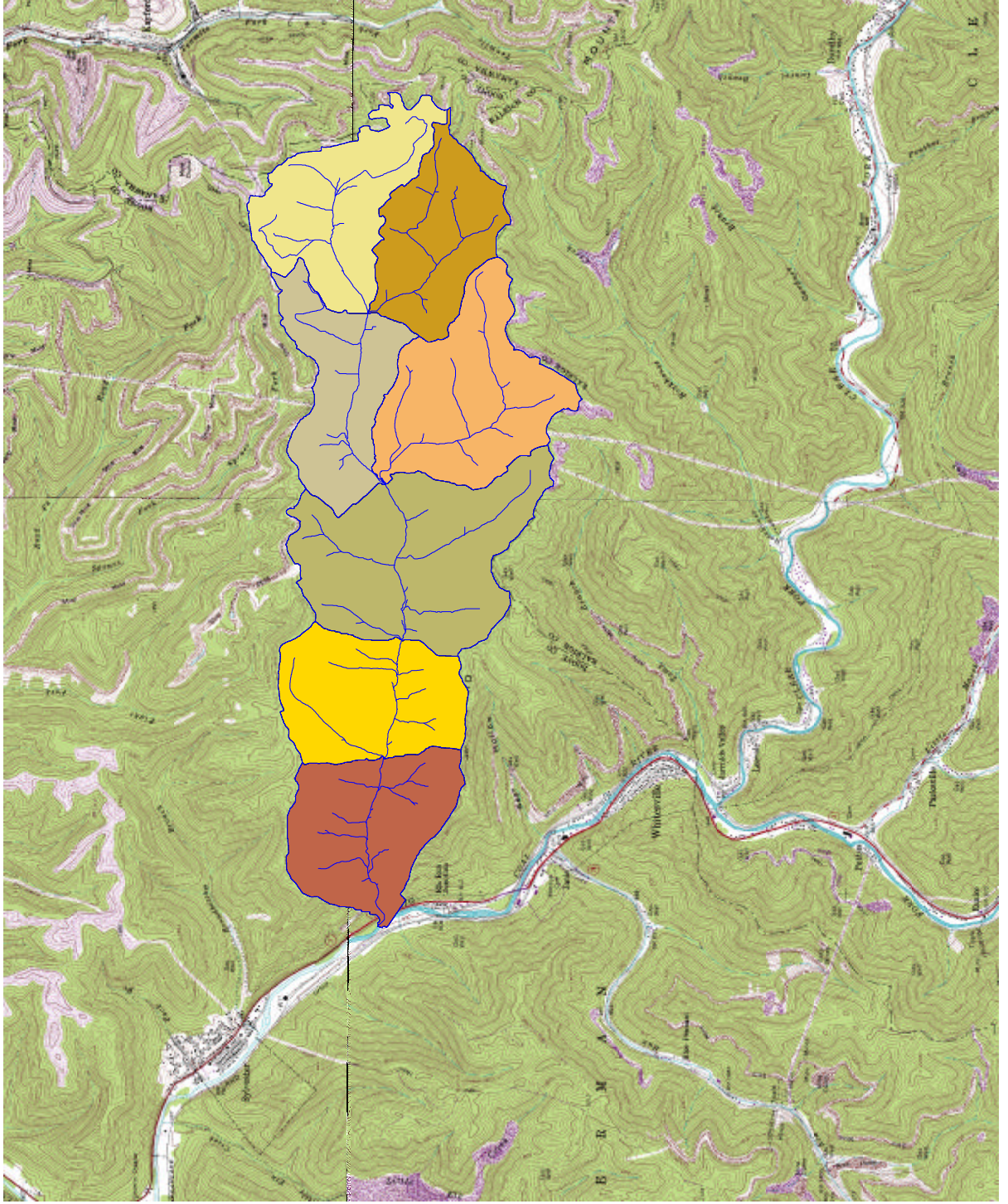


FATT Runoff Analyses

PART II

Data Input and Results Summary

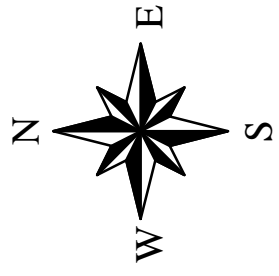
Seng Creek Watershed



Streams

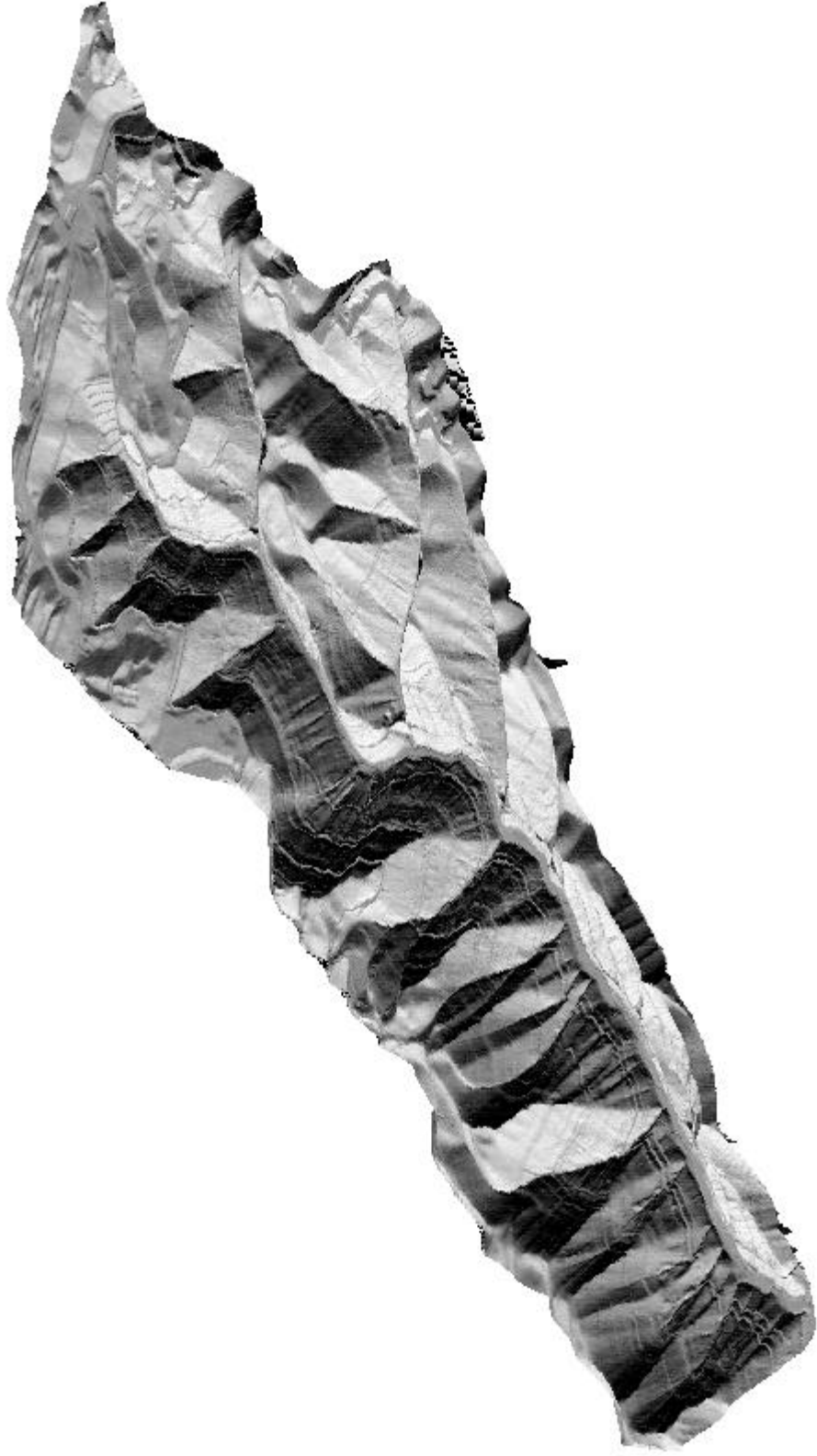
Drainage Areas

- 1B
- 2B
- 3B
- 4aB
- 4bB
- 5aB
- 5bB



Printed March 27, 2002

**Seng Creek LIDAR
3D View
Watershed Delineation**



**Seng Creek LIDAR
Plan View
Watershed Delineation**



Seng Creek Study Area



Legend

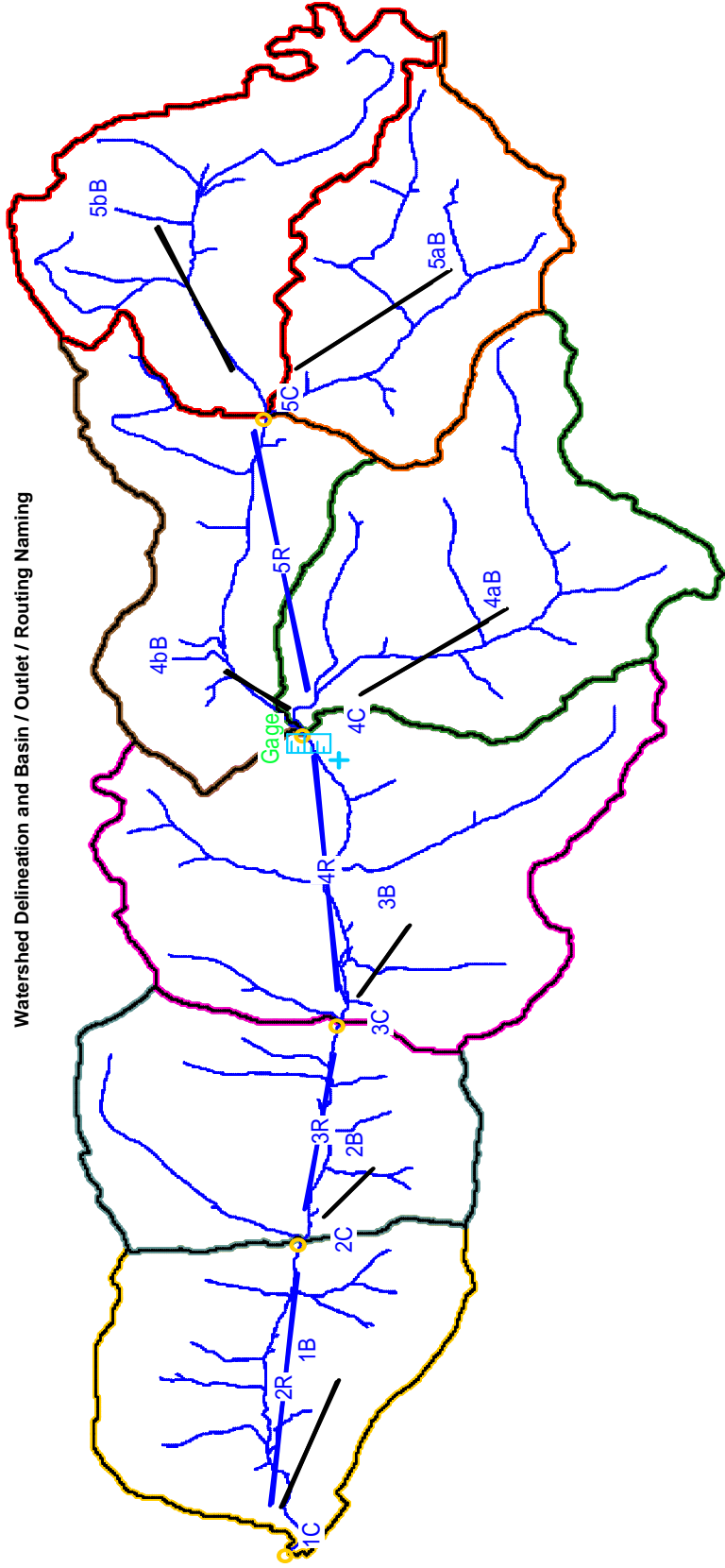
-  Seng Creek Watershed Boundaries



Seng Creek Outlet Node	Scenario 1			Scenario 2			Scenario 3			Scenario 4			Scenario 5		
	Event	25 yr	100 yr	Event	25 yr	100 yr	Event	25 yr	100 yr	Event	25 yr	100 yr	Event	25 yr	100 yr
1C	2595	3467	4622	2451	3224	4350	2379	3118	4230	2457	3265	4431	2609	3545	4751
2C	2297	3209	4255	2171	2986	4008	2097	2861	3867	2190	3005	4065	2322	3243	4339
3C	1995	2816	3722	1883	2622	3507	1810	2490	3359	1828	2534	3418	1942	2733	3641
4C	1440	2155	2872	1364	1991	2689	1293	1864	2545	1374	1941	2654	1452	2112	2847
5C	713	1145	1511	686	1092	1452	618	961	1306	705	1078	1465	732	1131	1524

14 fps

Watershed Delineation and Basin / Outlet / Routing Naming



Seng Creek Hydrology Analysis

Seng Creek Watershed Hydrology Analysis		Scenario 1				Scenario 2				Scenario 3				Scenario 4				Scenario 5			
		With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)		Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)		With Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)		Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)		With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)											
Bottom of Seng Creek at Node 1C	Storm Event	2595	3467	25 Yr Storm	4622	2451	3224	25 Yr Storm	4350	2379	3118	25 Yr Storm	4230	2457	3265	25 Yr Storm	4431	2609	3545	100 Yr Storm	4751
	Max Flow			100 Yr Storm				100 Yr Storm				100 Yr Storm									
Difference		216	349	392	72	106	120	Mining Influence		Comparison with Scenario 3		Total Influence		Comparison with Scenario 1		Comparison with Scenario 4		Logging Influence Cross Check			
% Difference		9.1%	11.2%	9.3%	3.0%	3.4%	2.8%	Logging Influence		Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					
Difference		144	243	272	-6	-41	-81	Mining Influence		Comparison with Scenario 4		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					
% Difference		5.9%	7.5%	6.3%	-0.2%	-1.3%	-1.9%	Logging Influence		Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					
Max Flow		2297	3209	4255	2171	2986	4006	Mining Influence		Comparison with Scenario 3		Comparison with Scenario 4		Comparison with Scenario 1		Comparison with Scenario 4					
Difference		200	348	388	74	125	141	Mining Influence		Comparison with Scenario 3		Comparison with Scenario 4		Comparison with Scenario 1		Comparison with Scenario 4					
% Difference		9.5%	12.2%	10.0%	3.5%	4.4%	3.6%	Logging Influence		Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					
Difference		126	223	247	-19	-19	-57	Mining Influence		Comparison with Scenario 3		Comparison with Scenario 4		Comparison with Scenario 1		Comparison with Scenario 4					
% Difference		5.8%	7.5%	6.2%	-0.9%	-0.6%	-1.4%	Logging Influence		Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					
Max Flow		1995	2816	3722	1883	2622	3507	Mining Influence		Comparison with Scenario 3		Comparison with Scenario 4		Comparison with Scenario 1		Comparison with Scenario 4					
Difference		185	326	363	73	132	148	Mining Influence		Comparison with Scenario 3		Comparison with Scenario 4		Comparison with Scenario 1		Comparison with Scenario 4					
% Difference		10.2%	13.1%	10.8%	4.0%	5.3%	4.4%	Logging Influence		Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					
Difference		112	194	215	55	88	89	Mining Influence		Comparison with Scenario 3		Comparison with Scenario 4		Comparison with Scenario 1		Comparison with Scenario 4					
% Difference		5.9%	7.4%	6.1%	3.0%	3.5%	2.6%	Logging Influence		Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4					

