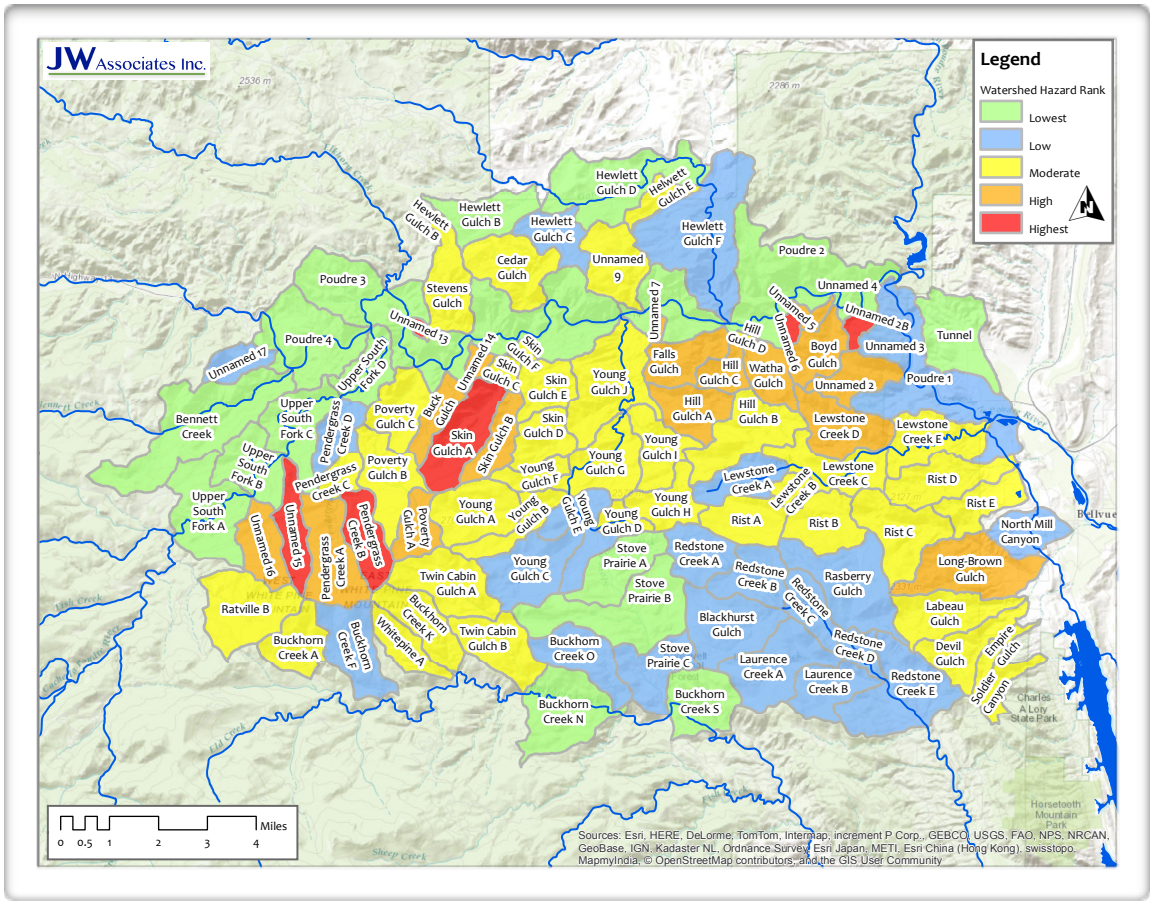
High Park Fire
Small Watershed Targeting

for post-fire watershed protection and restoration



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High Park Fire
Small Watershed Prioritization

Small Watershed Targeting for Watershed Protection Measures

INTRODUCTION

The High Park Fire burned a large area west of Fort Collins, Colorado that is a major water supply source area for the Cities of Greeley and Fort Collins. It started on June 9, 2012 and was contained on July 1, 2012. It burned 87,200 acres on multiple land jurisdictions (Figure 1). It was the largest and most destructive fire in the history of Larimer County, destroying 259 homes and cabins and disrupting the lives of hundreds of residents. The High Park Burned Area Emergency Response (BAER) Report (USDA Forest Service et al. 2012) documented 5,714 acres of high severity, 35,399 acres of moderate burn severity and 32,302 acres of low burn severity.

The Cache La Poudre Wildfire/Watershed Assessment (JW Associates 2010) provided support and background for the analysis in this document. That watershed assessment identified and prioritized sixth-level watersheds based upon their hazards of generating flooding, debris flows and increased sediment yields following wildfires that could have impacts on water supplies. It followed a procedure prescribed by the Front Range Watershed Protection Data Refinement Work Group (2009). The High Park Fire Burned Area Emergency Response (BAER) Report (USDA Forest Service et al. 2012) also provided substantial technical analyses used in this document. There are some additional analyses that are referenced in the descriptions of the technical components, but the basic prioritization approach is similar to that used in the Cache La Poudre Wildfire/Watershed Assessment (JW Associates 2010) and is presented below.

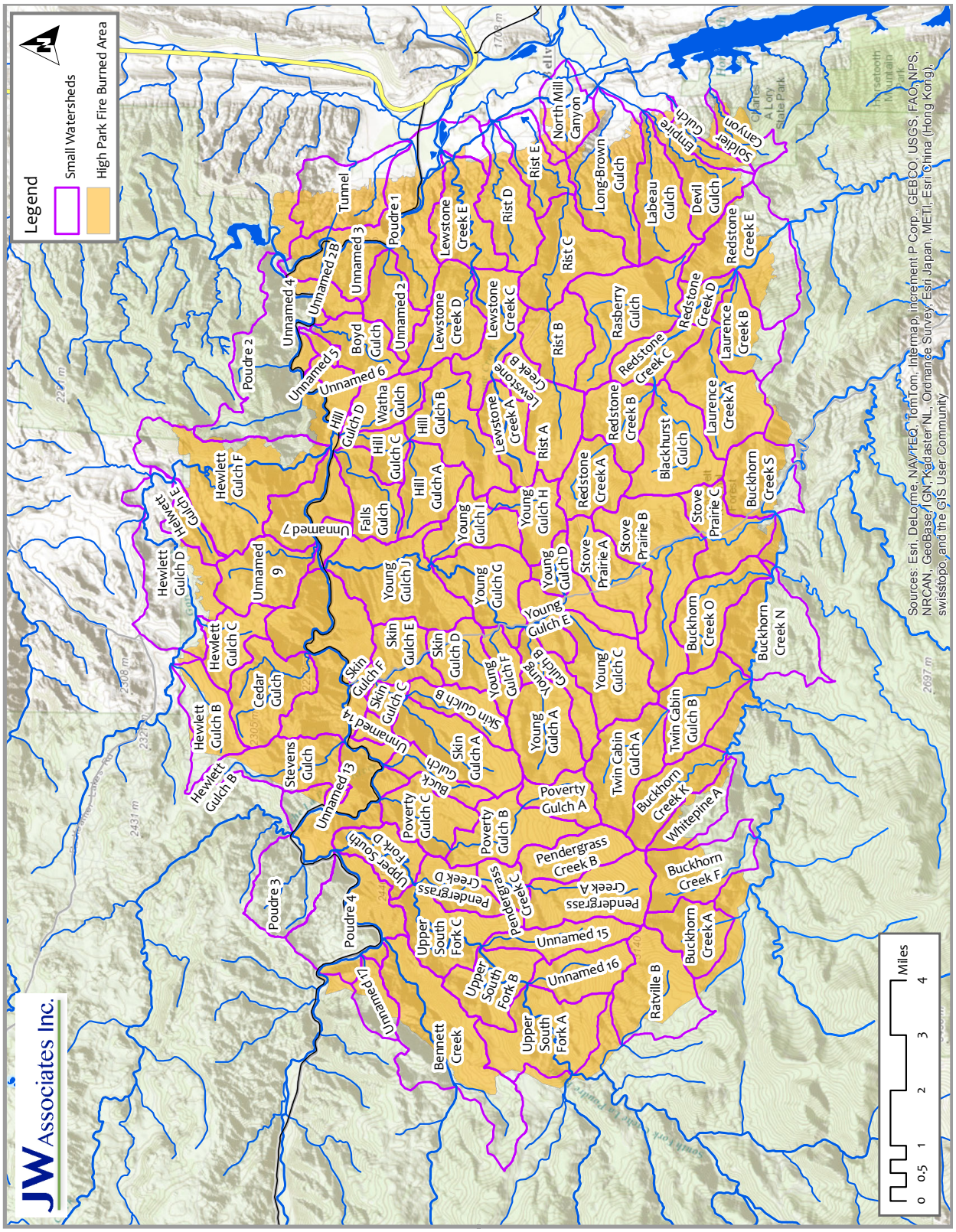

Figure 1. High Park Fire Burned Area and Small Watersheds

Small watersheds were delineated with the goal of identifying hazards in specific small watersheds that would be targets of post-fire, watershed protection actions. A total of 99 small watersheds were delineated within the High Park Fire Burned Area (Figure 1). These small watersheds were ranked based the following hazard components used;

1. Stream Gradient
2. Ruggedness
3. Burn Severity
4. Peakflow Increase
5. Distance to Water Supply

The results for each component are categorized into five categories that are used in the analysis. The categorization is prescribed by the Colorado Watershed Protection Data Refinement Work Group (2009). The categories are used in this analysis for comparing small watersheds to each other within the High Park Fire Burn Area.

The calculation of ranking for each small watershed was completed as follows:

1. Use the hazard based on the percentage of each small watershed.
2. Scale the results so that they fall within five categories with a reasonable distribution.
3. Round the scaled result to the nearest whole number (retain the number for Composite Hazard Ranking).
4. Create a map of the results using the following scheme:

    Category 1 – Lowest
    Category 2 – Low
    Category 3 – Moderate
    Category 4 – High
    Category 5 – Highest

The results of the hazard ranking by component are displayed on a map for each component.

Component 1 - Stream Gradient

The gradient of steam channels is one key variable in determining how much sediment that stream can transport. Higher gradient streams have higher sediment transport capacity. This analysis uses stream gradient as a simple indicator of sediment transport in a watershed. It is used to compare streams only not to estimate sediment transport capacity. Watersheds were ranked based on the stream gradient of the main channel in each watershed. Stream gradients measured above 20 percent were given 20 percent as a maximum value to reduce skewing the categorization.

The categorized stream gradient by small watershed are presented in Appendix A displayed on Figure 2. The highest ranked stream gradients are in the following small watersheds: Buck Gulch, Poverty Gulch A, Skin Gulch B, Unnamed 3, Unnamed 4, Unnamed 5, Unnamed 6, Unnamed 7, Unnamed 10A, Unnamed 13, Unnamed 14, and Unnamed 16.

