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RAC Mining, LLC
Powhatan Mine No. 2, P-3933
Re-evaluation of Basin 005

6.0 Inches, 10 Year - 24 Hour,

DRN 58

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General Information

Storm Information:

Storm Type:	DRN 58
Design Storm:	10 yr - 24 hr
Rainfall Depth:	6.000 inches

Particle Size Distribution:

Size (mm)	Topsoil	Spoil
3.0000	100.000%	100.000%
2.0000	82.000%	89.000%
1.0000	61.000%	68.000%
0.5000	45.000%	51.000%
0.3000	34.000%	41.000%
0.2000	26.000%	34.000%
0.1000	18.000%	25.000%
0.0500	15.000%	22.000%
0.0300	14.000%	19.000%
0.0200	12.000%	17.000%
0.0100	10.000%	14.000%
0.0050	9.000%	12.000%
0.0030	7.000%	9.000%
0.0010	6.000%	6.000%
0.0001	0.000%	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Basin 005

#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	42.200	42.200	54.22	13.60	6,268.2	484,569	330.36	198.15
	Out			39.70	13.60	796.1	64,350	0.07	0.05

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	88.998%	100.000%
1.0000	67.998%	100.000%
0.5000	50.999%	100.000%
0.3000	40.998%	100.000%
0.2000	33.998%	100.000%
0.1000	24.998%	100.000%
0.0500	21.998%	100.000%
0.0300	18.999%	100.000%
0.0200	16.999%	100.000%
0.0100	13.999%	100.000%
0.0050	11.999%	94.476%
0.0030	9.000%	70.857%
0.0010	6.000%	47.241%
0.0001	0.000%	0.000%

Structure Detail:

Structure #1 (Pond)

Basin 005

Pond Inputs:

Initial Pool Elev:	349.00 ft
Initial Pool:	1.97 ac-ft
*Sediment Storage:	4.10 ac-ft
Dead Space:	20.00 %

**Sediment capacity was entered by user*

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
36.00	75.00	2.00	0.0240	349.00	0.90	0.00

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
18.00	75.00	2.00	0.0240	353.00	0.90	0.00

Pond Results:

Peak Elevation:	352.42 ft
H'graph Detention Time:	1.31 hrs
Pond Model:	CSTRS
Dewater Time:	1.05 days
Trap Efficiency:	87.30 %

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)	
346.03	0.571	0.000	0.000		Top of Sed. Storage
346.50	0.599	0.276	0.000		
347.00	0.629	0.583	0.000		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
347.50	0.660	0.905	0.000		
348.00	0.692	1.243	0.000		
348.50	0.723	1.597	0.000		
348.80	0.741	1.817	0.000		
349.00	0.754	1.966	0.000		Spillway #1
349.50	0.786	2.351	2.224	12.75	
350.00	0.818	2.752	6.287	5.60	
350.50	0.859	3.171	11.541	4.25	
351.00	0.901	3.611	17.776	1.00	
351.50	0.943	4.072	24.832	0.70	
352.00	0.987	4.554	32.640	0.45	
352.40	1.018	4.955	39.384	0.30	
352.42	1.020	4.976	39.705	0.05	Peak Stage
352.50	1.026	5.057	40.983		
353.00	1.066	5.580	47.696		Spillway #2
353.50	1.107	6.124	54.901		
354.00	1.148	6.687	61.344		
354.50	1.181	7.269	66.980		
355.00	1.214	7.868	73.233		

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
346.03	0.000	0.000	0.000
346.50	0.000	0.000	0.000
347.00	0.000	0.000	0.000
347.50	0.000	0.000	0.000
348.00	0.000	0.000	0.000
348.50	0.000	0.000	0.000
348.80	0.000	0.000	0.000
349.00	0.000	0.000	0.000
349.50	(3)>2.224	0.000	2.224
350.00	(3)>6.287	0.000	6.287
350.50	(3)>11.541	0.000	11.541
351.00	(3)>17.776	0.000	17.776
351.50	(3)>24.832	0.000	24.832
352.00	(3)>32.640	0.000	32.640
352.40	(3)>39.384	0.000	39.384

Elevation (ft)	Straight Pipe (cfs)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
352.50	(3)>40.983	0.000	40.983
353.00	(5)>47.696	0.000	47.696
353.50	(5)>53.790	(3)>1.111	54.901
354.00	(6)>58.202	(3)>3.142	61.344
354.50	(6)>61.774	(2)>5.206	66.980
355.00	(6)>65.154	(5)>8.079	73.233

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	3.400	0.042	0.047	0.422	70.000	M	3.44	0.793
	2	37.300	0.066	0.000	0.000	81.000	F	48.43	12.055
	3	1.500	0.001	0.000	0.000	100.000	F	2.36	0.749
	Σ	**42.200**						**54.22**	**13.597**

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	48.00	0.0030	1.0000	1	1.5	2,504	1.79	1.01
	2	0.240	200.00	32.00	0.9000	1.0000	2	6,266.7	530,135	361.42	219.80
	3	0.001	100.00	0.01	0.0010	1.0000	1	0.0	0	0.00	0.00
	Σ							**6,268.2**	**484,569**	**330.36**	**198.15**

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	27.50	55.00	200.00	1.320	0.042
#1	**1**	**Time of Concentration:**					**0.042**
#1	2	5. Nearly bare and untilled, and alluvial valley fans	32.50	65.00	200.00	5.700	0.009
		8. Large gullies, diversions, and low flowing streams	5.01	70.00	1,398.01	6.710	0.057
#1	**2**	**Time of Concentration:**					**0.066**

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	9.46	150.00	1,586.00	9.220	0.047
#1	**1**	**Muskingum K:**					**0.047**