ECOLOGICAL CLASSIFICATION
THOMPSON RIVER BASIN
MONTANA

Prepared for:

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COLUMBIA FALLS, MONTANA

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The project was coordinated by Brian Sugden (Forest Hydrologist/Plum Creek Timber Company). Brian Gilbert (Wildlife Biologist/Plum Creek Timber Company), Ron Steiner (Biological Technician/Plum Creek Timber Company) and Greg Watson (Fish Ecologist/Plum Creek Timber Company) also participated in planning and review. Greg Snell (Natural Resource Conservation Service) provided soil maps and consultation concerning landtype association and landtype mapping. Personnel from the Kootenai and Lolo National Forests provided digital landtype maps and documentation. Ron Ryel wrote the computer program for estimating stream sinuosity from Cartographic Feature Files (CFFs). Ted Dean conducted all Geographical Information System operations. Sherman Jensen assembled the spatial information, mapped valley-bottom types and valley-bottom habitats and wrote the report.

EXECUTIVE SUMMARY

An ecological classification was conducted for the Thompson River basin in northwestern Montana. The project area is 410,095 acres with a stream network of 1,326 linear miles. The ecological classification provides a framework and descriptive attributes from which interpretations regarding habitats and the effects of land uses can be interpreted.

The ecological classification facilitates analysis from several perspectives. Hierarchical levels include broad classifications (Omernik 1987; Bailey 1995), geologic district, subsection, landtype association, landtype, habitat type group, valley-bottom type and valley-bottom habitat. *Italics* are used in this report for names of classes of all hierarchical levels. Spatial attributes include elevation, slope, aspect, annual precipitation, ownership and stream parameters (length, stream order, flow regime sinuosity and grade). Aquatic features measured along transects were also integrated. Spatial attributes can be summarized for any combination of the hierarchical layers.

Thompson River basin falls within a single ecoregion as defined by Omernik -- the *Northern Rockies Ecoregion.* It includes parts of two sections of the *Northern Rocky Mountain Forest-Steppe-Coniferous Forest-Alpine Meadow Province* defined by Bailey: 1) *Flathead Valley Section*; and 2) *Belt Mountain Section.* A single geologic district was identified *(metasedimentary)*. Four subsections were identified: 1) *alpine glaciated lands;* 2) *fluvial lands*; 3) *continental glaciated erosional lands*; and 4) *continental glaciated depositional lands*. Four landtype associations were identified in *alpine glaciated lands*: 1) *cirque and rocky ridge*; 2) *glacial basin*; 3) *glacial trough*; and 4) *moraine*. Three landtype associations comprise *fluvial lands:* 1) *mountain ridge;* 2) *mountain slope;* and 3) *breakland.* A single dominant landtype association was identified in *continental*

glaciated erosional lands -- continental glacial ridge and slope. Two landtype associations are dominant in *continental glaciated depositional lands:* 1) *high terrace*; and 2) *floodplain and alluvium.* Landtypes were mapped by the Kootenai and Lolo National Forests. More detailed mapping of soil types was conducted by the Natural Resource Conservation Service (NRCS) for private lands in the basin.

The valley-bottom landtype associated with streams was delineated and further divided into valley-bottom types (VBTs), which generally correlate with subsections. Valley-bottom habitats were also mapped. Vegetation response units (VRUs) corollary to habitat type and landtype association werel also identified.

A Geographical Information System (GIS) was used to compile hierarchical map layers, plot maps and to output map data summaries. Maps, descriptions and data summaries are provided for each hierarchical level. Digital GIS map layers were also provided to Plum Creek Timber.

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1.0 INTRODUCTION

An ecological classification was conducted for the Thompson River basin in the Northern Rocky Mountains of northwest Montana. The ecological classification provides a framework and descriptive attributes from which interpretations regarding habitats and effects of land uses can be interpreted.

The framework consists of hierarchical levels arranged sequentially from large views at small-scale to small views at large-scale. Hierarchical levels include: 1) broad classifications (ecoregion, division, province and section); 2) geologic district; 3) subsection; 4) landtype association; 5) landtype; 6) habitat type group; 7) valley-bottom landtype; 8) valley-bottom type; and 9) valley-bottom habitat.

Spatial attributes include elevation, slope, aspect, annual precipitation, ownership and stream parameters (length, order, density, flow-regime, sinuosity and grade), each assembled as a separate map layer. Spatial attributes can be sorted and summarized for any combination of hierarchical layers. Spatial attributes can also serve as stand-alone map layers (e.g. elevation) or combined map layers (e.g. elevation/aspect/precipitation) for specific applications. Digital map files (ARC-INFO format) were provided to facilitate subsequent analysis. Text and spreadsheet files used to generate this report were also provided. Documentation of report and GIS files is presented as APPENDIX A.

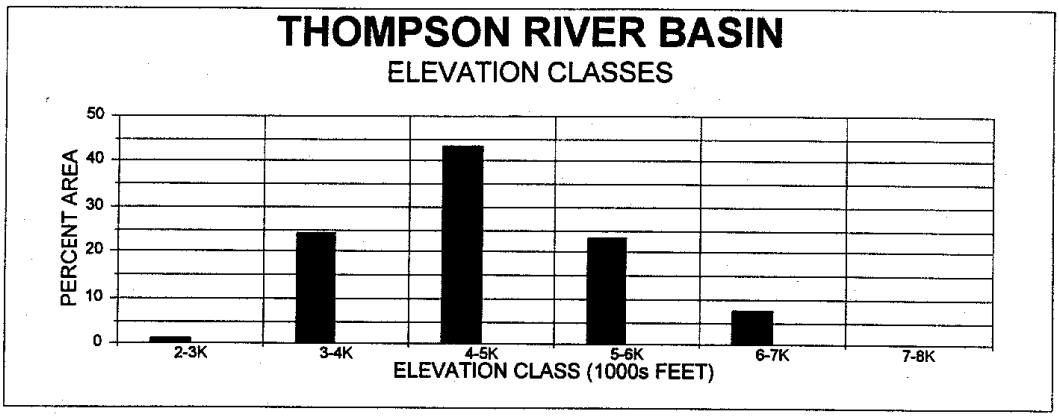
2.0 PROJECT AREA

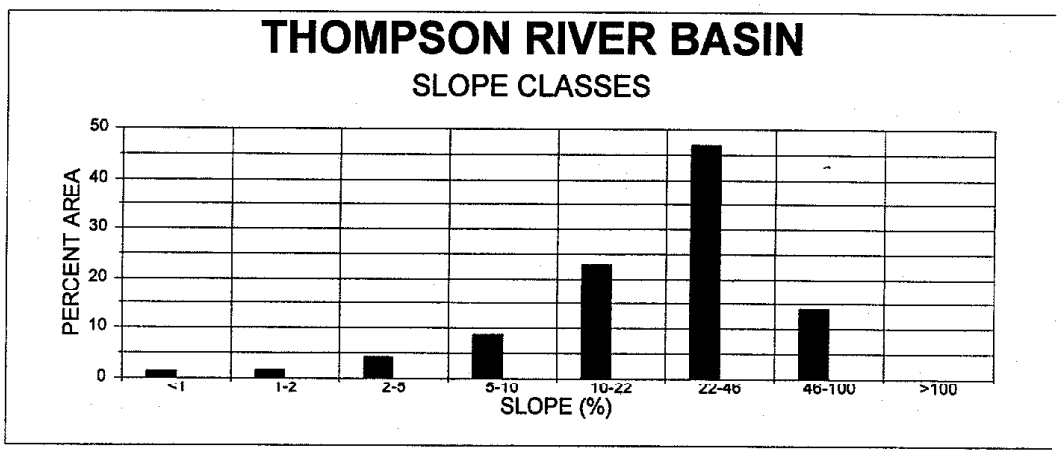
The Thompson River basin, as outlined in Figure 2-1, is 410,095 acres and contains a stream network that is 1,326 linear miles. The Thompson River drains to the Clark Fork below its confluence with the Flathead River. It lies along the west flank of Flathead Valley.

The topography of the Thompson River basin is illustrated at a larger scale in Figure 2-2. Elevations range from 7,464 feet on Baldy Mountain in the southeast corner of the basin to 2,457 feet at the Thompson/Clark Fork confluence. Subbasins and watersheds of key interest (see Figure 2-3)were identified by Plum Creek Timber Company (PCTC). The areas of subbasins and watersheds are listed in Table 2-1.

Elevation, slope and aspect classes were generated from 1:24,000 and 1:250,000 scale Digital Elevation Models (DEMs). Maps of elevation, slope and aspect classes are presented as Figures 2-4, 2-5 and 2-6, respectively. The distribution of elevation, slope and aspect classes for Thompson River basin are illustrated in Figure 2-7. The areas of elevation, slope and aspect classes are listed for subbasins and watersheds in Tables 2-2, 2-3 and 2-4, respectively.

A digital map of annual precipitation was acquired from the (NRCS) Natural Resource Conservation Service (USDA-SCS 1994). This PRISM digital map was generated from measurements at climate stations that were adjusted based on local topography. Annual precipitation ranges from less than 20 inches in the lowest bottom-lands to greater than 60 inches along the highest ridges (Figure 2-8). The distribution of precipitation classes for the Thompson River basin is shown in Figure 2-9. Precipitation classes for subbasins and watersheds are listed in Table 2-5. Average annual precipitation over the project area, estimated as the mid-point of precipitation classes, is 1,037,965 acre-feet.





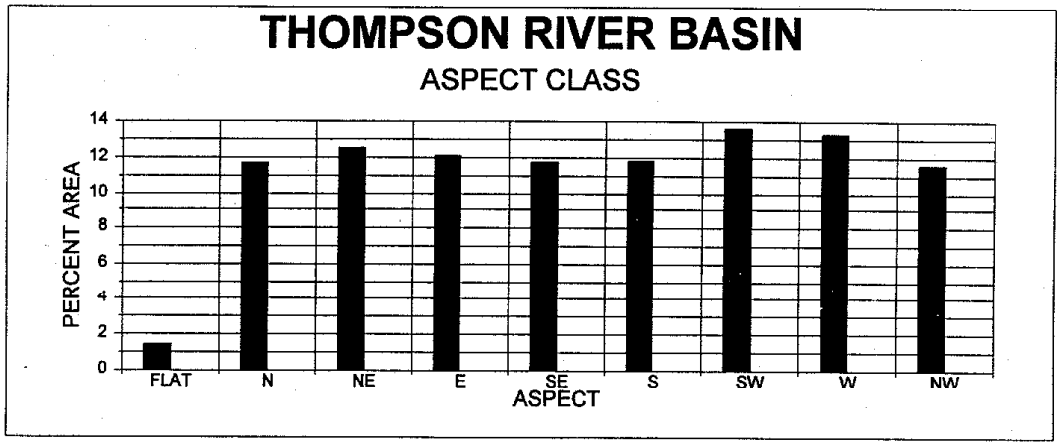


Figure 2-7. Distribution of elevation slope and aspect classes, Thompson River basin.

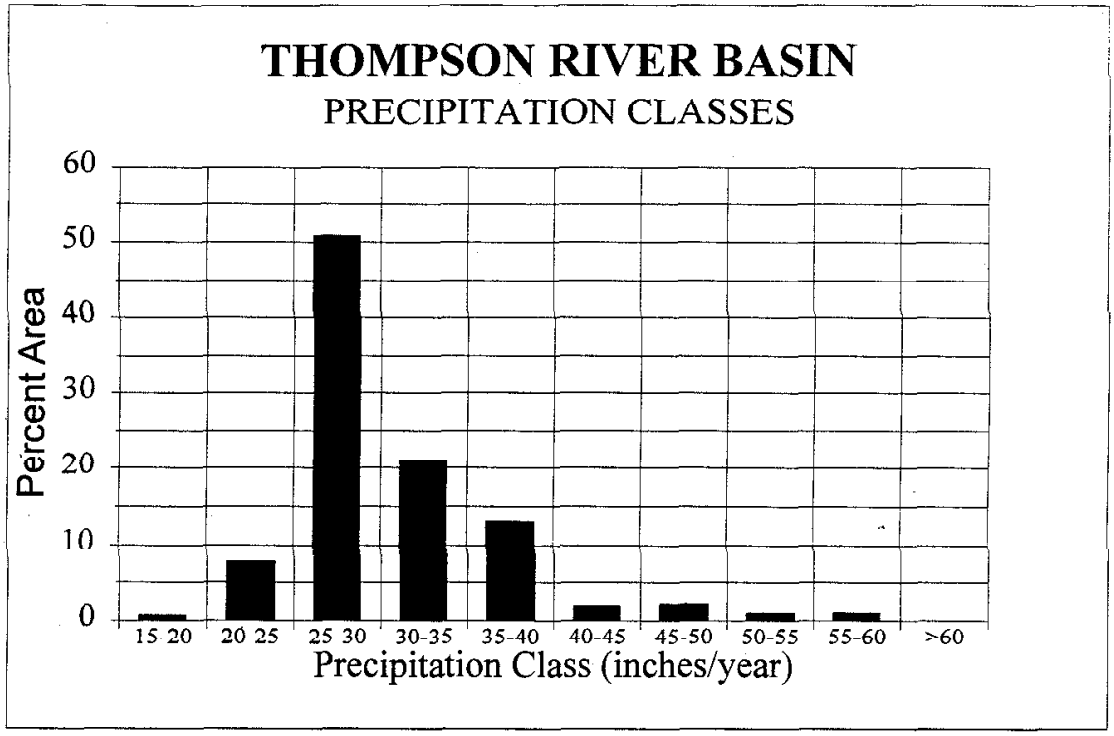


Figure 2-9. Distribution of precipitation classes, Thompson River basin.

Table 2-1. Subbasins and watersheds, Thompson River basin.

SUBBASIN	WATERSHED	AREA	
		Acres	Percent
Upper Thompson River	Thompson Lakes	19896	36.0
Upper Thompson River	Lang Creek	4846	8.8
Upper Thompson River	McGregor Creek	19736	35.7
Upper Thompson River	Boiling Springs Creek	5490	9.9
Upper Thompson River	Davis Creek	5250	9.5
Upper Thompson River	**TOTAL**	**55219**	**100.0**
Middle Thompson River	Middle Thompson	45202	30.3
Middle Thompson River	Murr Creek	19918	13.3
Middle Thompson River	Shroder Creek	4373	2.9
Middle Thompson River	Big Rock Creek	21024	14.1
Middle Thompson River	Semem Creek	3807	2.5
Middle Thompson River	Chippy Creek	11958	8.0
Middle Thompson River	Bear Creek	8352	5.6
Middle Thompson River	Meadow Creek	9575	6.4
Middle Thompson River	Lazier Creek	15204	10.2
Middle Thompson River	Indian Creek	9974	6.7
Middle Thompson River	**TOTAL**	**149386**	**100.0**
Fishtrap Creek	Upper Fishtrap Creek	22211	37.0
Fishtrap Creek	Lower Fishtrap Creek	14203	23.6
Fishtrap Creek	West Fork Fishtrap Creek	11586	19.3
Fishtrap Creek	Beatrice Creek	6570	10.9
Fishtrap Creek	Jungle Creek	5493	9.1
Fishtrap Creek	**TOTAL**	**60063**	**100.0**
Little Thompson River	Upper Little Thompson River	39311	50.1
Little Thompson River	Mudd Creek	13992	17.8
Little Thompson River	Lower Little Thompson	13420	17.1
Little Thompson River	Little Rock Creek	4769	6.1
Little Thompson River	North Fork Little Thompson	7034	9.0
Little Thompson River	**TOTAL**	**78526**	**100.0**
West Fork Thompson	Middle West Fork	14265	62.6
West Fork Thompson	Four Lakes Creek	5932	26.0
West Fork Thompson	Anne Creek	2584	11.3
West Fork Thompson	**TOTAL**	**22781**	**100.0**
Lower Thompson River	Lower Thompson	25184	57.1
Lower Thompson River	Deerhorn Creek	6149	13.9
Lower Thompson River	Bay State Creek	2846	6.5
Lower Thompson River	Big Hole Creek	5316	12.0
Lower Thompson River	Calico Creek	4625	10.5
Lower Thompson River	**TOTAL**	**44120**	**100.0**

Table 2-2. Elevation distribution, subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	ELEVATION CLASS (1000s FEET)					
		2-3K (%)	3-4K (%)	4-5K (%)	5-6K (%)	6-7K (%)	7-8K (%)
Upper Thompson River	Thompson Lakes	0.0	73.3	21.2	4.4	1.1	0.0
Upper Thompson River	Lang Creek	0.0	26.6	31.0	31.7	10.7	0.0
Upper Thompson River	McGregor Creek	0.0	27.3	56.0	15.8	0.9	0.0
Upper Thompson River	Boiling Springs Creek	0.0	36.3	54.2	9.5	0.0	0.0
Upper Thompson River	Davis Creek	0.0	53.9	40.7	5.4	0.0	0.0
Upper Thompson River	**TOTAL**	**0.0**	**47.3**	**39.6**	**11.5**	**1.7**	**0.0**
Middle Thompson River	Middle Thompson	1.0	67.4	26.2	4.9	0.5	0.0
Middle Thompson River	Murr Creek	0.0	4.0	33.8	52.2	10.1	0.0
Middle Thompson River	Shroder Creek	0.0	6.8	38.0	42.3	12.9	0.0
Middle Thompson River	Big Rock Creek	0.0	4.6	24.4	52.9	18.2	0.0
Middle Thompson River	Semem Creek	0.0	33.9	36.5	22.9	6.7	0.0
Middle Thompson River	Chippy Creek	0.0	9.0	23.6	39.3	27.8	0.3
Middle Thompson River	Bear Creek	0.0	6.4	21.9	40.4	29.9	1.3
Middle Thompson River	Meadow Creek	0.0	28.7	61.7	9.6	0.0	0.0
Middle Thompson River	Lazier Creek	0.0	44.2	54.9	0.9	0.0	0.0
Middle Thompson River	Indian Creek	0.0	40.8	48.2	11.1	0.0	0.0
Middle Thompson River	**TOTAL**	**0.3**	**32.8**	**33.8**	**24.5**	**8.5**	**0.1**
Fishtrap Creek	Upper Fishtrap Creek	0.0	14.0	65.6	18.7	1.7	0.0
Fishtrap Creek	Lower Fishtrap Creek	0.0	0.7	39.7	48.9	10.8	0.0
Fishtrap Creek	West Fork Fishtrap Creek	0.0	6.3	30.2	39.3	23.7	0.5
Fishtrap Creek	Beatrice Creek	0.0	9.0	48.4	28.7	13.6	0.3
Fishtrap Creek	Jungle Creek	0.0	16.6	53.1	21.5	8.8	0.0
Fishtrap Creek	**TOTAL**	**0.0**	**9.0**	**49.7**	**31.1**	**10.0**	**0.1**
Little Thompson River	Upper Little Thompson Rive	0.0	2.9	54.4	35.7	6.7	0.3
Little Thompson River	Mudd Creek	0.0	39.8	53.1	7.0	0.1	0.0
Little Thompson River	Lower Little Thompson	0.0	0.2	89.2	7.5	2.7	0.4
Little Thompson River	Little Rock Creek	0.0	45.1	13.3	26.6	15.0	0.0
Little Thompson River	North Fork Little Thompson	0.0	6.0	21.3	50.5	21.9	0.4
Little Thompson River	**TOTAL**	**0.0**	**11.9**	**54.7**	**26.5**	**6.7**	**0.3**
West Fork Thompson	Middle West Fork	1.0	14.1	30.8	37.4	16.5	0.3
West Fork Thompson	Four Lakes Creek	0.0	1.2	19.2	41.0	37.8	0.8
West Fork Thompson	Anne Creek	0.0	0.1	17.6	40.1	41.8	0.4
West Fork Thompson	**TOTAL**	**0.6**	**9.1**	**26.2**	**38.7**	**24.9**	**0.4**
Lower Thompson River	Lower Thompson	15.3	31.7	28.7	20.7	3.6	0.0
Lower Thompson River	Deerhorn Creek	0.4	24.9	36.1	25.3	13.2	0.1
Lower Thompson River	Bay State Creek	0.5	8.0	20.5	54.9	16.2	0.0
Lower Thompson River	Big Hole Creek	0.2	15.6	33.2	35.6	15.4	0.0
Lower Thompson River	Calico Creek	0.0	34.9	40.9	20.6	3.6	0.0
Lower Thompson River	**TOTAL**	**8.9**	**27.6**	**31.0**	**25.3**	**7.1**	**0.0**

Table 2-3. Slope distribution (percent area), subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	SLOPE CLASS (%)							
		<1	1-2	2-5	5-10	10-22	22-46	46-100	>100
Upper Thompson River	Thompson Lakes	12.2	5.8	6.0	10.3	23.2	37.7	4.8	0.0
Upper Thompson River	Lang Creek	2.1	0.6	2.5	5.6	10.6	58.0	20.7	0.0
Upper Thompson River	McGregor Creek	8.2	1.0	3.0	10.0	28.3	42.0	7.6	0.0
Upper Thompson River	Boiling Springs Creek	0.3	0.7	2.4	6.6	23.5	55.2	11.3	0.0
Upper Thompson River	Davis Creek	2.4	2.8	3.8	9.1	23.8	51.4	6.7	0.0
Upper Thompson River	TOTAL	7.8	2.8	4.0	9.3	24.0	44.0	8.0	0.0
Middle Thompson River	Middle Thompson	1.9	4.5	9.1	13.8	22.0	40.4	8.4	0.0
Middle Thompson River	Murr Creek	0.0	0.2	1.3	6.2	33.8	49.9	8.6	0.3
Middle Thompson River	Shroder Creek	0.0	0.2	0.8	3.0	18.0	61.6	16.5	0.0
Middle Thompson River	Big Rock Creek	0.1	0.3	1.0	4.3	23.6	55.8	14.8	0.2
Middle Thompson River	Semem Creek	0.2	1.5	5.0	7.6	22.5	56.4	6.8	0.0
Middle Thompson River	Chippy Creek	0.0	0.3	2.1	3.4	12.0	51.6	30.6	0.1
Middle Thompson River	Bear Creek	0.0	0.1	0.6	1.5	7.0	51.6	39.2	0.2
Middle Thompson River	Meadow Creek	0.2	0.8	2.2	5.4	22.0	60.0	9.3	0.0
Middle Thompson River	Lazier Creek	0.9	3.1	7.7	16.8	32.0	35.1	4.4	0.0
Middle Thompson River	Indian Creek	0.8	2.6	7.8	13.5	20.2	41.3	13.9	0.0
Middle Thompson River	TOTAL	0.8	2.0	4.8	9.2	22.9	47.1	13.0	0.1
Fishtrap Creek	Upper Fishtrap Creek	0.7	0.7	2.1	7.8	23.8	50.3	14.7	0.1
Fishtrap Creek	Lower Fishtrap Creek	0.2	0.7	2.0	4.1	12.2	51.2	29.6	0.0
Fishtrap Creek	West Fork Fishtrap Creek	0.4	0.3	0.9	3.2	10.9	43.8	40.5	1.0
Fishtrap Creek	Beatrice Creek	0.0	0.1	0.3	1.8	13.4	58.4	26.0	0.2
Fishtrap Creek	Jungle Creek	0.0	0.1	0.4	1.9	11.7	53.9	32.0	0.0
Fishtrap Creek	TOTAL	0.4	0.5	1.5	4.8	16.3	50.3	25.9	0.3
Little Thompson River	Upper Little Thompson River	1.0	0.9	2.5	9.1	29.0	47.8	9.7	0.0
Little Thompson River	Mudd Creek	0.1	0.4	1.3	5.7	24.6	57.1	10.9	0.0
Little Thompson River	Lower Little Thompson	1.1	4.7	13.9	22.3	30.2	23.7	4.2	0.0
Little Thompson River	Little Rock Creek	0.1	1.0	8.3	22.3	12.6	30.6	25.0	0.0
Little Thompson River	North Fork Little Thompson	0.1	0.4	1.5	3.4	10.6	54.7	29.3	0.1
Little Thompson River	TOTAL	0.7	1.4	4.5	11.0	25.8	44.9	11.7	0.0
West Fork Thompson	Middle West Fork	0.1	0.1	0.2	1.1	5.6	33.2	59.7	0.7
West Fork Thompson	Four Lakes Creek	0.2	0.2	0.9	4.1	13.6	39.8	41.2	1.3
West Fork Thompson	Anne Creek	0.0	0.1	0.3	1.3	6.5	46.5	45.2	0.0
West Fork Thompson		0.1	0.1	0.4	1.9	7.7	36.2	52.9	0.7
Lower Thompson River	Lower Thompson	0.1	0.3	0.9	3.2	9.6	36.6	49.4	1.1
Lower Thompson River	Deerhorn Creek	0.0	0.1	0.8	3.1	10.0	50.7	35.3	0.0
Lower Thompson River	Bay State Creek	0.0	0.0	0.3	1.0	8.0	49.3	41.4	0.6
Lower Thompson River	Big Hole Creek	0.1	0.3	1.1	3.9	16.4	44.3	34.1	0.1
Lower Thompson River	Calico Creek	0.1	0.2	0.9	3.2	10.4	41.6	42.9	0.7

Table 2-4. Distribution of aspect classes, subasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	ASPECT CLASS								
		Flat (%)	N (%)	NW (%)	W (%)	SW (%)	S (%)	SE (%)	E (%)	NE (%)
Upper Thompson River	Thompson Lakes	12.2	9.5	12.3	8.9	9.2	13.3	17.4	8.9	8.3
Upper Thompson River	Lang Creek	0.1	2.8	6.5	16.0	20.9	8.6	7.2	36.3	1.7
Upper Thompson River	McGregor Creek	1.3	18.4	2.0	16.2	21.4	21.7	2.2	1.5	15.2
Upper Thompson River	Boiling Springs Creek	0.4	23.2	2.6	2.6	19.6	14.3	9.0	12.0	16.2
Upper Thompson River	Davis Creek	4.0	29.8	0.5	26.8	11.8	9.4	1.1	16.3	0.3
Upper Thompson River	**TOTAL**	**6.7**	**14.6**	**7.2**	**12.2**	**14.6**	**15.3**	**10.4**	**9.0**	**10.1**
Middle Thompson River	Middle Thompson	2.5	9.4	15.9	2.0	14.2	12.0	18.5	24.1	1.5
Middle Thompson River	Murr Creek	0.0	16.4	9.0	7.1	9.3	10.9	18.7	13.6	14.8
Middle Thompson River	Shroder Creek	0.0	3.7	12.0	2.2	3.8	14.5	23.9	13.8	26.1
Middle Thompson River	Big Rock Creek	0.1	21.5	22.0	16.3	2.5	1.9	2.9	30.6	2.1
Middle Thompson River	Semem Creek	0.2	0.1	0.0	0.5	7.5	6.3	22.2	51.4	11.8
Middle Thompson River	Chippy Creek	0.0	12.8	4.6	5.7	13.8	15.0	13.8	14.6	19.5
Middle Thompson River	Bear Creek	0.0	20.6	1.0	2.8	1.2	22.2	16.4	12.8	23.1
Middle Thompson River	Meadow Creek	0.3	20.3	21.0	19.1	1.4	12.1	12.6	11.4	1.8
Middle Thompson River	Lazier Creek	1.3	16.5	21.8	3.1	2.4	13.7	15.5	12.3	13.6
Middle Thompson River	Indian Creek	1.4	6.4	15.0	2.7	2.7	29.5	5.1	27.5	9.8
Middle Thompson River	**TOTAL**	**1.0**	**13.6**	**13.5**	**6.0**	**8.3**	**12.6**	**15.3**	**20.1**	**9.6**
Fishtrap Creek	Upper Fishtrap Creek	0.7	13.3	16.2	15.1	11.0	10.5	11.9	10.8	10.5
Fishtrap Creek	Lower Fishtrap Creek	0.3	1.2	1.6	18.3	22.0	17.1	21.4	2.6	15.4
Fishtrap Creek	West Fork Fishtrap Creek	0.1	24.4	26.3	30.9	2.7	1.8	8.5	2.2	3.0
Fishtrap Creek	Beatrice Creek	0.0	26.3	28.4	0.3	3.2	12.1	1.1	10.6	17.9
Fishtrap Creek	Jungle Creek	0.0	13.8	3.6	18.6	18.0	18.8	16.3	4.7	6.2
Fishtrap Creek	**TOTAL**	**0.4**	**13.5**	**14.4**	**16.9**	**12.2**	**11.7**	**12.9**	**7.3**	**10.8**
Little Thompson River	Upper Little Thompson River	1.3	15.7	19.5	15.0	15.5	16.2	0.2	15.2	1.4
Little Thompson River	Mudd Creek	0.1	17.0	17.0	12.3	12.5	9.8	1.3	14.3	15.7
Little Thompson River	Lower Little Thompson	1.4	1.6	1.5	0.9	8.9	13.6	27.4	27.2	17.6
Little Thompson River	Little Rock Creek	0.1	8.8	1.7	1.8	11.3	13.3	17.7	26.4	18.8
Little Thompson River	North Fork Little Thompson	0.2	14.4	0.4	1.6	0.3	26.1	2.9	25.9	28.3
Little Thompson River	**TOTAL**	**0.9**	**13.0**	**13.4**	**10.2**	**12.4**	**14.9**	**6.4**	**18.6**	**10.1**
West Fork Thompson	Middle West Fork	0.0	17.7	3.0	24.9	2.2	0.3	21.8	16.5	13.6
West Fork Thompson	Four Lakes Creek	0.3	2.3	19.5	1.9	19.8	27.3	10.3	2.8	15.8
West Fork Thompson	Anne Creek	0.1	8.7	9.6	18.5	2.1	14.5	37.5	5.5	3.7
West Fork Thompson	**TOTAL**	**0.1**	**12.2**	**8.6**	**17.4**	**7.5**	**9.8**	**19.8**	**11.3**	**13.3**
Lower Thompson River	Lower Thompson	0.1	15.5	14.4	15.8	23.0	2.0	12.3	14.7	2.2
Lower Thompson River	Deerhorn Creek	0.1	27.6	4.5	5.2	5.3	20.8	14.2	9.6	12.7
Lower Thompson River	Bay State Creek	0.0	26.0	3.8	1.9	0.4	0.4	22.5	34.4	10.6
Lower Thompson River	Big Hole Creek	0.1	33.3	3.7	1.7	5.8	2.4	1.8	24.3	26.8
Lower Thompson River	Calico Creek	0.2	16.8	14.4	13.8	8.9	6.4	7.0	13.5	19.1
Lower Thompson River	**TOTAL**	**0.1**	**19.6**	**11.6**	**12.0**	**15.8**	**4.7**	**11.2**	**16.2**	**8.9**

Table 2-5. Distribution (percent area) of precipitation classes, subbasins and watersheds of Thompson River basin.

WATERSHED	SUBBASIN	PRECIPITATION CLASS (INCHES/YEAR)									
		15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	>60
ALL SUBBASINS	**ALL WATERSHEDS**	**0.8**	**7.7**	**50.9**	**21.0**	**13.1**	**2.0**	**2.2**	**1.1**	**1.1**	**0.1**
Upper Thompson River Subbasin	Thompson Lakes	0.0	0.0	89.8	10.2	0.0	0.0	0.0	0.0	0.0	0.0
Upper Thompson River Subbasin	Lang Creek	0.0	0.0	39.6	42.1	18.3	0.0	0.0	0.0	0.0	0.0
Upper Thompson River Subbasin	McGregor Creek	0.0	16.3	69.5	13.9	0.2	0.0	0.0	0.0	0.0	0.0
Upper Thompson River Subbasin	Boiling Springs Creek	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Thompson River Subbasin	Davis Creek	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Thompson River Subbasin	**TOTAL**	**0.0**	**5.8**	**80.1**	**12.3**	**1.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Middle Thompson River Subbasin	Middle Thompson	2.5	19.4	76.4	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Murr Creek	0.0	0.0	47.8	52.2	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Shroder Creek	0.0	0.0	71.2	28.8	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Big Rock Creek	0.0	0.1	43.1	32.0	24.8	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Semem Creek	0.0	15.9	67.2	16.8	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Chippy Creek	0.0	6.0	13.4	22.4	58.1	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Bear Creek	0.0	3.1	10.9	20.6	65.3	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Meadow Creek	0.0	0.0	51.1	48.9	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Lazier Creek	0.0	0.0	91.7	8.3	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	Indian Creek	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Thompson River Subbasin	**TOTAL**	**8.3**	**76.5**	**663.4**	**222.1**	**129.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Fishtrap Creek Subbasin	Upper Fishtrap Creek	0.0	0.0	8.5	41.9	39.3	7.9	2.4	0.0	0.0	0.0
Fishtrap Creek Subbasin	Lower Fishtrap Creek	0.0	10.5	65.7	23.8	0.0	0.0	0.0	0.0	0.0	0.0
Fishtrap Creek Subbasin	West Fork Fishtrap Creek	0.0	0.0	2.7	16.9	19.6	14.0	23.5	12.1	11.1	0.0
Fishtrap Creek Subbasin	Beatrice Creek	0.0	0.0	36.1	29.1	14.2	7.5	9.7	3.0	0.4	0.0
Fishtrap Creek Subbasin	Jungle Creek	0.0	12.2	49.0	24.9	10.9	2.8	0.3	0.0	0.0	0.0
Fishtrap Creek Subbasin	**TOTAL**	**0.0**	**3.6**	**27.6**	**29.9**	**20.9**	**6.7**	**6.5**	**2.7**	**2.2**	**0.0**

Table 2-5. Distribution (percent area) of precipitation classes, subbasins and watersheds of Thompson River basin.

WATERSHED	SUBBASIN	PRECIPITATION CLASS (INCHES/YEAR)									
		15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	>60
Little Thompson River Subbasin	Upper Little Thompson River	0.0	0.2	61.2	34.4	4.2	0.0	0.0	0.0	0.0	0.0
Little Thompson River Subbasin	Mudd Creek	0.0	6.3	83.5	7.7	2.5	0.0	0.0	0.0	0.0	0.0
Little Thompson River Subbasin	Lower Little Thompson	11.2	59.5	27.3	1.9	0.0	0.0	0.0	0.0	0.0	0.0
Little Thompson River Subbasin	Little Rock Creek	10.3	26.7	16.2	17.8	29.0	0.0	0.0	0.0	0.0	0.0
Little Thompson River Subbasin	North Fork Little Thompson	0.0	0.0	16.8	31.0	52.2	0.0	0.0	0.0	0.0	0.0
Little Thompson River Subbasin	**TOTAL**	**2.5**	**13.0**	**52.7**	**22.8**	**9.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
West Fork Thompson River Subbasin	Middle West Fork	0.0	0.0	0.0	17.2	31.7	11.8	24.9	6.5	7.8	0.0
West Fork Thompson River Subbasin	Four Lakes Creek	0.0	0.0	0.0	0.0	1.6	7.5	21.2	32.7	33.3	3.7
West Fork Thompson River Subbasin	Anne Creek	0.0	0.0	0.0	0.0	54.8	26.0	12.1	5.5	1.5	0.0
West Fork Thompson River Subbasin	**TOTAL**	**0.0**	**0.0**	**0.0**	**10.8**	**25.5**	**12.3**	**22.5**	**13.2**	**13.7**	**1.0**
Lower Thompson River Subbasin	Lower Thompson	0.0	17.0	43.0	25.5	10.4	4.0	0.1	0.0	0.0	0.0
Lower Thompson River Subbasin	Deerhorn Creek	0.0	12.8	40.2	26.2	20.8	0.0	0.0	0.0	0.0	0.0
Lower Thompson River Subbasin	Bay State Creek	0.0	0.0	2.2	27.5	59.3	11.1	0.0	0.0	0.0	0.0
Lower Thompson River Subbasin	Big Hole Creek	0.0	0.0	14.3	27.1	58.6	0.0	0.0	0.0	0.0	0.0
Lower Thompson River Subbasin	Calico Creek	0.0	15.3	48.2	16.7	19.8	0.0	0.0	0.0	0.0	0.0
Lower Thompson River Subbasin	**TOTAL**	**0**	**13.1**	**37.1**	**25.0**	**21.8**	**3.0**	**0.1**	**0.0**	**0.0**	**0.0**

The stream courses marked on Figure 2-10 are from the 1:24,000 scale Cartographic Feature Files (CFFs). The Thompson River consists of 2,299 stream reaches, defined as the stream course between successive confluences. Some reaches were further divided based on valley-bottom type (see chapter 3.7), resulting in 3,316 reaches.

A stream order based on Strahler (1957) was assigned to each reach. The headwater tributaries marked on 1:24,000 scale are Order 1. The convergence of two Order 1 streams makes an Order 2 stream. The convergence of two Order 2 streams makes an Order 3; etc. At the confluence with the Clark Fork River, Thompson River is Order 6 (see Figure 2-11). Streamflow regime (intermittent, perennial or ditch) was also assigned from the CFFs.

Stream gradient was estimated from 1:24,000 scale Digital Elevation Models (DEMs) and CFFs for each reach. The upstream and downstream elevations of stream reaches were estimated from the DEMs. Grade was calculated as:

$$((E_u - E_d)/L) * 100$$

where: E_u = Upstream elevation of reach
E_d = Downstream elevation of reach
L = Length of reach from CFFs

A program was written to estimate sinuosity of each reach from the CFFs. The program calculates sinuosity as the ratio of stream length to valley length. The distance over which valley length is measured varies for each reach to adjust for bends in the valley bottom. Methods for estimating sinuosity are further discussed in APPENDIX B.

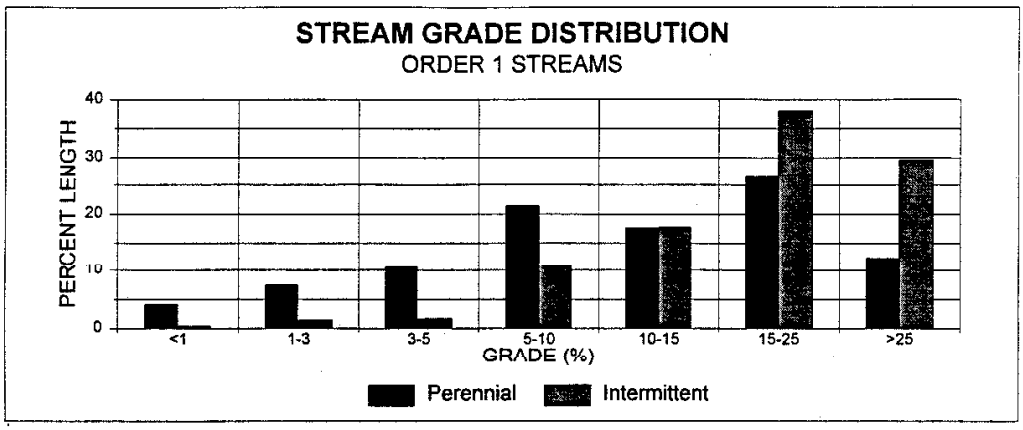
Stream attributes for the Thompson River basin are summarized in Table 2-6. About 31 percent (418 miles) of the total stream length is perennial with an average gradient of 6.5 percent. Intermittent streams are much steeper with an average grade of 15.3 percent. The distributions of stream gradient for order 1, 2, 3, 4, 5 and 6 streams in the Thompson River basin are illustrated in Figure 2-12. Included in the project area are 7.2 linear miles of ditches, 118 lakes and ponds with a total area of 3,180 acres and 59 linear miles of shoreline.

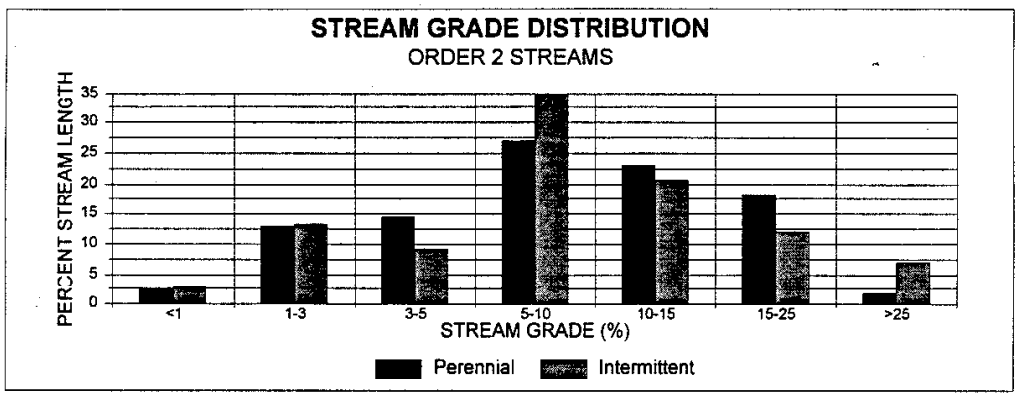
Sinuosity is the ratio of stream length to valley length. Straight streams have a sinuosity of 1.0 (stream length and valley length are equivalent). The sinuosity of most streams in the Thompson River basin (see Table 2-6) is low.

A stream gaging station is monitored by USGS near Thompson Falls about 1 mile upstream from the Clark Fork confluence (40 year period of record from 1911 to 1994). Average monthly flows (minimum, mean, and maximum) are compared for the gaging station in Figure 2-13. The average annual yield for Thompson River basin is 317,822 acre-feet. About 720,143 acre-feet (69 percent of estimated average annual precipitation) is lost to evapotranspiration and percolation to groundwater. A summary of the stream flow records is presented as APPENDIX C.

Lands are managed by the U.S. Forest Service, State of Montana, Plum Creek Timber and other private owners (see Figure 2-14). The ownership status for Thompson River basin, subbasins and watersheds are listed in Table 2-7.

Index maps for 1:24,000, 1:100,00 and 1:250,000 scale quads are presented as Figures 2-15, 2-16 and 2-17, respectively. An index map for 1:40,000 scale, black-and-white, NAPP aerial photos dated July 17, 1990 and August 6, 1990 is presented as Figure 2-18.





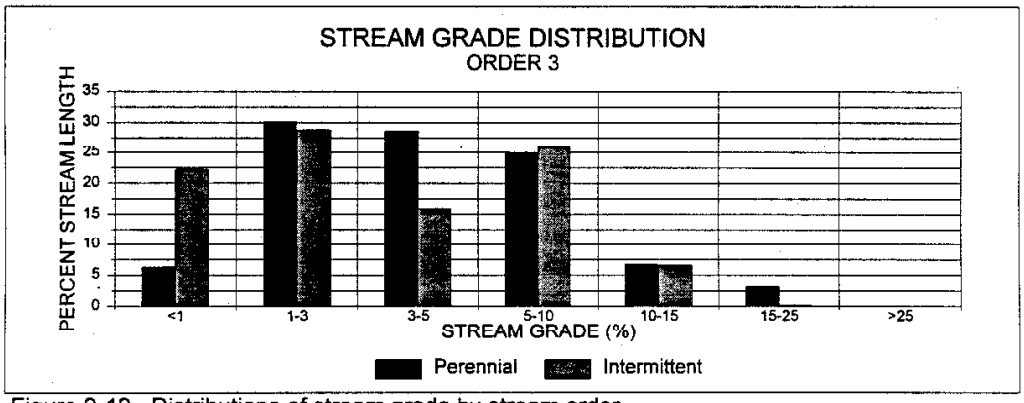
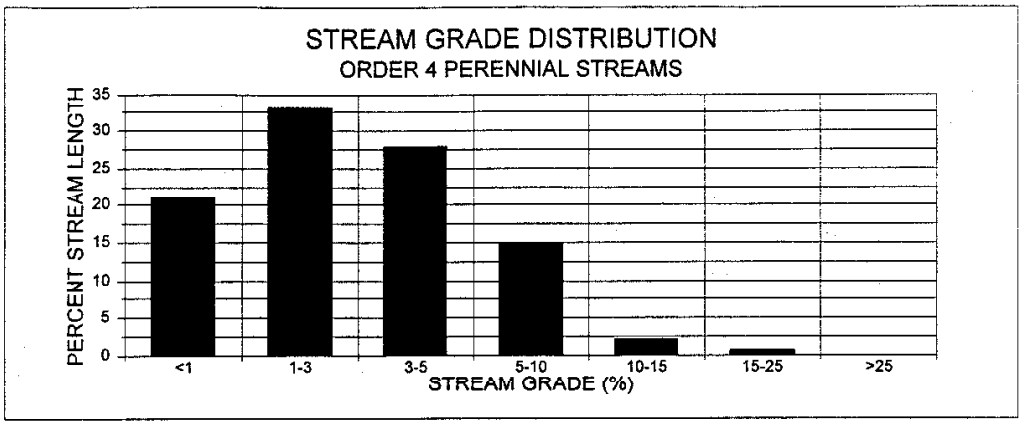
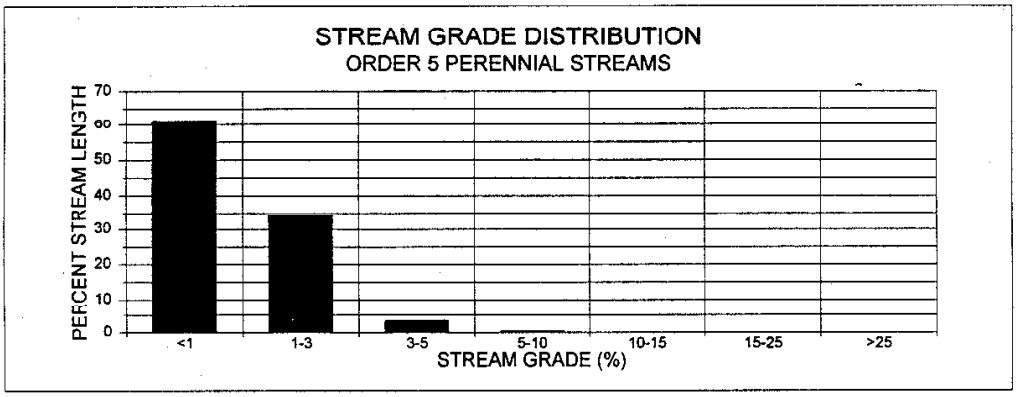


Figure 2-12. Distributions of stream grade by stream order.