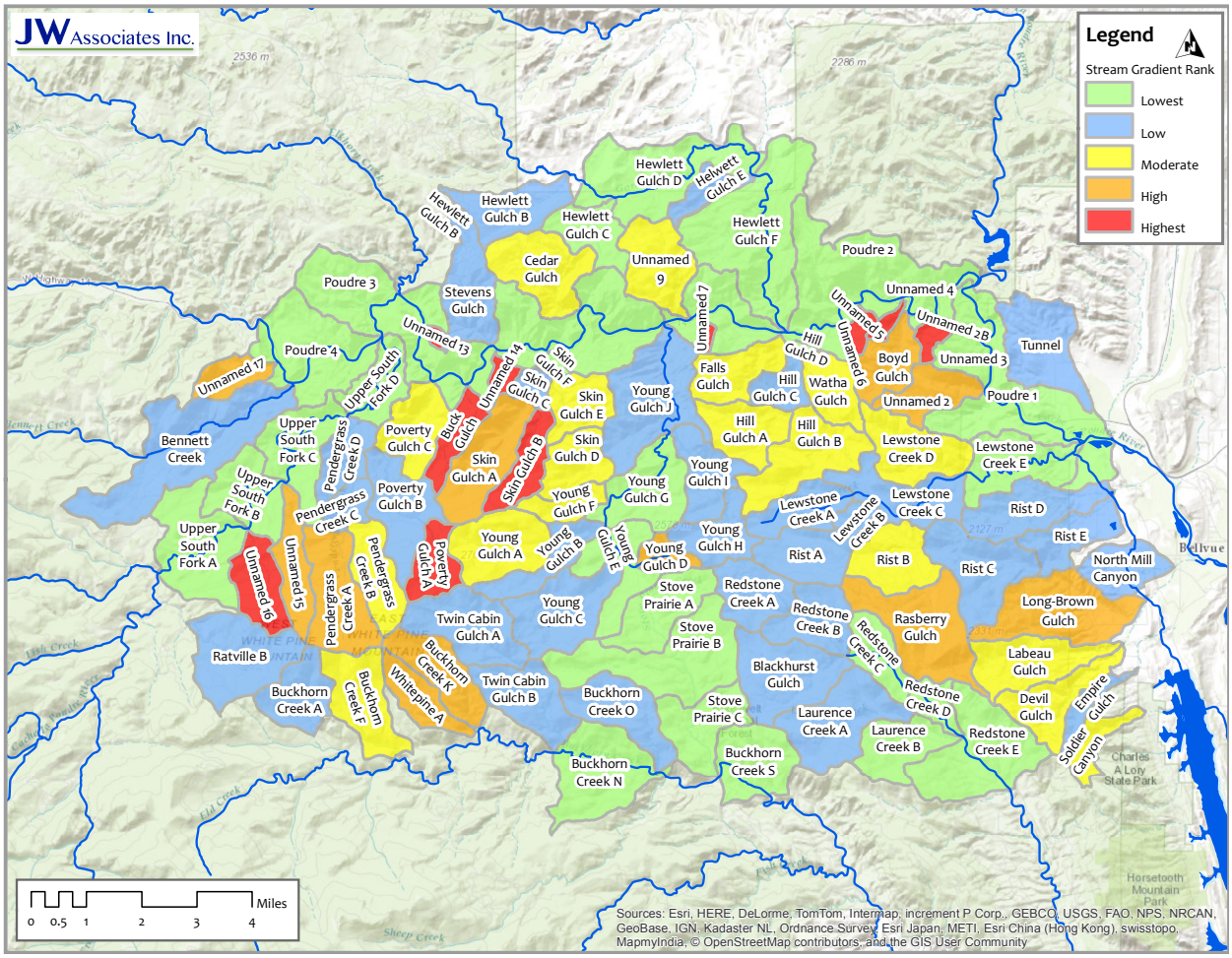

Figure 2. High Park Fire Small Watershed Stream Gradient Ranking

Component 2 - Ruggedness

Watershed steepness or ruggedness is an indicator of the relative sensitivity to debris flows following wildfires (Cannon and Reneau 2000). The more rugged the watershed, the higher its sensitivity to generating debris flows following wildfire (Melton 1957). The Melton ruggedness factor is basically a slope index.

Melton (1957) defines ruggedness, R, as;

$$R = H_b A_b^{-0.5}$$

Where A_b is basin area and H_b is basin height measured from the point of highest elevation along the watershed divide to the outlet.

The categorized ruggedness by small watershed are displayed in Appendix B and on Figure 3. The highest ranked ruggedness hazards are in the following small watersheds: Buck Gulch, Skin Gulch B, Skin Gulch C, Unnamed 3, Unnamed 4, Unnamed 5, Unnamed 6, Unnamed 7, Unnamed 10A, Unnamed 13, Unnamed 14, Unnamed 15, and Whitepine A.

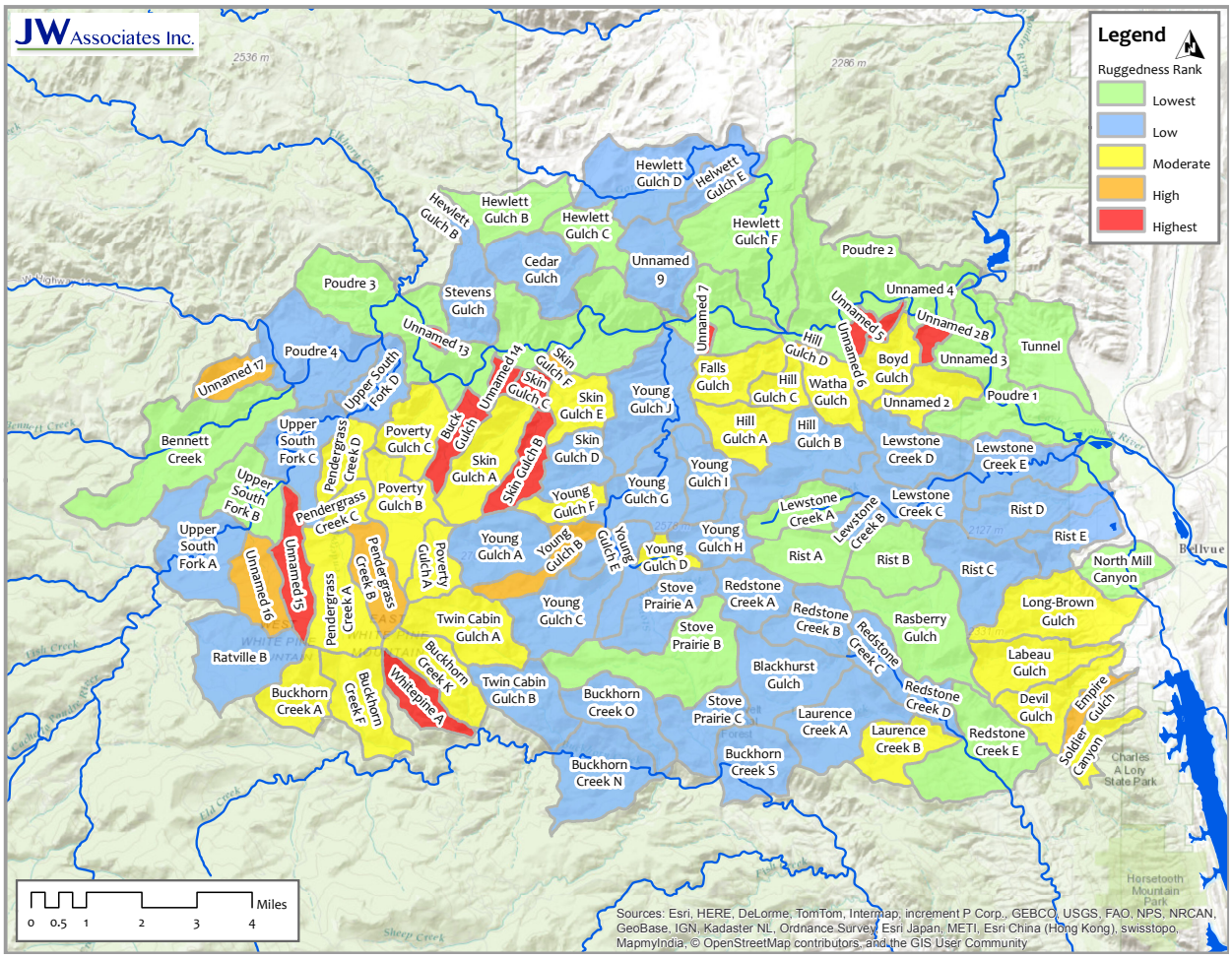

Figure 3. High Park Fire Small Watershed Ruggedness Ranking

Component 3 - Burn Severity

High-severity fires can cause changes in watershed components that can dramatically change runoff and erosion processes in watersheds. Water and sediment yields may increase as more of the forest floor is consumed (Wells et al. 1979, Robichaud and Waldrop 1994, Soto et al. 1994, Neary et al. 2005, and Moody et al. 2008) and soil properties are altered by soil heating (Hungerford et al. 1991).

The burn severity mapping used was the classified BARC image dated 7-20-12 that the High Park Fire BAER team adopted. The categorized burn severity by small watershed are displayed in Appendix C and on Figure 4. The highest ranked burn severity is found in the following small watersheds: Lewstone Creek D, Pendergrass Creek B, Unnamed 3, and Watha Gulch.