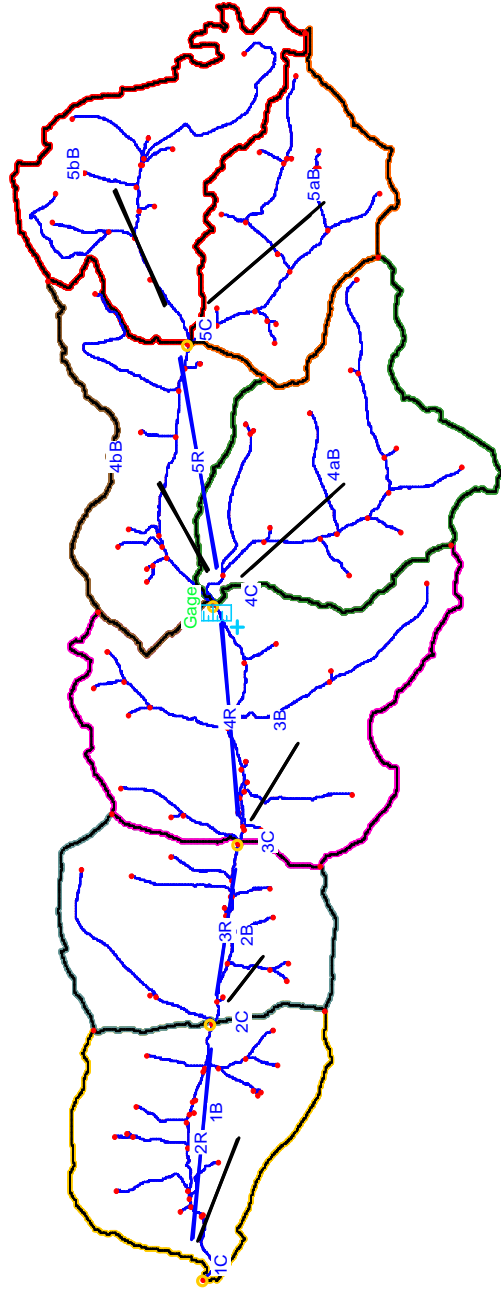
Seng Creek Hydrology Analysis

Seng Creek Watershed Hydrology Analysis	Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5	
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	With Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 70) Pristine Topography (USGS DEM Data)	Without Logging (CN 70) With Mining (CN 70) Pristine Topography (USGS DEM Data)	Without Logging (CN 70) With Mining (CN 70) Pristine Topography (USGS DEM Data)	Without Logging (CN 70) With Mining (CN 70) Pristine Topography (USGS DEM Data)	Without Logging (CN 70) With Mining (CN 70) Pristine Topography (USGS DEM Data)
at Node 4C	Storm Event	Storm Event	Storm Event	Storm Event	Storm Event	Storm Event	Storm Event	Storm Event	Storm Event	Storm Event
Max Flow	1440	2155	2872	1364	1991	2689	1293	1884	1941	2654
	147	291	327	71	127	144	66	214	218	78
Difference	11.4%	15.6%	12.8%	5.5%	6.4%	5.7%	4.8%	11.0%	8.2%	5.7%
% Difference		Logging Influence		Mining Influence				Total Influence		Logging Influence Cross Check
	76	164	183	-10	50	35	-81	-77	-109	171
Difference	5.6%	8.2%	6.8%	-0.7%	2.6%	1.3%	-6.3%	-4.1%	-4.3%	8.8%
% Difference		Logging Influence		Mining Influence				Total Influence		Logging Influence Cross Check
	713	1745	1571	686	1092	1452	705	1078	1465	732
Storm Event	25 Yr Storm	100 yr Storm	25 Yr Storm	100 yr Storm	25 Yr Storm	100 yr Storm	25 Yr Storm	100 yr Storm	25 Yr Storm	100 yr Storm
Max Flow	1745	1571	1511	686	1092	1452	705	1078	1465	732
	95	184	205	68	131	146	8	67	46	27
Difference	15.4%	19.1%	15.7%	11.0%	13.6%	11.2%	1.1%	6.2%	3.1%	3.8%
% Difference		Logging Influence		Mining Influence				Total Influence		Logging Influence Cross Check
	27	53	59	-19	14	-13	-87	-117	-159	53
Difference	3.9%	4.9%	4.1%	-2.8%	1.3%	-0.9%	-14.1%	-12.2%	-12.2%	4.9%
% Difference		Logging Influence		Mining Influence				Total Influence		Logging Influence Cross Check

Seng Creek Hydrology Analysis

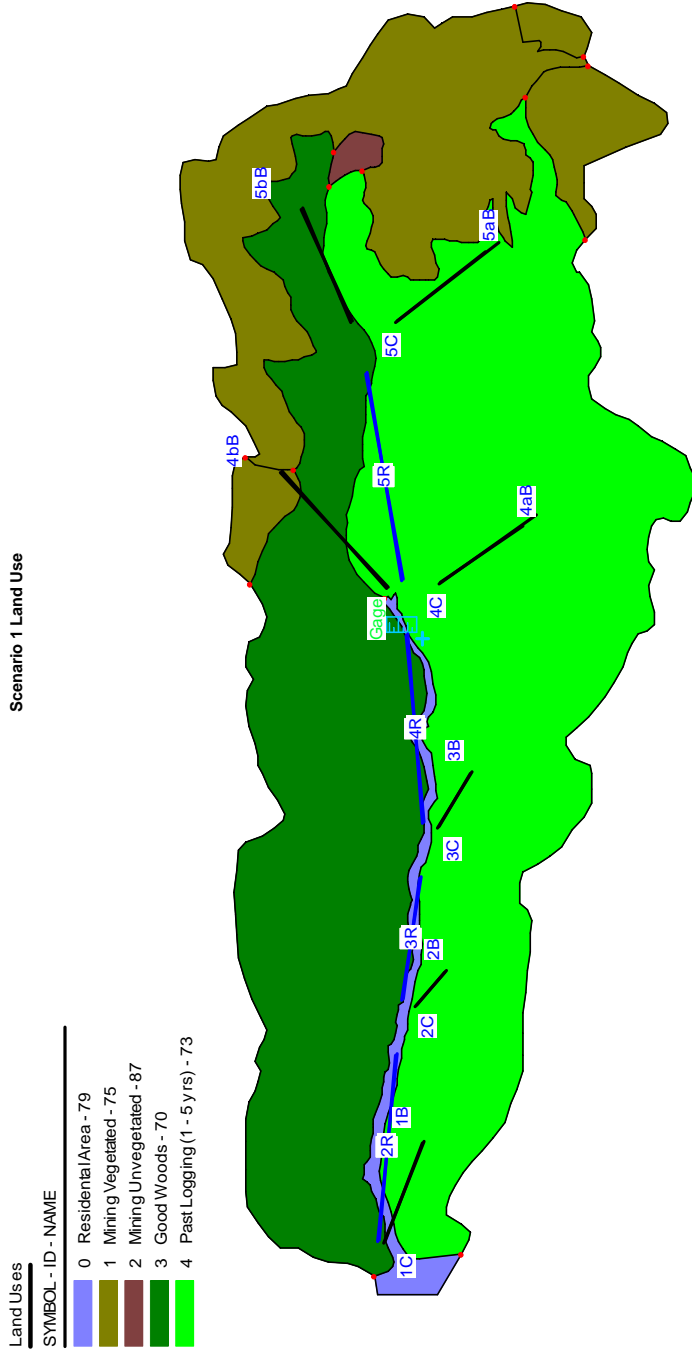
<p>Seng Creek Watershed Hydrology Analysis</p>	<p>Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)</p>	<p>Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>	<p>Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>
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Watershed Delineation and Basin / Outlet / Routing Naming



Seng Creek Hydrology Analysis

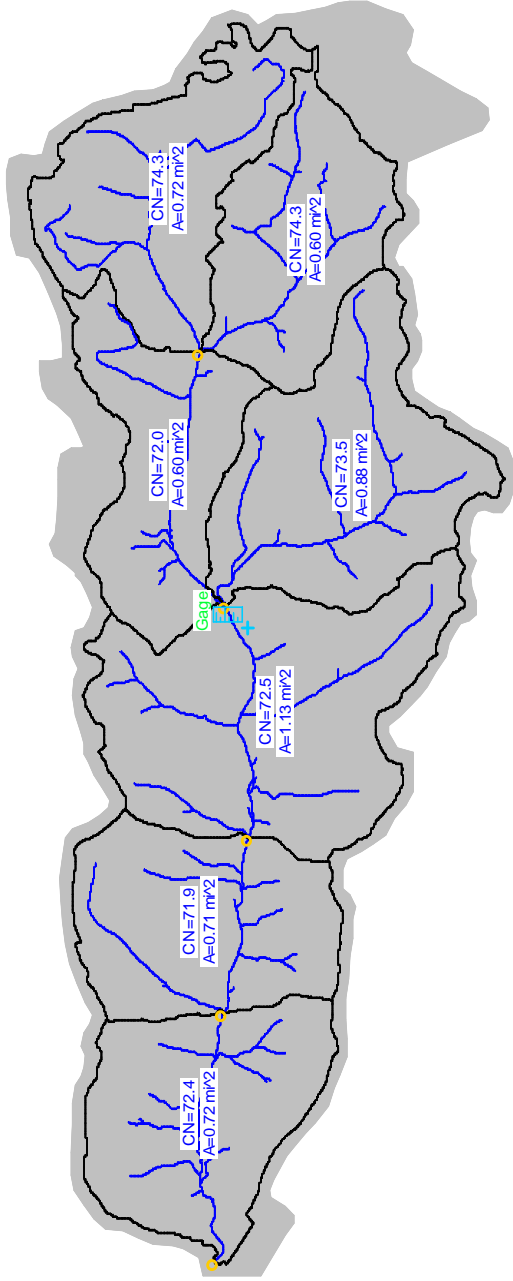
Seng Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)
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Seng Creek Hydrology Analysis

Seng Creek Watershed Hydrology Analysis	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)

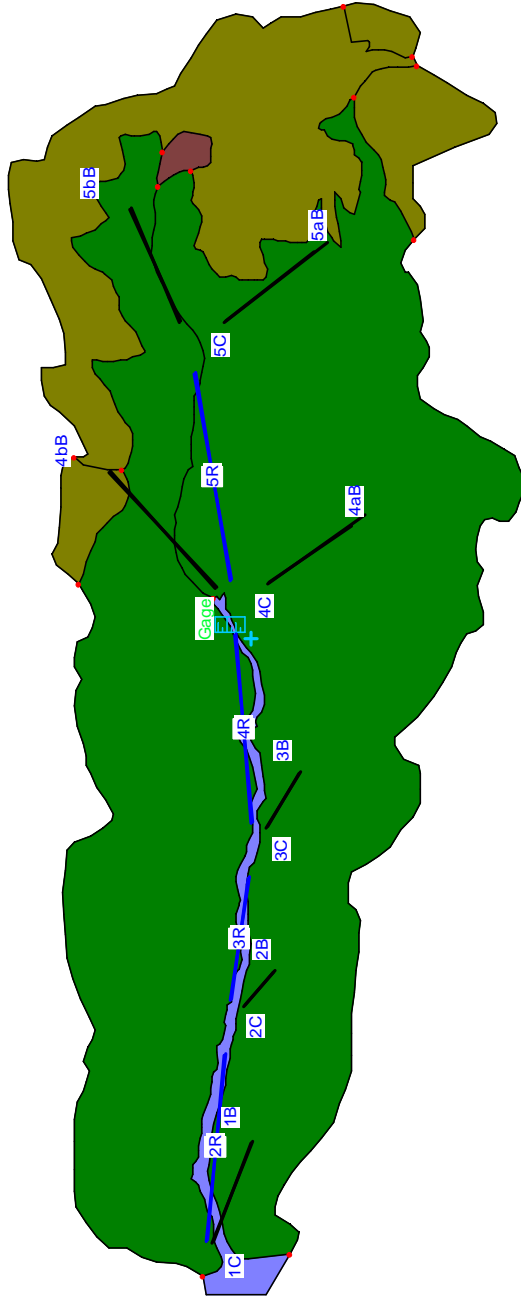
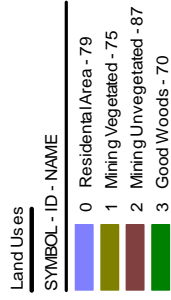
Scenario 1 Watershed Boundaries and Composite CN and Computed Areas



Seng Creek Hydrology Analysis

Scenario 1 Seng Creek Watershed Hydrology Analysis	Scenario 2	Scenario 3	Scenario 4	Scenario 5
With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)

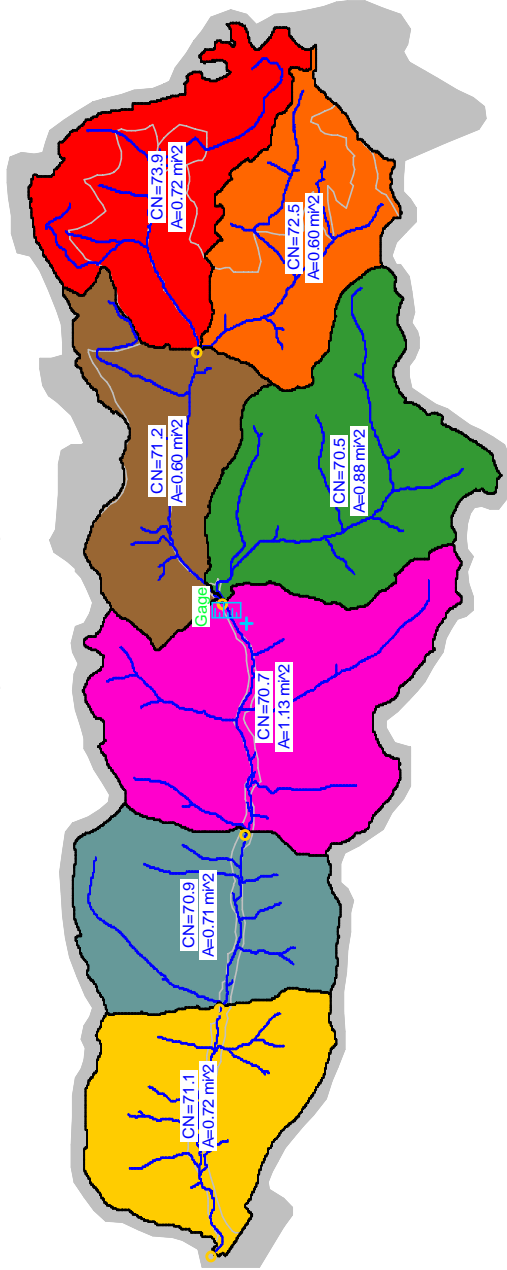
Scenario 2 Land Use



Seng Creek Hydrology Analysis

<p>Seng Creek Watershed Hydrology Analysis</p>	<p>Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)</p>	<p>Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>	<p>Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>
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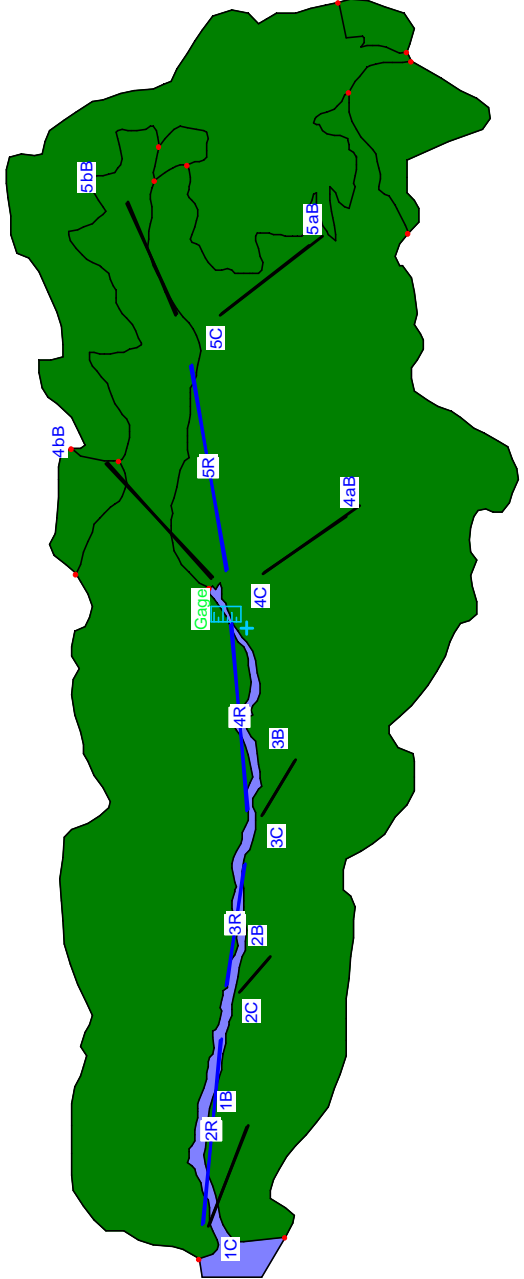
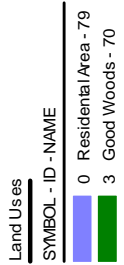
Scenario 2 Watershed Boundaries and Composite CN and Computed Areas



