

ATTACHMENT J-1

POSTMINE SEDCAD® RESULTS

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ATTACHMENT J-1
POSTMINE SEDCAD RESULTS
Spring Creek Drainage

Spring Creek Postmining Hydrology Model

2-YR, 24-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

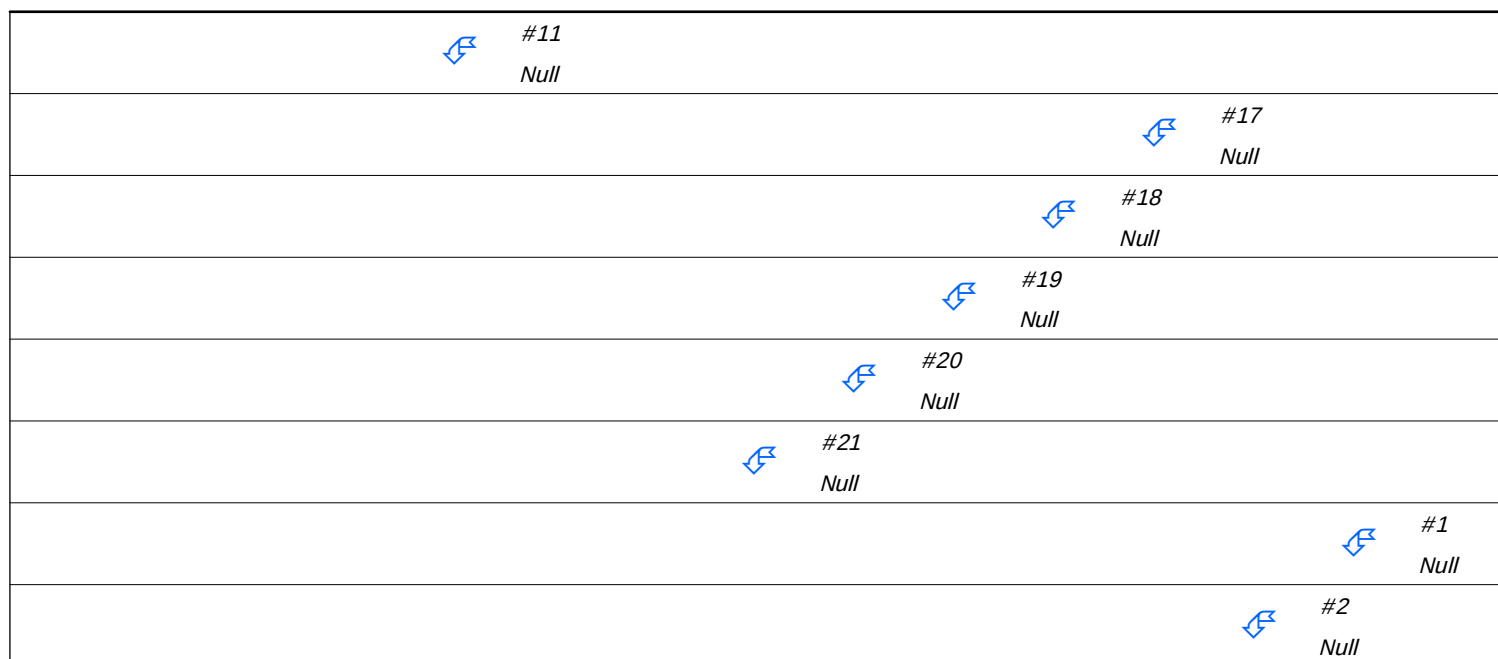
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	1.380 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.432	0.273	
Null	#2	==>	#3	0.541	0.281	
Null	#3	==>	#4	0.837	0.258	
Null	#4	==>	#5	1.088	0.247	
Null	#5	==>	#6	1.016	0.209	
Null	#6	==>	#7	2.401	0.209	
Null	#7	==>	#8	0.000	0.000	
Null	#8	==>	#9	2.452	0.194	
Null	#9	==>	#10	1.860	0.185	
Null	#10	==>	#12	0.000	0.000	
Null	#11	==>	#12	0.000	0.000	
Null	#12	==>	#13	1.852	0.219	
Null	#13	==>	#14	1.619	0.211	
Null	#14	==>	#15	0.424	0.228	
Null	#15	==>	#16	2.065	0.234	
Null	#16	==>	End	0.000	0.000	
Null	#17	==>	#18	0.301	0.272	
Null	#18	==>	#19	0.999	0.260	
Null	#19	==>	#20	1.066	0.261	
Null	#20	==>	#21	2.161	0.232	
Null	#21	==>	#8	0.000	0.000	



					#3 Null
					#4 Null
					#5 Null
					#6 Null
					#7 Null
					#8 Null
					#9 Null
					#10 Null
					#12 Null
					#13 Null
					#14 Null
					#15 Null
					#16 Null

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	1.88	60.00	3,193.00	2.05	0.432
#1	Muskingum K:					0.432
#2	6. Grassed waterway	2.12	90.00	4,246.00	2.18	0.541
#2	Muskingum K:					0.541
#3	6. Grassed waterway	1.47	80.00	5,459.00	1.81	0.837
#3	Muskingum K:					0.837
#4	6. Grassed waterway	1.23	80.00	6,502.00	1.66	1.088
#4	Muskingum K:					1.088
#5	6. Grassed waterway	0.67	30.00	4,465.00	1.22	1.016
#5	Muskingum K:					1.016
#6	6. Grassed waterway	0.66	70.00	10,548.00	1.22	2.401

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#6	Muskingum K:					2.401
#8	6. Grassed waterway	0.52	50.00	9,534.00	1.08	2.452
#8	Muskingum K:					2.452
#9	6. Grassed waterway	0.45	30.00	6,699.00	1.00	1.860
#9	Muskingum K:					1.860
#12	6. Grassed waterway	0.79	70.00	8,869.00	1.33	1.852
#12	Muskingum K:					1.852
#13	6. Grassed waterway	0.69	50.00	7,230.00	1.24	1.619
#13	Muskingum K:					1.619
#14	6. Grassed waterway	0.92	20.00	2,185.00	1.43	0.424
#14	Muskingum K:					0.424
#15	6. Grassed waterway	0.99	110.00	11,080.00	1.49	2.065
#15	Muskingum K:					2.065
#17	6. Grassed waterway	1.82	40.00	2,193.10	2.02	0.301
#17	Muskingum K:					0.301
#18	6. Grassed waterway	1.51	100.00	6,623.00	1.84	0.999
#18	Muskingum K:					0.999
#19	6. Grassed waterway	1.54	110.00	7,143.00	1.86	1.066
#19	Muskingum K:					1.066
#20	6. Grassed waterway	0.96	110.00	11,437.00	1.47	2.161
#20	Muskingum K:					2.161

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#11	586.000	586.000	11.01	5.57
#17	808.100	808.100	21.29	7.69
#18	853.400	1,661.500	34.37	13.89
#19	828.300	2,489.800	41.59	19.08
#20	872.000	3,361.800	42.00	20.36
#21	944.400	4,306.200	40.35	20.60
#1	917.100	917.100	7.71	4.15
#2	869.100	1,786.200	31.63	13.52
#3	958.900	2,745.100	50.19	22.64
#4	694.000	3,439.100	55.64	26.99
#5	893.200	4,332.300	60.51	31.77
#6	744.500	5,076.800	64.65	36.44
#7	674.100	5,750.900	64.92	38.99
#8	0.000	10,057.100	92.68	59.59
#9	541.700	10,598.800	92.34	60.93
#10	573.500	11,172.300	93.22	64.00
#12	0.000	11,758.300	95.97	69.58
#13	944.900	12,703.200	96.10	70.59
#14	554.000	13,257.200	95.44	70.59
#15	670.400	13,927.600	95.57	76.18
#16	630.700	14,558.300	95.19	80.13

Structure Detail:

Structure #11 (Null)

Structure #17 (Null)

Structure #18 (Null)

Structure #19 (Null)

Structure #20 (Null)

Structure #21 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

Structure #8 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #12 (Null)

Structure #13 (Null)

Structure #14 (Null)

Structure #15 (Null)

Structure #16 (Null)

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)
#11	1	586.000	2.045	0.000	0.000	76.000	M	11.01	5.573
	Σ	586.000						11.01	5.573
#17	1	808.100	1.087	0.000	0.000	76.000	M	21.29	7.690
	Σ	808.100						21.29	7.690
#18	1	853.400	1.360	0.000	0.000	74.000	M	13.21	6.196
	Σ	1,661.500						34.37	13.886
#19	1	828.300	1.460	0.000	0.000	73.000	M	9.82	5.190
	Σ	2,489.800						41.59	19.076
#20	1	872.000	1.523	0.000	0.000	66.000	M	1.54	1.286
	Σ	3,361.800						42.00	20.362
#21	1	944.400	2.739	0.000	0.000	62.000	M	0.45	0.237
	Σ	4,306.200						40.35	20.599
#1	1	917.100	0.825	0.000	0.000	71.000	M	7.71	4.154
	Σ	917.100						7.71	4.154
#2	1	869.100	1.302	0.000	0.000	77.000	M	25.21	9.366
	Σ	1,786.200						31.63	13.520
#3	1	958.900	1.348	0.000	0.000	76.000	M	22.61	9.121
	Σ	2,745.100						50.19	22.641
#4	1	694.000	1.103	0.000	0.000	73.000	M	9.30	4.350
	Σ	3,439.100						55.64	26.991
#5	1	893.200	2.044	0.000	0.000	72.000	M	7.26	4.784
	Σ	4,332.300						60.51	31.774
#6	1	744.500	1.918	0.000	0.000	73.000	M	7.83	4.666
	Σ	5,076.800						64.65	36.440
#7	1	674.100	0.471	0.000	0.000	70.000	M	4.57	2.547
	Σ	5,750.900						64.92	38.987
#8	Σ	10,057.100						92.68	59.586
#9	1	541.700	1.404	0.000	0.000	68.000	M	1.60	1.345
	Σ	10,598.800						92.34	60.931
#10	1	573.500	1.546	0.000	0.000	72.000	M	5.19	3.072

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	11,172.300						93.22	64.002
#12	Σ	11,758.300						95.97	69.575
#13	1	944.900	1.635	0.000	0.000	65.000	M	1.21	1.012
	Σ	12,703.200						96.10	70.587
#14	1	554.000	1.827	0.000	0.000	64.000	0.00	0.000	
	Σ	13,257.200						95.44	70.587
#15	1	670.400	1.407	0.000	0.000	75.000	M	12.66	5.592
	Σ	13,927.600						95.57	76.179
#16	1	630.700	2.929	0.000	0.000	73.000	M	5.49	3.952
	Σ	14,558.300						95.19	80.131

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	11.26	140.00	1,243.00	2.680	0.128
		6. Grassed waterway	8.39	200.00	2,383.00	4.340	0.152
		6. Grassed waterway	4.99	180.00	3,609.00	3.340	0.300
		6. Grassed waterway	2.09	40.00	1,912.00	2.160	0.245
#1	1	Time of Concentration:					0.825
#2	1	3. Short grass pasture	24.73	140.00	566.00	3.970	0.039
		6. Grassed waterway	7.37	200.00	2,714.00	4.070	0.185
		6. Grassed waterway	4.02	240.00	5,975.00	3.000	0.553
		6. Grassed waterway	2.76	130.00	4,713.00	2.490	0.525
#2	1	Time of Concentration:					1.302
#3	1	3. Short grass pasture	23.08	120.00	520.00	3.840	0.037
		6. Grassed waterway	12.95	260.00	2,008.00	5.390	0.103
		6. Grassed waterway	4.61	260.00	5,639.00	3.220	0.486
		6. Grassed waterway	2.12	120.00	5,671.00	2.180	0.722
#3	1	Time of Concentration:					1.348
#4	1	3. Short grass pasture	3.02	50.00	1,654.00	1.390	0.330
		6. Grassed waterway	9.49	320.00	3,371.00	4.620	0.202
		6. Grassed waterway	3.70	100.00	2,701.00	2.880	0.260
		6. Grassed waterway	1.78	40.00	2,246.00	2.000	0.311
#4	1	Time of Concentration:					1.103
#5	1	3. Short grass pasture	4.69	80.00	1,706.01	1.730	0.273
		6. Grassed waterway	8.05	340.00	4,221.03	4.250	0.275
		6. Grassed waterway	3.42	100.00	2,928.00	2.770	0.293

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	0.95	60.00	6,326.44	1.460	1.203
#5	1	Time of Concentration:					2.044
#6	1	3. Short grass pasture	3.24	50.00	1,545.00	1.430	0.300
		6. Grassed waterway	4.91	240.00	4,885.00	3.320	0.408
		6. Grassed waterway	4.78	160.00	3,346.00	3.280	0.283
		6. Grassed waterway	0.71	30.00	4,209.00	1.260	0.927
#6	1	Time of Concentration:					1.918
#7	1	3. Short grass pasture	22.96	90.00	392.00	3.830	0.028
		6. Grassed waterway	16.86	160.00	949.00	6.150	0.042
		6. Grassed waterway	3.13	120.00	3,835.00	2.650	0.401
#7	1	Time of Concentration:					0.471
#9	1	3. Short grass pasture	38.19	110.00	288.00	4.940	0.016
		6. Grassed waterway	9.46	120.00	1,268.00	4.610	0.076
		6. Grassed waterway	4.46	140.00	3,139.00	3.160	0.275
		6. Grassed waterway	1.05	60.00	5,714.00	1.530	1.037
#9	1	Time of Concentration:					1.404
#10	1	3. Short grass pasture	1.41	5.00	354.00	0.950	0.103
		6. Grassed waterway	12.92	80.00	619.00	5.390	0.031
		6. Grassed waterway	5.26	150.00	2,849.00	3.440	0.230
		6. Grassed waterway	1.35	100.00	7,407.00	1.740	1.182
#10	1	Time of Concentration:					1.546
#11	1	3. Short grass pasture	22.15	130.00	587.00	3.760	0.043
		6. Grassed waterway	13.92	170.00	1,221.00	5.590	0.060
		6. Grassed waterway	2.65	80.00	3,018.00	2.440	0.343
		6. Grassed waterway	1.03	90.00	8,754.00	1.520	1.599
#11	1	Time of Concentration:					2.045
#13	1	3. Short grass pasture	4.33	10.00	231.00	1.660	0.038
		6. Grassed waterway	4.74	200.00	4,215.00	3.260	0.359
		6. Grassed waterway	2.74	180.00	6,573.00	2.480	0.736
		6. Grassed waterway	0.82	20.00	2,443.00	1.350	0.502
#13	1	Time of Concentration:					1.635
#14	1	3. Short grass pasture	8.73	60.00	687.00	2.360	0.080
		6. Grassed waterway	2.55	65.00	2,546.02	2.390	0.295
		6. Grassed waterway	0.74	50.00	6,746.72	1.290	1.452
#14	1	Time of Concentration:					1.827
#15	1	3. Short grass pasture	177.17	900.00	508.00	10.640	0.013
		6. Grassed waterway	5.31	110.00	2,072.00	3.450	0.166
		6. Grassed waterway	2.42	210.00	8,668.00	2.330	1.033
		6. Grassed waterway	1.53	20.00	1,305.00	1.850	0.195
#15	1	Time of Concentration:					1.407
#16	1	3. Short grass pasture	240.00	600.00	250.00	12.390	0.005
		6. Grassed waterway	8.69	90.00	1,036.00	4.420	0.065