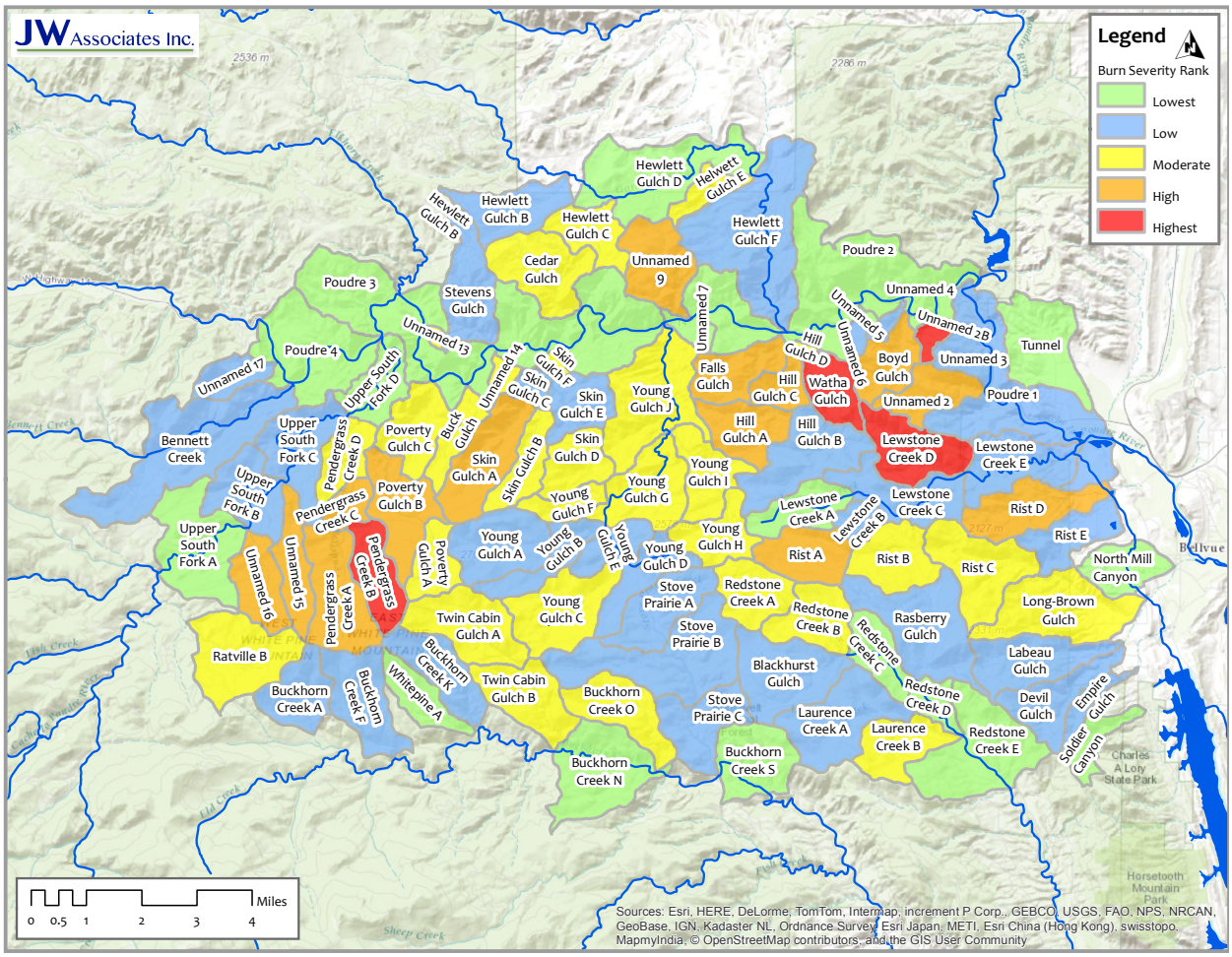

Figure 4. High Park Fire Small Watershed Burn Severity Ranking

Component 4 - Peakflow Increases

As discussed above in the burn severity section, watershed function changes following high severity fires. Peak flows in high severity burned watersheds can increase dramatically. These increased peak flows can transport large quantities of sediment and debris, as well as present a hazard for road stream crossings. The peak flow analysis completed by the NRCS used in the High Park Fire BAER report was used in this analysis.

The categorized peak flow increases by small watershed are displayed in Appendix D and on Figure 5. The highest ranked peak flow increases are in the following small watersheds: Buckhorn Creek A, Pendergrass Creek A & B, Poverty Gulch A, Ratville B, Skin Gulch A, Stevens Gulch, Twin Cabin Gulch A & B, Unnamed 13, Unnamed 15, and Unnamed 16.

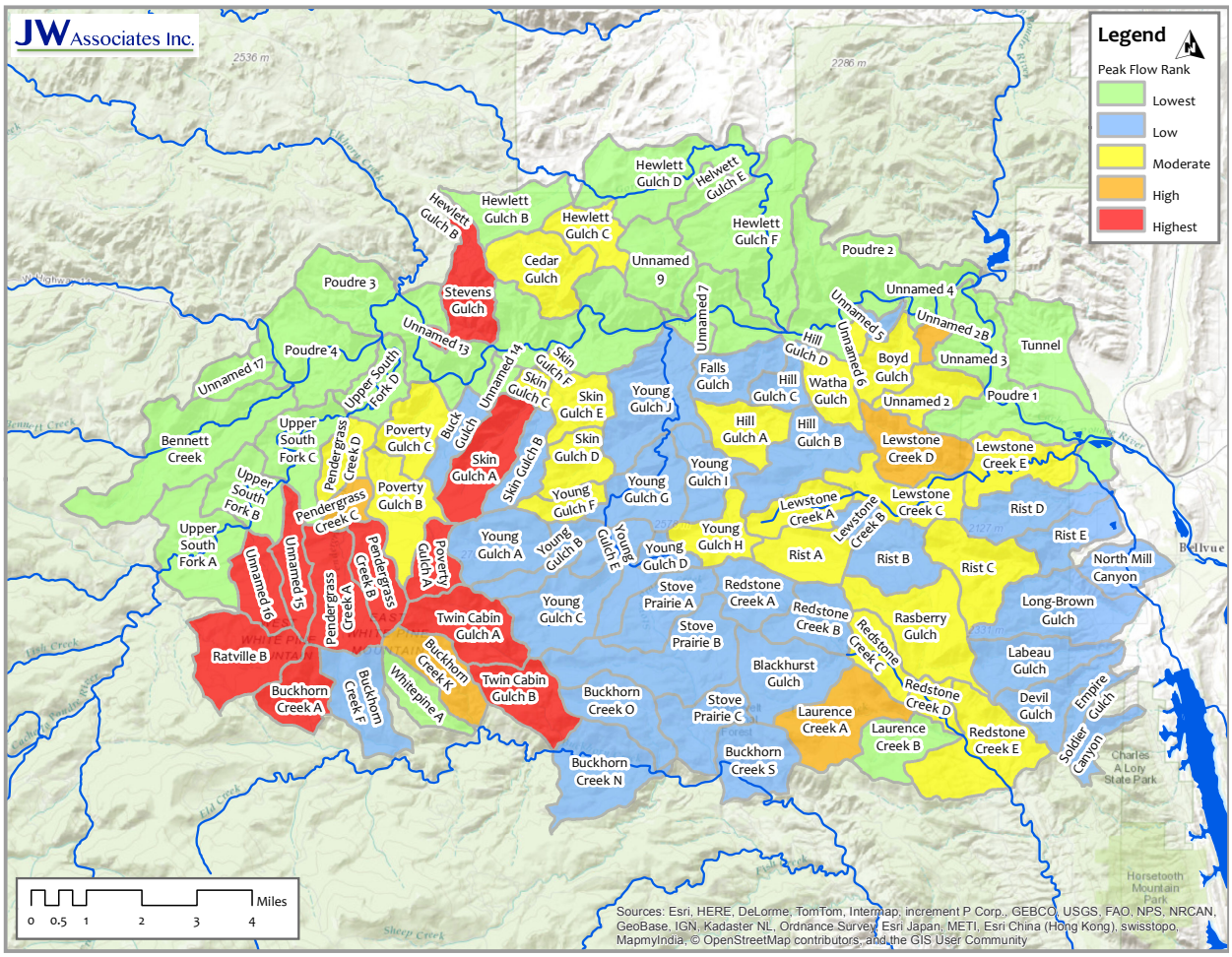

Figure 5. High Park Fire Small Watershed Peak Flow Increase Ranking

Component 5 - Distance to Water Supply

The distance to critical water supply components (diversions, reservoirs, etc.) is an important component. The closer a hazard is to those water supply components the more likely it is that the hazard could impact the function of the water supply system. The distance was measured as stream distance from the small watershed mouth to various water supply components.

The categorized distance to water supply by small watershed are displayed in Appendix E and on Figure 6. The highest ranked distance to water supply small watersheds are those close to the water supply sources.

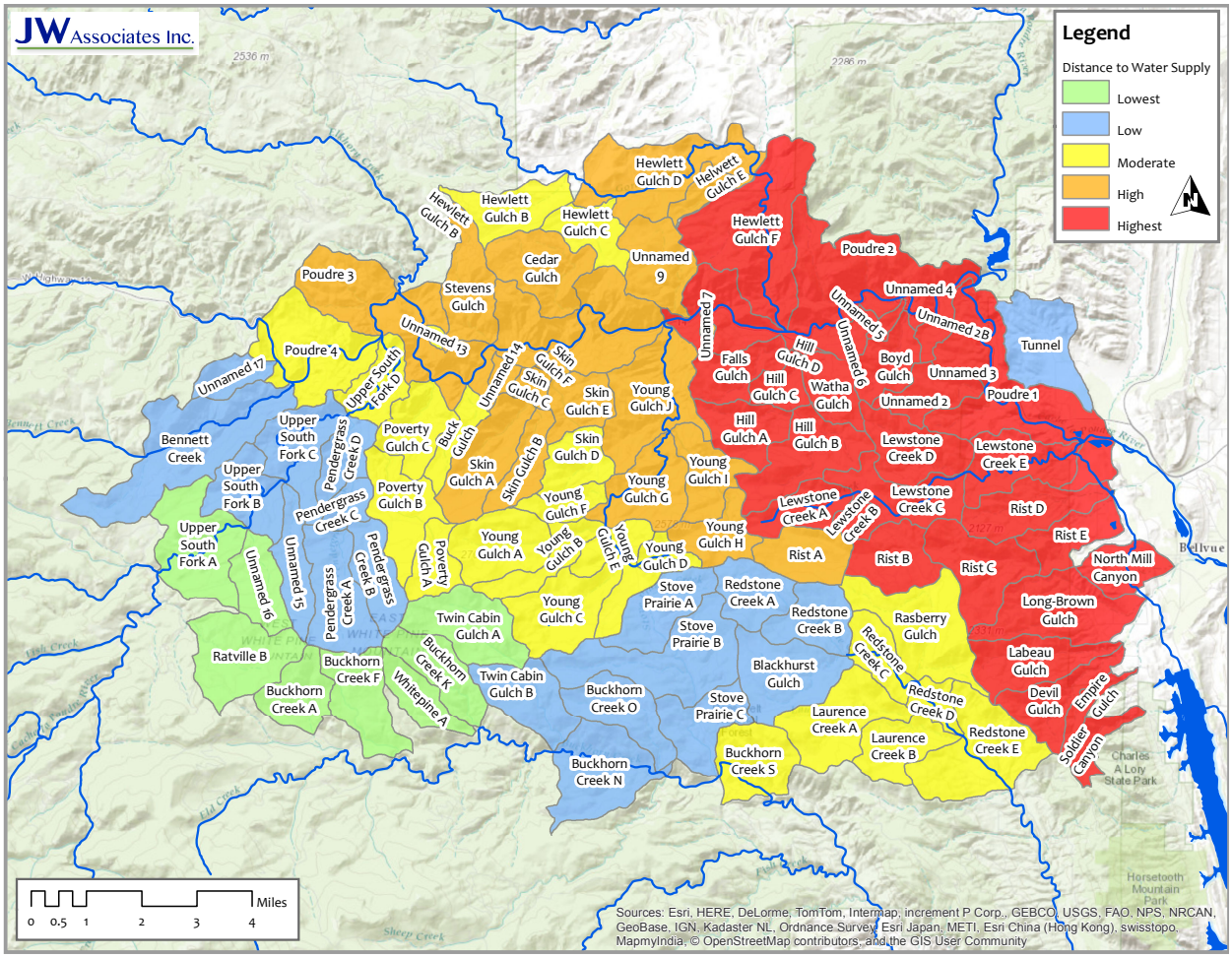

Figure 6. High Park Fire Small Watershed Distance to Water Supply Ranking

Composite Hazard Rank

The Composite Hazard Ranking combines the five components (Stream Gradient, Debris Flow Hazard, Burn Severity, Peakflow Increases and Distance to Water Supply) by numerically combining their rankings for each small watershed and then re-categorizing the results.

