APPENDIX 11-CC

HOSTEEN WASH POST-MINE HYDROLOGY & SEDIMENTOLGY

(2 YR – 6 HR, 10 YR – 6 HR, 25 YR – 6 HR, & 100 YR – 6 HR STORM EVENTS)

MAY 2005

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Hosteen Wash Post-mine Hydrology and Sedimentology

The hydrology model and drainage subdivisions are presented on Exhibit 11-75A. The alignment and details of the reclaimed channels are presented on Exhibit 11-76 and 11-76A thru 11-76E.

LR

BHP Navajo Coal Company
PO Box 1717
Fruitland, NM
87416

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General Information

Storm Information:

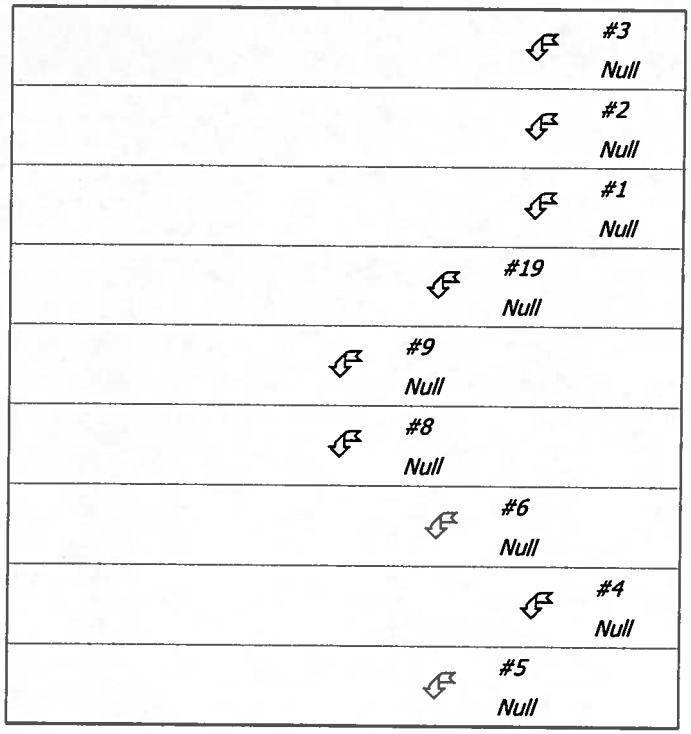
Storm Type:	Type II-60
Design Storm:	2 yr - 6 hr
Rainfall Depth:	0.800 inches

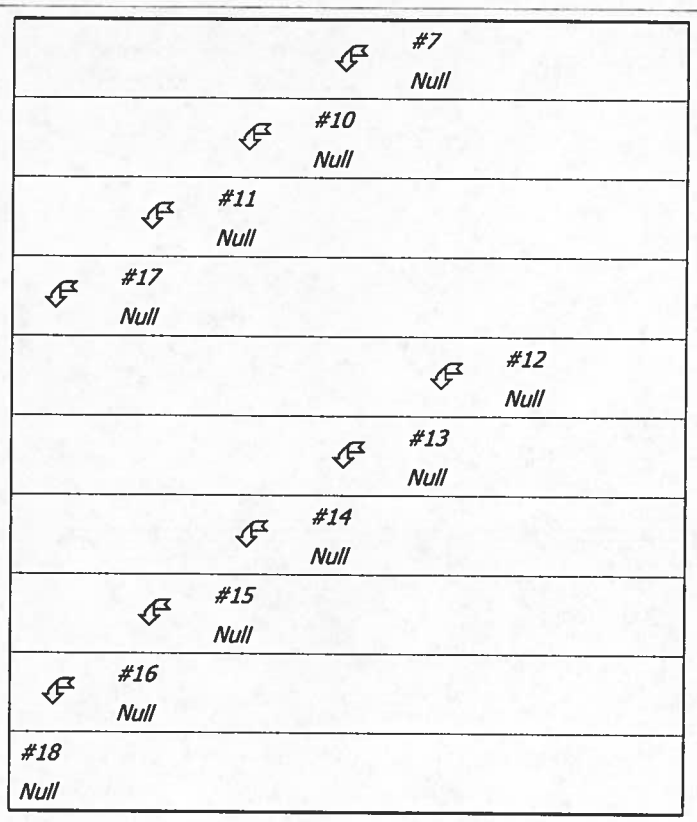
Particle Size Distribution:

