Stabilize Soil On-site	ton	\$25	Wilder Cost Otay Site
		Pre-Treatment Processing	ton	\$0.00	Included in thermal treatment cost
					Discussion with multiple vendors; EPA cost information
					which indicates costs of \$40 - \$300/ton; includes
					pretreatment because of DNAPL, moisture content, and
					physical properties of soil; includes reprocessing of soil
					that do not meet standards; considers that process is
		Thermal Treat Soil On-site	ton	\$75	subject to hazardous waste regulations,
		I and Transport and Compact Tranted Soil On Site	cy	\$7.25	Sevenson
		Load, Transport and Compact Treated Soil On-Site	c,		
		Load, Transport and Compact Treated Son On-Site Load, Transport and Load for Off-site Disposal	cy	\$10.10	Sevenson
		Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling	cy	\$10.10	Sevenson
		Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation	cy samp	\$10.10 \$250 \$2,000	Sevenson Estimated Price Per Jim J.
		Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent	cy samp	\$10.10 \$250 \$2,000 0%	Sevenson Estimated Price Per Jim J. Estimated
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilization	cy samp	\$10.10 \$250 \$2,000	Sevenson Estimated Price Per Jim J.
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilization CELL	cy samp ton	\$10.10 \$250 \$2,000 0% 0%	Sevenson Estimated Price Per Jim J. Estimated Estimated
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilization CELL Install Replacement Storm water Control Ditch	cy samp ton	\$10.10 \$250 \$2,000 0% 0% \$7.15	Sevenson Estimated Price Per Jim J. Estimated
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill	cy samp ton	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms	cy samp ton	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18	Sevenson Estimated Price Per Jim J. Estimated Estimated
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms	cy samp ton cy cy cy cy cy cy	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining	cy samp ton cy cy cy cy sf	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench	cy samp ton cy cy cy cy cy cy	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining	cy samp ton cy cy cy cy sf	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench	cy samp ton cy cy cy cy sf lf	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump)	cy samp ton cy cy cy cy sf lf sf	\$10.10 \$250 \$2,000 0% 57.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatio CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GO mit HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump)	cy samp ton cy cy cy cy cy fi lf sf sf sf	\$10.10 \$250 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 16 oz. Geotextile (Sump) Install To zie Geotextile (Sump) Install Drain Rock (Sump)	cy samp ton cy cy cy cy sf lf sf sf ton	\$10.10 \$2.50 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 16 on; HDPE Liner Textured Both Sides (Sump) Install 10 rain Rock (Sump) Install Jorain Rock (Sump) Install 4" PVC Sump Pipe (Sump)	cy samp ton cy cy cy sf lf sf sf sf ton lf	\$10.10 \$2.50 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson Estimated Price
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GO mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install Geotextile (Sump) Install Geotextile (Sump) Install Geotextile I 6 oz (Sump) Install Geotextile I 6 oz (Sump)	cy samp ton	\$10.10 \$2.50 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.60 \$0.31 \$23 \$4	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Estimated Price
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 16 oz. Geotextile (Sump) Install 1 fo z. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install Geotextile 16 oz (Sump) Install Geotextile 16 oz (Sump) Install GCL	cy samp ton cy cy cy cy sf lf sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.31 \$23 \$4 \$0.31	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Estimated Price Sevenson GSE Sevenson Sevenson Sevenson Estimated Price Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 16 omil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Jrain Rock (Sump) Install Jrain Rock (Sump) Install Gocextile 16 oz (Sump) Install Gocextile 16 oz (Sump) Install Gotextile (Somp)	cy samp ton cy cy cy cy sf lif sf sf st ton lif sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$3.31 \$2.3 \$4.3 \$0.31 \$2.3 \$4.3 \$0.31	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson Sevenson GSE Sevenson GSE Sevenson GSE Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install GCL Install GCL (Sump) Install GCL (Install GCL (Sump) Install GCL (Install GCL (Sump) Install GOL (Install GCL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install Double Sided Geocomposite	cy samp ton cy cy cy cy sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2.000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$2.35 \$4.00 \$0.60 \$0.60 \$0.60 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson GSE Sevenson GSE Sevenson Estimated Price Sevenson GSE Sevenson Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatio CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GO mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Oomle HDPE Liner Textured Both Sides Install Oomle HDPE Liner Textured Both Sides	cy samp ton cy cy cy cy sf lf sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2,000 0% 0% \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$23 \$4 \$0.68 \$0.60 \$0.83 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson Sevenson GSE Sevenson GSE Sevenson GSE Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install GCL Install GCL (Sump) Install GCL (Install GCL (Sump) Install GCL (Install GCL (Sump) Install GOL (Install GCL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install GOL (Install GOL) Install Double Sided Geocomposite	cy samp ton cy cy cy cy sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2.000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$2.35 \$4.00 \$0.60 \$0.60 \$0.60 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson GSE Sevenson GSE Sevenson Estimated Price Sevenson GSE Sevenson Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatio CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GO mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install Geotextile 16 oz (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Oomle HDPE Liner Textured Both Sides Install Oomle HDPE Liner Textured Both Sides	cy samp ton cy cy cy cy sf lf sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2,000 0% 0% \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$23 \$4 \$0.68 \$0.60 \$0.83 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson Sevenson Sevenson GSE Sevenson Sevenson Sevenson Sevenson Sevenson Sevenson Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install 60 mil HDPE Liner Textured Both Sides (Sump) Install 10 oz. Geotextile (Sump) Install Drain Rock (Sump) Install 4" PVC Sump Pipe (Sump) Install 4" PVC Sump Pipe (Sump) Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Double Sided Geocomposite Install 10 Double Sided Geocomposite Install 6" Corrugated Perforated HDPE Pipe Drain	cy samp ton cy cy cy cy sf lf sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2,000 0% 0% \$7.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.31 \$2.3 \$4 \$0.31 \$0.68 \$0.60 \$0.83	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Estimated Price Sevenson GSE Sevenson Sevenson Sevenson Sevenson GSE Sevenson GSE Sevenson GSE Sevenson Sevenson Sevenson Sevenson Sevenson Sevenson Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatio CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GO mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install Drain Rock (Sump) Install GCL Compact Containment Berms Install GCL Install GO mil HDPE Liner Textured Both Sides Install GO mil HDPE Liner Textured Both Sides Install GO mil HDPE Liner Textured Both Sides Install GO mil HDPE Liner Textured Both Sides Install Ouble Sided Geocomposite Install Bouble Sided Geocomposite Install Double Sided Geocomposite Install Je Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain	cy samp ton cy cy cy cy sf lif sf sf sf ton lif sf sf sf sf lif lif lif lif lif lif	\$10.10 \$2.50 \$2,000 0% 0% \$1.15 \$4.00 \$1.8 \$2.85 \$0.35 \$2.73 \$0.60 \$0.31 \$2.3 \$4 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson Sevenson Sevenson Aspectation Sevenson Sevenson Aspectation Sevenson Sevenson Aspectation Sevenson Sevenson Sevenson Sevenson Adjusted WDI Adjusted WDI
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatio CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GCL (Sump) Install 6 oz. Geotextile (Sump) Install Danin Rock (Sump) Install Danin Rock (Sump) Install Geotextile 16 oz (Sump) Install GCL Install 6 omil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 16 omil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install I Double Sided Geocomposite Install I Omil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install 16 'Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock	cy samp ton cy cy cy cy sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2,000 0% 0% \$4.00 \$18 \$2.73 \$0.68 \$0.60 \$0.31 \$2.3 \$4 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$1.0 \$0.83	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson Agjusted WDI Adjusted WDI Sevenson