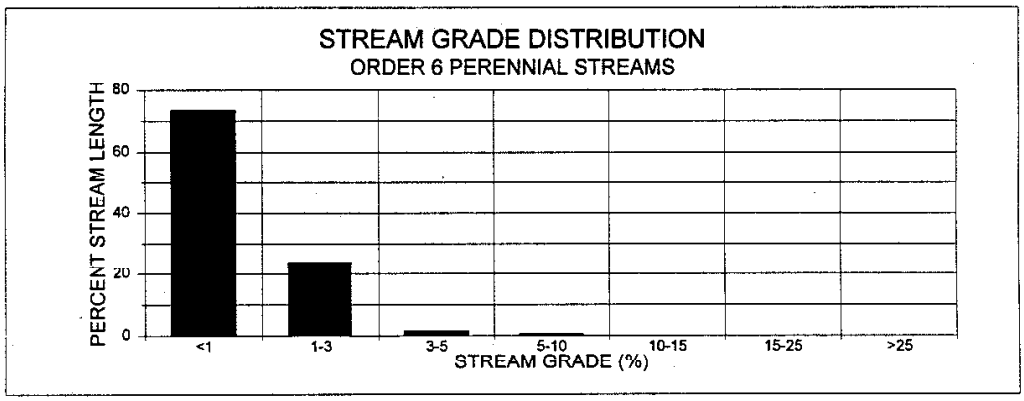


Figure 2-12. Continued.

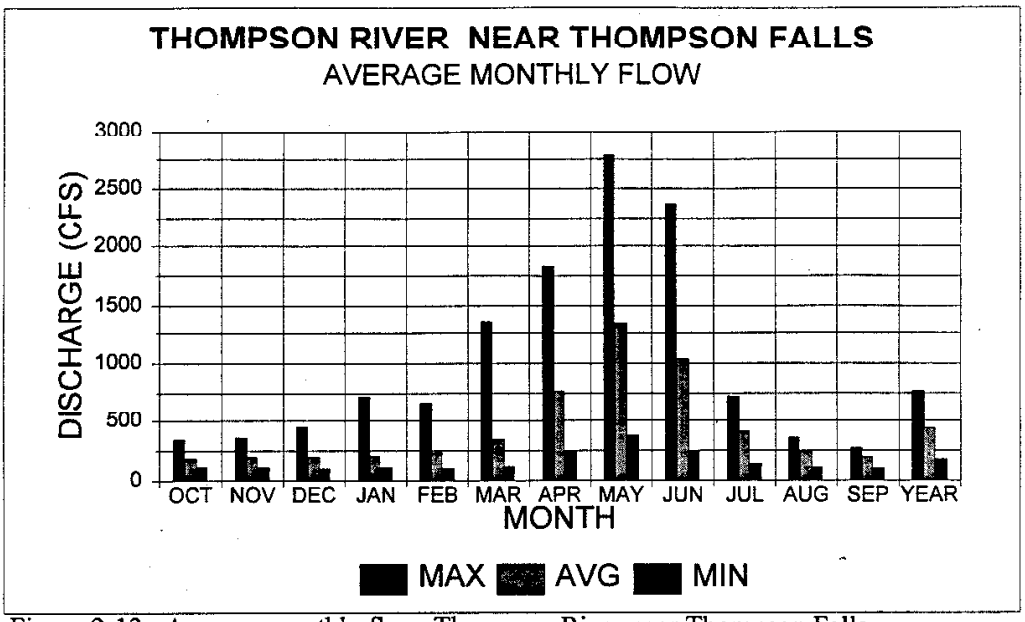


Figure 2-13. Average monthly flow, Thompson River near Thompson Falls.

Table 2-6. Stream attributes, Thompson River basin.

STREAM ORDER	PERENNIAL			INTERMITTENT			TOTAL		
	Length (miles)	Grade (%)	Sinuosity Ratio	Length (miles)	Grade (%)	Sinuosity Ratio	Length (miles)	Grade (%)	Sinuosity Ratio
1	55.8	13.0	1.05	776.3	21.0	1.05	832.1	20.4	1.05
2	127.8	9.5	1.04	119.5	10.3	1.05	247.2	9.9	1.05
3	105.1	4.9	1.05	12.9	4.2	1.06	118.0	4.8	1.05
4	52.7	3.3	1.07	0.0	NA	NA	52.7	3.3	1.07
5	51.9	0.9	1.17	0.0	NA	NA	51.9	0.9	1.17
6	24.3	0.8	1.04	0.0	NA	NA	24.3	0.8	1.04
TOTAL	**417.5**	**6.5**	**1.06**	**908.6**	**19.3**	**1.05**	**1326.2**	**15.3**	**1.05**

Table 2-7. Ownership status, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	OWNERSHIP									
		PCTC		PVT		STATE		USFS		TOTAL	
		(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)
ALL	**ALL**	169476	41.3	13900	3.4	27742	6.8	198977	48.5	410094	100.0
Upper Thompson River	Thompson Lakes	14106	70.9	1207	6.1	4256	21.4	328	1.6	19896	100.0
Upper Thompson River	Lang Creek	2773	57.2	577	11.9	357	7.4	1138	23.5	4846	100.0
Upper Thompson River	McGregor Creek	9980	50.6	1435	7.3	3491	17.7	4830	24.5	19736	100.0
Upper Thompson River	Boiling Springs Creek	4647	84.7	0	0.0	843	15.3	0	0.0	5490	100.0
Upper Thompson River	Davis Creek	3784	72.1	106	2.0	76	1.4	1285	24.5	5250	100.0
Upper Thompson River	**TOTAL**	**35290**	**63.9**	**3324**	**6.0**	**9023**	**16.3**	**7582**	**13.7**	**55219**	**100.0**
Middle Thompson River	Middle Thompson	33649	74.4	3566	7.9	6029	13.3	1958	4.3	45202	100.0
Middle Thompson River	Murr Creek	9596	48.2	30	0.1	347	1.7	9946	49.9	19918	100.0
Middle Thompson River	Shroder Creek	2009	45.9	147	3.4	462	10.6	1754	40.1	4373	100.0
Middle Thompson River	Big Rock Creek	6297	30.0	70	0.3	0	0.0	14657	69.7	21024	100.0
Middle Thompson River	Semem Creek	3146	82.6	0	0.0	209	5.5	451	11.9	3807	100.0
Middle Thompson River	Chippy Creek	2354	19.7	140	1.2	0	0.0	9464	79.1	11958	100.0
Middle Thompson River	Bear Creek	1439	17.2	0	0.0	32	0.4	6881	82.4	8352	100.0
Middle Thompson River	Meadow Creek	6287	65.7	1188	12.4	1141	11.9	959	10.0	9575	100.0
Middle Thompson River	Lazier Creek	9685	63.7	832	5.5	1151	7.6	3536	23.3	15204	100.0
Middle Thompson River	Indian Creek	8899	89.2	440	4.4	634	6.4	0	0.0	9974	100.0
Middle Thompson River	**TOTAL**	**83361**	**55.8**	**6413**	**4.3**	**10005**	**6.7**	**49608**	**33.2**	**149386**	**100.0**

Table 2-7. Ownership status, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	OWNERSHIP									
		PCTC		PVT		STATE		USFS		TOTAL	
		(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)
Fishtrap Creek	Upper Fishtrap Creek	50	0.2	22	0.1	0	0.0	22138	99.7	22210	100.0
Fishtrap Creek	Lower Fishtrap Creek	7708	54.3	150	1.1	1360	9.6	4985	35.1	14203	100.0
Fishtrap Creek	West Fork Fishtrap Creek	102	0.9	0	0.0	0	0.0	11484	99.1	11586	100.0
Fishtrap Creek	Beatrice Creek	2509	38.2	0	0.0	0	0.0	4062	61.8	6570	100.0
Fishtrap Creek	Jungle Creek	3501	63.7	113	2.1	0	0.0	1879	34.2	5493	100.0
Fishtrap Creek	**TOTAL**	**13870**	**23.1**	**285**	**0.5**	**1360**	**2.3**	**44547**	**74.2**	**60063**	**100.0**
Little Thompson River	Upper Little Thompson Rive	4498	11.4	1604	4.1	98	0.3	33111	84.2	39311	100.0
Little Thompson River	Mudd Creek	10000	71.5	1352	9.7	0	0.0	2639	18.9	13991	100.0
Little Thompson River	Lower Little Thompson	7509	56.0	185	1.4	5364	40.0	362	2.7	13420	100.0
Little Thompson River	Little Rock Creek	1894	39.7	735	15.4	0	0.0	2140	44.9	4769	100.0
Little Thompson River	North Fork Little Thompson	308	4.4	0	0.0	270	3.8	6456	91.8	7034	100.0
Little Thompson River	**TOTAL**	**24210**	**30.8**	**3876**	**4.9**	**5732**	**7.3**	**44708**	**56.9**	**78526**	**100.0**
West Fork Thompson	Middle West Fork	0	0.0	0	0.0	0	0.0	14265	100.0	14265	100.0
West Fork Thompson	Four Lakes Creek	0	0.0	0	0.0	0	0.0	5932	100.0	5932	100.0
West Fork Thompson	Anne Creek	354	13.7	0	0.0	0	0.0	2230	86.3	2584	100.0
West Fork Thompson	**TOTAL**	**354**	**1.6**	**0**	**0.0**	**0**	**0.0**	**22427**	**98.4**	**22781**	**100.0**
Lower Thompson River	Lower Thompson	3845	15.3	2	0.0	890	3.5	20447	81.2	25184	100.0
Lower Thompson River	Deerhorn Creek	3370	54.8	0	0.0	46	0.7	2734	44.5	6149	100.0
Lower Thompson River	Bay State Creek	371	13.0	0	0.0	0	0.0	2475	87.0	2846	100.0
Lower Thompson River	Big Hole Creek	2287	43.0	0	0.0	1	0.0	3029	57.0	5316	100.0
Lower Thompson River	Calico Creek	2519	54.5	0	0.0	686	14.8	1420	30.7	4625	100.0
Lower Thompson River	**TOTAL**	**12392**	**28.1**	**2**	**0.0**	**1622**	**3.7**	**30104**	**68.2**	**44120**	**100.0**

3.0 CLASSIFICATION AND INVENTORY

The classification is hierarchical and consists of eight levels (Table 3.0-1). Classes of the top levels are based on regional criteria from small-scale maps and general information sources (see Figure 3.0-1). Classes of the lower levels are based on information from large-scale maps and on more quantitative, site-specific criteria.

The intent of the classification is to identify landscapes that evolved in response to distinctive processes that have resulted in distinctive structure, function and ecological potential. Landscapes have evolved in response to the interaction of climatic, geologic, geomorphic, hydrologic and biotic processes. From a "high-perspective" (e.g., 1:2,500,000 scale), differences in regional climate and geologic structure are apparent between classes of broad classifications. When viewed from a "mid-perspective" (e.g., 1:100,000 scale), differences in geologic districts (e.g., granite versus metasedimentary) and subsections (e.g., alpine glaciated versus continental glaciated versus fluvial) become discernable, corresponding with landscapes that evolved from distinctive parent materials and distinctive processes. From a "low-perspective" (e.g., 1:24,000 scale) areas of still more distinctive form and position relative to environmental gradients are used to discern landtype associations and landtypes.

A landtype of particular interest is the valley-bottom landtype, where streams and riparian habitat occur. The valley-bottom landtype can be further divided into valley-bottom types based on longitudinal grade and valley morphology. Valley-bottom types were again stratified into valley-bottom habitats based on dominant vegetation.

Table 3.0-1. Hierarchical levels of classification.

Broad Classifications	Ecoregions (Omernik 1987) are areas of distinctive land-surface form, potential natural vegetation, land-use and soil. Bailey (1995) identified *domains and divisions* based on climatic zones and *provinces*, characterized by general floristic components.
Geologic district	Areas of distinctive parent materials that differ from surrounding districts in structure, degree of weathering, dominant size-fractions of weathering products and water- handling characteristics. They may contain several subsections.
Subsection	Lands that evolved in response to distinctive geomorphic processes that correlate with landscapes of distinctive form -- mountains sculpted by alpine glaciers are distinguished from mountains dissected by streams and from more gentle terrain shaped by continental glaciation.
Landtype association	Within a subsection areas with distinctive position are distinguished as landtype associations. Lands in the *alpine glaciated subsection* include *cirque and rocky ridge, glacial basin, glacial trough* and *moraine* landtype associations. Other landtype associations characterize fluvial and continental glaciated subsections. Landtype associations are a response to the geomorphic processes used to distinguish subsections. They can be further divided as landtypes.
Landtype	Portions of a landtype association that are distinguished by landform, soil and potential plant communities mapped at order 3 or 4 level and potential plant community. The emphasis of landtypes was upland landforms.
Valley-bottom landtype	The valley-bottom landtype includes mostly depositional lands along stream courses. Landforms include those formed by alpine glaciers (basins and moraines), streams (floodplains, alluvial fans and terraces), and continental glaciation (glacio-lacustrine terraces). This level is used to focus on streams and associated riparian habitats.
Valley-bottom type	Reaches of the valley-bottom landtype that generally correlate with subsections that are distinguished by effectiveness of the dominant geomorphic process. The valley-bottom in glacial lands can be divided as glacial basin (zone of scour), glacial train (zone of transport) and glacial outwash (zone of deposition). Valley-bottom types are distinguished based on valley grade and morphology. They correlate with streams and riparian habitats of distinctive ecological potential.
Valley-bottom Habitat	Areas within the valley-bottom distinguished by landform and potential vegetation.

Hierarchical levels may be thought of as layers of information. The top layers (e.g., ecoregion) consist of large polygons that are described in terms of general criteria. At successively lower levels, polygons are divided into smaller areas that are described in terms of more refined criteria, from which increasingly specific interpretations can be drawn. The classification is applied from the top level down, thus accounting for variance at the broadest level possible. The various scales used in the classification allow interpretation and generalization at perspectives ranging from regional to more specific. More specific information for lower levels can also be integrated to support interpretations for higher levels.

3.1 Broad Scale Classifications

Broad scale classifications include ecoregion (Omernik 1987) and division, province and section (Bailey 1995).

Omernik identified ecoregions based on factors that cause regional variation in ecosystems or on factors that integrate the causes of regional variations. Principal factors used to identify ecoregions are land surface form, potential natural vegetation, land use and soils. These ecoregions have been used to identify streams of similar potential to facilitate impact assessments (Hughes and Gammon. 1986; Rohm et al. 1987) and for identifying streams with similar biotic and physicochemical characteristics (Hughes et al. 1987; Whittier et al. 1988). The Thompson River basin is within the *Northern Rockies Ecoregion* (see Figure 3.1-1). This ecoregion is characterized as high mountains with cedar/hemlock/pine, western spruce/fir, grand fir/Douglas-fir and Douglas-fir potential natural vegetation. Major land uses include harvest of forest and woodland products. Soils are described as Eastern interior mountain soils with acidic rock types, mostly Inceptisols.

Bailey (1995) defined domains, divisions, provinces, and sections (see Figure 3.1-2). The two broadest levels, domains and divisions, are based on climatic zones identified by Koppen (1931) and modified by Trewartha (1968). Thompson River basin is within the *Dry Domain* and the *Temperate Steppe Regime Mountains Division*, characterized by semiarid continental climate with cold, dry winters and warm summers. Divisions are further stratified as provinces, characterized by more refined climate and similarities in general floristic components. The Thompson River basin is in the *Northern Rocky Mountain Forest-Steppe-Coniferous Forest-Alpine Meadow Province*, characterized by 1) high, rugged, glaciated mountains and nearly flat intermontane valleys; 2) cold winters and warm summers; 20 to 40 inch annual precipitation, most of which falls in the fall, winter and spring; 3) mixed evergreen-deciduous vegetation, mostly Douglas-fir and cedar-hemlock-Douglas-fir forests, are dominant; and 4) soils are mostly cool, moist Inceptisols derived from a variety of igneous, sedimentary and metamorphic rocks. The northern part of Thompson River basin is in the *Flathead Valley Section*, part of which may have been covered by the Cordilleran Ice sheet; the southern part is in the *Bitterroot Mountain Section*.

3.2 *Geologic Districts*

A geologic districts is an areas of similar rock type or parent material. They often correspond with distinctive assemblages of upland potential plant communities and areas of distinctive hydrologic character. The hydrologic character of landscapes is also influenced by the degree to which parent material has been weathered (producing sediment) and the water-handling characteristics (e.g., porosity, retention, etc.) of the parent rock and its weathering products. The hydrologic character of hard rock (e.g., quartzite) that weathers slowly to mixed sizes (e.g., silt, sand, gravel and cobble) is different from that of soft rock (e.g., tuff) that weathers rapidly to fine-textured sediment. Geologic districts may be 10's to many 100's of square miles in size. Geologic districts do not change (to other types) in response to cultural practices. They include both uplands and bottom-lands.

During Precambrian time, fine sediments were deposited in an expansive shallow sea, known as the Belt Basin, in what is now western Montana and northern Idaho (Sasich and Lomotte-Hagen 1989). These sediments were compressed and cemented into sedimentary rocks. The sedimentary rocks were metamorphosed -- sandstone became quartzite, siltstone became siltite and shale became argillite.

Most of northwest Montana, including the Thompson River basin is the over-thrust belt, which consists of a series of long ridges that trend north to south between parallel valleys. The over-thrust belt is dominated by belt rock -- thick layers of Precambrian mudstone, sandstone and limestone that have moved east along faults for distances of some tens of miles from where they formed (Alt and Hyndman 1986). The over-thrust belt consists of many slabs of sedimentary rock that tilt gently to downward to the west and that have moved east on a fault that lies almost flat. In

general, the slabs are progressively older from east to west, with older rocks on top of younger ones. Ridges correspond with tilted exposures of resistant rock and valleys follow the trend of weak rock.

In contrast to Belt rock east of the Rocky Mountain Trench (of which Flathead Valley is the southern extension), rocks to the west of the trench include enormous, thick slabs that moved at depth along faults that tilt gently downward to the west. Alt and Hyndman (1986) supposed two stages of bedrock deformation west of the Rocky Mountain Trench: 1) A collision between the Pacific Ocean and North American plates along the former trench in eastern Washington shoved deep slabs of rock to the east, thickened the crust and raised the surface more than 100 million years ago; and 2) elevated slabs from what was then the western edge of the continent continued to slide east along shallow faults under the influence of gravity.

The Cordilleran ice sheet that formed in Canada enlarged into northwest Montana many times during the Pleistocene (present to 2.5 million years ago). The most recent ice ages are the Bull Run, which peaked between 70,000 and 130,000 years ago, and the Pindale, which reached its maximum extent about 15,000 years ago. Johns (1970) shows one lobe of the Cordilleran ice sheet extending into the Thompson River basin to the vicinity of Bear Creek and another extending south into upper Fishtrap Creek basin.

During the Pinedale, the glacier dammed the Clark Fork River near Pend Oreille Lake to form Glacial Lake Missoula. At its maximum, Lake Missoula was about 2,000 feet deep just above the dam, covered about 3,300 square miles and filled ice-free valleys to a maximum elevation of 4,200 feet (Johns 1970). The continental ice sheet intermittently covered the northern half of the area shown as Lake Missoula in Thompson River basin (see Figure 3.2-1). The lake was frequently drained by catastrophic floods when the ice dam was eroded. Sediment records indicate the lake filled and drained 35 to 40 times.

A single geologic district was identified for the Thompson River basin:

Metasedimentary Geologic District: Comprised or derived primarily from metamorphosed sedimentary rocks of Precambrian age; lower positions are filled with secondary glacial, lacustrine and alluvial deposits.

Also included are narrow bands of limestone, dolomite, shale and quartzite of Cambrian age along the west flank of Fishtrap River basin.

A map showing component rock types is presented as Figure 3.2-2. A legend of rock types from the 1:250,000 scale Wallace and Kallispell geologic maps (Harrison et al. 1986 and 1992) is listed as Table 3.2-1. The distribution of surficial rock types for the Thompson River basin is listed in Table 3.2-2.

The single geologic district identified for the Swan River basin (White Horse Associates 1995) is similar to that identified in the Thompson River basin.

Table 3.2-1. Rock type legend (from Harrison et al. 1986 and 1992), Thompson River basin.

ERA / Period	SYMBOL	NAME	DESCRIPTION
RECENT			
Holocene	Qal	Alluvium	Gravel, sand, silt, and clay in flood plains and low terraces along present drainage courses. Includes alluvial fans.
Pleistocene	Qg	Glacial deposits	Glacial, fluvioglacial, and flood deposits -- includes till (ground and end moraines), outwash, glaciofluvial and flood deposits. Particularly abundant and thick in drainages and basins connecting to or north of the Flathead-Clark Fork River system. Torrential gravel deposits related to catastrophic emptying of Glacial Lake Missoula are in perched valleys at places along the Clark Fork River, form large point bars as terraces, form giant ripples, and show coarse cross-bedding convex upstream at the mouths of many tributaries to the Clark Fork northwest of Thompson Falls.
PALEOZOIC			
Cambrian	Cl	Limestone and Dolomite	Unnamed gray to tan dolomite. Consists of a lower dolomudstone about 1,020 feet thick, a middle laminated shaly unit about 280 feet thick and an upper dolomudstone unit about 1,200 feet thick that has an erosional top. Total thickness exposed is about 2,500 feet.
Cambrian	Csq	Shale and Quartzite	About 300 feet of olive fissile shale that contains trilobites and brachiopods of early Middle Cambrian age. Underlain by red to maroon quartzite at base grading up into buff quartzite. Base of quartzite has sparse trace fossils. Quartzite thickness about 30 feet. Disconformably overlies Libby Formation; micaceous and hematititc weathered zone in upper few feet of Libby. Disconformity has thin secondary chert zone along it

Table 3.2-1. Continued.

ERA	Period	SYMBOL	NAME	DESCRIPTION
PRECAMBRIAN				
	Proterozoic	Yl	Libby Formation	Consists mostly of interlaminated argillite and siltite and, in the upper part, quartzite. Contains three informal members. Maximum exposed thickness is about 5,500 feet.
	Proterozoic	Ym	McNamara Formation	Interbeded, laminated and interlaminated red and green argillite and siltite; ripple marks, mud cracks, scours and small-scale cross-bedding common; rare salt casts. Thickness varies from 3,600 feet in the southeast to about 300 feet in the north-central area.
	Proterozoic	Ybo	Bonner Quartzite	Red to pink, micaceous, arkosic, cross-bedded, fine to medium-grained quartzite containing red argillite interclasts. Ranges in thickness from about 1,400 feet in the southeast to about 500 feet in the north-central area.
	Proterozoic	Yspp	Striped Peak Formation	Consists of four informal members. The upper member is inter-bedded red and green laminate argillite and siltite. The member below is a buff-weathering stromatolitic dolomite about 200 feet thick. The third member down section is red, medium-grained planar-bedded, arkosic quartzite about 650 feet thick. The basal member is about 1,000 feet thick and consists of inter-bedded, argillite, siltite, and quartzite that are dominantly red but contain some green strata.

Table 3.2-1. Continued.

ERA	Period	SYMBOL	NAME	DESCRIPTION
PRECAMBRIAN (CONTINUED)				
	Proterozoic	Yms	Mount Shields Formation	Consists of three informal members. The upper member is inter-bedded laminated argillite and siltite that ranges in thickness from about 3,300 feet in the south to about 1,000 feet in the north. Middle member is red fine-grained arkosic planar-bedded quartzite ranging from about 3,300 feet thick in the southeast to about 650 feet thick in the north. Basal member is inter-bedded siltite, quartzite and argillite that is about 3,300 feet thick in the southeast and 1,000 feet thick in the north.
	Proterozoic	Ysh	Shepard Formation	Predominantly thinly and evenly laminated, green and pale-green dolomitic argillite; weathers readily into tan play rubble. Ranges from about 1,200 feet thick in the southeast to about 2,200 feet in the north.
	Proterozoic	Ysn	Snowslip Formation	Inter-bedded red and green interlaminated argillite and siltite. Thickness ranges from about 1,600 to 1,800 feet.
	Proterozoic	Yw	Wallace Formation	Middle and lower members of the Wallace Formation, undivided. Consists of inter-bedded argillite and siltite. Thickness ranges from about 15,200 feet in the south to about 4,900 feet in the north.
	Proterozoic	Ywu	Wallace-upper member	Consists of: 1) upper zone of black, thinly laminated argillite; 2) zone of dolomite, stromatolites and oolites; and 3) a zone of green planar-laminated argillite and siltite that is pyritic and dolomitic; and 4) a lower zone of thinly laminated black argillite. Thickness ranges from 0 feet in the southeast to about 5,000 feet in the northwest.

Table 3.2-1. Continued.

ERA	Period	SYMBOL	NAME	DESCRIPTION
PRECAMBRIAN (CONTINUED)				
	Proterozoic	Ywm	Wallace-middle member	Characteristic lithology is uneven and wavy bedded; black argillite alternates with slightly dolomitic white siltite or very fine grained quartzite layers that range from an inch to 20 inches in thickness. Thickness ranges from about 7,000 feet in the south to about 4,400 feet in the north.
	Proterozoic	Yh	Helena Formation	This formation is the eastern and more carbonate-rich facies of the "middle belt carbonate." Predominantly dolomite, dolomitic siltite, and dolomitic argillite. Characterized by 3 to 10 foot thick cycles that begin on a cut surface and consist of gray or green dolomitic argillite, fine-grained quartzite, and siltite that grade upward into impure dolomite, which is overlain by dense orange-weathering dolomite. Thickness is about 8,800 feet.
	Proterozoic	Yhl	Helena-lower member	Alternating beds a few feet to a few tens of feet thick of dense, orange-weathering dolomite and thinly laminated, apple-green to tan argillite. Maximum thickness is about 3,000 feet.
	Proterozoic	Ye	Empire Formation	Mostly thinly and evenly laminated light and dark-green dolomitic argillite or argillite and siltite. Thickness varies from 0 feet in the west to about 1,200 feet in the east.
	Proterozoic	Yr	Revett Formation	Characterized by blocky cosets of white, green, or pale-purple-gray, cross-bedded quartzite beds. Thickness ranges from about 2,000 feet to about 2,800 feet in exposures west of the Rocky Mountain Trench; formation is not recognized east of the trench.

Table 3.2-1. Continued.

ERA / Period	SYMBOL	NAME	DESCRIPTION
PRECAMBRIAN (CONTINUED)			
Proterozoic	Ysr	St. Regis Formation	Purple interlaminated argillite and siltite beds that alternate with green interlaminated argillite and siltite beds. Maximum thickness is about 1,000 feet, but thins to about 600 feet in north and to a few feet in southwest
Proterozoic	Ys	Spokane Formation	Three members are found in most areas. Upper member has beds a few feet to a few tens of feet thick of green laminated argillite and siltite that alternate with beds of purple laminated argillite and siltite. Middle member is predominantly pink to purple-gray, very fine grained feldspathic quartzite or coarse siltite that has planar lamination or long tabular cross lamination. Lower member is similar to the upper member but has more purple argillitic beds, is more solomitic, and has scattered iron-carbonate specks and cement. Thickness ranges from about 5,000 feet in the east tp 0 feet in the west.
Proterozoic	Yb	Burke Formation	Consists of three informal members. The upper member is predominantly blocky beds of purple-gray interlaminated argillite and siltite. Middle member is predominantly gray to purple-gray parallel and thinly-laminated siltite in blocky planar beds that have minor argillite partings or beds. Lower member is predominantly green parallel-laminated inter-bedded argillite and siltite that generally are in beds about 2 to 20 inches thick and weather to give a blocky-flaggy outcrop. Thickness ranges from about 2,500 feet to 3,600 feet west of the Rocky Mountain Trench.

Table 3.2-2. Distribution of rock types, Thompson River basin.

Symbol	Rock Type	N	Acres	Percent
Qal	Alluvial deposits (Holocene)	4	5306	1.3
Qg	Glacial and fluvioglacial deposits (Pleistocene)	13	102830	25.1
Cl	Limestone and dolomite (Cambrian)	10	8683	2.1
Csq	Shale and quartzite (Cambrian)	8	2032	0.5
Yl	Libby Formation	15	17781	4.3
Ym	McNamara Formation (Middle Proterozoic)	10	3099	0.8
Ybo	Bonner quartzite	12	5726	1.4
Yspp	Striped Peak Formation	4	322	0.1
Yms	Mount Shields Formation	18	22555	5.5
Ysh	Shepard Formation	12	16590	4.0
Ysn	Snowslip Formation (red and green facies)	13	26535	6.5
Yw	Wallace Formation	12	30045	7.3
Ywu	Wallace Formation - upper member	9	20312	5.0
Ywm	Wallace Formation - middle member	16	14750	3.6
Yh	Helena Formation - main member	4	3111	0.8
Yhl	Helena Formation - lower member	5	842	0.2
Ye	Empire Formation (Middle Proterozoic)	8	5060	1.2
Yr	Revett Formation	13	42373	10.3
Ysr	St. Regis Formation	2	1547	0.4
Ys	Spokane Formation	13	37561	9.2
Yb	Burke Formation (Middle Proterozoic)	11	43036	10.5
	TOTAL	**212**	**410095**	**100.0**

3.3 Subsections

Subsections are distinguished by geologic structure and/or geomorphic process. In the Swan River basin (White Horse Associates 1995) alpine glaciated lands were divided into very steep scarp slopes and less steep dip slopes. A continental glacial valley was also identified. Geologic structure was less evident in Thompson River basin and subsections were identified primarily based on geomorphic process.

Subsections are aggregations of landtype associations, which are further aggregations of landtypes identified by the Kootenai and Lolo NFs and soil types identified by the Natural Resource Conservation Service (NRCS). Landtype associations and landtypes are discussed in subsequent chapters. Subsections include small "islands" of landtype associations more similar to other subsections. While the smallest subsection was about 250 acres, most were much larger. Four subsections were identified in the Thompson River basin:

> ***Alpine glaciated lands (1100)*:** Includes lands sculpted by alpine glaciation that occur along the high ridges in the southern half of the Thompson River basin. They comprise 63,123 acres (15 percent) of the Thompson River basin. Elevations are mostly 4,000 to 7,000 feet. Dominant slopes are 10 to 100 percent. Northerly aspects are prevalent. The drainage density is relatively high (2.4) and 34 percent of streams are perennial. The dominant landtype associations in this subsection are: 1) *cirques and rocky ridges*; 2) *alpine glacial basin;* 3) *alpine glacial trough*; and 4) *moraine*. Minor areas of *floodplain and alluvium* are also included. Also included are small areas *mountain slope* more similar to *metasedimentary fluvial lands*. *Alpine glaciated lands* were also identified in the Swan River basin[1].

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1 *Alpine glacial scarp slope* and *alpine glacial dip slope* subsections were identified in Swan River basin. The highest peaks in Swan River basin are nearly 2,000 feet higher than those in Thompson River basin. Topography is more rugged in the Swan basin with a greater degree and extent of glacial scour. Slope distributions in the Swan *alpine glacial dip slope* subsection are similar to *alpine glacial lands* in Thompson River basin. Slope distributions in the Swan *alpine glacial scarp slope* are steeper than *alpine glacial lands* in Thompson River basin.

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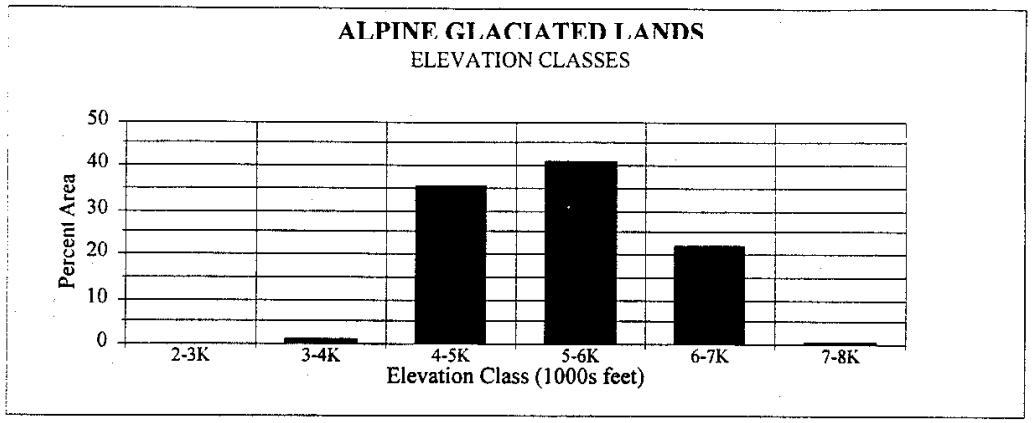
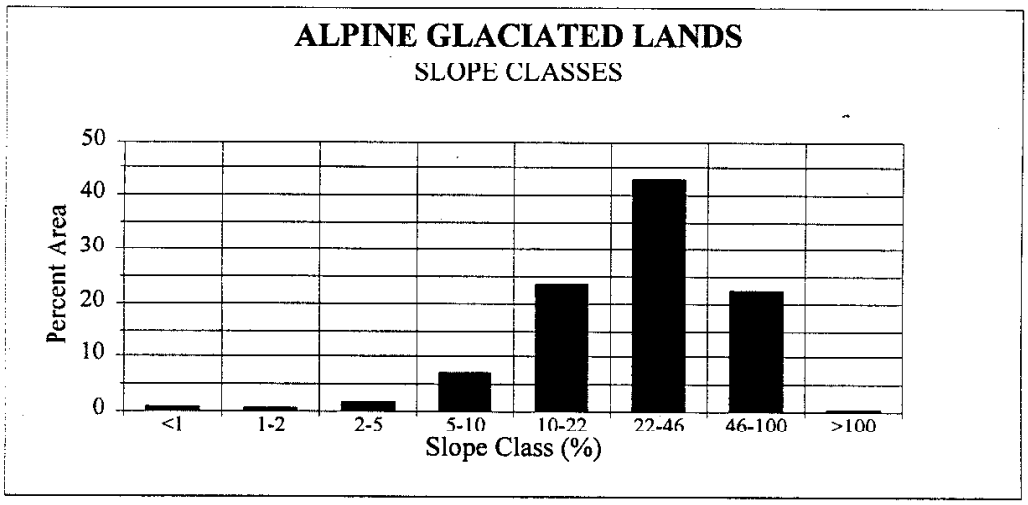
Fluvial lands (1200): Includes lands shaped by fluvial processes and characterized by V-shaped canyons. They comprise 207,323 acres (51 percent) of the Thompson River basin. Elevations are mostly 3,000 to 6,000 feet. Dominant slopes are 10 to 100 percent. Aspects are variable. The drainage density is moderate (1.9) and 26 percent of streams are perennial. The dominant landtype associations are: 1) *ridge*; 2) *mountain slope*; and 3) *breakland*. Minor areas of *floodplain and alluvium* are also included. Also included are small areas of *moraine* along the North Fork of Murr Creek, small areas of *high terrace* surrounded by *metasedimentary fluvial lands* east of the Lower Thompson River and small areas of *continental glaciated ridges and slopes* east of the Thompson River north of Murr Creek. Although *fluvial lands* were not identified in Swan River basin, they share similar with areas identified as *residual* general landtype class.

Continental glaciated erosional lands (1300): Includes low mountains and hills that were shaped by the Cordilleran ice sheet and Lake Missoula. They comprise 85,430 acres (21 percent) of the Thompson River basin. Elevation ranges from 3,000 to 4,000 feet. Slopes are mostly 10 to 46 percent. Aspects are variable. Drainage density is moderate (1.7) and 19 percent of streams are perennial. The dominant *landtype association* is *continental glacial ridge and slope*. Also included are small areas of *terrace* and *floodplain and alluvium*. This subsection is similar to foot-slopes adjacent to the *continental glacial valley* in Swan River basin.

Continental glaciated depositional lands (1400): Includes areas with thick deposits of sediment left by continental glaciers and Lake Missoula. High terraces of Tertiary valley-fill south of Chippy Creek were also included. They comprise 54,219 acres (13 percent) of the Thompson River basin. Elevations range from 3,000 to 4,000 feet. Slopes are less than 46 percent. Ten (10) percent of these lands is flat. Other aspects are variable with somewhat higher proportions of southwest and west aspects corresponding to extensive terrace along the east side of the Thompson River. The dominant landtype associations are: 1) *high terrace*; and 2) *floodplain and alluvium*. Small islands of *continental glaciated erosional lands* are also included. This subsection is similar in geomorphic origin to the *continental glacial valley* identified in the Swan River basin. It contrasts with the Swan in that streams have cut through the glacial debris in the Thompson, leaving terraces high and dry.

Subsections are illustrated in Figures 3.3-1A and 3.3-1B. Elevation, slope and aspect distributions for subsections are illustrated in Figure 3.3-2 through 3.3-5. Drainage densities are listed in Table 3.3-1. The areas of subsections the Thompson River basin, subbasins and watersheds are listed in Table 3.3-2.





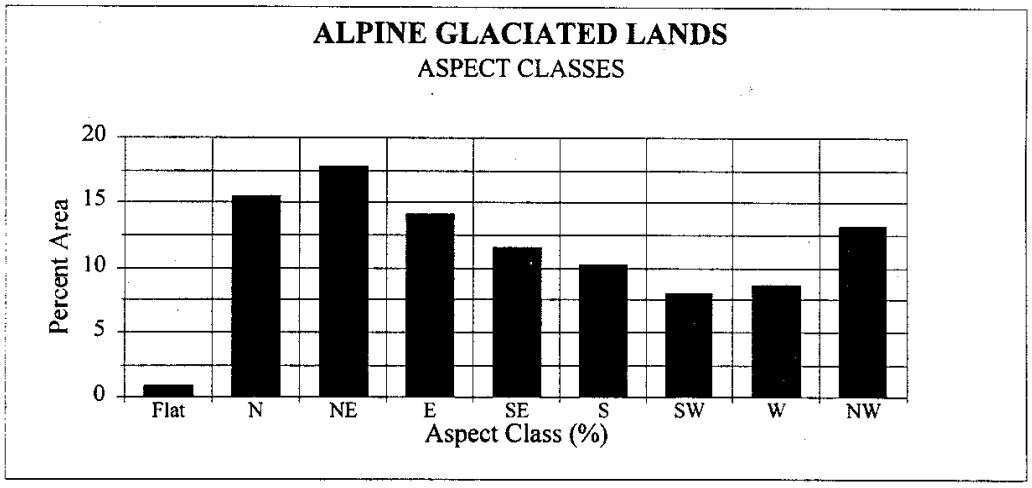
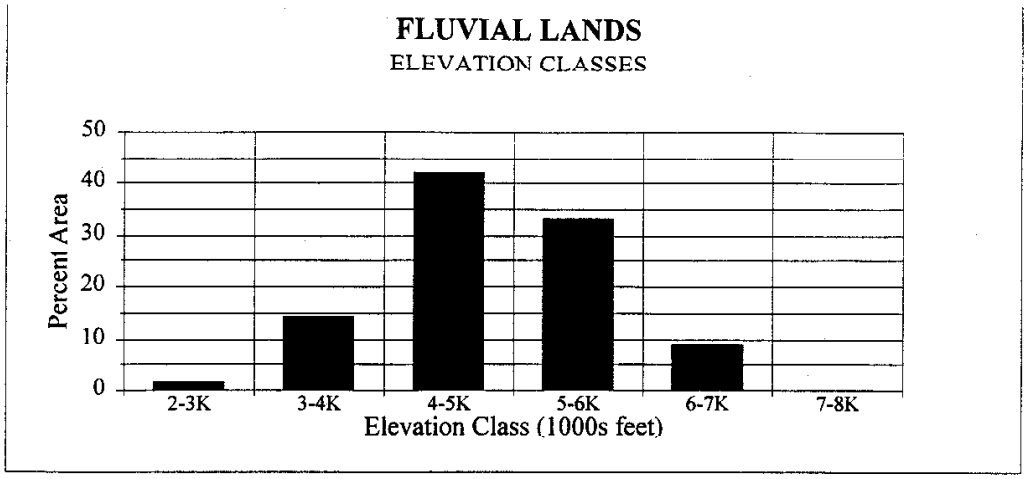
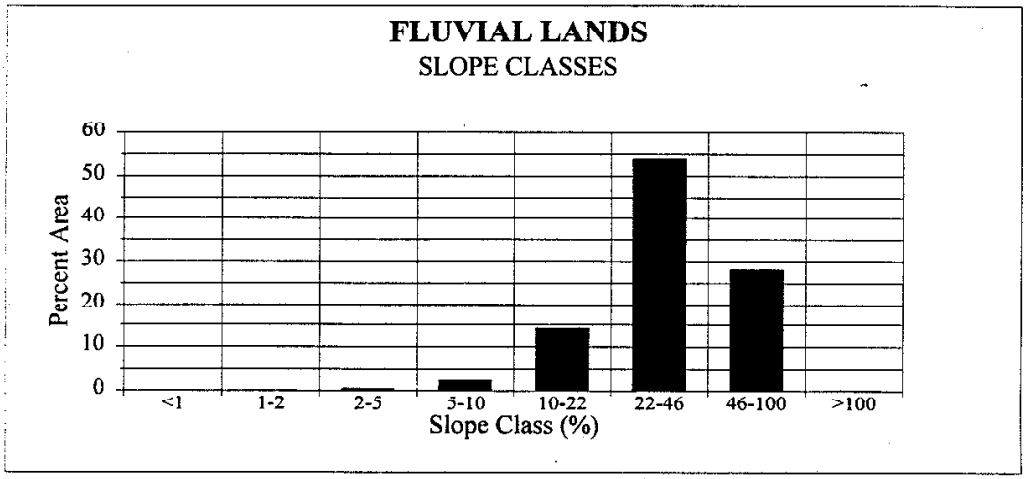


Figure 3.3-2. Elevation, slope and aspect distributions, alpine glaciated lands.