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	2.82	160.00	5,669.00	2.510	0.627
		5. Nearly bare and untilled, and alluvial valley fans	0.92	70.00	7,635.00	0.950	2.232
# 16	1	Time of Concentration:					2.929
#17	1	3. Short grass pasture	6.39	80.00	1,251.00	2.020	0.172
		6. Grassed waterway	7.82	160.00	2,046.00	4.190	0.135
		6. Grassed waterway	5.00	100.00	2,001.00	3.350	0.165
		6. Grassed waterway	3.09	180.00	5,830.00	2.630	0.615
# 17	1	Time of Concentration:					1.087
#18	1	3. Short grass pasture	4.44	100.00	2,254.00	1.680	0.372
		6. Grassed waterway	7.29	400.00	5,484.00	4.050	0.376
		6. Grassed waterway	2.29	100.00	4,367.00	2.260	0.536
		6. Grassed waterway	1.81	10.00	552.00	2.010	0.076
# 18	1	Time of Concentration:					1.360
#19	1	3. Short grass pasture	8.94	120.00	1,343.00	2.390	0.156
		6. Grassed waterway	4.96	100.00	2,017.00	3.330	0.168
		6. Grassed waterway	6.73	200.00	2,973.00	3.890	0.212
		6. Grassed waterway	1.37	80.00	5,823.00	1.750	0.924
# 19	1	Time of Concentration:					1.460
#20	1	3. Short grass pasture	13.58	180.00	1,325.00	2.940	0.125
		6. Grassed waterway	6.56	240.00	3,658.00	3.840	0.264
		6. Grassed waterway	1.62	60.00	3,702.00	1.900	0.541
		6. Grassed waterway	1.16	40.00	3,441.15	1.610	0.593
# 20	1	Time of Concentration:					1.523
#21	1	3. Short grass pasture	5.13	120.00	2,340.00	1.810	0.359
		6. Grassed waterway	3.55	60.00	1,689.00	2.820	0.166
		6. Grassed waterway	1.17	70.00	6,006.00	1.610	1.036
		6. Grassed waterway	0.74	40.00	5,431.00	1.280	1.178
# 21	1	Time of Concentration:					2.739

Spring Creek Postmining Hydrology Model

10-YR, 24-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

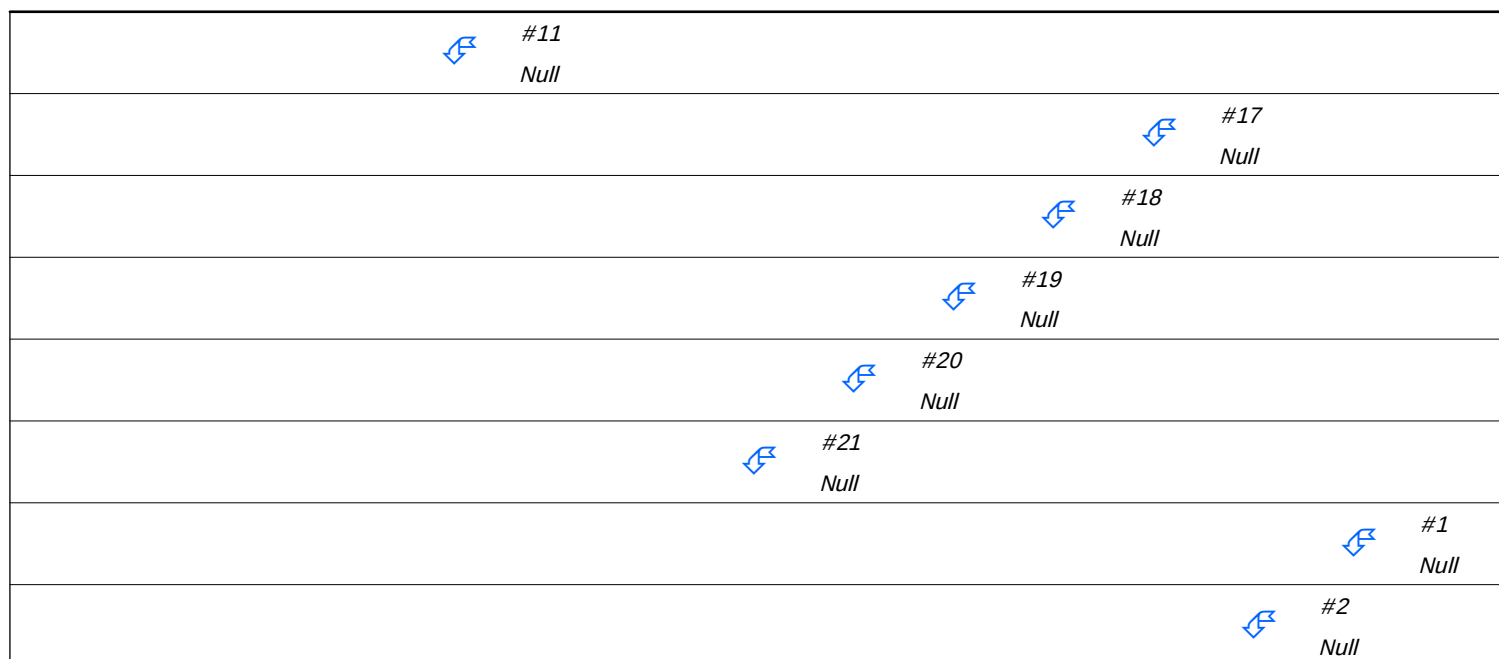
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	2.190 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.432	0.273	
Null	#2	==>	#3	0.541	0.281	
Null	#3	==>	#4	0.837	0.258	
Null	#4	==>	#5	1.088	0.247	
Null	#5	==>	#6	1.016	0.209	
Null	#6	==>	#7	2.401	0.209	
Null	#7	==>	#8	0.000	0.000	
Null	#8	==>	#9	2.452	0.194	
Null	#9	==>	#10	1.860	0.185	
Null	#10	==>	#12	0.000	0.000	
Null	#11	==>	#12	0.000	0.000	
Null	#12	==>	#13	1.852	0.219	
Null	#13	==>	#14	1.619	0.211	
Null	#14	==>	#15	0.424	0.228	
Null	#15	==>	#16	2.065	0.234	
Null	#16	==>	End	0.000	0.000	
Null	#17	==>	#18	0.301	0.272	
Null	#18	==>	#19	0.999	0.260	
Null	#19	==>	#20	1.066	0.261	
Null	#20	==>	#21	2.161	0.232	
Null	#21	==>	#8	0.000	0.000	



					#3 Null
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					#10 Null
					#12 Null
					#13 Null
					#14 Null
					#15 Null
					#16 Null

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	1.88	60.00	3,193.00	2.05	0.432
#1	Muskingum K:					0.432
#2	6. Grassed waterway	2.12	90.00	4,246.00	2.18	0.541
#2	Muskingum K:					0.541
#3	6. Grassed waterway	1.47	80.00	5,459.00	1.81	0.837
#3	Muskingum K:					0.837
#4	6. Grassed waterway	1.23	80.00	6,502.00	1.66	1.088
#4	Muskingum K:					1.088
#5	6. Grassed waterway	0.67	30.00	4,465.00	1.22	1.016
#5	Muskingum K:					1.016
#6	6. Grassed waterway	0.66	70.00	10,548.00	1.22	2.401

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#6	Muskingum K:					2.401
#8	6. Grassed waterway	0.52	50.00	9,534.00	1.08	2.452
#8	Muskingum K:					2.452
#9	6. Grassed waterway	0.45	30.00	6,699.00	1.00	1.860
#9	Muskingum K:					1.860
#12	6. Grassed waterway	0.79	70.00	8,869.00	1.33	1.852
#12	Muskingum K:					1.852
#13	6. Grassed waterway	0.69	50.00	7,230.00	1.24	1.619
#13	Muskingum K:					1.619
#14	6. Grassed waterway	0.92	20.00	2,185.00	1.43	0.424
#14	Muskingum K:					0.424
#15	6. Grassed waterway	0.99	110.00	11,080.00	1.49	2.065
#15	Muskingum K:					2.065
#17	6. Grassed waterway	1.82	40.00	2,193.10	2.02	0.301
#17	Muskingum K:					0.301
#18	6. Grassed waterway	1.51	100.00	6,623.00	1.84	0.999
#18	Muskingum K:					0.999
#19	6. Grassed waterway	1.54	110.00	7,143.00	1.86	1.066
#19	Muskingum K:					1.066
#20	6. Grassed waterway	0.96	110.00	11,437.00	1.47	2.161
#20	Muskingum K:					2.161

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#11	586.000	586.000	53.83	20.01
#17	808.100	808.100	114.69	27.61
#18	853.400	1,661.500	195.40	52.65
#19	828.300	2,489.800	230.64	75.09
#20	872.000	3,361.800	239.81	87.42
#21	944.400	4,306.200	236.45	95.63
#1	917.100	917.100	87.09	21.03
#2	869.100	1,786.200	200.51	52.96
#3	958.900	2,745.100	285.22	85.72
#4	694.000	3,439.100	305.02	104.52
#5	893.200	4,332.300	322.77	126.81
#6	744.500	5,076.800	334.91	146.98
#7	674.100	5,750.900	328.29	161.15
#8	0.000	10,057.100	453.58	256.78
#9	541.700	10,598.800	450.34	266.19
#10	573.500	11,172.300	451.59	280.50
#12	0.000	11,758.300	458.80	300.51
#13	944.900	12,703.200	461.31	312.46
#14	554.000	13,257.200	458.84	312.46
#15	670.400	13,927.600	459.21	333.71
#16	630.700	14,558.300	457.59	350.79

Structure Detail:

Structure #11 (Null)

Structure #17 (Null)

Structure #18 (Null)

Structure #19 (Null)

Structure #20 (Null)

Structure #21 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

Structure #8 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #12 (Null)

Structure #13 (Null)

Structure #14 (Null)

Structure #15 (Null)

Structure #16 (Null)

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)
#11	1	586.000	2.045	0.000	0.000	76.000	M	53.83	20.013
	Σ	586.000						53.83	20.013
#17	1	808.100	1.087	0.000	0.000	76.000	M	114.69	27.615
	Σ	808.100						114.69	27.615
#18	1	853.400	1.360	0.000	0.000	74.000	M	84.37	25.040
	Σ	1,661.500						195.40	52.655
#19	1	828.300	1.460	0.000	0.000	73.000	M	69.64	22.440
	Σ	2,489.800						230.64	75.094
#20	1	872.000	1.523	0.000	0.000	66.000	M	27.71	12.326
	Σ	3,361.800						239.81	87.420
#21	1	944.400	2.739	0.000	0.000	62.000	M	11.19	8.209
	Σ	4,306.200						236.45	95.629
#1	1	917.100	0.825	0.000	0.000	71.000	M	87.09	21.033
	Σ	917.100						87.09	21.033
#2	1	869.100	1.302	0.000	0.000	77.000	M	120.71	31.927
	Σ	1,786.200						200.51	52.960
#3	1	958.900	1.348	0.000	0.000	76.000	M	117.84	32.755
	Σ	2,745.100						285.22	85.716
#4	1	694.000	1.103	0.000	0.000	73.000	M	70.43	18.808
	Σ	3,439.100						305.02	104.524
#5	1	893.200	2.044	0.000	0.000	72.000	M	53.71	22.286
	Σ	4,332.300						322.77	126.810
#6	1	744.500	1.918	0.000	0.000	73.000	M	52.22	20.172
	Σ	5,076.800						334.91	146.982
#7	1	674.100	0.471	0.000	0.000	70.000	M	77.41	14.165
	Σ	5,750.900						328.29	161.147
#8	Σ	10,057.100						453.58	256.776
#9	1	541.700	1.404	0.000	0.000	68.000	M	24.48	9.411
	Σ	10,598.800						450.34	266.187
#10	1	573.500	1.546	0.000	0.000	72.000	M	41.31	14.310

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	11,172.300						451.59	280.497
#12	Σ	11,758.300						458.80	300.510
#13	1	944.900	1.635	0.000	0.000	65.000	M	24.48	11.950
	Σ	12,703.200						461.31	312.460
#14	1	554.000	1.827	0.000	0.000	64.000	0.00	0.000	
	Σ	13,257.200						458.84	312.460
#15	1	670.400	1.407	0.000	0.000	75.000	M	72.16	21.249
	Σ	13,927.600						459.21	333.708
#16	1	630.700	2.929	0.000	0.000	73.000	M	33.39	17.086
	Σ	14,558.300						457.59	350.794

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	11.26	140.00	1,243.00	2.680	0.128
		6. Grassed waterway	8.39	200.00	2,383.00	4.340	0.152
		6. Grassed waterway	4.99	180.00	3,609.00	3.340	0.300
		6. Grassed waterway	2.09	40.00	1,912.00	2.160	0.245
#1	1	Time of Concentration:					0.825
#2	1	3. Short grass pasture	24.73	140.00	566.00	3.970	0.039
		6. Grassed waterway	7.37	200.00	2,714.00	4.070	0.185
		6. Grassed waterway	4.02	240.00	5,975.00	3.000	0.553
		6. Grassed waterway	2.76	130.00	4,713.00	2.490	0.525
#2	1	Time of Concentration:					1.302
#3	1	3. Short grass pasture	23.08	120.00	520.00	3.840	0.037
		6. Grassed waterway	12.95	260.00	2,008.00	5.390	0.103
		6. Grassed waterway	4.61	260.00	5,639.00	3.220	0.486
		6. Grassed waterway	2.12	120.00	5,671.00	2.180	0.722
#3	1	Time of Concentration:					1.348
#4	1	3. Short grass pasture	3.02	50.00	1,654.00	1.390	0.330
		6. Grassed waterway	9.49	320.00	3,371.00	4.620	0.202
		6. Grassed waterway	3.70	100.00	2,701.00	2.880	0.260
		6. Grassed waterway	1.78	40.00	2,246.00	2.000	0.311
#4	1	Time of Concentration:					1.103
#5	1	3. Short grass pasture	4.69	80.00	1,706.01	1.730	0.273
		6. Grassed waterway	8.05	340.00	4,221.03	4.250	0.275
		6. Grassed waterway	3.42	100.00	2,928.00	2.770	0.293