Size (mm)	Badland Premining	Badland Postmining	LoamySand Premining	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	100.000%
0.1000	83.500%	75.900%	30.000%	26.500%
0.0500	77.000%	70.000%	17.000%	14.000%
0.0020	56.000%	47.000%	11.000%	11.000%
0.0010	0.000%	0.000%	0.000%	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#19	0.063	0.368	
Null	#2	==>	#19	0.167	0.319	
Null	#3	==>	#19	0.220	0.310	
Null	#4	==>	#5	0.374	0.350	
Null	#5	==>	#7	0.000	0.000	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	#10	0.075	0.352	
Null	#8	==>	#10	0.000	0.000	
Null	#9	==>	#10	0.000	0.000	
Null	#10	==>	#11	0.216	0.336	
Null	#11	==>	#17	0.447	0.360	
Null	#12	==>	#13	0.206	0.358	
Null	#13	==>	#14	0.000	0.000	
Null	#14	==>	#15	0.196	0.343	
Null	#15	==>	#16	0.346	0.362	
Null	#16	==>	#18	0.433	0.304	
Nuii	#17	==>	#18	0.433	0.304	
Null	#18	==>	End	0.000	0.000	
Null	#19	==>	#9	0.421	0.344	





Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	2.50	27.00	1,078.01	4.74	0.063
#1	**Muskingum K:**					**0.063**
#2	8. Large gullies, diversions, and low flowing streams	1.00	18.00	1,803.00	2.99	0.167
#2	**Muskingum K:**					**0.167**
#3	8. Large gullies, diversions, and low flowing streams	0.86	19.00	2,210.00	2.78	0.220
#3	**Muskingum K:**					**0.220**
#4	8. Large gullies, diversions, and low flowing streams	1.74	93.00	5,337.00	3.96	0.374
#4	**Muskingum K:**					**0.374**
#7	8. Large gullies, diversions, and low flowing streams	1.82	20.00	1,097.00	4.05	0.075
#7	**Muskingum K:**					**0.075**
#10	8. Large gullies, diversions, and low flowing streams	1.36	37.00	2,722.18	3.49	0.216
#10	**Muskingum K:**					**0.216**
#11	8. Large gullies, diversions, and low flowing streams	2.15	152.00	7,071.00	4.39	0.447

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#11	**Muskingum K:**					**0.447**
#12	8. Large gullies, diversions, and low flowing streams	2.04	65.00	3,189.00	4.28	0.206
#12	**Muskingum K:**					**0.206**
#14	8. Large gullies, diversions, and low flowing streams	1.53	40.00	2,618.00	3.70	0.196
#14	**Muskingum K:**					**0.196**
#15	8. Large gullies, diversions, and low flowing streams	2.22	124.00	5,583.07	4.47	0.346
#15	**Muskingum K:**					**0.346**
#16	8. Large gullies, diversions, and low flowing streams	0.78	32.00	4,124.00	2.64	0.433
#16	**Muskingum K:**					**0.433**
#17	8. Large gullies, diversions, and low flowing streams	0.78	32.00	4,124.00	2.64	0.433
#17	**Muskingum K:**					**0.433**
#19	8. Large gullies, diversions, and low flowing streams	1.58	90.00	5,702.33	3.76	0.421
#19	**Muskingum K:**					**0.421**

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)
#3	130.200	130.200	22.27	2.02	64.2	43,485	0.80	0.53
#2	554.300	554.300	62.95	7.81	264.2	41,602	0.62	0.45
#1	331.300	331.300	44.08	5.19	149.9	38,803	1.11	0.77
#19	0.000	1,015.800	121.45	15.03	478.3	155,332	3.04	0.57
#9	409.600	1,425.400	117.37	15.28	472.4	38,845	0.64	0.46
#8	63.100	63.100	0.18	0.04	0.2	5,386	3.45	2.91
#6	169.300	169.300	0.42	0.10	0.9	9,254	5.84	5.14
#4	67.300	67.300	16.58	1.16	37.7	46,287	3.18	2.06
#5	240.300	307.600	14.62	1.31	36.9	45,149	3.15	1.81
#7	0.000	476.900	14.70	1.41	37.8	44,799	3.73	2.03
#10	0.000	1,965.400	124.71	16.73	510.4	37,967	0.82	0.60
#11	298.200	2,263.600	124.17	17.04	513.0	37,668	0.90	0.66
#17	610.500	2,874.100	139.35	27.06	723.5	40,787	0.31	0.19
#12	285.000	285.000	0.69	0.18	0.9	5,158	3.25	2.82
#13	93.600	378.600	0.91	0.23	1.2	5,468	3.45	3.02
#14	142.500	521.100	1.23	0.32	1.9	6,153	3.86	3.40
#15	296.800	817.900	6.49	1.43	18.9	19,279	10.48	6.60
#16	538.600	1,356.500	38.95	7.12	115.5	20,873	2.69	1.91
#18	286.900	4,517.500	161.20	39.62	962.2	33,598	0.89	0.59

