

## APPENDIX B

### ROADS ANALYSIS SUMMARY

Based on the most current GIS data available (provided by the Kootenai National Forest) approximately 170 miles of roads exist in the Grave Creek Watershed today. “Jammer” roads and skid trails are not included as roads on the GIS layer (Map 10), and are therefore not included in the road length, density and other summary statistics values, thus providing an underestimate of total potential impacts from harvest roads and trails. Many of these skid trails and jammer roads will have revegetated since it has been more than one or two decades since most of the harvest occurred. These trails and jammer roads still have the potential to intercept and route flows, particularly if fire results in removal of some or all of the vegetation, thus creating a potential increased sediment loading impact from an otherwise natural event.

Tables B-1 and B-2 provide length and percentage summaries of the road distribution within the watershed. Over 100 miles (62%) are located in stands that are in or adjacent to riparian corridors; 35 miles of road (21%) are located within 300 feet of streams; and 52 miles (30%) are located in the rain-on-snow zone. The rain-on-snow zone is defined by the elevation band between 4500 and 5500 feet. All roads within the 300-foot riparian buffer would also be within the riparian related stands. Roads within the rain-on-snow zone can also fall within the riparian related stands as well as the 300-foot buffer. Table B-3 provides a summary of roads information within sensitive land type associations (LTAs 108 and 407). Tables B-4, B-5 and B-6 provide additional road summary information by watershed and LTAs. Appendix I provides additional analysis of road sediment loading. This analysis takes into account the fact that many roads have been closed and revegetated, thus reducing total erosion and potential sediment contribution to streams.

<b>Table B-1: Road Length Summary (miles).</b>							
	Total Road Length (miles)	Road Density (miles/mile <sup>2</sup> )	Length In Riparian-Related Stands (miles)	Length In 300' Riparian Buffer (miles)	Length In Rain-on-Snow zone (miles)		
					Total	%North	%South
Sub-watershed							
Blue Sky	<b>25.6</b>	2.1	<b>22.9</b>	<b>8.8</b>	16.8	79	21
Clarence-Stahl	<b>36.6</b>	2.0	<b>25.1</b>	<b>9.2</b>	19.7	50	50
Lower Grave Creek	<b>71.8</b>	3.3	<b>30.6</b>	<b>6.2</b>	0.0	0	0
Upper Grave-Foundation-Lewis	<b>19.4</b>	1.4	<b>15.7</b>	<b>6.7</b>	11.8	45	55
Williams	<b>16.6</b>	1.8	<b>10.2</b>	<b>4.1</b>	3.5	69	31
<b>Total</b>	<b>170.0</b>	2.3	<b>104.5</b>	<b>35.1</b>	51.8	59	41

	% Total Road Length	% In Riparian-Related Stands	% In 300' Riparian Buffer	%Length In Rain-on-Snow zone
Sub-watershed				Total
Blue Sky	15.1	13.5	5.2	9.9
Clarence-Stahl	21.5	14.8	5.4	11.6
Lower Grave Creek	42.2	18.0	3.7	0.0
Upper Grave-Foundation-Lewis	11.4	9.2	4.0	22.8
Williams	9.8	6.0	2.4	2.0
Total	100	61.5	20.6	30.5

Sub-watershed	Miles in LTA 108	%Sub-Watershed	%Water-shed	Miles in LTA 407	%Sub-Watershed	%Water-shed	Miles in LTA 108 & 407	%Sub-Watershed	%Water-shed
Blue Sky	0.0	0.0	0.0	14.4	56.3	8.5	14.4	56.3	8.5
Clarence-Stahl	2.8	7.7	1.6	15.4	42.1	9.1	18.2	49.7	10.7
Lower Grave Creek	13.3	18.5	7.8	0	0.0	0.0	13.3	18.5	7.8
Upper Grave-Foundation-Lewis	3.6	18.6	2.1	5.2	26.8	3.1	8.8	45.4	5.2
Williams Creek	1.3	7.8	0.8	8.1	48.8	4.8	9.4	56.6	5.5
Total	21.1		12.4	43.1		25.4	64.2		37.8