Seng Creek Hydrology Analysis

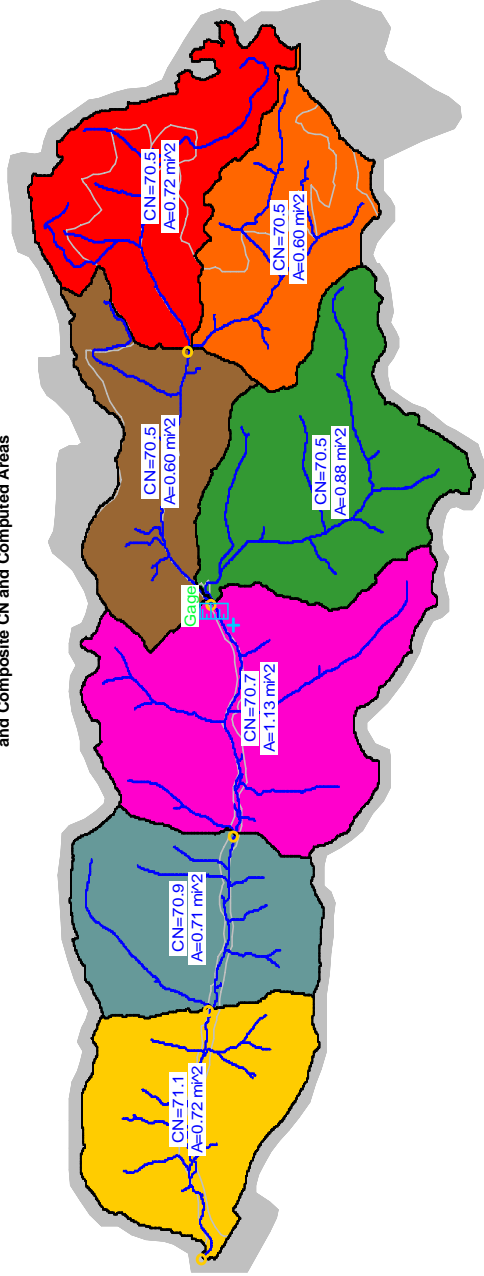
Seng Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)
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Scenario 3 Land Use



<p>Seng Creek Watershed Hydrology Analysis</p>	<p>Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)</p>	<p>Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>	<p>Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>
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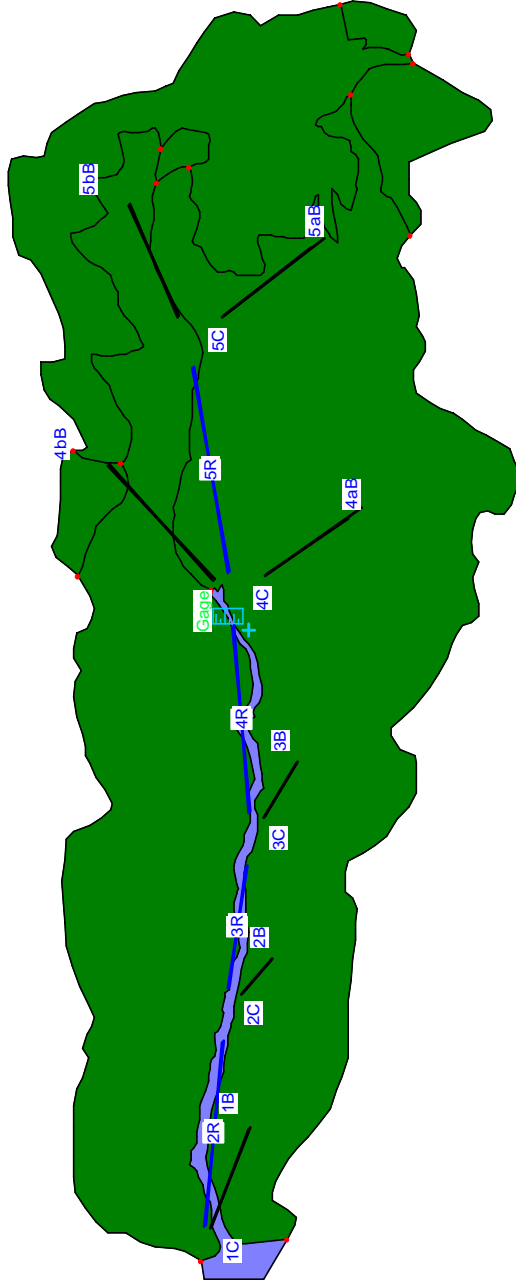
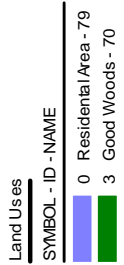
Scenario 3 Watershed Boundaries and Composite CN and Computed Areas



Seng Creek Hydrology Analysis

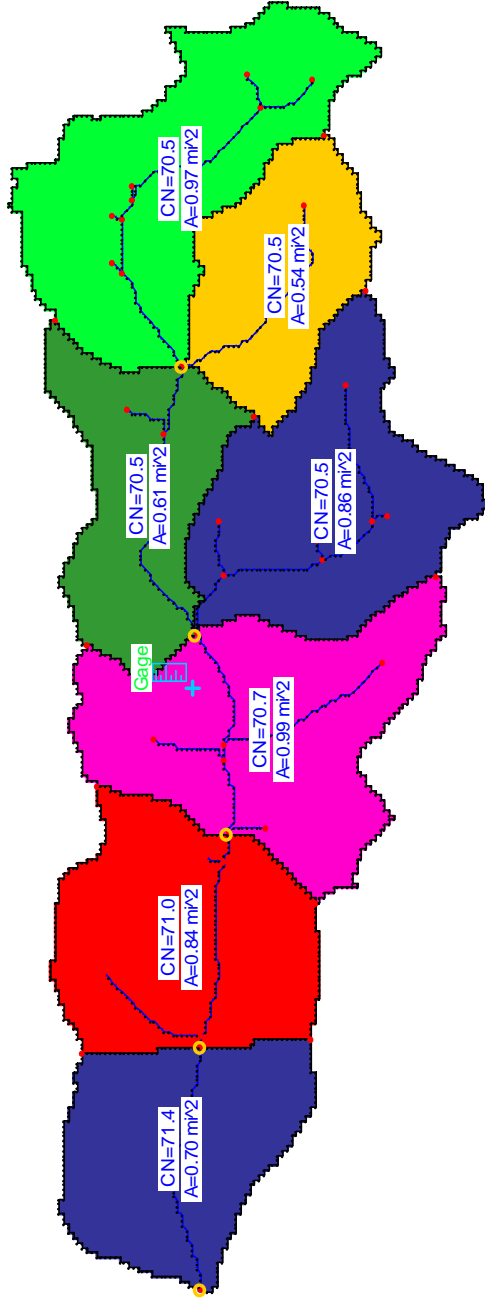
Seng Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)
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Scenario 4 Land Use



Seng Creek Watershed Hydrology Analysis	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)

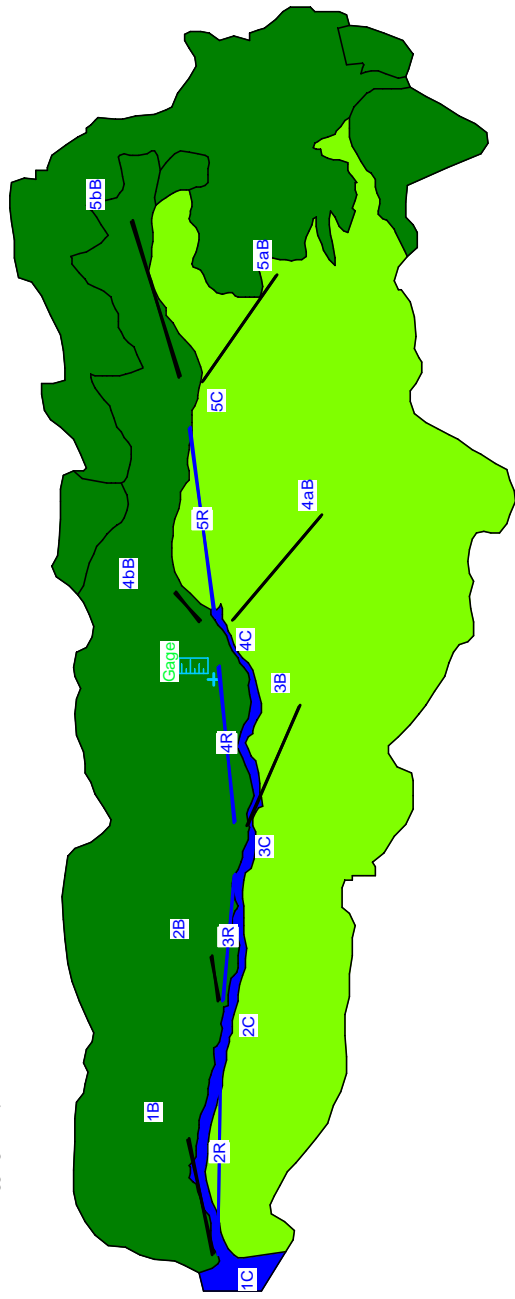
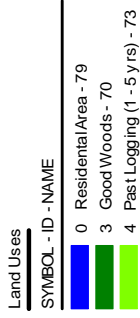
Scenario 4 Watershed Boundaries and Composite CN and Computed Areas



Seng Creek Hydrology Analysis

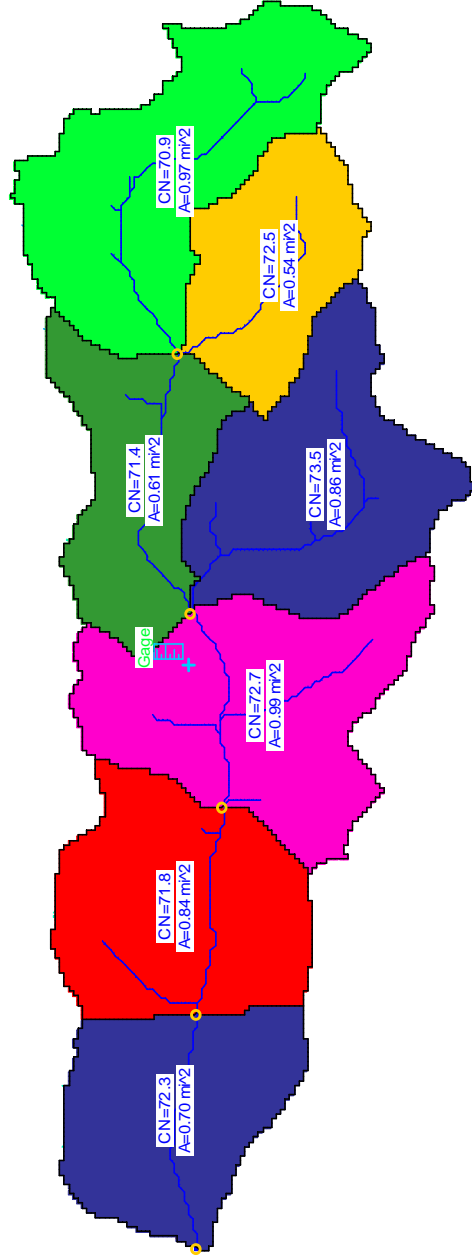
Scenario 1 Seng Creek Watershed Hydrology Analysis	Scenario 2	Scenario 3	Scenario 4	Scenario 5
With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)

Scenario 5 Land Use

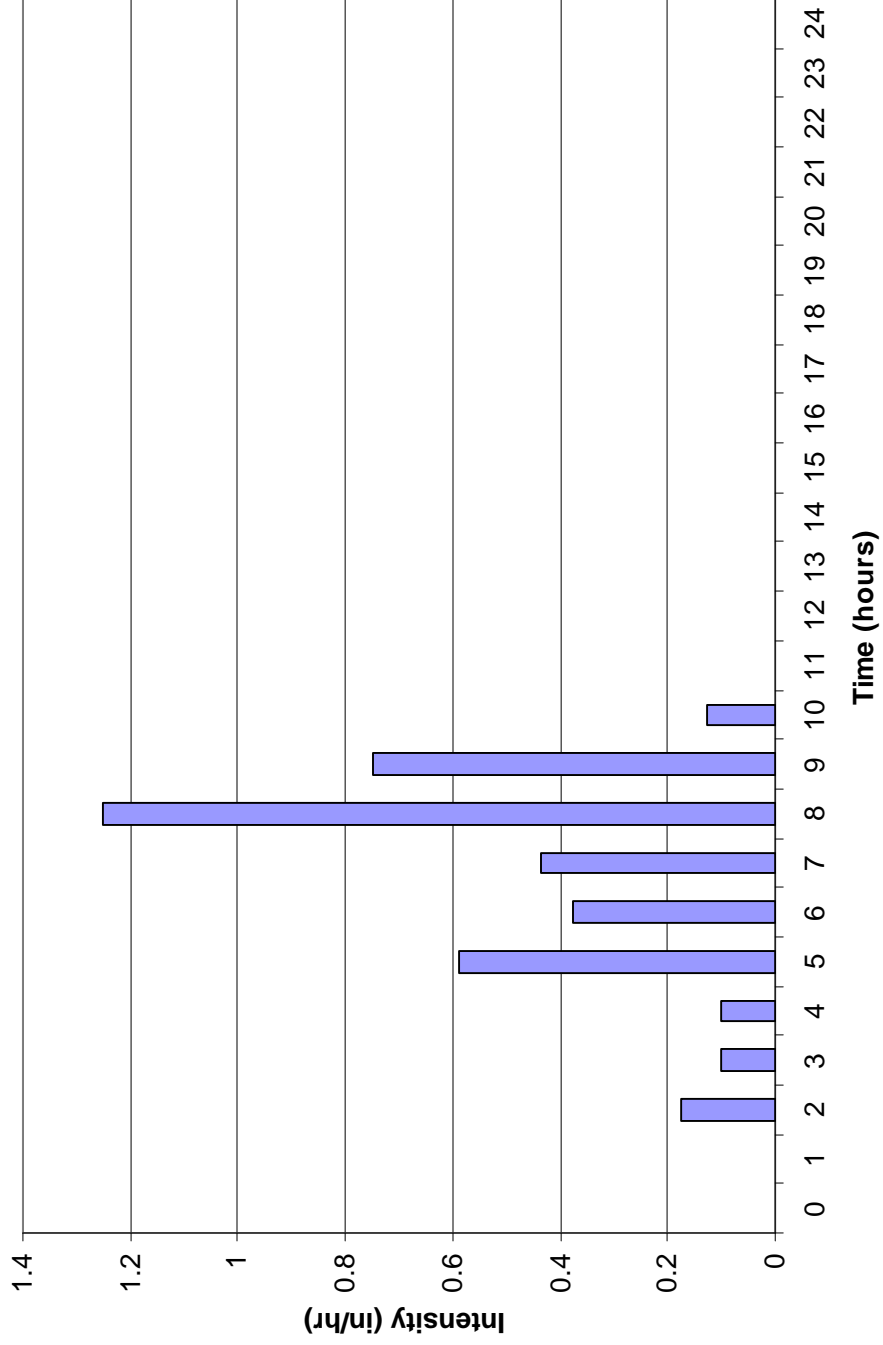


<p>Seng Creek Watershed Hydrology Analysis</p>	<p>Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)</p>	<p>Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>	<p>Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)</p>
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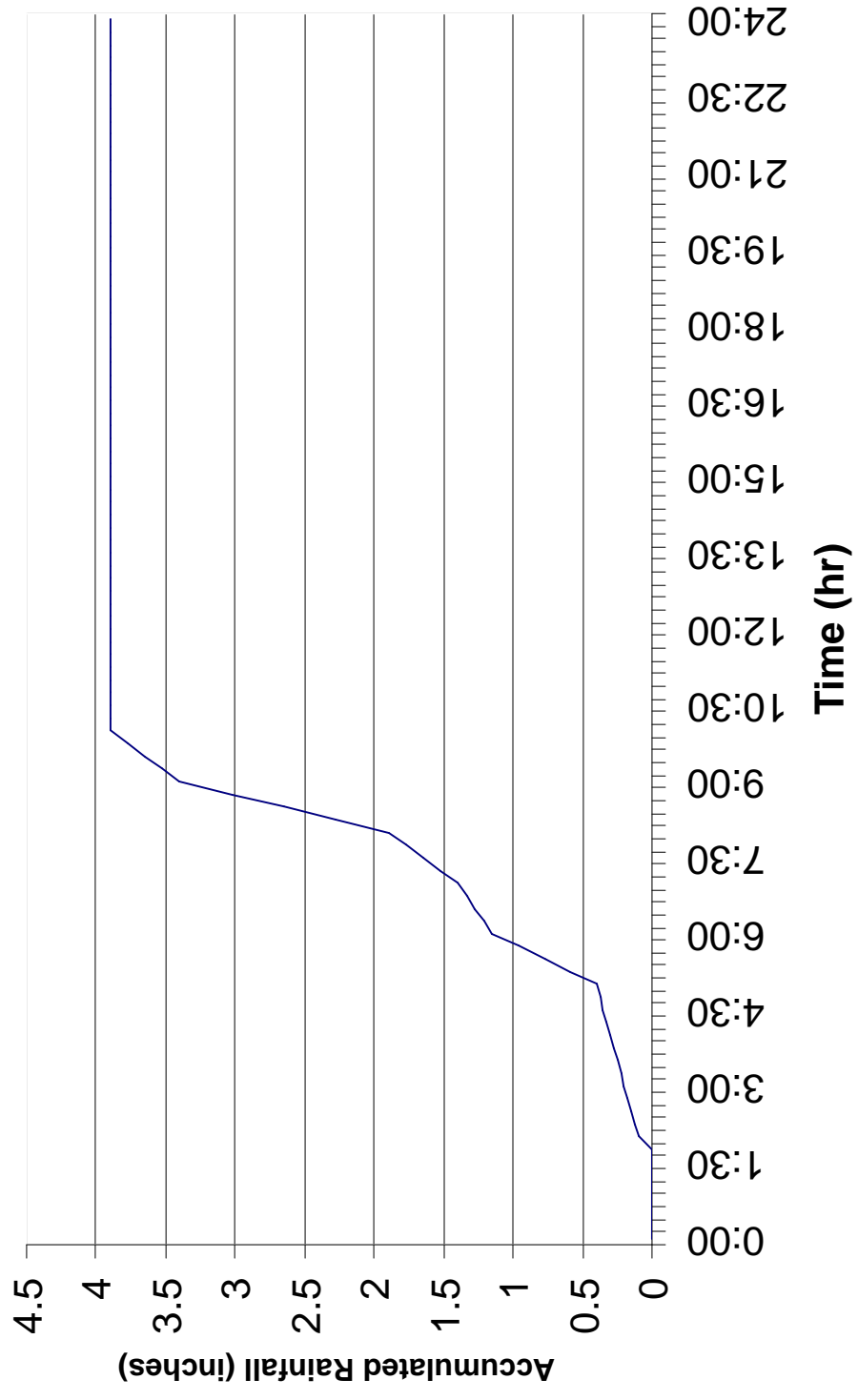
Scenario 5 Watershed Boundaries and Composite CN and Computed Areas