Particle Size Distribution(s) at Each Structure

Structure #3:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	94.840%
0.0010	0.000%

Structure #2:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	95.816%
0.0010	0.000%

Structure #1:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	91.957%
0.0010	0.000%

Structure #19:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	94.476%

Size (mm)	In/Out
0.0010	0.000%

Structure #9:

Size (mm)	In/Out
2.0000	100.000%
0.1000	99.807%
0.0500	99.723%
0.0020	95.740%
0.0010	0.000%

Structure #8:

Size (mm)	In/Out
2.0000	100.000%
0.1000	41.635%
0.0500	21.996%
0.0020	17.282%
0.0010	0.000%

Structure #6:

Size (mm)	In/Out
2.0000	100.000%
0.1000	44.218%
0.0500	23.361%
0.0020	18.355%
0.0010	0.000%

Structure #4:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	80.817%
0.0010	0.000%

Structure #5:

Size (mm)	In/Out
2.0000	100.000%
0.1000	98.438%
0.0500	97.811%
0.0020	83.148%
0.0010	0.000%

Structure #7:

Size (mm)	In/Out
2.0000	100.000%
0.1000	97.121%
0.0500	96.003%
0.0020	81.575%
0.0010	0.000%

Structure #10:

Size (mm)	In/Out
2.0000	100.000%
0.1000	99.586%
0.0500	99.418%
0.0020	94.661%
0.0010	0.000%

Structure #11:

Size (mm)	In/Out
2.0000	100.000%
0.1000	99.480%
0.0500	99.121%
0.0020	94.343%
0.0010	0.000%

Structure #17:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	97.830%

Size (mm)	In/Out
0.0010	0.000%

Structure #12:

Size (mm)	In/Out
2.0000	100.000%
0.1000	44.419%
0.0500	23.467%
0.0020	18.438%
0.0010	0.000%

Structure #13:

Size (mm)	In/Out
2.0000	100.000%
0.1000	44.383%
0.0500	23.448%
0.0020	18.423%
0.0010	0.000%

Structure #14:

Size (mm)	In/Out
2.0000	100.000%
0.1000	45.283%
0.0500	23.923%
0.0020	18.797%
0.0010	0.000%

Structure #15:

Size (mm)	In/Out
2.0000	100.000%
0.1000	66.970%
0.0500	35.381%
0.0020	27.799%
0.0010	0.000%

Structure #16:

Size (mm)	In/Out
2.0000	100.000%
0.1000	91.981%
0.0500	84.857%
0.0020	82.714%
0.0010	0.000%

Structure #18:

Size (mm)	In/Out
2.0000	100.000%
0.1000	99.039%
0.0500	98.184%
0.0020	94.823%
0.0010	0.000%

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)
#3	1	130.200	0.367	0.000	0.000	89.600	M	22.27	2.024
	Σ	**130.200**						**22.27**	**2.024**
#2	1	74.300	0.300	0.000	0.000	91.000	M	17.39	1.411
	2	193.700	0.448	0.000	0.000	88.900	M	26.26	2.717
	3	130.900	0.335	0.176	0.352	89.000	M	21.32	1.864
	4	155.400	0.402	0.325	0.347	87.700	M	18.15	1.818
	Σ	**554.300**						**62.95**	**7.810**
#1	1	190.000	0.460	0.128	0.351	88.500	M	23.62	2.511
	2	45.100	0.206	0.128	0.351	91.000	M	12.25	0.857
	3	96.200	0.287	0.000	0.000	91.000	M	22.95	1.827
	Σ	**331.300**						**44.08**	**5.194**
#19	Σ	**1,015.800**						**121.45**	**15.029**
#9	1	409.600	0.908	0.000	0.000	75.700	M	0.88	0.253
	Σ	**1,425.400**						**117.37**	**15.282**
#8	1	63.100	0.296	0.000	0.000	75.700	M	0.18	0.039
	Σ	**63.100**						**0.18**	**0.039**
#6	1	169.300	0.402	0.000	0.000	75.700	M	0.42	0.105
	Σ	**169.300**						**0.42**	**0.105**
#4	1	67.300	0.205	0.000	0.000	90.300	M	16.58	1.157
	Σ	**67.300**						**16.58**	**1.157**
#5	1	240.300	0.600	0.000	0.000	75.700	M	0.56	0.148
	Σ	**307.600**						**14.62**	**1.306**
#7	Σ	**476.900**						**14.70**	**1.410**
#10	Σ	**1,965.400**						**124.71**	**16.731**
#11	1	212.500	0.612	0.000	0.000	75.700	M	0.49	0.131
	2	85.700	0.292	0.061	0.341	79.100	M	1.08	0.181
	Σ	**2,263.600**						**124.17**	**17.043**
#17	1	229.200	0.540	0.110	0.338	90.500	M	36.19	4.055
	2	151.800	0.319	0.191	0.362	90.600	M	32.58	2.724
	3	176.500	0.332	0.191	0.362	88.200	M	25.20	2.229
	4	53.000	0.249	0.000	0.000	91.000	M	13.43	1.007