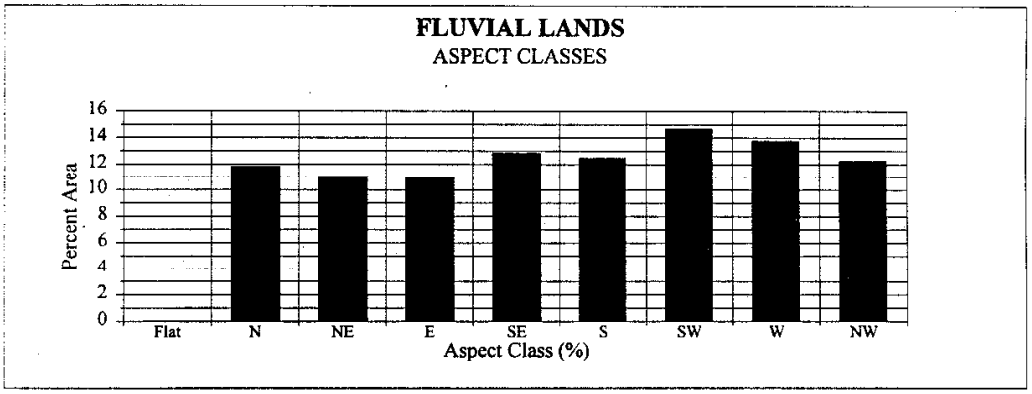
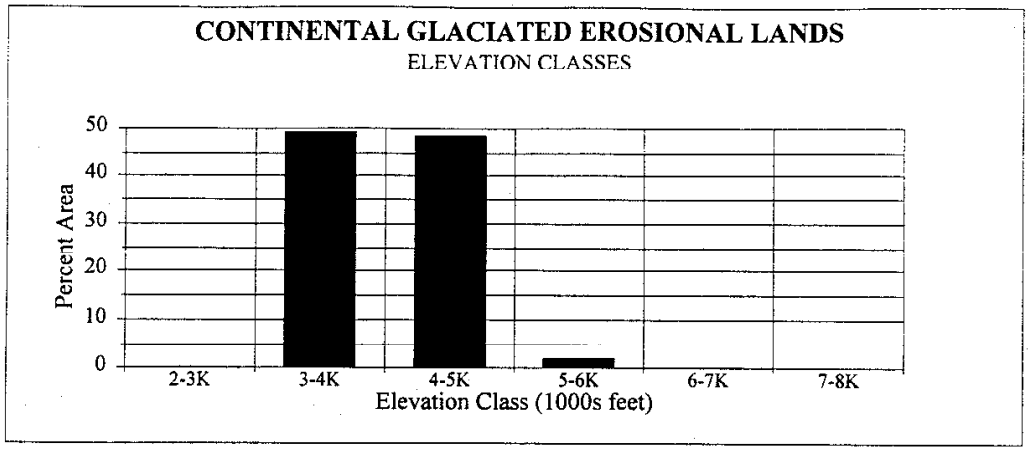
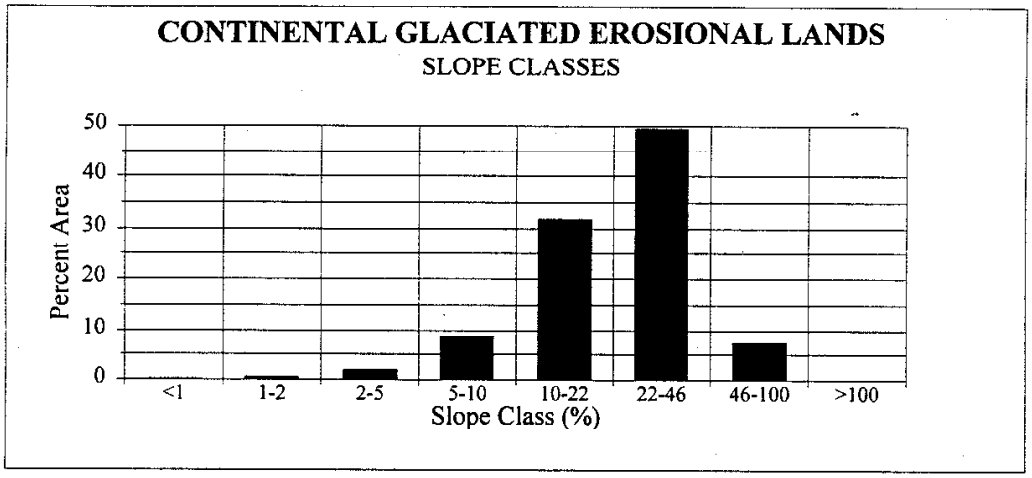


Figure 3.3-3. Elevation, slope and aspect distributions, fluvial lands.





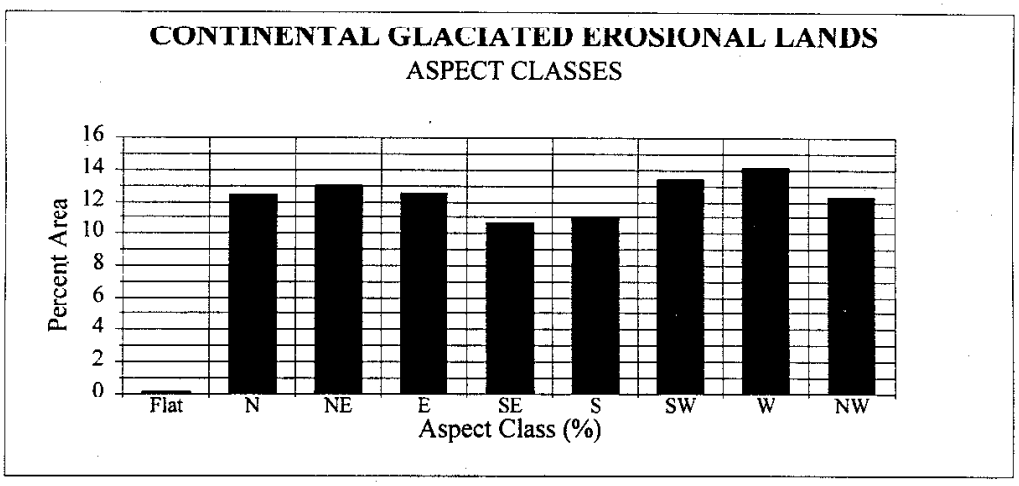
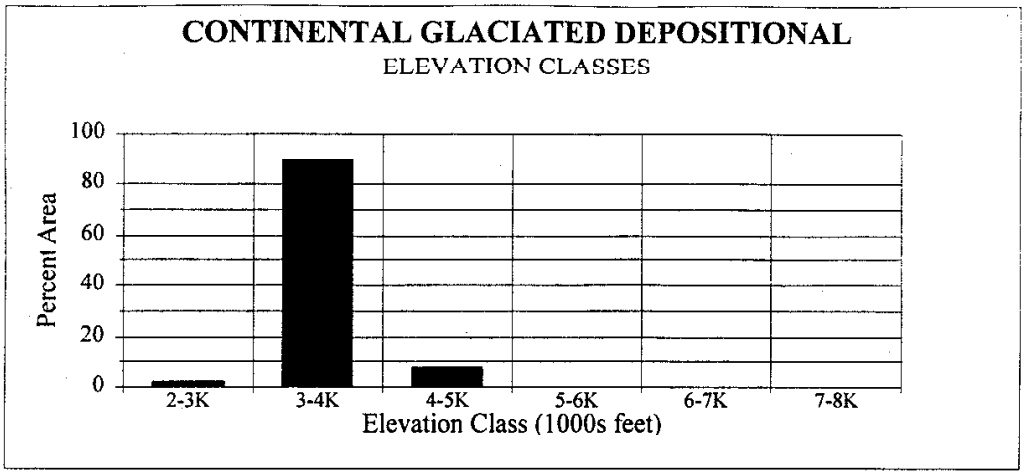
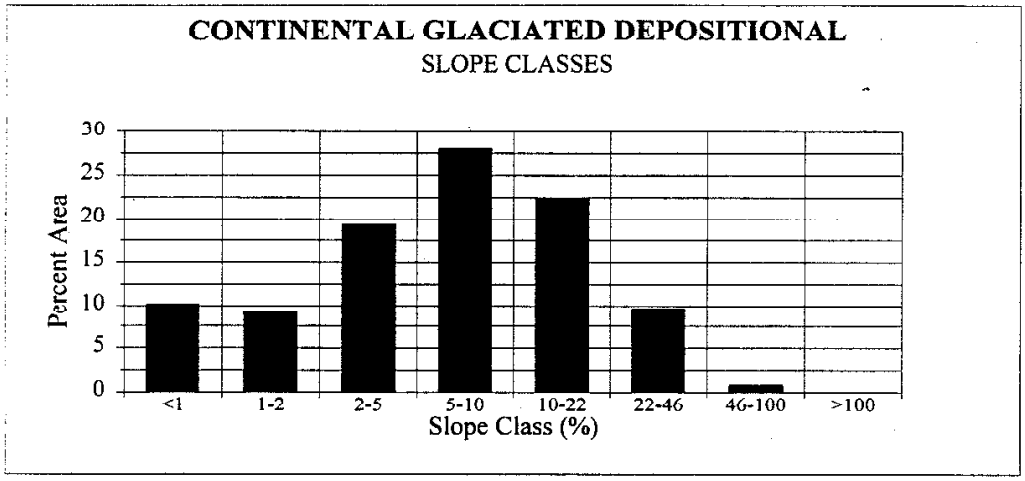


Figure 3.3-4. Elevation, slope and aspect distributions, continental glaciated erosional lands.





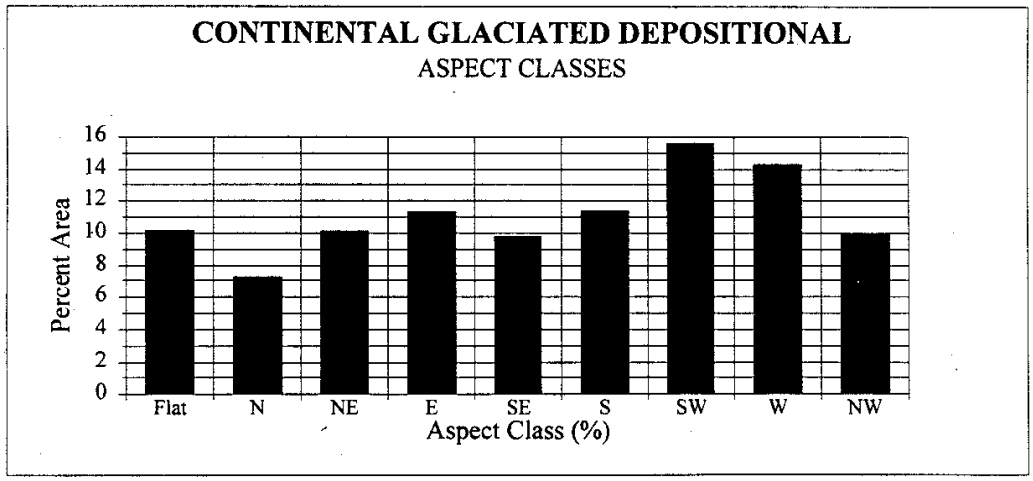


Figure 3.3-5. Elevation, slope and aspect distributions, continental glaciated depositional lands.

Table 3.3-1. Drainage density (linear miles per square mile) for subsections.

CODE	SUBSECTION	STREAM LENGTH			DRAINAGE DENSITY		
		Intermittent (miles)	Perennial (miles)	Total (miles)	Intermittent	Perennial	Total
1100	Alpine Glaciated Lands	157.4	81.2	238.6	1.6	0.8	2.4
1200	Fluvial Lands	462.6	166.6	629.2	1.4	0.5	1.9
1300	Continental Glaciated Erosional Lands	187.4	43.0	230.5	1.4	0.3	1.7
1400	ontinental Glaciated Depositional Land	101.2	126.7	227.8	1.2	1.5	2.7
	TOTAL	**908.7**	**417.5**	**1326.2**	**1.4**	**0.7**	**2.1**

Table 3.3-2. Areas of subsections for the Thompson River basin (all), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION		AREA	
		Code	Name	Acres	Percent
ALL	ALL	1100	Alpine Glaciated Lands	63123	15.4
ALL	ALL	1200	Fluvial Lands	207323	50.6
ALL	ALL	1300	Continental Glaciated Erosional Lands	85430	20.8
ALL	ALL	1400	Continental Glaciated Depositional Lands	54219	13.2
ALL	**ALL**	**TOTAL**	**TOTAL**	**410094**	**100.0**
Upper Thompson	ALL	1200	Fluvial Lands	11565	20.9
Upper Thompson	ALL	1300	Continental Glaciated Erosional Lands	32865	59.5
Upper Thompson	ALL	1400	Continental Glaciated Depositional Lands	10788	19.5
Upper Thompson	**ALL**	**TOTAL**	**TOTAL**	**55219**	**100.0**
Upper Thompson	Thompson Lakes	1200	Fluvial Lands	1487	7.5
Upper Thompson	Thompson Lakes	1300	Continental Glaciated Erosional Lands	12259	61.6
Upper Thompson	Thompson Lakes	1400	Continental Glaciated Depositional Lands	6149	30.9
Upper Thompson	**Thompson Lakes**	**TOTAL**	**TOTAL**	**19896**	**100.0**
Upper Thompson	Lang Creek	1200	Fluvial Lands	3327	68.6
Upper Thompson	Lang Creek	1300	Continental Glaciated Erosional Lands	861	17.8
Upper Thompson	Lang Creek	1400	Continental Glaciated Depositional Lands	658	13.6
Upper Thompson	**Lang Creek**	**TOTAL**	**TOTAL**	**4846**	**100.0**
Upper Thompson	McGregor Creek	1200	Fluvial Lands	6568	33.3
Upper Thompson	McGregor Creek	1300	Continental Glaciated Erosional Lands	10034	50.8
Upper Thompson	McGregor Creek	1400	Continental Glaciated Depositional Lands	3134	15.9
Upper Thompson	**McGregor Creek**	**TOTAL**	**TOTAL**	**19736**	**100.0**
Upper Thompson	Boiling Springs Creek	1200	Fluvial Lands	167	3.0
Upper Thompson	Boiling Springs Creek	1300	Continental Glaciated Erosional Lands	5295	96.5
Upper Thompson	Boiling Springs Creek	1400	Continental Glaciated Depositional Lands	27	0.5
Upper Thompson	**Boiling Springs Creek**	**TOTAL**	**TOTAL**	**5490**	**100.0**
Upper Thompson	Davis Creek	1200	Fluvial Lands	15	0.3
Upper Thompson	Davis Creek	1300	Continental Glaciated Erosional Lands	4416	84.1
Upper Thompson	Davis Creek	1400	Continental Glaciated Depositional Lands	819	15.6
Upper Thompson	**Davis Creek**	**TOTAL**	**TOTAL**	**5250**	**100.0**

Table 3.3-2. Areas of subsections for the Thompson River basin (all), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION		AREA	
		Code	Name	Acres	Percent
Middle Thompson	ALL	1100	Alpine Glaciated Lands	8635	5.8
Middle Thompson	ALL	1200	Fluvial Lands	79977	53.5
Middle Thompson	ALL	1300	Continental Glaciated Erosional Lands	32020	21.4
Middle Thompson	ALL	1400	Continental Glaciated Depositional Lands	28754	19.2
Middle Thompson	**ALL**	**TOTAL**	**TOTAL**	**149386**	**100.0**
Middle Thompson	Middle Thompson	1200	Fluvial Lands	12911	28.6
Middle Thompson	Middle Thompson	1300	Continental Glaciated Erosional Lands	14960	33.1
Middle Thompson	Middle Thompson	1400	Continental Glaciated Depositional Lands	17331	38.3
Middle Thompson	**Middle Thompson**	**TOTAL**	**TOTAL**	**45202**	**100.0**
Middle Thompson	Murr Creek	1200	Fluvial Lands	19281	96.8
Middle Thompson	Murr Creek	1300	Continental Glaciated Erosional Lands	361	1.8
Middle Thompson	Murr Creek	1400	Continental Glaciated Depositional Lands	277	1.4
Middle Thompson	**Murr Creek**	**TOTAL**	**TOTAL**	**19918**	**100.0**
Middle Thompson	Shroder Creek	1200	Fluvial Lands	3717	85.0
Middle Thompson	Shroder Creek	1300	Continental Glaciated Erosional Lands	639	14.6
Middle Thompson	Shroder Creek	1400	Continental Glaciated Depositional Lands	16	0.4
Middle Thompson	**Shroder Creek**	**TOTAL**	**TOTAL**	**4373**	**100.0**
Middle Thompson	Big Rock Creek	1100	Alpine Glaciated Lands	6307	30.0
Middle Thompson	Big Rock Creek	1200	Fluvial Lands	13941	66.3
Middle Thompson	Big Rock Creek	1300	Continental Glaciated Erosional Lands	445	2.1
Middle Thompson	Big Rock Creek	1400	Continental Glaciated Depositional Lands	332	1.6
Middle Thompson	**Big Rock Creek**	**TOTAL**	**TOTAL**	**21024**	**100.0**
Middle Thompson	Semem Creek	1200	Fluvial Lands	1964	51.6
Middle Thompson	Semem Creek	1300	Continental Glaciated Erosional Lands	1165	30.6
Middle Thompson	Semem Creek	1400	Continental Glaciated Depositional Lands	678	17.8
Middle Thompson	**Semem Creek**	**TOTAL**	**TOTAL**	**3807**	**100.0**
Middle Thompson	Chippy Creek	1100	Alpine Glaciated Lands	2116	17.7
Middle Thompson	Chippy Creek	1200	Fluvial Lands	9050	75.7
Middle Thompson	Chippy Creek	1300	Continental Glaciated Erosional Lands	172	1.4
Middle Thompson	Chippy Creek	1400	Continental Glaciated Depositional Lands	620	5.2
Middle Thompson	**Chippy Creek**	**TOTAL**	**TOTAL**	**11958**	**100.0**

Table 3.3-2. Areas of subsections for the Thompson River basin (all), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION		AREA	
		Code	Name	Acres	Percent
Middle Thompson	Bear Creek	1100	Alpine Glaciated Lands	2328	27.9
Middle Thompson	Bear Creek	1200	Fluvial Lands	5774	69.1
Middle Thompson	Bear Creek	1300	Continental Glaciated Erosional Lands	11	0.1
Middle Thompson	Bear Creek	1400	Continental Glaciated Depositional Lands	238	2.9
Middle Thompson	**Bear Creek**	**TOTAL**	**TOTAL**	**8352**	**100.0**
Middle Thompson	Meadow Creek	1200	Fluvial Lands	6922	72.3
Middle Thompson	Meadow Creek	1300	Continental Glaciated Erosional Lands	1967	20.5
Middle Thompson	Meadow Creek	1400	Continental Glaciated Depositional Lands	686	7.2
Middle Thompson	**Meadow Creek**	**TOTAL**	**TOTAL**	**9575**	**100.0**
Middle Thompson	Lazier Creek	1200	Fluvial Lands	1431	9.4
Middle Thompson	Lazier Creek	1300	Continental Glaciated Erosional Lands	8506	55.9
Middle Thompson	Lazier Creek	1400	Continental Glaciated Depositional Lands	5267	34.6
Middle Thompson	**Lazier Creek**	**TOTAL**	**TOTAL**	**15204**	**100.0**
Middle Thompson	Indian Creek	1200	Fluvial Lands	2870	28.8
Middle Thompson	Indian Creek	1300	Continental Glaciated Erosional Lands	3793	38.0
Middle Thompson	Indian Creek	1400	Continental Glaciated Depositional Lands	3310	33.2
Middle Thompson	**Indian Creek**	**TOTAL**	**TOTAL**	**9974**	**100.0**
Fishtrap Creek	ALL	1100	Alpine Glaciated Lands	13304	22.1
Fishtrap Creek	ALL	1200	Fluvial Lands	33908	56.5
Fishtrap Creek	ALL	1300	Continental Glaciated Erosional Lands	7662	12.8
Fishtrap Creek	ALL	1400	Continental Glaciated Depositional Lands	5189	8.6
Fishtrap Creek	**ALL**	**TOTAL**	**TOTAL**	**60063**	**100.0**
Fishtrap Creek	Upper Fishtrap	1100	Alpine Glaciated Lands	2200	9.9
Fishtrap Creek	Upper Fishtrap	1200	Fluvial Lands	8789	39.6
Fishtrap Creek	Upper Fishtrap	1300	Continental Glaciated Erosional Lands	7463	33.6
Fishtrap Creek	Upper Fishtrap	1400	Continental Glaciated Depositional Lands	3759	16.9
Fishtrap Creek	**Upper Fishtrap**	**TOTAL**	**TOTAL**	**22211**	**100.0**
Fishtrap Creek	Lower Fishtrap	1200	Fluvial Lands	12760	89.8
Fishtrap Creek	Lower Fishtrap	1300	Continental Glaciated Erosional Lands	14	0.1
Fishtrap Creek	Lower Fishtrap	1400	Continental Glaciated Depositional Lands	1430	10.1
Fishtrap Creek	**Lower Fishtrap**	**TOTAL**	**TOTAL**	**14203**	**100.0**

Table 3.3-2. Areas of subsections for the Thompson River basin (all), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION		AREA	
		Code	Name	Acres	Percent
Fishtrap Creek	West Fork Fishtrap	1100	Alpine Glaciated Lands	8068	69.6
Fishtrap Creek	West Fork Fishtrap	1200	Fluvial Lands	3331	28.8
Fishtrap Creek	West Fork Fishtrap	1300	Continental Glaciated Erosional Lands	186	1.6
Fishtrap Creek	**West Fork Fishtrap**	**TOTAL**	**TOTAL**	**11586**	**100.0**
Fishtrap Creek	Beatrice Creek	1100	Alpine Glaciated Lands	1718	26.2
Fishtrap Creek	Beatrice Creek	1200	Fluvial Lands	4852	73.8
Fishtrap Creek	**Beatrice Creek**	**TOTAL**	**TOTAL**	**6570**	**100.0**
Fishtrap Creek	Jungle Creek	1100	Alpine Glaciated Lands	1317	24.0
Fishtrap Creek	Jungle Creek	1200	Fluvial Lands	4176	76.0
Fishtrap Creek	Jungle Creek	1400	Continental Glaciated Depositional Lands	0	0.0
Fishtrap Creek	**Jungle Creek**	**TOTAL**	**TOTAL**	**5493**	**100.0**
Little Thompson	ALL	1100	Alpine Glaciated Lands	25437	32.4
Little Thompson	ALL	1200	Fluvial Lands	33994	43.3
Little Thompson	ALL	1300	Continental Glaciated Erosional Lands	11399	14.5
Little Thompson	ALL	1400	Continental Glaciated Depositional Lands	7696	9.8
Little Thompson	**ALL**	**TOTAL**	**TOTAL**	**78526**	**100.0**
Little Thompson	Upper Little Thompson	1100	Alpine Glaciated Lands	25270	64.3
Little Thompson	Upper Little Thompson	1200	Fluvial Lands	13436	34.2
Little Thompson	Upper Little Thompson	1300	Continental Glaciated Erosional Lands	441	1.1
Little Thompson	Upper Little Thompson	1400	Continental Glaciated Depositional Lands	164	0.4
Little Thompson	**Upper Little Thompson**	**TOTAL**	**TOTAL**	**39311**	**100.0**
Little Thompson	Mudd Creek	1200	Fluvial Lands	9876	70.6
Little Thompson	Mudd Creek	1300	Continental Glaciated Erosional Lands	3947	28.2
Little Thompson	Mudd Creek	1400	Continental Glaciated Depositional Lands	168	1.2
Little Thompson	**Mudd Creek**	**TOTAL**	**TOTAL**	**13991**	**100.0**
Little Thompson	Lower Little Thompson	1200	Fluvial Lands	1435	10.7
Little Thompson	Lower Little Thompson	1300	Continental Glaciated Erosional Lands	6254	46.6
Little Thompson	Lower Little Thompson	1400	Continental Glaciated Depositional Lands	5731	42.7
Little Thompson	**Lower Little Thompson**	**TOTAL**	**TOTAL**	**13420**	**100.0**

Table 3.3-2. Areas of subsections for the Thompson River basin (all), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION		AREA	
		Code	Name	Acres	Percent
Little Thompson	Little Rock Creek	1100	Alpine Glaciated Lands	21	0.4
Little Thompson	Little Rock Creek	1200	Fluvial Lands	2598	54.5
Little Thompson	Little Rock Creek	1300	Continental Glaciated Erosional Lands	757	15.9
Little Thompson	Little Rock Creek	1400	Continental Glaciated Depositional Lands	1395	29.2
Little Thompson	**Little Rock Creek**	**TOTAL**	**TOTAL**	**4769**	**100.0**
Little Thompson	North Fork Little Thompson	1100	Alpine Glaciated Lands	147	2.1
Little Thompson	North Fork Little Thompson	1200	Fluvial Lands	6649	94.5
Little Thompson	North Fork Little Thompson	1400	Continental Glaciated Depositional Lands	238	3.4
Little Thompson	**North Fork Little Thompson**	**TOTAL**	**TOTAL**	**7034**	**100.0**
West Fork Thompson	ALL	1100	Alpine Glaciated Lands	9580	42.1
West Fork Thompson	ALL	1200	Fluvial Lands	13201	57.9
West Fork Thompson	**ALL**	**TOTAL**	**TOTAL**	**22781**	**100.0**
West Fork Thompson	Middle West Fork	1100	Alpine Glaciated Lands	4367	30.6
West Fork Thompson	Middle West Fork	1200	Fluvial Lands	9898	69.4
West Fork Thompson	**Middle West Fork**	**TOTAL**	**TOTAL**	**14265**	**100.0**
West Fork Thompson	Four Lakes Creek	1100	Alpine Glaciated Lands	5163	87.0
West Fork Thompson	Four Lakes Creek	1200	Fluvial Lands	769	13.0
West Fork Thompson	**Four Lakes Creek**	**TOTAL**	**TOTAL**	**5932**	**100.0**
West Fork Thompson	Anne Creek	1100	Alpine Glaciated Lands	50	1.9
West Fork Thompson	Anne Creek	1200	Fluvial Lands	2534	98.1
West Fork Thompson	**Anne Creek**	**TOTAL**	**TOTAL**	**2584**	**100.0**
Lower Thompson	ALL	1100	Alpine Glaciated Lands	6167	14.0
Lower Thompson	ALL	1200	Fluvial Lands	34679	78.6
Lower Thompson	ALL	1300	Continental Glaciated Erosional Lands	1483	3.4
Lower Thompson	ALL	1400	Continental Glaciated Depositional Lands	1791	4.1
Lower Thompson	**ALL**	**TOTAL**	**TOTAL**	**44120**	**100.0**
Lower Thompson	Lower Thompson	1100	Alpine Glaciated Lands	1363	5.4
Lower Thompson	Lower Thompson	1200	Fluvial Lands	21506	85.4
Lower Thompson	Lower Thompson	1300	Continental Glaciated Erosional Lands	799	3.2
Lower Thompson	Lower Thompson	1400	Continental Glaciated Depositional Lands	1515	6.0
Lower Thompson	**Lower Thompson**	**TOTAL**	**TOTAL**	**25184**	**100.0**

Table 3.3-2. Areas of subsections for the Thompson River basin (all), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION		AREA	
		Code	Name	Acres	Percent
Lower Thompson	Deerhorn Creek	1100	Alpine Glaciated Lands	1999	32.5
Lower Thompson	Deerhorn Creek	1200	Fluvial Lands	4142	67.4
Lower Thompson	Deerhorn Creek	1400	Continental Glaciated Depositional Lands	8	0.1
Lower Thompson	**Deerhorn Creek**	**TOTAL**	**TOTAL**	**6149**	**100.0**
Lower Thompson	Bay State Creek	1100	Alpine Glaciated Lands	297	10.4
Lower Thompson	Bay State Creek	1200	Fluvial Lands	2549	89.6
Lower Thompson	**Bay State Creek**	**TOTAL**	**TOTAL**	**2846**	**100.0**
Lower Thompson	Big Hole Creek	1100	Alpine Glaciated Lands	2509	47.2
Lower Thompson	Big Hole Creek	1200	Fluvial Lands	2807	52.8
Lower Thompson	**Big Hole Creek**	**TOTAL**	**TOTAL**	**5316**	**100.0**
Lower Thompson	Calico Creek	1200	Fluvial Lands	3673	79.4
Lower Thompson	Calico Creek	1300	Continental Glaciated Erosional Lands	684	14.8
Lower Thompson	Calico Creek	1400	Continental Glaciated Depositional Lands	268	5.8
Lower Thompson	**Calico Creek**	**TOTAL**	**TOTAL**	**4625**	**100.0**

3.4 Landtype Associations

A digital map of landtype associations was compiled by the U.S. Forest Service as part of a regional assessment of the Columbia River basin. Source maps for these landtype associations included landtype maps for the Lolo and Kootenai National Forests and broad scale soil maps prepared by the NRCS. Landtype and soil map units identified on source maps were combined as landtype associations. The map of landtype association generated by the Forest Service is presented as Figure 3.4-1.

The Forest Service grouped landtype associations as alluvial, sedimentary and belt series parent materials. The sedimentary landtype associations were distinguished along the west flank of Fishtrap Creek. The topography of the sedimentary, gently to moderately sloping glaciated lands identified by the Forest Service is similar to that of the belt series, gently sloping glaciated lands. The topography in sedimentary mountain slopes and ridges is similar to belt series, mountain slopes and ridges. Relative to the Thompson River basin, the sedimentary lands were similar to the belt series lands.

The Forest Service also grouped alpine glaciated land in the Upper Little Thompson watershed (see Figure 2-3) with terraces remnant of continental glaciation and Lake Missoula in the Middle Thompson River watershed. High terraces in the Middle Thompson watershed between Bend and the Little Thompson River were grouped with continental glaciated mountain slopes and ridges, but are topographically more similar to lacustrine deposits (see Figure 3.4-1).

While the Forest Service landtype association map may be adequate for regional assessments of upland resources, alternative combinations of landtypes may serve better for the Thompson River basin. An alternative map of PCTC landtype associations for the Thompson River basin was developed with the intent of identifying areas of more distinctive ecological potential than the Forest Service landtype associations.

PCTC landtype associations were compiled from: 1) digital maps of landtypes prepared by the Kootenai and Lolo NFs at order 3 to 4; and 2) soil maps on orthoquads provided by the Natural Resource Conservation Service (NRCS). The compilation of Kootenai and Lolo NF landtype and NRCS soil maps are discussed in chapter 3.5.

Preliminary landtype associations were assigned to Kootenai and Lolo NF landtypes based on descriptive legends prepared by the Forest Service. Preliminary landtype associations were also assigned to NRCS map units, based on correlation with overlapping Kootenai and Lolo NF landtypes (see Figure 3.5-1). These preliminary landtype associations were color coded and plotted as overlays for 1:24,000 scale USGS quads and orthoquads. Editing of the preliminary maps was conducted on a polygon-by-polygon basis. Some landtype and soil polygons were divided into two landtype associations to "match" Kootenai NF landtype, Lolo NF landtype and NRCS soil types boundaries. Where polygons were divided, the respective landtype or soil type was maintained in both polygons.

The PCTC landtype associations are presented as Figure 3.4-2. PCTC landtype associations generally correlate with subsections, but islands of landtype associations dissimilar to the subsection are identified. Drainage densities (linear miles stream per square mile) of landtype associations are listed in Table 3.4-1. The areas of landtype associations are listed for the Thompson River basin, subbasins and watersheds in Table 3.4-2. Descriptions of landtype associations are presented with respect to the four subsections.

Table 3.4-1. Drainage density for landtype associations (lakes are not included).