<b>Road Length in LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Watershed	% Water-shed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
<b>Blue Sky</b>								
108	64	0.0	0.2	0.0	severe	severe	low	moderate
351	2734	1.7	6.6	1.0	moderate	moderate	high	severe
401	186	0.1	0.5	0.1	moderate	slight	high	severe
403	1087	0.7	2.6	0.4	moderate	slight	high	severe
404	3929	2.4	9.5	1.4	moderate	moderate	low	moderate
405	1672	1.0	4.1	0.6	moderate	slight	low	moderate
406	2527	1.6	6.1	0.9	moderate	slight	low	moderate
407	23104	14.4	56.0	8.4	moderate	moderate	high	severe
408	5930	3.7	14.4	2.2	moderate	slight	high	severe
	<b>41235</b>	<b>25.6</b>	<b>100.0</b>	<b>15.1</b>				
<b>Clarence-Stahl</b>								
108	4549	2.8	7.7	1.7	severe	severe	low	moderate
351	4841	3.0	8.2	1.8	moderate	moderate	high	severe
401	1782	1.1	3.0	0.7	moderate	slight	high	severe

<b>Table B-4: Length of Road by LTA by Sub-Watershed.</b>								
<b>Road Length in LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Water-shed	% Water-shed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
404	19382	12.0	32.9	7.1	moderate	moderate	low	moderate
405	2497	1.6	4.2	0.9	moderate	slight	low	moderate
406	1038	0.6	1.8	0.4	moderate	slight	low	moderate
407	24856	15.4	42.2	9.1	moderate	moderate	high	severe
	<b>58944</b>	<b>36.6</b>	<b>100.0</b>	<b>21.5</b>				
<b>Lower Grave Creek</b>								
102	1656	1.0	1.4	0.6	moderate	severe	low	moderate
103	15641	9.7	13.5	5.7	moderate	severe	high	severe
105	1162	0.7	1.0	0.4	moderate	severe	low	moderate
106	1144	0.7	1.0	0.4	moderate	severe	low	moderate
108	21397	13.3	18.5	7.8	severe	severe	low	moderate
110	501	0.3	0.4	0.2	moderate	severe	low	moderate
251	29	0.0	0.0	0.0	moderate	slight	high	severe
321	14509	9.0	12.6	5.3	moderate	moderate	low	moderate
322	25823	16.0	22.4	9.4	moderate	severe	low	moderate
323	9108	5.7	7.9	3.3	severe	severe	low	moderate
324	23993	14.9	20.8	8.8	moderate	moderate	low	moderate
408	564	0.4	0.5	0.2	moderate	slight	high	severe
	<b>115526</b>	<b>71.8</b>	<b>100.0</b>	<b>42.2</b>				
<b>Upper Grave-Foundation-Lewis</b>								
108	5779	3.6	18.5	2.1	severe	severe	low	moderate
351	2473	1.5	7.9	0.9	moderate	moderate	high	severe
401	1666	1.0	5.3	0.6	moderate	slight	high	severe
404	9751	6.1	31.3	3.6	moderate	moderate	low	moderate
405	576	0.4	1.8	0.2	moderate	slight	low	moderate
406	2497	1.6	8.0	0.9	moderate	slight	low	moderate
407	8444	5.2	27.1	3.1	moderate	moderate	high	severe
	<b>31185</b>	<b>19.4</b>	<b>100.0</b>	<b>11.4</b>				
<b>Williams</b>								
108	2107	1.3	7.9	0.8	severe	severe	low	moderate
322	1344	0.8	5.0	0.5	moderate	severe	low	moderate
401	752	0.5	2.8	0.3	moderate	slight	high	severe
403	17	0.0	0.1	0.0	moderate	slight	high	severe
405	6056	3.8	22.7	2.2	moderate	slight	low	moderate
406	2359	1.5	8.8	0.9	moderate	slight	low	moderate
407	12979	8.1	48.6	4.7	moderate	moderate	high	severe
408	1071	0.7	4.0	0.4	moderate	slight	high	severe
	<b>26684</b>	<b>16.6</b>	<b>100.0</b>	<b>9.8</b>				
<b>Grave Creek Watershed</b>								
102	1656	1.0		0.6	moderate	severe	low	moderate
103	15641	9.7		5.7	moderate	severe	high	severe
105	1162	0.7		0.4	moderate	severe	low	moderate