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
	Σ	**2,874.100**						**139.35**	**27.059**
#12	1	118.100	0.351	0.000	0.000	75.700	M	0.31	0.073
	2	166.900	0.562	0.000	0.000	75.700	M	0.39	0.103
	Σ	**285.000**						**0.69**	**0.176**
#13	1	93.600	0.402	0.000	0.000	75.700	M	0.23	0.058
	Σ	**378.600**						**0.91**	**0.234**
#14	1	142.500	0.741	0.000	0.000	75.700	M	0.32	0.088
	Σ	**521.100**						**1.23**	**0.322**
#15	1	296.800	0.583	0.000	0.000	81.400	M	6.45	1.107
	Σ	**817.900**						**6.49**	**1.429**
#16	1	304.700	1.045	0.000	0.000	88.400	M	22.18	3.967
	2	122.200	0.672	0.242	0.367	86.200	M	7.86	1.127
	3	111.700	0.374	0.242	0.367	83.100	M	5.04	0.593
	Σ	**1,356.500**						**38.95**	**7.116**
#18	1	286.900	0.322	0.000	0.000	91.000	M	65.02	5.449
	Σ	**4,517.500**						**161.20**	**39.623**

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)
#3	1	0.202	150.00	6.80	0.3910	1.0000	1	64.2	43,485	0.80	0.53
	Σ							**64.2**	**43,485**	**0.80**	**0.53**
#2	1	0.210	150.00	6.40	0.3990	1.0000	1	45.7	44,665	2.09	1.37
	2	0.182	150.00	6.20	0.3990	1.0000	1	69.9	34,762	0.00	0.00
	3	0.196	125.00	9.60	0.3810	1.0000	1	80.0	58,004	1.30	0.87
	4	0.204	125.00	9.20	0.3710	1.0000	1	68.6	50,177	0.00	0.00
	Σ							**264.2**	**41,602**	**0.62**	**0.45**
#1	1	0.208	150.00	6.40	0.3830	1.0000	1	71.3	37,964	0.00	0.00
	2	0.210	150.00	7.30	0.3990	1.0000	1	32.2	52,193	3.77	2.46
	3	0.210	175.00	4.90	0.3990	1.0000	1	51.7	39,203	1.96	1.29
	Σ							**149.9**	**38,803**	**1.11**	**0.77**
#19	Σ							**478.3**	**155,332**	**3.04**	**0.57**
#9	1	0.210	200.00	3.50	0.3990	1.0000	4	1.8	7,520	4.63	3.94