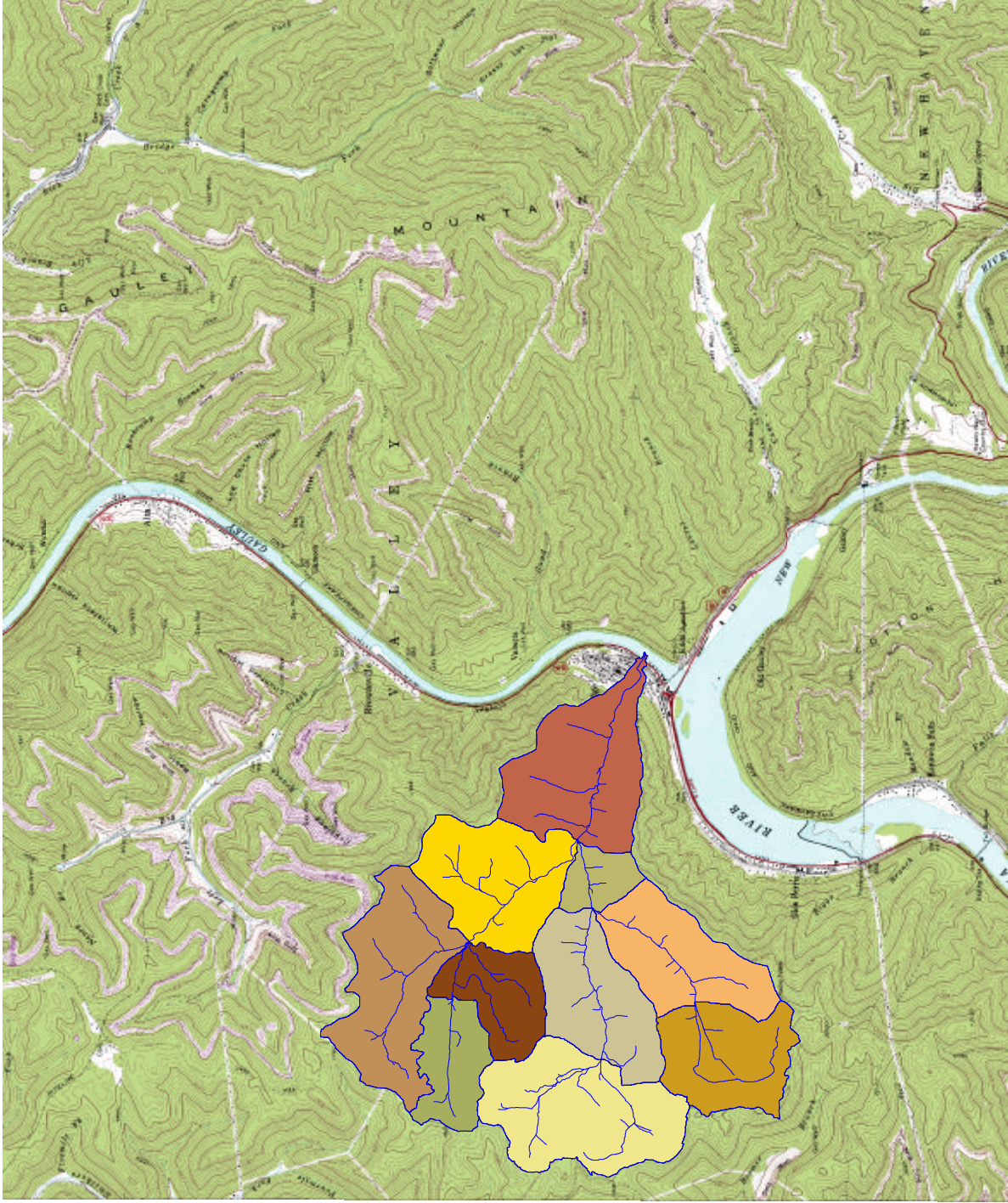
July 8, 2001 Storm Event in Seng Creek



July 8, 2001 Storm Event for Seng Creek

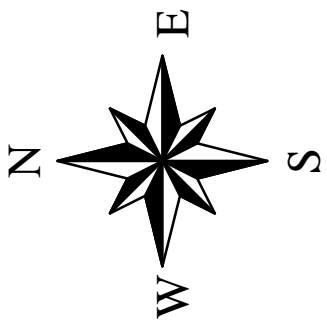
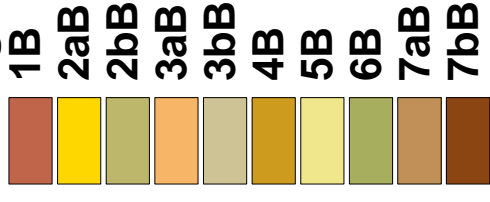


Scrabble Creek Watershed



Streams

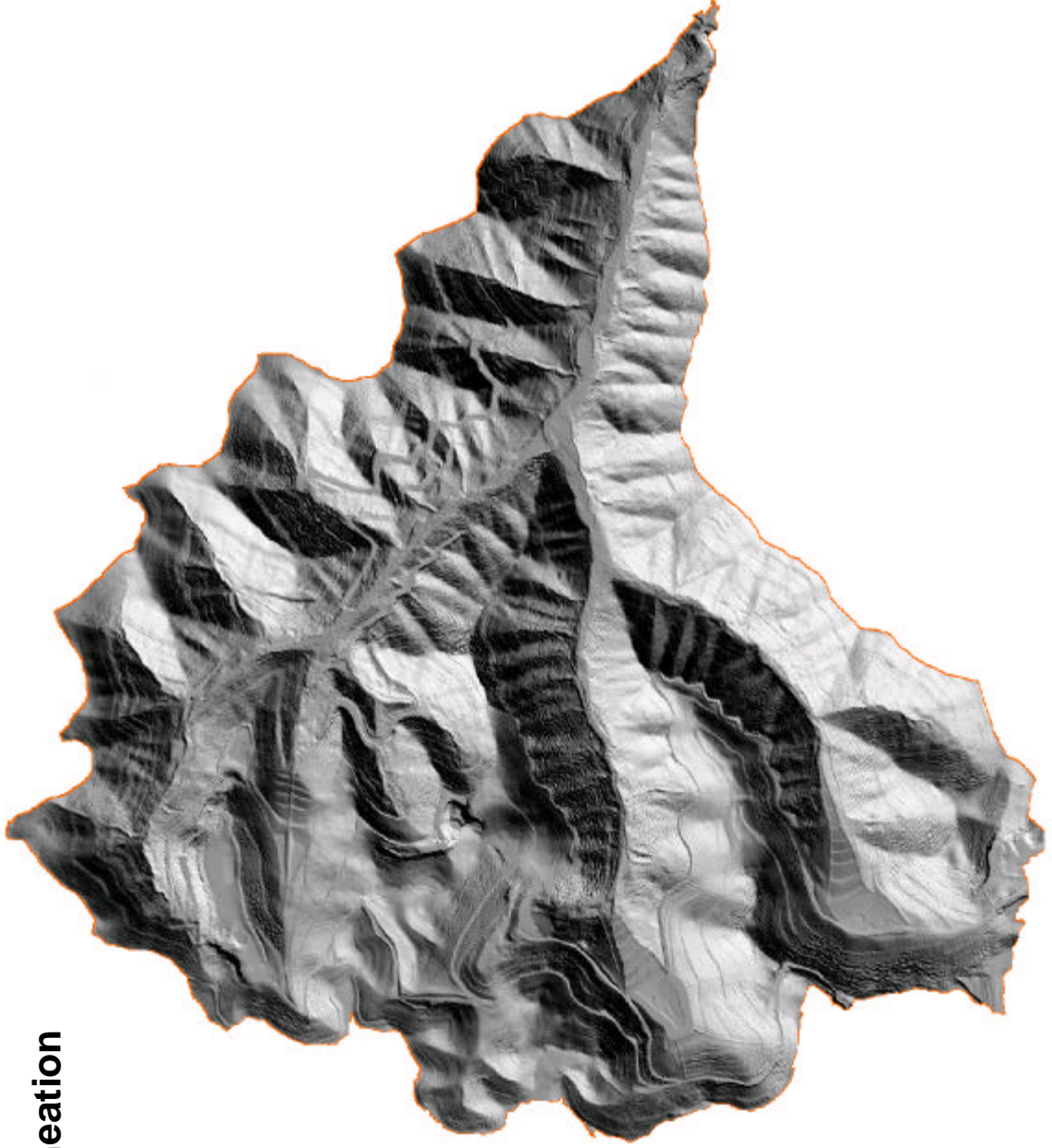
Drainage Areas



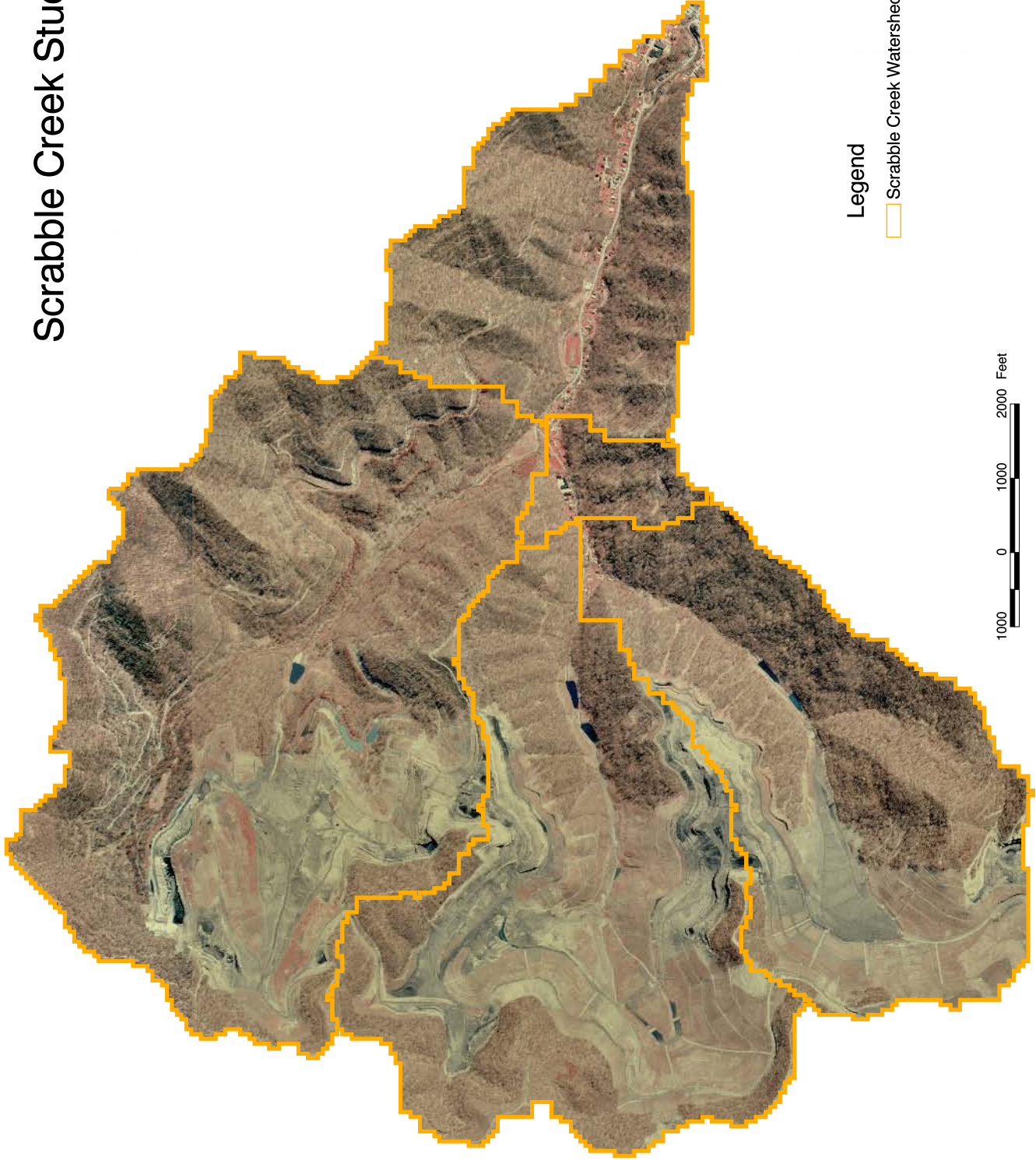
**Scrabble Creek LIDAR
3D View
Watershed Delineation**



**Scrabble Creek LIDAR
Plan View
Watershed Delineation**



Scrabble Creek Study Area



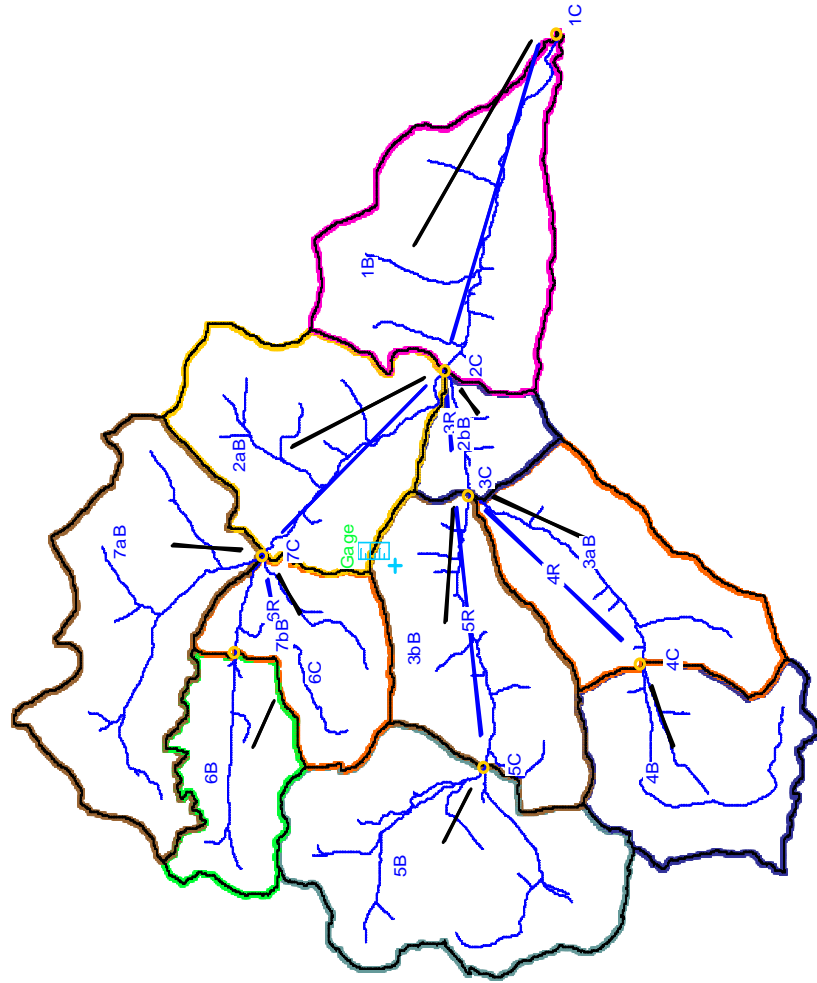
Legend

 Scrabble Creek Watershed Boundaries.