The categorized composite hazard rankings by small watershed are displayed in Appendix F and on Figure 6. The highest ranked composite hazards are in the following small watersheds: Pendergrass Creek B, Skin Gulch A, Unnamed 3, Unnamed 6, Unnamed 13, and Unnamed 15.

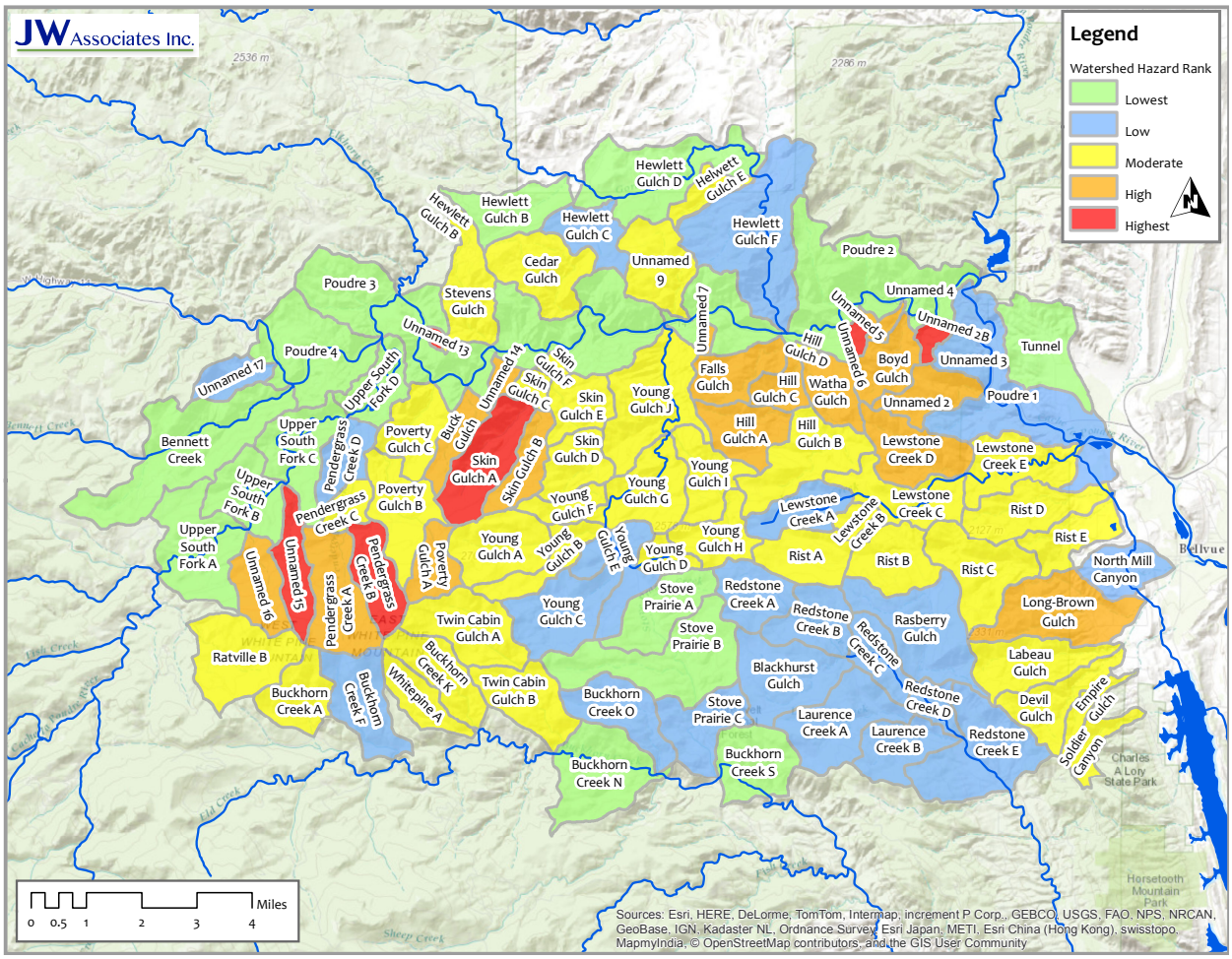

Figure 6. High Park Fire Small Watershed Composite Hazard Ranking

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APPENDIX A - SMALL WATERSHED STREAM GRADIENT

High Park Fire Watersheds - Stream Gradients

Watershed	Length (ft)	Lower elevation	Upper elevation	Gradient (%)	Rank
Bennett Creek	16,826	6700	7640	5.6%	1.8
Blackhurst Gulch	15,816	6720	7750	6.5%	2.0
Boyd Gulch	10,559	5460	6980	14.4%	4.0
Buck Gulch	10,032	6240	8200	19.5%	5.4
Buckhorn Creek A	5,172	8280	8680	7.7%	2.3
Buckhorn Creek F	12,247	7880	9200	10.8%	3.1
Buckhorn Creek K	11,655	7310	8950	14.1%	4.0
Buckhorn Creek N	13,453	6560	7000	3.3%	1.2
Buckhorn Creek O	14,642	6580	7750	8.0%	2.4
Buckhorn Creek S	8,023	6300	6410	1.4%	0.7
Cedar Gulch	13,170	5960	7200	9.4%	2.8
Devil Gulch	13,887	5400	6760	9.8%	2.9
Empire Gulch	14,070	5500	6400	6.4%	2.0
Falls Gulch	12,728	5680	7160	11.6%	3.3
Hewlett Gulch B	10,567	6820	7370	5.2%	1.7
Hewlett Gulch C	6,027	6720	6950	3.8%	1.3
Hewlett Gulch D	24,980	6280	6790	2.0%	0.9
Hewlett Gulch E	8,400	6280	6870	7.0%	2.1
Hewlett Gulch F	20,842	5660	6280	3.0%	1.1
Hill Gulch A	8,953	6080	6980	10.1%	2.9
Hill Gulch B	12,289	6080	7180	9.0%	2.6
Hill Gulch C	6,810	5750	6080	4.8%	1.6
Hill Gulch D	2,165	5670	5750	3.7%	1.3
Labeau Gulch	16,522	5400	6920	9.2%	2.7
Laurence Creek A	11,910	6360	7200	7.1%	2.2
Laurence Creek B	5,929	6100	6360	4.4%	1.5
Lewstone Creek A	10,046	6819	7360	5.4%	1.7
Lewstone Creek B	3,388	6750	7000	7.4%	2.2
Lewstone Creek C	14,257	5850	6819	6.8%	2.1
Lewstone Creek D	12,459	5850	6960	8.9%	2.6
Lewstone Creek E	17,612	5200	5850	3.7%	1.3
Long-Brown Gulch	10,374	5240	6800	15.0%	4.2
North Mill Canyon	8,881	5120	5720	6.8%	2.1
Pendergrass Creek A	10,540	7840	9500	15.7%	4.4
Pendergrass Creek B	6,594	7820	8600	11.8%	3.4
Pendergrass Creek C	5,554	7500	7840	6.1%	1.9
Pendergrass Creek D	8,323	6960	7500	6.5%	2.0
Poudre 1	26,719	5180	5360	0.7%	0.5
Poudre 2	42,977	5360	5800	1.0%	0.6
Poudre 3	50,469	5800	6520	1.4%	0.7
Poudre 4	12,348	6520	6700	1.5%	0.7

High Park Fire Watersheds - Stream Gradients

Watershed	Length (ft)	Lower elevation	Upper elevation	Gradient (%)	Rank
Poverty Gulch A	6,238	8140	9700	20.0%	5.5
Poverty Gulch B	10,342	7320	8140	7.9%	2.4
Poverty Gulch C	9,151	6360	7320	10.5%	3.0
Rasberry Gulch	6,563	6320	7300	14.9%	4.2
Ratville B	9,397	8190	8960	8.2%	2.4
Redstone Creek A	7,143	7100	7600	7.0%	2.1
Redstone Creek B	7,424	6750	7160	5.5%	1.8
Redstone Creek C	10,144	6320	6750	4.2%	1.4
Redstone Creek D	7,796	6100	6320	2.8%	1.1
Redstone Creek E	7,594	5950	6100	2.0%	0.8
Rist A	6,552	6900	7400	7.6%	2.3
Rist B	7,674	6420	7100	8.9%	2.6
Rist C	13,116	5750	6410	5.0%	1.6
Rist D	16,139	5420	6650	7.6%	2.3
Rist E	9,992	5240	5760	5.2%	1.7
Skin Gulch A	12,597	6440	8180	13.8%	3.9
Skin Gulch B	10,656	6440	8180	16.3%	4.6
Skin Gulch C	3,637	6200	6440	6.6%	2.0
Skin Gulch D	9,089	6840	7720	9.7%	2.8
Skin Gulch E	6,194	6200	6840	10.3%	3.0
Skin Gulch F	2,685	6080	6200	4.5%	1.5
Soldier Canyon	12,152	5500	6760	10.4%	3.0
Stevens Gulch	14,581	6100	7320	8.4%	2.5
Stove Prairie A	6,322	7040	7325	4.5%	1.5
Stove Prairie B	8,493	6750	7040	3.4%	1.2
Stove Prairie C	8,944	6440	6780	3.8%	1.3
Tunnel	10,197	5260	5800	5.3%	1.7
Twin Cabin Gulch A	7,276	7700	8240	7.4%	2.2
Twin Cabin Gulch B	11,508	6920	7700	6.8%	2.1
Unnamed 13	1,541	6410	7000	20.0%	5.5
Unnamed 14	3,643	6080	7200	20.0%	5.5
Unnamed 15	10,687	7500	8840	12.5%	3.6
Unnamed 16	9,358	7660	9200	16.5%	4.6
Unnamed 17	8,000	6750	7950	15.0%	4.2
Unnamed 2	11,634	5280	7020	15.0%	4.2
Unnamed 3	2,753	5540	6120	20.0%	5.5
Unnamed 4	3,954	5480	6120	16.2%	4.5
Unnamed 5	1,958	5550	6190	20.0%	5.5
Unnamed 6	1,460	5580	6040	20.0%	5.5
Unnamed 7	3,158	5800	7000	20.0%	5.5
Unnamed 9	14,093	5780	7040	8.9%	2.6