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)
	Σ							**472.4**	**38,845**	**0.64**	**0.46**
#8	1	0.190	200.00	3.80	0.3150	1.0000	4	0.2	5,386	3.45	2.91
	Σ							**0.2**	**5,386**	**3.45**	**2.91**
#6	1	0.190	175.00	5.70	0.3150	1.0000	4	0.9	9,254	5.84	5.08
	Σ							**0.9**	**9,254**	**5.84**	**5.14**
#4	1	0.206	175.00	5.70	0.3980	1.0000	1	37.7	46,287	3.18	2.04
	Σ							**37.7**	**46,287**	**3.18**	**2.06**
#5	1	0.190	175.00	4.60	0.3150	1.0000	4	1.1	7,623	4.76	4.13
	Σ							**36.9**	**45,149**	**3.15**	**1.81**
#7	Σ							**37.8**	**44,799**	**3.73**	**2.03**
#10	Σ							**510.4**	**37,967**	**0.82**	**0.60**
#11	1	0.190	175.00	5.40	0.3150	1.0000	4	1.1	8,732	5.45	4.72
	2	0.187	150.00	7.20	0.3550	1.0000	4	2.7	18,119	10.43	7.89
	Σ							**513.0**	**37,668**	**0.90**	**0.66**
#17	1	0.205	125.00	9.00	0.3140	1.0000	1	130.1	42,207	0.00	0.00
	2	0.206	175.00	5.80	0.3830	1.0000	1	87.0	43,316	1.70	1.13
	3	0.196	175.00	5.80	0.3870	1.0000	1	64.7	39,701	0.63	0.42
	4	0.174	75.00	12.50	0.2570	1.0000	1	29.5	40,653	2.46	1.60
	Σ							**723.5**	**40,787**	**0.31**	**0.19**
#12	1	0.190	175.00	4.00	0.3150	1.0000	4	0.4	6,068	3.86	3.31
	2	0.190	200.00	3.20	0.3150	1.0000	4	0.4	4,560	2.85	2.48
	Σ							**0.9**	**5,158**	**3.25**	**2.82**
#13	1	0.190	175.00	4.30	0.3150	1.0000	4	0.4	6,609	4.17	3.63
	Σ							**1.2**	**5,468**	**3.45**	**3.02**
#14	1	0.190	175.00	5.30	0.3150	1.0000	4	0.7	8,099	5.03	4.32
	Σ							**1.9**	**6,153**	**3.86**	**3.40**
#15	1	0.205	175.00	5.20	0.3500	1.0000	4	17.4	19,398	10.48	7.77
	Σ							**18.9**	**19,279**	**10.48**	**6.60**
#16	1	0.194	150.00	6.40	0.3200	1.0000	1	69.2	22,069	0.00	0.00
	2	0.232	175.00	4.10	0.3780	1.0000	1	19.2	21,798	0.00	0.00
	3	0.216	175.00	4.00	0.3590	1.0000	3	8.3	18,383	10.27	7.13
	Σ							**115.5**	**20,873**	**2.69**	**1.91**
#18	1	0.156	175.00	5.90	0.3250	1.0000	1	123.3	31,253	1.28	0.85

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)
	Σ							962.2	33,598	0.89	0.59

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	4.44	73.00	1,643.03	2.100	0.217
		8. Large gullies, diversions, and low flowing streams	2.89	129.00	4,465.05	5.090	0.243
#1	**1**	**Time of Concentration:**					**0.460**
#1	2	5. Nearly bare and untilled, and alluvial valley fans	7.60	63.00	829.00	2.750	0.083
		8. Large gullies, diversions, and low flowing streams	3.36	82.00	2,442.00	5.490	0.123
#1	**2**	**Time of Concentration:**					**0.206**
#1	3	5. Nearly bare and untilled, and alluvial valley fans	4.52	53.00	1,173.00	2.120	0.153
		8. Large gullies, diversions, and low flowing streams	2.72	65.00	2,389.00	4.940	0.134
#1	**3**	**Time of Concentration:**					**0.287**
#2	1	5. Nearly bare and untilled, and alluvial valley fans	6.48	70.00	1,081.01	2.540	0.118
		8. Large gullies, diversions, and low flowing streams	2.65	85.00	3,204.04	4.880	0.182
#2	**1**	**Time of Concentration:**					**0.300**
#2	2	5. Nearly bare and untilled, and alluvial valley fans	2.31	15.00	649.00	1.520	0.118
		8. Large gullies, diversions, and low flowing streams	3.19	203.00	6,373.00	5.350	0.330
#2	**2**	**Time of Concentration:**					**0.448**
#2	3	5. Nearly bare and untilled, and alluvial valley fans	3.37	15.00	445.00	1.830	0.067
		8. Large gullies, diversions, and low flowing streams	3.33	176.00	5,291.00	5.470	0.268
#2	**3**	**Time of Concentration:**					**0.335**
#2	4	5. Nearly bare and untilled, and alluvial valley fans	1.36	15.00	1,102.00	1.160	0.263
		8. Large gullies, diversions, and low flowing streams	4.84	160.00	3,303.00	6.600	0.139
#2	**4**	**Time of Concentration:**					**0.402**
#3	1	5. Nearly bare and untilled, and alluvial valley fans	4.54	34.00	749.00	2.130	0.097
		8. Large gullies, diversions, and low flowing streams	2.75	133.00	4,834.00	4.970	0.270