<b>Table B-4: Length of Road by LTA by Sub-Watershed.</b>								
<b>Road Length in LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Watershed	% Watershed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
106	1144	0.7		0.4	moderate	severe	low	moderate
108	33896	21.1		12.4	severe	severe	low	moderate
110	501	0.3		0.2	moderate	severe	low	moderate
251	29	0.0		0.0	moderate	slight	high	severe
321	14509	9.0		5.3	moderate	moderate	low	moderate
322	27167	16.9		9.9	moderate	severe	low	moderate
323	9108	5.7		3.3	severe	severe	low	moderate
324	23993	14.9		8.8	moderate	moderate	low	moderate
351	10048	6.2		3.7	moderate	moderate	high	severe
401	4386	2.7		1.6	moderate	slight	high	severe
403	1104	0.7		0.4	moderate	slight	high	severe
404	33061	20.5		12.1	moderate	moderate	low	moderate
405	10802	6.7		3.9	moderate	slight	low	moderate
406	8420	5.2		3.1	moderate	slight	low	moderate
407	69383	43.1		25.4	moderate	moderate	high	severe
408	7564	4.7		2.8	moderate	slight	high	severe
	<b>273574</b>	<b>170.0</b>		<b>100.0</b>				

<b>Table B-5: Length of Road in Riparian-Related Stands by LTA by Sub-Watershed.</b>								
<b>Road Length in Riparian-Related Stands by LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Watershed	% Watershed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
<b>Blue Sky</b>								
108	64	0.0	0.2	0.0	severe	severe	low	moderate
351	2040	1.3	4.9	0.7	moderate	moderate	high	severe
401	186	0.1	0.5	0.1	moderate	slight	high	severe
403	410	0.3	1.0	0.1	moderate	slight	high	severe
404	2411	1.5	5.8	0.9	moderate	moderate	low	moderate
405	1672	1.0	4.1	0.6	moderate	slight	low	moderate
406	2054	1.3	5.0	0.8	moderate	slight	low	moderate
407	22365	13.9	54.2	8.2	moderate	moderate	high	severe
408	5625	3.5	13.6	2.1	moderate	slight	high	severe
	<b>36829</b>	<b>22.9</b>	<b>89.3</b>	<b>13.5</b>				
<b>Clarence-Stahl</b>								
108	4549	2.8	7.7	1.7	severe	severe	low	moderate
351	4763	3.0	8.1	1.7	moderate	moderate	high	severe
401	1782	1.1	3.0	0.7	moderate	slight	high	severe
404	10099	6.3	17.1	3.7	moderate	moderate	low	moderate
405	1895	1.2	3.2	0.7	moderate	slight	low	moderate
406	98	0.1	0.2	0.0	moderate	slight	low	moderate