LTA	AREA	INTERMITTENT		PERENNIAL		TOTAL	
	(miles)	(miles)	Density	(miles)	Density	(miles)	Density
Cirque & Rocky Ridge	18.4	6.9	0.4	0.8	0.0	7.7	0.4
Glacial Basin	7.5	16.2	2.2	7.6	1.0	23.8	3.2
Glacial Trough	52.4	94.3	1.8	19.4	0.4	113.7	2.2
Moraine	22.4	53.5	2.4	50.9	2.3	104.4	4.7
Mountain Ridge	57.7	6.6	0.1	0.7	0.0	7.3	0.1
Mountain Slope	211.3	365.2	1.7	73.0	0.3	438.2	2.1
Breakland	50.2	74.8	1.5	47.3	0.9	122.1	2.4
Glacial Ridge & Slope	128.7	174.5	1.4	31.7	0.2	206.3	1.6
High Terrace	74.8	94.7	1.3	56.4	0.8	151.1	2.0
Floodplain & Alluvium	12.5	21.9	1.7	129.8	10.4	151.6	12.1
TOTAL	**636.1**	**908.7**	**1.4**	**417.5**	**0.7**	**1326.2**	**2.1**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
ALL	ALL	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	11792	2.9
ALL	ALL	Alpine Glaciated Lands	1102	Glacial Basin	4828	1.2
ALL	ALL	Alpine Glaciated Lands	1103	Glacial Trough	33477	8.2
ALL	ALL	Alpine Glaciated Lands	1104	Moraine	11043	2.7
ALL	ALL	Alpine Glaciated Lands	1201	Mountain Ridge	1330	0.3
ALL	ALL	Alpine Glaciated Lands	1202	Mountain Slope	2012	0.5
ALL	ALL	Alpine Glaciated Lands	1203	Breakland	93	0.0
ALL	ALL	Alpine Glaciated Lands	1301	Glacial Ridge & Slope	28	0.0
ALL	ALL	Alpine Glaciated Lands	1402	Floodplain & Alluvium	502	0.1
ALL	ALL	Alpine Glaciated Lands	1403	Water	133	0.0
ALL	ALL	Fluvial Lands	1103	Glacial Trough	63	0.0
ALL	ALL	Fluvial Lands	1104	Moraine	493	0.1
ALL	ALL	Fluvial Lands	1201	Mountain Ridge	35619	8.7
ALL	ALL	Fluvial Lands	1202	Mountain Slope	133238	32.5
ALL	ALL	Fluvial Lands	1203	Breakland	32064	7.8
ALL	ALL	Fluvial Lands	1301	Glacial Ridge & Slope	459	0.1
ALL	ALL	Fluvial Lands	1401	High Terrace	1416	0.3
ALL	ALL	Fluvial Lands	1402	Floodplain & Alluvium	1855	0.5
ALL	ALL	Continental Glaciated Erosional Lands	1104	Moraine	2292	0.6
ALL	ALL	Continental Glaciated Erosional Lands	1202	Mountain Slope	4	0.0
ALL	ALL	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	81765	19.9
ALL	ALL	Continental Glaciated Erosional Lands	1401	High Terrace	755	0.2
ALL	ALL	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	608	0.1
ALL	ALL	Continental Glaciated Erosional Lands	1403	Water	6	0.0
ALL	ALL	Continental Glaciated Depositional Lands	1104	Moraine	480	0.1
ALL	ALL	Continental Glaciated Depositional Lands	1301	Glacial Ridge & Slope	140	0.0
ALL	ALL	Continental Glaciated Depositional Lands	1401	High Terrace	45690	11.1
ALL	ALL	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	5031	1.2
ALL	ALL	Continental Glaciated Depositional Lands	1403	Water	2877	0.7
ALL	**ALL**	**TOTAL**	**ALL**	**ALL**	**410094**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Upper Thompson River	ALL	Fluvial Lands	1203	Breakland	528	1.0
Upper Thompson River	ALL	Fluvial Lands	1401	High Terrace	6973	12.6
Upper Thompson River	ALL	Fluvial Lands	1202	Mountain Slope	10137	18.4
Upper Thompson River	ALL	Fluvial Lands	1104	Moraine	2804	5.1
Upper Thompson River	ALL	Fluvial Lands	1201	Mountain Ridge	611	1.1
Upper Thompson River	ALL	Continental Glaciated Erosional Lands	1403	Water	4	0.0
Upper Thompson River	ALL	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	30093	54.5
Upper Thompson River	ALL	Continental Glaciated Depositional Lands	1403	Water	2826	5.1
Upper Thompson River	ALL	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	1243	2.3
Upper Thompson River	**ALL**	**TOTAL**	**ALL**	**ALL**	**55218**	100.0
Upper Thompson River	Thompson Lakes	Fluvial Lands	1201	Mountain Ridge	144	0.7
Upper Thompson River	Thompson Lakes	Fluvial Lands	1202	Mountain Slope	1299	6.5
Upper Thompson River	Thompson Lakes	Fluvial Lands	1203	Breakland	44	0.2
Upper Thompson River	Thompson Lakes	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	12034	60.5
Upper Thompson River	Thompson Lakes	Continental Glaciated Erosional Lands	1401	High Terrace	223	1.1
Upper Thompson River	Thompson Lakes	Continental Glaciated Erosional Lands	1403	Water	2	0.0
Upper Thompson River	Thompson Lakes	Continental Glaciated Depositional Lands	1301	Glacial Ridge & Slope	40	0.2
Upper Thompson River	Thompson Lakes	Continental Glaciated Depositional Lands	1401	High Terrace	4352	21.9
Upper Thompson River	Thompson Lakes	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	424	2.1
Upper Thompson River	Thompson Lakes	Continental Glaciated Depositional Lands	1403	Water	1333	6.7
Upper Thompson River	**TOTAL**	**TOTAL**			**19896**	**100.0**
Upper Thompson River	Lang Creek	Fluvial Lands	1202	Mountain Slope	3238	66.8
Upper Thompson River	Lang Creek	Fluvial Lands	1203	Breakland	32	0.7
Upper Thompson River	Lang Creek	Fluvial Lands	1301	Glacial Ridge & Slope	57	1.2
Upper Thompson River	Lang Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	838	17.3
Upper Thompson River	Lang Creek	Continental Glaciated Erosional Lands	1401	High Terrace	23	0.5
Upper Thompson River	Lang Creek	Continental Glaciated Depositional Lands	1401	High Terrace	590	12.2
Upper Thompson River	Lang Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	69	1.4
Upper Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**4846**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Upper Thompson River	McGregor Creek	Fluvial Lands	1104	Moraine	32	0.2
Upper Thompson River	McGregor Creek	Fluvial Lands	1201	Mountain Ridge	288	1.5
Upper Thompson River	McGregor Creek	Fluvial Lands	1202	Mountain Slope	5596	28.4
Upper Thompson River	McGregor Creek	Fluvial Lands	1203	Breakland	451	2.3
Upper Thompson River	McGregor Creek	Fluvial Lands	1301	Glacial Ridge & Slope	45	0.2
Upper Thompson River	McGregor Creek	Fluvial Lands	1401	High Terrace	0	0.0
Upper Thompson River	McGregor Creek	Fluvial Lands	1402	Floodplain & Alluvium	155	0.8
Upper Thompson River	McGregor Creek	Continental Glaciated Erosional Lands	1104	Moraine	2292	11.6
Upper Thompson River	McGregor Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	7742	39.2
Upper Thompson River	McGregor Creek	Continental Glaciated Depositional Lands	1104	Moraine	480	2.4
Upper Thompson River	McGregor Creek	Continental Glaciated Depositional Lands	1401	High Terrace	699	3.5
Upper Thompson River	McGregor Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	463	2.3
Upper Thompson River	McGregor Creek	Continental Glaciated Depositional Lands	1403	Water	1492	7.6
Upper Thompson River	**TOTAL**	**TOTAL**			**19736**	**100.0**
Upper Thompson River	Boiling Springs Creek	Fluvial Lands	1201	Mountain Ridge	164	3.0
Upper Thompson River	Boiling Springs Creek	Fluvial Lands	1202	Mountain Slope	3	0.1
Upper Thompson River	Boiling Springs Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	4922	89.7
Upper Thompson River	Boiling Springs Creek	Continental Glaciated Erosional Lands	1401	High Terrace	254	4.6
Upper Thompson River	Boiling Springs Creek	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	117	2.1
Upper Thompson River	Boiling Springs Creek	Continental Glaciated Erosional Lands	1403	Water	2	0.0
Upper Thompson River	Boiling Springs Creek	Continental Glaciated Depositional Lands	1401	High Terrace	27	0.5
Upper Thompson River	**TOTAL**	**TOTAL**	**TOTA**	**TOTAL**	**5490**	**100.0**
Upper Thompson River	Davis Creek	Fluvial Lands	1201	Mountain Ridge	15	0.3
Upper Thompson River	Davis Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	4416	84.1
Upper Thompson River	Davis Creek	Continental Glaciated Depositional Lands	1401	High Terrace	805	15.3
Upper Thompson River	Davis Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	15	0.3
Upper Thompson River	**TOTAL**	**TOTAL**	**TOTA**	**TOTAL**	**5250**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Middle Thompson River	ALL	Alpine Glaciated Lands	1102	Glacial Basin	46	0.0
Middle Thompson River	ALL	Alpine Glaciated Lands	1103	Glacial Trough	8221	5.5
Middle Thompson River	ALL	Alpine Glaciated Lands	1402	Floodplain & Alluvium	2587	1.7
Middle Thompson River	ALL	Alpine Glaciated Lands	1403	Water	8	0.0
Middle Thompson River	ALL	Fluvial Lands	1101	Cirque & Rocky Ridge	989	0.7
Middle Thompson River	ALL	Fluvial Lands	1104	Moraine	1586	1.1
Middle Thompson River	ALL	Fluvial Lands	1201	Mountain Ridge	18876	12.6
Middle Thompson River	ALL	Fluvial Lands	1202	Mountain Slope	50081	33.5
Middle Thompson River	ALL	Fluvial Lands	1203	Breakland	8534	5.7
Middle Thompson River	ALL	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	31960	21.4
Middle Thompson River	ALL	Continental Glaciated Depositional Lands	1401	High Terrace	26490	17.7
Middle Thompson River	ALL	Continental Glaciated Depositional Lands	1403	Water	8	0.0
Middle Thompson River	**ALL**	**TOTAL**	**ALL**	**ALL**	**149386**	100.0
Middle Thompson River	Middle Thompson	Fluvial Lands	1201	Mountain Ridge	1851	4.1
Middle Thompson River	Middle Thompson	Fluvial Lands	1202	Mountain Slope	9783	21.6
Middle Thompson River	Middle Thompson	Fluvial Lands	1203	Breakland	1194	2.6
Middle Thompson River	Middle Thompson	Fluvial Lands	1301	Glacial Ridge & Slope	72	0.2
Middle Thompson River	Middle Thompson	Fluvial Lands	1402	Floodplain & Alluvium	12	0.0
Middle Thompson River	Middle Thompson	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	14764	32.7
Middle Thompson River	Middle Thompson	Continental Glaciated Erosional Lands	1401	High Terrace	195	0.4
Middle Thompson River	Middle Thompson	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	0	0.0
Middle Thompson River	Middle Thompson	Continental Glaciated Depositional Lands	1301	Glacial Ridge & Slope	42	0.1
Middle Thompson River	Middle Thompson	Continental Glaciated Depositional Lands	1401	High Terrace	15129	33.5
Middle Thompson River	Middle Thompson	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	2160	4.8
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**45201**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Middle Thompson River	Murr Creek	Fluvial Lands	1103	Glacial Trough	63	0.3
Middle Thompson River	Murr Creek	Fluvial Lands	1104	Moraine	461	2.3
Middle Thompson River	Murr Creek	Fluvial Lands	1201	Mountain Ridge	6025	30.2
Middle Thompson River	Murr Creek	Fluvial Lands	1202	Mountain Slope	11502	57.7
Middle Thompson River	Murr Creek	Fluvial Lands	1203	Breakland	1147	5.8
Middle Thompson River	Murr Creek	Fluvial Lands	1401	High Terrace	10	0.1
Middle Thompson River	Murr Creek	Fluvial Lands	1402	Floodplain & Alluvium	73	0.4
Middle Thompson River	Murr Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	360	1.8
Middle Thompson River	Murr Creek	Continental Glaciated Depositional Lands	1401	High Terrace	256	1.3
Middle Thompson River	Murr Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	21	0.1
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**19918**	**100.0**
Middle Thompson River	Shroder Creek	Fluvial Lands	1201	Mountain Ridge	1202	27.5
Middle Thompson River	Shroder Creek	Fluvial Lands	1202	Mountain Slope	1927	44.1
Middle Thompson River	Shroder Creek	Fluvial Lands	1203	Breakland	589	13.5
Middle Thompson River	Shroder Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	639	14.6
Middle Thompson River	Shroder Creek	Continental Glaciated Depositional Lands	1401	High Terrace	15	0.4
Middle Thompson River	Shroder Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	1	0.0
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**4373**	**100.0**
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	505	2.4
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1102	Glacial Basin	31	0.1
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1103	Glacial Trough	4786	22.8
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1104	Moraine	644	3.1
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1202	Mountain Slope	318	1.5
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1402	Floodplain & Alluvium	17	0.1
Middle Thompson River	Big Rock Creek	Alpine Glaciated Lands	1403	Water	5	0.0
Middle Thompson River	Big Rock Creek	Fluvial Lands	1201	Mountain Ridge	4035	19.2
Middle Thompson River	Big Rock Creek	Fluvial Lands	1202	Mountain Slope	8197	39.0
Middle Thompson River	Big Rock Creek	Fluvial Lands	1203	Breakland	1708	8.1
Middle Thompson River	Big Rock Creek	Continental Glaciated Erosional Lands	1202	Mountain Slope	4	0.0
Middle Thompson River	Big Rock Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	441	2.1
Middle Thompson River	Big Rock Creek	Continental Glaciated Depositional Lands	1401	High Terrace	299	1.4
Middle Thompson River	Big Rock Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	33	0.2
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**21024**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Middle Thompson River	Semen Creek	Fluvial Lands	1201	Mountain Ridge	517	13.6
Middle Thompson River	Semen Creek	Fluvial Lands	1202	Mountain Slope	1338	35.1
Middle Thompson River	Semen Creek	Fluvial Lands	1203	Breakland	109	2.9
Middle Thompson River	Semen Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	1152	30.3
Middle Thompson River	Semen Creek	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	14	0.4
Middle Thompson River	Semen Creek	Continental Glaciated Depositional Lands	1401	High Terrace	676	17.8
Middle Thompson River	Semen Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	1	0.0
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**3807**	**100.0**
Middle Thompson River	Chippy Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	202	1.7
Middle Thompson River	Chippy Creek	Alpine Glaciated Lands	1102	Glacial Basin	14	0.1
Middle Thompson River	Chippy Creek	Alpine Glaciated Lands	1103	Glacial Trough	1543	12.9
Middle Thompson River	Chippy Creek	Alpine Glaciated Lands	1104	Moraine	264	2.2
Middle Thompson River	Chippy Creek	Alpine Glaciated Lands	1403	Water	3	0.0
Middle Thompson River	Chippy Creek	Fluvial Lands	1201	Mountain Ridge	2666	22.3
Middle Thompson River	Chippy Creek	Fluvial Lands	1202	Mountain Slope	4416	36.9
Middle Thompson River	Chippy Creek	Fluvial Lands	1203	Breakland	2057	17.2
Middle Thompson River	Chippy Creek	Fluvial Lands	1403	Water	3	0.0
Middle Thompson River	Chippy Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	172	1.4
Middle Thompson River	Chippy Creek	Continental Glaciated Depositional Lands	1401	High Terrace	605	5.1
Middle Thompson River	Chippy Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	15	0.1
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**11957**	**100.0**
Middle Thompson River	Bear Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	282	3.4
Middle Thompson River	Bear Creek	Alpine Glaciated Lands	1103	Glacial Trough	1829	21.9
Middle Thompson River	Bear Creek	Alpine Glaciated Lands	1104	Moraine	217	2.6
Middle Thompson River	Bear Creek	Fluvial Lands	1201	Mountain Ridge	1255	15.0
Middle Thompson River	Bear Creek	Fluvial Lands	1202	Mountain Slope	3099	37.1
Middle Thompson River	Bear Creek	Fluvial Lands	1203	Breakland	1420	17.0
Middle Thompson River	Bear Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	11	0.1
Middle Thompson River	Bear Creek	Continental Glaciated Depositional Lands	1401	High Terrace	201	2.4
Middle Thompson River	Bear Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	38	0.5
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**8352**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Middle Thompson River	Meadow Creek	Fluvial Lands	1201	Mountain Ridge	648	6.8
Middle Thompson River	Meadow Creek	Fluvial Lands	1202	Mountain Slope	5951	62.2
Middle Thompson River	Meadow Creek	Fluvial Lands	1203	Breakland	232	2.4
Middle Thompson River	Meadow Creek	Fluvial Lands	1401	High Terrace	49	0.5
Middle Thompson River	Meadow Creek	Fluvial Lands	1402	Floodplain & Alluvium	42	0.4
Middle Thompson River	Meadow Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	1967	20.5
Middle Thompson River	Meadow Creek	Continental Glaciated Depositional Lands	1401	High Terrace	606	6.3
Middle Thompson River	Meadow Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	79	0.8
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**9575**	**100.0**
Middle Thompson River	Lazier Creek	Fluvial Lands	1201	Mountain Ridge	158	1.0
Middle Thompson River	Lazier Creek	Fluvial Lands	1202	Mountain Slope	1273	8.4
Middle Thompson River	Lazier Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	8506	55.9
Middle Thompson River	Lazier Creek	Continental Glaciated Depositional Lands	1401	High Terrace	5217	34.3
Middle Thompson River	Lazier Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	49	0.3
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**15204**	**100.0**
Middle Thompson River	Indian Creek	Fluvial Lands	1201	Mountain Ridge	519	5.2
Middle Thompson River	Indian Creek	Fluvial Lands	1202	Mountain Slope	2254	22.6
Middle Thompson River	Indian Creek	Fluvial Lands	1202	Mountain Slope	19	0.2
Middle Thompson River	Indian Creek	Fluvial Lands	1203	Breakland	78	0.8
Middle Thompson River	Indian Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	3775	37.8
Middle Thompson River	Indian Creek	Continental Glaciated Erosional Lands	1401	High Terrace	18	0.2
Middle Thompson River	Indian Creek	Continental Glaciated Depositional Lands	1301	Glacial Ridge & Slope	59	0.6
Middle Thompson River	Indian Creek	Continental Glaciated Depositional Lands	1401	High Terrace	3213	32.2
Middle Thompson River	Indian Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	30	0.3
Middle Thompson River	Indian Creek	Continental Glaciated Depositional Lands	1403	Water	8	0.1
Middle Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**9974**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Fishtrap Creek	ALL	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	3250	5.4
Fishtrap Creek	ALL	Alpine Glaciated Lands	1102	Glacial Basin	1470	2.4
Fishtrap Creek	ALL	Alpine Glaciated Lands	1103	Glacial Trough	7172	11.9
Fishtrap Creek	ALL	Alpine Glaciated Lands	1104	Moraine	1242	2.1
Fishtrap Creek	ALL	Alpine Glaciated Lands	1403	Water	49	0.1
Fishtrap Creek	ALL	Fluvial Lands	1201	Mountain Ridge	5346	8.9
Fishtrap Creek	ALL	Fluvial Lands	1202	Mountain Slope	23486	39.1
Fishtrap Creek	ALL	Fluvial Lands	1203	Breakland	4795	8.0
Fishtrap Creek	ALL	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	7319	12.2
Fishtrap Creek	ALL	Continental Glaciated Erosional Lands	1403	Water	2	0.0
Fishtrap Creek	ALL	Continental Glaciated Depositional Lands	1401	High Terrace	4614	7.7
Fishtrap Creek	ALL	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	1274	2.1
Fishtrap Creek	ALL	Continental Glaciated Depositional Lands	1403	Water	44	0.1
Fishtrap Creek	**ALL**	**TOTAL**		**TOTAL**	**60063**	100.0
Fishtrap Creek	Upper Fishtrap Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	601	2.7
Fishtrap Creek	Upper Fishtrap Creek	Alpine Glaciated Lands	1102	Glacial Basin	193	0.9
Fishtrap Creek	Upper Fishtrap Creek	Alpine Glaciated Lands	1103	Glacial Trough	144	0.6
Fishtrap Creek	Upper Fishtrap Creek	Alpine Glaciated Lands	1103	Glacial Trough	939	4.2
Fishtrap Creek	Upper Fishtrap Creek	Alpine Glaciated Lands	1104	Moraine	323	1.5
Fishtrap Creek	Upper Fishtrap Creek	Fluvial Lands	1103	Glacial Trough	0	0.0
Fishtrap Creek	Upper Fishtrap Creek	Fluvial Lands	1201	Mountain Ridge	1511	6.8
Fishtrap Creek	Upper Fishtrap Creek	Fluvial Lands	1202	Mountain Slope	6916	31.1
Fishtrap Creek	Upper Fishtrap Creek	Fluvial Lands	1203	Breakland	362	1.6
Fishtrap Creek	Upper Fishtrap Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	7068	31.8
Fishtrap Creek	Upper Fishtrap Creek	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	393	1.8
Fishtrap Creek	Upper Fishtrap Creek	Continental Glaciated Erosional Lands	1403	Water	2	0.0
Fishtrap Creek	Upper Fishtrap Creek	Continental Glaciated Depositional Lands	1401	High Terrace	3405	15.3
Fishtrap Creek	Upper Fishtrap Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	309	1.4
Fishtrap Creek	Upper Fishtrap Creek	Continental Glaciated Depositional Lands	1403	Water	44	0.2
Fishtrap Creek	**TOTAL**	**TOTAL**		**TOTAL**	**22211**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Fishtrap Creek	Lower Fishtrap Creek	Fluvial Lands	1201	Mountain Ridge	1336	9.4
Fishtrap Creek	Lower Fishtrap Creek	Fluvial Lands	1202	Mountain Slope	7958	56.0
Fishtrap Creek	Lower Fishtrap Creek	Fluvial Lands	1203	Breakland	3210	22.6
Fishtrap Creek	Lower Fishtrap Creek	Fluvial Lands	1301	Glacial Ridge & Slope	69	0.5
Fishtrap Creek	Lower Fishtrap Creek	Fluvial Lands	1401	High Terrace	32	0.2
Fishtrap Creek	Lower Fishtrap Creek	Fluvial Lands	1402	Floodplain & Alluvium	156	1.1
Fishtrap Creek	Lower Fishtrap Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	0	0.0
Fishtrap Creek	Lower Fishtrap Creek	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	13	0.1
Fishtrap Creek	Lower Fishtrap Creek	Continental Glaciated Depositional Lands	1401	High Terrace	1177	8.3
Fishtrap Creek	Lower Fishtrap Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	253	1.8
Fishtrap Creek	**TOTAL**	**TOTAL**		**TOTAL**	**14203**	**100.0**
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	2074	17.9
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1102	Glacial Basin	1230	10.6
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1103	Glacial Trough	3676	31.7
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1104	Moraine	919	7.9
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1203	Breakland	93	0.8
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1301	Glacial Ridge & Slope	28	0.2
Fishtrap Creek	West Fork Fishtrap Creek	Alpine Glaciated Lands	1403	Water	49	0.4
Fishtrap Creek	West Fork Fishtrap Creek	Fluvial Lands	1201	Mountain Ridge	1035	8.9
Fishtrap Creek	West Fork Fishtrap Creek	Fluvial Lands	1202	Mountain Slope	1976	17.1
Fishtrap Creek	West Fork Fishtrap Creek	Fluvial Lands	1203	Breakland	320	2.8
Fishtrap Creek	West Fork Fishtrap Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	154	1.3
Fishtrap Creek	West Fork Fishtrap Creek	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	32	0.3
Fishtrap Creek	**TOTAL**	**TOTAL**		**TOTAL**	**11586**	**100.0**
Fishtrap Creek	Beatrice Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	447	6.8
Fishtrap Creek	Beatrice Creek	Alpine Glaciated Lands	1103	Glacial Trough	1272	19.4
Fishtrap Creek	Beatrice Creek	Fluvial Lands	1201	Mountain Ridge	894	13.6
Fishtrap Creek	Beatrice Creek	Fluvial Lands	1202	Mountain Slope	3261	49.6
Fishtrap Creek	Beatrice Creek	Fluvial Lands	1203	Breakland	581	8.8
Fishtrap Creek	Beatrice Creek	Fluvial Lands	1402	Floodplain & Alluvium	117	1.8
Fishtrap Creek	**TOTAL**	**TOTAL**		**TOTAL**	**6570**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Fishtrap Creek	Jungle Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	129	2.3
Fishtrap Creek	Jungle Creek	Alpine Glaciated Lands	1102	Glacial Basin	47	0.9
Fishtrap Creek	Jungle Creek	Alpine Glaciated Lands	1103	Glacial Trough	1141	20.8
Fishtrap Creek	Jungle Creek	Fluvial Lards	1201	Mountain Ridge	571	10.4
Fishtrap Creek	Jungle Creek	Fluvial Lards	1202	Mountain Slope	3375	61.4
Fishtrap Creek	Jungle Creek	Fluvial Lards	1203	Breakland	230	4.2
Fishtrap Creek	Jungle Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	0	0.0
Fishtrap Creek	**TOTAL**	**TOTAL**		**TOTAL**	**5493**	**100.0**
Little Thompson River	ALL	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	1776	2.3
Little Thompson River	ALL	Alpine Glaciated Lands	1102	Glacial Basin	178	0.2
Little Thompson River	ALL	Alpine Glaciated Lands	1103	Glacial Trough	13178	16.8
Little Thompson River	ALL	Alpine Glaciated Lands	1104	Moraine	6870	8.7
Little Thompson River	ALL	Alpine Glaciated Lands	1201	Mountain Ridge	7801	9.9
Little Thompson River	ALL	Alpine Glaciated Lands	1403	Water	16	0.0
Little Thompson River	ALL	Fluvial Lands	1202	Mountain Slope	25591	32.6
Little Thompson River	ALL	Fluvial Lands	1203	Breakland	3406	4.3
Little Thompson River	ALL	Fluvial Lands	1301	Glacial Ridge & Slope	11390	14.5
Little Thompson River	ALL	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	1363	1.7
Little Thompson River	ALL	Continental Glaciated Depositional Lands	1401	High Terrace	6957	8.9
Little Thompson River	**ALL**	**TOTAL**		**TOTAL**	**78526**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	1608	4.1
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1102	Glacial Basin	178	0.5
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1103	Glacial Trough	13178	33.5
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1104	Moraine	6870	17.5
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1201	Mountain Ridge	1330	3.4
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1202	Mountain Slope	1604	4.1
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1402	Floodplain & Alluvium	485	1.2
Little Thompson River	Upper Little Thompson River	Alpine Glaciated Lands	1403	Water	16	0.0
Little Thompson River	Upper Little Thompson River	Fluvial Lands	1201	Mountain Ridge	2525	6.4
Little Thompson River	Upper Little Thompson River	Fluvial Lands	1202	Mountain Slope	8782	22.3
Little Thompson River	Upper Little Thompson River	Fluvial Lands	1203	Breakland	2029	5.2
Little Thompson River	Upper Little Thompson River	Fluvial Lands	1301	Glacial Ridge & Slope	40	0.1
Little Thompson River	Upper Little Thompson River	Fluvial Lands	1402	Floodplain & Alluvium	60	0.2
Little Thompson River	Upper Little Thompson River	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	441	1.1
Little Thompson River	Upper Little Thompson River	Continental Glaciated Depositional Lands	1401	High Terrace	107	0.3
Little Thompson River	Upper Little Thompson River	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	57	0.1
Little Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**39311**	**100.0**
Little Thompson River	Mudd Creek	Fluvial Lands	1201	Mountain Ridge	1975	14.1
Little Thompson River	Mudd Creek	Fluvial Lands	1202	Mountain Slope	7901	56.5
Little Thompson River	Mudd Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	3907	27.9
Little Thompson River	Mudd Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	1	0.0
Little Thompson River	Mudd Creek	Continental Glaciated Erosional Lands	1402	Floodplain & Alluvium	39	0.3
Little Thompson River	Mudd Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	168	1.2
Little Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**13991**	**100.0**
Little Thompson River	Lower Little Thompson	Fluvial Lands	1201	Mountain Ridge	220	1.6
Little Thompson River	Lower Little Thompson	Fluvial Lands	1202	Mountain Slope	1197	8.9
Little Thompson River	Lower Little Thompson	Fluvial Lands	1203	Breakland	18	0.1
Little Thompson River	Lower Little Thompson	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	6225	46.4
Little Thompson River	Lower Little Thompson	Continental Glaciated Erosional Lands	1401	High Terrace	29	0.2
Little Thompson River	Lower Little Thompson	Continental Glaciated Depositional Lands	1401	High Terrace	5243	39.1
Little Thompson River	Lower Little Thompson	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	489	3.6
Little Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**13421**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Little Thompson River	Little Rock Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	21	0.4
Little Thompson River	Little Rock Creek	Fluvial Lands	1201	Mountain Ridge	547	11.5
Little Thompson River	Little Rock Creek	Fluvial Lands	1202	Mountain Slope	1571	32.9
Little Thompson River	Little Rock Creek	Fluvial Lands	1203	Breakland	480	10.1
Little Thompson River	Little Rock Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	746	15.6
Little Thompson River	Little Rock Creek	Continental Glaciated Erosional Lands	1401	High Terrace	11	0.2
Little Thompson River	Little Rock Creek	Continental Glaciated Depositional Lands	1401	High Terrace	1394	29.2
Little Thompson River	Little Rock Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	1	0.0
Little Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**4769**	**100.0**
Little Thompson River	North Fork Little Thompson	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	147	2.1
Little Thompson River	North Fork Little Thompson	Alpine Glaciated Lands	1103	Glacial Trough	0	0.0
Little Thompson River	North Fork Little Thompson	Fluvial Lands	1201	Mountain Ridge	1203	17.1
Little Thompson River	North Fork Little Thompson	Fluvial Lands	1202	Mountain Slope	4536	64.5
Little Thompson River	North Fork Little Thompson	Fluvial Lands	1203	Breakland	880	12.5
Little Thompson River	North Fork Little Thompson	Fluvial Lands	1301	Glacial Ridge & Slope	29	0.4
Little Thompson River	North Fork Little Thompson	Continental Glaciated Depositional Lands	1401	High Terrace	173	2.5
Little Thompson River	North Fork Little Thompson	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	65	0.9
Little Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**7034**	**100.0**
West Fork Thompson	ALL	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	3657	16.1
West Fork Thompson	ALL	Alpine Glaciated Lands	1102	Glacial Basin	2523	11.1
West Fork Thompson	ALL	Alpine Glaciated Lands	1103	Glacial Trough	2090	9.2
West Fork Thompson	ALL	Alpine Glaciated Lands	1104	Moraine	1258	5.5
West Fork Thompson	ALL	Alpine Glaciated Lands	1403	Water	52	0.2
West Fork Thompson	ALL	Fluvial Lands	1201	Mountain Ridge	1205	5.3
West Fork Thompson	ALL	Fluvial Lands	1202	Mountain Slope	6358	27.9
West Fork Thompson	ALL	Fluvial Lands	1203	Breakland	5177	22.7
West Fork Thompson	ALL	Fluvial Lands	1401	High Terrace	53	0.2
West Fork Thompson	ALL	Fluvial Lands	1402	Floodplain & Alluvium	408	1.8
West Fork Thompson	**ALL**	**TOTAL**		**TOTAL**	**22781**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
West Fork Thompson	Middle West Fork	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	2066	14.5
West Fork Thompson	Middle West Fork	Alpine Glaciated Lands	1102	Glacial Basin	952	6.7
West Fork Thompson	Middle West Fork	Alpine Glaciated Lands	1103	Glacial Trough	944	6.6
West Fork Thompson	Middle West Fork	Alpine Glaciated Lands	1104	Moraine	380	2.7
West Fork Thompson	Middle West Fork	Alpine Glaciated Lands	1403	Water	25	0.2
West Fork Thompson	Middle West Fork	Fluvial Lands	1201	Mountain Ridge	546	3.8
West Fork Thompson	Middle West Fork	Fluvial Lands	1202	Mountain Slope	4257	29.8
West Fork Thompson	Middle West Fork	Fluvial Lands	1203	Breakland	4690	32.9
West Fork Thompson	Middle West Fork	Fluvial Lands	1401	High Terrace	53	0.4
West Fork Thompson	Middle West Fork	Fluvial Lands	1402	Floodplain & Alluvium	352	2.5
West Fork Thompson	**TOTAL**	**TOTAL**		**TOTAL**	**14265**	**100.0**
West Fork Thompson	Four Lakes Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	1541	26.0
West Fork Thompson	Four Lakes Creek	Alpine Glaciated Lands	1102	Glacial Basin	1571	26.5
West Fork Thompson	Four Lakes Creek	Alpine Glaciated Lands	1103	Glacial Trough	1146	19.3
West Fork Thompson	Four Lakes Creek	Alpine Glaciated Lands	1104	Moraine	878	14.8
West Fork Thompson	Four Lakes Creek	Alpine Glaciated Lands	1403	Water	28	0.5
West Fork Thompson	Four Lakes Creek	Fluvial Lands	1201	Mountain Ridge	98	1.7
West Fork Thompson	Four Lakes Creek	Fluvial Lands	1202	Mountain Slope	422	7.1
West Fork Thompson	Four Lakes Creek	Fluvial Lands	1203	Breakland	194	3.3
West Fork Thompson	Four Lakes Creek	Fluvial Lands	1402	Floodplain & Alluvium	55	0.9
West Fork Thompson	**TOTAL**	**TOTAL**		**TOTAL**	**5932**	**100.0**
West Fork Thompson	Anne Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	50	1.9
West Fork Thompson	Anne Creek	Fluvial Lands	1201	Mountain Ridge	561	21.7
West Fork Thompson	Anne Creek	Fluvial Lands	1202	Mountain Slope	1679	65.0
West Fork Thompson	Anne Creek	Fluvial Lands	1203	Breakland	293	11.4
West Fork Thompson	Anne Creek	Fluvial Lands	1402	Floodplain & Alluvium	0	0.0
West Fork Thompson	**TOTAL**	**TOTAL**		**TOTAL**	**2584**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Lower Thompson River	ALL	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	2121	4.8
Lower Thompson River	ALL	Alpine Glaciated Lands	1102	Glacial Basin	612	1.4
Lower Thompson River	ALL	Alpine Glaciated Lands	1104	Moraine	549	1.2
Lower Thompson River	ALL	Alpine Glaciated Lands	1403	Water	7	0.0
Lower Thompson River	ALL	Fluvial Lands	1103	Glacial Trough	2879	6.5
Lower Thompson River	ALL	Fluvial Lands	1201	Mountain Ridge	3111	7.1
Lower Thompson River	ALL	Fluvial Lands	1202	Mountain Slope	19602	44.4
Lower Thompson River	ALL	Fluvial Lands	1203	Breakland	9716	22.0
Lower Thompson River	ALL	Fluvial Lands	1301	Glacial Ridge & Slope	1630	3.7
Lower Thompson River	ALL	Fluvial Lands	1401	High Terrace	2773	6.3
Lower Thompson River	ALL	Fluvial Lands	1402	Floodplain & Alluvium	1121	2.5
Lower Thompson River	**ALL**	**TOTAL**		**TOTAL**	**44120**	**100.0**
Lower Thompson River	Lower Thompson	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	852	3.4
Lower Thompson River	Lower Thompson	Alpine Glaciated Lands	1102	Glacial Basin	294	1.2
Lower Thompson River	Lower Thompson	Alpine Glaciated Lands	1103	Glacial Trough	210	0.8
Lower Thompson River	Lower Thompson	Alpine Glaciated Lands	1403	Water	7	0.0
Lower Thompson River	Lower Thompson	Fluvial Lands	1201	Mountain Ridge	1032	4.1
Lower Thompson River	Lower Thompson	Fluvial Lands	1202	Mountain Slope	9752	38.7
Lower Thompson River	Lower Thompson	Fluvial Lands	1203	Breakland	9016	35.8
Lower Thompson River	Lower Thompson	Fluvial Lands	1301	Glacial Ridge & Slope	147	0.6
Lower Thompson River	Lower Thompson	Fluvial Lands	1401	High Terrace	894	3.5
Lower Thompson River	Lower Thompson	Fluvial Lands	1402	Floodplain & Alluvium	664	2.6
Lower Thompson River	Lower Thompson	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	799	3.2
Lower Thompson River	Lower Thompson	Continental Glaciated Depositional Lands	1401	High Terrace	1264	5.0
Lower Thompson River	Lower Thompson	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	250	1.0
Lower Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**25184**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Lower Thompson River	Deerhorn Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	766	12.5
Lower Thompson River	Deerhorn Creek	Alpine Glaciated Lands	1102	Glacial Basin	91	1.5
Lower Thompson River	Deerhorn Creek	Alpine Glaciated Lands	1103	Glacial Trough	12	0.2
Lower Thompson River	Deerhorn Creek	Alpine Glaciated Lands	1103	Glacial Trough	1131	18.4
Lower Thompson River	Deerhorn Creek	Fluvial Lands	1103	Glacial Trough	0	0.0
Lower Thompson River	Deerhorn Creek	Fluvial Lands	1201	Mountain Ridge	349	5.7
Lower Thompson River	Deerhorn Creek	Fluvial Lands	1202	Mountain Slope	3651	59.4
Lower Thompson River	Deerhorn Creek	Fluvial Lands	1402	Floodplain & Alluvium	142	2.3
Lower Thompson River	Deerhorn Creek	Continental Glaciated Depositional Lands	1401	High Terrace	3	0.1
Lower Thompson River	Deerhorn Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	5	0.1
Lower Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**6149**	**100.0**
Lower Thompson River	Bay State Creek	Alpine Glaciated Lands	1102	Glacial Basin	62	2.2
Lower Thompson River	Bay State Creek	Alpine Glaciated Lands	1103	Glacial Trough	235	8.3
Lower Thompson River	Bay State Creek	Fluvial Lands	1201	Mountain Ridge	512	18.0
Lower Thompson River	Bay State Creek	Fluvial Lands	1202	Mountain Slope	1349	47.4
Lower Thompson River	Bay State Creek	Fluvial Lands	1203	Breakland	686	24.1
Lower Thompson River	Bay State Creek	Fluvial Lands	1402	Floodplain & Alluvium	3	0.1
Lower Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**2846**	**100.0**
Lower Thompson River	Big Hole Creek	Alpine Glaciated Lands	1101	Cirque & Rocky Ridge	504	9.5
Lower Thompson River	Big Hole Creek	Alpine Glaciated Lands	1102	Glacial Basin	165	3.1
Lower Thompson River	Big Hole Creek	Alpine Glaciated Lands	1103	Glacial Trough	1291	24.3
Lower Thompson River	Big Hole Creek	Alpine Glaciated Lands	1104	Moraine	549	10.3
Lower Thompson River	Big Hole Creek	Fluvial Lands	1201	Mountain Ridge	662	12.5
Lower Thompson River	Big Hole Creek	Fluvial Lands	1202	Mountain Slope	1753	33.0
Lower Thompson River	Big Hole Creek	Fluvial Lands	1203	Breakland	13	0.2
Lower Thompson River	Big Hole Creek	Fluvial Lands	1401	High Terrace	357	6.7
Lower Thompson River	Big Hole Creek	Fluvial Lands	1402	Floodplain & Alluvium	22	0.4
Lower Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**5316**	**100.0**

Table 3.4-2. Areas of landtype associations, Thompson River basin (ALL), subbasins and watersheds.

SUBBASIN	WATERSHED	SUBSECTION	LTA	LANDTYPE ASSOCIATION	AREA	
					Acres	Percent
Lower Thompson River	Calico Creek	Fluvial Lands	1201	Mountain Ridge	556	12.0
Lower Thompson River	Calico Creek	Fluvial Lands	1202	Mountain Slope	3096	66.9
Lower Thompson River	Calico Creek	Fluvial Lands	1401	High Terrace	22	0.5
Lower Thompson River	Calico Creek	Continental Glaciated Erosional Lands	1301	Glacial Ridge & Slope	684	14.8
Lower Thompson River	Calico Creek	Continental Glaciated Depositional Lands	1401	High Terrace	233	5.0
Lower Thompson River	Calico Creek	Continental Glaciated Depositional Lands	1402	Floodplain & Alluvium	35	0.8
Lower Thompson River	**TOTAL**	**TOTAL**		**TOTAL**	**4625**	**100.0**

3.4-1. Alpine Glaciated Landtype Associations

Four dominant landtype associations comprise *alpine glaciated lands*: 1) *Cirque and rocky ridge;* 2) *alpine glacial basin;* 3) *alpine glacial trough*; and 4) *moraine*. Smaller areas of *floodplain and alluvium* are associated with *moraines*.

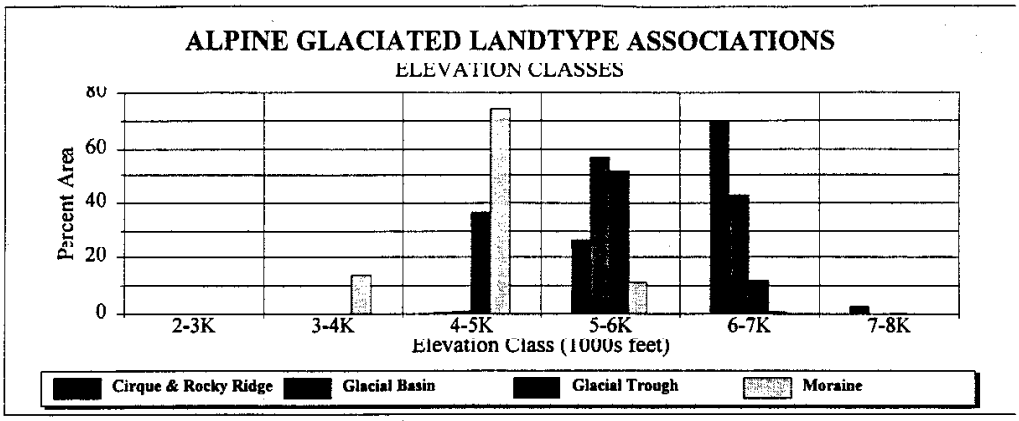
Elevation, slope and aspect distributions for these landtype associations are illustrated in Figure 3.4.1-1. Descriptions of dominant landtype associations in *alpine glaciated lands* follow:

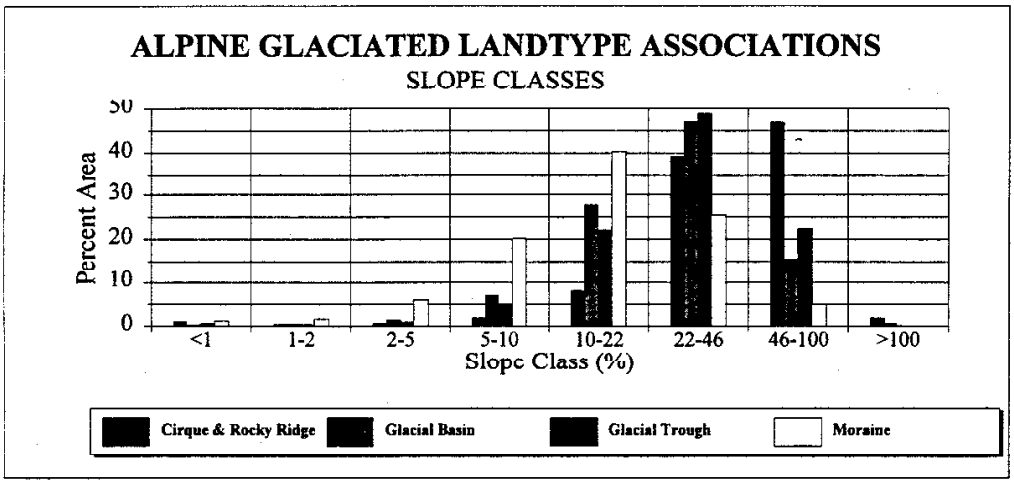
***Cirque and rocky ridge* (1101):** Comprises 11,792 acres (19 percent) of *alpine glaciated lands*. It occurs along the highest ridges. Drainage density (0.4) is very low. Ten (10) percent of streams are perennial. Elevations range from 5,000 to 7,500 feet. Dominant slopes are 22 to 100 percent. Northerly aspects are prevalent.

***Alpine glacial basin* (1102):** Comprises 4,828 acres (7.6 percent) of *alpine glaciated lands*. It occurs just below *cirques and rock ridges*. Drainage density is moderate-to-high (3.2). About 32 percent of streams are perennial. Elevations range from 5,000 to 7,000 feet. Dominant slopes are 10 to 46 percent. Northerly aspects are prevalent.

***Alpine glacial trough* (1103):** Comprises 33,477 acres (53 percent) of *alpine glaciated lands*. It is also a minor inclusion of *fluvial lands*. It includes very steep glaciated slopes and trough walls. Drainage density is moderate (2.2). About 17 percent of streams are perennial. Elevations range from 4,000 to over 6,000 feet. Dominant slopes are 10 to 100 percent. Northerly aspects are prevalent.

***Moraine* (1104):** Comprises 11,043 acres (17 percent) of *alpine glaciated lands*. Typically, *moraines* occur along drainages in the bottoms of *alpine glacial troughs* below *alpine glacial basins*. Glacial outwash identified in *continental glaciated erosional lands* in the vicinity of McGregor Lake (2,292 acres) and in *fluvial lands* in the Murr Creek watershed (493 acres) were also included as *moraine*. Drainage density is high (4.7). About 49 percent of streams are perennial. Elevations range from 4,000 to 5,000 feet. Dominant slopes are 5 to 46 percent. The prevalence of southerly aspects (see Figure 3.4.1-1) probably reflects the large area of glacial outwash near McGregor Lake.





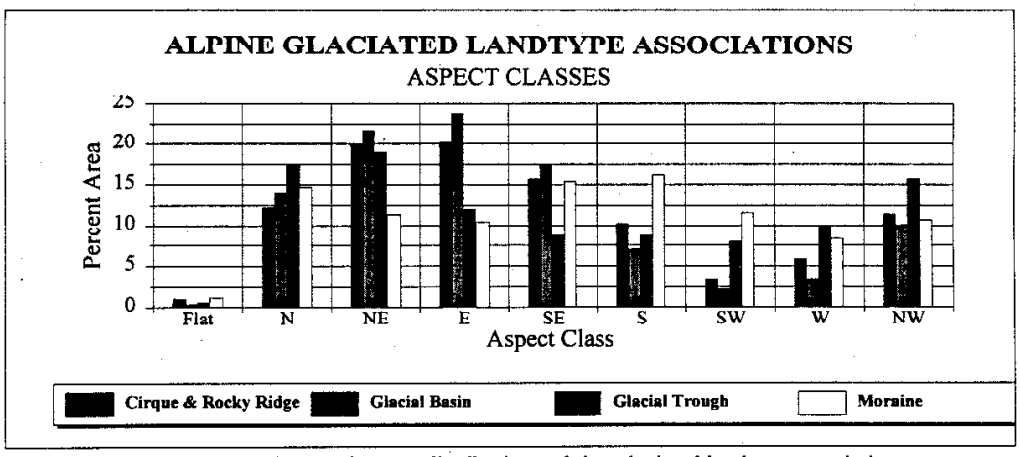


Figure 3.4.1-1. Elevation, slope and aspect distributions, alpine glaciated landtype associations.

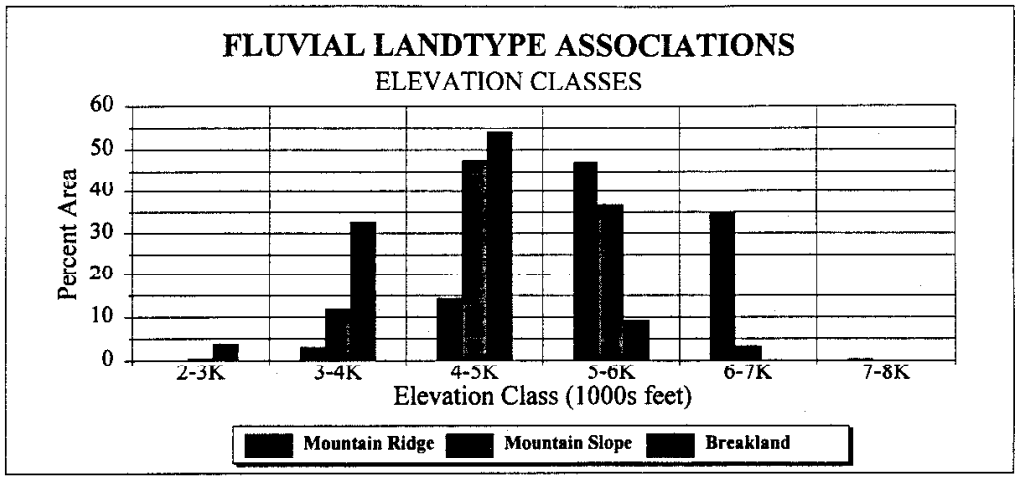
3.4.2 Fluvial Landtype Associations

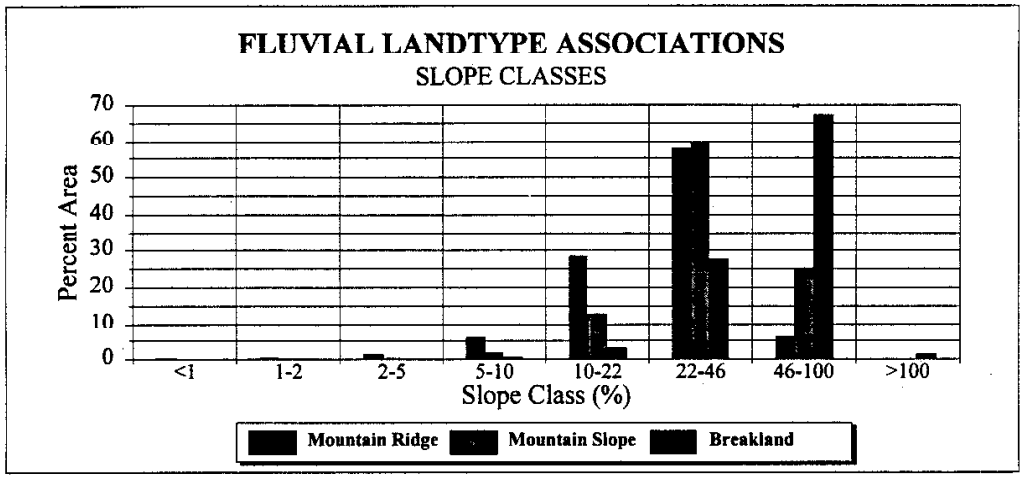
Three dominant landtype associations make up the *fluvial subsection*: 1) *ridge*; 2) *mountain slope*; and 3) *breakland*. Smaller areas of *floodplain and alluvium* also occur. Elevation, slope and aspect distributions for these landtype associations are illustrated in Figure 3.4.2-1. Descriptions of dominant landtype associations in *fluvial lands* follow:

***Mountain Ridge* (1201):** Comprises 35,619 acres (17 percent) of *fluvial lands*. Small areas of *mountain ridge* were also identified in *alpine glaciated lands* (1,330 acres). It includes mountain ridge crests and shoulder slopes. Drainage density (0.1) is very low. About 10 percent of streams are perennial. Elevation range from 5,000 to 7,000 feet. Dominant slopes are 10 to 46 percent on all aspects.

***Mountain Slope* (1202):** Comprises 133,238 acres (64 percent) of *fluvial lands*. Small areas of *mountain slope* were also identified in *alpine glaciated lands* (2,012 acres). It includes steep, forested mountain slopes that were generally above that directly affected by continental glaciation and Lake Missoula. Drainage density is moderate (2.1). About 17 percent of streams are perennial. Elevations range from 5,000 to 6,000 feet. Dominant slopes are 22 to 100 percent on all aspects.

***Breakland* (1203):** Comprises 32,064 acres (15 percent) of *fluvial lands*. Small areas of *breakland* were also identified in *alpine glaciated lands* (93 acres). It includes very steep, rocky, forested slopes, talus and rock outcrop that were above that directly affected by continental glaciation and Lake Missoula. Drainage density is moderate (2.4). About 39 percent of streams are perennial. Elevations range from 3,000 to 5,000 feet. Dominant slopes are 22 to 100 percent. Southerly aspects are somewhat more prevalent.





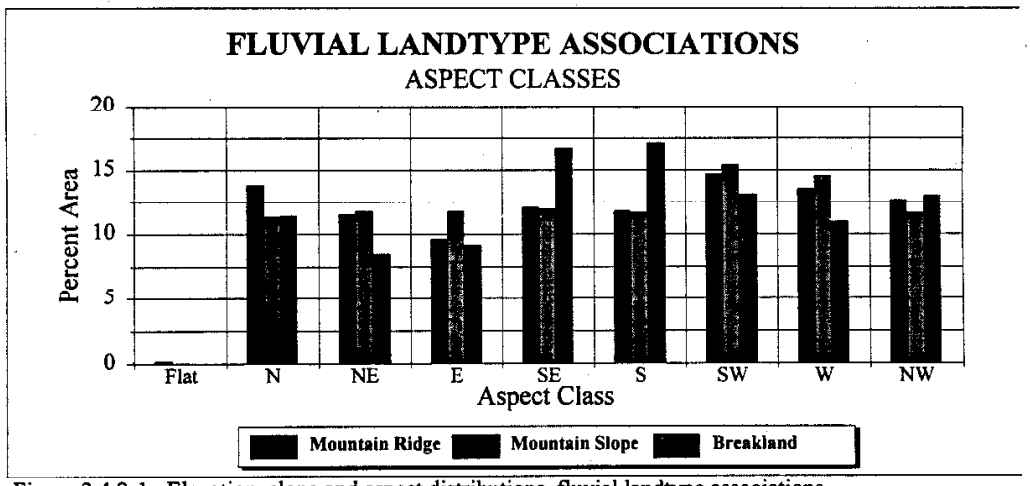
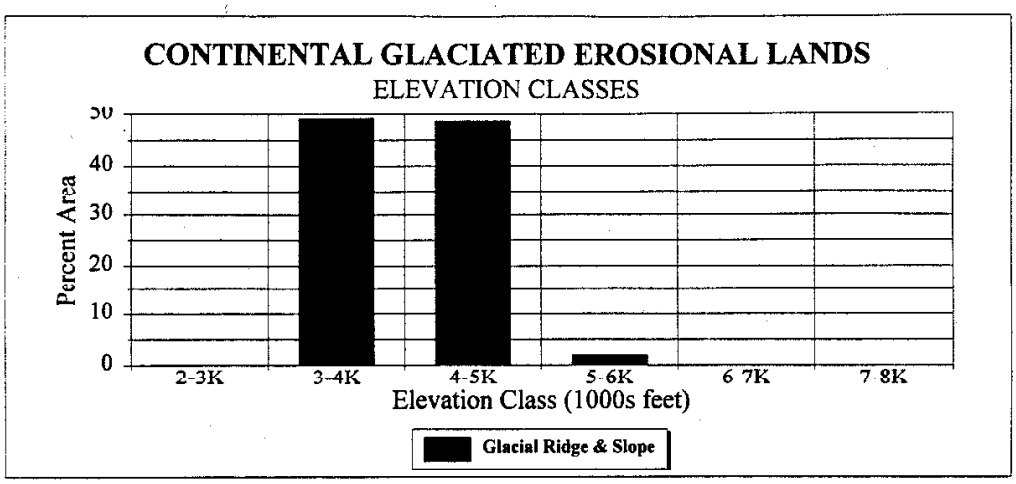


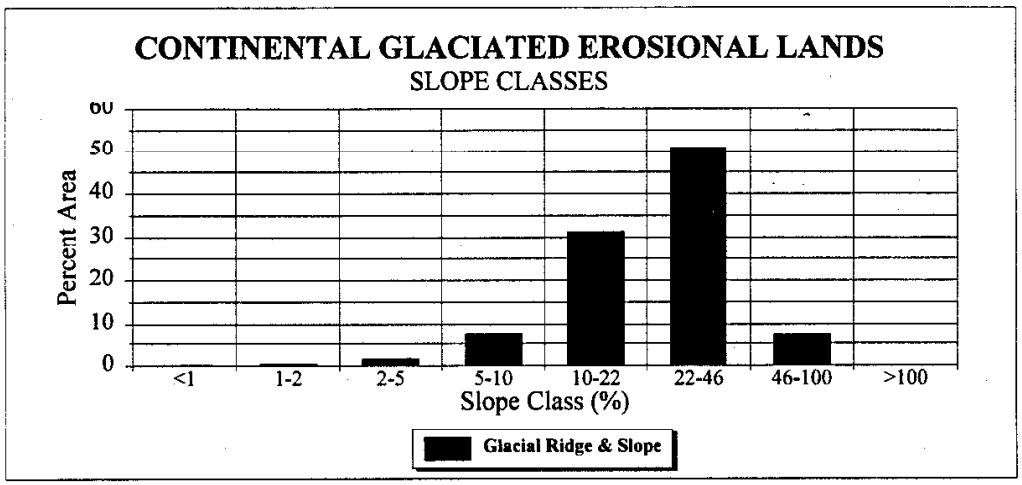
Figure 3.4.2-1. Elevation, slope and aspect distributions, fluvial landtype associations.