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	0.95	60.00	6,326.44	1.460	1.203
#5	1	Time of Concentration:					2.044
#6	1	3. Short grass pasture	3.24	50.00	1,545.00	1.430	0.300
		6. Grassed waterway	4.91	240.00	4,885.00	3.320	0.408
		6. Grassed waterway	4.78	160.00	3,346.00	3.280	0.283
		6. Grassed waterway	0.71	30.00	4,209.00	1.260	0.927
#6	1	Time of Concentration:					1.918
#7	1	3. Short grass pasture	22.96	90.00	392.00	3.830	0.028
		6. Grassed waterway	16.86	160.00	949.00	6.150	0.042
		6. Grassed waterway	3.13	120.00	3,835.00	2.650	0.401
#7	1	Time of Concentration:					0.471
#9	1	3. Short grass pasture	38.19	110.00	288.00	4.940	0.016
		6. Grassed waterway	9.46	120.00	1,268.00	4.610	0.076
		6. Grassed waterway	4.46	140.00	3,139.00	3.160	0.275
		6. Grassed waterway	1.05	60.00	5,714.00	1.530	1.037
#9	1	Time of Concentration:					1.404
#10	1	3. Short grass pasture	1.41	5.00	354.00	0.950	0.103
		6. Grassed waterway	12.92	80.00	619.00	5.390	0.031
		6. Grassed waterway	5.26	150.00	2,849.00	3.440	0.230
		6. Grassed waterway	1.35	100.00	7,407.00	1.740	1.182
#10	1	Time of Concentration:					1.546
#11	1	3. Short grass pasture	22.15	130.00	587.00	3.760	0.043
		6. Grassed waterway	13.92	170.00	1,221.00	5.590	0.060
		6. Grassed waterway	2.65	80.00	3,018.00	2.440	0.343
		6. Grassed waterway	1.03	90.00	8,754.00	1.520	1.599
#11	1	Time of Concentration:					2.045
#13	1	3. Short grass pasture	4.33	10.00	231.00	1.660	0.038
		6. Grassed waterway	4.74	200.00	4,215.00	3.260	0.359
		6. Grassed waterway	2.74	180.00	6,573.00	2.480	0.736
		6. Grassed waterway	0.82	20.00	2,443.00	1.350	0.502
#13	1	Time of Concentration:					1.635
#14	1	3. Short grass pasture	8.73	60.00	687.00	2.360	0.080
		6. Grassed waterway	2.55	65.00	2,546.02	2.390	0.295
		6. Grassed waterway	0.74	50.00	6,746.72	1.290	1.452
#14	1	Time of Concentration:					1.827
#15	1	3. Short grass pasture	177.17	900.00	508.00	10.640	0.013
		6. Grassed waterway	5.31	110.00	2,072.00	3.450	0.166
		6. Grassed waterway	2.42	210.00	8,668.00	2.330	1.033
		6. Grassed waterway	1.53	20.00	1,305.00	1.850	0.195
#15	1	Time of Concentration:					1.407
#16	1	3. Short grass pasture	240.00	600.00	250.00	12.390	0.005
		6. Grassed waterway	8.69	90.00	1,036.00	4.420	0.065

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	2.82	160.00	5,669.00	2.510	0.627
		5. Nearly bare and untilled, and alluvial valley fans	0.92	70.00	7,635.00	0.950	2.232
# 16	1	Time of Concentration:					2.929
#17	1	3. Short grass pasture	6.39	80.00	1,251.00	2.020	0.172
		6. Grassed waterway	7.82	160.00	2,046.00	4.190	0.135
		6. Grassed waterway	5.00	100.00	2,001.00	3.350	0.165
		6. Grassed waterway	3.09	180.00	5,830.00	2.630	0.615
# 17	1	Time of Concentration:					1.087
#18	1	3. Short grass pasture	4.44	100.00	2,254.00	1.680	0.372
		6. Grassed waterway	7.29	400.00	5,484.00	4.050	0.376
		6. Grassed waterway	2.29	100.00	4,367.00	2.260	0.536
		6. Grassed waterway	1.81	10.00	552.00	2.010	0.076
# 18	1	Time of Concentration:					1.360
#19	1	3. Short grass pasture	8.94	120.00	1,343.00	2.390	0.156
		6. Grassed waterway	4.96	100.00	2,017.00	3.330	0.168
		6. Grassed waterway	6.73	200.00	2,973.00	3.890	0.212
		6. Grassed waterway	1.37	80.00	5,823.00	1.750	0.924
# 19	1	Time of Concentration:					1.460
#20	1	3. Short grass pasture	13.58	180.00	1,325.00	2.940	0.125
		6. Grassed waterway	6.56	240.00	3,658.00	3.840	0.264
		6. Grassed waterway	1.62	60.00	3,702.00	1.900	0.541
		6. Grassed waterway	1.16	40.00	3,441.15	1.610	0.593
# 20	1	Time of Concentration:					1.523
#21	1	3. Short grass pasture	5.13	120.00	2,340.00	1.810	0.359
		6. Grassed waterway	3.55	60.00	1,689.00	2.820	0.166
		6. Grassed waterway	1.17	70.00	6,006.00	1.610	1.036
		6. Grassed waterway	0.74	40.00	5,431.00	1.280	1.178
# 21	1	Time of Concentration:					2.739

Spring Creek Postmining Hydrology Model

100-YR, 6-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

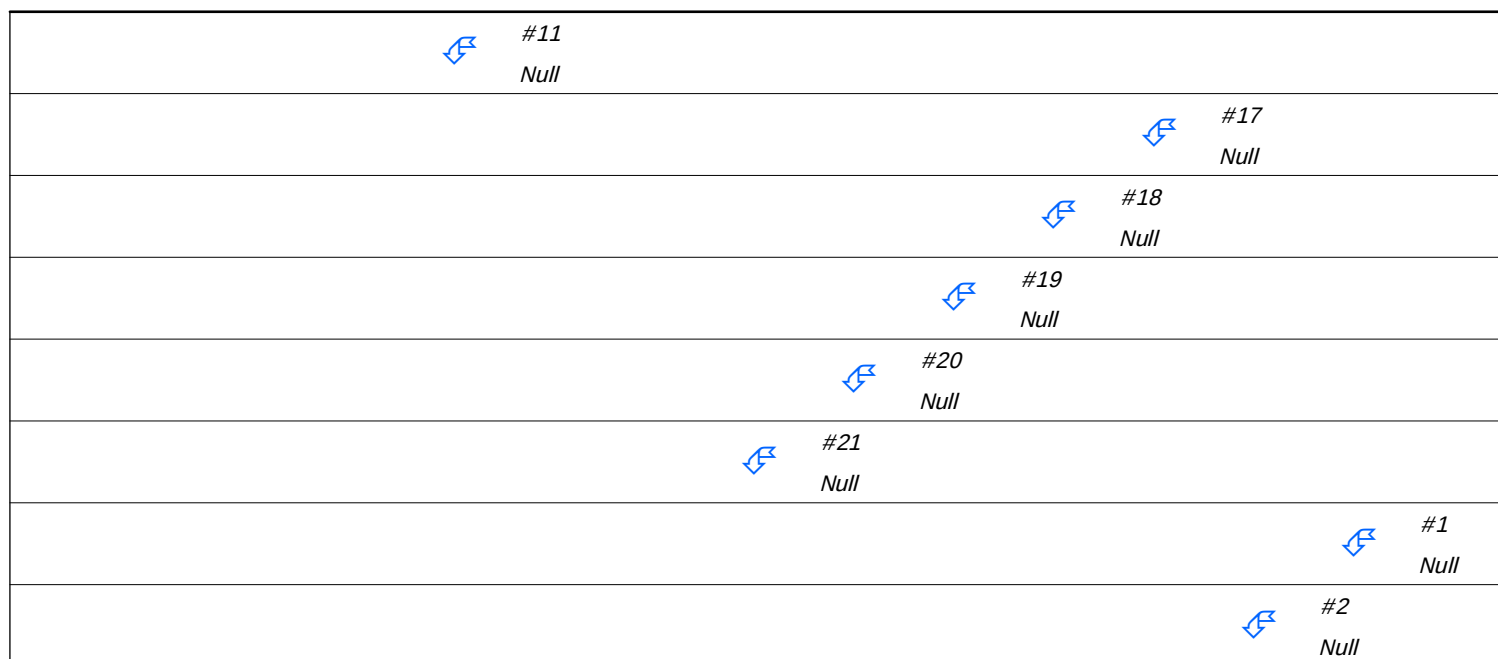
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 6 hr
Rainfall Depth:	2.380 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.432	0.273	
Null	#2	==>	#3	0.541	0.281	
Null	#3	==>	#4	0.837	0.258	
Null	#4	==>	#5	1.088	0.247	
Null	#5	==>	#6	1.016	0.209	
Null	#6	==>	#7	2.401	0.209	
Null	#7	==>	#8	0.000	0.000	
Null	#8	==>	#9	2.452	0.194	
Null	#9	==>	#10	1.860	0.185	
Null	#10	==>	#12	0.000	0.000	
Null	#11	==>	#12	0.000	0.000	
Null	#12	==>	#13	1.852	0.219	
Null	#13	==>	#14	1.619	0.211	
Null	#14	==>	#15	0.424	0.228	
Null	#15	==>	#16	2.065	0.234	
Null	#16	==>	End	0.000	0.000	
Null	#17	==>	#18	0.301	0.272	
Null	#18	==>	#19	0.999	0.260	
Null	#19	==>	#20	1.066	0.261	
Null	#20	==>	#21	2.161	0.232	
Null	#21	==>	#8	0.000	0.000	



				#3 Null
			#4 Null	
		#5 Null		
	#6 Null			
#7 Null				
#8 Null				
#9 Null				
#10 Null				
#12 Null				
#13 Null				
#14 Null				
#15 Null				
#16 Null				

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	1.88	60.00	3,193.00	2.05	0.432
#1	Muskingum K:					0.432
#2	6. Grassed waterway	2.12	90.00	4,246.00	2.18	0.541
#2	Muskingum K:					0.541
#3	6. Grassed waterway	1.47	80.00	5,459.00	1.81	0.837
#3	Muskingum K:					0.837
#4	6. Grassed waterway	1.23	80.00	6,502.00	1.66	1.088
#4	Muskingum K:					1.088
#5	6. Grassed waterway	0.67	30.00	4,465.00	1.22	1.016
#5	Muskingum K:					1.016
#6	6. Grassed waterway	0.66	70.00	10,548.00	1.22	2.401

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#6	Muskingum K:					2.401
#8	6. Grassed waterway	0.52	50.00	9,534.00	1.08	2.452
#8	Muskingum K:					2.452
#9	6. Grassed waterway	0.45	30.00	6,699.00	1.00	1.860
#9	Muskingum K:					1.860
#12	6. Grassed waterway	0.79	70.00	8,869.00	1.33	1.852
#12	Muskingum K:					1.852
#13	6. Grassed waterway	0.69	50.00	7,230.00	1.24	1.619
#13	Muskingum K:					1.619
#14	6. Grassed waterway	0.92	20.00	2,185.00	1.43	0.424
#14	Muskingum K:					0.424
#15	6. Grassed waterway	0.99	110.00	11,080.00	1.49	2.065
#15	Muskingum K:					2.065
#17	6. Grassed waterway	1.82	40.00	2,193.10	2.02	0.301
#17	Muskingum K:					0.301
#18	6. Grassed waterway	1.51	100.00	6,623.00	1.84	0.999
#18	Muskingum K:					0.999
#19	6. Grassed waterway	1.54	110.00	7,143.00	1.86	1.066
#19	Muskingum K:					1.066
#20	6. Grassed waterway	0.96	110.00	11,437.00	1.47	2.161
#20	Muskingum K:					2.161

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#11	586.000	586.000	94.96	24.21
#17	808.100	808.100	201.86	33.41
#18	853.400	1,661.500	351.22	64.09
#19	828.300	2,489.800	419.17	91.78
#20	872.000	3,361.800	443.66	107.98
#21	944.400	4,306.200	434.05	119.44
#1	917.100	917.100	174.66	26.34
#2	869.100	1,786.200	370.51	64.75
#3	958.900	2,745.100	521.61	104.38
#4	694.000	3,439.100	559.47	127.58
#5	893.200	4,332.300	593.89	155.27
#6	744.500	5,076.800	605.86	180.16
#7	674.100	5,750.900	579.41	198.05
#8	0.000	10,057.100	793.16	317.49
#9	541.700	10,598.800	779.96	329.59
#10	573.500	11,172.300	773.32	347.37
#12	0.000	11,758.300	773.52	371.59
#13	944.900	12,703.200	769.07	387.50
#14	554.000	13,257.200	765.37	387.50
#15	670.400	13,927.600	764.42	413.37
#16	630.700	14,558.300	760.12	434.45

Structure Detail:

Structure #11 (Null)

Structure #17 (Null)

Structure #18 (Null)

Structure #19 (Null)

Structure #20 (Null)

Structure #21 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

Structure #8 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #12 (Null)

Structure #13 (Null)

Structure #14 (Null)

Structure #15 (Null)

Structure #16 (Null)

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)
#11	1	586.000	2.045	0.000	0.000	76.000	M	94.96	24.215
	Σ	586.000						94.96	24.215
#17	1	808.100	1.087	0.000	0.000	76.000	M	201.86	33.413
	Σ	808.100						201.86	33.413
#18	1	853.400	1.360	0.000	0.000	74.000	M	155.13	30.680
	Σ	1,661.500						351.22	64.093
#19	1	828.300	1.460	0.000	0.000	73.000	M	131.58	27.683
	Σ	2,489.800						419.17	91.776
#20	1	872.000	1.523	0.000	0.000	66.000	M	67.97	16.207
	Σ	3,361.800						443.66	107.984
#21	1	944.400	2.739	0.000	0.000	62.000	M	33.55	11.456
	Σ	4,306.200						434.05	119.440
#1	1	917.100	0.825	0.000	0.000	71.000	M	174.66	26.340
	Σ	917.100						174.66	26.340
#2	1	869.100	1.302	0.000	0.000	77.000	M	208.11	38.406
	Σ	1,786.200						370.51	64.746
#3	1	958.900	1.348	0.000	0.000	76.000	M	207.17	39.633
	Σ	2,745.100						521.61	104.378
#4	1	694.000	1.103	0.000	0.000	73.000	M	132.91	23.203
	Σ	3,439.100						559.47	127.581
#5	1	893.200	2.044	0.000	0.000	72.000	M	104.70	27.693
	Σ	4,332.300						593.89	155.274
#6	1	744.500	1.918	0.000	0.000	73.000	M	98.98	24.886
	Σ	5,076.800						605.86	180.160
#7	1	674.100	0.471	0.000	0.000	70.000	M	161.37	17.886
	Σ	5,750.900						579.41	198.046
#8	Σ	10,057.100						793.16	317.486
#9	1	541.700	1.404	0.000	0.000	68.000	M	54.83	12.107
	Σ	10,598.800						779.96	329.593
#10	1	573.500	1.546	0.000	0.000	72.000	M	80.38	17.782