Scrabble Creek	Scenario 1			Scenario 2			Scenario 3			Scenario 4			Scenario 5		
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)			Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)			Without Logging (CN 70) Reclaimed Mining (CN 70) Topography w Mining			Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (USGS DEM Data)			With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (USGS DEM Data)		
Outlet Node	Event	25 yr	100 yr	Event	25 yr	100 yr	Event	25 yr	100 yr	Event	25 yr	100 yr	Event	25 yr	100 yr
1C	2045	3760	5165	1970	3595	4980	1663	2745	3879	1802	3242	4573	1877	3405	4755
2C	1803	3621	4926	1738	3515	4808	1426	2004	2848	1533	3041	4254	1586	3143	4368
3C	938	1886	2568	928	1867	2547	767	1320	1864	818	1634	2294	827	1654	2316
4C	203	395	535	203	395	535	171	336	470	173	341	477	173	341	477
5C	338	682	932	338	682	932	278	552	785	279	530	747	279	530	747
6C	134	286	392	134	286	392	113	238	337	112	228	324	112	228	324
7C	594	1489	2032	571	1422	1958	470	1108	1560	503	1241	1748	525	1307	1821

Watershed Delineation and Basin / Outlet / Routing Naming



Scrabble Creek Hydrology Analysis

Scrabble Creek Watershed Hydrology Analysis	Scenario 1			Scenario 2			Scenario 3			Scenario 4			Scenario 5		
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	With Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Pristine Topography (10m DEM Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Pristine Topography (10m DEM Data)	Storm Event	25 Yr Storm	100 yr Storm	Storm Event	25 Yr Storm	100 yr Storm	Storm Event	25 Yr Storm	100 yr Storm
Bottom of Scrabble Creek at Node 1C	2045	3760	5165	1970	3595	4930	1663	2745	3879	1802	3242	4573	1877	3405	4755
Max Flow															

Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4		
Difference	382	1015	1286	307	850	1101
% Difference	23.0%	37.0%	33.2%	18.5%	31.0%	28.4%

Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 4		
Difference	75	165	185	168	353	407
% Difference	3.8%	4.6%	3.7%	9.3%	10.9%	8.9%

At Node 2C		25 Yr Storm		100 yr Storm		25 Yr Storm		100 yr Storm	
Max Flow	1803	3621	4926	1738	3515	4806	1426	2004	2848

Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4		
Difference	377	1617	2078	312	1511	1960
% Difference	26.4%	80.7%	73.0%	21.9%	75.4%	68.8%

Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 4		
Difference	65	106	118	205	474	554
% Difference	3.7%	3.0%	2.5%	13.4%	15.6%	13.0%

At Node 3C		25 Yr Storm		100 yr Storm		25 Yr Storm		100 yr Storm	
Max Flow	938	1886	2568	928	1867	2547	767	1320	1864

Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4		
Difference	171	566	704	161	547	683
% Difference	22.3%	42.9%	37.8%	21.0%	41.4%	36.6%

Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 4		
Difference	10	19	21	110	233	253
% Difference	1.1%	1.0%	0.8%	13.4%	14.3%	11.0%

Downstream of Valley Fill at Node 4C		25 Yr Storm		100 yr Storm		25 Yr Storm		100 yr Storm	
Max Flow	203	395	535	203	395	535	171	336	470

Comparison with Scenario 3		Comparison with Scenario 1		Comparison with Scenario 4		
Difference	32	59	65	32	59	65
% Difference	18.7%	17.6%	13.8%	18.7%	14.9%	13.8%

Comparison with Scenario 2		Comparison with Scenario 3		Comparison with Scenario 4		
Difference	0	0	0	30	54	58
% Difference	0.0%	0.0%	0.0%	17.3%	15.8%	12.2%

Scrabble Creek Hydrology Analysis

Downstream of Valley Fill at Node 5C	Scenario 1			Scenario 2			Scenario 3			Scenario 4			Scenario 5		
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Pristine Topography (10m DEM Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Pristine Topography (10m DEM Data)	Storm Event	25 Yr Storm	100 yr Storm	Storm Event	25 Yr Storm	100 yr Storm	Storm Event	25 Yr Storm	100 yr Storm
Max Flow	338	682	932	338	682	932	278	552	785	279	530	747	279	530	747

Comparison with Scenario 3			Comparison with Scenario 4			
Difference	60	130	147	59	152	185
% Difference	21.6%	23.6%	18.7%	21.1%	28.7%	24.8%

Comparison with Scenario 2			Comparison with Scenario 3			
Difference	0	0	0	-1	22	38
% Difference	0.0%	0.0%	0.0%	-0.4%	4.2%	5.1%

Comparison with Scenario 1			Comparison with Scenario 3			
Difference	0	0	0	-1	22	38
% Difference	0.0%	0.0%	0.0%	-0.4%	4.2%	5.1%

Comparison with Scenario 3			Comparison with Scenario 4			
Difference	0	0	0	-1	22	38
% Difference	0.0%	0.0%	0.0%	-0.4%	4.2%	5.1%

Comparison with Scenario 3			Comparison with Scenario 4			
Difference	21	48	55	22	58	68
% Difference	18.6%	20.2%	16.3%	19.6%	25.4%	21.0%

Comparison with Scenario 2			Comparison with Scenario 3			
Difference	0	0	0	1	10	13
% Difference	0.0%	0.0%	0.0%	0.9%	4.4%	4.0%

Comparison with Scenario 3			Comparison with Scenario 4			
Difference	124	381	472	91	248	284
% Difference	26.4%	34.4%	30.3%	18.1%	20.0%	16.2%

Comparison with Scenario 2			Comparison with Scenario 3			
Difference	23	67	74	-33	-133	-188
% Difference	4.0%	4.7%	3.8%	-7.0%	-12.0%	-12.1%

Comparison with Scenario 3			Comparison with Scenario 4			
Difference	124	381	472	91	248	284
% Difference	26.4%	34.4%	30.3%	18.1%	20.0%	16.2%

Comparison with Scenario 2			Comparison with Scenario 3			
Difference	23	67	74	-33	-133	-188
% Difference	4.0%	4.7%	3.8%	-7.0%	-12.0%	-12.1%

Comparison with Scenario 3			Comparison with Scenario 4			
Difference	124	381	472	91	248	284
% Difference	26.4%	34.4%	30.3%	18.1%	20.0%	16.2%

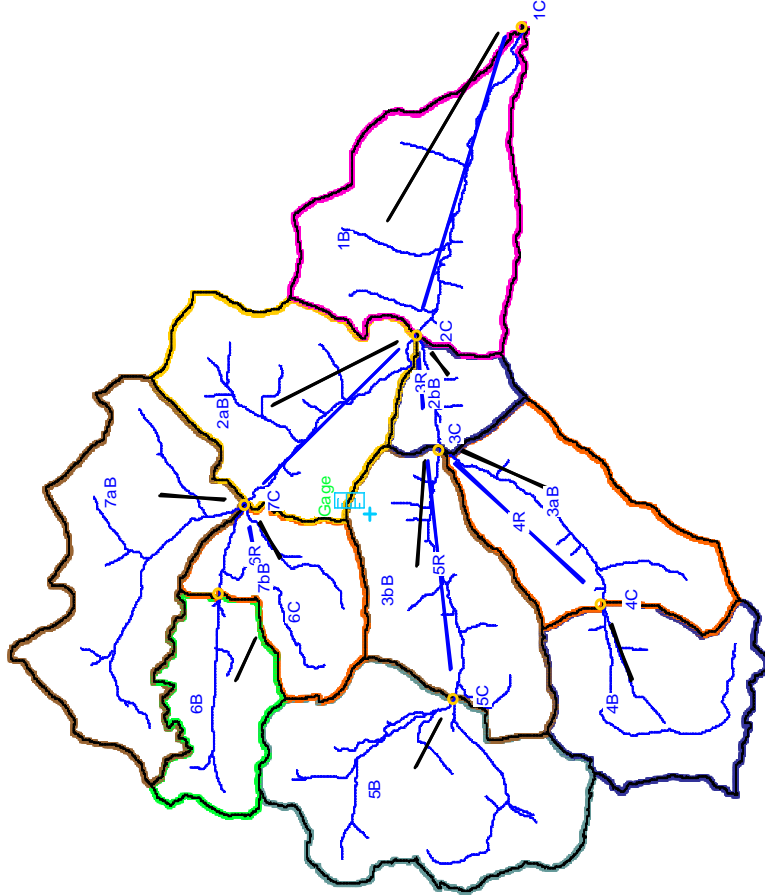
Comparison with Scenario 2			Comparison with Scenario 3			
Difference	23	67	74	-33	-133	-188
% Difference	4.0%	4.7%	3.8%	-7.0%	-12.0%	-12.1%

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Scrabble Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)
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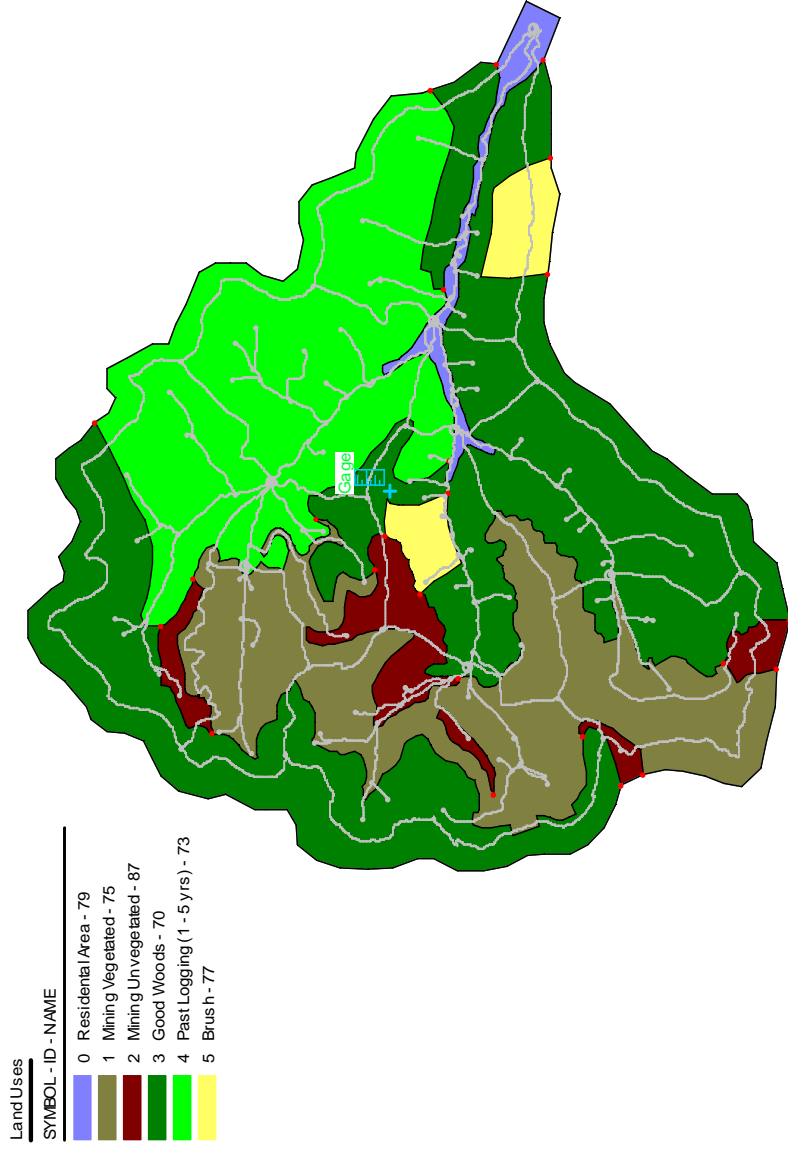
Watershed Delineation and Basin / Outlet / Routing Naming



Scrabble Creek Hydrology Analysis

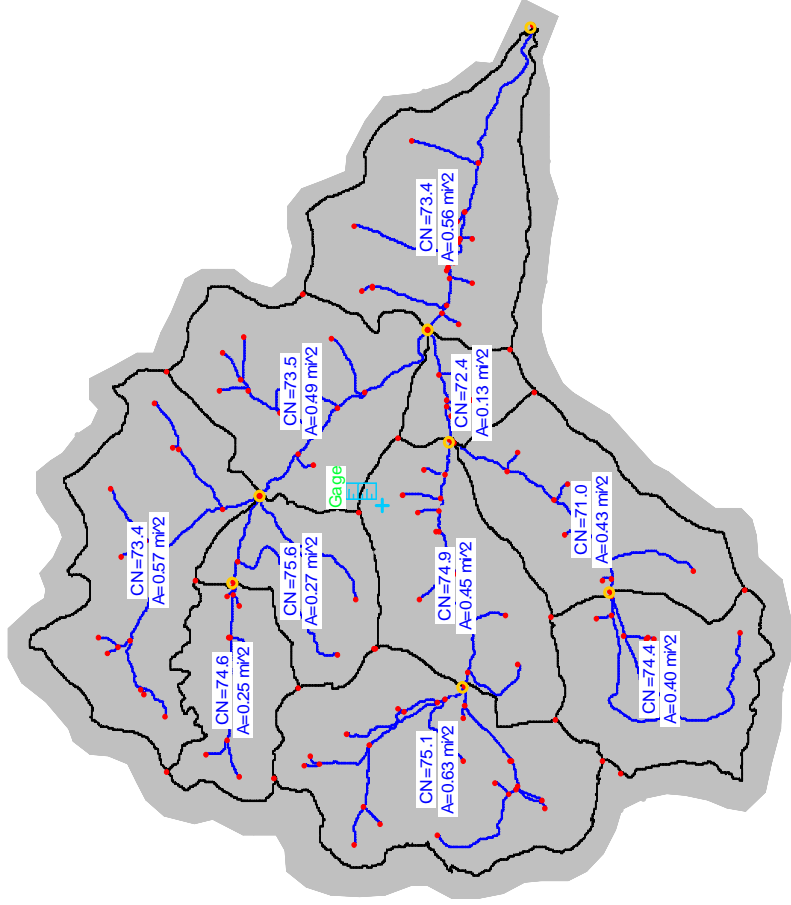
Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Scrabble Creek Watershed Hydrology Analysis With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)

Scenario 1 Land Use



Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)

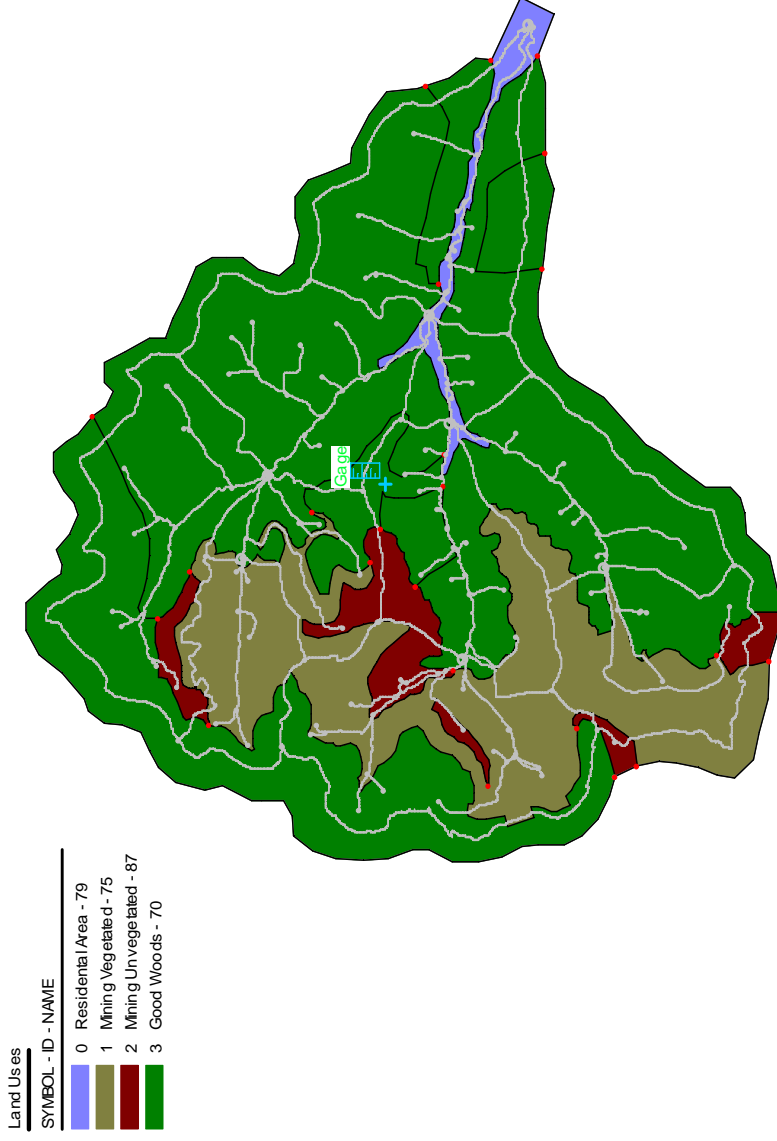
Scenario 1 Watershed Boundaries and Composite CN and Computed Areas