3.4.3 Continental Glaciated Erosional Landtype Associations

A single landtype association is dominant in *continental glaciated erosional lands — glacial ridge and slope.* Small areas of *high terrace* and *floodplains and alluvium* were also delineated in the subsection. Elevation, slope and aspect distributions for *glacial ridge and slope* are illustrated in Figure 3.4.3-1.

> ***Glacial Ridge and Slope* (1301):** Comprises 81,765 acres (96 percent) of *continental glaciated erosional lands.* Small areas of *glacial ridge and slope* were also identified in *alpine glaciated lands* (28 acres), *fluvial lands* (459 acres) and *continental glaciated depositional lands* (140 acres). It includes areas low mountains and hills that were scoured Cordilleran ice sheet and/or further influenced by Lake Missoula. Drainage density is moderate (1.6). About 15 percent of streams are perennial. Elevations range from 3,000 to 5,000 feet. Dominant slopes are 10 to 46 percent on all aspects.





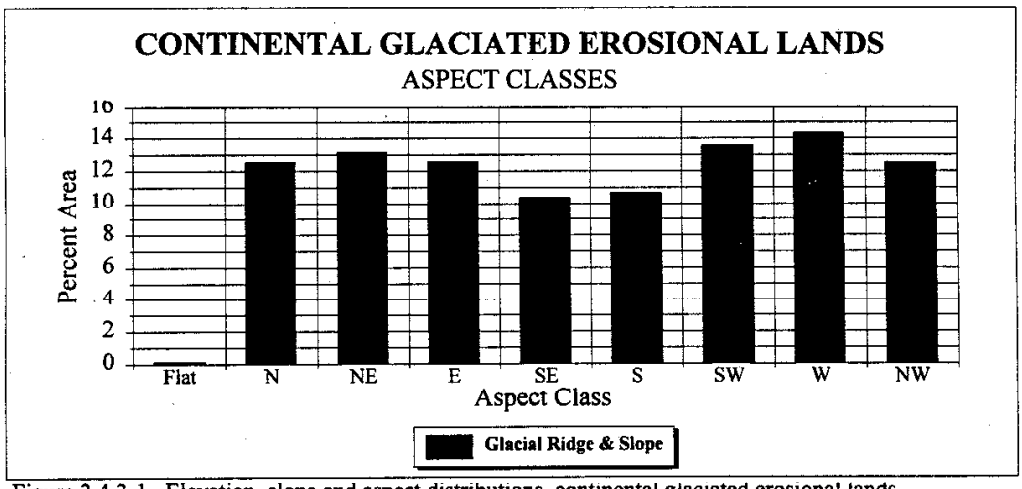


Figure 3.4.3-1. Elevation, slope and aspect distributions, continental glaciated erosional lands.

3.4.4. Continental Glaciated Depositional Landtype Associations

Two landtype associations are dominant in *continental glaciated depositional lands*: 1) *high terrace*; and 2) *floodplains and alluvium*. Elevation, slope and aspect distributions for these landtype associations are illustrated in Figure 3.4.4-1. Descriptions of landtype associations follow.

> ***High Terrace* (1401):** Comprises 45,690 acres (84 percent) of *continental glaciated depositional lands*. Small areas of *high terrace* were also identified in *fluvial lands* (1,416 acres) and *continental glaciated erosional lands* (755 acres). It includes: 1) glacio-lacustrine terraces remnant of the Cordilleran ice sheet, mostly along the Thompson River north of Chippy Creek and in upper Fishtrap, , and 2) Tertiary valley-fill and lake terrace, mostly along the east side of the Thompson River south of Chippy Creek. Drainage density is moderate (2.0). About 37 percent of streams are perennial. Elevations range from 3,000 to 4,000 feet. Dominant slopes are 2 to 22 percent on all aspects. Steeper slopes are along the margins of terraces adjacent to drainages.
>
> ***Floodplain and Alluvium* (1402):** Comprises 5,031 acres (9 percent) of *continental glaciated depositional lands*. Small areas of *floodplain and alluvium* were also identified in *alpine glaciated lands* (502 acres), *fluvial lands* (1,855 acres) and *continental glaciated erosional lands* (608 acres). It Includes floodplains, low stream terraces and alluvium. Drainage density is very high (12.1). About 86 percent of streams are perennial. Elevations range from 3,000 to 4,000 feet. Dominant slopes are less than 10 percent[2] on all aspects.

Lakes comprise 2,877 acres (5 percent) of this subsection. Lakes are also a minor component of *alpine glaciated lands* (133 acres) and *continental glaciated erosional lands* (6 acres).

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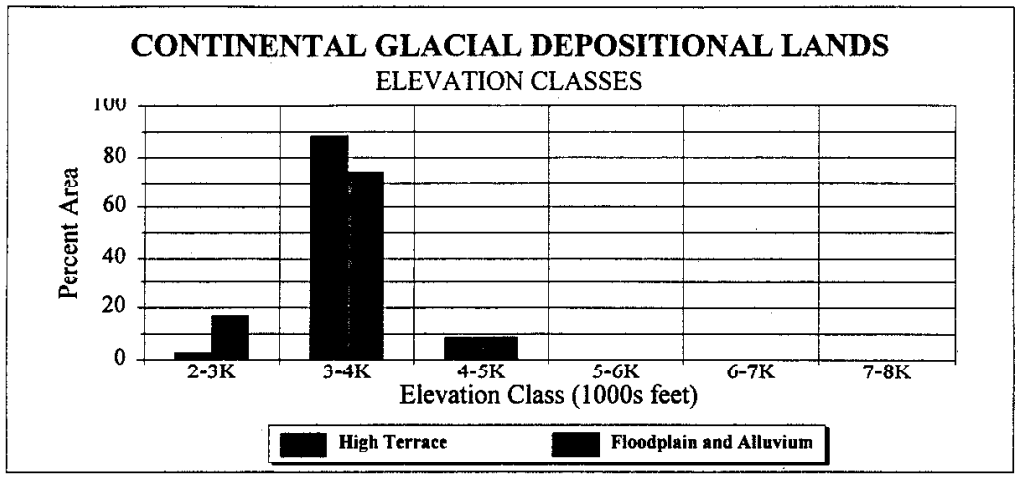
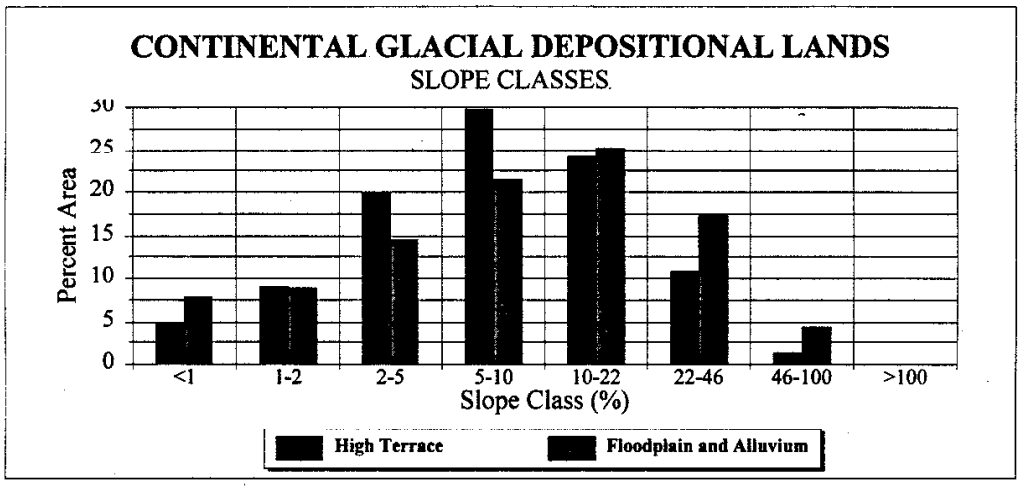
2 Slopes estimated from DEMs for this landtype association were higher than expected. The 30 meter pixels probably overlap steeper terrain adjacent to the narrow areas of floodplain and alluvium.





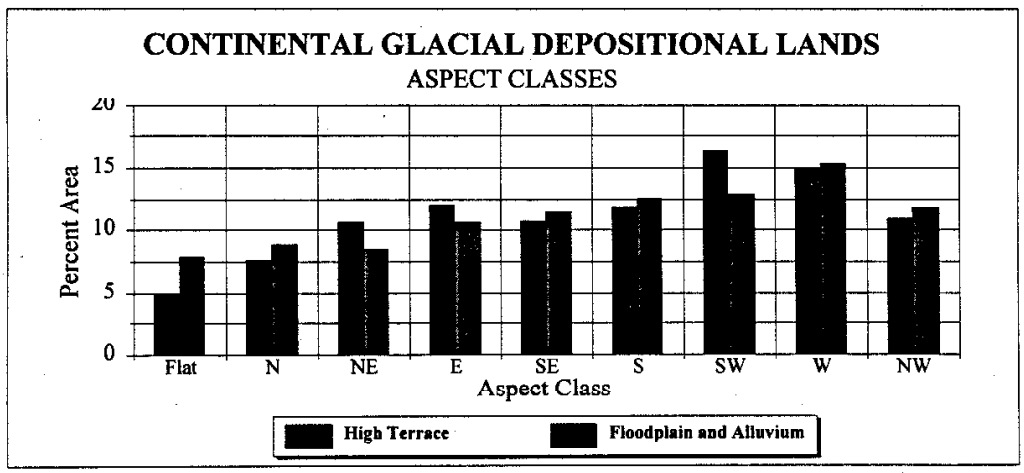


Figure 3.4.4-1. Elevation, slope and aspect distributions, continental glaciated depositional lands.

3.5 Landtypes

Landtype maps were compiled from three different sources: 1) digital landtype maps for the Kootenai NF; 2) digital landtype maps for the Lolo NF; and 3) soil maps on 1:24,000 scale orthophotos for private and State lands prepared by the Natural Resource Conservation Service (NRCS). The map extent for these three sources in the Thompson River basin is shown in Figure 3.5-1. Landtype mapping for the Kootenai and Lolo NFs overlap the NRCS mapping in 129,847 acres. There is also a small overlap (3,345 acres) between the Kootenai and Lolo landtype mapping. Landtype mapping was conducted by the Kootenai and Lolo NFs at an order 3 to 4 level. Soil mapping by the NRCS is at an order 2 level. The priority of sources used to develop landtype maps in this ecological inventory was: 1) NRCS soil types; 2) Lolo NF landtypes; and 3) Kootenai NF landtypes.

Descriptive legends of Kootenai and Lolo NF landtypes are presented in Tables 3.5-1 and 3.5-2, respectively. Landtypes are distinguished by landform, parent material, vegetation, slope, elevation and aspect. They correlate with soil and habitat types. Kootenai NF landtypes are described in Soil Survey of Kootenai National Forest Area, Montana and Idaho (USDA-NRCS 1995). Lolo NF landtypes are described in Lolo National Forest Land Systems Inventory (Sasich and Lamotte-Hagen 1989). Landtype descriptions for the Kootenai NF are compiled in APPENDIX D. Descriptions for the Lolo NF are compiled in APPENDIX E.

Table 3.5-1. Kootenai NF landtype legend.

CODE	LANDFORM	PARENT MATERIAL	VEGETATION	SLOPE (%)	ASPECT	ELEVATION (FT)	ROCK (%)
104	Kames and kettles	Glacial drift	Moist, mixed forest	5-25	Variable	2,500-4,000	0
108	Terrace	Lacustrine and glacial outwash	Moist, mixed forest	0-15	Variable	2,000-4,000	0
301	Glaciated mountain slope	Compact glacial till	Dry, mixed forest	15-35	Southerly	2,400-3,800	0
302	Glaciated mountain slope	Compact glacial till	Dry, mixed forest	30-60	Southerly	3,000-4,200	0
303	Glaciated mountain ridges	Metasedimentary residuum	Open-grown forest	15-35	Southerly	3,500-4,700	50
328	Glaciated mountain slope	Compact glacial till	Moist, mixed forest	15-35	Northerly	3,000-5,400	0
329	Moraine	Compact glacial till	Subalpine forest	15-35	Variable	3,000-5,500	0
352	Glaciated mountain slope	Compact glacial till	Moist, mixed forest	20-60	Northerly	2,200-5,600	30
353	Glaciated mountain ridge	Metasedimentary residuum	Subalpine forest & moist,mixed forest	15-35	Variable	4,000-6,000	20
355	Glaciated mountain slope	Compact glacial till	Moist, mixed forest	20-50	Northerly	3,000-5,500	0
357	Dissected glaciated mountain slope	Compact till & metasedimentary residuum	Moist, mixed forest	30-60	Northerly	3,500-5,500	0
360	Glaciated mountain ridge	Metasedimentary residuum	Subalpine forest	15-35	Variable	4,500-6,000	60
403	Cirque headwalls & alpine ridges	Metasedimentary residuum & friable till	Subalpine forest	40-80	Variable	5,500-8,700	60
405	Glaciated mountain ridges	Metasedimentary residuum & friable till	Subalpine forest	15-50	Variable	5,500-8,000	20
406	Glaciated mountain ridges	Metasedimentary residuum & friable till	Subalpine forest	15-50	Variable	5,000-6,500	0
999	Water	NA	NA	NA	Flat	NA	0

Table 3.5-2. Lolo NF landtype legend.

CODE	LANDFORM	PARENT MATERIAL	VEGETATION	SLOPE (%)	ASPECT	ELEVATION (ft)	ROCK (%)
10UA	Floodplain and low stream terrace	Alluvium	Warm-forested riparian	1-10	Variable	2800-4400	0-5
10UB	Floodplain and low stream terrace	Alluvium	Non-forested riparian	1-10	Variable	2800-4400	0
10UC	Floodplain and low stream terrace	Alluvium	Cool-forested riparian	1-10	Variable	3400-5400	0
13JA	High and old alluvial terrace	Lacustrine over alluvium	Dry Douglas-fir & moist mixed conifereous forest	1-35	Variable	2800-4400	0-5
13UA	High and old alluvial terrace	Alluvium	Dry, mixed coniferous forest	1-45	Variable	2800-4400	0-5
13UB	High and old alluvial terrace	Alluvium	Moist, mixed coniferous and subalpine forests	1-45	Variable	3300-4900	0-5
15JA	Toeslopes in valley fill and alluvial fan	Valley fill	Dry, Douglas-fir and dry, mixed coniferous forests	5-35	Variable	3000-4400	0
15JB	Toeslopes in valley fill and alluvial fan	Valley fill	Moist, mixed confierous and subalpine forests	5-35	Variable	3000-4400	0
15UA	Toeslopes in valley fill and alluvial fan	Undifferentiated	Dry, Douglas-fir and dry, mixed coniferous forests	5-35	Variable	3000-4400	0
15UB	Toeslopes in valley fill and alluvial fan	Undifferentiated	Moist, mixed coniferous forest	5-35	Northerly	3000-4600	0
16UA	Rolling alluvial terrace from Lake Missoula	Undifferentiated	Open grown, dry Douglas-fir and dry mixed forests	5-45	Variable	2800-4400	0
22MA	Flood scoured footslopes	Mod. weathered metased.	Dry, mixed and moist mixed coniferous forests	20-45	Variable	3200-4500	0
22UA	Flood scoured footslopes	Weakly weathered metased.	Dry, Douglas-fir and dry mixed coniferous forests	20-45	Variable	3200-4500	0
26UA	Rocky stream breaklands and rocklands	Undifferentiated	Dry, Douglas-fir forest	55-100	Variable	3800-6800	>50
30BB	Mod. reliefmountain slope	Sedimentary	Cool, dry Douglas-fir & moist mixed forests	30-50	Variable	3800-4800	0-5
30MB	Mod. reliefmountain slope	Mod. weathered metased.	Dry Douglas-fir forest	35-55	S,E,W	3000-5000	0-5
30MC	Mod. reliefmountain slope	Mod. weathered metased.	Dry, mixed coniferous forest	35-55	N,E,W	3800-5200	0-5
30MD	Mod. reliefmountain slope	Mod. weathered metased.	Moist, mixed coniferous forest	35-55	Northerly	3700-5400	0-5
30ME	Mod. reliefmountain slope	Mod. weathered metased.	Subalpine forest	35-55	Northerly	4800-6600	0-5
30MG	Mod. reliefmountain slope	Mod. weathered metased.	Cool, somewhat dry Douglas-fir	35-55	Southerly	5000-6500	0-5
30QA	Mod. reliefmountain slope	Weakly weathered metased.	Open grown forest	35-55	Southerly	3000-4800	0-5
30QB	Mod. reliefmountain slope	Weakly weathered metased.	Dry Douglas-fir	35-55	S,E,W	3000-5800	0-5
30QC	Mod. reliefmountain slope	Weakly weathered metased.	Dry, mixed confierous forest	35-55	N,E,W	3800-5200	0-5
30QD	Mod. reliefmountain slope	Weakly weathered metased.	Moist, mixed coniferous forest	35-55	Northerly	4000-5200	0-5
30QE	Mod. reliefmountain slope	Weakly weathered metased.	Supalpine forest	35-55	Northerly	4600-6600	0-5
30QG	Mod. reliefmountain slope	Weakly weathered metased.	Cool, somewhat dry Douglas-fir	35-55	Southerly	4600-6000	0-5
32MA	Broadly convex ridge	Mod. weathered metased.	Subalpine forest	10-35	Variable	5000-6800	0
32QA	Broadly convex ridge	Weakly weathered metased.	Subalpine forest	10-35	Variable	5000-6800	0-5
32QC	Broadly convex ridge	Weakly weathered metased.	Cool, somewhat dry Douglas-fir	10-35	Variable	4500-5600	0-5
33UA	Broadly convex ridge, frost churned	Undifferentiated	Upper subalpine forest	10-40	Variable	6200-8000	0
38QA	Undulating uplands, ice cap features	Weakly weathered metased.	Subalpine forest and moist openings	10-35	Northerly	5000-6800	0
40QA	Glacial cirque headwall and alpine ridge	Weakly weathered metased.	Upper subalpine forest	55-85	Northerly	6000-8000	20-40
41QA	Steep subalpine ridge, headwall & slope	Weakly weathered metased.	Subalpine forest	50-100	Northerly	4400-6600	20-40
42QA	Glacial cirque bottom	Weakly weathered metased.	Subalpine forest	20-45	Northerly	5400-6700	5-15
43QA	Glacial cirque and nivational basin	Weakly weathered metased.	Subalpine forest	20-45	Northerly	4800-6000	0
45UA	Avalanche chute	Undifferentiated	Moist forest openings	40-80	Variable	4800-8000	10-20
46OA	Glacial valley train	Glacial till and drift	Subalpine forest	10-35	Variable	5400-6600	0

Table 3.5-2. Lolo NF landtype legend.

CODE	LANDFORM	PARENT MATERIAL	VEGETATION	SLOPE (%)	ASPECT	ELEVATION (ft)	ROCK (%)
47OA	Glacial valley train	Glacial till and drift	Subalpine forest	35-45	Variable	5400-6500	5
48QA	Glaciated sideslope and troughwall	Weakly weathered metased.	Subalpine and moist, mixed forest	55-75	Variable	4500-6500	10-25
60MA	Stream breakland	Mod. weathered metased.	Open grown forest	65-100	Southerly	3400-4800	25
60MB	Stream breakland	Mod. weathered metased.	Dry Douglas-fir forest	65-100	Variable	3400-4800	25
60MC	Stream breakland	Mod. weathered metased.	Dry, mixed and cool, somewhat dry Douglas-fir	65-100	Variable	3400-4800	25
60MD	Stream breakland	Mod. weathered metased.	Moist, mixed coniferous forest	65-100	Northerly	4000-5500	25
60QA	Stream breakland	Weakly weathered metased.	Open grown forest	65-100	Southerly	3400-4800	20-40
60QB	Stream breakland	Weakly weathered metased.	Dry Douglas-fir forest	65-100	Variable	3400-4800	20-40
60QC	Stream breakland	Weakly weathered metased.	Dry, mixed and cool, somewhat dry Douglas-fir	65-100	N,E,W	3600-4800	20-40
60QD	Stream breakland	Weakly weathered metased.	Moist, mixed coniferous forest	65-100	Northerly	3600-5000	20-40
61MC	Dissected stream breakland	Mod. weathered metased.	Open grown and dry, mixed forest	65-100	Southerly	3600-5800	15-30
61MD	Dissected stream breakland	Mod. weathered metased.	Moist, mixed coniferous forest	65-100	Northerly	3600-5800	15-30
61QC	Dissected stream breakland	Weakly weathered metased.	Dry, mixed coniferous forest	65-100	E,W	3600-5800	15-40
61QD	Dissected stream breakland	Weakly weathered metased.	Moist, mixed and subalpine forests	65-100	Northerly	3600-5800	15-40
64MA	Steep mountain slope	Mod. weathered metased.	Open grown forest	55-75	Southerly	3200-5000	5-15
64MB	Steep mountain slope	Mod. weathered metased.	Dry Douglas-fir forest	55-75	S,E,W	3200-5000	5-15
64MC	Steep mountain slope	Mod. weathered metased.	Dry, mixed coniferous forest	55-75	N,E,W	3200-5500	5-15
64MD	Steep mountain slope	Mod. weathered metased.	Moist, mixed coniferous forest	55-75	Northerly	3400-5800	5-15
64ME	Steep mountain slope	Mod. weathered metased.	Subalpine forest	55-75	Variable	5000-6500	5-15
64MG	Steep mountain slope	Mod. weathered metased.	Cool, somewhat dry, Douglas-fir forest	55-75	Southerly	4200-5600	5-15
64QA	Steep mountain slope	Weakly weathered metased.	Open grown forest	55-75	Southerly	3000-4800	5-15
64QB	Steep mountain slope	Weakly weathered metased.	Dry Douglas-fir forest	55-75	S,E,W	4000-5500	5-15
64QC	Steep mountain slope	Weakly weathered metased.	Dry, mixed coniferous forest	55-75	Variable	3400-5500	5-15
64QD	Steep mountain slope	Weakly weathered metased.	Moist, mixed coniferous forest	55-75	Northerly	3400-5500	5-15
64QE	Steep mountain slope	Weakly weathered metased.	Subalpine forest	55-75	Northerly	5000-6600	5-15
72BA	Continental moraine, rolling hills	Glacial till and drift	Moist, mixed and subalpine forests	1-35	Variable	3600-4600	0
72OA	Continental moraine, rolling hills	Glacial till and drift	Moist, mixed and subalpine forests	1-35	Variable	3600-4600	0
73UA	Glacial outwash plain	Glacial outwash	Dry, mixed coniferous forest	1-20	Variable	3200-4800	0
73UB	Glacial outwash plain	Alluvium over glacial outwash	Cool and non-forested riparian	1-10	Variable	3200-4600	0
74BA	Glacial scoured mountain slope	Sedimentary and till	Cool, dry Douglas-fir, moist, mixed & subalpine forests	25-55	Variable	3200-5400	0-5
74UA	Glacial scoured mountain slope	Undifferentiated	Cool, dry Douglas-fir, moist, mixed & subalpine forests	25-55	Variable	3200-5400	0-5
W	NA	NA	NA	NA	NA	NA	NA

Soils in private and State lands in the Thompson River basin were mapped by the NRCS and compiled on 1:24,000 scale orthophotos. These orthophotos were acquired and map unit boundaries were digitized. Soil polygons were assigned a unique number and plotted as mylar overlays for the orthoquads. Digitizing errors (missed lines) were corrected and the field map unit symbol was assigned to the unique polygon number. Field symbols were compiled on the GIS. Another set of mylar overlays for the orthophotos was plotted with the field symbol. The field symbol of each polygon was checked relative to that marked on the original orthophotos. Corrections were compiled on the GIS. Polygons that were unlabeled or labeled with two different field symbols on the original orthoquads were corrected by Greg Snell (NRCS). Field symbols were correlated with NRCS publication symbols from Classification and Correlation of the Soils of Sanders County Area and Parts of Flathead and Lincoln Counties, Montana (USDA-NRCS 1997). A legend for NRCS map units is presented in Table 3.5-3[3]. The NRCS mapping has not been published.

NRCS soil map units are slope classes of consociations and complexes of soil series. Consociation map units are comprised of a single dominant soil series with small inclusions of contrasting series. Complex map units consist of two or more codominant soil series or miscellaneous landtypes that cannot be distinguished at the scale of mapping. The NRCS polygons are much smaller than Kootenai and Lolo NF landtypes. NRCS soil series descriptions are presented as APPENDIX G.

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3 Field symbols for map units marked on NRCS orthoquads that were digitized were converted to NRCS publication symbols. The publication codes were not suited for sorting with a computer. For example, publication symbol 22C is the Courville series and 22E was the Winkler series. Codes were revised. Map units were sorted alphabetically by the series name and numbered sequentially. Slope classes of series were assigned a letter corresponding to that of the publication code. A correlation table for NRCS field symbols, publication symbols and PCTC symbols is presented as APPENDIX F.

Table 3.5-3. NRCS map unit legend.

CODE	SERIES	SLOPE (%)	SUBGROUP	GROUP	PARTICLE-SIZE CLASS
1C	Ashworth gravelly silt loam	2-8	Andic	Cryochrepts	Loamy-skeletal
1E	Ashworth gravelly silt loam	8-30	Andic	Cryochrepts	Loamy-skeletal
1F	Ashworth gravelly silt loam	30-50	Andic	Cryochrepts	Loamy-skeletal
2C	Auggie silt loam	2-8	Typic	Cryoboralfs	Fine-silty
2E	Auggie silt loam	8-30	Typic	Cryoboralfs	Fine-silty
3A	Barzee mucky peat	0-2	Typic	Borohemist	Euic
4C	Bata gravelly silt loam	2-8	Andic	Cryoboralfs	Loamy-skeletal
4E	Bata gravelly silt loam	8-30	Andic	Cryoboralfs	Loamy-skeletal
5D	Beeskove gravelly loam, moist	4-15	Typic	Eutrochrepts	Loamy-skeletal
5E	Beeskove gravelly loam, moist	15-35	Typic	Eutrochrepts	Loamy-skeletal
5F	Beeskove gravelly loam, moist	35-60	Typic	Eutrochrepts	Loamy-skeletal
6G	Beeskove-Mollman-Rock outcrop Complex	40-80	See series	See series	
7E	Bendahl gravelly silt loam	15-30	Andic	Eutrochrepts	Loamy-skeletal
7F	Bendahl gravelly silt loam	30-50	Andic	Eutrochrepts	Loamy-skeletal
8B	Bignell gravelly loam	0-4	Typic	Haplustalfs	Clayey-skeletal
8D	Bignell gravelly loam	4-15	Typic	Haplustalfs	Clayey-skeletal
9A	Blackcreek silt loam	0-2	Typic	Endoaquepts	Coarse-silty
10A	Blacklake mucky peat	0-1	Histic	Humaquepts	Coarse-silty
11D	Combest gravelly silt loam	4-15	Andic	Ustochrepts	Loamy-skeletal
11E	Combest gravelly silt loam	15-35	Andic	Ustochrepts	Loamy-skeletal
11F	Combest gravelly silt loam	35-60	Andic	Ustochrepts	Loamy-skeletal
12G	Combest-Rubble land Complex	40-70	See series	See series	
13C	Courville gravelly silt loam	2-8	Andic	Eutrochrepts	Loamy-skeletal
13E	Courville gravelly silt loam	8-30	Andic	Eutrochrepts	Loamy-skeletal
13F	Courville gravelly silt loam	30-50	Andic	Eutrochrepts	Loamy-skeletal
14A	Felan gravelly silt loam, moist	*	Andic	Cryoboralfs	Loamy-skeletal
14E	Felan gravelly silt loam, moist	15-35	Andic	Cryoboralfs	Loamy-skeletal
14F	Felan gravelly silt loam, moist	35-60	Andic	Cryoboralfs	Loamy-skeletal
15A	Glaciercreek gravelly silt loam, cool	0-2	Andic	Eutrochrepts	Sandy-skeletal
15C	Glaciercreek gravelly silt loam, cool	2-8	Andic	Eutrochrepts	Sandy-skeletal
15E	Glaciercreek gravelly silt loam, cool	8-30	Andic	Eutrochrepts	Sandy-skeletal
15F	Glaciercreek gravelly silt loam, cool	30-45	Andic	Eutrochrepts	Sandy-skeletal
16B	Half moon silt loam, cool	2-8	Typic	Haplustalfs	Fine-silty
16D	Half moon silt loam, cool	8-15	Typic	Haplustalfs	Fine-silty
16E	Half moon silt loam, cool	15-35	Typic	Haplustalfs	Fine-silty
16F	Half moon silt loam, cool	35-60	Typic	Haplustalfs	Fine-silty
17E	Holloway gravelly silt loam	15-35	Andic	Cryochrepts	Loamy-skeletal
17F	Holloway gravelly silt loam	35-60	Andic	Cryochrepts	Loamy-skeletal
18E	Holloway gravelly silt loam, moist	15-35	Andic	Cryochrepts	Loamy-skeletal
18F	Holloway gravelly silt loam, moist	35-60	Andic	Cryochrepts	Loamy-skeletal
19G	Holloway, moist-Rock outcrop Complex	40-70	See series	See series	
20E	Holloway-Rubble land Complex	40-70	See series	See series	
21C	Krause gravelly silt loam	2-8	Andic	Ustochrepts	Sandy-skeletal
22A	Larchpoint silt loam	0-2	Typic	Endoaquents	Coarse-loamy/sandy
23C	Lesier gravelly silt loam	2-8	Vitrandic	Eutrochrepts	Loamy-skeletal
23E	Lesier gravelly silt loam	8-30	Vitrandic	Eutrochrepts	Loamy-skeletal
24E	Loneman silt loam	15-35	Andic	Paleboralfs	Loamy-skeletal
24F	Loneman silt loam	35-60	Andic	Paleboralfs	Loamy-skeletal

Table 3.5-3. NRCS map unit legend.

CODE	SERIES	SLOPE (%)	SUBGROUP	GROUP	PARTICLE-SIZE CLASS
25D	Loonlake gravelly silt loam	4-15	Andic	Paleboralfs	Loamy-skeletal
26A	Mclangor mucky peat	0-2	Terric	Borohemists	Loamy
27A	Meadowpeak silt loam	0-2	Aeric	Fluvaquents	Course-silty
28E	Mitten gravelly silt loam	15-35	See series	See series	
28F	Mitten gravelly silt loam	35-60	Andic	Eutrochrepts	Loamy-skeletal
29F	Mitten gravelly silt loam, dry	15-60	Andic	Eutrochrepts	Loamy-skeletal
30F	Mitten-Rock outcrop Complex	40-70	See series	See series	
31G	Mitten-Rubble land Complex	40-70	See series	See series	
32F	Mitten-Tevis Complex	35-60	See series	See series	
33C	Mollman gravelly loam	2-8	Typic	Eutrochrepts	Loamy-skeletal
33E	Mollman gravelly loam	8-30	Typic	Eutrochrepts	Loamy-skeletal
33F	Mollman gravelly loam	30-50	Typic	Eutrochrepts	Loamy-skeletal
34E	Mollman gravelly loam, dry	15-30	Typic	Eutrochrepts	Loamy-skeletal
34F	Mollman gravelly loam, dry	30-50	Typic	Eutrochrepts	Loamy-skeletal
35A	Murrstead mucky peat	0-2	Fluvaquentic	Borohemists	Euic
36C	Oldtrail gravelly sandy loam	0-8	Oxyaquic	Udifluvents	Sandy-skeletal
37B	Oldtrail-Glaciercreek-Larchpoint Complex	0-8	See series	See series	
38E	Repp gravelly loam	15-35	Typic	Ustochrepts	Loamy-skeletal
38F	Repp gravelly loam	35-60	Typic	Ustochrepts	Loamy-skeletal
39	Rock outcrop-Rubble land Complex	NA	NA	NA	
40F	Rumblecreek gravelly loam	30-50	Glossic	Eutroboralfs	Loamy-skeletal
41D	Rumblecreek gravelly loam, stony	8-15	Glossic	Eutroboralfs	Loamy-skeletal
41D	Rumblecreek gravelly loam	4-15	Glossic	Eutroboralfs	Loamy-skeletal
41E	Rumblecreek gravelly loam, stony	15-30	Glossic	Eutroboralfs	Loamy-skeletal
41E	Rumblecreek gravelly loam	15-30	Glossic	Eutroboralfs	Loamy-skeletal
42D	Rumblecreek gravelly loam, dry	4-15	Glossic	Eutroboralfs	Loamy-skeletal
42E	Rumblecreek gravelly loam, dry	15-30	Glossic	Eutroboralfs	Loamy-skeletal
42F	Rumblecreek gravelly loam, dry	30-50	Glossic	Eutroboralfs	Loamy-skeletal
43F	Sharrott-Rubble-Rock outcrop Complex	15-60	See series	See series	
43F	Sharrott, cool-Rubble-Rock Complex	15-60	See series	See series	
44B	Tallcreek silt loam	0-4	Vitrandic	Eutrochepts	Coarse-silty
45C	Tamarack loam	2-8	Vitrandic	Eutrochepts	Coarse-loamy
46B	Tamarack-Crystalex Complex	0-4	See series	See series	
46C	Tamarack-Crystalex Complex	4-15	See series	See series	
46E	Tamarack-Crystalex Complex	15-30	See series	See series	
47E	Tevis gravelly loam	15-35	Dystric	Eutrochrepts	Loamy-skeletal
47F	Tevis gravelly loam	35-60	Dystric	Eutrochrepts	Loamy-skeletal
48E	Tevis gravelly loam, dry	15-35	Dystric	Eutrochrepts	Loamy-skeletal
48F	Tevis gravelly loam, dry	35-60	Dystric	Eutrochrepts	Loamy-skeletal
49F	Tevis-Rock outcrop complex	30-60	See series	See series	
50G	Tevis-Rubble land Complex	40-70	See series	See series	
51B	Totelake gravelly loam	2-8	Typic	Ustochrepts	Sandy-skeletal
51D	Totelake gravelly loam	8-15	Typic	Ustochrepts	Sandy-skeletal
52C	Upsata gravelly silt loam	2-8	Andic	Cryochrepts	Sandy-skeletal
52E	Upsata gravelly silt loam	8-30	Andic	Cryochrepts	Sandy-skeletal
52F	Upsata gravelly silt loam	30-60	Andic	Cryochrepts	Sandy-skeletal

Table 3.5-3. NRCS map unit legend.

CODE	SERIES	SLOPE (%)	SUBGROUP	GROUP	PARTICLE-SIZE CLASS
53C	Waldbillig gravelly silt loam, moist	8-30	Andic	Cryochrepts	Loamy-skeletal
53F	Waldbillig gravelly silt loam, moist	30-50	Andic	Cryochrepts	Loamy-skeletal
54E	Waldbillig-Holloway gravelly silt loams	8-30	See series	See series	
54E	Waldbillig-Holloway gravelly silt loams	8-30	See series	See series	
55F	Waldbillig-Holloway, moist	30-50	See series	See series	
56D	Wildgen gravelly loam	4-15	Typic	Ustochrepts	Loamy-skeletal
56E	Wildgen gravelly loam	15-30	Typic	Ustochrepts	Loamy-skeletal
56F	Wildgen gravelly loam	30-50	Typic	Ustochrepts	Loamy-skeletal
57F	Wildgen gravelly loam, dry	30-50	Typic	Ustochrepts	Loamy-skeletal
58E	Winfall gravelly loam	8-30	Dystric	Eutrochrepts	Loamy-skeletal
59E	Winfall-Courville Complex	8-30	See series	See series	
59F	Winfall-Courville Complex	30-60	See series	See series	
60E	Winfall-Courville Complex, dry	8-30	See series	See series	
61E	Winkler gravelly loam	15-35	Typic	Ustochrepts	Loamy-skeletal
61F	Winkler gravelly loam	35-60	Typic	Ustochrepts	Loamy-skeletal
62E	Winkler gravelly sandy loam, cool	15-35	Typic	Ustochrepts	Loamy-skeletal
62F	Winkler gravelly sandy loam, cool	35-60	Typic	Ustochrepts	Loamy-skeletal
63G	Winkler, cool-Rubble land Complex	40-70	See series	See series	
64E	Winkler, cool-Sharrott, cool-Rock Complex	8-40	See series	See series	
64F	Winkler, cool-Sharrott, cool-Rubble Complex	40-85	See series	See series	
65G	Winkler-Rubble land Complex	40-70	See series	See series	
66E	Winkler-Sharrott-Rock outcrop Complex	8-40	See series	See series	
66G	Winkler-Sharrott-Rubble land Complex	40-85	See series	See series	
67B	Yourame gravelly loam	0-4	Typic	Haplustalfs	Loamy-skeletal
67D	Yourame gravelly loam	4-15	Typic	Haplustalfs	Loamy-skeletal
67E	Yourame gravelly loam	15-30	Typic	Haplustalfs	Loamy-skeletal
67F	Yourame gravelly loam	30-50	Typic	Haplustalfs	Loamy-skeletal
68E	Yourame gravelly loam, dry	15-30	Typic	Haplustalfs	Loamy-skeletal
69D	Yourame-Wildgen gravelly loams	8-30	See series	See series	
W	Water				

An index for landtype maps is presented as Figure 3.5-2. Maps that follow are color coded by landtype association. Alphanumeric codes denote Kootenai NF landtypes (see Table 3.5-1), Lolo NF landtypes (see Table 3.5-2) or NRCS soil types (see Table 3.5-3). The source of landtype mapping is identified on individual maps.

The areas of Kootenai and Lolo NF landtypes are listed for landtype associations in Tables 3.5-4 and 3.5-5, respectively. The areas of NRCS map units by landtype associations are listed in Table 3.5-6. Dominant landtypes are further discussed with respect to landtype associations. Dominant landtypes are landforms or soil series that comprise more than 10 percent of the landtype association. Descriptions are taken from landtype and soil descriptions of respective sources. The distribution of landtypes for subbasins and watersheds of the Thompson River basin are listed in APPENDIX H.

Table 3.5-4. Areas of Kootenai NF landtypes for landtype associations.

LTA	LT	LANDFORM	N	AREA	
				Acres	Percent
Moraine	104	Kames and Kettles	2	1421	52.3
Moraine	108	Terrace	3	1120	41.2
Moraine	352	Glaciated mountain slope	1	173	6.3
Moraine	353	Glaciated mountain ridge	1	5	0.2
Moraine	**TOTAL**		**7**	**2719**	**100.0**
Mountain Ridge	352	Glaciated mountain slope	2	105	17.9
Mountain Ridge	353	Glaciated mountain ridge	37	67	11.5
Mountain Ridge	355	Glaciated mountain slope	7	261	44.2
Mountain Ridge	406	Glaciated mountain ridges	4	156	26.4
Mountain Ridge	**TOTAL**		**50**	**589**	**100.0**
Mountain Slope	302	Glaciated mountain slope	2	66	1.0
Mountain Slope	328	Glaciated mountain slope	3	88	1.3
Mountain Slope	329	Moraine	5	421	6.2
Mountain Slope	352	Glaciated mountain slope	5	1903	28.0
Mountain Slope	355	Glaciated mountain slope	4	1965	28.9
Mountain Slope	403	Cirque headwalls & alpine ridges	2	18	0.3
Mountain Slope	405	Glaciated mountain ridges	3	1229	18.1
Mountain Slope	406	Glaciated mountain ridges	4	1099	16.2
Mountain Slope	**TOTAL**		**28**	**6788**	**100.0**
Glacial Ridge & Slope	104	Kames and Kettles	2	1048	10.2
Glacial Ridge & Slope	301	Glaciated mountain slope	2	68	0.7
Glacial Ridge & Slope	303	Glaciated mountain ridges	1	145	1.4
Glacial Ridge & Slope	352	Glaciated mountain slope	18	6002	58.7
Glacial Ridge & Slope	353	Glaciated mountain ridge	11	1434	14.0
Glacial Ridge & Slope	355	Glaciated mountain slope	7	878	8.6
Glacial Ridge & Slope	357	Dissected glaciated mountain slope	2	761	7.4
Glacial Ridge & Slope	360	Glaciated mountain ridge	1	41	0.4
Glacial Ridge & Slope	**TOTAL**		**44**	**10233**	**100.0**
High Terrace	**352**	Glaciated mountain slope	**1**	**49**	**100.0**
Floodplain & Alluvium	**108**	Terrace	**1**	**186**	**100.0**
Water	**999**	Water	**1**	**1492**	**100.0**

Table 3.5-5. Areas of Lolo NF landtypes for landtype associations.

LTA	LT	LANDFORM	N	AREA	
				Acres	Percent
Cirque & Rocky Ridge	30QE	Mod. relief mountain slope	2	479	4.1
Cirque & Rocky Ridge	30QG	Mod. relief mountain slope	1	12	0.1
Cirque & Rocky Ridge	32MA	Broadly convex ridge	1	91	0.8
Cirque & Rocky Ridge	32QA	Broadly convex ridge	2	119	1.0
Cirque & Rocky Ridge	33UA	Broadly convex ridge, strongly frost churned	9	638	5.4
Cirque & Rocky Ridge	40QA	Glacial cirque headwall and alpine ridge	41	9395	79.9
Cirque & Rocky Ridge	41QA	Steep subalpine ridge, headwall and mountain slope	9	935	8.0
Cirque & Rocky Ridge	43QA	Weakly expressed glacial cirque and nivational basin	1	58	0.5
Cirque & Rocky Ridge	45UA	Avalanche chute	1	25	0.2
Cirque & Rocky Ridge	**TOTAL**		**67**	**11753**	**100.0**
Glacial Basin	40QA	Glacial cirque headwall and alpine ridge	1	63	1.3
Glacial Basin	41QA	Steep subalpine ridge, headwall and mountain slope	2	128	2.7
Glacial Basin	42QA	Glacial cirque bottom	33	4203	87.1
Glacial Basin	46OA	Glacial valley train	3	245	5.1
Glacial Basin	47OA	Glacial valley train	2	189	3.9
Glacial Basin	**TOTAL**		**41**	**4828**	**100.0**
Glacial Trough	13UB	High and old alluvial terrace	1	85	0.3
Glacial Trough	15UA	Toeslopes in valley fill and alluvial fan	2	880	2.6
Glacial Trough	15UB	Toeslopes in valley fill and alluvial fan	6	5809	17.5
Glacial Trough	30QD	Mod. relief mountain slope	3	834	2.5
Glacial Trough	30QE	Mod. relief mountain slope	4	1461	4.4
Glacial Trough	32QA	Broadly convex ridge	7	1725	5.2
Glacial Trough	38QA	Undulating uplands, old ice cap features	4	3068	9.2
Glacial Trough	40QA	Glacial cirque headwall and alpine ridge	1	67	0.2
Glacial Trough	41QA	Steep subalpine ridge, headwall and mountain slope	24	3576	10.8
Glacial Trough	42QA	Glacial cirque bottom	7	357	1.1
Glacial Trough	43QA	Weakly expressed glacial cirque and nivational basin	9	589	1.8
Glacial Trough	45UA	Avalanche chute	2	81	0.2
Glacial Trough	46OA	Glacial valley train	6	925	2.8
Glacial Trough	47OA	Glacial valley train	22	3366	10.1
Glacial Trough	48QA	Glaciated sideslope and troughwall	37	8902	26.8
Glacial Trough	64QC	Steep mountain slope	1	111	0.3
Glacial Trough	64QD	Steep mountain slope	2	457	1.4
Glacial Trough	64QE	Steep mountain slope	4	949	2.9
Glacial Trough	**TOTAL**		**142**	**33241**	**100.0**

Table 3.5-5. Areas of Lolo NF landtypes for landtype associations.