<b>Table B-5: Length of Road in Riparian-Related Stands by LTA by Sub-Watershed.</b>								
<b>Road Length in Riparian-Related Stands by LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Water-shed	% Water-shed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
407	17199	10.7	29.2	6.3	moderate	moderate	high	severe
	<b>40386</b>	<b>25.1</b>	<b>68.5</b>	<b>14.8</b>				
<b>Lower Grave Creek</b>								
102	135	0.1	0	0.0	moderate	severe	low	moderate
103	12511	7.8	11	4.6	moderate	severe	high	severe
105	616	0.4	1	0.2	moderate	severe	low	moderate
106	543	0.3	0	0.2	moderate	severe	low	moderate
108	16992	10.6	15	6.2	severe	severe	low	moderate
110	8	0.0	0	0.0	moderate	severe	low	moderate
251	29	0.0	0	0.0	moderate	slight	high	severe
321	3618	2.2	3	1.3	moderate	moderate	low	moderate
322	2461	1.5	2	0.9	moderate	severe	low	moderate
323	4737	2.9	4	1.7	severe	severe	low	moderate
324	7667	4.8	7	2.8	moderate	moderate	low	moderate
	49317	<b>30.6</b>	<b>42.7</b>	<b>18.0</b>				
<b>Upper Grave-Foundation-Lewis</b>								
108	5706	3.5	18.3	2.1	severe	severe	low	moderate
351	2422	1.5	7.8	0.9	moderate	moderate	high	severe
401	1570	1.0	5.0	0.6	moderate	slight	high	severe
404	6867	4.3	22.0	2.5	moderate	moderate	low	moderate
405	474	0.3	1.5	0.2	moderate	slight	low	moderate
406	1637	1.0	5.2	0.6	moderate	slight	low	moderate
407	6573	4.1	21.1	2.4	moderate	moderate	high	severe
	<b>25248</b>	<b>15.7</b>	<b>81.0</b>	<b>9.2</b>				
<b>Williams</b>								
108	1940.0366	1.2	7.3	0.7	severe	severe	low	moderate
322	943.9127	0.6	3.5	0.3	moderate	severe	low	moderate
401	751.5478	0.5	2.8	0.3	moderate	slight	high	severe
405	2899.7793	1.8	10.9	1.1	moderate	slight	low	moderate
406	2031.3657	1.3	7.6	0.7	moderate	slight	low	moderate
407	6721.7229	4.2	25.2	2.5	moderate	moderate	high	severe
408	1070.6976	0.7	4.0	0.4	moderate	slight	high	severe
	<b>16359</b>	<b>10.2</b>	<b>61.3</b>	<b>6.0</b>				
<b>Grave Creek Watershed</b>								
102	135	0.1		0.0	moderate	severe	low	moderate
103	12511	7.8		4.6	moderate	severe	high	severe
105	616	0.4		0.2	moderate	severe	low	moderate
106	543	0.3		0.2	moderate	severe	low	moderate
108	29251	18.2		10.7	severe	severe	low	moderate
110	8	0.0		0.0	moderate	severe	low	moderate
251	29	0.0		0.0	moderate	slight	high	severe
321	3618	2.2		1.3	moderate	moderate	low	moderate

<b>Table B-5: Length of Road in Riparian-Related Stands by LTA by Sub-Watershed.</b>								
<b>Road Length in Riparian-Related Stands by LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Water-shed	% Water-shed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
322	3405	2.1		1.2	moderate	severe	low	moderate
323	4737	2.9		1.7	severe	severe	low	moderate
324	7667	4.8		2.8	moderate	moderate	low	moderate
351	9224	5.7		3.4	moderate	moderate	high	severe
401	4290	2.7		1.6	moderate	slight	high	severe
403	410	0.3		0.1	moderate	slight	high	severe
404	19378	12.0		7.1	moderate	moderate	low	moderate
405	6941	4.3		2.5	moderate	slight	low	moderate
406	5821	3.6		2.1	moderate	slight	low	moderate
407	52859	32.8		19.3	moderate	moderate	high	severe
408	6696	4.2		2.4	moderate	slight	high	severe
	<b>168139</b>	<b>104.5</b>		<b>61.5</b>				