Scrabble Creek Hydrology Analysis

Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Scrabble Creek Watershed Hydrology Analysis With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)

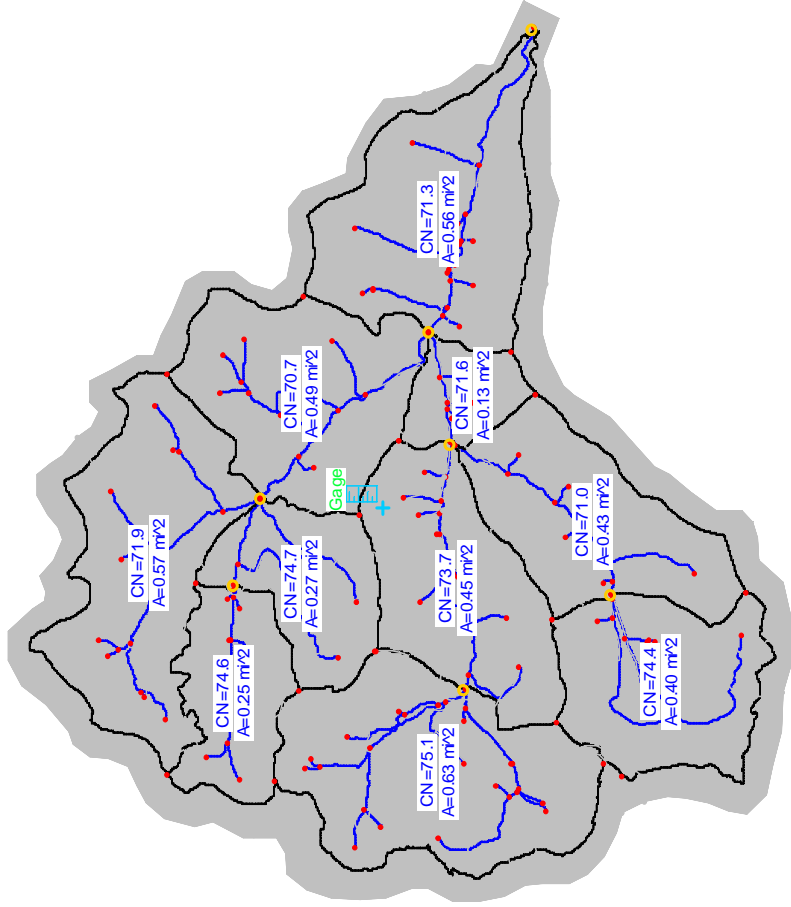
Scenario 2 Land Use



- Land Uses
- SYMBOL - ID - NAME
- 0 Residential Area - 79
 - 1 Mining Vegetated - 75
 - 2 Mining Unvegetated - 87
 - 3 Good Woods - 70

<p>Scrabble Creek Watershed Hydrology Analysis</p>	<p>Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)</p>	<p>Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)</p>	<p>Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)</p>	<p>Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)</p>
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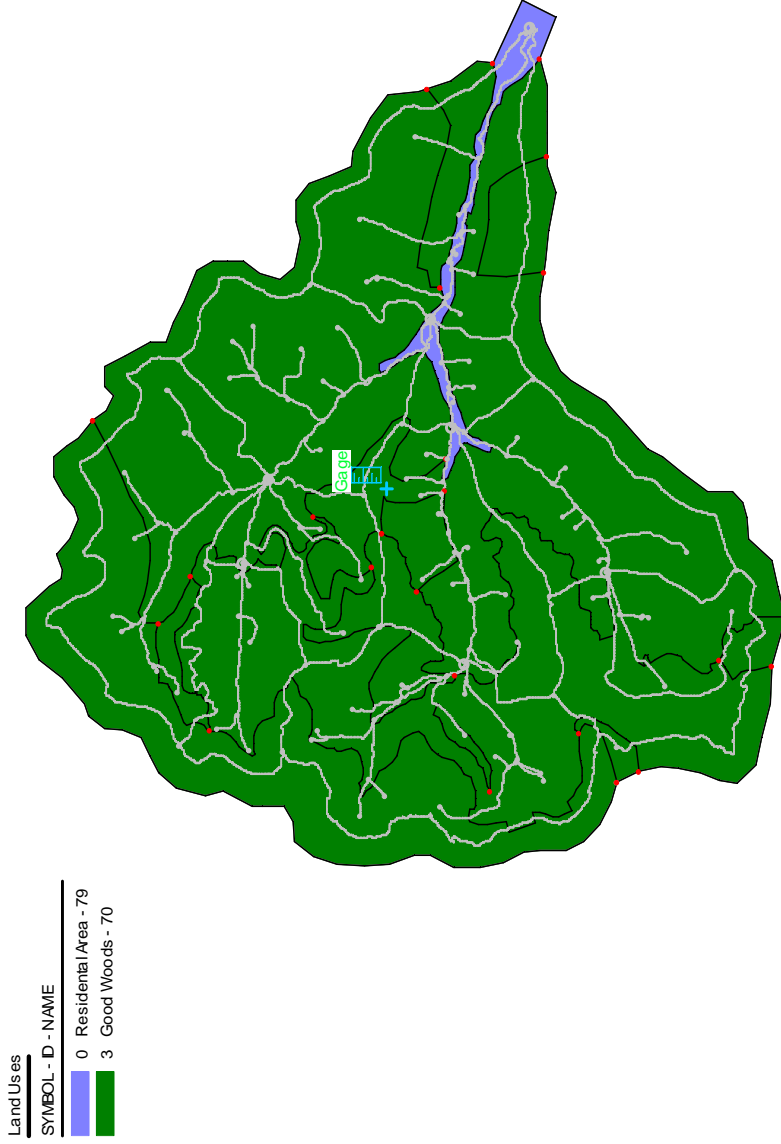
Scenario 2 Watershed Boundaries and Composite CN and Computed Areas



Scrabble Creek Hydrology Analysis

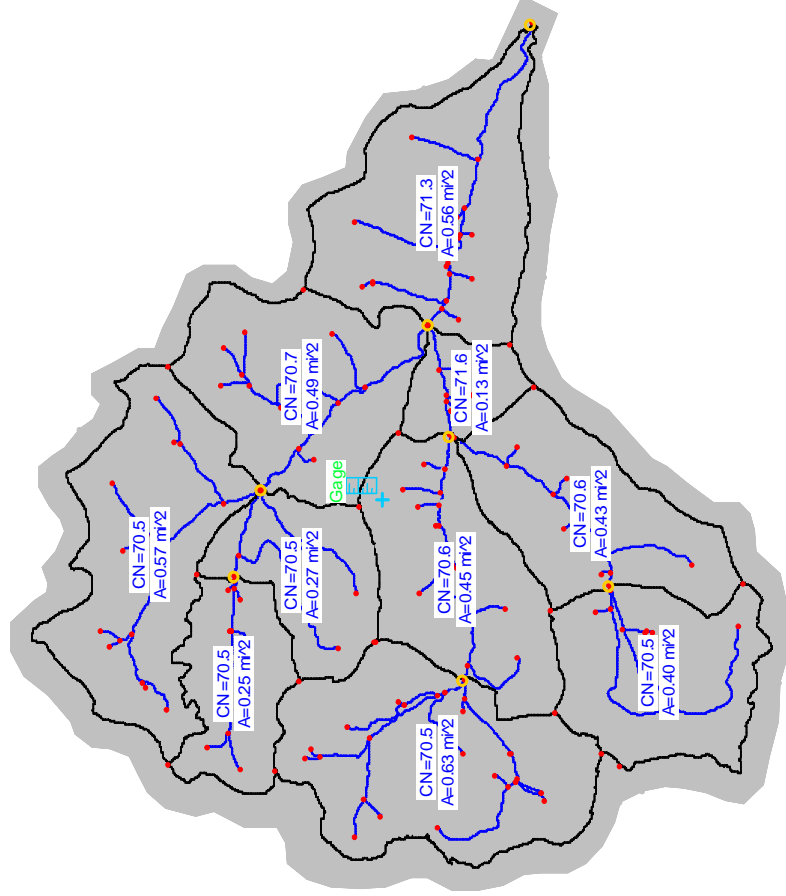
Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Scrabble Creek Watershed Hydrology Analysis With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)

Scenario 3 Land Use



Scrabble Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)
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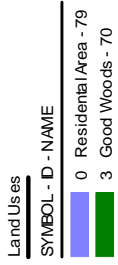
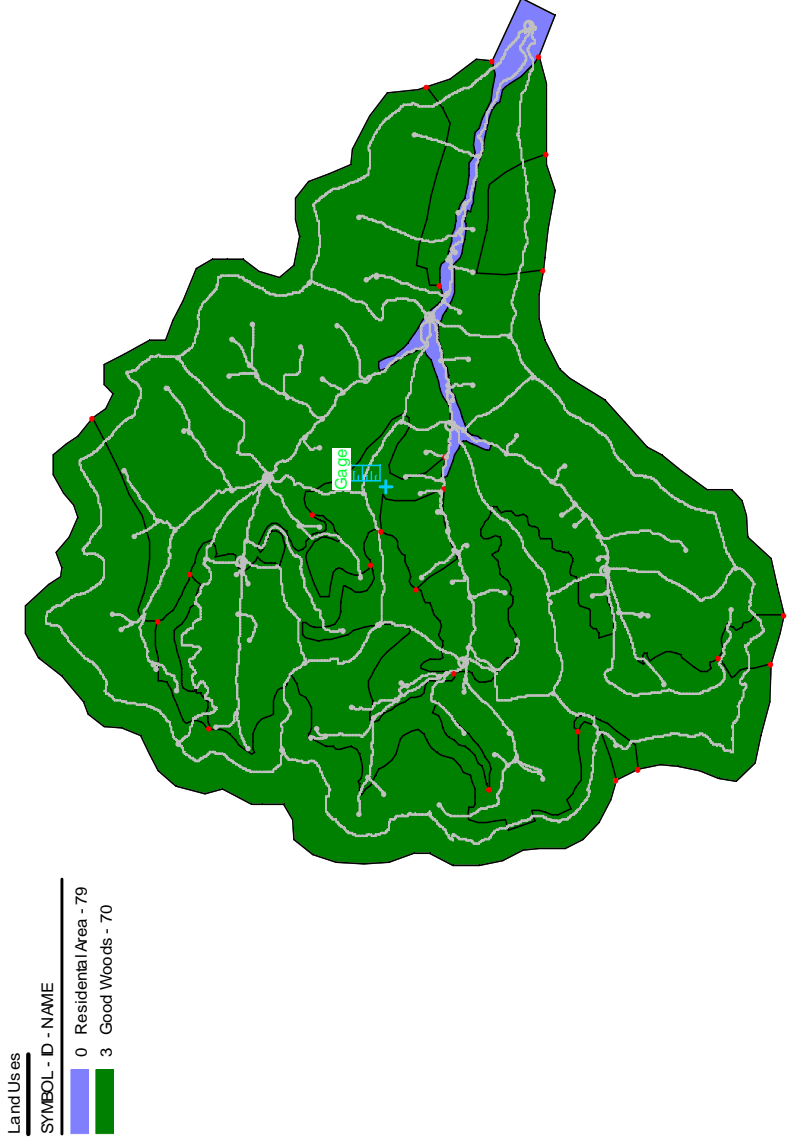
Scenario 3 Watershed Boundaries and Composite CN and Computed Areas



Scrabble Creek Hydrology Analysis

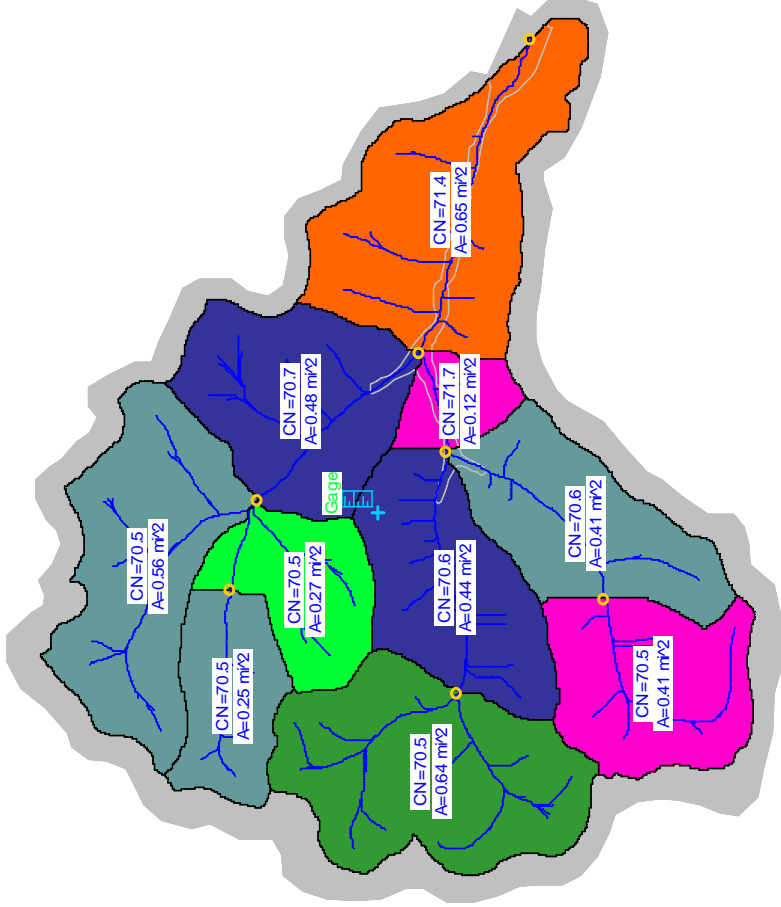
Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Scrabble Creek Watershed Hydrology Analysis With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)

Scenario 4 Land Use



Scrabble Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)
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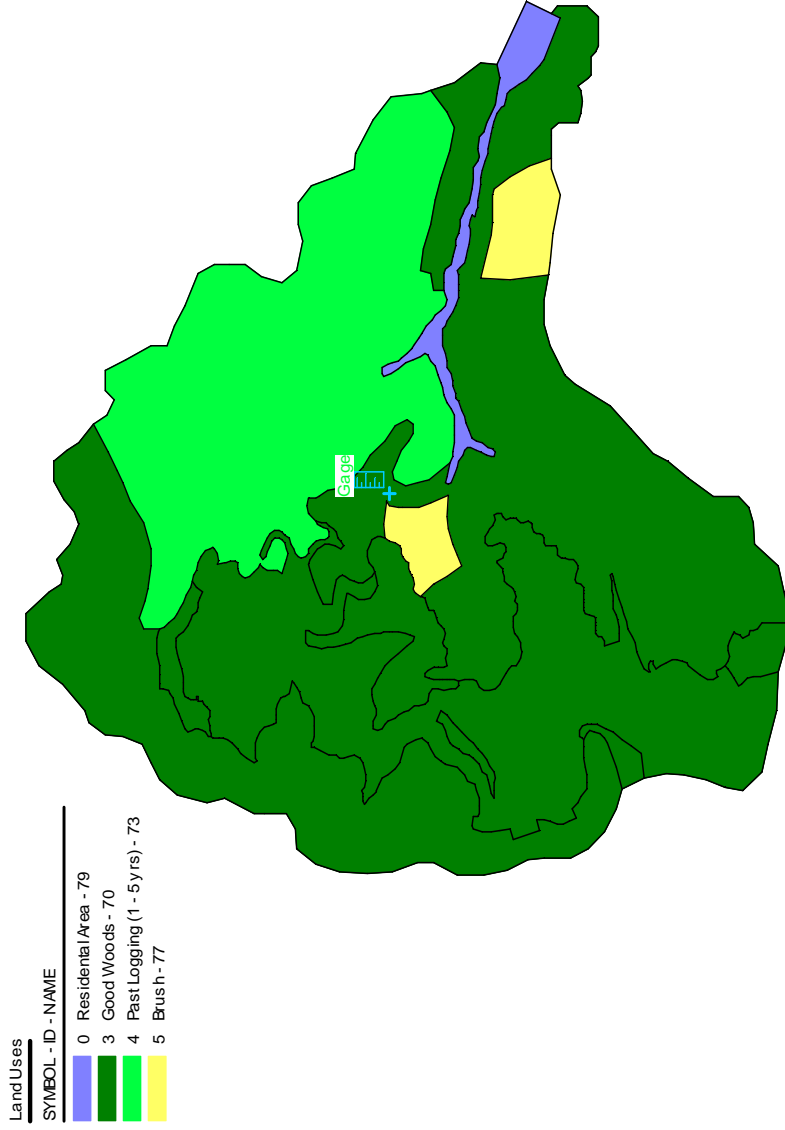
Scenario 4 Watershed Boundaries and Composite CN and Computed Areas