LTA	LT	LANDFORM	N	AREA	
				Acres	Percent
Moraine	10UB	Floodplain and low stream terrace	1	224	2.0
Moraine	10UC	Floodplain and low stream terrace	1	213	1.9
Moraine	13UA	High and old alluvial terrace	1	232	2.0
Moraine	13UB	High and old alluvial terrace	7	1432	12.4
Moraine	15JA	Toeslopes in valley fill and alluvial fan	4	1604	13.9
Moraine	15JB	Toeslopes in valley fill and alluvial fan	3	3240	28.2
Moraine	15UB	Toeslopes in valley fill and alluvial fan	1	197	1.7
Moraine	26UA	Rocky stream breaklands and rocklands	3	381	3.3
Moraine	30QE	Mod. relief mountain slope	1	197	1.7
Moraine	38QA	Undulating uplands, old ice cap features	2	237	2.1
Moraine	46OA	Glacial valley train	8	2363	20.5
Moraine	47OA	Glacial valley train	4	441	3.8
Moraine	60QA	Stream breakland	1	104	0.9
Moraine	64QB	Steep mountain slope	1	184	1.6
Moraine	73UB	Glacial outwash plain	1	456	4.0
Moraine	**TOTAL**		**39**	**11504**	**100.0**
Mountain Ridge	30BB	Mod. relief mountain slope	2	130	0.4
Mountain Ridge	30MD	Mod. relief mountain slope	1	110	0.4
Mountain Ridge	30QC	Mod. relief mountain slope	11	584	2.0
Mountain Ridge	30QD	Mod. relief mountain slope	6	667	2.2
Mountain Ridge	30QD	Mod. relief mountain slope	3	1	0.0
Mountain Ridge	30QE	Mod. relief mountain slope	1	0	0.0
Mountain Ridge	30QE	Mod. relief mountain slope	5	889	3.0
Mountain Ridge	30QG	Mod. relief mountain slope	2	230	0.8
Mountain Ridge	32MA	Broadly convex ridge	7	732	2.4
Mountain Ridge	32QA	Broadly convex ridge	124	20131	67.3
Mountain Ridge	32QA	Broadly convex ridge	29	11	0.0
Mountain Ridge	32QC	Broadly convex ridge	4	182	0.6
Mountain Ridge	33UA	Broadly convex ridge, strongly frost churned	48	6094	20.4
Mountain Ridge	38QA	Undulating uplands, old ice cap features	1	80	0.3
Mountain Ridge	41QA	Steep subalpine ridge, headwall and mountain slope	1	34	0.1
Mountain Ridge	64QC	Steep mountain slope	1	3	0.0
Mountain Ridge	**TOTAL**		**285**	**29898**	**100.0**

Table 3.5-5. Areas of Lolo NF landtypes for landtype associations.

LTA	LT	LANDFORM	N	AREA	
				Acres	Percent
Mountain Slope	13JA	High and old alluvial terrace	3	1342	1.6
Mountain Slope	13JB	High and old alluvial terrace	1	95	0.1
Mountain Slope	13UB	High and old alluvial terrace	10	448	0.5
Mountain Slope	15JA	Toeslopes in valley fill and alluvial fan	2	76	0.1
Mountain Slope	16UA	Rolling alluvial terrace-remnant from Lake Missoula	16	849	1.0
Mountain Slope	22MA	Flood scoured footslopes	1	21	0.0
Mountain Slope	22UA	Flood scoured footslopes	12	1346	1.6
Mountain Slope	30BB	Mod. relief mountain slope	8	2816	3.3
Mountain Slope	30MB	Mod. relief mountain slope	12	920	1.1
Mountain Slope	30MC	Mod. relief mountain slope	19	3203	3.7
Mountain Slope	30MD	Mod. relief mountain slope	16	2981	3.5
Mountain Slope	30ME	Mod. relief mountain slope	8	2193	2.6
Mountain Slope	30MG	Mod. relief mountain slope	1	59	0.1
Mountain Slope	30QB	Mod. relief mountain slope	10	744	0.9
Mountain Slope	30QC	Mod. relief mountain slope	55	9639	11.3
Mountain Slope	30QD	Mod. relief mountain slope	53	8812	10.3
Mountain Slope	30QE	Mod. relief mountain slope	46	15206	17.8
Mountain Slope	30QG	Mod. relief mountain slope	17	2199	2.6
Mountain Slope	32MA	Broadly convex ridge	1	77	0.1
Mountain Slope	32QA	Broadly convex ridge	14	2253	2.6
Mountain Slope	32QC	Broadly convex ridge	3	66	0.1
Mountain Slope	38QA	Undulating uplands, old ice cap features	4	5209	6.1
Mountain Slope	40QA	Glacial cirque headwall and alpine ridge	2	97	0.1
Mountain Slope	41QA	Steep subalpine ridge, headwall and mountain slope	14	2652	3.1
Mountain Slope	42QA	Glacial cirque bottom	4	271	0.3
Mountain Slope	43QA	Weakly expressed glacial cirque and nivational basin	11	1199	1.4
Mountain Slope	46OA	Glacial valley train	4	595	0.7
Mountain Slope	47OA	Glacial valley train	1	34	0.0
Mountain Slope	48QA	Glaciated sideslope and troughwall	6	1496	1.7
Mountain Slope	61QC	Dissected stream breakland	1	63	0.1
Mountain Slope	64MA	Steep mountain slope	5	532	0.6
Mountain Slope	64MB	Steep mountain slope	5	86	0.1
Mountain Slope	64MC	Steep mountain slope	10	1291	1.5
Mountain Slope	64MD	Steep mountain slope	10	1690	2.0
Mountain Slope	64ME	Steep mountain slope	4	598	0.7
Mountain Slope	64MG	Steep mountain slope	1	174	0.2
Mountain Slope	64QA	Steep mountain slope	6	424	0.5
Mountain Slope	64QB	Steep mountain slope	7	676	0.8
Mountain Slope	64QC	Steep mountain slope	31	3472	4.1
Mountain Slope	64QD	Steep mountain slope	25	3299	3.9
Mountain Slope	64QE	Steep mountain slope	24	6022	7.0
Mountain Slope	72OA	Continental glacial moraine, rolling hills on valley floor	1	64	0.1
Mountain Slope	74UA	Glacial scoured mountain slope	6	294	0.3
Mountain Slope	**TOTAL**		**983**	**85593**	**100.0**

Table 3.5-5. Areas of Lolo NF landtypes for landtype associations.

LTA	LT	LANDFORM	N	AREA	
				Acres	Percent
Breakland	13UA	High and old alluvial terrace	1	42	0.2
Breakland	13UB	High and old alluvial terrace	5	515	2.2
Breakland	16UA	Rolling alluvial terrace-remnant from Lake Missoula	1	100	0.4
Breakland	26UA	Rocky stream breaklands and rocklands	46	9577	41.0
Breakland	30QD	Mod. relief mountain slope	3	43	0.2
Breakland	45UA	Avalanche chute	5	450	1.9
Breakland	60MA	Stream breakland	8	931	4.0
Breakland	60MB	Stream breakland	6	833	3.6
Breakland	60MC	Stream breakland	6	862	3.7
Breakland	60MD	Stream breakland	10	1010	4.3
Breakland	60QA	Stream breakland	11	1485	6.4
Breakland	60QB	Stream breakland	8	1199	5.1
Breakland	60QC	Stream breakland	6	689	3.0
Breakland	60QD	Stream breakland	18	1932	8.3
Breakland	61MC	Dissected stream breakland	5	964	4.1
Breakland	61MD	Dissected stream breakland	12	1226	5.3
Breakland	61QC	Dissected stream breakland	2	473	2.0
Breakland	61QD	Dissected stream breakland	4	943	4.0
Breakland	64F	Steep mountain slope	3	14	0.1
Breakland	64MA	Steep mountain slope	2	55	0.2
Breakland	64QB	Steep mountain slope	1	10	0.0
Breakland	**TOTAL**		**163**	**23353**	**100.0**
Glacial Ridge & Slope	13UB	High and old alluvial terrace	1	1	0.0
Glacial Ridge & Slope	15JB	Toeslopes in valley fill and alluvial fan	1	53	0.5
Glacial Ridge & Slope	30BA	Mod. relief mountain slope	2	548	4.9
Glacial Ridge & Slope	30MD	Mod. relief mountain slope	2	14	0.1
Glacial Ridge & Slope	30QC	Mod. relief mountain slope	1	28	0.3
Glacial Ridge & Slope	30QD	Mod. relief mountain slope	5	176	1.6
Glacial Ridge & Slope	32QA	Broadly convex ridge	9	56	0.5
Glacial Ridge & Slope	64MA	Steep mountain slope	2	115	1.0
Glacial Ridge & Slope	72BA	Continental glacial moraine, rolling hills on valley floor	2	948	8.5
Glacial Ridge & Slope	72OA	Continental glacial moraine, rolling hills on valley floor	8	1233	11.0
Glacial Ridge & Slope	74BA	Glacial scoured mountain slope	5	3007	26.8
Glacial Ridge & Slope	74UA	Glacial scoured mountain slope	15	5025	44.8
Glacial Ridge & Slope	**TOTAL**		**226**	**11210**	**100.0**

Table 3.5-5. Areas of Lolo NF landtypes for landtype associations.

LTA	LT	LANDFORM	N	AREA	
				Acres	Percent
High Terrace	13JA	High and old alluvial terrace	3	170	2.7
High Terrace	13JB	High and old alluvial terrace	1	27	0.4
High Terrace	13UA	High and old alluvial terrace	2	545	8.6
High Terrace	13UB	High and old alluvial terrace	6	447	7.1
High Terrace	72BA	Continental glacial moraine, rolling hills on valley floor	4	3290	51.9
High Terrace	72OA	Continental glacial moraine, rolling hills on valley floor	2	1697	26.8
High Terrace	73UA	Glacial outwash plain	1	159	2.5
High Terrace	**TOTAL**		**19**	**6334**	**100.0**
Floodplain & Alluvium	10UA	Floodplain and low stream terrace	6	641	24.5
Floodplain & Alluvium	10UB	Floodplain and low stream terrace	10	330	12.6
Floodplain & Alluvium	10UC	Floodplain and low stream terrace	6	492	18.8
Floodplain & Alluvium	13UA	High and old alluvial terrace	3	194	7.4
Floodplain & Alluvium	13UB	High and old alluvial terrace	4	293	11.2
Floodplain & Alluvium	15UA	Toeslopes in valley fill and alluvial fan	1	0	0.0
Floodplain & Alluvium	64MA	Steep mountain slope	1	104	4.0
Floodplain & Alluvium	72BA	Continental glacial moraine, rolling hills on valley floor	2	430	16.4
Floodplain & Alluvium	73UB	Glacial outwash plain	1	73	2.8
Floodplain & Alluvium	74BA	Glacial scoured mountain slope	1	60	2.3
Floodplain & Alluvium	**TOTAL**		**35**	**2617**	**100.0**
Water	**W**	NA	**28**	**178**	**100.0**

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Cirque & Rocky Ridge	18F	Holloway, moist	1	5	13.0
Cirque & Rocky Ridge	19G	Holloway, moist-Rock	1	32	87.0
Cirque & Rocky Ridge	**TOTAL**		**2**	**37**	100.0
Glacial Trough	18F	Holloway, moist	2	145	48.6
Glacial Trough	19G	Holloway, moist-Rock	3	153	51.4
Glacial Trough	**TOTAL**		**5**	**298**	**100.0**
Moraine	**52C**	Upsata	**2**	**85**	**100.0**
Mountain Ridge	5E	Beeskove	3	13	0.2
Mountain Ridge	11E	Combest	1	22	0.3
Mountain Ridge	13E	Courville	2	82	1.3
Mountain Ridge	17E	Holloway	30	1659	25.7
Mountain Ridge	17F	Holloway	9	247	3.8
Mountain Ridge	18E	Holloway, moist	2	63	1.0
Mountain Ridge	20E	Holloway-Rubble	2	61	0.9
Mountain Ridge	24F	Loneman	2	4	0.1
Mountain Ridge	28E	Mitten	29	1488	23.1
Mountain Ridge	28F	Mitten	5	85	1.3
Mountain Ridge	29F	Mitten, dry	2	32	0.5
Mountain Ridge	40F	Rumblecreek	1	0	0.0
Mountain Ridge	42D	Rumblecreek, dry	1	69	1.1
Mountain Ridge	42E	Rumblecreek, dry	2	16	0.2
Mountain Ridge	42F	Rumblecreek, dry	1	2	0.0
Mountain Ridge	43F	Sharrott-Rubble-Rock	5	78	1.2
Mountain Ridge	47E	Tevis	16	512	7.9
Mountain Ridge	47F	Tevis	2	22	0.3
Mountain Ridge	48E	Tevis, dry	20	874	13.5
Mountain Ridge	53C	Waldbillig, moist	2	104	1.6
Mountain Ridge	54E	Waldbillig, moist	6	429	6.6
Mountain Ridge	58E	Winfall	1	17	0.3
Mountain Ridge	61E	Winkler	7	80	1.2
Mountain Ridge	61F	Winkler	1	26	0.4
Mountain Ridge	62E	Winkler, cool	6	234	3.6
Mountain Ridge	62F	Winkler, cool	3	90	1.4
Mountain Ridge	64E	Winkler, cool-Sharrot, cool-Rock	9	145	2.2
Mountain Ridge	**TOTAL**		**83**	**6455**	**100.0**

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Mountain Slope	1C	Ashworth	1	21	0.0
Mountain Slope	4E	Bata	12	816	1.9
Mountain Slope	5E	Beeskove	1	111	0.3
Mountain Slope	5F	Beeskove	9	442	1.0
Mountain Slope	11E	Combest	4	173	0.4
Mountain Slope	11F	Combest	9	475	1.1
Mountain Slope	13E	Courville	19	781	1.8
Mountain Slope	13F	Courville	1	104	0.2
Mountain Slope	14E	Felan	1	99	0.2
Mountain Slope	14F	Felan	1	9	0.0
Mountain Slope	15E	Glaciercreek	4	77	0.2
Mountain Slope	17E	Holloway	20	449	1.0
Mountain Slope	17F	Holloway	77	4667	10.9
Mountain Slope	18E	Holloway, moist	1	41	0.1
Mountain Slope	18F	Holloway, moist	17	1817	4.2
Mountain Slope	20E	Holloway-Rubble	5	965	2.3
Mountain Slope	28E	Mitten	64	3003	7.0
Mountain Slope	28F	Mitten	111	7783	18.2
Mountain Slope	29F	Mitten, dry	16	1810	4.2
Mountain Slope	30F	Mitten-Rock	12	1002	2.3
Mountain Slope	31G	Mitten-Rubble	9	594	1.4
Mountain Slope	32F	Mitten-Tevis	64	5125	12.0
Mountain Slope	40F	Rumblecreek	16	622	1.5
Mountain Slope	41E	Rumblecreek	12	378	0.9
Mountain Slope	42D	Rumblecreek, dry	2	20	0.0
Mountain Slope	42E	Rumblecreek, dry	8	410	1.0
Mountain Slope	42F	Rumblecreek, dry	8	82	0.2
Mountain Slope	47E	Tevis	33	1239	2.9
Mountain Slope	47F	Tevis	54	2101	4.9
Mountain Slope	48E	Tevis, dry	10	315	0.7
Mountain Slope	48F	Tevis, dry	37	1112	2.6
Mountain Slope	49F	Tevis-Rock	4	120	0.3
Mountain Slope	52C	Upsata	1	175	0.4
Mountain Slope	52E	Upsata	1	22	0.1
Mountain Slope	53C	Waldbillig, moist	5	341	0.8
Mountain Slope	53F	Waldbillig, moist	3	416	1.0

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Mountain Slope	54E	Waldbillig-Holloway	2	71	0.2
Mountain Slope	61E	Winkler	3	24	0.1
Mountain Slope	61F	Winkler	21	888	2.1
Mountain Slope	62E	Winkler, cool	19	446	1.0
Mountain Slope	62F	Winkler, cool	83	3333	7.8
Mountain Slope	64E	Winkler, cool-Sharrot, cool-Rock	8	114	0.3
Mountain Slope	64F	Winkler, cool-Sharrot, cool-Rock	1	3	0.0
Mountain Slope	66E	Winkler-Sharrot-Rubble	1	49	0.1
Mountain Slope	67E	Yourame	4	144	0.3
Mountain Slope	67F	Yourame	3	82	0.2
Mountain Slope	**TOTAL**		**735**	**42872**	**100.0**
Breakland	6G	Beeskove-Mollman-Rock	3	314	3.6
Breakland	11E	Combest	1	38	0.4
Breakland	12G	Combest-Rubble l	3	400	4.5
Breakland	17F	Holloway	1	11	0.1
Breakland	20E	Holloway-Rubble	1	125	1.4
Breakland	28F	Mitten	7	406	4.6
Breakland	31G	Mitten-Rubble	7	1357	15.4
Breakland	39	Rock outcrop-Rubble	7	256	2.9
Breakland	42F	Rumblecreek, dry	1	83	0.9
Breakland	43F	Sharrott-Rubble-Rock	36	1455	16.5
Breakland	47F	Tevis	1	11	0.1
Breakland	48F	Tevis, dry	3	152	1.7
Breakland	49F	Tevis-Rock	1	41	0.5
Breakland	50G	Tevis-Rubble	6	241	2.7
Breakland	62F	Winkler, cool	5	171	1.9
Breakland	63G	Winkler, cool-Rubble	1	32	0.4
Breakland	64F	Winkler, cool-Sharrot, cool-Rock	59	3491	39.7
Breakland	66G	Winkler-Sharrot-Rubble	8	216	2.5
Breakland	**TOTAL**		**83**	**8803**	**100.0**

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Glacial Ridge & Slope	1C	Ashworth	1	16	0.0
Glacial Ridge & Slope	1E	Ashworth	9	438	0.7
Glacial Ridge & Slope	1F	Ashworth	11	390	0.6
Glacial Ridge & Slope	4C	Bata	1	12	0.0
Glacial Ridge & Slope	4E	Bata	4	294	0.5
Glacial Ridge & Slope	5D	Beeskove	16	405	0.7
Glacial Ridge & Slope	5E	Beeskove	11	240	0.4
Glacial Ridge & Slope	5F	Beeskove	16	532	0.9
Glacial Ridge & Slope	6G	Beeskove-Mollman-Rock	24	1446	2.4
Glacial Ridge & Slope	7E	Bendahl	38	1785	2.9
Glacial Ridge & Slope	7F	Bendahl	35	803	1.3
Glacial Ridge & Slope	8B	Bignell	1	22	0.0
Glacial Ridge & Slope	11E	Combest	9	376	0.6
Glacial Ridge & Slope	11F	Combest	9	192	0.3
Glacial Ridge & Slope	13C	Courville	14	614	1.0
Glacial Ridge & Slope	13E	Courville	66	5546	9.1
Glacial Ridge & Slope	13F	Courville	29	1207	2.0
Glacial Ridge & Slope	14E	Felan	7	111	0.2
Glacial Ridge & Slope	14F	Felan	10	620	1.0
Glacial Ridge & Slope	15C	Glaciercreek	16	311	0.5
Glacial Ridge & Slope	15E	Glaciercreek	27	2166	3.6
Glacial Ridge & Slope	16D	Half moon	2	177	0.3
Glacial Ridge & Slope	16E	Half moon	1	129	0.2
Glacial Ridge & Slope	17E	Holloway	15	307	0.5
Glacial Ridge & Slope	17F	Holloway	24	952	1.6
Glacial Ridge & Slope	18E	Holloway, moist	1	25	0.0
Glacial Ridge & Slope	18F	Holloway, moist	12	1091	1.8
Glacial Ridge & Slope	24E	Loneman	8	904	1.5
Glacial Ridge & Slope	24F	Loneman	1	87	0.1
Glacial Ridge & Slope	28E	Mitten	48	2414	4.0
Glacial Ridge & Slope	28F	Mitten	35	1648	2.7
Glacial Ridge & Slope	30F	Mitten-Rock	1	23	0.0
Glacial Ridge & Slope	31G	Mitten-Rubble	1	59	0.1
Glacial Ridge & Slope	32F	Mitten-Tevis	42	2875	4.7
Glacial Ridge & Slope	33C	Mollman	12	295	0.5
Glacial Ridge & Slope	33E	Mollman	67	4987	8.2
Glacial Ridge & Slope	33F	Mollman	54	2449	4.0

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Glacial Ridge & Slope	34E	Mollman, dry	7	500	0.8
Glacial Ridge & Slope	34F	Mollman, dry	15	1067	1.8
Glacial Ridge & Slope	36C	Oldtrail	1	9	0.0
Glacial Ridge & Slope	38E	Repp	1	60	0.1
Glacial Ridge & Slope	38F	Repp	8	314	0.5
Glacial Ridge & Slope	40F	Rumblecreek	9	194	0.3
Glacial Ridge & Slope	41D	Rumblecreek	5	104	0.2
Glacial Ridge & Slope	41E	Rumblecreek	18	1032	1.7
Glacial Ridge & Slope	42D	Rumblecreek, dry	6	234	0.4
Glacial Ridge & Slope	42E	Rumblecreek, dry	7	704	1.2
Glacial Ridge & Slope	42F	Rumblecreek, dry	2	87	0.1
Glacial Ridge & Slope	45C	Tamarack	5	103	0.2
Glacial Ridge & Slope	46C	Tamarack-Crystalex	3	371	0.6
Glacial Ridge & Slope	46E	Tamarack-Crystalex	1	14	0.0
Glacial Ridge & Slope	47E	Tevis	16	594	1.0
Glacial Ridge & Slope	47F	Tevis	24	690	1.1
Glacial Ridge & Slope	48E	Tevis, dry	5	338	0.6
Glacial Ridge & Slope	48F	Tevis, dry	12	680	1.1
Glacial Ridge & Slope	49F	Tevis-Rock	3	105	0.2
Glacial Ridge & Slope	52C	Upsata	6	172	0.3
Glacial Ridge & Slope	52E	Upsata	26	2269	3.7
Glacial Ridge & Slope	52F	Upsata	9	645	1.1
Glacial Ridge & Slope	53C	Waldbillig, moist	29	3116	5.1
Glacial Ridge & Slope	53F	Waldbillig, moist	14	829	1.4
Glacial Ridge & Slope	54E	Waldbillig-Holloway	1	1	0.0
Glacial Ridge & Slope	55F	Waldbillig-Holloway, moist	11	1651	2.7
Glacial Ridge & Slope	56D	Wildgen	1	36	0.1
Glacial Ridge & Slope	56E	Wildgen	13	324	0.5
Glacial Ridge & Slope	56F	Wildgen	2	13	0.0
Glacial Ridge & Slope	58E	Winfall	18	1172	1.9
Glacial Ridge & Slope	59E	Winfall-Courville	3	207	0.3
Glacial Ridge & Slope	59F	Winfall-Courville	3	94	0.2
Glacial Ridge & Slope	60E	Winfall-Courville, dry	6	153	0.3
Glacial Ridge & Slope	61E	Winkler	12	213	0.3
Glacial Ridge & Slope	61F	Winkler	7	90	0.1
Glacial Ridge & Slope	62E	Winkler, cool	21	886	1.5
Glacial Ridge & Slope	62F	Winkler, cool	27	1495	2.5

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Glacial Ridge & Slope	64E	Winkler, cool-Sharrot, cool-Rock	13	497	0.8
Glacial Ridge & Slope	64F	Winkler, cool-Sharrot, cool-Rock	9	553	0.9
Glacial Ridge & Slope	66E	Winkler-Sharrot-Rubble	8	229	0.4
Glacial Ridge & Slope	66G	Winkler-Sharrot-Rubble	4	133	0.2
Glacial Ridge & Slope	67B	Yourame	5	201	0.3
Glacial Ridge & Slope	67D	Yourame	22	738	1.2
Glacial Ridge & Slope	67E	Yourame	22	1101	1.8
Glacial Ridge & Slope	67F	Yourame	17	793	1.3
Glacial Ridge & Slope	68E	Yourname, dry	6	185	0.3
Glacial Ridge & Slope	**TOTAL**		**814**	**60946**	**100.0**
High Terrace	1C	Ashworth	8	498	1.2
High Terrace	1E	Ashworth	5	397	1.0
High Terrace	1F	Ashworth	1	14	0.0
High Terrace	2C	Auggie	2	228	0.5
High Terrace	2E	Auggie	3	127	0.3
High Terrace	3A	Barzee	1	12	0.0
High Terrace	4C	Bata	2	1091	2.6
High Terrace	5E	Beeskove	2	282	0.7
High Terrace	5F	Beeskove	5	108	0.3
High Terrace	6G	Beeskove-Mollman-Rock	1	46	0.1
High Terrace	7E	Bendahl	9	371	0.9
High Terrace	8B	Bignell	2	970	2.3
High Terrace	8D	Bignell	6	1263	3.0
High Terrace	9A	Blackcreek	10	439	1.1
High Terrace	10A	Blacklake	6	117	0.3
High Terrace	11D	Combest	2	76	0.2
High Terrace	11E	Combest	1	67	0.2
High Terrace	11F	Combest	1	16	0.0
High Terrace	13C	Courville	17	861	2.1
High Terrace	13E	Courville	11	485	1.2
High Terrace	13F	Courville	3	98	0.2
High Terrace	15A	Glaciercreek	2	248	0.6
High Terrace	15C	Glaciercreek	35	6170	14.9
High Terrace	15E	Glaciercreek	32	1682	4.1

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
High Terrace	16B	Half moon	28	2991	7.2
High Terrace	16D	Half moon	9	1059	2.6
High Terrace	16E	Half moon	3	94	0.2
High Terrace	16F	Half moon	2	95	0.2
High Terrace	21C	Krause	21	2018	4.9
High Terrace	21F	Krause	1	95	0.2
High Terrace	22A	Larchpoint	1	24	0.1
High Terrace	23C	Lesier	10	1061	2.6
High Terrace	23E	Lesier	4	208	0.5
High Terrace	25D	Loonlake	6	288	0.7
High Terrace	28E	Mitten	4	72	0.2
High Terrace	32F	Mitten-Tevis	1	25	0.1
High Terrace	33C	Mollman	17	593	1.4
High Terrace	33E	Mollman	11	450	1.1
High Terrace	33F	Mollman	7	218	0.5
High Terrace	34E	Mollman, dry	1	122	0.3
High Terrace	35A	Murrstead	3	54	0.1
High Terrace	36C	Oldtrail	1	7	0.0
High Terrace	37B	Oldtrail-Glaciercreek-Larchpoint	1	18	0.0
High Terrace	41D	Rumblecreek	11	2039	4.9
High Terrace	41E	Rumblecreek	8	352	0.8
High Terrace	42D	Rumblecreek, dry	33	5432	13.1
High Terrace	42E	Rumblecreek, dry	6	867	2.1
High Terrace	42F	Rumblecreek, dry	1	41	0.1
High Terrace	44B	Tallcreek	10	445	1.1
High Terrace	46B	Tamarack-Crystalex	13	1029	2.5
High Terrace	46C	Tamarack-Crystalex	11	578	1.4
High Terrace	46E	Tamarack-Crystalex	2	85	0.2
High Terrace	47E	Tevis	6	171	0.4
High Terrace	47F	Tevis	4	183	0.4
High Terrace	49F	Tevis-Rock	1	113	0.3
High Terrace	51B	Totelake	11	1037	2.5
High Terrace	51D	Totelake	3	71	0.2
High Terrace	52C	Upsata	25	919	2.2
High Terrace	52E	Upsata	7	137	0.3
High Terrace	52F	Upsata	4	205	0.5

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
High Terrace	53C	Waldbillig, moist	3	104	0.3
High Terrace	55F	Waldbillig-Holloway, moist	1	54	0.1
High Terrace	56D	Wildgen	4	247	0.6
High Terrace	56E	Wildgen	1	71	0.2
High Terrace	56F	Wildgen	3	51	0.1
High Terrace	57F	Wildgen, dry	2	70	0.2
High Terrace	58E	Winfall	3	83	0.2
High Terrace	62E	Winkler, cool	2	93	0.2
High Terrace	62F	Winkler, cool	2	32	0.1
High Terrace	64E	Winkler, cool-Sharrot, cool-Rock	2	31	0.1
High Terrace	64F	Winkler, cool-Sharrot, cool-Rock	3	69	0.2
High Terrace	65G	Winkler-Rubble	1	75	0.2
High Terrace	66E	Winkler-Sharrot-Rock	1	6	0.0
High Terrace	67B	Yourame	1	283	0.7
High Terrace	67D	Yourame	19	657	1.6
High Terrace	67E	Yourame	5	182	0.4
High Terrace	67F	Yourame	11	474	1.1
High Terrace	69D	Yourname-Wildgen	3	36	0.1
High Terrace	**TOTAL**		**3983**	**41477**	**100.0**

Table 3.5-6. Areas of NRCS soil types for landtype associations.

LTA	MAP CODE	SOIL TYPE	N	AREA	
				Acres	Percent
Floodplain & Alluvium	3A	Barzee	3	29	0.6
Floodplain & Alluvium	5E	Beeskove	1	82	1.6
Floodplain & Alluvium	9A	Blackcreek	17	323	6.2
Floodplain & Alluvium	10A	Blacklake	25	320	6.2
Floodplain & Alluvium	13C	Courville	1	13	0.3
Floodplain & Alluvium	15C	Glaciercreek	12	213	4.1
Floodplain & Alluvium	16D	Half moon	1	25	0.5
Floodplain & Alluvium	21C	Krause	1	17	0.3
Floodplain & Alluvium	22A	Larchpoint	6	118	2.3
Floodplain & Alluvium	23C	Lesier	2	24	0.5
Floodplain & Alluvium	26A	Mclangor	4	182	3.5
Floodplain & Alluvium	27A	Meadowpeak	21	1014	19.5
Floodplain & Alluvium	35A	Murrstead	5	132	2.5
Floodplain & Alluvium	36C	Oldtrail	9	122	2.3
Floodplain & Alluvium	37B	Oldtrail-Glaciercreek-Larchpoint	32	1867	35.9
Floodplain & Alluvium	41E	Rumblecreek	1	79	1.5
Floodplain & Alluvium	42D	Rumblecreek, dry	4	240	4.6
Floodplain & Alluvium	44B	Tallcreek	2	24	0.5
Floodplain & Alluvium	45C	Tamarack	1	35	0.7
Floodplain & Alluvium	51B	Totelake	3	71	1.4
Floodplain & Alluvium	52C	Upsata	1	8	0.2
Floodplain & Alluvium	52E		1	54	1.0
Floodplain & Alluvium	53C	Waldbillig, moist	1	163	3.1
Floodplain & Alluvium	64E	Winkler, cool-Sharrot, cool-Rock	1	37	0.7
Floodplain & Alluvium	**TOTAL**		**82**	**5194**	**100.0**
Water	**W**	Water	**20**	**1345**	**100.0**

3.5.1 Cirque and Rocky Ridge Landtypes

The *cirque and rocky ridge* landtype association was not identified in the Kootenai NF and makes up only 37 acres of the area mapped by the NRCS. A single dominant landform makes up 80 percent of the landtype association in the Lolo NF.

***Glacial cirque headwall and alpine ridge* (40QA):** The landform consists of very steep ridges and cirque headwalls. Slopes are nearly vertical on upper slopes changing to concave on lower slopes. Tarns or glacial lakes are common beneath the headwalls. Runoff is concentrated by these landforms and converges in basins below. Avalanche chutes are common.

Existing vegetation is a complex of mixed forest, alpine openings, avalanche chutes and rock. Mixed forests are dominated by subalpine fir, spruce and whitebark pine. Important habitat types are ABLA/LUHI and ABLA/MEFE-LUHI, which occupy up to 60 percent of the map unit where soils are present.

Soils are well-drained and moderately coarse to medium texture. Subsoils are 55 to 90 percent rock fragments. Soil depth ranges from 12 to 40 inches. Rock outcrop and talus make up 20 to 40 percent.

3.5.2 Glacial Basin Landtypes

The *glacial basin* landtype association was not identified in the Kootenai NF or in the area mapped by the NRCS. A single dominant landform makes up 87 percent of the landtype association in the Lolo NF.

***Glacial cirque bottom* (42QA):** The landform consists of concave alpine basins. The basins are relatively gentle but often include a series of steep stair-stepped features between benches. Runoff is collected from adjacent slopes. Incised streams often cascade over the stair-step features. Small lakes are common.

Vegetation is mixed forest dominated by subalpine fir, spruce, lodgepole pine and western larch. Dominant habitat types are ABLA/MEFE (mostly below 6,100 feet), ABLA/LUHI (above 6,100 feet) and ABLA/CACA (along drainages).

Soils are well-drained to somewhat-poorly drained and moderately coarse to medium texture. Volcanic ash loess is common in surface soils. Subsoils are 35 to 65 percent rock fragments. Soil depth varies from shallow to moderately deep.

3.5.3 Glacial Trough Landtypes

The *glacial trough* landtype association was not identified in the Kootenai NF and comprised only 298 acres of the area mapped by the NRCS. Dominant landforms in the Lolo NF were: 1) *Toeslopes in valley fill and alluvial fan* (20 percent); 2) *Steep subalpine ridge, headwall and mountain slope* (11 percent); 3) *glacial valley train* (13 percent); and 4) *glaciated sideslope and troughwall* (27 percent). The *glacial valley train* is described with respect to *moraine* landtypes in chapter 3.5.4. Descriptions of other landforms follow.

***Toeslopes in valley fill and alluvial fan* (15UA and 15UB):** The landform for these map units consists of low relief footslopes, benches and fans at the base of high mountains. Subsurface water is common in drainages.

Existing vegetation in 15UA is mixed forest dominated by ponderosa pine and Douglas-fir. East/west aspects and drainages support western larch. Dominant habitats are PSME/PHMA-CARU and PSME/CARU on southerly aspects and PSME/PHMA-PHMA on east and west aspects. Existing vegetation in 15UB is mixed forest dominated by western larch, lodgepole pine, Douglas-fir and western white pine. Dominant habitat types are PSME/LIBO and ABGR/LIBO.

Soils are deep, well-drained and medium texture. Subsoils are 35 to 60 percent rock fragments.

***Steep subalpine ridge, headwall and mountain slope* (41QA):** This landform consists of very steep subalpine ridges, forested glacial cirque headwalls and very steep, high elevation mountain slopes. Avalanche chutes are common.

Existing vegetation is mixed forest dominated by subalpine fir, spruce, Douglas-fir, lodgepole pine and western larch. ABLA/MEFE is the dominant habitat.

Soils are well-drained and moderately coarse to medium texture. Thick surface layers of volcanic ash loess are common. Subsoils are 55 to 90 percent rock fragments.

***Glaciated sideslope and troughwall* (48QA):** This landform is steep and very steep glaciated mountain slopes, glacial troughwalls and truncated spurs. They drain to glacial valley trains below. Glacially scoured mid-slopes are concave. Depositional mid-slopes are convex. Lower slopes are convex and often have springs at the boundaries between depositional till and residual surfaces.

Existing vegetation is mixed forest with subalpine fir, spruce, lodgepole pine, western white pine, western larch and Douglas-fir. Dominant habitat types are ABLA/MEFE on northern aspects above 5,200 feet, ABLA/CLUN on lower slopes mantled by glacial till and ABLA/XETE-VAGL on south aspects at mid-to-upper elevations.

Soils are well-drained and moderately coarse to medium texture. Subsoils are 35 to 65 percent rock fragments.

3.5.4 Moraine Landtypes

The *moraine* landtype association made up 2,719 acres of the Kootenai NF in the vicinity of McGregor Lake and 11,504 acres in the Lolo NF. It comprised only 85 acres of the area mapped by the NRCS. Two dominant landforms were identified the Kootenai NF: 1) *Kames and kettles* (52 percent); and 2) *terrace* (41 percent).

***Kames and kettles* (104):** Kames and kettles occur in a complex pattern of knolls and depressions. The drainage pattern is deranged. Kettles contain bogs and marshes.

Existing vegetation is mixed forest of western hemlock, western redcedar, western white pine, western larch, grand fir, Douglas-fir, lodgepole pine, black cottonwood, paper birch, quaking aspen and Engelmann spruce. Habitat types in this map unit vary.

Soils on kames are underlain by dense, glacial till. Soils in kettles are underlain by silty lacustrine sediments or glacial till. Both soils have medium textured surface. Kame soils are well drained with a surface layer of volcanic ash loess. Soils in kettles are poorly or very poorly drained.

***Terrace* (108):** Landforms are predominantly level with short breaks of 30 to 60 percent slopes.

Existing vegetation is mixed forest with western hemlock, western redcedar, grand fir, western larch, Douglas-fir and lodgepole pine. Dominant habitat types are western redcear/queencup beadily and western hemlock/queencup beadily.

Soils are formed in stratified glacial outwash or lacustrine deposits.

Three dominant landforms were identified in the Lolo NF: 1) *high and old alluvial terrace* (14 percent); 2) *Toeslopes in valley fill and alluvial fan* (44 percent); and 3) *glacial valley train* (24 percent).

***High and old alluvial terrace* (13UA and 13UB):** This landform consists of high stream terraces, 50 to 500 feet above adjacent streams. Terraces are nearly flat benches with short, steep breaks to streams.

Existing vegetation for 13UA is mixed forest of Douglas-fir, ponderosa pine and western larch. Habitat types are PSME/PHME, PSME/LIBO and PSME/VACA on the flat benches. PSME/PHMA or PSME/SYAL occur on steep slopes. Existing vegetation for 13UB is mixed forest of Douglas-fir, western larch, lodgepole pine, grand fir and some western redcedar. An association of habitat type groups are common. THPL/CLUN, ABGR/CLUN and ABGR/LIBO occur below 4,600 feet in areas with cool, moist climate. ABLA/MEFE, ABLA/CLUN, ABLA/XETE-VAGL AND ABLA/VACA occur above 4,600 feet in areas with cold, moist to very moist climate in narrow stream valleys subject to cold air drainage. ABLA/XETE-VAGL and ABLA/VACA are confined to well-drained terraces high above ground water influences. ABLA/MEFE and ABLA/CLUN occur on lower terraces near streams.

Soils are well-drained with moderately coarse texture. Surface layers of volcanic ash loess are common. Subsoils are 55 to 80 percent rock fragments. Soils supporting subalpine fir are cold relative to those supporting mixed, moist forest are warmer.

***Toeslopes in valley fill and alluvial fan* (15JA, 15JB and 15UB):** This landform consists of low relief footslopes and fans at the base of mountain slopes. Subsurface water is common.

Existing vegetation for the 15JA map unit is dry Douglas-fir and dry, mixed conifer forest. Habitat types are PSME/VACA on nearly flat landscapes, PSME/PHMA on very stony surfaces below 4,000 feet; PSME/SYAL and PSME/CARU occur below 4,000 feet in areas east of Alberton. Existing vegetation for the 15JB map unit is moist, mixed and subalpine forest. Habitat types are ABGR/LIBO and THPL/CLUN. Existing vegetation in 15UB is mixed forest dominated by western larch, lodgepole pine, Douglas-fir and western white pine. Dominant habitat types are PSME/LIBO and ABGR/LIBO.

Soils are deep, moderately well-drained with some poorly-drained inclusions and have medium to moderately fine texture. Surface soils are high in silt and may contain up to 40 percent large stone is some areas.

***Glacial valley train* (46OA and 47OA):** The landform consists of mountain valley bottoms confined in narrow, U-shaped glaciated drainages.

Existing vegetation is mixed forest with subalpine fir, spruce, western white pine, western redcedar, lodgepole pine, western white pine, western redcedar, western larch and some Douglas-fir. The dominant habitat type is ABLA/MEFE with ABLA/CLUN in moist swales near streams.

Soils are deep, moderately well-drained to well-drained and moderately coarse to medium texture. Subsoils are 35 to 55 percent rock fragments. Boulder eratics are sometimes present.

3.5.5 Mountain Ridge Landtypes

The *mountain ridge* landtype association made up only 589 acres of the Kootenai NF — these landtypes are not described. Dominant landforms in the Lolo NF were: 1) *broadly convex ridge* (70 percent); and 2) *broadly convex ridge, strongly frost churned* (20 percent). Descriptions of these Lolo NF landforms follow.

***Broadly convex ridge* (32MA, 32QA and 32QC):** The landform consists of broad rounded mountain ridge tops.

Existing vegetation for 32MA and 32QA is subalpine forest dominated by lodgepole pine due to frequent fire history. The dominant habitat type is ABLA/XETE; ABLA/MEFE occurs on northerly aspects. Existing vegetation for 32QC is mixed forest of Douglas-fir, lodgepole pine and western larch. PSME/VAGL-XETE is the major habitat type.

Soils are moderately-deep, well drained and moderately coarse. Subsoils are 65 to 90 percent angular rock fragments.

***Broadly convex ridge, strongly frost churned* (33UA):** The landform consists of broad, rounded mountain ridge tops and high elevation mountain slopes.

Existing vegetation is mixed forest dominated by lodgepole pine, whitebark pine and subalpine fir. The dominant habitat type is ABLA/LUHI; TSME/XETE occurs on southern aspects that do not support LUHI.

Soils are moderately deep, well drained and moderately coarse. Subsoils are 65 to 95 percent rock fragments.

The *mountain ridge* landtype association makes up 6,455 acres of lands mapped by the NRCS. Three dominant soil series were identified: 1) *Holloway* (30 percent); 2) *Mitten* (24 percent); and 3) *Tevis* (22 percent). Descriptions of these series follow.

Holloway (17E and 17F): Occurs on mountains at elevations from 3,800 to 7,000 feet. Potential vegetation is subalpine fir, Douglas-fir, Engelmann spruce, western larch and lodgepole pine with an under-story of twinflower, blue huckleberry, rusty menziesia and common beargrass. Soils are very deep, somewhat excessively drained and loamy skeletal.

Mitten (28E and 28F): Occurs on mountains at elevations from 2,200 to 6,000 feet. Potential vegetation consists of western larch, Douglas-fir, grand fir, ponderosa pine and lodgepole pine with an under-story of twinflower, blue huckleberry, dwarf huckleberry, common beargrass, oceanspray and pinegrass. Soils are very deep, somewhat excessively drained and loamy skeletal.

Tevis (47E, 47F and 48E): Occurs on mountains at elevations from 3,300 to 6,000 feet. Potential vegetation consists of Douglas-fir, ponderosa pine, western larch and lodgepole pine with an under-story of dwarf huckleberry, blue huckleberry and common beargrass. Soils are very deep, somewhat excessively drained and loamy skeletal.

3.5.6 Mountain Slope Landtypes

The *mountain slope* landtype association comprised 6,788 acres of the Kootenai NF map area. These landtypes are not described. It comprised 85,593 acres of the Lolo NF map area. Dominant landforms in the Lolo NF were: 1) *moderate relief mountain slope* (54 percent); and 2) *steep mountain slope* (21 percent). Descriptions of these Lolo NF landforms follow.

***Moderate relief mountain slopes* (30BB, 30MB, 30MC, 30MD, 30ME, 30MG, 30QB, 30QC, 30QD, 30QE, 30QG):** The landform consists of broad, moderately sloping draws and convex slopes. Slopes are complex and influenced by underlying bedrock. Most drainages are intermittent. Refer to Table 3.5-2 and APPENDIX E for information on habitat types and soils.

***Steep mountain slopes* (64MA, 64MB, 64MC, 64ME, 64MG, 64QA, 64QB, 64QC, 64QD, 64QE):** This landform consists of steep, complex slopes. Drainages are somewhat broad and form a trellis pattern. Refer to Table 3.5-2 and APPENDIX E for information on habitat types and soils.

The *mountain slope* landtype association was identified for 42,780 acres of the NRCS map area. Dominant soil series are: 1) Holloway (12 percent); and 2) Mitten (29 percent). Both of these soils were described with respect to *mountain ridge* landtypes (see chapter 3.5.5).

3.5.7 Breakland Landtypes

Breaklands were not identified in the Kootenai NF map area. Breaklands comprise 23,353 acres in the Lolo NF map area. Dominant landforms in the Lolo NF were: 1) *rocky stream breaklands and rocklands* (41 percent); *stream breakland* (48 percent); and 3) *dissected stream breakland* (15 percent). Descriptions of these landtypes follow.