High Park Fire Watersheds - Stream Gradients

Watershed	Length (ft)	Lower elevation	Upper elevation	Gradient (%)	Rank
Unnamed 10A	3,538	5960	7600	20.0%	5.5
Upper South Fork A	12,987	7660	7880	1.7%	0.8
Upper South Fork B	10,723	7500	7660	1.5%	0.7
Upper South Fork C	19,383	6960	7500	2.8%	1.0
Upper South Fork D	14,194	6575	6960	2.7%	1.0
Watha Gulch	9,015	5750	6760	11.2%	3.2
Whitepine A	13,190	7320	9350	15.4%	4.3
Young Gulch A	7,403	7540	8260	9.7%	2.8
Young Gulch B	5,793	7120	7540	7.3%	2.2
Young Gulch C	9,690	7190	7680	5.1%	1.6
Young Gulch D	5,002	7240	7920	13.6%	3.8
Young Gulch E	9,000	7120	7400	3.1%	1.1
Young Gulch F	6,913	7000	7720	10.4%	3.0
Young Gulch G	14,495	6580	7120	3.7%	1.3
Young Gulch H	4,803	7140	7420	5.8%	1.8
Young Gulch I	8,620	6580	7140	6.5%	2.0
Young Gulch J	14,253	5820	6580	5.3%	1.7

Gradient Categories

Min	0.00674	
Max	0.20000	
Range	0.19326	
Step	0.03865	
Category	From	To
1	0.0067	0.0454
2	0.0454	0.0840
3	0.0840	0.1227
4	0.1227	0.1613
5	0.1613	0.2000

Ranking

Category	
1 - lowest	1
2	2
3	3
4	4
5 - highest	5

APPENDIX B - SMALL WATERSHED RUGGEDNESS

High Park Fire Watersheds - Ruggedness

Watershed	Area (acres)	Lower elevation	Upper elevation	Elevation difference	Rugged-ness	Rank
Bennett Creek	2,711	6700	8527	1827	0.17	1.2
Blackhurst Gulch	1,454	6720	8341	1621	0.20	1.7
Boyd Gulch	779	5460	7334	1874	0.32	3.2
Buck Gulch	504	6240	8385	2145	0.46	5.0
Buckhorn Creek A	857	8280	10305	2025	0.33	3.3
Buckhorn Creek F	1,181	7880	10248	2368	0.33	3.3
Buckhorn Creek K	950	7310	9166	1856	0.29	2.8
Buckhorn Creek N	1,619	6560	8280	1720	0.20	1.7
Buckhorn Creek O	1,057	6580	8190	1610	0.24	2.1
Buckhorn Creek S	1,096	6300	7949	1649	0.24	2.1
Cedar Gulch	1,282	5960	7596	1636	0.22	1.9
Devil Gulch	949	5400	7527	2127	0.33	3.3
Empire Gulch	310	5500	6980	1480	0.40	4.2
Falls Gulch	853	5680	7623	1943	0.32	3.2
Hewlett Gulch B	956	6820	7690	870	0.13	0.8
Hewlett Gulch C	723	6720	7432	712	0.13	0.7
Hewlett Gulch D	2,059	6280	8130	1850	0.20	1.6
Hewlett Gulch E	399	6280	7240	960	0.23	2.0
Hewlett Gulch F	2,795	5660	7681	2021	0.18	1.4
Hill Gulch A	901	6080	7815	1735	0.28	2.6
Hill Gulch B	1,411	6080	7802	1722	0.22	1.9
Hill Gulch C	457	5750	7160	1410	0.32	3.1
Hill Gulch D	52	5670	6200	530	0.35	3.6
Labeau Gulch	1,180	5400	7660	2260	0.32	3.1
Laurence Creek A	1,470	6360	7919	1559	0.19	1.6
Laurence Creek B	904	6100	7919	1819	0.29	2.8
Lewstone Creek A	767	6819	7732	913	0.16	1.1
Lewstone Creek B	227	6750	7440	690	0.22	1.9
Lewstone Creek C	1,157	5850	7390	1540	0.22	1.8
Lewstone Creek D	1,148	5850	7341	1491	0.21	1.8
Lewstone Creek E	1,160	5200	6800	1600	0.23	2.0
Long-Brown Gulch	1,689	5240	7660	2420	0.28	2.7
North Mill Canyon	724	5120	6070	950	0.17	1.2
Pendergrass Creek A	1,381	7840	10305	2465	0.32	3.1
Pendergrass Creek B	869	7820	10120	2300	0.37	3.9
Pendergrass Creek C	379	7500	8680	1180	0.29	2.8
Pendergrass Creek D	655	6960	8435	1475	0.28	2.6
Poudre 1	3,017	5180	6800	1620	0.14	0.9
Poudre 2	4,304	5360	7309	1949	0.14	0.9
Poudre 3	5,174	5800	7842	2042	0.14	0.8
Poudre 4	1,858	6520	8280	1760	0.20	1.6

High Park Fire Watersheds - Ruggedness

Watershed	Area (acres)	Lower elevation	Upper elevation	Elevation difference	Rugged-ness	Rank
Poverty Gulch A	621	8140	9685	1545	0.30	2.9
Poverty Gulch B	1,160	7320	9610	2290	0.32	3.2
Poverty Gulch C	975	6360	8320	1960	0.30	2.9
Rasberry Gulch	1,785	6320	7660	1340	0.15	1.0
Ratville B	1,522	8190	10305	2115	0.26	2.4
Redstone Creek A	866	7100	8340	1240	0.20	1.7
Redstone Creek B	911	6750	8031	1281	0.20	1.7
Redstone Creek C	699	6320	7420	1100	0.20	1.6
Redstone Creek D	388	6100	7080	980	0.24	2.1
Redstone Creek E	1,900	5950	7555	1605	0.18	1.3
Rist A	921	6900	8031	1131	0.18	1.4
Rist B	996	6420	7480	1060	0.16	1.1
Rist C	1,370	5750	7660	1910	0.25	2.2
Rist D	1,133	5420	6975	1555	0.22	1.9
Rist E	801	5240	6700	1460	0.25	2.2
Skin Gulch A	1,293	6440	8806	2366	0.32	3.1
Skin Gulch B	684	6440	8806	2366	0.43	4.6
Skin Gulch C	248	6200	7600	1400	0.43	4.5
Skin Gulch D	760	6840	8120	1280	0.22	1.9
Skin Gulch E	736	6200	7800	1600	0.28	2.7
Skin Gulch F	111	6080	6900	820	0.37	3.9
Soldier Canyon	473	5500	7015	1515	0.33	3.4
Stevens Gulch	1,110	6100	7667	1567	0.23	2.0
Stove Prairie A	1,047	7040	8341	1301	0.19	1.5
Stove Prairie B	2,135	6750	8250	1500	0.16	1.1
Stove Prairie C	1,040	6440	7864	1424	0.21	1.8
Tunnel	1,345	5260	6120	860	0.11	0.5
Twin Cabin Gulch A	1,332	7700	10040	2340	0.31	3.0
Twin Cabin Gulch B	1,097	6920	8595	1675	0.24	2.2
Unnamed 13	70	6410	7410	1000	0.50	5.5
Unnamed 14	177	6080	7748	1668	0.50	5.5
Unnamed 15	774	7500	10220	2720	0.47	5.1
Unnamed 16	833	7660	9970	2310	0.38	4.0
Unnamed 17	499	6750	8431	1681	0.36	3.7
Unnamed 2	747	5280	7248	1968	0.34	3.5
Unnamed 3	178	5540	6888	1348	0.48	5.3
Unnamed 4	130	5480	6490	1010	0.43	4.5
Unnamed 5	57	5550	6360	810	0.50	5.5
Unnamed 6	135	5580	7280	1700	0.50	5.5
Unnamed 7	84	5800	7450	1650	0.50	5.5
Unnamed 9	1,107	5780	7501	1721	0.25	2.2

High Park Fire Watersheds - Ruggedness

Watershed	Area (acres)	Lower elevation	Upper elevation	Elevation difference	Rugged-ness	Rank
Unnamed 10A	100	5960	7890	1930	0.50	5.5
Upper South Fork A	1,670	7660	9370	1710	0.20	1.6
Upper South Fork B	1,018	7500	8480	980	0.15	0.9
Upper South Fork C	1,218	6960	8400	1440	0.20	1.6
Upper South Fork D	773	6575	7980	1405	0.24	2.2
Watha Gulch	717	5750	7290	1540	0.28	2.6
Whitepine A	650	7320	10248	2928	0.50	5.5
Young Gulch A	1,240	7540	9166	1626	0.22	1.9
Young Gulch B	686	7120	9166	2046	0.37	3.9
Young Gulch C	1,368	7190	8666	1476	0.19	1.5
Young Gulch D	344	7240	8471	1231	0.32	3.2
Young Gulch E	981	7120	8471	1351	0.21	1.7
Young Gulch F	431	7000	8269	1269	0.29	2.8
Young Gulch G	1,225	6580	8471	1891	0.26	2.4
Young Gulch H	779	7140	8430	1290	0.22	1.9
Young Gulch I	876	6580	8220	1640	0.27	2.5
Young Gulch J	1,829	5820	7980	2160	0.24	2.2

Ruggedness Categories

Min	0.11236	
Max	0.50000	
Range	0.38764	
Step	0.07753	
Category	From	To
1	0.1124	0.1899
2	0.1899	0.2674
3	0.2674	0.3449
4	0.3449	0.4225
5	0.4225	0.5000