Scrabble Creek Hydrology Analysis

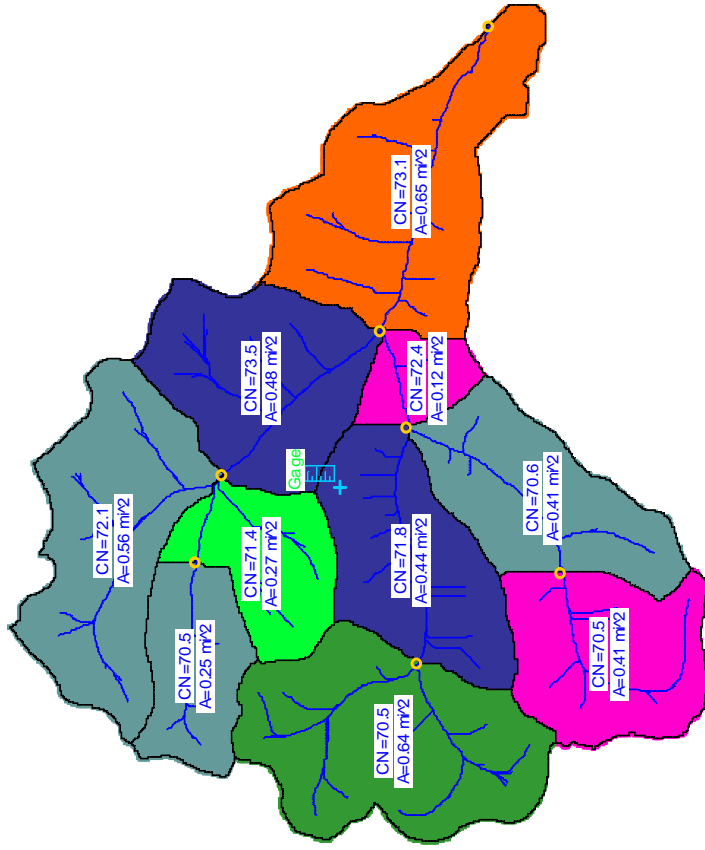
Scrabble Creek Watershed Hydrology Analysis	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)

Scenario 5 Land Use

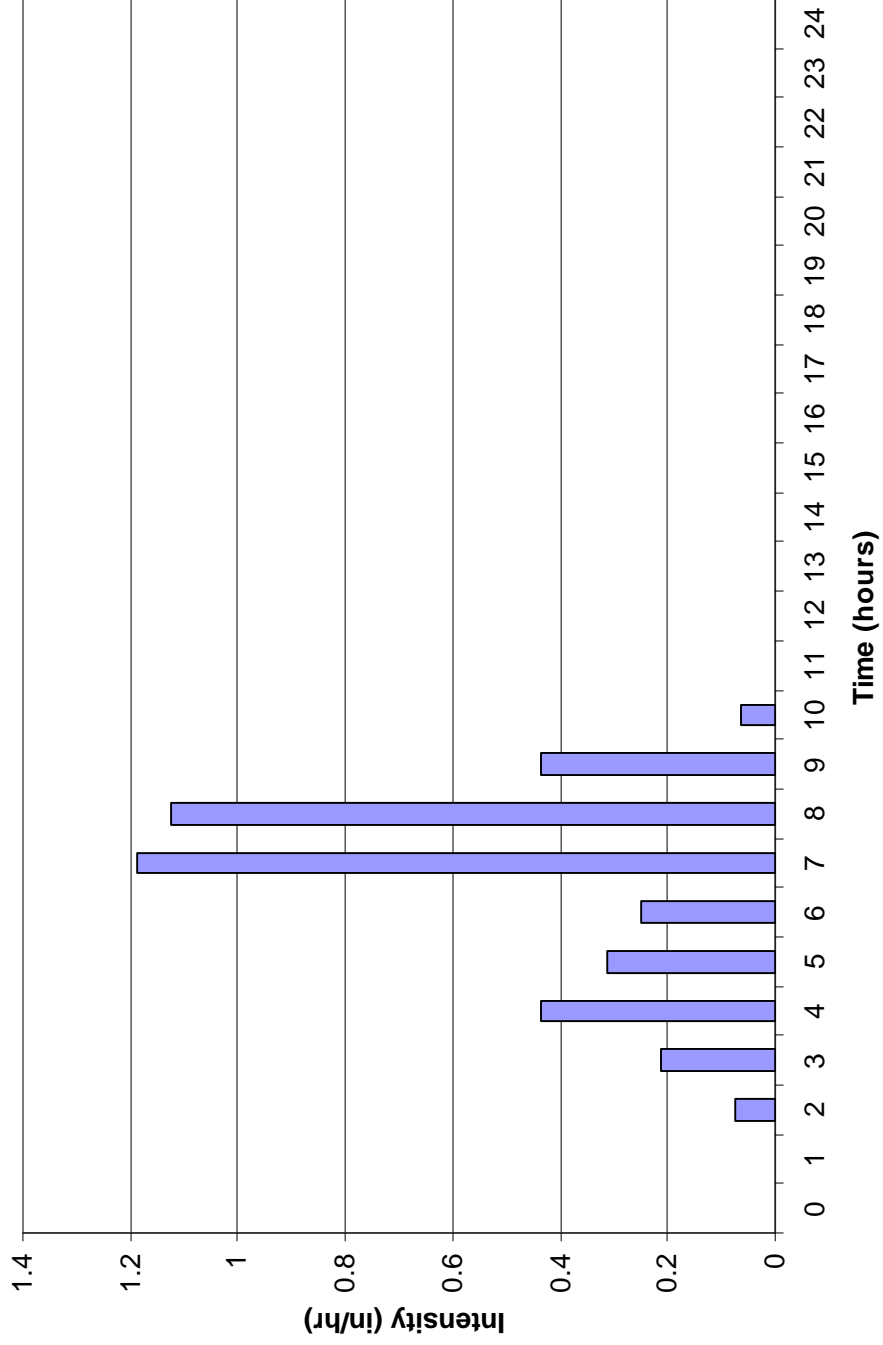


Scrabble Creek Watershed Hydrology Analysis	Scenario 1 With Logging (CN 70 & 73) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 2 Without Logging (CN 70) With Mining (CN 75 & 87) Topography w Mining (LIDAR Data)	Scenario 3 Without Logging (CN 70) With Reclaimed Mining (CN 70) Topography w Mining (LIDAR Data)	Scenario 4 Without Logging (CN 70) Without Mining (CN 70) Pristine Topography (10m DEM Data)	Scenario 5 With Logging (CN 70 & 73) Without Mining (CN 70) Pristine Topography (10m DEM Data)
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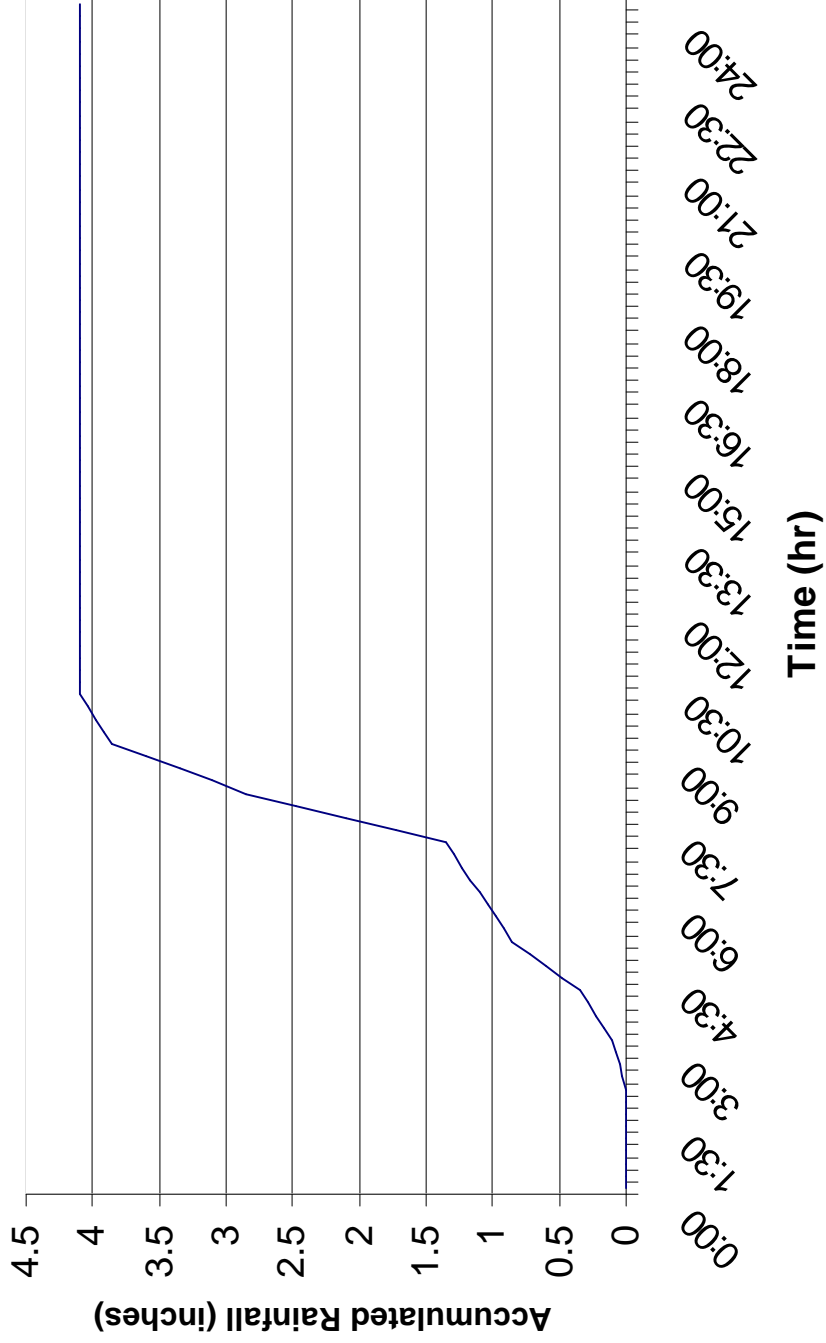
Scenario 5 Watershed Boundaries and Composite CN and Computed Areas



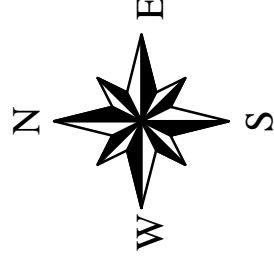
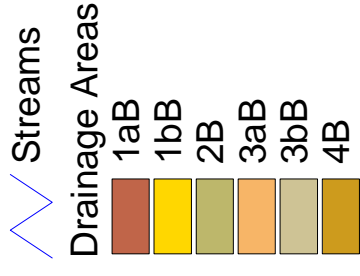
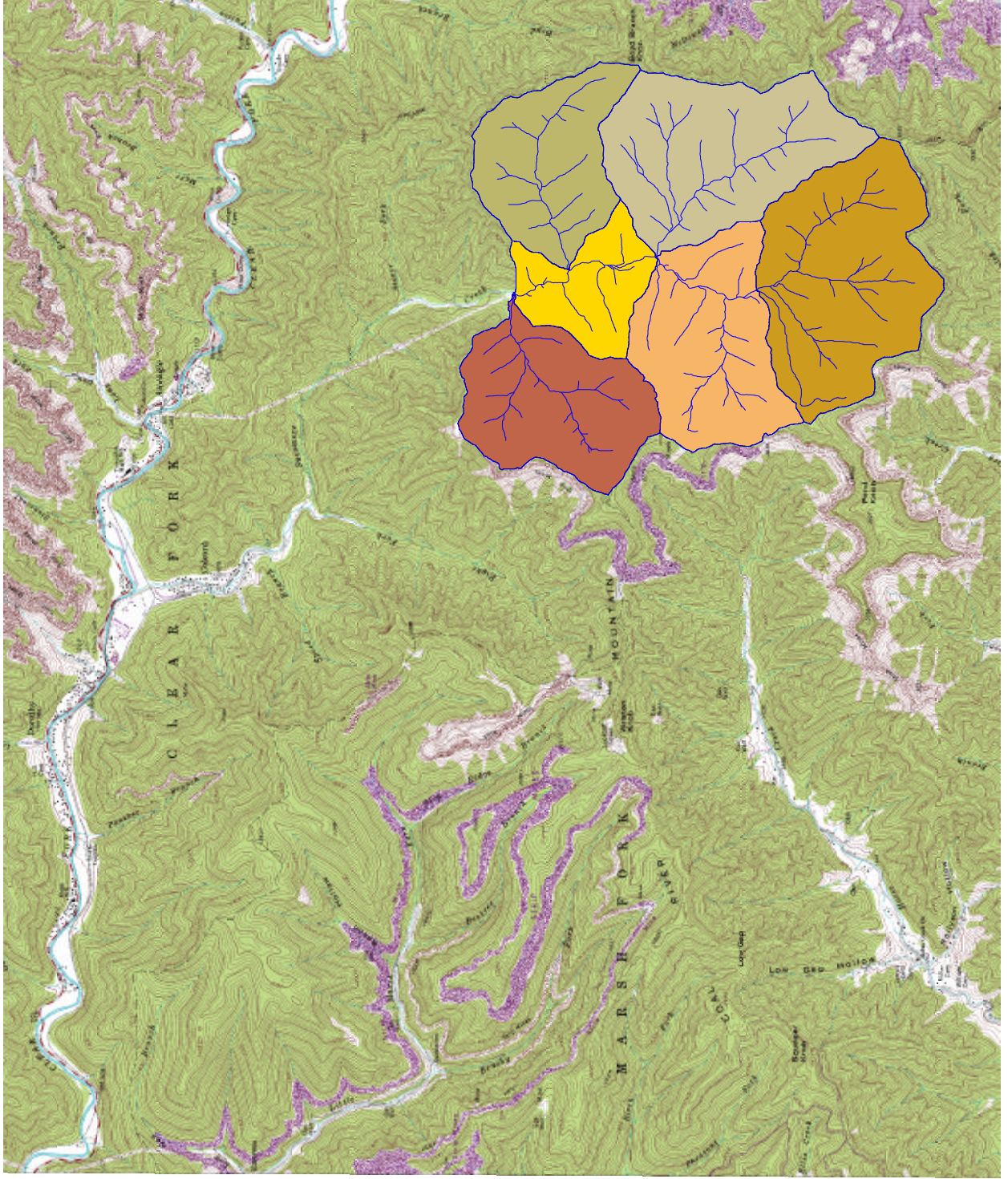
July 8, 2001 Storm Event in Scrabble Creek