<b>Table B-6: Road Length Within 300' Riparian Buffer by LTA by Sub-Watershed.</b>								
<b>Road Length in 300' Riparian Buffer by LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Water-shed	% Water-shed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
<b>Blue Sky</b>								
401	161	0.1	0.4	0.1	moderate	slight	high	severe
404	313	0.2	0.8	0.1	moderate	moderate	low	moderate
405	229	0.1	0.6	0.1	moderate	slight	low	moderate
407	11754	7.3	28.5	4.3	moderate	moderate	high	severe
408	1677	1.0	4.1	0.6	moderate	slight	high	severe
	<b>14133</b>	<b>8.8</b>	<b>34.3</b>	<b>5.2</b>				
<b>Clarence-Stahl</b>								
108	3237	2.0	5.5	1.2	severe	severe	low	moderate
351	354	0.2	0.6	0.1	moderate	moderate	high	severe
401	214	0.1	0.4	0.1	moderate	slight	high	severe
404	2331	1.4	4.0	0.9	moderate	moderate	low	moderate
405	346	0.2	0.6	0.1	moderate	slight	low	moderate
407	8393	5.2	14.2	3.1	moderate	moderate	high	severe
	<b>14874</b>	<b>9.2</b>	<b>25.2</b>	<b>5.4</b>				
<b>Lower Grave Creek</b>								
102	8	0.0	0	0.0	moderate	severe	low	moderate
103	4433	2.8	4	1.6	moderate	severe	high	severe
105	35	0.0	0	0.0	moderate	severe	low	moderate
106	1	0.0	0	0.0	moderate	severe	low	moderate
108	4088	2.5	4	1.5	severe	severe	low	moderate
321	69	0.0	0	0.0	moderate	moderate	low	moderate
323	1154	0.7	1	0.4	severe	severe	low	moderate

<b>Table B-6: Road Length Within 300' Riparian Buffer by LTA by Sub-Watershed.</b>								
<b>Road Length in 300' Riparian Buffer by LTA by Sub-Watershed</b>								
Landtype	Meters	Miles	% Sub-Water-shed	% Water-shed	Surface Erodibility	Subsurface Erodibility	Delivery Efficiency	Sediment Hazard
324	204	0.1	0	0.1	moderate	moderate	low	moderate
	9993	<b>6.2</b>	<b>8.6</b>	<b>3.7</b>				
<b>Upper Grave-Foundation-Lewis</b>								
108	3561	2.2	11.4	1.3	severe	severe	low	moderate
351	1586	1.0	5.1	0.6	moderate	moderate	high	severe
401	532	0.3	1.7	0.2	moderate	slight	high	severe
404	3211	2.0	10.3	1.2	moderate	moderate	low	moderate
405	7	0.0	0.0	0.0	moderate	slight	low	moderate
407	1943	1.2	6.2	0.7	moderate	moderate	high	severe
	<b>10840</b>	<b>6.7</b>	<b>34.8</b>	<b>4.0</b>				
<b>Williams</b>								
108	1151	0.7	4.3	0.4	severe	severe	low	moderate
322	13	0.0	0.1	0.0	moderate	severe	low	moderate
401	752	0.5	2.8	0.3	moderate	slight	high	severe
405	533	0.3	2.0	0.2	moderate	slight	low	moderate
406	813	0.5	3.0	0.3	moderate	slight	low	moderate
407	2280	1.4	8.5	0.8	moderate	moderate	high	severe
408	1071	0.7	4.0	0.4	moderate	slight	high	severe
	<b>6613</b>	<b>4.1</b>	<b>24.8</b>	<b>2.4</b>				
<b>Grave Creek Watershed</b>								
102	8	0.0		0.0	moderate	severe	low	moderate
103	4433	2.8		1.6	moderate	severe	high	severe
105	35	0.0		0.0	moderate	severe	low	moderate
106	1	0.0		0.0	moderate	severe	low	moderate
108	12038	7.5		4.4	severe	severe	low	moderate
321	69	0.0		0.0	moderate	moderate	low	moderate
322	13	0.0		0.0	moderate	severe	low	moderate
323	1154	0.7		0.4	severe	severe	low	moderate
324	204	0.1		0.1	moderate	moderate	low	moderate
351	1939	1.2		0.7	moderate	moderate	high	severe
401	1658	1.0		0.6	moderate	slight	high	severe
404	5855	3.6		2.1	moderate	moderate	low	moderate
405	1115	0.7		0.4	moderate	slight	low	moderate
406	813	0.5		0.3	moderate	slight	low	moderate
407	24370	15.1		8.9	moderate	moderate	high	severe
408	2748	1.7		1.0	moderate	slight	high	severe
	<b>56453</b>	<b>35.1</b>		<b>20.6</b>				