Ranking

Category	
1 - lowest	1
2	2
3	3
4	4
5 - highest	5

APPENDIX C - SMALL WATERSHED BURN SEVERITY

High Park Fire Watersheds - Burn Severity

Hewlett	Area (acres)	% Low Burn Severity	% Moderate Burn Severity	% High Burn Severity	Rank
Bennett Creek	2,711	16.0%	32.2%	3.3%	1.7
Blackhurst Gulch	1,454	13.0%	29.6%	9.2%	2.1
Boyd Gulch	779	17.5%	48.2%	24.7%	3.9
Buck Gulch	504	25.1%	56.9%	4.6%	2.7
Buckhorn Creek A	857	12.5%	44.5%	4.4%	2.3
Buckhorn Creek F	1,181	11.1%	36.7%	7.5%	2.2
Buckhorn Creek K	950	26.6%	44.3%	5.5%	2.3
Buckhorn Creek N	1,619	16.9%	4.2%	0.5%	0.5
Buckhorn Creek O	1,057	15.8%	30.0%	16.4%	2.6
Buckhorn Creek S	1,096	29.8%	16.1%	0.7%	0.9
Cedar Gulch	1,282	24.5%	65.5%	6.4%	3.2
Devil Gulch	949	33.5%	30.6%	6.8%	1.9
Empire Gulch	310	26.5%	21.9%	12.3%	2.0
Falls Gulch	853	5.9%	71.0%	19.8%	4.4
Hewlett Gulch B	956	19.3%	23.4%	5.8%	1.6
Hewlett Gulch C	723	26.0%	57.4%	10.4%	3.2
Hewlett Gulch D	2,059	7.0%	12.8%	2.7%	1.0
Hewlett Gulch E	399	17.4%	62.7%	9.9%	3.3
Hewlett Gulch F	2,795	22.7%	44.1%	4.5%	2.3
Hill Gulch A	901	15.5%	43.2%	25.2%	3.8
Hill Gulch B	1,411	23.6%	30.0%	12.3%	2.3
Hill Gulch C	457	2.9%	81.4%	15.5%	4.4
Hill Gulch D	52	19.8%	56.0%	4.3%	2.7
Labeau Gulch	1,180	28.0%	29.4%	9.3%	2.1
Laurence Creek A	1,470	23.6%	19.9%	16.9%	2.3
Laurence Creek B	904	12.3%	23.5%	18.3%	2.5
Lewstone Creek A	767	29.6%	16.9%	6.0%	1.4
Lewstone Creek B	227	28.0%	19.4%	8.2%	1.6
Lewstone Creek C	1,157	29.5%	30.2%	13.0%	2.4
Lewstone Creek D	1,148	6.0%	59.1%	31.0%	4.8
Lewstone Creek E	1,160	30.1%	34.9%	10.7%	2.4
Long-Brown Gulch	1,689	14.7%	40.3%	11.6%	2.6
North Mill Canyon	724	21.4%	22.5%	0.0%	1.1
Pendergrass Creek A	1,381	8.9%	49.1%	31.6%	4.4
Pendergrass Creek B	869	3.8%	44.7%	48.1%	5.5
Pendergrass Creek C	379	11.4%	77.6%	8.0%	3.8
Pendergrass Creek D	655	34.3%	57.3%	2.1%	2.6
Poudre 1	3,017	26.6%	28.9%	4.2%	1.7
Poudre 2	4,304	14.9%	12.2%	1.7%	0.9
Poudre 3	5,174	29.4%	23.1%	1.2%	1.2
Poudre 4	1,858	9.9%	12.3%	0.5%	0.8

High Park Fire Watersheds - Burn Severity

Hewlett	Area (acres)	% Low Burn Severity	% Moderate Burn Severity	% High Burn Severity	Rank
Poverty Gulch A	621	13.7%	32.3%	18.4%	2.9
Poverty Gulch B	1,160	15.1%	53.9%	23.3%	4.0
Poverty Gulch C	975	29.7%	55.6%	5.4%	2.8
Rasberry Gulch	1,785	20.2%	23.2%	6.2%	1.6
Ratville B	1,522	0.7%	9.1%	2.4%	3.4
Redstone Creek A	866	16.9%	51.1%	11.8%	3.1
Redstone Creek B	911	13.1%	45.4%	11.6%	2.8
Redstone Creek C	699	20.0%	21.7%	0.5%	1.1
Redstone Creek D	388	24.9%	7.4%	1.4%	0.7
Redstone Creek E	1,900	21.1%	10.1%	1.7%	0.8
Rist A	921	18.5%	46.0%	23.2%	3.7
Rist B	996	16.2%	34.4%	18.6%	2.9
Rist C	1,370	20.6%	38.3%	15.7%	2.9
Rist D	1,133	18.6%	42.2%	24.5%	3.7
Rist E	801	21.3%	34.6%	6.3%	2.0
Skin Gulch A	1,293	16.3%	61.8%	19.2%	4.0
Skin Gulch B	684	23.9%	48.2%	12.5%	3.0
Skin Gulch C	248	40.6%	49.8%	1.4%	2.2
Skin Gulch D	760	19.1%	39.6%	16.7%	3.0
Skin Gulch E	736	38.8%	38.2%	3.0%	1.9
Skin Gulch F	111	32.8%	61.0%	3.1%	2.8
Soldier Canyon	473	28.2%	22.4%	0.0%	1.1
Stevens Gulch	1,110	37.6%	44.6%	0.5%	2.0
Stove Prairie A	1,047	20.0%	26.2%	4.4%	1.6
Stove Prairie B	2,135	16.6%	33.5%	7.4%	2.1
Stove Prairie C	1,040	22.0%	31.2%	9.3%	2.1
Tunnel	1,345	34.3%	14.8%	0.0%	0.9
Twin Cabin Gulch A	1,332	11.5%	45.5%	16.7%	3.2
Twin Cabin Gulch B	1,097	24.0%	55.2%	11.2%	3.2
Unnamed 13	70	9.0%	83.5%	1.4%	3.5
Unnamed 14	177	18.3%	59.5%	7.6%	3.1
Unnamed 15	774	10.5%	45.4%	32.4%	4.4
Unnamed 16	833	9.9%	60.5%	14.0%	3.6
Unnamed 17	499	14.8%	29.8%	2.5%	1.6
Unnamed 2	747	22.0%	53.9%	17.6%	3.6
Unnamed 3	178	7.9%	47.6%	36.0%	4.7
Unnamed 4	130	37.7%	29.3%	2.1%	1.5
Unnamed 5	57	50.8%	6.0%	0.0%	0.5
Unnamed 6	135	23.5%	20.0%	18.6%	2.4
Unnamed 7	84	21.1%	30.6%	0.8%	1.5
Unnamed 9	1,107	14.9%	74.7%	9.9%	3.8

High Park Fire Watersheds - Burn Severity

Hewlett	Area (acres)	% Low Burn Severity	% Moderate Burn Severity	% High Burn Severity	Rank
Unnamed 10A	100	14.9%	55.3%	21.1%	3.9
Upper South Fork A	1,670	15.9%	28.5%	1.1%	1.4
Upper South Fork B	1,018	31.6%	41.0%	2.0%	2.0
Upper South Fork C	1,218	29.5%	46.3%	3.8%	2.3
Upper South Fork D	773	40.7%	27.5%	0.1%	1.3
Watha Gulch	717	0.5%	68.9%	29.9%	5.0
Whitepine A	650	13.0%	15.4%	0.0%	0.9
Young Gulch A	1,240	21.5%	39.7%	8.2%	2.4
Young Gulch B	686	20.9%	29.8%	11.6%	2.3
Young Gulch C	1,368	11.4%	36.9%	18.0%	3.0
Young Gulch D	344	23.1%	39.5%	1.8%	1.9
Young Gulch E	981	19.9%	27.6%	2.9%	1.5
Young Gulch F	431	12.4%	55.4%	14.7%	3.4
Young Gulch G	1,225	18.0%	45.2%	15.6%	3.1
Young Gulch H	779	19.1%	43.6%	12.1%	2.8
Young Gulch I	876	15.9%	50.1%	12.6%	3.1
Young Gulch J	1,829	26.6%	52.8%	9.6%	3.0

Burn Severity Categories

Min	0.05208	
Max	1.40940	
Range	1.35732	
Step	0.27146	
Category	From	To
1	0.0521	0.3235
2	0.3235	0.5950
3	0.5950	0.8665
4	0.8665	1.1379
5	1.1379	1.4094

Ranking

Category	
1 - lowest	1
2	2
3	3
4	4
5 - highest	5

APPENDIX D - SMALL WATERSHED PEAK FLOW

High Park Fire Watersheds - NRCS Peakflow

Watershed	Ratio10	Ratio25	Numeric Rank	Rank
Bennett Creek			0.0	0.5
Blackhurst Gulch	3.9	2.8	3.9	2.5
Boyd Gulch	4.3	3.4	4.3	2.7
Buck Gulch	3.8	3.4	3.8	2.4
Buckhorn Creek A	10.0	5.6	10.0	5.5
Buckhorn Creek F	3.6	2.6	3.6	2.3
Buckhorn Creek K	6.6	4.1	6.6	3.8
Buckhorn Creek N	2.6	2.4	2.6	1.8
Buckhorn Creek O	2.4	2.1	2.4	1.7
Buckhorn Creek S	2.4	2.1	2.4	1.7
Cedar Gulch	4.4	3.4	4.4	2.7
Devil Gulch	3.6	2.8	3.6	2.3
Empire Gulch	2.8	2.3	2.8	1.9
Falls Gulch	3.9	3.2	3.9	2.5
Hewlett Gulch B	1.1	1.1	1.1	1.1
Hewlett Gulch C	4.4	3.3	4.4	2.7
Hewlett Gulch D	1.4	1.3	1.4	1.2
Hewlett Gulch E	1.0	1.0	1.0	1.0
Hewlett Gulch F	1.5	1.4	1.5	1.3
Hill Gulch A	5.0	3.8	5.0	3.0
Hill Gulch B	3.7	2.9	3.7	2.4
Hill Gulch C	3.6	3.0	3.6	2.3
Hill Gulch D	3.6	3.0	3.6	2.3
Labeau Gulch	3.6	2.8	3.6	2.3
Laurence Creek A	6.2	3.8	6.2	3.6
Laurence Creek B			0.0	0.5
Lewstone Creek A	4.0	2.8	4.0	2.5
Lewstone Creek B	3.3	2.6	3.3	2.2
Lewstone Creek C	4.8	3.6	4.8	2.9
Lewstone Creek D	7.4	5.2	7.4	4.2
Lewstone Creek E	5.6	4.1	5.6	3.3
Long-Brown Gulch	3.6	2.8	3.6	2.3
North Mill Canyon	2.4	2.0	2.4	1.7
Pendergrass Creek A	10.0	6.0	10.0	5.5
Pendergrass Creek B	10.0	6.0	10.0	5.5
Pendergrass Creek C	6.8	6.0	6.8	3.9
Pendergrass Creek D	4.1	3.8	4.1	2.6
Poudre 1			0.0	0.5
Poudre 2			0.0	0.5
Poudre 3			0.0	0.5
Poudre 4			0.0	0.5