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	11,172.300						773.32	347.375
#12	Σ	11,758.300						773.52	371.589
#13	1	944.900	1.635	0.000	0.000	65.000	M	63.23	15.913
	Σ	12,703.200						769.07	387.502
#14	1	554.000	1.827	0.000	0.000	64.000	0.00	0.000	
	Σ	13,257.200						765.37	387.502
#15	1	670.400	1.407	0.000	0.000	75.000	M	129.60	25.868
	Σ	13,927.600						764.42	413.370
#16	1	630.700	2.929	0.000	0.000	73.000	M	63.48	21.078
	Σ	14,558.300						760.12	434.448

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	11.26	140.00	1,243.00	2.680	0.128
		6. Grassed waterway	8.39	200.00	2,383.00	4.340	0.152
		6. Grassed waterway	4.99	180.00	3,609.00	3.340	0.300
		6. Grassed waterway	2.09	40.00	1,912.00	2.160	0.245
#1	1	Time of Concentration:					0.825
#2	1	3. Short grass pasture	24.73	140.00	566.00	3.970	0.039
		6. Grassed waterway	7.37	200.00	2,714.00	4.070	0.185
		6. Grassed waterway	4.02	240.00	5,975.00	3.000	0.553
		6. Grassed waterway	2.76	130.00	4,713.00	2.490	0.525
#2	1	Time of Concentration:					1.302
#3	1	3. Short grass pasture	23.08	120.00	520.00	3.840	0.037
		6. Grassed waterway	12.95	260.00	2,008.00	5.390	0.103
		6. Grassed waterway	4.61	260.00	5,639.00	3.220	0.486
		6. Grassed waterway	2.12	120.00	5,671.00	2.180	0.722
#3	1	Time of Concentration:					1.348
#4	1	3. Short grass pasture	3.02	50.00	1,654.00	1.390	0.330
		6. Grassed waterway	9.49	320.00	3,371.00	4.620	0.202
		6. Grassed waterway	3.70	100.00	2,701.00	2.880	0.260
		6. Grassed waterway	1.78	40.00	2,246.00	2.000	0.311
#4	1	Time of Concentration:					1.103
#5	1	3. Short grass pasture	4.69	80.00	1,706.01	1.730	0.273
		6. Grassed waterway	8.05	340.00	4,221.03	4.250	0.275
		6. Grassed waterway	3.42	100.00	2,928.00	2.770	0.293

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	0.95	60.00	6,326.44	1.460	1.203
#5	1	Time of Concentration:					2.044
#6	1	3. Short grass pasture	3.24	50.00	1,545.00	1.430	0.300
		6. Grassed waterway	4.91	240.00	4,885.00	3.320	0.408
		6. Grassed waterway	4.78	160.00	3,346.00	3.280	0.283
		6. Grassed waterway	0.71	30.00	4,209.00	1.260	0.927
#6	1	Time of Concentration:					1.918
#7	1	3. Short grass pasture	22.96	90.00	392.00	3.830	0.028
		6. Grassed waterway	16.86	160.00	949.00	6.150	0.042
		6. Grassed waterway	3.13	120.00	3,835.00	2.650	0.401
#7	1	Time of Concentration:					0.471
#9	1	3. Short grass pasture	38.19	110.00	288.00	4.940	0.016
		6. Grassed waterway	9.46	120.00	1,268.00	4.610	0.076
		6. Grassed waterway	4.46	140.00	3,139.00	3.160	0.275
		6. Grassed waterway	1.05	60.00	5,714.00	1.530	1.037
#9	1	Time of Concentration:					1.404
#10	1	3. Short grass pasture	1.41	5.00	354.00	0.950	0.103
		6. Grassed waterway	12.92	80.00	619.00	5.390	0.031
		6. Grassed waterway	5.26	150.00	2,849.00	3.440	0.230
		6. Grassed waterway	1.35	100.00	7,407.00	1.740	1.182
#10	1	Time of Concentration:					1.546
#11	1	3. Short grass pasture	22.15	130.00	587.00	3.760	0.043
		6. Grassed waterway	13.92	170.00	1,221.00	5.590	0.060
		6. Grassed waterway	2.65	80.00	3,018.00	2.440	0.343
		6. Grassed waterway	1.03	90.00	8,754.00	1.520	1.599
#11	1	Time of Concentration:					2.045
#13	1	3. Short grass pasture	4.33	10.00	231.00	1.660	0.038
		6. Grassed waterway	4.74	200.00	4,215.00	3.260	0.359
		6. Grassed waterway	2.74	180.00	6,573.00	2.480	0.736
		6. Grassed waterway	0.82	20.00	2,443.00	1.350	0.502
#13	1	Time of Concentration:					1.635
#14	1	3. Short grass pasture	8.73	60.00	687.00	2.360	0.080
		6. Grassed waterway	2.55	65.00	2,546.02	2.390	0.295
		6. Grassed waterway	0.74	50.00	6,746.72	1.290	1.452
#14	1	Time of Concentration:					1.827
#15	1	3. Short grass pasture	177.17	900.00	508.00	10.640	0.013
		6. Grassed waterway	5.31	110.00	2,072.00	3.450	0.166
		6. Grassed waterway	2.42	210.00	8,668.00	2.330	1.033
		6. Grassed waterway	1.53	20.00	1,305.00	1.850	0.195
#15	1	Time of Concentration:					1.407
#16	1	3. Short grass pasture	240.00	600.00	250.00	12.390	0.005
		6. Grassed waterway	8.69	90.00	1,036.00	4.420	0.065

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	2.82	160.00	5,669.00	2.510	0.627
		5. Nearly bare and untilled, and alluvial valley fans	0.92	70.00	7,635.00	0.950	2.232
# 16	1	Time of Concentration:					2.929
#17	1	3. Short grass pasture	6.39	80.00	1,251.00	2.020	0.172
		6. Grassed waterway	7.82	160.00	2,046.00	4.190	0.135
		6. Grassed waterway	5.00	100.00	2,001.00	3.350	0.165
		6. Grassed waterway	3.09	180.00	5,830.00	2.630	0.615
# 17	1	Time of Concentration:					1.087
#18	1	3. Short grass pasture	4.44	100.00	2,254.00	1.680	0.372
		6. Grassed waterway	7.29	400.00	5,484.00	4.050	0.376
		6. Grassed waterway	2.29	100.00	4,367.00	2.260	0.536
		6. Grassed waterway	1.81	10.00	552.00	2.010	0.076
# 18	1	Time of Concentration:					1.360
#19	1	3. Short grass pasture	8.94	120.00	1,343.00	2.390	0.156
		6. Grassed waterway	4.96	100.00	2,017.00	3.330	0.168
		6. Grassed waterway	6.73	200.00	2,973.00	3.890	0.212
		6. Grassed waterway	1.37	80.00	5,823.00	1.750	0.924
# 19	1	Time of Concentration:					1.460
#20	1	3. Short grass pasture	13.58	180.00	1,325.00	2.940	0.125
		6. Grassed waterway	6.56	240.00	3,658.00	3.840	0.264
		6. Grassed waterway	1.62	60.00	3,702.00	1.900	0.541
		6. Grassed waterway	1.16	40.00	3,441.15	1.610	0.593
# 20	1	Time of Concentration:					1.523
#21	1	3. Short grass pasture	5.13	120.00	2,340.00	1.810	0.359
		6. Grassed waterway	3.55	60.00	1,689.00	2.820	0.166
		6. Grassed waterway	1.17	70.00	6,006.00	1.610	1.036
		6. Grassed waterway	0.74	40.00	5,431.00	1.280	1.178
# 21	1	Time of Concentration:					2.739

ATTACHMENT J-1

POSTMINE SEDCAD RESULTS

South Fork Spring Creek Drainage

South Fork Spring Creek Postmining Hydrology Model

2-YR, 24-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

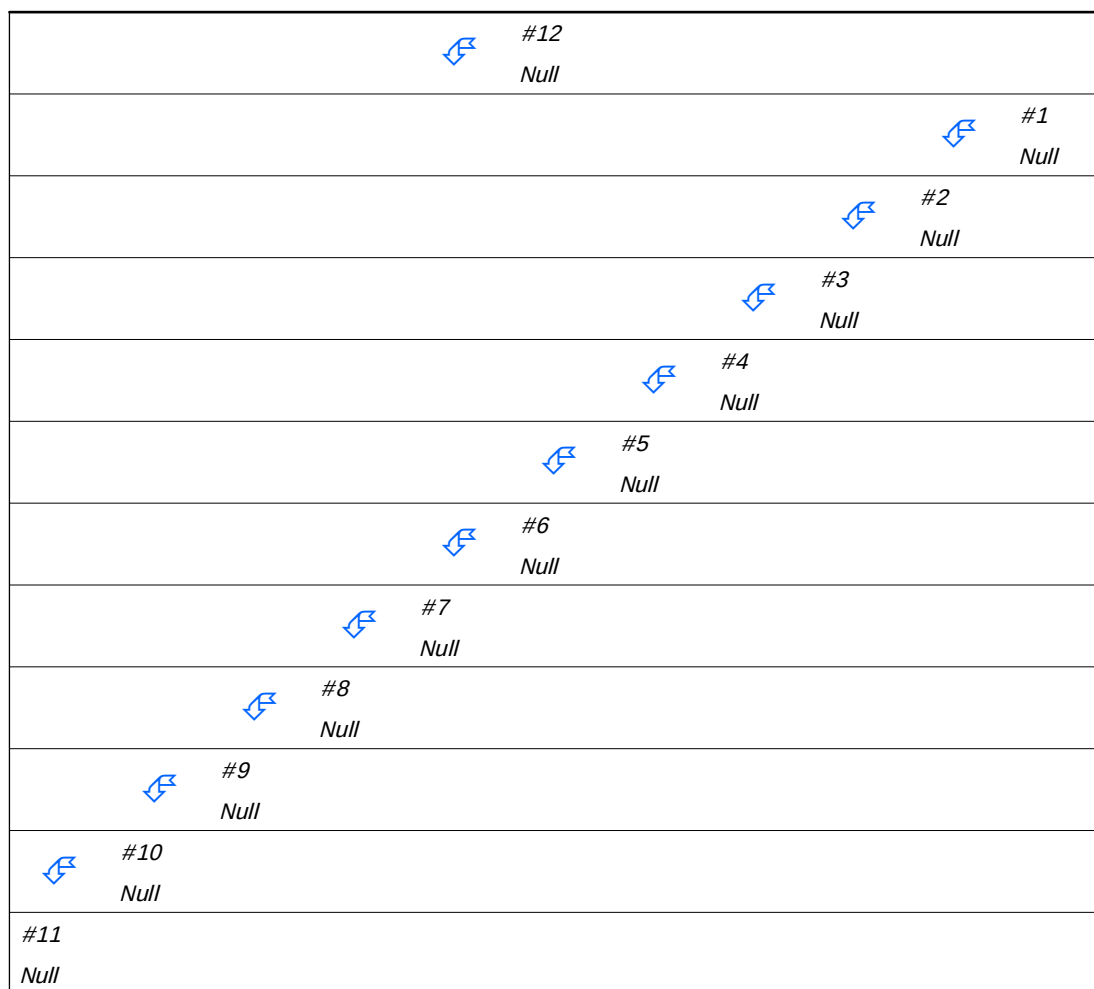
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	1.380 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	1.028	0.278	
Null	#2	==>	#3	0.579	0.261	
Null	#3	==>	#4	0.661	0.273	
Null	#4	==>	#5	1.589	0.260	
Null	#5	==>	#6	1.417	0.230	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	#8	1.836	0.219	
Null	#8	==>	#9	2.511	0.207	
Null	#9	==>	#10	3.786	0.201	
Null	#10	==>	#11	1.747	0.232	
Null	#11	==>	End	0.000	0.000	
Null	#12	==>	#7	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	2.03	160.00	7,890.32	2.13	1.028
#1	Muskingum K:					1.028
#2	6. Grassed waterway	1.55	60.00	3,883.00	1.86	0.579
#2	Muskingum K:					0.579
#3	6. Grassed waterway	1.85	90.00	4,860.00	2.04	0.661
#3	Muskingum K:					0.661
#4	6. Grassed waterway	1.52	160.00	10,531.00	1.84	1.589
#4	Muskingum K:					1.589
#5	6. Grassed waterway	0.95	70.00	7,398.00	1.45	1.417
#5	Muskingum K:					1.417
#6	6. Grassed waterway	0.00	0.00	0.00	0.00	0.000
#6	Muskingum K:					0.000
#7	6. Grassed waterway	0.80	70.00	8,794.00	1.33	1.836
#7	Muskingum K:					1.836
#8	6. Grassed waterway	0.65	70.00	10,849.00	1.20	2.511
#8	Muskingum K:					2.511
#9	6. Grassed waterway	0.58	90.00	15,538.00	1.14	3.786
#9	Muskingum K:					3.786
#10	6. Grassed waterway	0.97	90.00	9,250.00	1.47	1.747
#10	Muskingum K:					1.747

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#12	889.900	889.900	14.65	7.42
#1	959.200	959.200	34.00	11.65
#2	816.600	1,775.800	38.91	15.35
#3	629.600	2,405.400	46.76	21.34
#4	633.200	3,038.600	53.63	27.36
#5	1,330.400	4,369.000	63.47	38.46
#6	361.800	4,730.800	65.30	42.85
#7	0.000	5,620.700	71.83	50.27
#8	866.300	6,487.000	76.94	60.79
#9	837.300	7,324.299	81.40	72.19
#10	933.000	8,257.299	82.62	82.24
#11	640.200	8,897.499	82.18	83.18

Structure Detail:

Structure #12 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

Structure #8 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #11 (Null)