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#3	**1**	**Time of Concentration:**					**0.367**
#4	1	5. Nearly bare and untilled, and alluvial valley fans	1.55	5.00	322.01	1.240	0.072
		8. Large gullies, diversions, and low flowing streams	3.72	103.00	2,769.04	5.780	0.133
#4	**1**	**Time of Concentration:**					**0.205**
#5	1	5. Nearly bare and untilled, and alluvial valley fans	4.27	102.00	2,386.02	2.060	0.321
		8. Large gullies, diversions, and low flowing streams	1.55	58.00	3,750.00	3.730	0.279
#5	**1**	**Time of Concentration:**					**0.600**
#6	1	5. Nearly bare and untilled, and alluvial valley fans	3.24	44.00	1,357.00	1.800	0.209
		8. Large gullies, diversions, and low flowing streams	2.45	80.00	3,265.00	4.690	0.193
#6	**1**	**Time of Concentration:**					**0.402**
#8	1	8. Large gullies, diversions, and low flowing streams	0.99	23.00	2,314.11	2.990	0.214
		8. Large gullies, diversions, and low flowing streams	3.88	68.00	1,754.02	5.900	0.082
#8	**1**	**Time of Concentration:**					**0.296**
#9	1	5. Nearly bare and untilled, and alluvial valley fans	2.10	54.00	2,569.10	1.440	0.495
		8. Large gullies, diversions, and low flowing streams	1.55	86.00	5,546.24	3.730	0.413
#9	**1**	**Time of Concentration:**					**0.908**
#11	1	5. Nearly bare and untilled, and alluvial valley fans	3.58	125.00	3,491.03	1.890	0.513
		8. Large gullies, diversions, and low flowing streams	1.31	16.00	1,225.02	3.420	0.099
#11	**1**	**Time of Concentration:**					**0.612**
#11	2	5. Nearly bare and untilled, and alluvial valley fans	4.16	34.00	817.01	2.030	0.111
		8. Large gullies, diversions, and low flowing streams	2.87	95.00	3,312.06	5.080	0.181
#11	**2**	**Time of Concentration:**					**0.292**
#12	1	5. Nearly bare and untilled, and alluvial valley fans	1.90	14.00	735.02	1.380	0.147
		8. Large gullies, diversions, and low flowing streams	1.72	50.00	2,900.06	3.930	0.204
#12	**1**	**Time of Concentration:**					**0.351**
#12	2	5. Nearly bare and untilled, and alluvial valley fans	2.24	57.00	2,550.10	1.490	0.475
		8. Large gullies, diversions, and low flowing streams	0.89	8.00	895.05	2.830	0.087
#12	**2**	**Time of Concentration:**					**0.562**
#13	1	5. Nearly bare and untilled, and alluvial valley fans	4.03	77.00	1,913.00	2.000	0.265

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		8. Large gullies, diversions, and low flowing streams	2.03	43.00	2,118.00	4.270	0.137
#13	**1**	**Time of Concentration:**					**0.402**
#14	1	5. Nearly bare and untilled, and alluvial valley fans	0.63	8.00	1,262.00	0.790	0.443
		8. Large gullies, diversions, and low flowing streams	2.47	125.00	5,065.03	4.710	0.298
#14	**1**	**Time of Concentration:**					**0.741**
#15	1	5. Nearly bare and untilled, and alluvial valley fans	4.67	60.00	1,285.01	2.160	0.165
		8. Large gullies, diversions, and low flowing streams	1.81	110.00	6,070.30	4.030	0.418
#15	**1**	**Time of Concentration:**					**0.583**
#16	1	5. Nearly bare and untilled, and alluvial valley fans	1.87	81.00	4,340.13	1.360	0.886
		8. Large gullies, diversions, and low flowing streams	3.65	120.00	3,286.05	5.730	0.159
#16	**1**	**Time of Concentration:**					**1.045**
#16	2	5. Nearly bare and untilled, and alluvial valley fans	3.03	100.00	3,303.05	1.730	0.530
		8. Large gullies, diversions, and low flowing streams	2.70	68.00	2,518.05	4.920	0.142
#16	**2**	**Time of Concentration:**					**0.672**
#16	3	5. Nearly bare and untilled, and alluvial valley fans	4.56	40.00	877.00	2.130	0.114
		8. Large gullies, diversions, and low flowing streams	2.38	103.00	4,330.00	4.620	0.260
#16	**3**	**Time of Concentration:**					**0.374**
#17	1	5. Nearly bare and untilled, and alluvial valley fans	5.26	84.00	1,597.01	2.290	0.193
		8. Large gullies, diversions, and low flowing streams	2.40	139.00	5,803.03	4.640	0.347
#17	**1**	**Time of Concentration:**					**0.540**
#17	2	5. Nearly bare and untilled, and alluvial valley fans	3.58	20.00	558.00	1.890	0.082
		8. Large gullies, diversions, and low flowing streams	3.83	192.00	5,009.00	5.870	0.237
#17	**2**	**Time of Concentration:**					**0.319**
#17	3	5. Nearly bare and untilled, and alluvial valley fans	4.89	44.00	899.00	2.210	0.112
		8. Large gullies, diversions, and low flowing streams	4.06	194.00	4,784.00	6.040	0.220
#17	**3**	**Time of Concentration:**					**0.332**
#17	4	5. Nearly bare and untilled, and alluvial valley fans	23.01	110.00	478.00	4.790	0.027
		8. Large gullies, diversions, and low flowing streams	1.36	38.00	2,801.12	3.490	0.222
#17	**4**	**Time of Concentration:**					**0.249**