4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatior CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install GC (Sump) Install 16 oz. Geotextile (Sump) Install I fo oz. Geotextile (Sump) Install Drain Rock (Sump) Install GCL Install GCL Install 60 mil HDPE Liner Textured Both Sides Install Double Sided Geocomposite Install Double Sided Geocomposite Install 10 bouble Sided Geocomposite Install 16 "Corrugated Perforated HDPE Pipe Drain Install 4" Corrugated Perforated HDPE Pipe Drain Install Drain Rock Install Drain Rock Install Drain Rock Install Bora Geotextile	cy samp ton cy cy cy cy sf lif sf sf sf ton lif sf sf sf sf lif lif lif lif lif lif	\$10.10 \$2.50 \$2,000 0% 0% \$1.15 \$4.00 \$1.8 \$2.85 \$0.35 \$2.73 \$0.60 \$0.31 \$2.3 \$4 \$0.31 \$0.68 \$0.60 \$0.83 \$0.60 \$0.83 \$0.60	Sevenson Estimated Price Per Jim J. Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson Sevenson Sevenson GSE Sevenson Sevenson Estimated Price Sevenson Sevenson Sevenson Sevenson Aspectation Sevenson Aspectation Sevenson Sevenson Adjusted WDI Adjusted WDI
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4	On-site Landfill	Load, Transport and Load for Off-site Disposal Pre/Post Treatment Sampling On-site Incineration with Mob/Demob Allocation Retreatment Percent Bulk Factor from Stabilizatiot CELL Install Replacement Storm water Control Ditch Excavate, Transport and Stockpile Bottom Foundation of Landfill Import Soil for Containment Berms Place and Compact Containment Berms Grade Bottom Before Lining Anchor Trench Install GCL (Sump) Install Go mil HDPE Liner Textured Both Sides (Sump) Install 16 oz. Geotextile (Sump) Install Drain Rock (Sump) Install GD (Sump) Install GOL (Sump) Install GOL (Sump	cy samp ton cy cy cy cy sf lif sf sf sf ton lif sf sf sf sf sf sf sf sf sf sf sf sf sf	\$10.10 \$2.50 \$2.000 0% 0% 0% \$57.15 \$4.00 \$18 \$2.85 \$0.35 \$2.73 \$0.68 \$0.60 \$0.31 \$2.3 \$4 \$0.68 \$0.60 \$0.83 \$13 \$10 \$2.2.50 \$0.60 \$0.83 \$1.85 \$1.75 \$0.68	Sevenson Estimated Price Per Jim J. Estimated Estimated Estimated Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson Sevenson Sevenson GSE Sevenson GSE Sevenson GSE Sevenson GSE Sevenson GSE Sevenson Estimated Price Sevenson Exxon Mobile Commancho Bid GSE Sevenson
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Appendix D Cost Estimate Detail Unit Costs

NO.	ELEMENTS	ACTIVITIES	HC Hnite	US UNIT	SOURCE
	Lined Excavation/Backfill	CELL	US UNITS	OS UNII	SOURCE
3	Emed Excavation/Dackini	Grade Bottom Before Lining	sf	\$0.35	Sevenson
		Install 60 mil HDPE Liner Textured Both Sides	sf	\$0.55	Sevenson Sevenson
		Install 16 oz. Geotextile	si sf	\$0.60	Sevenson Sevenson
		Install Drain Rock	ton	\$22.50	Sevenson
		Install 8 oz Geotextile	sf	\$0.20	Sevenson
		CAP	81	\$0.20	Sevenson
		Sump with Pump 30' Deep	ea	\$6,450	Sevenson
		Import Soil	cv	\$18	Estimated Price
		Place and Compact Import Cover Soil	cy	\$2.85	Sevenson
		Seed Cap	acre	\$1,750	Sevenson
		Additional Sampling for Leaving Soil On-sit	ea	\$1,730	Sevenson
6	Off-site Treatment/Disposal	Tons per Cubic Yard	ton	1.60	
0	OII-site Treatment/Disposai	Load, Transport and Incinerate Soil Off-site (Trucks)	ton	\$704.33	Ave of Deer Park, Aragonite and Kimball
				\$286.33	
		Load, Transport and Dispose at Subtitle "C" (Trucks) Load, Transport and Incinerate Soil Off-site (Rail)	ton ton	\$286.33	Ave of Deer Park, Aragonite and Kimball Ave of Grassy Mountain, Emelle and Lake Charles
		Load, Transport and Dispose at Subtitle "C" (Rail)	ton	\$249.00	Grassy Mountain, Emeile and Lake Charles Grassy Mountain Site
		Loau, Transport and Dispose at Subutic C (Kall)	tOII	\$249.00	Grassy wouldtain site
				\$0	
		Transloading Facility	1s	\$15,000	
		Import Soil to Replace Removed Contaminated Soil		\$13,000	E.C. ID.
		Place and Compact Soil in Removal Location	cy cy	\$2.85	Estimated Price Sevenson
7	Site Restoration	Install Railroad Tracks 100 lb Rail, Wood Ties	lf	\$102.00	Means 2002 Heavy Construction Cost Data
/	Site Restoration	Install Tram	ls	\$0.00	Means 2002 Heavy Construction Cost Data
		Reinstall Fence	ls lf	\$13.00	Di Ei
			sf		Previous Experience
		Reinstall Asphalt/Concrete	sf	\$6.00 \$70.00	Estimated Price Average Estimated Price
		Building		\$550,000.00	
		Gas Fired Boiler	ls	\$0.00	Input from Koppers Inc
			1	\$0.00	
			1	\$0.00	
			1	\$0.00	
	0.14	VI O C C C C C V			
8	O+M	Labor Operation Cost of System per Year	yr	\$38,860 \$40,564	
]		Monitoring/Reporting per Year	yr		
		Electric Cost Per Year Gas Cost per Year	yr	\$21,600 \$18,000	
			yr		
		Carbon Cost per Year	yr	\$5,000	
			1	\$0	
			1	\$0	
		CL : III C . V	1	\$0	
		Chemical Use Cost per Year	yr	\$1,500	
		Charles	1	\$0	
 	Subtotal:				
	Miscellaneous	Engineering (Including Field Investigations)	8%		
		Local Permitting	5%		
		Plan Checks	0%		
		Construction Management/Project Management	8%		
		QA/QC	5%		
		Contingency	15%		
]		Fee	10%]	
		Total:	1		