> ***Rocky stream breaklands and rockland* (26UA):** Consists of steep and very steep mountain slopes with perennial streams at the base. Large stringers of talus below rock outcrops are common.
>
> Existing vegetation is sparse forest of ponderosa pine and Douglas-fir between talus and rock outcrop. The major habitat types are PSME/PHMA-CARU and PSME/SYAL where bedrock does not restrict vegetation; and PSME/AGSP and SCREE on southerly aspects.
>
> Rock outcrop and talus are major components. Soils are excessively drained and moderately coarse.
>
> ***Stream breaklands* (60MA, 60MB, 60MC, 60MD, 60QA, 60QB, 60QC and 60QD):** The landform consists of very steep, straight mountain slopes with major perennial streams at the base.
>
> Refer to Table 3.5-2 and APPENDIX E for information on existing vegetation and habitat types.
>
> Soils are moderately deep, well drained with medium or moderately fine texture. Rock outcrop and talus make up about 25 percent. .

Breaklands comprise 8,803 acres in the NRCS map area. Dominant soil map units are: 1) Mitten-rubble complex (15 percent); 2) Sharrott-Rubble-Rock complex (16 percent); and 3) Winkler, cool-Sharrott, cool-Rock complex (40 percent). Refer to Table 3.5-3 and APPENDIX G for descriptions of soil series comprising these complex map units.

3.5.8 Glacial Ridge and Slope Landtypes

The *glacial ridge and slope* landtype association comprised 10,233 acres of the Kootenai NF map area. The dominant landforms are glaciated mountain slope (301, 352 and 355) and glaciated mountain ridge (303, 353 and 360). The landtype association comprised 11,210 acres of the Lolo NF map area. The dominant landforms are: 1) *continental glacial moraine, rolling hills on valley floor* (20 percent); and 2) *glacial scoured mountain slope* (72 percent).

***Continental glacial moraine, rolling hills on valley floor* (72BA and 72OA):** Consists of an intricate pattern of knolls and concave depressions and flat areas. The drainage pattern is deranged. Streams are short and meandering with many bogs, marshes and wet depressions.

Existing vegetation on well-drained knolls and hillsides support grand fir, Douglas-fir, lodgepole pine, western white pine and western larch. Southerly aspects support ponderosa pine. A complex of dissimilar habitats are associated with this landtype.

Soils are well-drained, moderately well-drained and poorly-drained, depending on position. Subsoils are moderately fine texture. Knolls, hillsides and plains contain 35 to 50 percent rounded rocks.

***Glacial scoured mountain slope* (74BA and 74UA):** Consists of complex low mountain with over-steepened slopes, closely spaced drainages and rolling benches at mid-to-lower elevations. Some drainages are moderately incised. Most streams are intermittent. Springs are common near slope breaks and at the contact between bedrock and glacial till.

Existing vegetation consists of a mixed forest community dominated by Douglas-fir, lodgepole pine and western larch. Some northerly aspects support subalpine fir. In the Fishtrap area, grand fir is also an important component. A complex of dissimilar habitat types are distributed in response to aspect and topographic position in this landtype.

Soils are moderately well-drained and well-drained. Volcanic ash layers 8 to 12 inches thick are common near the soil surface. Subsoils are medium to moderately fine texture. Soils vary by topographic position and underlying parent material. Soils formed from metasedimentary rocks or thin glacial deposits have medium texture and contain 45 to 65 percent rock. These soils are common between drainages and on mid-to-upper slope positions. Soils formed in deep glacial till have argillic horizons, moderately fine texture and 35 to 50 percent subrounded rock. These soils are common on toeslopes, rolling

benches and along drainages.

The landtype association comprised 60,946 acres of the NRCS map area. Numerous soil series and map units were identified, of which only two were dominant: 1) *Courville* (12 percent); and 2) *Mollman* (15 percent).

***Courville* (13E and 13F):** Occurs on foothills, moraines and mountain slopes in glaciated valleys at elevations from 3,000 to 6,000 feet. Potential vegetation is coniferous forest consisting mainly of grand fir, lodgepole pine, ponderosa pine, Engelmann spruce, Douglas-fir, western larch, western redcedar and western hemlock with an under-story of twinflower, beargrass, queencup beadily, pachistima and blue huckleberry. Soils are very deep, well drained and formed in glacial till. They have a large component of volcanic ash in surface horizons.

***Mollman* (33C, 33E and 13F):** Occurs on moraines, hills and mountains at elevations from 2,900 to 5,500 feet. Native vegetation is Douglas-fir, western larch, ponderosa pine and grand fir with an under-story of twinflower, queencup beadily, snowberry and ninebark. Soils are very deep, well drained and formed in calcareous loamy till or colluvium.

3.5.9 High Terrace Landtypes

The *high terrace* landtype association comprised only 186 acres of the Kootenai NF map area. It comprised 6,344 acres of the Lolo NF map area. The dominant landform is *continental glacial moraine, rolling hills on valley floor* (79 percent). These landtypes (72BA and 72OA) were described with respect to *glacial ridge and slope* landtypes (chapter 3.5.8).

The landtype association comprised 41,477 acres of the NRCS map area. Numerous soil series and map units were identified (see Table 3.5-6). The dominant soil series are: 1) Glaciercreek (20 percent: 2) Half moon (10 percent); and 3) Rumblecreek (21 percent).

***Glaciercreek* (15C and 15E)**: Occurs on stream terraces and glacial outwash terraces in warm, broad, intermountain valleys at elevations of 2,000 to 4,000 feet. Potential vegetation is coniferous forest consisting of Douglas-fir, lodgepole pine and ponderosa pine with an under-story of dwarf huckleberry, common snowberry and pinegrass. Soils are very deep, excessively drained and formed in alluvium and glacial outwash. Volcanic ash is common in surface layers.

***Half moon* (16B, 16D, 16E and 16F):** Occurs on lake plains, glacio-lacustrine terraces and alluvial fans at elevations of 2,500 to 4,500 feet. Potential vegetation is ponderosa pine, western larch and Douglas-fir with an understory of pinegrass, snowberry and elk sedge. Soils are very deep, well drained and formed in lacustrine deposits.

***Rumblecreek* (41D, 41E, 42D, 42E and 42F)**: Occurs on moraines, till plains, hills and mountains at 3,000 to 5,000 feet elevation. Potential vegetation is western larch, lodgepole pine, Douglas-fir, grand fir and ponderosa pine with an under-story of snowberry, common beargrass, dwarf huckleberry and blue huckleberry. Soils are very deep, well drained and formed in glacial till and drift. Map units 42D, 42E and 42F denote a dry variant of the soil series.

3.5.10 Floodplain and Alluvium Landtypes

The *floodplain and alluvium* landtype association comprised only 186 acres of the Kootenai NF map area. It comprised 2,617 acres of the Lolo NF map area. Dominant landtypes are: 1) *floodplain and low stream terrace* (56 percent); 2) *high and old alluvial terrace* (19 percent); and 3) *continental glacial moraine, rolling hills on valley floor* (16 percent). The *high and old alluvial terrace* (13UA and 13UB) were described with respect to *moraine* landtypes (Chapter 3.5.4). The *continental glacial moraine, rolling hills on valley floor* (72BA) was described with respect to *glacial ridge and slope* landtypes (Chapter 3.5.8).

> ***Floodplain and low stream terrace* (10UA, 10UB and 10UC):** Consists of recent floodplains, low stream terraces and ponded depressions.
>
> Existing vegetation for 10UA is mixed forest of ponderosa pine and Douglas-fir on well drained terraces and moist meadow with spruce and cottonwood on poorly-drained soils. Existing vegetation for 10UB is mostly riparian shrub, but low terraces support subalpine fir, spruce and lodgepole pine. Existing vegetation for 10UC is mixed forest of spruce, western redcedar, grand fir, larch, lodgepole pine and subalpine fir. Habitats for these landtypes vary with position.
>
> Soils for 10UA are very deep, a complex of well-drained and poorly-drained and formed in alluvium in stream bottoms. Soils for 10UB are poorly-drained and often associated with beaver activity. Soils for 10UC are a complex of moderately well drained and poorly drained sites in cool stream bottoms.

The *floodplain and alluvium* landtype association occurs on 1,345 acres of the NRCS map area. Dominant map units are: 1) *Meadowpeak* (20 percent); and 2) *Oldtrail-Glaciercreek-Larchpoint complex* (36 percent).

> ***Meadowpeak* (27A)**: Occurs on floodplains and in depressions at 2,200 to 3,800 feet elevation. Potential vegetation is Engelmann spruce, water birch, alder, black hawthorn and black cottonwood and willow. Understory vegetation is mainly sedges, rushes and perennial grass. Soils are very deep, poorly drained and formed in alluvium.

Oldtrail-Glaciercreek-Larchpoint complex **(37B)**: The *Oldtrail* soil occurs on floodplains and along drainages in steep narrow canyons at elevations of 2,200 to 4,200 feet. The *Glaciercreek* soil was described with respect to *high terrace* landtypes (Chapter 3.5.9). The *Larchpoint* soil occurs on floodplains at 2,200 to 4,200 feet elevation. Potential vegetation for both soils include Engelmann spruce, black cottonwood. Understory species are more hydric for the *Larchpoint* soil, which is very deep, poorly drained and formed in alluvium. The *Oldtrail* soil is very deep, moderately well-drained and formed in alluvium.

3.6 Valley-Bottom Landtype

The valley-bottom corresponding with the stream network (see Figure 2-1) was delineated. Where the valley-bottom is broad and irregular, it was digitized from 1:24,000 scale quads. Where it is narrow and regular, it was estimated using "buffers" on stream courses from CFFs. The width of the valley-bottom was estimated from 1:24,000 scale USGS quads, 1:40,000 scale aerial photos and 1:12,000 scale aerial photos for combinations of stream order and valley-bottom type (see chapter 3.7). A map of the valley-bottom landtype is presented as Figure 3.6-1. The valley-bottom comprises 73,114 acres (18 percent) of the Thompson River basin.

The *valley-bottom landtype* includes: 1) relatively flat surfaces of glacio-lacustrine terraces and Tertiary valley-fill, even though these surface may be 400 feet above contemporary floodplains; and 2) steep canyon slopes along streams that have cut through the high terrace. Areas where the topography of glacio-lacustrine deposits was shaped by underlying residual structures (e.g. mountain slopes) and the depth of the deposits was apparently thin were excluded from the valley-bottom landtype.

3.7 Valley-bottom Types

Valley-bottom types are subdivisions of the valley-bottom landtype. They were identified from 1:24,000 scale quads, 1:40,000 scale aerial photos, 1:12,000 scale aerial photos and ground observations. Where the valley-bottom was wide and irregular, it was digitized from 1:24,000 scale quads. Where the valley-bottom was narrow and relatively consistent, it was estimated as a fixed width (buffer) centered on the stream course from the CFFs. The buffers used for most valley-bottom types were assigned based on stream order, ranging from 100 feet for order 1 to 200 feet for order 5, in 25 foot increments. The buffers used for *fluvial cascade* and *continental fluvial cascade* valley-bottom types were 60 feet for order 1 and 2 streams.

Survey stations where aquatic attributes were measured are marked on Figure 3.7-1. Each station consists of a 100 meter transect oriented parallel to the stream course. Stream attributes were recorded for stream habitat types (riffle, glide, scour pool and dam pool) encountered along the transect. A valley-bottom type and watershed code (see Figure 2-3) was assigned to each survey station. Selected attributes are listed for valley-bottom type in Appendix I. Habitat types, Rosgen types and substrates discussed for valley-bottom types are from stream survey stations.

Fourteen (14) valley-bottom types identified in Thompson River basin were distinguished by the dominant geomorphic process and the relative effectiveness of that process in shaping the valley-bottom.

***Alpine Glacial Basin* (1110):** Corresponds with the zone of glacial erosion. It makes up 1,753 acres (2.4 percent) of the valley-bottom landtype. It occurs in *alpine glaciated lands.* Most streams are order 1 and 2. About 15 percent of streams are perennial. Average stream grade is 18 percent and sinuosity is 1.0. Intermittent streams are steeper. One survey station was monitored. Aquatic habitats include *glide, scour pool* and dam pool. The Rosgen type is B2. Dominant substrates are boulder and rubble.

***Alpine Glacial Train* (1120)**: Broad, U-shaped canyons below *alpine glacial basin* that correspond with the zone of glacial transport. It occurs in *alpine glaciated lands.* It makes up 883 acres (1.2 percent) of the valley-bottom landtype. Streams are order 1, 2, 3 and 4. All streams are perennial. Average stream grade is 8 percent and sinuosity is 1.0. No stream survey stations were monitored.

***Glacial Outwash* (1130):** Broad, undulating surfaces with low relief where coarse materials were deposited when the alpine glaciers melted. It makes up 5,946 acres (8.1 percent) of the valley-bottom landtype. It occurs in *alpine glaciated lands.* Streams are order 1, 2, 3 and 4. About 47 percent of streams are perennial. Average stream grade is 5 percent and sinuosity is 1.1. Intermittent streams are steeper. It is expected that streams are losing flow to percolation. No stream survey stations were monitored.

***Fluvial Cascade* (1205):** Areas along very steep drainages not associated with well developed canyons. The criteria used to distinguish *cascade* from *fluvial basin* were: 1) Canyons are less than 200 feet deep; and 2) stream gradient is steeper than the side slope gradient. It occurs in *alpine glaciated lands.* It makes up 1,875 acres (2.6 percent) of the valley-bottom landtype. Streams are order 1 and 2. Only 4 percent of streams are perennial. Average stream grade is 31 percent and sinuosity is 1.0. One survey station was monitored. Aquatic habitat types are riffle and scour pool. Rosgen types are mostly B2. Dominant substrates are boulder and cobble.

***Fluvial Basin* (1210):** Areas along very steep drainages associated with well developed canyons and corresponds with the zone of fluvial erosion. The criteria used to distinguish *fluvial basin* from *cascade* were: 1) Canyons are greater than 200 feet deep; and 2) stream gradient is less than the side slope gradient. It occurs in *alpine glaciated lands.* It makes up 4,015 acres (5.5 percent) of the valley-bottom landtype. Streams are order 1, 2 and 3. About 16 percent of streams are perennial. Average stream grade is 19 percent and sinuosity is 1.0. Four (4) stream survey stations were monitored. Dominant aquatic habitats are riffle, glide and scour pool. Rosgen type is B2. Dominant substrates are boulder and cobble.

***Fluvial V-Erosional Canyon* (1220):** Along streams that are confined by residual slopes and corresponds with the zone of fluvial transport. Wide continuous floodplains are not present. It occurs in *fluvial lands.* It makes up 1,708 acres (2.3 percent) of the valley-bottom landtype. Streams are order 1 through 5. About 77 percent of streams are perennial. Average stream grade is 9 percent and sinuosity is 1.0. Intermittent streams are steeper than perennial streams. Fifty five (55) stream survey stations were monitored. Dominant aquatic habitats are riffle, glide, scour pool and dam pool.. Rosgen types are B2, C2 and C3. Dominant substrates are boulder and cobble.

***Fluvial V-Depositional Canyon* (1230):** Along streams in canyons that are confined by residual slopes and corresponds with the zone of fluvial deposition. Wide continuous floodplains are present. It occurs in *alpine glaciated lands.* It makes up 1,849 acres (2.5 percent) of the valley-bottom landtype. Streams are order 1 through 6. About 90 percent of streams are perennial. Average stream grade is 3 percent and sinuosity is 1.0. Intermittent streams are steeper than perennial streams. Three (3) stream survey stations were monitored. Dominant aquatic habitats are riffle, glide and scour pool. Rosgen types are mostly C3. Dominant substrates are cobble and gravel.

***Continental cascade* (1305):** Similar to *fluvial cascades*, but occur in *continental glaciated erosional lands.* It makes up 100 acres (0.1 percent) of the valley-bottom landtype. Streams are order 1 and 2. About 3 percent of streams are perennial. Average stream grade is 23 percent and sinuosity is 1.0. No stream survey stations were monitored.

***Continental fluvial basin* (1310):** Similar to *fluvial basin*, but occur in *continental glaciated erosional lands.* It makes up 1,826 acres (2.5 percent) of the valley-bottom landtype. Streams are order 1, 2 and 3. About 5 percent of streams are perennial. Average stream grade is 13 percent and sinuosity is 1.0. No stream survey stations were monitored.

***Continental V-erosional canyon* (1320):** Similar to *fluvial V-erosional canyons*, but occur in *continental glaciated erosional lands.* It makes up 349 acres (0.5 percent) of the valley-bottom landtype. Streams are order 1, 2 and 3. About 77 percent of streams are perennial. Average stream grade is 6 percent and sinuosity is 1.0. No stream survey stations were monitored.

***Continental V-depositional canyon* (1330):** Similar to *fluvial V-depositional canyons*, but occur in *continental glaciated erosional lands.* It makes up 973 acres (1.3 percent) of the valley-bottom landtype. Streams are order 1 through 5. About 83 percent of streams are perennial. Average stream grade is 3 percent and sinuosity is 1.1. Seven (7) stream survey stations were monitored. Dominant aquatic habitats are riffle, glide, scour pool and dam pool. Rosgen types are mostly C2 and C3. Dominant substrates are boulder and cobble.

***Glacio-Lacustrine basin, unconfined* (1410):** Includes broad valleys with gentle slopes. Adjacent terraces are less than 50 feet above the level of wide, continuous floodplains. It occurs in *continental glaciated depositional lands.* It makes up 7,439 acres (10.2 percent) of the valley-bottom landtype. Streams are order 1 through 5. About 74 percent of streams are perennial. Average stream grade is 2.1 percent and sinuosity is 1.2. Intermittent streams are steeper than perennial streams. No stream survey stations were monitored.

***Glacio-lacustrine basin, confined* (1420):** Similar to *glacio-lacustrine basin, unconfined* but the stream channel is usually incised more than 50 feet into the glacio-lacustrine terrace. Wide, continuous floodplains are <u>not</u> present. It makes up the vast majority of *continental glaciated depositional lands.* It makes up 42,094 acres (58 percent) of the valley-bottom landtype. Streams are order 1 through 5. About 39 percent of streams are perennial. Average stream grade is 4.1 percent and sinuosity is 1.1. It is expected that streams are losing water to percolation. Percolated water may resurface near the transition to the *glacio-lacustrine basin, confined* valley-bottom type. Thirty two (32) stream survey stations were monitored. Dominant aquatic habitats are riffle, glide, scour pool and dam pool. Rosgen types include B2, B3, C2 and C3.. Dominant substrates are boulder and cobble.

***Glacio-Lacustrine Canyon* (1430):** Stream courses have cut through most of the glacio-lacustrine deposits. It is similar to *fluvial V-depositional canyons*, but the canyon slopes are glacio-lacustrine sediment. Continuous floodplains are typically present. It occurs in *continental glaciated depositional lands.* It makes up 2,262 acres (3.1 percent) of the valley-bottom landtype. Streams are order 1 through 6. About 96 percent of streams are perennial. Average stream grade is 1.3 percent and sinuosity is 1.2. It is expected that streams are gaining flow from drainage of adjacent high terraces. Two (2) stream survey stations were monitored. Dominant aquatic habitats are riffle, glide and scour pool. Rosgen types are B2 and C#. Dominant substrates are cobble, boulder and gravel.

Maps of valley-bottom types are presented with respect to valley-bottom habitats in chapter 3.8. The distributions of stream grade for valley-bottom types (all stream orders) are compared in Figure 3.7-1. Steeper gradients correspond with lower order streams. Stream attributes compiled from CFFs are listed in Table 3.7-1. The areas of valley-bottom types for subbasins and watersheds of the Thompson River basin are presented in Table 3.7-2.

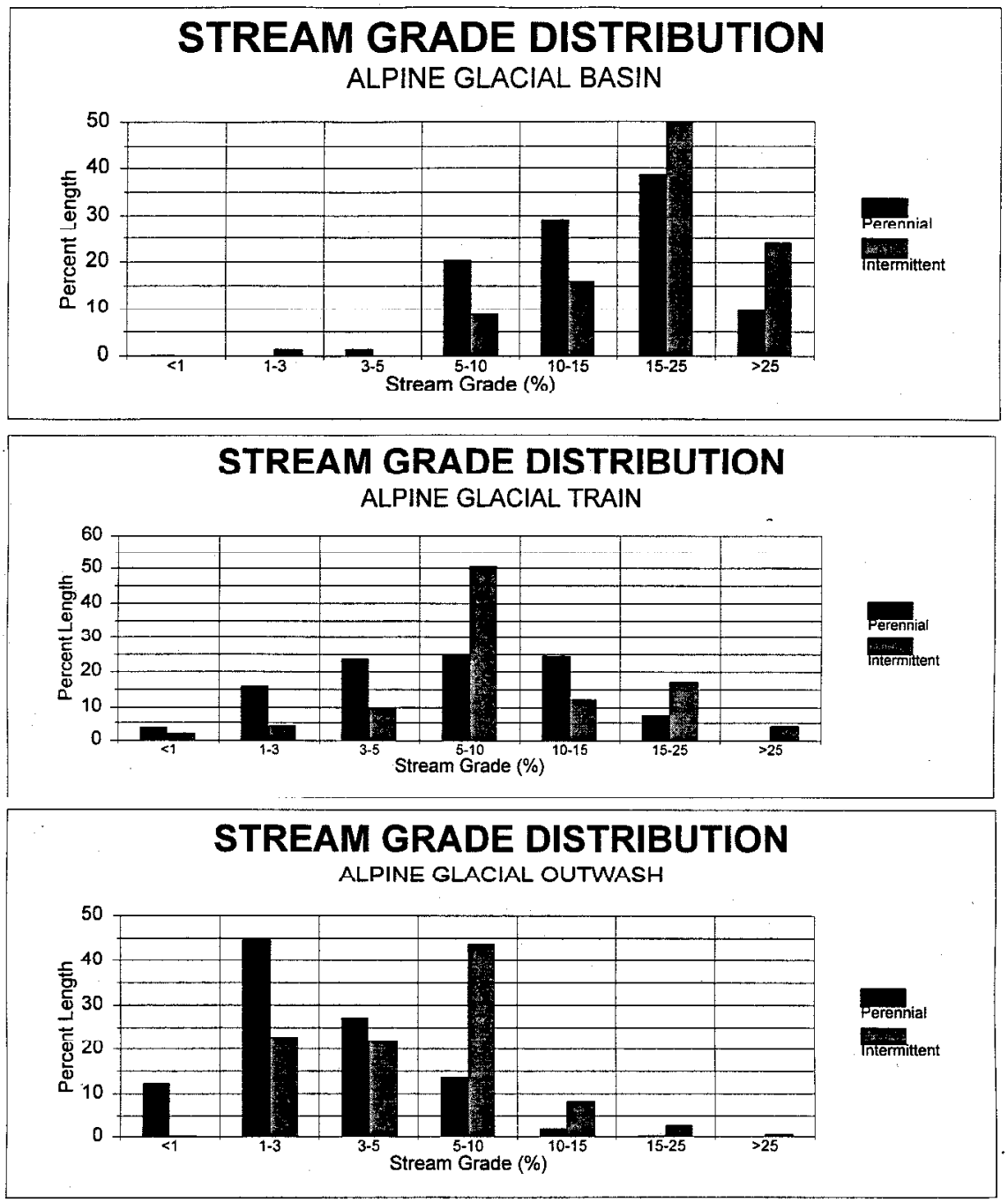
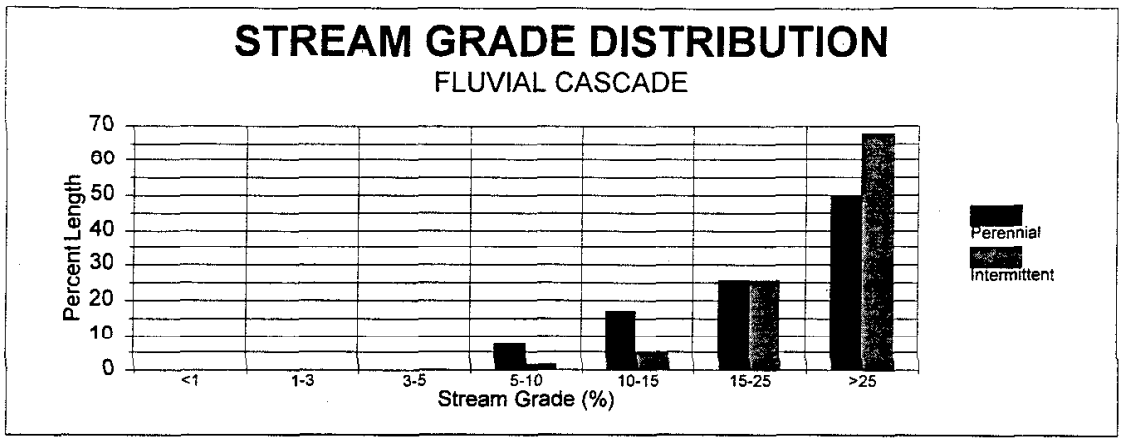
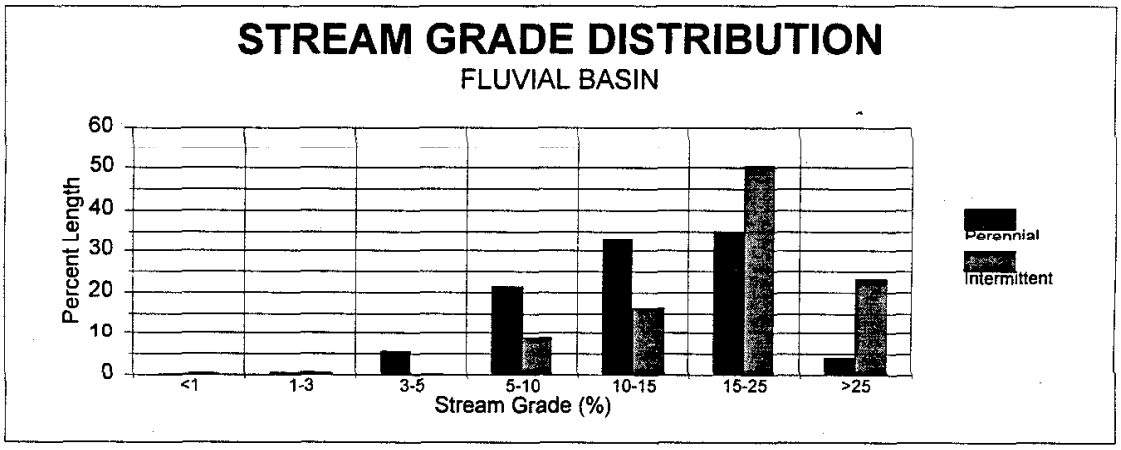


Figure 3.7-1. Stream grade distributions for valley-bottom types (all stream orders).





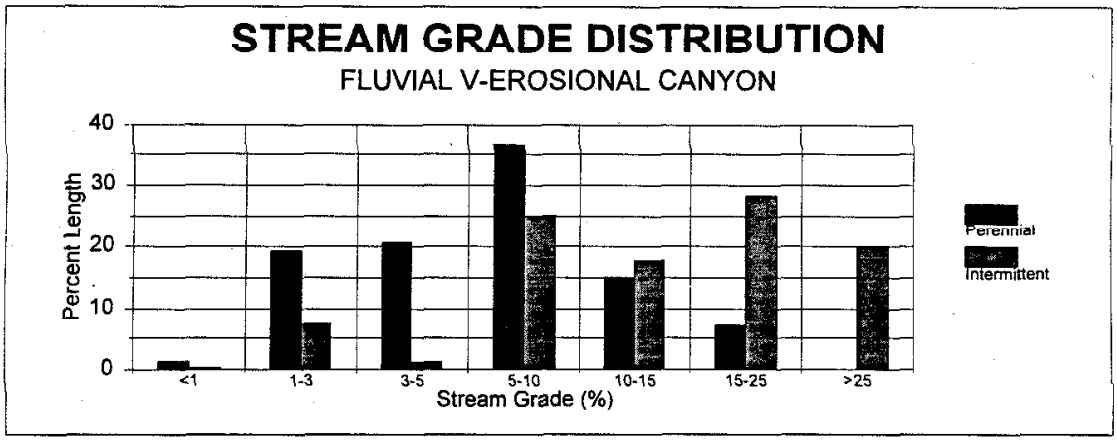
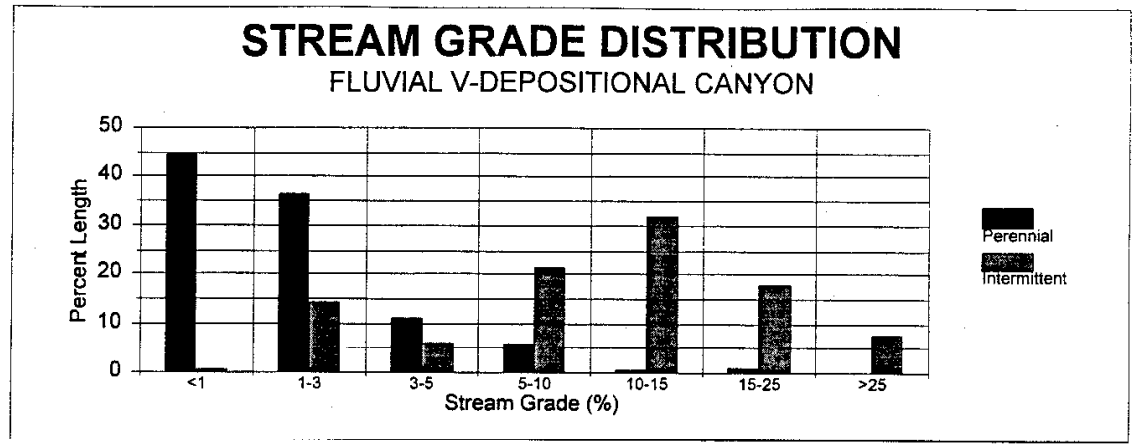
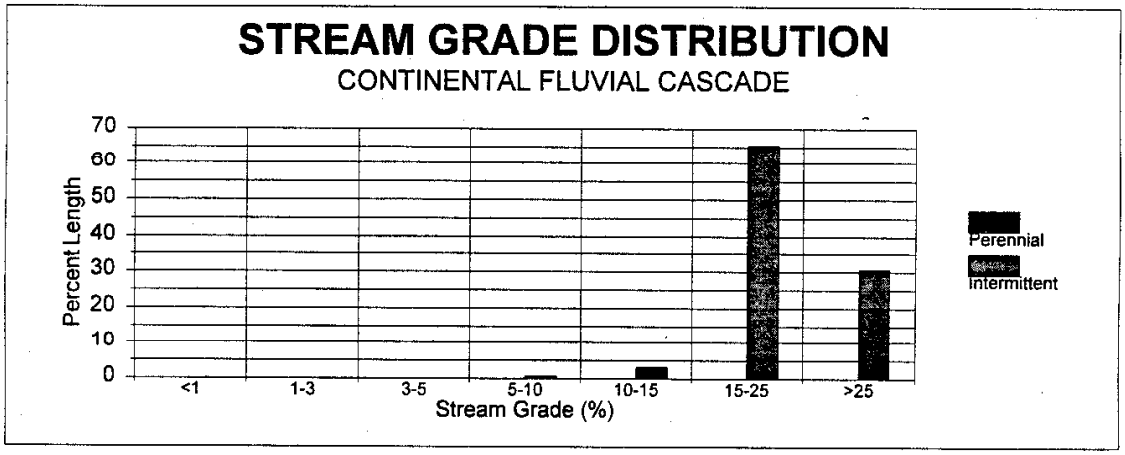


Figure 3.7-1. Stream grade distributions for valley-bottom types (all stream orders).





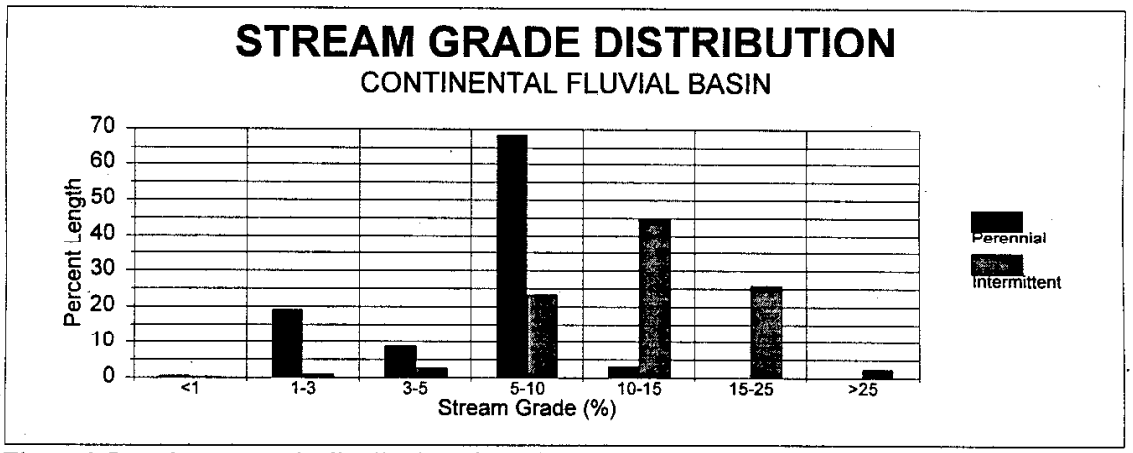
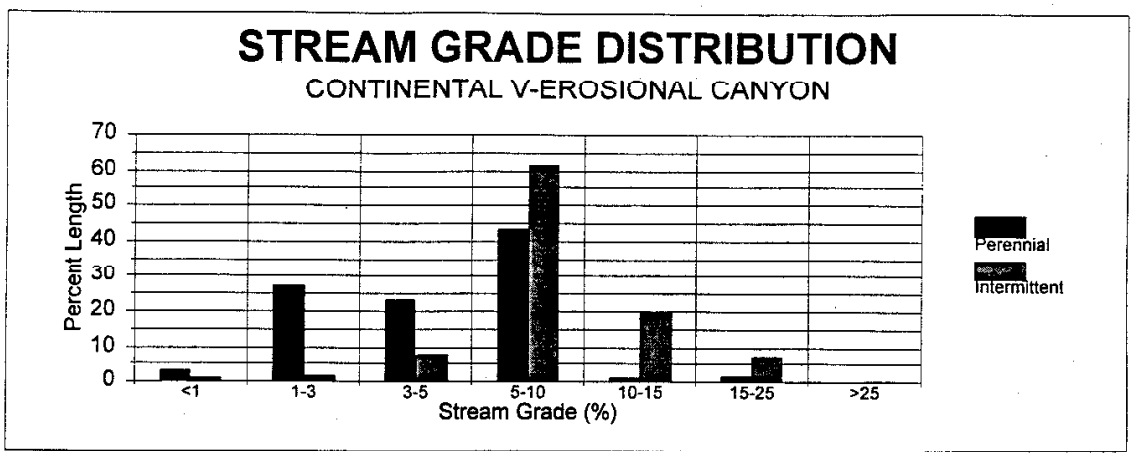
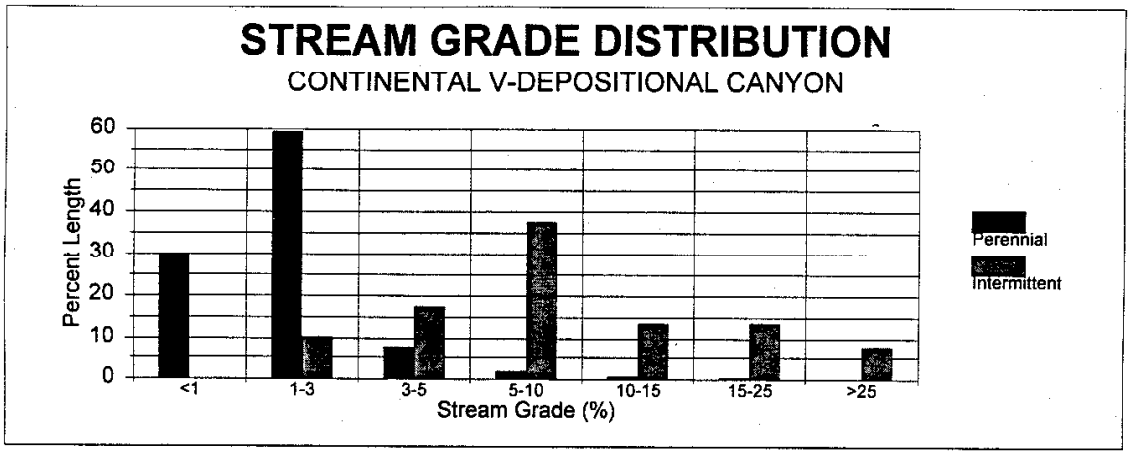


Figure 3.7-1. Stream grade distributions for valley-bottom types (all stream orders).





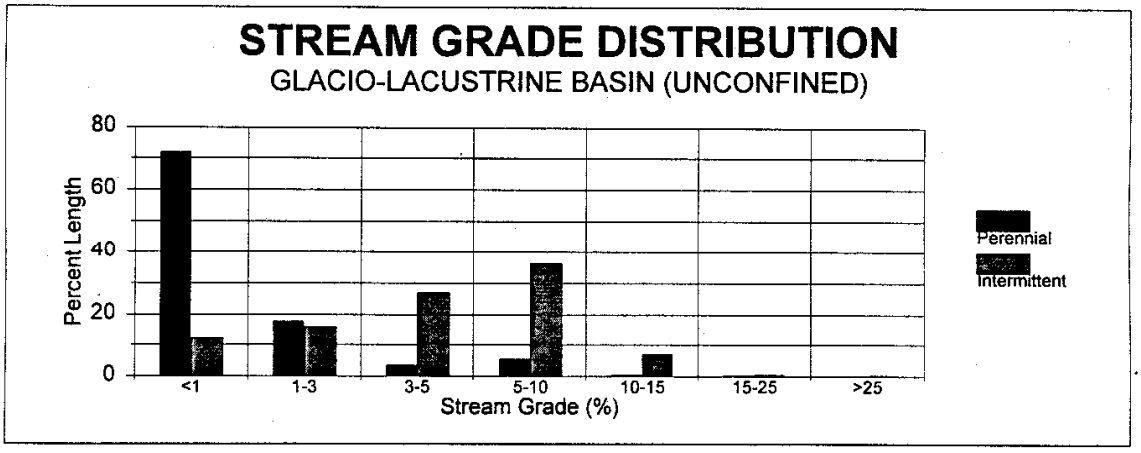
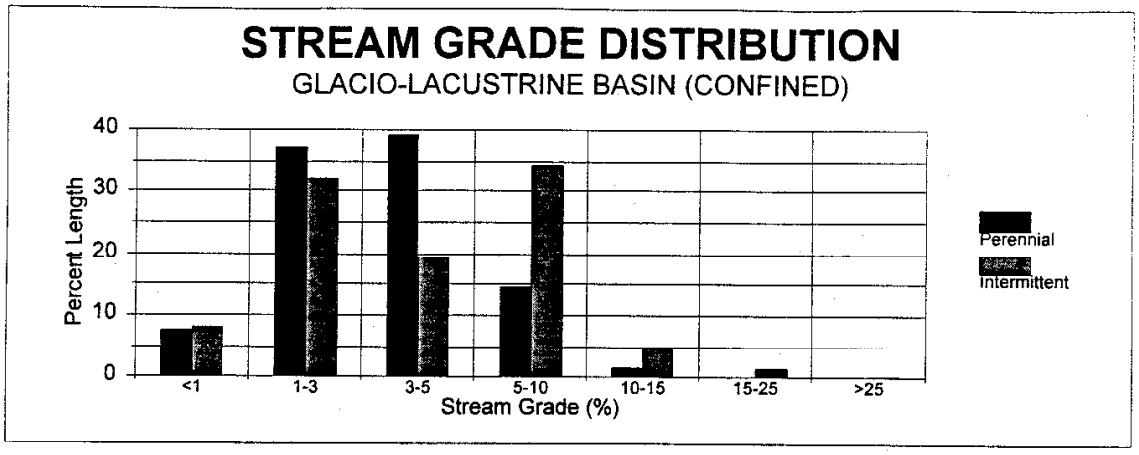


Figure 3.7-1. Stream grade distributions for valley-bottom types (all stream orders).



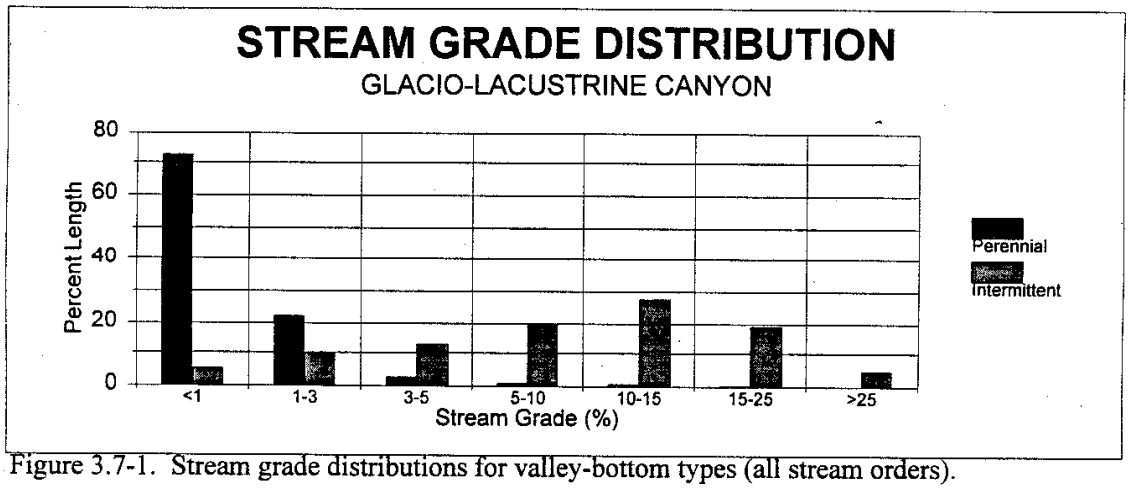


Figure 3.7-1. Stream grade distributions for valley-bottom types (all stream orders).