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)
#12	1	889.900	1.835	0.000	0.000	75.000	M	14.65	7.422
	Σ	889.900						14.65	7.422
#1	1	959.200	1.253	0.000	0.000	78.000	M	34.00	11.651
	Σ	959.200						34.00	11.651
#2	1	816.600	1.213	0.000	0.000	71.000	M	6.10	3.695
	Σ	1,775.800						38.91	15.346
#3	1	629.600	1.190	0.000	0.000	76.000	M	15.83	5.990
	Σ	2,405.400						46.76	21.336
#4	1	633.200	0.962	0.000	0.000	76.000	M	17.76	6.024
	Σ	3,038.600						53.63	27.359
#5	1	822.900	1.837	0.000	0.000	75.000	M	13.54	6.863
	2	507.500	1.348	0.000	0.000	75.000	M	9.79	4.233
	Σ	4,369.000						63.47	38.455
#6	1	361.800	1.148	0.000	0.000	78.000	M	13.50	4.394
	Σ	4,730.800						65.30	42.850
#7	Σ	5,620.700						71.83	50.272
#8	1	866.300	1.974	0.000	0.000	78.000	M	23.48	10.518
	Σ	6,487.000						76.94	60.790
#9	1	837.300	2.969	0.000	0.000	79.000	M	20.59	11.397
	Σ	7,324.299						81.40	72.187
#10	1	933.000	3.270	0.000	0.000	77.000	M	15.85	10.053
	Σ	8,257.299						82.62	82.240
#11	1	640.200	2.108	0.000	0.000	66.000	M	1.07	0.944
	Σ	8,897.499						82.18	83.184

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	24.79	120.00	484.00	3.980	0.033
		6. Grassed waterway	8.02	160.00	1,995.00	4.240	0.130
		6. Grassed waterway	2.61	120.00	4,604.00	2.420	0.528

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	2.50	120.00	4,796.00	2.370	0.562
#1	1	Time of Concentration:					1.253
#2	1	3. Short grass pasture	18.12	50.00	276.00	3.400	0.022
		6. Grassed waterway	9.41	360.00	3,826.00	4.600	0.231
		6. Grassed waterway	5.68	100.00	1,759.00	3.570	0.136
		6. Grassed waterway	1.72	100.00	5,820.00	1.960	0.824
#2	1	Time of Concentration:					1.213
#3	1	3. Short grass pasture	11.22	140.00	1,248.00	2.670	0.129
		6. Grassed waterway	5.38	320.00	5,943.00	3.480	0.474
		6. Grassed waterway	1.53	60.00	3,915.00	1.850	0.587
#3	1	Time of Concentration:					1.190
#4	1	3. Short grass pasture	11.48	80.00	697.00	2.710	0.071
		6. Grassed waterway	3.46	80.00	2,312.00	2.790	0.230
		6. Grassed waterway	9.72	180.00	1,852.00	4.670	0.110
		6. Grassed waterway	2.25	100.00	4,448.00	2.240	0.551
#4	1	Time of Concentration:					0.962
#5	1	3. Short grass pasture	4.74	60.00	1,265.00	1.740	0.201
		6. Grassed waterway	3.24	120.00	3,699.00	2.700	0.380
		6. Grassed waterway	6.60	180.00	2,727.00	3.850	0.196
		6. Grassed waterway	1.81	140.00	7,715.00	2.020	1.060
#5	1	Time of Concentration:					1.837
#5	2	3. Short grass pasture	6.39	80.00	1,252.00	2.020	0.172
		6. Grassed waterway	1.67	60.00	3,593.00	1.930	0.517
		6. Grassed waterway	8.24	140.00	1,700.00	4.300	0.109
		6. Grassed waterway	3.57	200.00	5,604.00	2.830	0.550
#5	2	Time of Concentration:					1.348
#6	1	3. Short grass pasture	114.29	80.00	70.00	8.550	0.002
		6. Grassed waterway	8.06	130.00	1,613.00	4.250	0.105
		6. Grassed waterway	1.16	70.00	6,037.00	1.610	1.041
#6	1	Time of Concentration:					1.148
#8	1	3. Short grass pasture	3.59	20.00	557.00	1.510	0.102
		6. Grassed waterway	13.73	250.00	1,821.00	5.550	0.091
		6. Grassed waterway	3.54	70.00	1,976.00	2.820	0.194
		6. Grassed waterway	0.79	60.00	7,602.00	1.330	1.587
#8	1	Time of Concentration:					1.974
#9	1	3. Short grass pasture	3.42	10.00	292.00	1.480	0.054
		6. Grassed waterway	10.75	70.00	651.00	4.910	0.036
		6. Grassed waterway	1.13	50.00	4,421.00	1.590	0.772
		6. Grassed waterway	0.65	60.00	9,179.00	1.210	2.107
#9	1	Time of Concentration:					2.969
#10	1	3. Short grass pasture	2.57	10.00	389.01	1.280	0.084
		6. Grassed waterway	3.60	170.00	4,727.08	2.840	0.462

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	0.61	70.00	11,477.29	1.170	2.724
#10	1	Time of Concentration:					3.270
#11	1	3. Short grass pasture	7.29	50.00	686.00	2.150	0.088
		6. Grassed waterway	1.44	50.00	3,474.00	1.790	0.539
		6. Grassed waterway	5.08	110.00	2,165.00	3.380	0.177
		6. Grassed waterway	1.09	80.00	7,326.00	1.560	1.304
#11	1	Time of Concentration:					2.108
#12	1	3. Short grass pasture	5.67	70.00	1,234.02	1.900	0.180
		6. Grassed waterway	3.93	100.00	2,543.04	2.970	0.237
		6. Grassed waterway	4.12	220.00	5,337.08	3.040	0.487
		6. Grassed waterway	2.43	190.00	7,814.10	2.330	0.931
#12	1	Time of Concentration:					1.835

South Fork Spring Creek Postmining Hydrology Model

10-YR, 24-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

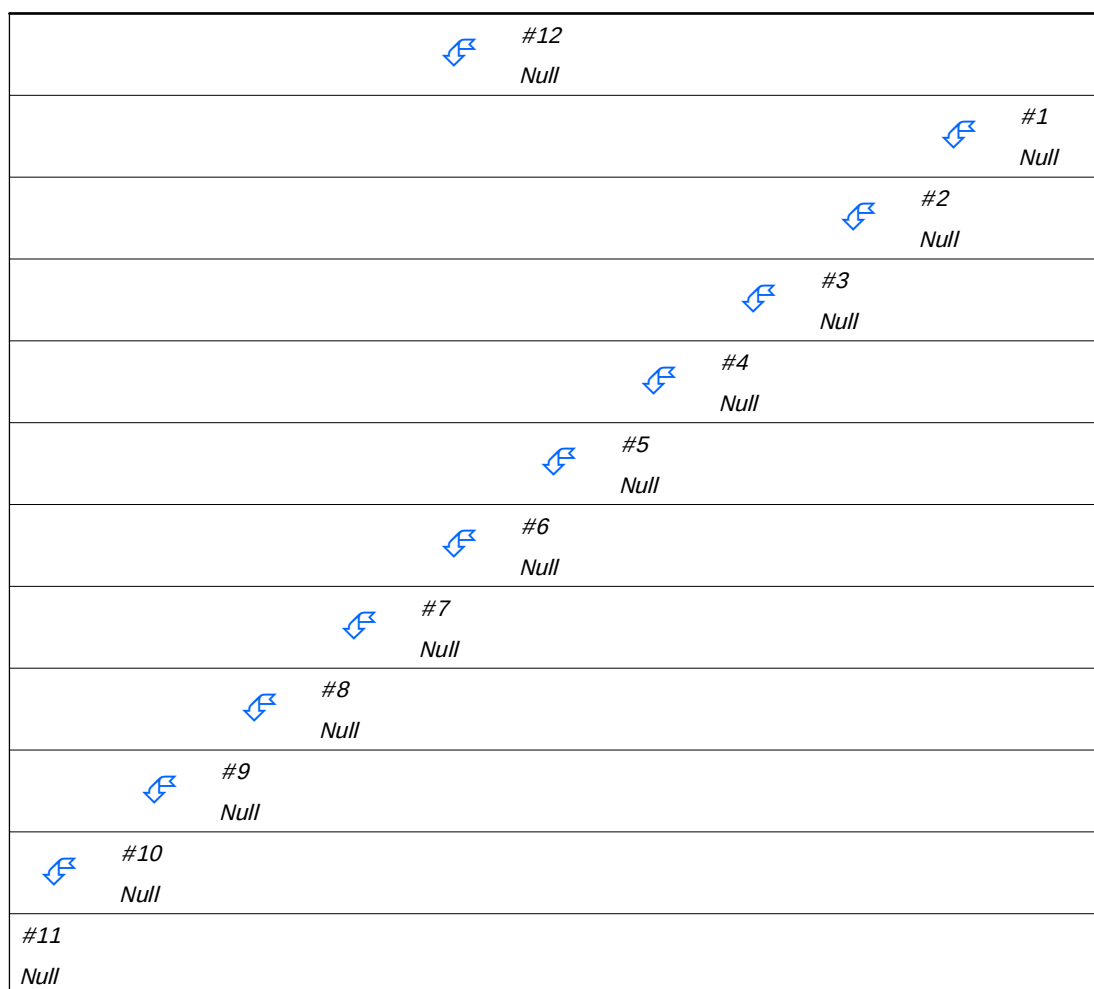
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	2.190 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	1.028	0.278	
Null	#2	==>	#3	0.579	0.261	
Null	#3	==>	#4	0.661	0.273	
Null	#4	==>	#5	1.589	0.260	
Null	#5	==>	#6	1.417	0.230	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	#8	1.836	0.219	
Null	#8	==>	#9	2.511	0.207	
Null	#9	==>	#10	3.786	0.201	
Null	#10	==>	#11	1.747	0.232	
Null	#11	==>	End	0.000	0.000	
Null	#12	==>	#7	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	2.03	160.00	7,890.32	2.13	1.028
#1	Muskingum K:					1.028
#2	6. Grassed waterway	1.55	60.00	3,883.00	1.86	0.579
#2	Muskingum K:					0.579
#3	6. Grassed waterway	1.85	90.00	4,860.00	2.04	0.661
#3	Muskingum K:					0.661
#4	6. Grassed waterway	1.52	160.00	10,531.00	1.84	1.589
#4	Muskingum K:					1.589
#5	6. Grassed waterway	0.95	70.00	7,398.00	1.45	1.417
#5	Muskingum K:					1.417
#6	6. Grassed waterway	0.00	0.00	0.00	0.00	0.000
#6	Muskingum K:					0.000
#7	6. Grassed waterway	0.80	70.00	8,794.00	1.33	1.836
#7	Muskingum K:					1.836
#8	6. Grassed waterway	0.65	70.00	10,849.00	1.20	2.511
#8	Muskingum K:					2.511
#9	6. Grassed waterway	0.58	90.00	15,538.00	1.14	3.786
#9	Muskingum K:					3.786
#10	6. Grassed waterway	0.97	90.00	9,250.00	1.47	1.747
#10	Muskingum K:					1.747

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#12	889.900	889.900	79.70	28.20
#1	959.200	959.200	150.30	37.84
#2	816.600	1,775.800	177.86	56.55
#3	629.600	2,405.400	205.68	78.06
#4	633.200	3,038.600	228.30	99.69
#5	1,330.400	4,369.000	260.51	141.86
#6	361.800	4,730.800	263.56	156.13
#7	0.000	5,620.700	284.85	184.33
#8	866.300	6,487.000	297.22	218.49
#9	837.300	7,324.299	307.58	253.87
#10	933.000	8,257.299	310.75	288.14
#11	640.200	8,897.499	309.65	297.18

Structure Detail:

Structure #12 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

Structure #8 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #11 (Null)

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)
#12	1	889.900	1.835	0.000	0.000	75.000	M	79.70	28.202
	Σ	889.900						79.70	28.202
#1	1	959.200	1.253	0.000	0.000	78.000	M	150.30	37.838
	Σ	959.200						150.30	37.838
#2	1	816.600	1.213	0.000	0.000	71.000	M	60.72	18.713
	Σ	1,775.800						177.86	56.550
#3	1	629.600	1.190	0.000	0.000	76.000	M	84.17	21.510
	Σ	2,405.400						205.68	78.060
#4	1	633.200	0.962	0.000	0.000	76.000	M	97.16	21.632
	Σ	3,038.600						228.30	99.693
#5	1	822.900	1.837	0.000	0.000	75.000	M	73.64	26.078
	2	507.500	1.348	0.000	0.000	75.000	M	56.25	16.085
	Σ	4,369.000						260.51	141.856
#6	1	361.800	1.148	0.000	0.000	78.000	M	60.09	14.272
	Σ	4,730.800						263.56	156.128
#7	Σ	5,620.700						284.85	184.330
#8	1	866.300	1.974	0.000	0.000	78.000	M	98.89	34.159
	Σ	6,487.000						297.22	218.490
#9	1	837.300	2.969	0.000	0.000	79.000	M	77.65	35.378
	Σ	7,324.299						307.58	253.867
#10	1	933.000	3.270	0.000	0.000	77.000	M	67.59	34.269
	Σ	8,257.299						310.75	288.137
#11	1	640.200	2.108	0.000	0.000	66.000	M	17.08	9.048
	Σ	8,897.499						309.65	297.185

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	24.79	120.00	484.00	3.980	0.033
		6. Grassed waterway	8.02	160.00	1,995.00	4.240	0.130
		6. Grassed waterway	2.61	120.00	4,604.00	2.420	0.528