High Park Fire Watersheds - NRCS Peakflow

Watershed	Ratio10	Ratio25	Numeric Rank	Rank
Poverty Gulch A	10.0	6.0	10.0	5.5
Poverty Gulch B	4.3	3.5	4.3	2.7
Poverty Gulch C	5.4	4.0	5.4	3.2
Rasberry Gulch	4.1	2.8	4.1	2.6
Ratville B	10.0	6.0	10.0	5.5
Redstone Creek A	3.5	2.9	3.5	2.3
Redstone Creek B	3.7	2.8	3.7	2.4
Redstone Creek C	4.2	2.9	4.2	2.6
Redstone Creek D	4.9	3.3	4.9	3.0
Redstone Creek E	5.2	3.4	5.2	3.1
Rist A	4.3	3.4	4.3	2.7
Rist B	3.6	2.9	3.6	2.3
Rist C	4.7	3.5	4.7	2.9
Rist D	3.6	3.0	3.6	2.3
Rist E	3.7	3.1	3.7	2.4
Skin Gulch A	10.0	6.0	10.0	5.5
Skin Gulch B	3.3	2.7	3.3	2.2
Skin Gulch C	5.0	3.8	5.0	3.0
Skin Gulch D	4.3	3.3	4.3	2.7
Skin Gulch E	5.0	3.8	5.0	3.0
Skin Gulch F	4.9	3.9	4.9	3.0
Soldier Canyon	2.2	1.9	2.2	1.6
Stevens Gulch	8.2	4.5	8.2	4.6
Stove Prairie A	2.3	1.9	2.3	1.7
Stove Prairie B	2.9	2.2	2.9	2.0
Stove Prairie C	2.9	2.2	2.9	2.0
Tunnel			0.0	0.5
Twin Cabin Gulch A	10.0	6.0	10.0	5.5
Twin Cabin Gulch B	10.0	6.0	10.0	5.5
Unnamed 13	10.0	6.0	10.0	5.5
Unnamed 14			0.0	0.5
Unnamed 15	10.0	6.0	10.0	5.5
Unnamed 16	10.0	6.0	10.0	5.5
Unnamed 17			0.0	0.5
Unnamed 2	4.3	3.5	4.3	2.7
Unnamed 3	6.2	4.6	6.2	3.6
Unnamed 4	2.3	1.9	2.3	1.7
Unnamed 5	2.2	1.7	2.2	1.6
Unnamed 6	4.6	3.2	4.6	2.8
Unnamed 7			0.0	0.5
Unnamed 9			0.0	0.5

High Park Fire Watersheds - NRCS Peakflow

Watershed	Ratio10	Ratio25	Numeric Rank	Rank
Unnamed 10A			0.0	0.5
Upper South Fork A			0.0	0.5
Upper South Fork B			0.0	0.5
Upper South Fork C			0.0	0.5
Upper South Fork D			0.0	0.5
Watha Gulch	3.7	3.1	3.7	2.4
Whitepine A	1.4	1.3	1.4	1.2
Young Gulch A	3.6	2.8	3.6	2.3
Young Gulch B	2.6	2.2	2.6	1.8
Young Gulch C	2.4	2.1	2.4	1.7
Young Gulch D	2.0	1.8	2.0	1.5
Young Gulch E	2.6	2.2	2.6	1.8
Young Gulch F	4.8	3.5	4.8	2.9
Young Gulch G	3.0	2.5	3.0	2.0
Young Gulch H	4.4	3.2	4.4	2.7
Young Gulch I	3.0	2.5	3.0	2.0
Young Gulch J	3.1	2.6	3.1	2.1
Totals				

Peak Flow Increase Categories

Min	0.00000	
Max	10.00000	
Range	10.00000	
Step	2.00000	
Category	From	To
1	0.0000	2.0000
2	2.0000	4.0000
3	4.0000	6.0000
4	6.0000	8.0000
5	8.0000	10.0000

Ranking

Category	
1 - lowest	1
2	2
3	3
4	4
5 - highest	5

APPENDIX E - DISTANCE TO WATER SUPPLY

High Park Fire Watersheds - Distance to Water Supply

Watershed	Water Supply	Distance from Supply (miles)	Numeric Rank	Rank
Bennett Creek	Cache La Poudre	18.55	11.5	2.2
Blackhurst Gulch	Big Thompson	17.73	12.3	2.4
Boyd Gulch	Cache La Poudre	0.60	29.4	5.4
Buck Gulch	Cache La Poudre	12.19	17.8	3.4
Buckhorn Creek A	Big Thompson	27.74	2.3	0.6
Buckhorn Creek F	Big Thompson	26.34	3.7	0.9
Buckhorn Creek K	Big Thompson	23.35	6.7	1.4
Buckhorn Creek N	Big Thompson	18.59	11.4	2.2
Buckhorn Creek O	Big Thompson	18.80	11.2	2.2
Buckhorn Creek S	Big Thompson	15.94	14.1	2.7
Cedar Gulch	Cache La Poudre	8.73	21.3	4.0
Devil Gulch	Hansen Canal	0.95	29.1	5.3
Empire Gulch	Hansen Canal	0.98	29.0	5.3
Falls Gulch	Cache La Poudre	4.16	25.8	4.8
Hewlett Gulch B	Cache La Poudre	13.10	16.9	3.2
Hewlett Gulch C	Cache La Poudre	12.04	18.0	3.4
Hewlett Gulch D	Cache La Poudre	8.02	22.0	4.1
Hewlett Gulch E	Cache La Poudre	8.02	22.0	4.1
Hewlett Gulch F	Cache La Poudre	4.07	25.9	4.8
Hill Gulch A	Cache La Poudre	5.52	24.5	4.5
Hill Gulch B	Cache La Poudre	5.52	24.5	4.5
Hill Gulch C	Cache La Poudre	4.23	25.8	4.8
Hill Gulch D	Cache La Poudre	3.82	26.2	4.8
Labeau Gulch	Hansen Canal	0.95	29.1	5.3
Laurence Creek A	Big Thompson	15.45	14.6	2.8
Laurence Creek B	Big Thompson	14.33	15.7	3.0
Lewstone Creek A	Hansen Canal	4.45	25.6	4.7
Lewstone Creek B	Hansen Canal	4.10	25.9	4.8
Lewstone Creek C	Hansen Canal	3.34	26.7	4.9
Lewstone Creek D	Hansen Canal	3.09	26.9	5.0
Lewstone Creek E	Hansen Canal	0.00	30.0	5.5
Long-Brown Gulch	Hansen Canal	0.05	30.0	5.5
North Mill Canyon	Hansen Canal	1.00	29.0	5.3
Pendergrass Creek A	Cache La Poudre	21.51	8.5	1.7
Pendergrass Creek B	Cache La Poudre	21.41	8.6	1.7
Pendergrass Creek C	Cache La Poudre	20.45	9.6	1.9
Pendergrass Creek D	Cache La Poudre	18.93	11.1	2.2
Poudre 1	Hansen Canal	0.00	30.0	5.5
Poudre 2	Cache La Poudre	0.00	30.0	5.5
Poudre 3	Cache La Poudre	6.67	23.3	4.3
Poudre 4	Cache La Poudre	16.24	13.8	2.7

High Park Fire Watersheds - Distance to Water Supply

Watershed	Water Supply	Distance from Supply (miles)	Numeric Rank	Rank
Poverty Gulch A	Cache La Poudre	16.65	13.4	2.6
Poverty Gulch B	Cache La Poudre	14.69	15.3	2.9
Poverty Gulch C	Cache La Poudre	12.96	17.0	3.2
Rasberry Gulch	Big Thompson	15.81	14.2	2.7
Ratville B	Cache La Poudre	28.52	1.5	0.5
Redstone Creek A	Big Thompson	19.14	10.9	2.1
Redstone Creek B	Big Thompson	17.73	12.3	2.4
Redstone Creek C	Big Thompson	15.81	14.2	2.7
Redstone Creek D	Big Thompson	14.33	15.7	3.0
Redstone Creek E	Big Thompson	12.89	17.1	3.2
Rist A	Hansen Canal	5.82	24.2	4.5
Rist B	Hansen Canal	4.37	25.6	4.7
Rist C	Hansen Canal	1.89	28.1	5.2
Rist D	Hansen Canal	0.00	30.0	5.5
Rist E	Hansen Canal	0.00	30.0	5.5
Skin Gulch A	Cache La Poudre	11.33	18.7	3.5
Skin Gulch B	Cache La Poudre	11.33	18.7	3.5
Skin Gulch C	Cache La Poudre	10.62	19.4	3.6
Skin Gulch D	Cache La Poudre	11.81	18.2	3.4
Skin Gulch E	Cache La Poudre	10.64	19.4	3.6
Skin Gulch F	Cache La Poudre	10.11	19.9	3.7
Soldier Canyon	Horsetooth Reservoir	0.00	30.0	5.5
Stevens Gulch	Cache La Poudre	11.27	18.7	3.5
Stove Prairie A	Big Thompson	20.76	9.2	1.9
Stove Prairie B	Big Thompson	19.15	10.9	2.1
Stove Prairie C	Big Thompson	17.46	12.5	2.4
Tunnel	Hansen Canal	20.00	10.0	2.0
Twin Cabin Gulch A	Big Thompson	23.32	6.7	1.4
Twin Cabin Gulch B	Big Thompson	21.14	8.9	1.8
Unnamed 13	Cache La Poudre	14.09	15.9	3.0
Unnamed 14	Cache La Poudre	11.12	18.9	3.6
Unnamed 15	Cache La Poudre	22.59	7.4	1.5
Unnamed 16	Cache La Poudre	24.62	5.4	1.2
Unnamed 17	Cache La Poudre	19.08	10.9	2.2
Unnamed 2	Hansen Canal	0.00	30.0	5.5
Unnamed 3	Cache La Poudre	0.10	29.9	5.5
Unnamed 4	Cache La Poudre	1.11	28.9	5.3
Unnamed 5	Cache La Poudre	2.18	27.8	5.1
Unnamed 6	Cache La Poudre	2.81	27.2	5.0
Unnamed 7	Cache La Poudre	5.97	24.0	4.5
Unnamed 9	Cache La Poudre	6.15	23.9	4.4

High Park Fire Watersheds - Distance to Water Supply

Watershed	Water Supply	Distance from Supply (miles)	Numeric Rank	Rank
Unnamed 10A	Cache La Poudre	9.54	20.5	3.8
Upper South Fork A	Cache La Poudre	24.62	5.4	1.2
Upper South Fork B	Cache La Poudre	22.59	7.4	1.5
Upper South Fork C	Cache La Poudre	18.93	11.1	2.2
Upper South Fork D	Cache La Poudre	16.24	13.8	2.7
Watha Gulch	Cache La Poudre	4.23	25.8	4.8
Whitepine A	Big Thompson	23.42	6.6	1.4
Young Gulch A	Cache La Poudre	13.17	16.8	3.2
Young Gulch B	Cache La Poudre	12.07	17.9	3.4
Young Gulch C	Cache La Poudre	12.79	17.2	3.3
Young Gulch D	Cache La Poudre	12.97	17.0	3.2
Young Gulch E	Cache La Poudre	12.07	17.9	3.4
Young Gulch F	Cache La Poudre	11.52	18.5	3.5
Young Gulch G	Cache La Poudre	9.32	20.7	3.9
Young Gulch H	Cache La Poudre	10.95	19.1	3.6
Young Gulch I	Cache La Poudre	9.32	20.7	3.9
Young Gulch J	Cache La Poudre	6.67	23.3	4.3

