National Coal of Alabama, Inc.
Poplar Springs North Mine, P-3886, R-6
Sediment Basin 039

25 Year - 6 Hour Event

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General Information

Storm Information:

Storm Type:	SCS 6 HOUR
Design Storm:	25 yr - 6 hr
Rainfall Depth:	4.900 inches

Particle Size Distribution:

Size (mm)	Topsoil	Spoil Material
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	Sediment Basin 039

#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	12.200	12.200	36.35	3.11	2,239.1	644,286	493.46	331.05
	Out			8.06	3.11	46.6	12,399	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	92.000%	100.000%
1.0000	78.000%	100.000%
0.5000	54.000%	100.000%
0.3000	43.000%	100.000%
0.2000	34.000%	100.000%
0.1000	22.000%	100.000%
0.0500	15.000%	100.000%
0.0300	9.000%	100.000%
0.0200	5.000%	100.000%
0.0100	4.000%	100.000%
0.0050	3.000%	100.000%
0.0030	2.500%	100.000%
0.0010	2.000%	96.156%
0.0001	0.001%	0.048%

Structure Detail:

Structure #1 (Pond)

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Pond Inputs:

Initial Pool Elev:	641.80
Initial Pool:	1.36 ac-ft
*Sediment Storage:	1.46 ac-ft
Dead Space:	20.00 %

**Sediment capacity calculated from 0.130 times disturbed acres*

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev	Entrance Loss Coefficient	Tailwater Depth (ft)
18.00	120.00	2.00	0.0240	641.80	0.90	0.00

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
643.60	20.00	2.00:1	2.00:1	10.00

Pond Results:

Peak Elevation:	643.65
H'graph Detention Time:	2.99 hrs
Pond Model:	CSTRS
Dewater Time:	1.05 days
Trap Efficiency:	97.92 %

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)	
639.77	0.568	0.000	0.000		Top of Sed. Storage
640.00	0.600	0.135	0.000		
640.20	0.617	0.257	0.000		
640.70	0.661	0.576	0.000		
641.20	0.706	0.918	0.000		
641.50	0.733	1.133	0.000		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
641.70	0.752	1.282	0.000		
641.80	0.761	1.357	0.000		Spillway #1
642.00	0.780	1.512	0.575	15.35	
642.20	0.796	1.669	0.807	2.80	
642.70	0.838	2.078	2.684	3.20	
643.20	0.880	2.507	4.918	1.40	
643.50	0.906	2.775	5.995	1.05	
643.60	0.915	2.866	6.703	0.90	Spillway #2
643.65	0.919	2.913	8.064	0.40	Peak Stage
643.70	0.924	2.958	9.398		
644.00	0.950	3.239	14.955		
644.20	0.966	3.431	18.588		
644.70	1.008	3.924	39.734		
645.20	1.050	4.439	70.807		
645.70	1.094	4.975	112.416		
646.00	1.120	5.307	142.083		

Detailed Discharge Table

Elevation	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
639.77	0.000	0.000	0.000
640.00	0.000	0.000	0.000
640.20	0.000	0.000	0.000
640.70	0.000	0.000	0.000
641.20	0.000	0.000	0.000
641.50	0.000	0.000	0.000
641.70	0.000	0.000	0.000
641.80	0.000	0.000	0.000
642.00	(3)>0.575	0.000	0.575
642.20	(3)>0.807	0.000	0.807
642.70	(3)>2.684	0.000	2.684
643.20	(2)>4.918	0.000	4.918
643.50	(1)>5.995	0.000	5.995
643.60	(1)>6.703	0.000	6.703
643.70	(5)>7.749	1.649	9.398
644.00	(6)>8.362	6.593	14.955
644.20	(6)>8.699	9.889	18.588
644.70	(6)>9.289	30.444	39.734
645.20	(6)>9.852	60.955	70.807

Elevation	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
645.70	(6)>10.384	102.032	112.416
646.00	(6)>10.694	131.389	142.083

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	11.200	0.090	0.000	0.000	81.000	F	32.55	2.704
	2	1.000	0.060	0.000	0.000	100.000	F	3.80	0.408
	Σ	**12.200**						**36.35**	**3.112**

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	33.00	0.9000	1.0000	2	2,239.1	698,466	534.95	367.07
	2	0.001	200.00	0.01	0.0001	1.0000	1	0.0	0	0.00	0.00
	Σ							**2,239.1**	**644,286**	**493.46**	**331.05**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	1.52	5.00	330.00	0.310	0.295
#1	**1**	**Time of Concentration:**					**0.090**
#1	2	1. Forest with heavy ground litter	4.44	20.00	450.00	0.530	0.235
#1	**2**	**Time of Concentration:**					**0.060**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	6.25	25.00	400.00	0.630	0.176
		6. Grassed waterway	6.67	40.00	600.00	3.870	0.043
		7. Paved area and small upland gullies	2.35	40.00	1,700.00	3.080	0.153
#1	**1**	**Muskingum K:**					**0.000**