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	2.50	120.00	4,796.00	2.370	0.562
#1	1	Time of Concentration:					1.253
#2	1	3. Short grass pasture	18.12	50.00	276.00	3.400	0.022
		6. Grassed waterway	9.41	360.00	3,826.00	4.600	0.231
		6. Grassed waterway	5.68	100.00	1,759.00	3.570	0.136
		6. Grassed waterway	1.72	100.00	5,820.00	1.960	0.824
#2	1	Time of Concentration:					1.213
#3	1	3. Short grass pasture	11.22	140.00	1,248.00	2.670	0.129
		6. Grassed waterway	5.38	320.00	5,943.00	3.480	0.474
		6. Grassed waterway	1.53	60.00	3,915.00	1.850	0.587
#3	1	Time of Concentration:					1.190
#4	1	3. Short grass pasture	11.48	80.00	697.00	2.710	0.071
		6. Grassed waterway	3.46	80.00	2,312.00	2.790	0.230
		6. Grassed waterway	9.72	180.00	1,852.00	4.670	0.110
		6. Grassed waterway	2.25	100.00	4,448.00	2.240	0.551
#4	1	Time of Concentration:					0.962
#5	1	3. Short grass pasture	4.74	60.00	1,265.00	1.740	0.201
		6. Grassed waterway	3.24	120.00	3,699.00	2.700	0.380
		6. Grassed waterway	6.60	180.00	2,727.00	3.850	0.196
		6. Grassed waterway	1.81	140.00	7,715.00	2.020	1.060
#5	1	Time of Concentration:					1.837
#5	2	3. Short grass pasture	6.39	80.00	1,252.00	2.020	0.172
		6. Grassed waterway	1.67	60.00	3,593.00	1.930	0.517
		6. Grassed waterway	8.24	140.00	1,700.00	4.300	0.109
		6. Grassed waterway	3.57	200.00	5,604.00	2.830	0.550
#5	2	Time of Concentration:					1.348
#6	1	3. Short grass pasture	114.29	80.00	70.00	8.550	0.002
		6. Grassed waterway	8.06	130.00	1,613.00	4.250	0.105
		6. Grassed waterway	1.16	70.00	6,037.00	1.610	1.041
#6	1	Time of Concentration:					1.148
#8	1	3. Short grass pasture	3.59	20.00	557.00	1.510	0.102
		6. Grassed waterway	13.73	250.00	1,821.00	5.550	0.091
		6. Grassed waterway	3.54	70.00	1,976.00	2.820	0.194
		6. Grassed waterway	0.79	60.00	7,602.00	1.330	1.587
#8	1	Time of Concentration:					1.974
#9	1	3. Short grass pasture	3.42	10.00	292.00	1.480	0.054
		6. Grassed waterway	10.75	70.00	651.00	4.910	0.036
		6. Grassed waterway	1.13	50.00	4,421.00	1.590	0.772
		6. Grassed waterway	0.65	60.00	9,179.00	1.210	2.107
#9	1	Time of Concentration:					2.969
#10	1	3. Short grass pasture	2.57	10.00	389.01	1.280	0.084
		6. Grassed waterway	3.60	170.00	4,727.08	2.840	0.462

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	0.61	70.00	11,477.29	1.170	2.724
#10	1	Time of Concentration:					3.270
#11	1	3. Short grass pasture	7.29	50.00	686.00	2.150	0.088
		6. Grassed waterway	1.44	50.00	3,474.00	1.790	0.539
		6. Grassed waterway	5.08	110.00	2,165.00	3.380	0.177
		6. Grassed waterway	1.09	80.00	7,326.00	1.560	1.304
#11	1	Time of Concentration:					2.108
#12	1	3. Short grass pasture	5.67	70.00	1,234.00	1.900	0.180
		6. Grassed waterway	3.93	100.00	2,543.00	2.970	0.237
		6. Grassed waterway	4.12	220.00	5,337.00	3.040	0.487
		6. Grassed waterway	2.43	190.00	7,814.00	2.330	0.931
#12	1	Time of Concentration:					1.835

South Fork Spring Creek Postmining Hydrology Model

100-YR, 6-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

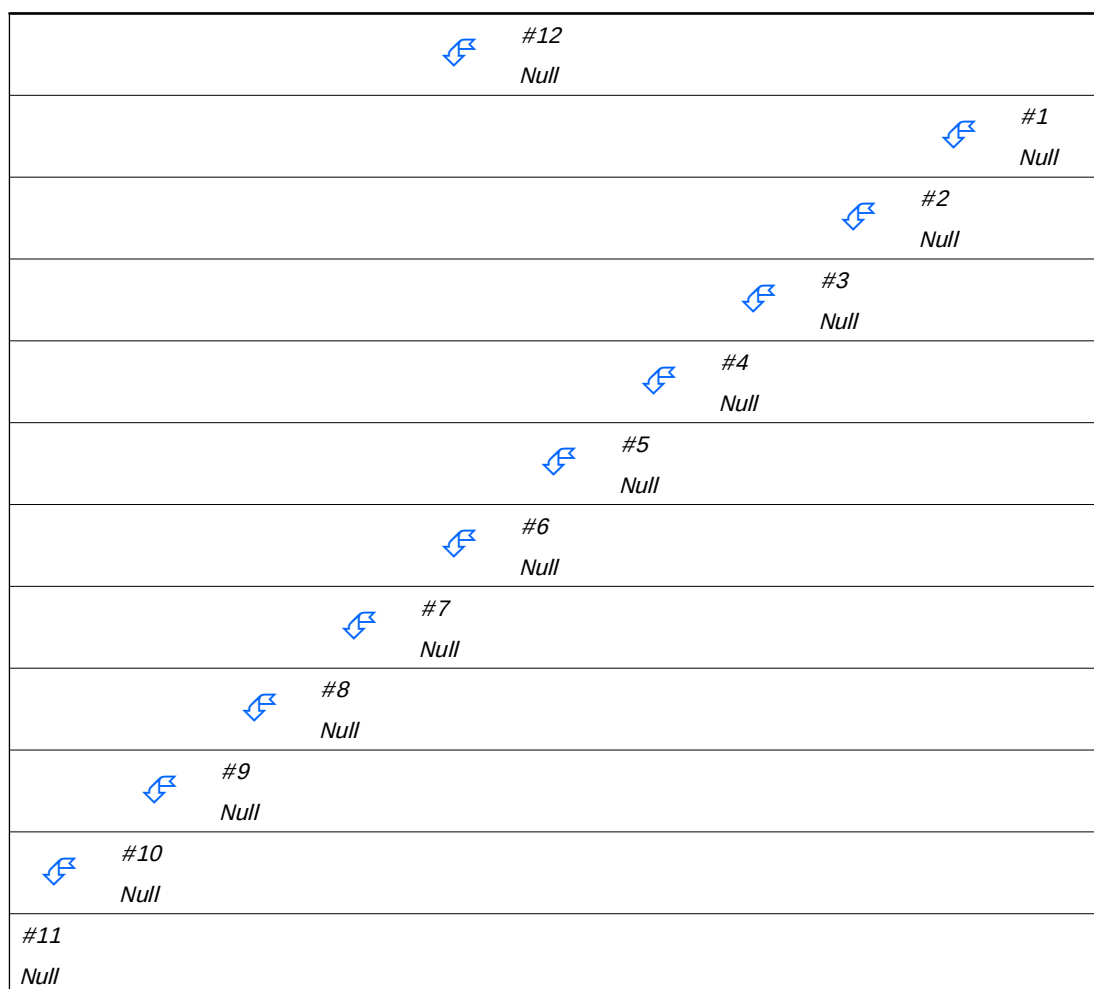
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 6 hr
Rainfall Depth:	2.380 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	1.028	0.278	
Null	#2	==>	#3	0.579	0.261	
Null	#3	==>	#4	0.661	0.273	
Null	#4	==>	#5	1.589	0.260	
Null	#5	==>	#6	1.417	0.230	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	#8	1.836	0.219	
Null	#8	==>	#9	2.511	0.207	
Null	#9	==>	#10	3.786	0.201	
Null	#10	==>	#11	1.747	0.232	
Null	#11	==>	End	0.000	0.000	
Null	#12	==>	#7	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	2.03	160.00	7,890.32	2.13	1.028
#1	Muskingum K:					1.028
#2	6. Grassed waterway	1.55	60.00	3,883.00	1.86	0.579
#2	Muskingum K:					0.579
#3	6. Grassed waterway	1.85	90.00	4,860.00	2.04	0.661
#3	Muskingum K:					0.661
#4	6. Grassed waterway	1.52	160.00	10,531.00	1.84	1.589
#4	Muskingum K:					1.589
#5	6. Grassed waterway	0.95	70.00	7,398.00	1.45	1.417
#5	Muskingum K:					1.417
#6	6. Grassed waterway	0.00	0.00	0.00	0.00	0.000
#6	Muskingum K:					0.000
#7	6. Grassed waterway	0.80	70.00	8,794.00	1.33	1.836
#7	Muskingum K:					1.836
#8	6. Grassed waterway	0.65	70.00	10,849.00	1.20	2.511
#8	Muskingum K:					2.511
#9	6. Grassed waterway	0.58	90.00	15,538.00	1.14	3.786
#9	Muskingum K:					3.786
#10	6. Grassed waterway	0.97	90.00	9,250.00	1.47	1.747
#10	Muskingum K:					1.747

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#12	889.900	889.900	143.57	34.33
#1	959.200	959.200	254.60	45.26
#2	816.600	1,775.800	311.16	68.70
#3	629.600	2,405.400	362.57	94.72
#4	633.200	3,038.600	404.44	120.90
#5	1,330.400	4,369.000	433.51	172.23
#6	361.800	4,730.800	427.84	189.30
#7	0.000	5,620.700	441.22	223.63
#8	866.300	6,487.000	441.11	264.50
#9	837.300	7,324.299	442.21	306.59
#10	933.000	8,257.299	438.00	347.82
#11	640.200	8,897.499	436.61	359.71

Structure Detail:

Structure #12 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

Structure #8 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #11 (Null)

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)
#12	1	889.900	1.835	0.000	0.000	75.000	M	143.57	34.332
	Σ	889.900						143.57	34.332
#1	1	959.200	1.253	0.000	0.000	78.000	M	254.60	45.264
	Σ	959.200						254.60	45.264
#2	1	816.600	1.213	0.000	0.000	71.000	M	121.76	23.434
	Σ	1,775.800						311.16	68.697
#3	1	629.600	1.190	0.000	0.000	76.000	M	148.05	26.026
	Σ	2,405.400						362.57	94.724
#4	1	633.200	0.962	0.000	0.000	76.000	M	171.21	26.174
	Σ	3,038.600						404.44	120.898
#5	1	822.900	1.837	0.000	0.000	75.000	M	132.66	31.747
	2	507.500	1.348	0.000	0.000	75.000	M	101.03	19.582
	Σ	4,369.000						433.51	172.227
#6	1	361.800	1.148	0.000	0.000	78.000	M	101.88	17.073
	Σ	4,730.800						427.84	189.300
#7	Σ	5,620.700						441.22	223.632
#8	1	866.300	1.974	0.000	0.000	78.000	M	167.33	40.864
	Σ	6,487.000						441.11	264.496
#9	1	837.300	2.969	0.000	0.000	79.000	M	129.96	42.096
	Σ	7,324.299						442.21	306.592
#10	1	933.000	3.270	0.000	0.000	77.000	M	117.62	41.223
	Σ	8,257.299						438.00	347.815
#11	1	640.200	2.108	0.000	0.000	66.000	M	41.57	11.898
	Σ	8,897.499						436.61	359.713

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	24.79	120.00	484.00	3.980	0.033
		6. Grassed waterway	8.02	160.00	1,995.00	4.240	0.130
		6. Grassed waterway	2.61	120.00	4,604.00	2.420	0.528

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	2.50	120.00	4,796.00	2.370	0.562
#1	1	Time of Concentration:					1.253
#2	1	3. Short grass pasture	18.12	50.00	276.00	3.400	0.022
		6. Grassed waterway	9.41	360.00	3,826.00	4.600	0.231
		6. Grassed waterway	5.68	100.00	1,759.00	3.570	0.136
		6. Grassed waterway	1.72	100.00	5,820.00	1.960	0.824
#2	1	Time of Concentration:					1.213
#3	1	3. Short grass pasture	11.22	140.00	1,248.00	2.670	0.129
		6. Grassed waterway	5.38	320.00	5,943.00	3.480	0.474
		6. Grassed waterway	1.53	60.00	3,915.00	1.850	0.587
#3	1	Time of Concentration:					1.190
#4	1	3. Short grass pasture	11.48	80.00	697.00	2.710	0.071
		6. Grassed waterway	3.46	80.00	2,312.00	2.790	0.230
		6. Grassed waterway	9.72	180.00	1,852.00	4.670	0.110
		6. Grassed waterway	2.25	100.00	4,448.00	2.240	0.551
#4	1	Time of Concentration:					0.962
#5	1	3. Short grass pasture	4.74	60.00	1,265.00	1.740	0.201
		6. Grassed waterway	3.24	120.00	3,699.00	2.700	0.380
		6. Grassed waterway	6.60	180.00	2,727.00	3.850	0.196
		6. Grassed waterway	1.81	140.00	7,715.00	2.020	1.060
#5	1	Time of Concentration:					1.837
#5	2	3. Short grass pasture	6.39	80.00	1,252.00	2.020	0.172
		6. Grassed waterway	1.67	60.00	3,593.00	1.930	0.517
		6. Grassed waterway	8.24	140.00	1,700.00	4.300	0.109
		6. Grassed waterway	3.57	200.00	5,604.00	2.830	0.550
#5	2	Time of Concentration:					1.348
#6	1	3. Short grass pasture	114.29	80.00	70.00	8.550	0.002
		6. Grassed waterway	8.06	130.00	1,613.00	4.250	0.105
		6. Grassed waterway	1.16	70.00	6,037.00	1.610	1.041
#6	1	Time of Concentration:					1.148
#8	1	3. Short grass pasture	3.59	20.00	557.00	1.510	0.102
		6. Grassed waterway	13.73	250.00	1,821.00	5.550	0.091
		6. Grassed waterway	3.54	70.00	1,976.00	2.820	0.194
		6. Grassed waterway	0.79	60.00	7,602.00	1.330	1.587
#8	1	Time of Concentration:					1.974
#9	1	3. Short grass pasture	3.42	10.00	292.00	1.480	0.054
		6. Grassed waterway	10.75	70.00	651.00	4.910	0.036
		6. Grassed waterway	1.13	50.00	4,421.00	1.590	0.772
		6. Grassed waterway	0.65	60.00	9,179.00	1.210	2.107
#9	1	Time of Concentration:					2.969
#10	1	3. Short grass pasture	2.57	10.00	389.01	1.280	0.084
		6. Grassed waterway	3.60	170.00	4,727.08	2.840	0.462

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	0.61	70.00	11,477.29	1.170	2.724
#10	1	Time of Concentration:					3.270
#11	1	3. Short grass pasture	7.29	50.00	686.00	2.150	0.088
		6. Grassed waterway	1.44	50.00	3,474.00	1.790	0.539
		6. Grassed waterway	5.08	110.00	2,165.00	3.380	0.177
		6. Grassed waterway	1.09	80.00	7,326.00	1.560	1.304
#11	1	Time of Concentration:					2.108
#12	1	3. Short grass pasture	5.67	70.00	1,234.00	1.900	0.180
		6. Grassed waterway	3.93	100.00	2,543.00	2.970	0.237
		6. Grassed waterway	4.12	220.00	5,337.00	3.040	0.487
		6. Grassed waterway	2.43	190.00	7,814.00	2.330	0.931
#12	1	Time of Concentration:					1.835