Distance Categories

Min	1.48000	
Max	30.00000	
Range	28.52000	
Step	5.70400	
Category	From	To
1	1.4800	7.1840
2	7.1840	12.8880
3	12.8880	18.5920
4	18.5920	24.2960
5	24.2960	30.0000

Ranking

Category	
1 - lowest	1
2	2
3	3
4	4
5 - highest	5

APPENDIX F - SMALL WATERSHED COMPOSITE RANK

High Park Fire Final Watershed Hazard Ranking

Watershed	Area (acres)	Gradient Rank	Debris Flow Rank	Burn Severity Rank	Peakflow	Distance to Supply Rank	Combined Rank
Bennett Creek	2,711	1.8	1.2	1.7	0.5	2.2	1.1
Blackhurst Gulch	1,454	2.0	1.7	2.1	2.5	2.4	2.0
Boyd Gulch	779	4.0	3.2	3.9	2.7	5.4	4.4
Buck Gulch	504	5.4	5.0	2.7	2.4	3.4	4.3
Buckhorn Creek A	857	2.3	3.3	2.3	5.5	0.6	2.9
Buckhorn Creek F	1,181	3.1	3.3	2.2	2.3	0.9	2.3
Buckhorn Creek K	950	4.0	2.8	2.3	3.8	1.4	3.0
Buckhorn Creek N	1,619	1.2	1.7	0.5	1.8	2.2	1.0
Buckhorn Creek O	1,057	2.4	2.1	2.6	1.7	2.2	2.1
Buckhorn Creek S	1,096	0.7	2.1	0.9	1.7	2.7	1.3
Cedar Gulch	1,282	2.8	1.9	3.2	2.7	4.0	3.1
Devil Gulch	949	2.9	3.3	1.9	2.3	5.3	3.4
Empire Gulch	310	2.0	4.2	2.0	1.9	5.3	3.3
Falls Gulch	853	3.3	3.2	4.4	2.5	4.8	4.1
Hewlett Gulch B	956	1.7	0.8	1.6	1.1	3.2	1.3
Hewlett Gulch C	723	1.3	0.7	3.2	2.7	3.4	2.1
Hewlett Gulch D	2,059	0.9	1.6	1.0	1.2	4.1	1.4
Hewlett Gulch E	399	2.1	2.0	3.3	1.0	4.1	2.5
Hewlett Gulch F	2,795	1.1	1.4	2.3	1.3	4.8	2.0
Hill Gulch A	901	2.9	2.6	3.8	3.0	4.5	3.7
Hill Gulch B	1,411	2.6	1.9	2.3	2.4	4.5	2.8
Hill Gulch C	457	1.6	3.1	4.4	2.3	4.8	3.6
Hill Gulch D	52	1.3	3.6	2.7	2.3	4.8	3.1
Labeau Gulch	1,180	2.7	3.1	2.1	2.3	5.3	3.4
Laurence Creek A	1,470	2.2	1.6	2.3	3.6	2.8	2.5
Laurence Creek B	904	1.5	2.8	2.5	0.5	3.0	1.9
Lewstone Creek A	767	1.7	1.1	1.4	2.5	4.7	2.2
Lewstone Creek B	227	2.2	1.9	1.6	2.2	4.8	2.5
Lewstone Creek C	1,157	2.1	1.8	2.4	2.9	4.9	3.0
Lewstone Creek D	1,148	2.6	1.8	4.8	4.2	5.0	4.2
Lewstone Creek E	1,160	1.3	2.0	2.4	3.3	5.5	3.0
Long-Brown Gulch	1,689	4.2	2.7	2.6	2.3	5.5	3.9
North Mill Canyon	724	2.1	1.2	1.1	1.7	5.3	2.2
Pendergrass Creek A	1,381	4.4	3.1	4.4	5.5	1.7	4.4
Pendergrass Creek B	869	3.4	3.9	5.5	5.5	1.7	4.6
Pendergrass Creek C	379	1.9	2.8	3.8	3.9	1.9	3.0
Pendergrass Creek D	655	2.0	2.6	2.6	2.6	2.2	2.3
Poudre 1	3,017	0.5	0.9	1.7	0.5	5.5	1.5
Poudre 2	4,304	0.6	0.9	0.9	0.5	5.5	1.3
Poudre 3	5,174	0.7	0.8	1.2	0.5	4.3	1.1

High Park Fire Final Watershed Hazard Ranking

Watershed	Area (acres)	Gradient Rank	Debris Flow Rank	Burn Severity Rank	Peakflow	Distance to Supply Rank	Combined Rank
Poudre 4	1,858	0.7	1.6	0.8	0.5	2.7	0.7
Poverty Gulch A	621	5.5	2.9	2.9	5.5	2.6	4.4
Poverty Gulch B	1,160	2.4	3.2	4.0	2.7	2.9	3.3
Poverty Gulch C	975	3.0	2.9	2.8	3.2	3.2	3.3
Rasberry Gulch	1,785	4.2	1.0	1.6	2.6	2.7	2.4
Ratville B	1,522	2.4	2.4	3.4	5.5	0.5	3.0
Redstone Creek A	866	2.1	1.7	3.1	2.3	2.1	2.1
Redstone Creek B	911	1.8	1.7	2.8	2.4	2.4	2.1
Redstone Creek C	699	1.4	1.6	1.1	2.6	2.7	1.6
Redstone Creek D	388	1.1	2.1	0.7	3.0	3.0	1.7
Redstone Creek E	1,900	0.8	1.3	0.8	3.1	3.2	1.6
Rist A	921	2.3	1.4	3.7	2.7	4.5	3.1
Rist B	996	2.6	1.1	2.9	2.3	4.7	2.8
Rist C	1,370	1.6	2.2	2.9	2.9	5.2	3.1
Rist D	1,133	2.3	1.9	3.7	2.3	5.5	3.4
Rist E	801	1.7	2.2	2.0	2.4	5.5	2.9
Skin Gulch A	1,293	3.9	3.1	4.0	5.5	3.5	4.6
Skin Gulch B	684	4.6	4.6	3.0	2.2	3.5	4.0
Skin Gulch C	248	2.0	4.5	2.2	3.0	3.6	3.3
Skin Gulch D	760	2.8	1.9	3.0	2.7	3.4	2.9
Skin Gulch E	736	3.0	2.7	1.9	3.0	3.6	3.0
Skin Gulch F	111	1.5	3.9	2.8	3.0	3.7	3.2
Soldier Canyon	473	3.0	3.4	1.1	1.6	5.5	3.1
Stevens Gulch	1,110	2.5	2.0	2.0	4.6	3.5	3.1
Stove Prairie A	1,047	1.5	1.5	1.6	1.7	1.9	1.2
Stove Prairie B	2,135	1.2	1.1	2.1	2.0	2.1	1.3
Stove Prairie C	1,040	1.3	1.8	2.1	2.0	2.4	1.7
Tunnel	1,345	1.7	0.5	0.9	0.5	2.0	0.5
Twin Cabin Gulch A	1,332	2.2	3.0	3.2	5.5	1.4	3.3
Twin Cabin Gulch B	1,097	2.1	2.2	3.2	5.5	1.8	3.1
Unnamed 13	70	5.5	5.5	3.5	5.5	3.0	5.5
Unnamed 14	177	5.5	5.5	3.1	0.5	3.6	4.1
Unnamed 15	774	3.6	5.1	4.4	5.5	1.5	4.7
Unnamed 16	833	4.6	4.0	3.6	5.5	1.2	4.3
Unnamed 17	499	4.2	3.7	1.6	0.5	2.2	2.4
Unnamed 2	747	4.2	3.5	3.6	2.7	5.5	4.5
Unnamed 3	178	5.5	5.3	4.7	3.6	5.5	5.1
Unnamed 4	130	4.5	4.5	1.5	1.7	5.3	3.9
Unnamed 5	57	5.5	5.5	0.5	1.6	5.1	4.1
Unnamed 6	135	5.5	5.5	2.4	2.8	5.0	5.0

High Park Fire Final Watershed Hazard Ranking

Watershed	Area (acres)	Gradient Rank	Debris Flow Rank	Burn Severity Rank	Peakflow	Distance to Supply Rank	Combined Rank
Unnamed 7	84	5.5	5.5	1.5	0.5	4.5	3.9
Unnamed 9	1,107	2.6	2.2	3.8	0.5	4.4	2.8
Unnamed 10A	100	5.5	5.5	3.9	0.5	3.8	4.4
Upper South Fork A	1,670	0.8	1.6	1.4	0.5	1.2	0.5
Upper South Fork B	1,018	0.7	0.9	2.0	0.5	1.5	0.5
Upper South Fork C	1,218	1.0	1.6	2.3	0.5	2.2	1.1
Upper South Fork D	773	1.0	2.2	1.3	0.5	2.7	1.1
Watha Gulch	717	3.2	2.6	5.0	3.0	4.8	4.2
Whitepine A	650	4.3	5.5	0.9	1.2	1.4	2.7
Young Gulch A	1,240	2.8	1.9	2.4	2.3	3.2	2.5
Young Gulch B	686	2.2	3.9	2.3	1.8	3.4	2.8
Young Gulch C	1,368	1.6	1.5	3.0	1.7	3.3	2.1
Young Gulch D	344	3.8	3.2	1.9	1.5	3.2	2.8
Young Gulch E	981	1.1	1.7	1.5	1.8	3.4	1.7
Young Gulch F	431	3.0	2.8	3.4	2.9	3.5	3.4
Young Gulch G	1,225	1.3	2.4	3.1	2.0	3.9	2.5
Young Gulch H	779	1.8	1.9	2.8	2.7	3.6	2.6
Young Gulch I	876	2.0	2.5	3.1	2.0	3.9	2.8
Young Gulch J	1,829	1.7	2.2	3.0	2.1	4.3	2.7

Combined Categories

Min	1.10549	
Max	4.60348	
Range	3.49799	
Step	0.69960	
Category	From	To
1	1.1055	1.8051
2	1.8051	2.5047
3	2.5047	3.2043
4	3.2043	3.9039
5	3.9039	4.6035

Ranking

Category	
1 - lowest	1
2	2
3	3
4	4
5 - highest	5