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Birmingham Coal & Coke Company, Inc.
Posey Mill No. 2 Mine, P-3963
Detailed Design Plan Basin 040

4.7 Inches, 25 Year - 6 Hour,

SCS 6 HR

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General Information

Storm Information:

Storm Type:	SCS 6HOUR
Design Storm:	25 yr - 6 hr
Rainfall Depth:	4.700 inches

Particle Size Distribution:

Size (mm)	Topsoil	Spoil
3.0000	100.000%	100.000%
2.0000	98.000%	92.000%
1.0000	96.000%	78.000%
0.5000	94.000%	54.000%
0.3000	88.000%	43.000%
0.2000	80.000%	34.000%
0.1000	68.000%	22.000%
0.0500	49.000%	15.000%
0.0300	36.000%	9.000%
0.0200	28.000%	5.000%
0.0100	14.000%	4.000%
0.0050	5.000%	3.000%
0.0030	4.000%	2.500%
0.0010	2.000%	2.000%
0.0001	0.001%	0.001%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Basin 040

#1
Pond

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	19.430	19.430	51.24	4.12	1,104.0	306,161	234.48	138.54
	Out			9.08	4.12	31.3	9,023	0.00	0.00

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	92.023%	100.000%
1.0000	78.021%	100.000%
0.5000	54.016%	100.000%
0.3000	43.014%	100.000%
0.2000	34.011%	100.000%
0.1000	22.008%	100.000%
0.0500	15.006%	100.000%
0.0300	9.004%	100.000%
0.0200	5.003%	100.000%
0.0100	4.002%	100.000%
0.0050	3.001%	100.000%
0.0030	2.501%	88.146%
0.0010	2.001%	70.514%
0.0001	0.001%	0.035%

Structure Detail:

Structure #1 (Pond)

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Pond Inputs:

Initial Pool Elev:	869.60 ft
Initial Pool:	0.88 ac-ft
*Sediment Storage:	1.25 ac-ft
Dead Space:	20.00 %

**Sediment capacity calculated from 0.075 times disturbed area*

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
18.00	110.00	2.00	0.0240	869.60	0.90	0.00

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
872.30	20.00	2.00:1	2.00:1	12.00

Pond Results:

Peak Elevation:	872.27 ft
H'graph Detention Time:	2.14 hrs
Pond Model:	CSTRS
Dewater Time:	0.76 days
Trap Efficiency:	97.16 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
867.55	0.359	0.000	0.000		Top of Sed. Storage
867.80	0.376	0.091	0.000		
868.30	0.410	0.288	0.000		
868.80	0.446	0.502	0.000		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
868.90	0.454	0.547	0.000		
869.30	0.484	0.734	0.000		
869.60	0.507	0.883	0.000		Spillway #1
869.80	0.523	0.986	0.573	10.35	
870.00	0.539	1.092	0.807	1.85	
870.30	0.566	1.258	1.845	1.60	
870.80	0.612	1.552	4.129	1.30	
871.30	0.659	1.870	5.995	0.75	
871.80	0.709	2.212	8.410	0.55	
872.27	0.758	2.560	9.084	1.75	Peak Stage
872.30	0.760	2.579	9.122		Spillway #2
872.40	0.771	2.656	9.686		
872.80	0.813	2.973	11.928		
873.30	0.868	3.393	40.373		
873.80	0.925	3.841	73.889		
874.30	0.983	4.318	119.256		
874.80	1.043	4.825	175.241		
875.00	1.068	5.036	200.636		

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
867.55	0.000	0.000	0.000
867.80	0.000	0.000	0.000
868.30	0.000	0.000	0.000
868.80	0.000	0.000	0.000
868.90	0.000	0.000	0.000
869.30	0.000	0.000	0.000
869.60	0.000	0.000	0.000
869.80	(3)>0.573	0.000	0.573
870.00	(3)>0.807	0.000	0.807
870.30	(3)>1.845	0.000	1.845
870.80	(3)>4.129	0.000	4.129
871.30	(1)>5.995	0.000	5.995
871.80	(6)>8.410	0.000	8.410
872.30	(6)>9.122	0.000	9.122
872.40	(6)>9.248	0.438	9.686
872.80	(6)>9.739	2.189	11.928

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
873.30	(6)>10.309	30.064	40.373
873.80	(6)>10.853	63.036	73.889
874.30	(6)>11.372	107.884	119.256
874.80	(6)>11.866	163.374	175.241
875.00	(6)>12.057	188.580	200.636

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	16.720	0.109	0.039	0.325	81.000	F	48.31	3.792
	2	2.290	0.039	0.000	0.000	55.000	M	1.08	0.159
	3	0.420	0.001	0.000	0.000	100.000	F	1.86	0.165
	Σ	**19.430**						**51.24**	**4.116**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	200.00	12.50	0.9000	1.0000	2	1,104.3	322,431	246.95	149.55
	2	0.240	150.00	13.50	0.0030	1.0000	1	0.1	451	0.31	0.22
	3	0.001	50.00	0.01	0.0010	1.0000	1	0.0	0	0.00	0.00
	Σ							**1,104.0**	**306,161**	**234.48**	**138.54**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	2.17	10.00	460.00	1.470	0.086
		8. Large gullies, diversions, and low flowing streams	10.82	90.00	832.00	9.860	0.023
#1	**1**	**Time of Concentration:**					**0.109**
#1	2	8. Large gullies, diversions, and low flowing streams	1.12	5.00	447.02	3.170	0.039
#1	**2**	**Time of Concentration:**					**0.039**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	1.12	5.00	447.02	3.170	0.039
#1	**1**	**Muskingum K:**					**0.039**