ATTACHMENT J-1
POSTMINE SEDCAD RESULTS
Pearson Creek Drainage

Pearson Creek Postmining Hydrology Model

2-YR, 24-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

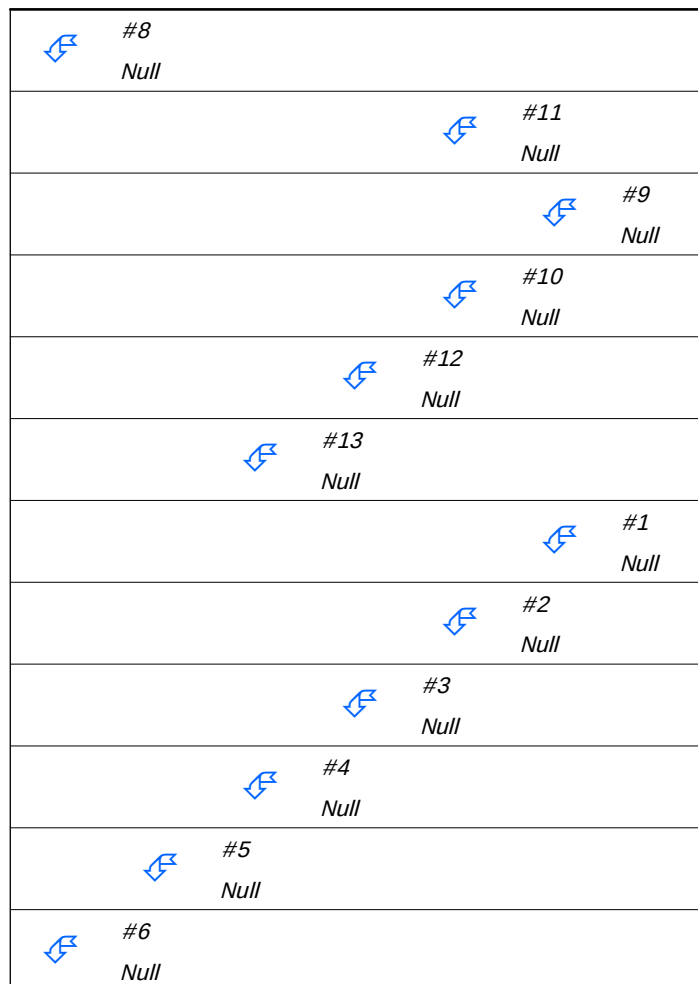
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	1.380 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.488	0.293	
Null	#2	==>	#3	0.690	0.271	
Null	#3	==>	#4	1.357	0.238	
Null	#4	==>	#5	0.000	0.000	
Null	#5	==>	#6	0.710	0.224	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	End	0.000	0.000	
Null	#8	==>	#7	0.000	0.000	
Null	#9	==>	#10	1.021	0.273	
Null	#10	==>	#12	0.000	0.000	
Null	#11	==>	#12	0.000	0.000	
Null	#12	==>	#13	1.303	0.228	
Null	#13	==>	#5	0.000	0.000	



#7

Null

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	2.59	110.00	4,241.00	2.41	0.488
#1	Muskingum K:					0.488
#2	6. Grassed waterway	1.80	90.00	5,000.00	2.01	0.690
#2	Muskingum K:					0.690
#3	6. Grassed waterway	1.06	80.00	7,525.00	1.54	1.357
#3	Muskingum K:					1.357
#4	6. Grassed waterway	0.00	0.00	0.00	0.00	0.000
#4	Muskingum K:					0.000
#5	6. Grassed waterway	0.85	30.00	3,529.00	1.38	0.710
#5	Muskingum K:					0.710
#9	6. Grassed waterway	1.87	140.00	7,502.00	2.04	1.021
#9	Muskingum K:					1.021
#12	6. Grassed waterway	0.90	60.00	6,661.00	1.42	1.303
#12	Muskingum K:					1.303

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#8	523.200	523.200	12.76	4.37
#11	389.800	389.800	10.52	3.26
#9	956.400	956.400	25.77	8.58
#10	453.400	1,409.800	31.14	12.37
#12	0.000	1,799.600	36.83	15.62
#13	281.700	2,081.300	38.08	17.67
#1	839.600	839.600	5.88	3.80
#2	327.000	1,166.600	10.03	6.53
#3	372.400	1,539.000	14.33	9.23
#4	360.800	1,899.800	17.80	11.85
#5	0.000	3,981.100	54.95	29.52
#6	126.600	4,107.700	55.06	30.20
#7	0.000	4,630.900	59.65	34.57

Structure Detail:

Structure #8 (Null)

Structure #11 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #12 (Null)

Structure #13 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

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)
#8	1	523.200	0.824	0.000	0.000	75.000	M	12.76	4.368
	Σ	523.200						12.76	4.368
#11	1	389.800	0.654	0.000	0.000	75.000	M	10.52	3.256
	Σ	389.800						10.52	3.256
#9	1	511.500	0.968	0.000	0.000	76.000	M	14.30	4.866
	2	444.900	0.667	0.000	0.000	75.000	M	11.91	3.716
	Σ	956.400						25.77	8.583
#10	1	453.400	0.948	0.000	0.000	75.000	M	10.36	3.783
	Σ	1,409.800						31.14	12.365
#12	Σ	1,799.600						36.83	15.622
#13	1	281.700	1.333	0.000	0.000	74.000	M	4.40	2.046
	Σ	2,081.300						38.08	17.667
#1	1	839.600	1.513	0.000	0.000	71.000	M	5.88	3.800
	Σ	839.600						5.88	3.800
#2	1	327.000	0.711	0.000	0.000	75.000	M	8.52	2.729
	Σ	1,166.600						10.03	6.529
#3	1	372.400	0.968	0.000	0.000	74.000	M	6.71	2.705
	Σ	1,539.000						14.33	9.233
#4	1	360.800	2.091	0.000	0.000	74.000	M	4.52	2.619
	Σ	1,899.800						17.80	11.853
#5	Σ	3,981.100						54.95	29.520
#6	1	126.600	0.586	0.000	0.000	72.000	M	1.59	0.679
	Σ	4,107.700						55.06	30.199
#7	Σ	4,630.900						59.65	34.567

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	8.44	200.00	2,370.00	2.320	0.283
		6. Grassed waterway	1.72	60.00	3,490.00	1.960	0.494

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	4.30	220.00	5,114.00	3.110	0.456
		6. Grassed waterway	2.22	50.00	2,252.00	2.230	0.280
#1	1	Time of Concentration:					1.513
#2	1	3. Short grass pasture	6.68	30.00	449.00	2.060	0.060
		6. Grassed waterway	9.63	220.00	2,284.00	4.650	0.136
		6. Grassed waterway	2.65	120.00	4,525.00	2.440	0.515
#2	1	Time of Concentration:					0.711
#3	1	3. Short grass pasture	12.28	50.00	407.00	2.800	0.040
		6. Grassed waterway	16.21	220.00	1,357.00	6.030	0.062
		6. Grassed waterway	7.89	240.00	3,042.00	4.210	0.200
		6. Grassed waterway	1.56	70.00	4,485.00	1.870	0.666
#3	1	Time of Concentration:					0.968
#4	1	3. Short grass pasture	20.08	50.00	249.00	3.580	0.019
		6. Grassed waterway	1.15	50.00	4,364.00	1.600	0.757
		6. Grassed waterway	1.08	80.00	7,387.00	1.560	1.315
#4	1	Time of Concentration:					2.091
#6	1	3. Short grass pasture	0.00	20.00	0.00	0.000	0.000
		6. Grassed waterway	15.28	110.00	720.00	5.860	0.034
		6. Grassed waterway	1.01	30.00	2,983.00	1.500	0.552
#6	1	Time of Concentration:					0.586
#8	1	3. Short grass pasture	11.29	50.00	443.00	2.680	0.045
		6. Grassed waterway	7.93	220.00	2,775.00	4.220	0.182
		6. Grassed waterway	2.93	80.00	2,729.00	2.560	0.296
		6. Grassed waterway	1.82	40.00	2,193.00	2.020	0.301
#8	1	Time of Concentration:					0.824
#9	1	3. Short grass pasture	10.43	60.00	575.00	2.580	0.061
		6. Grassed waterway	3.69	100.00	2,713.00	2.870	0.262
		6. Grassed waterway	4.16	180.00	4,323.00	3.060	0.392
		6. Grassed waterway	2.68	60.00	2,236.00	2.450	0.253
#9	1	Time of Concentration:					0.968
#9	2	3. Short grass pasture	14.49	70.00	483.00	3.040	0.044
		6. Grassed waterway	3.29	60.00	1,825.00	2.710	0.187
		6. Grassed waterway	6.17	200.00	3,243.00	3.720	0.242
		6. Grassed waterway	2.44	40.00	1,637.00	2.340	0.194
#9	2	Time of Concentration:					0.667
#10	1	3. Short grass pasture	17.29	60.00	347.00	3.320	0.029
		6. Grassed waterway	7.58	160.00	2,111.00	4.120	0.142
		6. Grassed waterway	6.87	160.00	2,330.00	3.930	0.164
		6. Grassed waterway	1.95	90.00	4,613.00	2.090	0.613
#10	1	Time of Concentration:					0.948
#11	1	3. Short grass pasture	23.36	50.00	214.00	3.860	0.015
		6. Grassed waterway	10.65	120.00	1,127.00	4.890	0.064

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	4.54	300.00	6,606.00	3.190	0.575
#11	1	Time of Concentration:					0.654
#13	1	3. Short grass pasture	7.59	60.00	790.00	2.200	0.099
		6. Grassed waterway	3.17	40.00	1,260.00	2.670	0.131
		6. Grassed waterway	1.01	60.00	5,961.00	1.500	1.103
#13	1	Time of Concentration:					1.333

Pearson Creek Postmining Hydrology Model

10-YR, 24-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

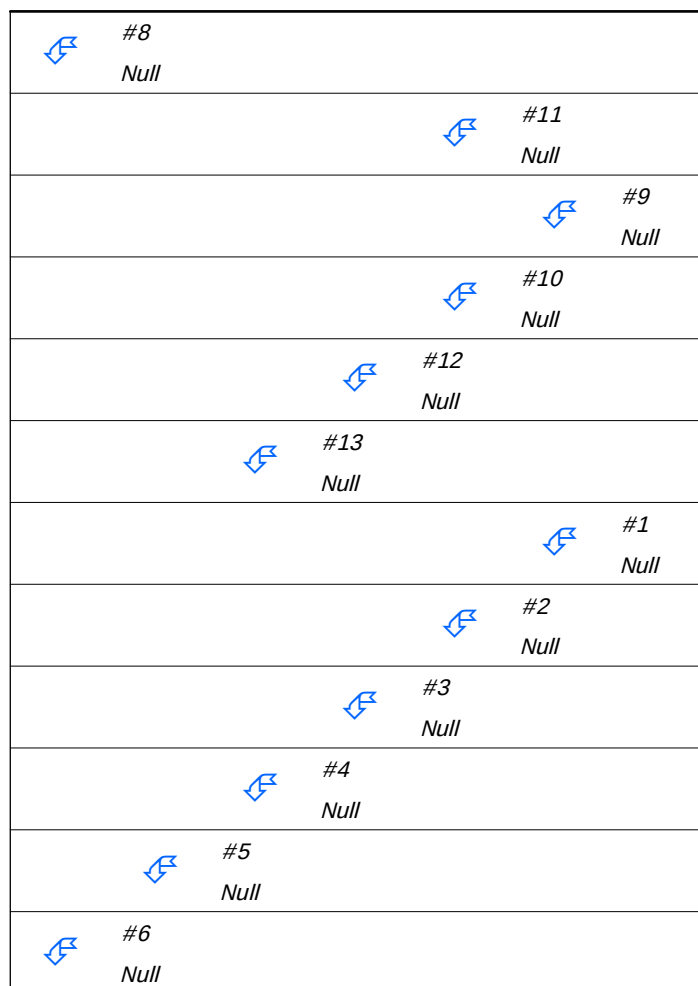
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	2.190 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.488	0.293	
Null	#2	==>	#3	0.690	0.271	
Null	#3	==>	#4	1.357	0.238	
Null	#4	==>	#5	0.000	0.000	
Null	#5	==>	#6	0.710	0.224	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	End	0.000	0.000	
Null	#8	==>	#7	0.000	0.000	
Null	#9	==>	#10	1.021	0.273	
Null	#10	==>	#12	0.000	0.000	
Null	#11	==>	#12	0.000	0.000	
Null	#12	==>	#13	1.303	0.228	
Null	#13	==>	#5	0.000	0.000	



#7

Null

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	2.59	110.00	4,241.00	2.41	0.488
#1	Muskingum K:					0.488
#2	6. Grassed waterway	1.80	90.00	5,000.00	2.01	0.690
#2	Muskingum K:					0.690
#3	6. Grassed waterway	1.06	80.00	7,525.00	1.54	1.357
#3	Muskingum K:					1.357
#4	6. Grassed waterway	0.00	0.00	0.00	0.00	0.000
#4	Muskingum K:					0.000
#5	6. Grassed waterway	0.85	30.00	3,529.00	1.38	0.710
#5	Muskingum K:					0.710
#9	6. Grassed waterway	1.87	140.00	7,502.00	2.04	1.021
#9	Muskingum K:					1.021
#12	6. Grassed waterway	0.90	60.00	6,661.00	1.42	1.303
#12	Muskingum K:					1.303

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#8	523.200	523.200	79.62	16.60
#11	389.800	389.800	68.26	12.37
#9	956.400	956.400	146.64	31.60
#10	453.400	1,409.800	165.49	45.97
#12	0.000	1,799.600	188.64	58.34
#13	281.700	2,081.300	189.26	66.61
#1	839.600	839.600	54.30	19.24
#2	327.000	1,166.600	73.72	29.61
#3	372.400	1,539.000	89.50	40.54
#4	360.800	1,899.800	103.66	51.12
#5	0.000	3,981.100	288.25	117.74
#6	126.600	4,107.700	286.92	120.90
#7	0.000	4,630.900	301.76	137.50

Structure Detail:

Structure #8 (Null)

Structure #11 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #12 (Null)