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#18	1	5. Nearly bare and untilled, and alluvial valley fans	3.83	20.00	522.00	1.950	0.074
		8. Large gullies, diversions, and low flowing streams	3.29	160.00	4,861.00	5.440	0.248
#18	**1**	**Time of Concentration:**					**0.322**

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	1.79	33.00	1,848.01	4.000	0.128
#1	**1**	**Muskingum K:**					**0.128**
#1	2	8. Large gullies, diversions, and low flowing streams	1.79	33.00	1,848.00	4.000	0.128
#1	**2**	**Muskingum K:**					**0.128**
#2	3	8. Large gullies, diversions, and low flowing streams	1.83	47.00	2,573.00	4.050	0.176
#2	**3**	**Muskingum K:**					**0.176**
#2	4	8. Large gullies, diversions, and low flowing streams	1.65	74.00	4,495.00	3.840	0.325
#2	**4**	**Muskingum K:**					**0.325**
#11	2	8. Large gullies, diversions, and low flowing streams	1.48	12.00	809.00	3.650	0.061
#11	**2**	**Muskingum K:**					**0.061**
#16	2	8. Large gullies, diversions, and low flowing streams	2.44	100.00	4,092.15	4.680	0.242
#16	**2**	**Muskingum K:**					**0.242**
#16	3	8. Large gullies, diversions, and low flowing streams	2.44	100.00	4,092.00	4.680	0.242
#16	**3**	**Muskingum K:**					**0.242**
#17	1	8. Large gullies, diversions, and low flowing streams	1.41	20.00	1,419.00	3.560	0.110
#17	**1**	**Muskingum K:**					**0.110**
#17	2	8. Large gullies, diversions, and low flowing streams	2.22	68.00	3,067.00	4.460	0.191
#17	**2**	**Muskingum K:**					**0.191**
#17	3	8. Large gullies, diversions, and low flowing streams	2.22	68.00	3,067.00	4.460	0.191
#17	**3**	**Muskingum K:**					**0.191**

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General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	10 yr - 6 hr
Rainfall Depth:	1.300 inches

Particle Size Distribution:

Size (mm)	Badland Premining	Badland Postmining	LoamySand Premining	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	100.000%
0.1000	83.500%	75.900%	30.000%	26.500%
0.0500	77.000%	70.000%	17.000%	14.000%
0.0020	56.000%	47.000%	11.000%	11.000%
0.0010	0.000%	0.000%	0.000%	0.000%

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)
#3	130.200	130.200	63.12	5.55	202.4	48,891	2.30	1.56
#2	554.300	554.300	194.46	22.18	876.4	48,175	1.95	1.44
#1	331.300	331.300	129.04	14.16	482.5	42,283	2.00	1.46
#19	0.000	1,015.800	364.46	41.90	1,561.4	146,339	6.36	1.47
#9	409.600	1,425.400	370.56	45.72	1,607.3	43,965	2.51	1.82
#8	63.100	63.100	5.93	0.59	6.3	15,114	9.16	5.95
#6	169.300	169.300	13.24	1.58	28.9	24,521	14.35	9.85
#4	67.300	67.300	43.00	3.06	110.8	49,314	4.26	2.87
#5	240.300	307.600	53.75	5.30	141.1	41,655	7.75	4.57
#7	0.000	476.900	64.99	6.88	170.0	38,382	9.73	5.71
#10	0.000	1,965.400	408.79	53.18	1,783.6	41,902	3.26	2.36
#11	298.200	2,263.600	414.25	56.41	1,843.2	41,179	3.86	2.78
#17	610.500	2,874.100	449.91	83.29	2,497.8	45,854	1.00	0.60
#12	285.000	285.000	18.70	2.66	26.1	13,271	7.66	5.20
#13	93.600	378.600	23.62	3.53	37.5	14,340	8.31	5.64
#14	142.500	521.100	31.33	4.86	55.6	14,652	8.28	5.95
#15	296.800	817.900	64.17	10.48	180.7	26,501	15.32	9.12
#16	538.600	1,356.500	166.98	28.44	548.6	25,950	6.29	4.25
#18	286.900	4,517.500	538.08	125.61	3,400.1	37,159	2.30	1.52