July 8, 2001 Storm Event for Scrabble Creek

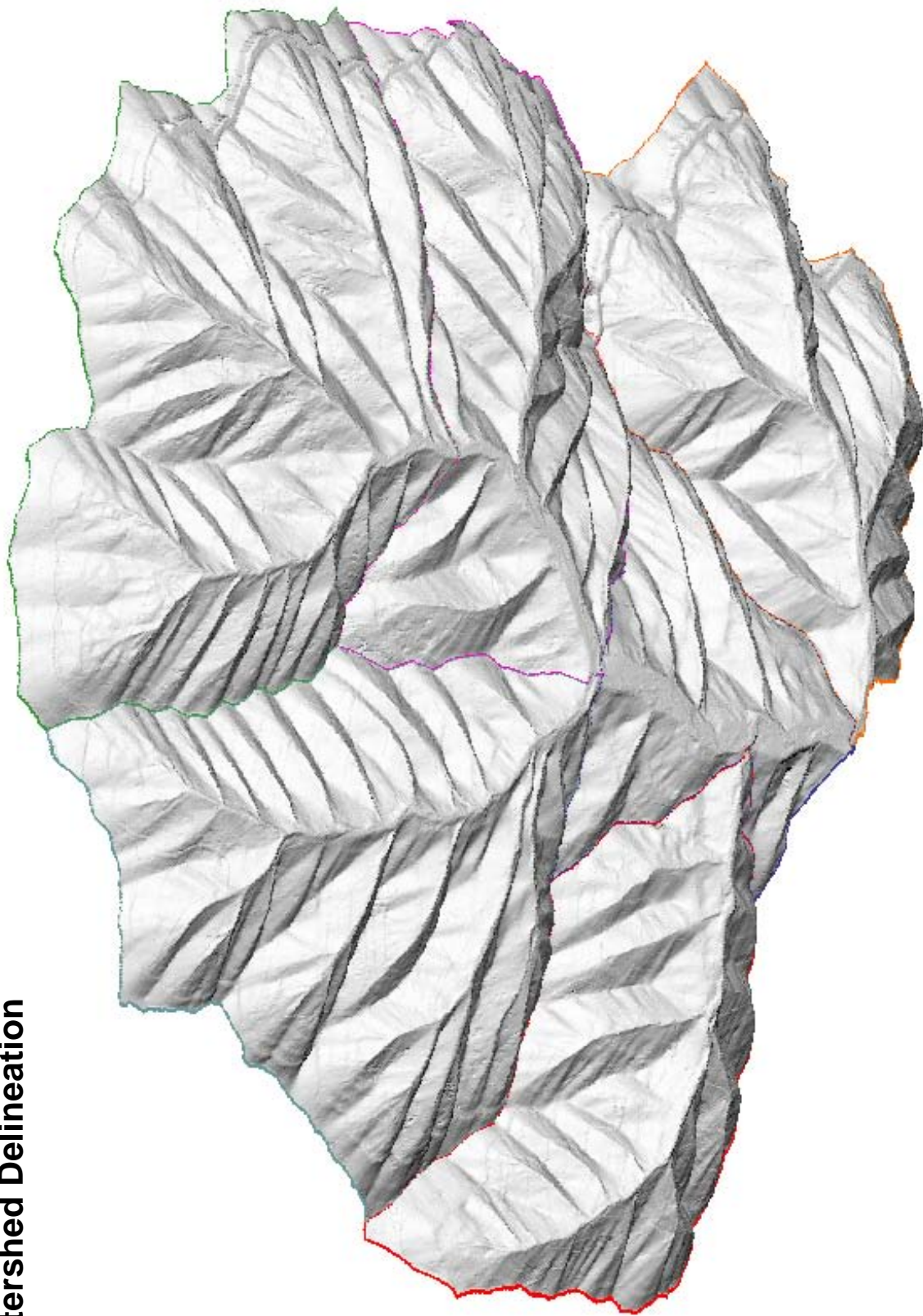


Sycamore Creek Watershed

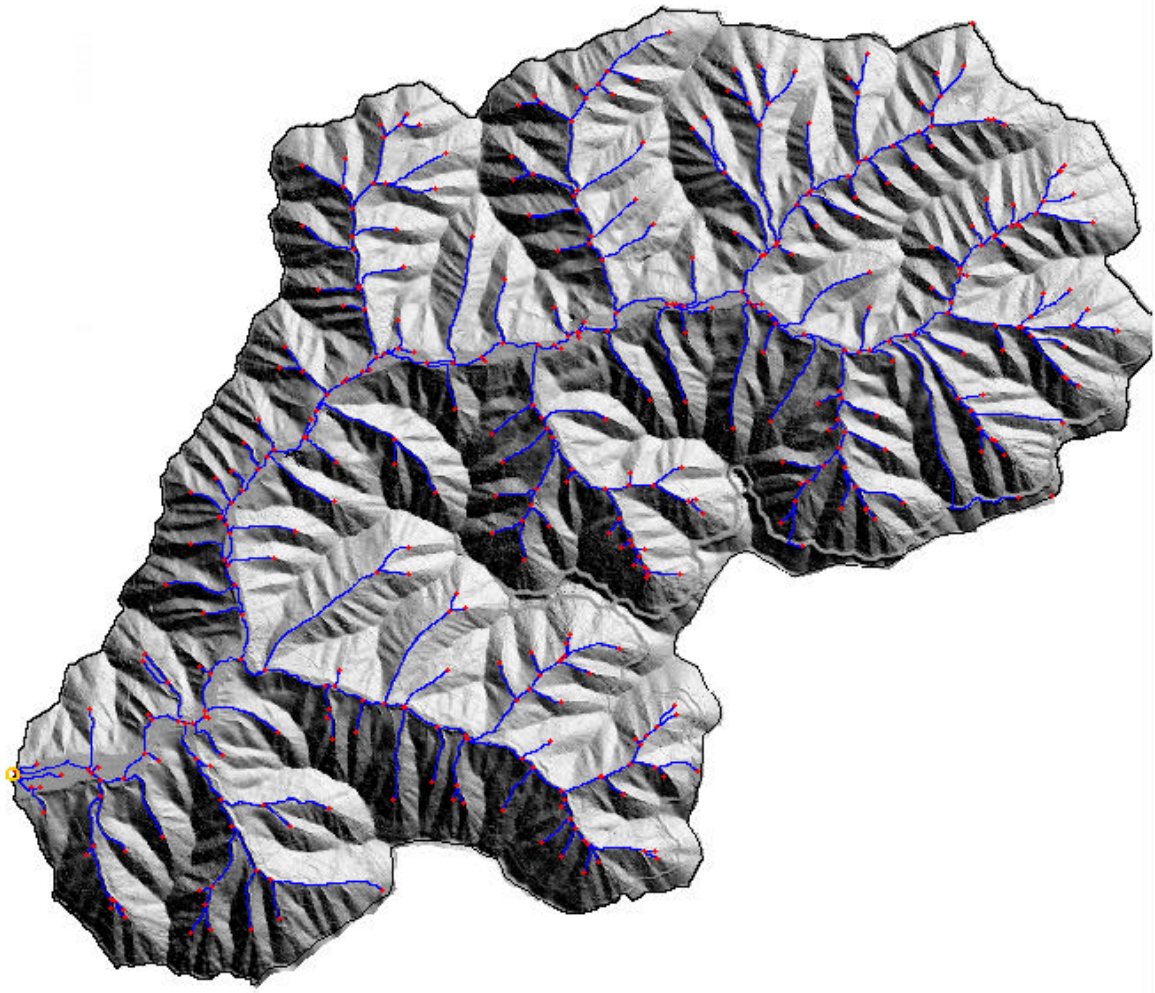


Printed March 27, 2002

**Sycamore Creek LIDAR
3D View
Watershed Delineation**



**Sycamore Creek LIDAR
Plan View
Watershed Delineation**



Sycamore Creek Study Area



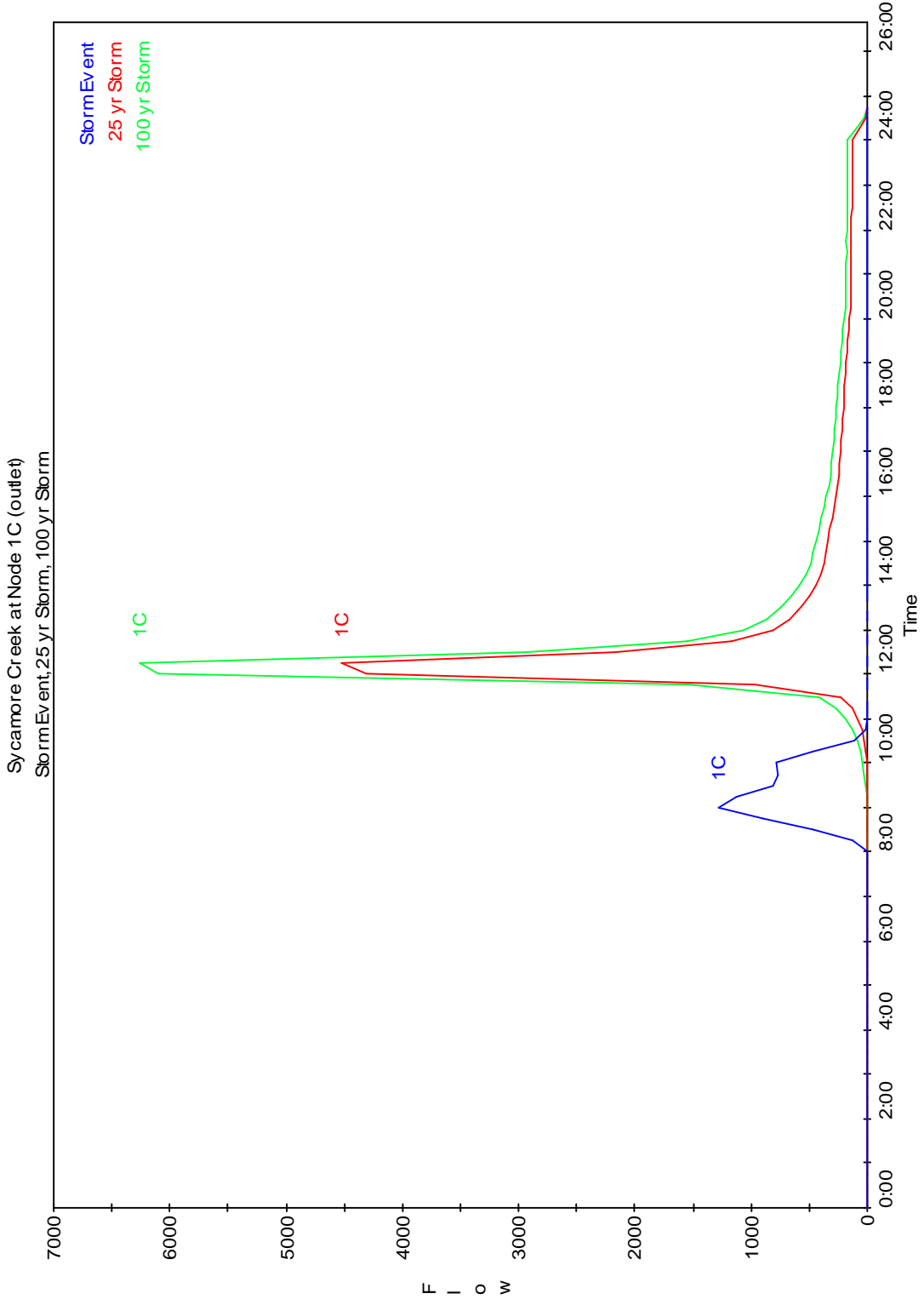
Legend

 Sycamore Creek Watershed Boundaries



Sycamore Creek Hydrology Analysis

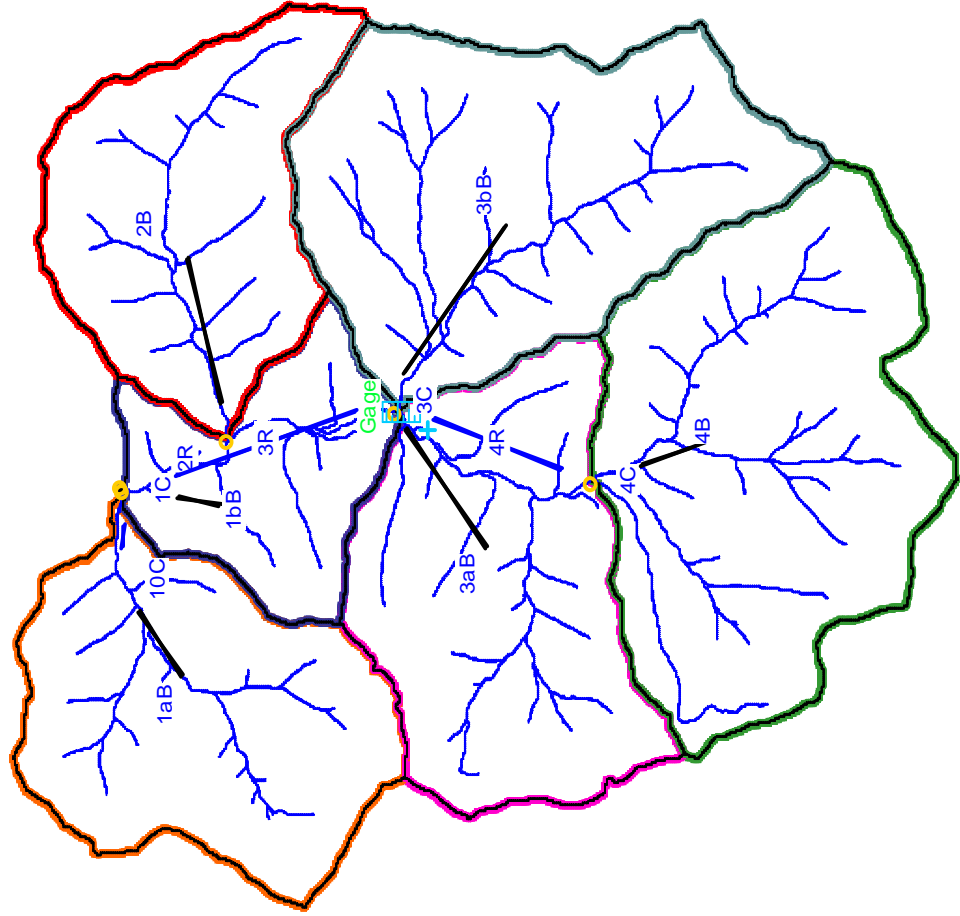
Bottom of Sycamore Creek	Storm Event	25 Yr Storm	100 yr Storm
Max Flow	1211	4378	6078



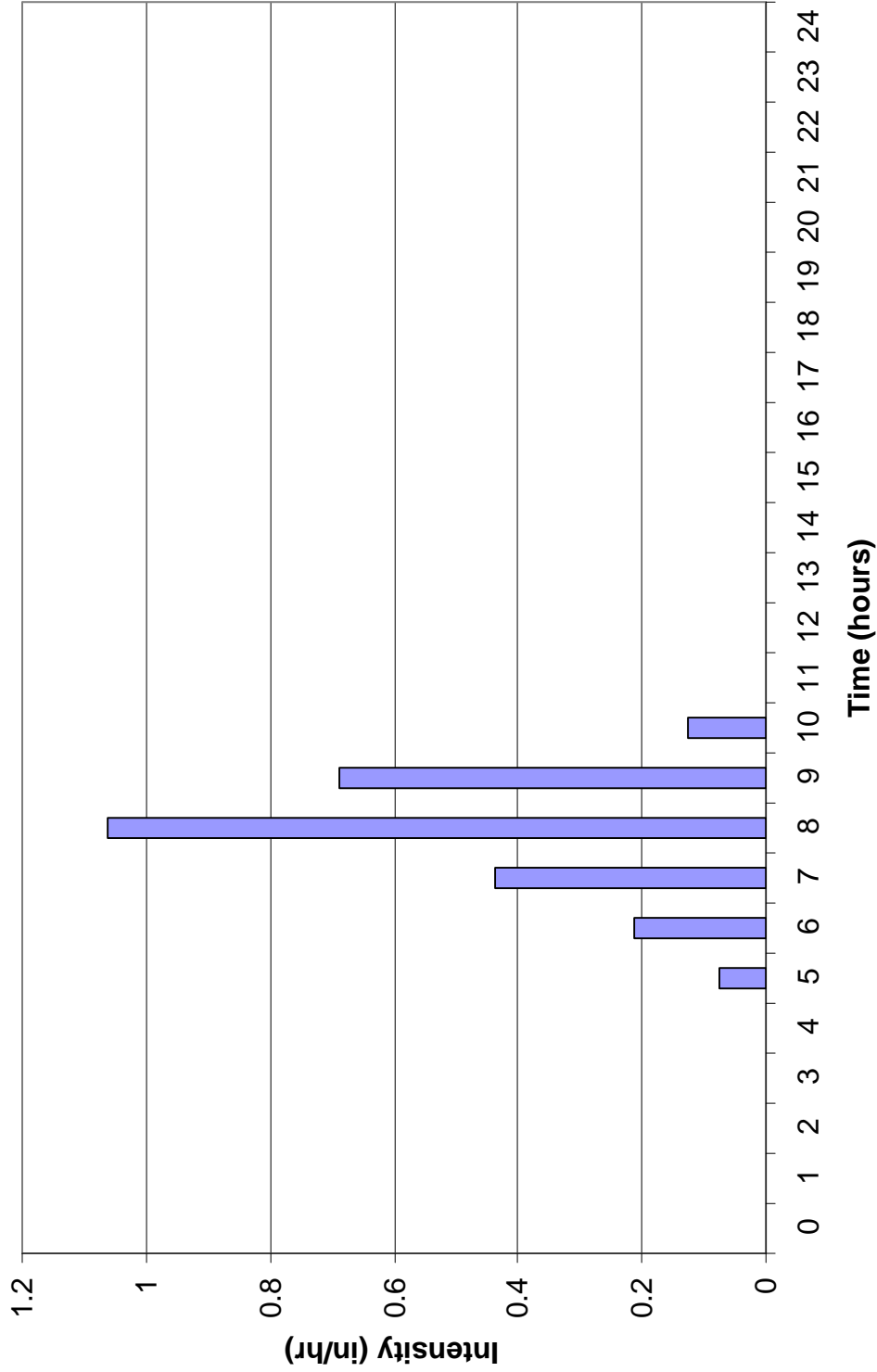
Sycamore Creek LIDAR (wo Mining & wo Logging)			
Outlet Node	Event	25 yr	100 yr
1C	1211	4378	6078
2C	198	901	1255
3C	840	3374	4737
4C	333	1513	2109

9 fps

Watershed Delineation and Basin / Outlet / Routing Naming



July 8, 2001 Storm Event in Sycamore Creek



July 8, 2001 Storm Event for Sycamore Creek