Structure #13 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

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)
#8	1	523.200	0.824	0.000	0.000	75.000	M	79.62	16.596
	Σ	523.200						79.62	16.596
#11	1	389.800	0.654	0.000	0.000	75.000	M	68.26	12.373
	Σ	389.800						68.26	12.373
#9	1	511.500	0.968	0.000	0.000	76.000	M	78.18	17.476
	2	444.900	0.667	0.000	0.000	75.000	M	77.00	14.121
	Σ	956.400						146.64	31.597
#10	1	453.400	0.948	0.000	0.000	75.000	M	63.35	14.374
	Σ	1,409.800						165.49	45.972
#12	Σ	1,799.600						188.64	58.345
#13	1	281.700	1.333	0.000	0.000	74.000	M	28.23	8.267
	Σ	2,081.300						189.26	66.612
#1	1	839.600	1.513	0.000	0.000	71.000	M	54.30	19.241
	Σ	839.600						54.30	19.241
#2	1	327.000	0.711	0.000	0.000	75.000	M	54.40	10.369
	Σ	1,166.600						73.72	29.610
#3	1	372.400	0.968	0.000	0.000	74.000	M	46.09	10.929
	Σ	1,539.000						89.50	40.539
#4	1	360.800	2.091	0.000	0.000	74.000	M	26.61	10.585
	Σ	1,899.800						103.66	51.124
#5	Σ	3,981.100						288.25	117.736
#6	1	126.600	0.586	0.000	0.000	72.000	M	16.72	3.166
	Σ	4,107.700						286.92	120.902
#7	Σ	4,630.900						301.76	137.498

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	8.44	200.00	2,370.00	2.320	0.283
		6. Grassed waterway	1.72	60.00	3,490.00	1.960	0.494

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	4.30	220.00	5,114.00	3.110	0.456
		6. Grassed waterway	2.22	50.00	2,252.00	2.230	0.280
#1	1	Time of Concentration:					1.513
#2	1	3. Short grass pasture	6.68	30.00	449.00	2.060	0.060
		6. Grassed waterway	9.63	220.00	2,284.00	4.650	0.136
		6. Grassed waterway	2.65	120.00	4,525.00	2.440	0.515
#2	1	Time of Concentration:					0.711
#3	1	3. Short grass pasture	12.28	50.00	407.00	2.800	0.040
		6. Grassed waterway	16.21	220.00	1,357.00	6.030	0.062
		6. Grassed waterway	7.89	240.00	3,042.00	4.210	0.200
		6. Grassed waterway	1.56	70.00	4,485.00	1.870	0.666
#3	1	Time of Concentration:					0.968
#4	1	3. Short grass pasture	20.08	50.00	249.00	3.580	0.019
		6. Grassed waterway	1.15	50.00	4,364.00	1.600	0.757
		6. Grassed waterway	1.08	80.00	7,387.00	1.560	1.315
#4	1	Time of Concentration:					2.091
#6	1	3. Short grass pasture	0.00	20.00	0.00	0.000	0.000
		6. Grassed waterway	15.28	110.00	720.00	5.860	0.034
		6. Grassed waterway	1.01	30.00	2,983.00	1.500	0.552
#6	1	Time of Concentration:					0.586
#8	1	3. Short grass pasture	11.29	50.00	443.00	2.680	0.045
		6. Grassed waterway	7.93	220.00	2,775.00	4.220	0.182
		6. Grassed waterway	2.93	80.00	2,729.00	2.560	0.296
		6. Grassed waterway	1.82	40.00	2,193.00	2.020	0.301
#8	1	Time of Concentration:					0.824
#9	1	3. Short grass pasture	10.43	60.00	575.00	2.580	0.061
		6. Grassed waterway	3.69	100.00	2,713.00	2.870	0.262
		6. Grassed waterway	4.16	180.00	4,323.00	3.060	0.392
		6. Grassed waterway	2.68	60.00	2,236.00	2.450	0.253
#9	1	Time of Concentration:					0.968
#9	2	3. Short grass pasture	14.49	70.00	483.00	3.040	0.044
		6. Grassed waterway	3.29	60.00	1,825.00	2.710	0.187
		6. Grassed waterway	6.17	200.00	3,243.00	3.720	0.242
		6. Grassed waterway	2.44	40.00	1,637.00	2.340	0.194
#9	2	Time of Concentration:					0.667
#10	1	3. Short grass pasture	17.29	60.00	347.00	3.320	0.029
		6. Grassed waterway	7.58	160.00	2,111.00	4.120	0.142
		6. Grassed waterway	6.87	160.00	2,330.00	3.930	0.164
		6. Grassed waterway	1.95	90.00	4,613.00	2.090	0.613
#10	1	Time of Concentration:					0.948
#11	1	3. Short grass pasture	23.36	50.00	214.00	3.860	0.015
		6. Grassed waterway	10.65	120.00	1,127.00	4.890	0.064

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	4.54	300.00	6,606.00	3.190	0.575
#11	1	Time of Concentration:					0.654
#13	1	3. Short grass pasture	7.59	60.00	790.00	2.200	0.099
		6. Grassed waterway	3.17	40.00	1,260.00	2.670	0.131
		6. Grassed waterway	1.01	60.00	5,961.00	1.500	1.103
#13	1	Time of Concentration:					1.333

Pearson Creek Postmining Hydrology Model

100-YR, 6-HR RUNOFF EVENT

WWC Engineering

WWC Engineering
1849 Terra Avenue
Sheridan, WY 82801

Phone: 307-672-0761

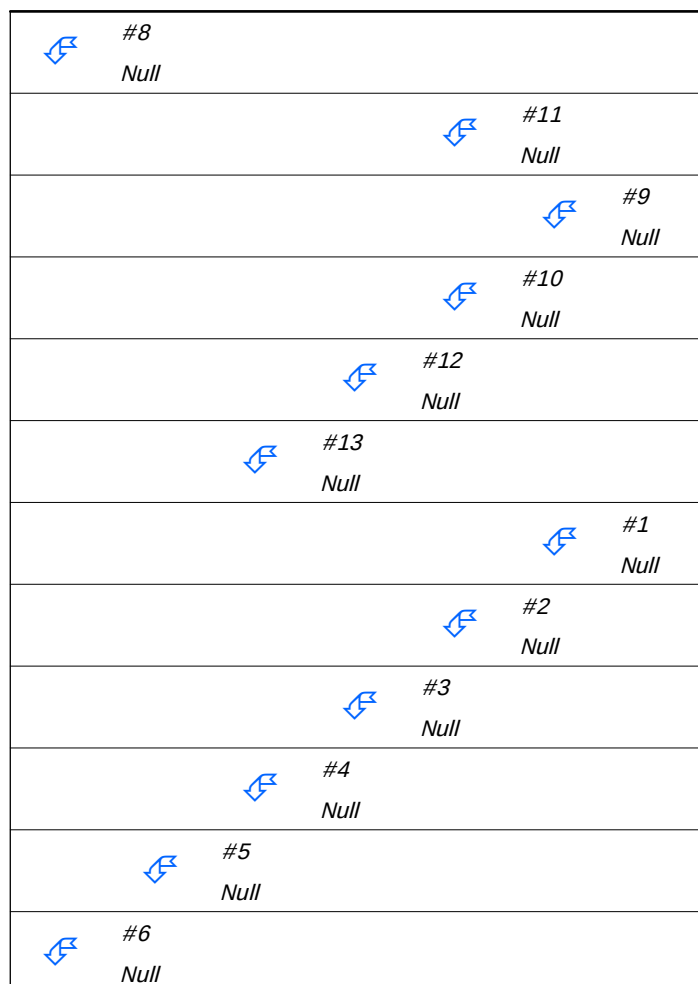
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 6 hr
Rainfall Depth:	2.380 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#2	0.488	0.293	
Null	#2	==>	#3	0.690	0.271	
Null	#3	==>	#4	1.357	0.238	
Null	#4	==>	#5	0.000	0.000	
Null	#5	==>	#6	0.710	0.224	
Null	#6	==>	#7	0.000	0.000	
Null	#7	==>	End	0.000	0.000	
Null	#8	==>	#7	0.000	0.000	
Null	#9	==>	#10	1.021	0.273	
Null	#10	==>	#12	0.000	0.000	
Null	#11	==>	#12	0.000	0.000	
Null	#12	==>	#13	1.303	0.228	
Null	#13	==>	#5	0.000	0.000	



#7

Null

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	6. Grassed waterway	2.59	110.00	4,241.00	2.41	0.488
#1	Muskingum K:					0.488
#2	6. Grassed waterway	1.80	90.00	5,000.00	2.01	0.690
#2	Muskingum K:					0.690
#3	6. Grassed waterway	1.06	80.00	7,525.00	1.54	1.357
#3	Muskingum K:					1.357
#4	6. Grassed waterway	0.00	0.00	0.00	0.00	0.000
#4	Muskingum K:					0.000
#5	6. Grassed waterway	0.85	30.00	3,529.00	1.38	0.710
#5	Muskingum K:					0.710
#9	6. Grassed waterway	1.87	140.00	7,502.00	2.04	1.021
#9	Muskingum K:					1.021
#12	6. Grassed waterway	0.90	60.00	6,661.00	1.42	1.303
#12	Muskingum K:					1.303

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#8	523.200	523.200	143.51	20.20
#11	389.800	389.800	122.71	15.06
#9	956.400	956.400	261.08	38.34
#10	453.400	1,409.800	296.19	55.84
#12	0.000	1,799.600	339.37	70.90
#13	281.700	2,081.300	341.22	81.03
#1	839.600	839.600	108.98	24.10
#2	327.000	1,166.600	144.93	36.72
#3	372.400	1,539.000	174.56	50.11
#4	360.800	1,899.800	193.51	63.08
#5	0.000	3,981.100	527.67	144.11
#6	126.600	4,107.700	523.58	148.04
#7	0.000	4,630.900	545.31	168.24

Structure Detail:

Structure #8 (Null)

Structure #11 (Null)

Structure #9 (Null)

Structure #10 (Null)

Structure #12 (Null)

Structure #13 (Null)

Structure #1 (Null)

Structure #2 (Null)

Structure #3 (Null)

Structure #4 (Null)

Structure #5 (Null)

Structure #6 (Null)

Structure #7 (Null)

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)
#8	1	523.200	0.824	0.000	0.000	75.000	M	143.51	20.204
	Σ	523.200						143.51	20.204
#11	1	389.800	0.654	0.000	0.000	75.000	M	122.71	15.063
	Σ	389.800						122.71	15.063
#9	1	511.500	0.968	0.000	0.000	76.000	M	137.76	21.145
	2	444.900	0.667	0.000	0.000	75.000	M	138.37	17.191
	Σ	956.400						261.08	38.336
#10	1	453.400	0.948	0.000	0.000	75.000	M	114.00	17.499
	Σ	1,409.800						296.19	55.835
#12	Σ	1,799.600						339.37	70.898
#13	1	281.700	1.333	0.000	0.000	74.000	M	51.91	10.129
	Σ	2,081.300						341.22	81.028
#1	1	839.600	1.513	0.000	0.000	71.000	M	108.98	24.096
	Σ	839.600						108.98	24.096
#2	1	327.000	0.711	0.000	0.000	75.000	M	97.91	12.623
	Σ	1,166.600						144.93	36.718
#3	1	372.400	0.968	0.000	0.000	74.000	M	84.84	13.391
	Σ	1,539.000						174.56	50.110
#4	1	360.800	2.091	0.000	0.000	74.000	M	49.20	12.970
	Σ	1,899.800						193.51	63.079
#5	Σ	3,981.100						527.67	144.107
#6	1	126.600	0.586	0.000	0.000	72.000	M	32.59	3.934
	Σ	4,107.700						523.58	148.041
#7	Σ	4,630.900						545.31	168.244

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	8.44	200.00	2,370.00	2.320	0.283
		6. Grassed waterway	1.72	60.00	3,490.00	1.960	0.494

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	4.30	220.00	5,114.00	3.110	0.456
		6. Grassed waterway	2.22	50.00	2,252.00	2.230	0.280
#1	1	Time of Concentration:					1.513
#2	1	3. Short grass pasture	6.68	30.00	449.00	2.060	0.060
		6. Grassed waterway	9.63	220.00	2,284.00	4.650	0.136
		6. Grassed waterway	2.65	120.00	4,525.00	2.440	0.515
#2	1	Time of Concentration:					0.711
#3	1	3. Short grass pasture	12.28	50.00	407.00	2.800	0.040
		6. Grassed waterway	16.21	220.00	1,357.00	6.030	0.062
		6. Grassed waterway	7.89	240.00	3,042.00	4.210	0.200
		6. Grassed waterway	1.56	70.00	4,485.00	1.870	0.666
#3	1	Time of Concentration:					0.968
#4	1	3. Short grass pasture	20.08	50.00	249.00	3.580	0.019
		6. Grassed waterway	1.15	50.00	4,364.00	1.600	0.757
		6. Grassed waterway	1.08	80.00	7,387.00	1.560	1.315
#4	1	Time of Concentration:					2.091
#6	1	3. Short grass pasture	0.00	20.00	0.00	0.000	0.000
		6. Grassed waterway	15.28	110.00	720.00	5.860	0.034
		6. Grassed waterway	1.01	30.00	2,983.00	1.500	0.552
#6	1	Time of Concentration:					0.586
#8	1	3. Short grass pasture	11.29	50.00	443.00	2.680	0.045
		6. Grassed waterway	7.93	220.00	2,775.00	4.220	0.182
		6. Grassed waterway	2.93	80.00	2,729.00	2.560	0.296
		6. Grassed waterway	1.82	40.00	2,193.00	2.020	0.301
#8	1	Time of Concentration:					0.824
#9	1	3. Short grass pasture	10.43	60.00	575.00	2.580	0.061
		6. Grassed waterway	3.69	100.00	2,713.00	2.870	0.262
		6. Grassed waterway	4.16	180.00	4,323.00	3.060	0.392
		6. Grassed waterway	2.68	60.00	2,236.00	2.450	0.253
#9	1	Time of Concentration:					0.968
#9	2	3. Short grass pasture	14.49	70.00	483.00	3.040	0.044
		6. Grassed waterway	3.29	60.00	1,825.00	2.710	0.187
		6. Grassed waterway	6.17	200.00	3,243.00	3.720	0.242
		6. Grassed waterway	2.44	40.00	1,637.00	2.340	0.194
#9	2	Time of Concentration:					0.667
#10	1	3. Short grass pasture	17.29	60.00	347.00	3.320	0.029
		6. Grassed waterway	7.58	160.00	2,111.00	4.120	0.142
		6. Grassed waterway	6.87	160.00	2,330.00	3.930	0.164
		6. Grassed waterway	1.95	90.00	4,613.00	2.090	0.613
#10	1	Time of Concentration:					0.948
#11	1	3. Short grass pasture	23.36	50.00	214.00	3.860	0.015
		6. Grassed waterway	10.65	120.00	1,127.00	4.890	0.064

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		6. Grassed waterway	4.54	300.00	6,606.00	3.190	0.575
#11	1	Time of Concentration:					0.654
#13	1	3. Short grass pasture	7.59	60.00	790.00	2.200	0.099
		6. Grassed waterway	3.17	40.00	1,260.00	2.670	0.131
		6. Grassed waterway	1.01	60.00	5,961.00	1.500	1.103
#13	1	Time of Concentration:					1.333