General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	25 yr - 6 hr
Rainfall Depth:	1.600 inches

Particle Size Distribution:

Size (mm)	Badland Premining	Badland Postmining	LoamySand Premining	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	100.000%
0.1000	83.500%	75.900%	30.000%	26.500%
0.0500	77.000%	70.000%	17.000%	14.000%
0.0020	56.000%	47.000%	11.000%	11.000%
0.0010	0.000%	0.000%	0.000%	0.000%

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)
#3	130.200	130.200	92.03	8.03	307.4	50,987	2.90	1.98
#2	554.300	554.300	289.31	32.41	1,348.0	50,543	2.55	1.89
#1	331.300	331.300	190.02	20.45	729.8	43,857	2.44	1.80
#19	0.000	1,015.800	539.64	60.89	2,385.1	132,736	7.03	1.87
#9	409.600	1,425.400	558.78	68.41	2,488.8	155,040	11.36	2.41
#8	63.100	63.100	13.04	1.16	14.3	17,521	10.90	7.05
#6	169.300	169.300	29.65	3.11	66.2	29,075	17.58	11.87
#4	67.300	67.300	60.87	4.38	164.5	50,426	4.66	3.19
#5	240.300	307.600	88.13	8.78	234.3	40,424	9.52	5.81
#7	0.000	476.900	113.32	11.89	300.5	37,371	11.83	7.29
#10	0.000	1,965.400	627.33	81.46	2,803.6	155,040	15.83	3.18
#11	298.200	2,263.600	637.23	87.57	2,932.8	52,422	6.48	3.76
#17	610.500	2,874.100	688.04	126.20	3,928.0	47,613	1.93	1.15
#12	285.000	285.000	41.83	5.23	59.8	15,731	9.39	6.26
#13	93.600	378.600	52.24	6.95	85.9	17,069	10.23	6.79
#14	142.500	521.100	69.36	9.56	127.2	17,371	10.18	7.17
#15	296.800	817.900	125.53	18.99	359.2	28,215	16.76	10.28
#16	538.600	1,356.500	278.79	46.03	947.8	27,537	7.67	5.21
#18	286.900	4,517.500	832.03	191.88	5,397.7	38,216	3.26	2.18

General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	100 yr - 6 hr
Rainfall Depth:	2.000 inches

Particle Size Distribution:

Size (mm)	Badland Premining	Badland Postmining	LoamySand Premining	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	100.000%
0.1000	83.500%	75.900%	30.000%	26.500%
0.0500	77.000%	70.000%	17.000%	14.000%
0.0020	56.000%	47.000%	11.000%	11.000%
0.0010	0.000%	0.000%	0.000%	0.000%

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)
#3	130.200	130.200	132.93	11.58	463.6	52,855	3.47	2.38
#2	554.300	554.300	426.58	47.17	2,060.5	52,866	3.17	2.35
#1	331.300	331.300	278.13	29.47	1,103.9	45,563	2.96	2.20
#19	0.000	1,015.800	792.49	88.23	3,628.0	49,659	3.09	2.31
#9	409.600	1,425.400	840.14	102.01	3,840.6	47,051	4.22	3.05
#8	63.100	63.100	25.68	2.12	29.4	19,598	12.44	8.04
#6	169.300	169.300	58.35	5.70	135.9	32,560	20.14	13.60
#4	67.300	67.300	86.25	6.25	244.1	51,765	5.12	3.55
#5	240.300	307.600	143.80	14.33	387.2	39,791	11.14	7.00
#7	0.000	476.900	191.06	20.03	523.1	37,008	13.60	8.74
#10	0.000	1,965.400	951.82	124.16	4,393.1	44,343	5.60	4.05
#11	298.200	2,263.600	973.48	135.07	4,647.3	43,415	6.62	4.75
#17	610.500	2,874.100	1,042.08	190.50	6,166.8	48,942	2.89	1.73
#12	285.000	285.000	83.57	9.59	122.7	17,606	10.77	7.17
#13	93.600	378.600	103.42	12.74	176.2	19,280	11.83	7.77
#14	142.500	521.100	136.76	17.53	260.9	19,525	11.74	8.23
#15	296.800	817.900	230.30	32.91	672.1	29,653	17.98	11.31
#16	538.600	1,356.500	458.30	73.32	1,602.0	29,012	8.94	6.11
#18	286.900	4,517.500	1,280.50	291.64	8,536.5	39,310	4.22	2.85