Table 3.7-1. Stream attributes for valley-bottom types

VALLEY-BOTTOM TYPE		STREAM ORDER	PERENNIAL			INTERMITTENT			TOTAL		
Code	Name		Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)
1110	Alpine glacial basin	1	18.9	1.04	11.0	20.5	1.04	64.9	20.3	1.04	75.9
1110	Alpine glacial basin	2	14.9	1.04	16.9	13.2	1.03	9.4	14.3	1.04	26.3
1110	Alpine glacial basin	3	10.2	1.04	3.0	13.3	1.00	0.1	10.3	1.04	3.1
1110	**Alpine glacial basin**	**TOTAL**	**15.9**	**1.04**	**30.9**	**19.6**	**1.04**	**74.4**	**18.5**	**1.04**	**105.2**
1120	Alpine glacial train	1	11.6	1.03	3.1	NA	NA	0.0	11.6	1.03	3.1
1120	Alpine glacial train	2	12.0	1.04	5.3	NA	NA	0.0	12.0	1.04	5.3
1120	Alpine glacial train	3	4.9	1.04	10.9	10.3	1.00	0.1	5.0	1.04	11.0
1120	Alpine glacial train	4	8.0	1.02	2.5	NA	NA	0.0	8.0	1.02	2.5
1120	**Alpine glacial train**	**TOTAL**	**8.0**	**1.04**	**21.8**	**10.3**	**1.00**	**0.1**	**8.0**	**1.04**	**21.9**
1130	Alpine glacial outwash	1	3.1	1.06	1.8	6.3	1.06	23.8	6.1	1.06	25.5
1130	Alpine glacial outwash	2	3.3	1.04	9.3	6.1	1.08	6.7	4.5	1.06	16.0
1130	Alpine glacial outwash	3	3.6	1.04	12.1	4.9	1.06	1.1	3.7	1.05	13.2
1130	Alpine glacial outwash	4	2.1	1.05	5.1	NA	NA	0.0	2.1	1.05	5.1
1130	**Alpine glacial outwash**	**TOTAL**	**3.2**	**1.04**	**28.3**	**6.3**	**1.06**	**31.5**	**4.8**	**1.05**	**59.8**
1205	Fluvial cascade	1	28.2	1.04	5.9	31.5	1.02	233.3	31.4	1.02	239.2
1205	Fluvial cascade	2	20.2	1.03	3.8	28.9	1.03	8.0	26.1	1.03	11.8
1205	**Fluvial cascade**	**TOTAL**	**25.1**	**1.04**	**9.6**	**31.4**	**1.02**	**241.3**	**31.2**	**1.02**	**250.9**
1210	Fluvial basin	1	14.3	1.03	16.0	21.2	1.04	226.7	20.8	1.04	242.7
1210	Fluvial basin	2	13.4	1.03	31.5	13.1	1.04	36.6	13.3	1.04	68.1
1210	Fluvial basin	3	12.9	1.02	3.5	2.2	1.02	0.3	12.1	1.02	3.8
1210	**Fluvial basin**	**TOTAL**	**13.7**	**1.03**	**51.0**	**20.1**	**1.04**	**263.7**	**19.0**	**1.04**	**314.7**

Table 3.7-1. Stream attributes for valley-bottom types

VALLEY-BOTTOM TYPE		STREAM ORDER	PERENNIAL			INTERMITTENT			TOTAL		
Code	Name		Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)
1220	Fluvial V-erosional canyon	1	12.3	1.02	2.1	19.3	1.03	17.5	18.6	1.03	19.6
1220	Fluvial V-erosional canyon	2	8.8	1.03	26.8	11.7	1.04	6.3	9.4	1.03	33.1
1220	Fluvial V-erosional canyon	3	7.1	1.03	30.7	NA	NA	0.0	7.1	1.03	30.7
1220	Fluvial V-erosional canyon	4	3.8	1.03	17.3	NA	NA	0.0	3.8	1.03	17.3
1220	Fluvial V-erosional canyon	5	2.8	1.06	3.4	NA	NA	0.0	2.8	1.06	3.4
1220	**Fluvial V-erosional canyon**	**TOTAL**	**6.9**	**1.03**	**80.3**	**17.3**	**1.03**	**23.8**	**9.3**	**1.03**	**104.0**
1230	Fluvial V-depositional canyon	1	7.1	1.03	0.1	12.6	1.03	3.3	12.4	1.03	3.4
1230	Fluvial V-depositional canyon	2	7.0	1.03	2.2	10.4	1.02	1.1	8.1	1.02	3.3
1230	Fluvial V-depositional canyon	3	4.3	1.03	4.4	2.9	1.00	0.1	4.3	1.03	4.5
1230	Fluvial V-depositional canyon	4	1.9	1.06	10.0	NA	NA	0.0	1.9	1.06	10.0
1230	Fluvial V-depositional canyon	5	2.5	1.05	2.9	NA	NA	0.0	2.5	1.05	2.9
1230	Fluvial V-depositional canyon	6	1.0	1.04	19.8	NA	NA	0.0	1.0	1.04	19.8
1230	**Fluvial V-depositional canyon**	**TOTAL**	**2.0**	**1.04**	**39.5**	**11.8**	**1.03**	**4.5**	**3.0**	**1.04**	**44.0**
1305	Continental cascade	1	15.2	1.01	0.4	23.0	1.04	13.1	22.8	1.03	13.5
1305	Continental cascade	2	NA	NA	0.0	7.9	1.00	0.1	7.9	1.00	0.1
1305	**Continental cascade**	**TOTAL**	**15.2**	**1.01**	**0.4**	**22.9**	**1.03**	**13.2**	**22.7**	**1.03**	**13.6**
1310	Continental fluvial basin	1	6.4	1.05	5.2	13.6	1.05	123.9	13.3	1.05	129.1
1310	Continental fluvial basin	2	6.6	1.02	1.6	8.5	1.04	14.2	8.3	1.04	15.8
1310	Continental fluvial basin	3	NA	NA	0.0	8.6	1.02	1.5	8.6	1.02	1.5
1310	**Continental fluvial basin**	**TOTAL**	**6.4**	**1.04**	**6.8**	**13.1**	**1.05**	**139.5**	**12.7**	**1.05**	**146.4**

Table 3.7-1. Stream attributes for valley-bottom types

VALLEY-BOTTOM TYPE		STREAM	PERENNIAL			INTERMITTENT			TOTAL		
Code	Name	ORDER	Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)
1320	Continental V-erosional canyon	1	6.2	1.03	2.4	11.6	1.04	4.1	9.6	1.04	6.4
1320	Continental V-erosional canyon	2	5.6	1.05	9.8	6.7	1.03	0.3	5.6	1.05	10.1
1320	Continental V-erosional canyon	3	3.4	1.04	5.5	4.5	1.03	1.0	3.6	1.04	6.6
1320	**Continental V-erosional canyon**	**TOTAL**	**5.0**	**1.05**	**17.7**	**10.0**	**1.04**	**5.4**	**6.1**	**1.05**	**23.1**
1330	Contiental V-depositional canyon	1	28.0	1.01	0.0	8.6	1.03	1.4	9.1	1.03	1.4
1330	Contiental V-depositional canyon	2	1.9	1.07	0.1	12.1	1.02	0.6	10.8	1.03	0.7
1330	Contiental V-depositional canyon	3	2.7	1.06	2.4	NA	NA	0.0	2.7	1.06	2.4
1330	Contiental V-depositional canyon	4	1.4	1.09	3.5	NA	NA	0.0	1.4	1.09	3.5
1330	Contiental V-depositional canyon	5	1.1	1.09	4.0	NA	NA	0.0	1.1	1.09	4.0
1330	**Contiental V-depositional canyon**	**TOTAL**	**1.7**	**1.08**	**10.0**	**9.7**	**1.03**	**2.0**	**3.1**	**1.07**	**12.0**
1410	Glacio-lacustrine basin (unconfined)	1	0.9	1.10	3.9	5.3	1.11	4.7	3.3	1.11	8.6
1410	Glacio-lacustrine basin (unconfined)	2	3.0	1.10	5.0	4.4	1.09	2.0	3.4	1.10	7.0
1410	Glacio-lacustrine basin (unconfined)	3	0.9	1.18	6.6	5.0	1.10	1.9	1.8	1.16	8.4
1410	Glacio-lacustrine basin (unconfined)	4	0.6	1.26	2.8	NA	NA	0.0	0.6	1.26	2.8
1410	Glacio-lacustrine basin (unconfined)	5	0.0	1.27	6.6	NA	NA	0.0	0.0	1.27	6.6
1410	**Glacio-lacustrine basin (unconfined)**	**TOTAL**	**1.1**	**1.18**	**24.8**	**5.1**	**1.11**	**8.6**	**2.1**	**1.16**	**33.4**
1420	Glacio-lacustrine basin (confined)	1	3.9	1.08	5.6	5.7	1.05	56.6	5.6	1.06	62.3
1420	Glacio-lacustrine basin (confined)	2	3.8	1.04	16.4	3.5	1.07	32.9	3.6	1.06	49.2
1420	Glacio-lacustrine basin (confined)	3	3.0	1.05	25.3	2.7	1.06	6.8	2.9	1.05	32.1
1420	Glacio-lacustrine basin (confined)	4	4.1	1.12	10.7	NA	NA	0.0	4.1	1.12	10.7
1420	Glacio-lacustrine basin (confined)	5	1.8	1.07	4.1	NA	NA	0.0	1.8	1.07	4.1
1420	**Glacio-lacustrine basin (confined)**	**TOTAL**	**3.4**	**1.06**	**62.1**	**4.7**	**1.06**	**96.3**	**4.2**	**1.06**	**158.3**

Table 3.7-1. Stream attributes for valley-bottom types

VALLEY-BOTTOM TYPE		STREAM ORDER	PERENNIAL			INTERMITTENT			TOTAL		
Code	Name		Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)	Grade (%)	Sin. (ratio)	Length (miles)
1430	Glacio-lacustrine canyon	1	2.3	1.07	0.2	10.2	1.04	1.1	8.9	1.04	1.3
1430	Glacio-lacustrine canyon	2	3.6	1.03	0.2	13.6	1.02	0.3	9.3	1.03	0.6
1430	Glacio-lacustrine canyon	3	7.4	1.04	0.6	8.3	1.01	0.0	7.4	1.04	0.7
1430	Glacio-lacustrine canyon	4	1.6	1.05	0.7	NA	NA	0.0	1.6	1.05	0.7
1430	Glacio-lacustrine canyon	5	0.8	1.19	30.9	NA	NA	0.0	0.8	1.19	30.9
1430	Glacio-lacustrine canyon	6	0.6	1.03	4.5	NA	NA	0.0	0.6	1.03	4.5
1430	**Glacio-lacustrine canyon**	**TOTAL**	**0.9**	**1.16**	**37.3**	**10.8**	**1.04**	**1.5**	**1.3**	**1.16**	**38.8**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
ALL	ALL	1110	Alpine glacial basin	1753.2	2.4
ALL	ALL	1120	Alpine glacial train	882.9	1.2
ALL	ALL	1130	Alpine glacial outwash	5946.3	8.1
ALL	ALL	1205	Fluvial cascade	1875.4	2.6
ALL	ALL	1210	Fluvial basin	4015.2	5.5
ALL	ALL	1220	Fluvial V-erosional canyon	1707.6	2.3
ALL	ALL	1230	Fluvial V-depositional canyon	1849.2	2.5
ALL	ALL	1305	Continental cascade	99.8	0.1
ALL	ALL	1310	Continental fluvial basin	1826.3	2.5
ALL	ALL	1320	Continental V-erosional canyon	349.2	0.5
ALL	ALL	1330	Continental V-depositional canyon	973.3	1.3
ALL	ALL	1410	Glacio-lacustine basin (unconfined)	7438.6	10.2
ALL	ALL	1420	Glacio-lacustrine basin (confined)	42094.3	57.6
ALL	ALL	1430	Glacio-lacustine canyon	2262.5	3.1
ALL	ALL	9999	Not in valley-bottom	40.2	0.1
ALL	**ALL**	**TOTAL**	**TOTAL**	**73113.9**	**100.0**
Upper Thompson River	ALL	1130	Alpine glacial outwash	2241.1	15.9
Upper Thompson River	ALL	1205	Fluvial cascade	59.9	0.4
Upper Thompson River	ALL	1210	Fluvial basin	226.0	1.6
Upper Thompson River	ALL	1220	Fluvial V-erosional canyon	46.1	0.3
Upper Thompson River	ALL	1230	Fluvial V-depositional canyon	170.2	1.2
Upper Thompson River	ALL	1305	Continental cascade	37.2	0.3
Upper Thompson River	ALL	1310	Continental fluvialbasin	644.7	4.6
Upper Thompson River	ALL	1320	Continental V-erosional canyon	109.7	0.8
Upper Thompson River	ALL	1410	Glacio-lacustine basin (unconfined)	5786.6	41.2
Upper Thompson River	ALL	1420	Glacio-lacustrine basin (confined)	4707.4	33.5
Upper Thompson River	ALL	9999	Not in valley-bottom	29.2	0.2
pper Thompson Rive	**ALL**	**TOTAL**		**14058.1**	**100.0**
Upper Thompson	Thompson Lakes	1205	Fluvial cascade	11.5	0.2
Upper Thompson	Thompson Lakes	1310	Continental fluvial basin	282.6	4.4
Upper Thompson	Thompson Lakes	1320	Continental V-erosional canyon	30.3	0.5
Upper Thompson	Thompson Lakes	1410	Glacio-lacustrine basin (unconfined)	2923.0	45.4
Upper Thompson	Thompson Lakes	1420	Glacio-lacustrine basin (confined)	3194.0	49.6
Upper Thompson	**Thompson Lakes**	**TOTAL**		**6441.3**	**100.0**
Upper Thompson	Lang	1205	Fluvial cascade	14.9	2.4
Upper Thompson	Lang	1210	Fluvial basin	95.2	15.5
Upper Thompson	Lang	1320	Continental V-erosional canyon	8.2	1.3
Upper Thompson	Lang	1410	Glacio-lacustrine basin (unconfined)	122.4	20.0
Upper Thompson	Lang	1420	Glacio-lacustrine basin (confined)	372.6	60.8
Upper Thompson	**Lang**	**TOTAL**		**613.3**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Upper Thompson	McGregor	1130	Alpine glacial outwash	2241.1	39.1
Upper Thompson	McGregor	1205	Fluvial cascade	33.5	0.6
Upper Thompson	McGregor	1210	Fluvial basin	124.3	2.2
Upper Thompson	McGregor	1220	Fluvial V-erosional canyon	46.1	0.8
Upper Thompson	McGregor	1230	Fluvial V-depositional canyon	170.2	3.0
Upper Thompson	McGregor	1305	Continental cascade	18.1	0.3
Upper Thompson	McGregor	1310	Continental fluvial basin	192.3	3.4
Upper Thompson	McGregor	1410	Glacio-lacustrine basin (unconfined)	2302.7	40.2
Upper Thompson	McGregor	1420	Glacio-lacustrine basin (confined)	578.2	10.1
Upper Thompson	McGregor	9999	Not in valley-bottom	21.2	0.4
Upper Thompson	**McGregor**	**TOTAL**		**5727.7**	**100.0**
Upper Thompson	Boiling Springs	1210	Fluvial basin	6.6	1.3
Upper Thompson	Boiling Springs	1305	Continental cascade	19.1	3.7
Upper Thompson	Boiling Springs	1310	Continental fluvial basin	47.0	9.1
Upper Thompson	Boiling Springs	1320	Continental V-erosional canyon	71.2	13.8
Upper Thompson	Boiling Springs	1410	Glacio-lacustrine basin (unconfined)	365.6	70.7
Upper Thompson	Boiling Springs	9999	Not in valley-bottom	7.9	1.5
Upper Thompson	**Boiling Springs**	**TOTAL**		**517.4**	**100.0**
Upper Thompson	Davis	1310	Continental fluvial basin	122.9	21.8
Upper Thompson	Davis	1410	Glacio-lacustrine basin (unconfined)	72.9	13.0
Upper Thompson	Davis	1420	Glacio-lacustrine basin (confined)	562.7	100.0
Upper Thompson	**Davis**	**TOTAL**		**758.5**	**134.8**
Middle Thompson River	ALL	1110	Alpine glacial basin	341.1	1.0
Middle Thompson River	ALL	1120	Alpine glacial train	52.5	0.2
Middle Thompson River	ALL	1130	Alpine glacial outwash	1205.3	3.6
Middle Thompson River	ALL	1205	Fluvial cascade	447.0	1.3
Middle Thompson River	ALL	1210	Fluvial basin	1499.2	4.5
Middle Thompson River	ALL	1220	Fluvial V-erosional canyon	750.4	2.2
Middle Thompson River	ALL	1230	Fluvial V-depositional canyon	363.5	1.1
Middle Thompson River	ALL	1305	Continental cascade	59.3	0.2
Middle Thompson River	ALL	1310	Continental fluvialbasin	763.9	2.3
Middle Thompson River	ALL	1320	Continental V-erosional canyon	43.6	0.1
Middle Thompson River	ALL	1410	Glacio-lacustine basin (unconfined)	1069.7	3.2
Middle Thompson River	ALL	1420	Glacio-lacustrine basin (confined)	25364.9	75.4
Middle Thompson River	ALL	1430	Glacio-lacustine canyon	1681.4	5.0
Middle Thompson River	ALL	9999	Not in valley-bottom	8.9	0.0
iddle Thompson Rive	**ALL**	**TOTAL**		**33650.8**	**100.0**
Middle Thompson	Middle Thompson	1205	Fluvial cascade	50.4	0.3
Middle Thompson	Middle Thompson	1210	Fluvial basin	347.3	1.9
Middle Thompson	Middle Thompson	1220	Fluvial V-erosional canyon	20.8	0.1
Middle Thompson	Middle Thompson	1230	Fluvial V-depositional canyon	42.0	0.2
Middle Thompson	Middle Thompson	1305	Continental cascade	23.5	0.1
Middle Thompson	Middle Thompson	1310	Continental fluvial basin	332.6	1.8
Middle Thompson	Middle Thompson	1410	Glacio-lacustrine basin (unconfined)	1066.7	5.9
Middle Thompson	Middle Thompson	1420	Glacio-lacustrine basin (confined)	14544.3	80.5
Middle Thompson	Middle Thompson	1430	Glacio-lacustrine canyon	1637.8	9.1
Middle Thompson	**Middle Thompson**	**TOTAL**		**18065.4**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Middle Thompson	Murr	1130	Alpine glacial outwash	549.7	42.4
Middle Thompson	Murr	1205	Fluvial cascade	28.3	2.2
Middle Thompson	Murr	1210	Fluvial basin	249.2	19.2
Middle Thompson	Murr	1220	Fluvial V-erosional canyon	160.2	12.4
Middle Thompson	Murr	1310	Continental fluvial basin	12.3	0.9
Middle Thompson	Murr	1410	Glacio-lacustrine basin (unconfined)	3.0	0.2
Middle Thompson	Murr	1420	Glacio-lacustrine basin (confined)	292.5	22.6
Middle Thompson	Murr	9999	Not in valley-bottom	1.3	0.1
Middle Thompson	**Murr**	**TOTAL**		**1296.4**	**100.0**
Middle Thompson	Shroder	1205	Fluvial cascade	8.2	3.8
Middle Thompson	Shroder	1210	Fluvial basin	71.7	32.9
Middle Thompson	Shroder	1220	Fluvial V-erosional canyon	105.9	48.6
Middle Thompson	Shroder	1305	Continental cascade	6.0	2.8
Middle Thompson	Shroder	1310	Continental fluvial basin	10.1	4.6
Middle Thompson	Shroder	1420	Glacio-lacustrine basin (confined)	10.8	4.9
Middle Thompson	Shroder	1430	Glacio-lacustrine canyon	5.2	2.4
Middle Thompson	**Shroder**	**TOTAL**		**218.0**	**100.0**
Middle Thompson	Big Rock	1110	Alpine glacial basin	183.3	11.4
Middle Thompson	Big Rock	1130	Alpine glacial outwash	485.3	30.1
Middle Thompson	Big Rock	1205	Fluvial cascade	132.5	8.2
Middle Thompson	Big Rock	1210	Fluvial basin	229.0	14.2
Middle Thompson	Big Rock	1220	Fluvial V-erosional canyon	165.7	10.3
Middle Thompson	Big Rock	1420	Glacio-lacustrine basin (confined)	408.8	25.4
Middle Thompson	Big Rock	1430	Glacio-lacustrine canyon	6.1	0.4
Middle Thompson	**Big Rock**	**TOTAL**		**1610.8**	**100.0**
Middle Thompson	Semem	1205	Fluvial cascade	50.1	5.3
Middle Thompson	Semem	1305	Continental cascade	16.7	1.8
Middle Thompson	Semem	1310	Continental fluvial basin	17.1	1.8
Middle Thompson	Semem	1320	Continental V-erosional canyon	23.6	2.5
Middle Thompson	Semem	1420	Glacio-lacustrine basin (confined)	838.3	88.4
Middle Thompson	Semem	1430	Glacio-lacustrine canyon	2.1	0.2
Middle Thompson	**Semem**	**TOTAL**		**948.0**	**100.0**
Middle Thompson	Chippy	1110	Alpine glacial basin	69.7	5.6
Middle Thompson	Chippy	1130	Alpine glacial outwash	170.3	13.6
Middle Thompson	Chippy	1205	Fluvial cascade	87.1	7.0
Middle Thompson	Chippy	1210	Fluvial basin	163.1	13.1
Middle Thompson	Chippy	1220	Fluvial V-erosional canyon	102.4	8.2
Middle Thompson	Chippy	1420	Glacio-lacustrine basin (confined)	654.8	52.5
Middle Thompson	Chippy	1430	Glacio-lacustrine canyon	0.5	0.0
Middle Thompson	**Chippy**	**TOTAL**		**1247.9**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Middle Thompson	Bear	1110	Alpine glacial basin	88.0	13.9
Middle Thompson	Bear	1120	Alpine glacial train	52.5	8.3
Middle Thompson	Bear	1205	Fluvial cascade	82.2	13.0
Middle Thompson	Bear	1210	Fluvial basin	61.9	9.8
Middle Thompson	Bear	1220	Fluvial V-erosional canyon	93.9	14.9
Middle Thompson	Bear	1420	Glacio-lacustrine basin (confined)	227.3	36.0
Middle Thompson	Bear	1430	Glacio-lacustrine canyon	25.8	4.1
Middle Thompson	**Bear**	**TOTAL**		**631.7**	**100.0**
Middle Thompson	Meadow	1205	Fluvial cascade	8.2	0.7
Middle Thompson	Meadow	1210	Fluvial basin	270.7	23.0
Middle Thompson	Meadow	1220	Fluvial V-erosional canyon	77.2	6.6
Middle Thompson	Meadow	1230	Fluvial V-depositional canyon	321.5	27.3
Middle Thompson	Meadow	1310	Continental fluvial basin	81.9	7.0
Middle Thompson	Meadow	1320	Continental V erosional canyon	20.0	1.7
Middle Thompson	Meadow	1420	Glacio-lacustrine basin (confined)	392.8	33.4
Middle Thompson	Meadow	1430	Glacio-lacustrine canyon	4.0	0.3
Middle Thompson	**Meadow**	**TOTAL**		**1176.2**	**100.0**
Middle Thompson	Lazier	1210	Fluvial basin	9.6	0.2
Middle Thompson	Lazier	1305	Continental cascade	13.1	0.3
Middle Thompson	Lazier	1310	Continental fluvial basin	234.9	4.8
Middle Thompson	Lazier	1420	Glacio-lacustrine basin (confined)	4637.5	94.7
Middle Thompson	Lazier	9999	Not in valley-bottom	4.4	0.1
Middle Thompson	**Lazier**	**TOTAL**		**4899.4**	**100.0**
Middle Thompson	Indian	1210	Fluvial basin	96.7	2.7
Middle Thompson	Indian	1220	Fluvial V-erosional canyon	24.3	0.7
Middle Thompson	Indian	1310	Continental fluvial basin	75.1	2.1
Middle Thompson	Indian	1420	Glacio-lacustrine basin (confined)	3357.7	94.4
Middle Thompson	Indian	9999	Not in valley-bottom	3.3	0.1
Middle Thompson	**Indian**	**TOTAL**		**3557.1**	**100.0**
Fishtrap Creek	ALL	1110	Alpine glacial basin	504.5	6.3
Fishtrap Creek	ALL	1120	Alpine glacial train	763.1	9.5
Fishtrap Creek	ALL	1205	Fluvial cascade	204.0	2.5
Fishtrap Creek	ALL	1210	Fluvial basin	856.2	10.6
Fishtrap Creek	ALL	1220	Fluvial V-erosional canyon	278.2	3.4
Fishtrap Creek	ALL	1230	Fluvial V-depositional canyon	171.9	2.1
Fishtrap Creek	ALL	1305	Continental cascade	3.3	0.0
Fishtrap Creek	ALL	1310	Continental fluvialbasin	162.0	2.0
Fishtrap Creek	ALL	1320	Continental V-erosional canyon	30.1	0.4
Fishtrap Creek	ALL	1330	Continental V-depositional canyon	310.4	3.8
Fishtrap Creek	ALL	1410	Glacio-lacustine basin (unconfined)	582.3	7.2
Fishtrap Creek	ALL	1420	Glacio-lacustrine basin (confined)	3862.6	47.9
Fishtrap Creek	ALL	1430	Glacio-lacustine canyon	340.0	4.2
Fishtrap Creek	**ALL**	**TOTAL**		**8068.9**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Fishtrap Creek	Upper Fishtrap	1110	Alpine glacial basin	80.9	1.8
Fishtrap Creek	Upper Fishtrap	1120	Alpine glacial train	199.9	4.4
Fishtrap Creek	Upper Fishtrap	1205	Fluvial cascade	21.2	0.5
Fishtrap Creek	Upper Fishtrap	1210	Fluvial basin	291.3	6.4
Fishtrap Creek	Upper Fishtrap	1220	Fluvial V-erosional canyon	68.0	1.5
Fishtrap Creek	Upper Fishtrap	1305	Continental cascade	3.3	0.1
Fishtrap Creek	Upper Fishtrap	1310	Continental fluvial basin	162.0	3.5
Fishtrap Creek	Upper Fishtrap	1320	Continental V-erosional canyon	30.1	0.7
Fishtrap Creek	Upper Fishtrap	1330	Continental V-depositional canyon	291.1	6.3
Fishtrap Creek	Upper Fishtrap	1410	Glacio-lacustrine basin (unconfined)	582.3	12.7
Fishtrap Creek	Upper Fishtrap	1420	Glacio-lacustrine basin (confined)	2854.7	62.3
Fishtrap Creek	**Upper Fishtrap**	**TOTAL**		**4584.8**	**100.0**
Fishtrap Creek	Lower Fishtrap	1205	Fluvial cascade	25.4	1.3
Fishtrap Creek	Lower Fishtrap	1210	Fluvial basin	382.4	19.3
Fishtrap Creek	Lower Fishtrap	1220	Fluvial V-erosional canyon	99.4	5.0
Fishtrap Creek	Lower Fishtrap	1230	Fluvial V-depositional canyon	171.0	8.6
Fishtrap Creek	Lower Fishtrap	1330	Continental V-depositional canyon	8.6	0.4
Fishtrap Creek	Lower Fishtrap	1420	Glacio-lacustrine basin (confined)	960.3	48.3
Fishtrap Creek	Lower Fishtrap	1430	Glacio-lacustrine canyon	339.2	17.1
Fishtrap Creek	**Lower Fishtrap**	**TOTAL**		**1986.3**	**100.0**
Fishtrap Creek	West Fork Fishtrap	1110	Alpine glacial basin	313.6	33.7
Fishtrap Creek	West Fork Fishtrap	1120	Alpine glacial train	518.4	55.7
Fishtrap Creek	West Fork Fishtrap	1205	Fluvial cascade	40.2	4.3
Fishtrap Creek	West Fork Fishtrap	1210	Fluvial basin	48.2	5.2
Fishtrap Creek	West Fork Fishtrap	1330	Continental V-depositional canyon	10.7	1.2
Fishtrap Creek	**West Fork Fishtrap**	**TOTAL**		**931.2**	**100.0**
Fishtrap Creek	Beatrice	1110	Alpine glacial basin	110.0	32.8
Fishtrap Creek	Beatrice	1120	Alpine glacial train	44.8	13.4
Fishtrap Creek	Beatrice	1205	Fluvial cascade	34.0	10.1
Fishtrap Creek	Beatrice	1210	Fluvial basin	115.8	34.5
Fishtrap Creek	Beatrice	1220	Fluvial V-erosional canyon	30.2	9.0
Fishtrap Creek	Beatrice	1230	Fluvial V-depositional canyon	0.9	0.3
Fishtrap Creek	**Beatrice**	**TOTAL**		**336**	**100.0**
Fishtrap Creek	Jungle	1205	Fluvial cascade	83.2	36.1
Fishtrap Creek	Jungle	1210	Fluvial basin	18.4	8.0
Fishtrap Creek	Jungle	1220	Fluvial V-erosional canyon	80.7	34.9
Fishtrap Creek	Jungle	1420	Glacio-lacustrine basin (confined)	47.7	20.7
Fishtrap Creek	Jungle	1430	Glacio-lacustrine canyon	0.8	0.4
Fishtrap Creek	**Jungle**	**TOTAL**		**230.8**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Little Thompson River	ALL	1110	Alpine glacial basin	521.0	4.0
Little Thompson River	ALL	1120	Alpine glacial train	20.2	0.2
Little Thompson River	ALL	1130	Alpine glacial outwash	2499.8	19.1
Little Thompson River	ALL	1205	Fluvial cascade	543.8	4.2
Little Thompson River	ALL	1210	Fluvial basin	765.4	5.8
Little Thompson River	ALL	1220	Fluvial V-erosional canyon	326.1	2.5
Little Thompson River	ALL	1230	Fluvial V-depositional canyon	302.9	2.3
Little Thompson River	ALL	1310	Continental fluvialbasin	243.3	1.9
Little Thompson River	ALL	1320	Continental V-erosional canyon	165.8	1.3
Little Thompson River	ALL	1330	Continental V-depositional canyon	662.8	5.1
Little Thompson River	ALL	1420	Glacio-lacustrine basin (confined)	7040.1	53.8
Little Thompson River	ALL	1430	Glacio-lacustine canyon	1.5	0.0
Little Thompson River	ALL	9999	Not in valley-bottom	2.1	0.0
Little Thompson River	**ALL**	**TOTAL**		**13094.8**	**100.0**
Little Thompson	Upper Little Thompson	1110	Alpine glacial basin	521.0	12.6
Little Thompson	Upper Little Thompson	1120	Alpine glacial train	20.2	0.5
Little Thompson	Upper Little Thompson	1130	Alpine glacial outwash	2499.8	60.4
Little Thompson	Upper Little Thompson	1205	Fluvial cascade	473.2	11.4
Little Thompson	Upper Little Thompson	1210	Fluvial basin	188.8	4.6
Little Thompson	Upper Little Thompson	1220	Fluvial V-erosional canyon	167.6	4.0
Little Thompson	Upper Little Thompson	1230	Fluvial V-depositional canyon	64.6	1.6
Little Thompson	Upper Little Thompson	1310	Continental fluvial basin	16.8	0.4
Little Thompson	Upper Little Thompson	1420	Glacio-lacustrine basin (confined)	183.1	4.4
Little Thompson	Upper Little Thompson	9999	Not in valley bottom	2.1	0.1
Little Thompson	**Upper Little Thompson**	**TOTAL**		**4137.2**	**100.0**
Little Thompson	Mudd	1205	Fluvial cascade	21.9	2.5
Little Thompson	Mudd	1210	Fluvial basin	403.0	45.3
Little Thompson	Mudd	1220	Fluvial V-erosional canyon	35.6	4.0
Little Thompson	Mudd	1230	Fluvial V-depositional canyon	238.2	26.8
Little Thompson	Mudd	1310	Continental fluvial basin	60.9	6.8
Little Thompson	Mudd	1320	Continental V-erosional canyon	123.2	13.9
Little Thompson	Mudd	1330	Continental V-depositional canyon	6.6	0.7
Little Thompson	**Mudd**	**TOTAL**		**889.4**	**100.0**
Little Thompson	Lower Little Thompson	1205	Fluvial cascade	2.2	0.0
Little Thompson	Lower Little Thompson	1210	Fluvial basin	17.6	0.3
Little Thompson	Lower Little Thompson	1220	Fluvial V-erosional canyon	12.5	0.2
Little Thompson	Lower Little Thompson	1230	Fluvial V-depositional canyon	0.1	0.0
Little Thompson	Lower Little Thompson	1310	Continental fluvial basin	157.3	2.6
Little Thompson	Lower Little Thompson	1320	Continental V-erosional canyon	29.7	0.5
Little Thompson	Lower Little Thompson	1330	Continental V-depositional canyon	653.3	10.9
Little Thompson	Lower Little Thompson	1420	Glacio-lacustrine basin (confined)	5142.2	85.5
Little Thompson	Lower Little Thompson	1430	Glacio-lacustrine canyon	1.5	0.0
Little Thompson	**Lower Little Thompson**	**TOTAL**		**6016.3**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Little Thompson	Little Rock	1210	Fluvial basin	59.4	3.8
Little Thompson	Little Rock	1220	Fluvial V-erosional canyon	24.9	1.6
Little Thompson	Little Rock	1310	Continental fluvial basin	8.3	0.5
Little Thompson	Little Rock	1320	Continental V-erosional canyon	12.9	0.8
Little Thompson	Little Rock	1330	Continental V-depositional canyon	3.0	0.2
Little Thompson	Little Rock	1420	Glacio-lacustrine basin (confined)	1462.8	93.1
Little Thompson	**Little Rock**	**TOTAL**		**1571.3**	**100.0**
Little Thompson	NF Little Thompson	1205	Fluvial cascade	46.5	9.7
Little Thompson	NF Little Thompson	1210	Fluvial basin	96.7	20.1
Little Thompson	NF Little Thompson	1220	Fluvial V-erosional canyon	85.4	17.8
Little Thompson	NF Little Thompson	1420	Glacio-lacustrine basin (confined)	251.9	52.4
Little Thompson	**NF Little Thompson**	**TOTAL**		**480.5**	**100.0**
West Fork Thompson	ALL	1110	Alpine glacial basin	246.1	27.8
West Fork Thompson	ALL	1120	Alpine glacial train	47.1	5.3
West Fork Thompson	ALL	1205	Fluvial cascade	204.2	23.1
West Fork Thompson	ALL	1210	Fluvial basin	179.8	20.3
West Fork Thompson	ALL	1220	Fluvial V-erosional canyon	204.9	23.2
West Fork Thompson	ALL	1230	Fluvial V-depositional canyon	2.1	0.2
West Fork Thompson	**ALL**	**TOTAL**		**884.2**	**100.0**
West Fork Thompson	Middle West Fork	1110	Alpine glacial basin	94.1	15.6
West Fork Thompson	Middle West Fork	1120	Alpine glacial train	33.4	5.6
West Fork Thompson	Middle West Fork	1205	Fluvial cascade	173.3	28.8
West Fork Thompson	Middle West Fork	1210	Fluvial basin	121.7	20.2
West Fork Thompson	Middle West Fork	1220	Fluvial V-erosional canyon	177.4	29.5
West Fork Thompson	Middle West Fork	1230	Fluvial V-depositional canyon	2.1	0.3
West Fork Thompson	**Middle West Fork**	**TOTAL**		**602.0**	**100.0**
West Fork Thompson	Four Lakes	1110	Alpine glacial basin	152.1	77.1
West Fork Thompson	Four Lakes	1120	Alpine glacial train	13.7	6.9
West Fork Thompson	Four Lakes	1205	Fluvial cascade	15.0	7.6
West Fork Thompson	Four Lakes	1220	Fluvial V-erosional canyon	16.6	8.4
West Fork Thompson	**Four Lakes**	**TOTAL**		**197.3**	**100.0**
West Fork Thompson	Anne	1205	Fluvial cascade	15.9	18.7
West Fork Thompson	Anne	1210	Fluvial basin	58.1	68.4
West Fork Thompson	Anne	1220	Fluvial V-erosional canyon	10.9	12.8
West Fork Thompson	**Anne**	**TOTAL**		**84.9**	**100.0**
Lower Thompson River	ALL	1110	Alpine glacial basin	140.4	4.2
Lower Thompson River	ALL	1205	Fluvial cascade	416.5	12.4
Lower Thompson River	ALL	1210	Fluvial basin	488.6	14.6
Lower Thompson River	ALL	1220	Fluvial V-erosional canyon	101.9	3.0
Lower Thompson River	ALL	1230	Fluvial V-depositional canyon	838.5	25.0
Lower Thompson River	ALL	1310	Continental fluvialbasin	12.4	0.4
Lower Thompson River	ALL	1420	Glacio-lacustrine basin (confined)	1119.3	33.3
Lower Thompson River	ALL	1430	Glacio-lacustine canyon	239.6	7.1
ower Thompson Rive	**ALL**	**TOTAL**		**3357.2**	**100.0**

Table 3.7-2. Areas of valley-bottom types, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	VALLEY-BOTTOM TYPE		AREA	
		Code	Name	(acres)	(%)
Lower Thompson	Lower Thompson	1110	Alpine glacial basin	36.3	1.7
Lower Thompson	Lower Thompson	1205	Fluvial cascade	206.0	9.6
Lower Thompson	Lower Thompson	1210	Fluvial basin	257.3	12.0
Lower Thompson	Lower Thompson	1230	Fluvial V-depositional canyon	837.1	38.9
Lower Thompson	Lower Thompson	1420	Glacio-lacustrine basin (confined)	578.7	26.9
Lower Thompson	Lower Thompson	1430	Glacio-lacustrine canyon	235.0	10.9
Lower Thompson	**Lower Thompson**	**TOTAL**		**2150.4**	**100.0**
Lower Thompson	Deerhorn	1110	Alpine glacial basin	5.8	2.2
Lower Thompson	Deerhorn	1205	Fluvial cascade	104.2	40.1
Lower Thompson	Deerhorn	1210	Fluvial basin	84.7	32.6
Lower Thompson	Deerhorn	1220	Fluvial V-erosional canyon	59.3	22.8
Lower Thompson	Deerhorn	1420	Glacio-lacustrine basin (confined)	1.4	0.5
Lower Thompson	Deerhorn	1430	Glacio-lacustrine canyon	4.6	1.8
Lower Thompson	**Deerhorn**	**TOTAL**		**259.9**	**100.0**
Lower Thompson	Bay State	1110	Alpine glacial basin	14.2	14.8
Lower Thompson	Bay State	1205	Fluvial cascade	18.2	19.0
Lower Thompson	Bay State	1210	Fluvial basin	62.8	65.8
Lower Thompson	Bay State	1230	Fluvial V-depositional canyon	0.4	0.4
Lower Thompson	**Bay State**	**TOTAL**		**95.5**	**100.0**
Lower Thompson	Big Hole	1110	Alpine glacial basin	84.1	17.7
Lower Thompson	Big Hole	1205	Fluvial cascade	34.5	7.3
Lower Thompson	Big Hole	1210	Fluvial basin	50.7	10.7
Lower Thompson	Big Hole	1220	Fluvial V-erosional canyon	10.2	2.2
Lower Thompson	Big Hole	1230	Fluvial V-depositional canyon	1.1	0.2
Lower Thompson	Big Hole	1420	Glacio-lacustrine basin (confined)	293.8	61.9
Lower Thompson	**Big Hole**	**TOTAL**		**474.4**	**100.0**
Lower Thompson	Calico	1205	Fluvial cascade	53.7	14.3
Lower Thompson	Calico	1210	Fluvial basin	33.1	8.8
Lower Thompson	Calico	1220	Fluvial V-erosional canyon	32.4	8.6
Lower Thompson	Calico	1310	Continental fluvial basin	12.4	3.3
Lower Thompson	Calico	1420	Glacio-lacustrine basin (confined)	245.4	65.1
Lower Thompson	**Calico**	**TOTAL**		**377.1**	**100.0**

3.8 Valley-bottom Habitats

Valley-bottom habitats were identified from 1:24,000 scale orthophotos, 1:12,000 scale aerial photos dated July and August, 1992, and 1:40,000 scale NAPP aerial photos dated August, 1990. First, the valley-bottom landtype (see Figure 3.5-1) and lakes from 1:24,000 scale CFFs were plotted as overlays for the 1:24,000 scale orthophotos. Valley-bottom habitats were identified from the 1:12,000 and 1:40,000 scale aerial photos and delineated on the orthophotos. Valley-bottom habitats were digitized and a second set of overlays for the orthophotos was used to edit mapping.

Ten (10) valley-bottom habitats were identified in the Thompson River basin:

Wet meadow: Dominated by sedges and hydric herbaceous vegetation. Soils are saturated to the surface for most of the growing season. Occurs on floodplains and in wet depressions. It is a minor component in *alpine glacial basin, alpine glacial outwash, fluvial V-depositional canyon, continental V-depositional canyon, glacio-lacustrine basin (unconfined), glacio-lacustrine basin (confined),* and *glacio-fluvial canyon.* It makes up 629 acres (0.9 percent) of the valley-bottom landtype. *Wet meadow* is jurisdictional wetland.

Mesic meadow: Dominated by grasses and herbaceous species, some of which are hydric. Soils may be saturated in the Spring. Occurs on floodplains and stream terraces. It is a minor component of *alpine glacial outwash, fluvial basin, fluvial V-depositional canyon, continental fluvial basin, continental V-erosional canyon, continental V-depositional canyon, glacio-lacustrine basin (unconfined)* and *glacio-lacustrine basin (confined)* valley-bottom types. It makes up 290 acres (0.4 percent) of the valley-bottom landtype. Some parts of *mesic meadow* may be jurisdictional wetland.

Irrigated pasture: Vegetatively similar to *mesic meadow*, but vegetation is maintained by irrigation. Occurs on low terraces. Where irrigation ponds, vegetation may be similar to *wet meadow.* It is a component of *glacio-lacustrine basin (unconfined), glacio-lacustrine basin (confined)* and *glacio-lacustrine canyon.* It makes up 1,894 acres (2.6 percent) of the valley-bottom landtype. Some parts of *irrigated pasture* may be jurisdictional wetland.

Riparian shrub: Dominated by willows (*Salix sp.*) with an under-story dominated by hydric grasses and forms. Occurs on floodplains. It is a minor component of *alpine glacial outwash, fluvial basin, fluvial V-erosional canyon, fluvial V-depositional canyon, continental V-erosional canyon, continental V-depositional canyon, glacio-lacustrine basin (unconfined), glacio-lacustrine basin (confined)* and *glacio-lacustrine canyon* valley-bottom types. It makes up 1,272 acres (1.7 percent) of the valley-bottom landtype. *Riparian shrub* is jurisdictional wetland.

Riparian shrub/wet meadow: Dominated by willows with sedges and hydric grasses in the under-story. Occurs in association with beaver activity on floodplains and in wet depressions. It is a minor component of *alpine glacial outwash, glacio-lacustrine basin (unconfined)* and *glacio-lacustrine basin (confined)* valley-bottom types. It makes up 340 acres (0.5 percent) of the valley-bottom landtype. This habitat is jurisdictional wetland.

Deciduous tree: Dominated by aspen (*Populus tremuloides*) or cottonwoods (*Populus sp.*) with mesic grasses and forms in the under-story. Occurs on stream terraces in the vicinity of Thompson Lakes. It is a minor component of *glacio-lacustrine basin (unconfined)* valley-bottom type. It makes up 195 acres (0.3 percent) of the valley-bottom landtype. The *deciduous tree* habitat is not expected to be jurisdictional wetland.

Mixed conifer/riparian shrub association: *Mixed conifer* occurs on higher and dryer and *riparian shrub* occurs as a narrow band on lower and wetter positions adjacent to the stream. It is a major component of all valley-bottom types except *glacio-lacustrine basin (confined)* and *glacio-lacustrine basin (unconfined).* where it is a minor component. It makes up 22,704 acres (31 percent) of the valley-bottom landtype. The *riparian shrub* component is jurisdictional wetland; the *mixed conifer* component is not.

Mixed conifer: Dominated by conifers. Occurs on terraces and surfaces above the floodplain. It is a major component of *alpine glacial outwash, fluvial V-depositional canyon, continental V-depositional canyon, glacio-lacustrine basin (confined)* and a minor component of *alpine glacial basin* and *glacio-lacustrine basin (unconfined)* valley-bottom types. It makes up 42,780 acres (58 percent) of the valley-bottom landtype. This habitat is not jurisdictional wetland.

Water: A major component of *alpine glacial basin* and *glacio-lacustrine basin (unconfined)* and a minor component of *alpine glacial outwash, continental fluvial basin, glacio-lacustrine terrace (confined)* and *glacio-lacustrine canyon.* It makes up 3,210 acres (4 percent) of the valley-bottom landtype.

Farmyard: Small areas of rural development in *glacio-lacustrine basin (unconfined)* and *glacio-lacustrine basin (confined)* valley-bottom types. It makes up 42 acres (less than 1 percent) of the valley-bottom landtype.

An index of valley-bottom habitat maps is presented as Figure 3.8-1. Maps that follow display valley-bottom habitats and valley-bottom types. The areas of valley-bottom habitats are listed by valley-bottom type in Table 3.8-1. The areas of valley-bottom habitats for subbasins and watersheds of Thompson River basin are listed in Table 3.8-2.

Table 3.8-1. Areas of valley-bottom habitats by valley-bottom type.

VALLEY-BOTTOM TYPE	HABITAT	AREA	
		Acres	Percent
ALL	Wet meadow	628.9	0.9
ALL	Mesic meadow	289.9	0.4
ALL	Irrigated pasture	1894.2	2.6
ALL	Riparian shrub	1272.4	1.7
ALL	Riparian shrub/wet meadow	333.9	0.5
ALL	Deciduous tree	195.4	0.3
ALL	Mixed conifer/riparian shrub	22704.4	31.0
ALL	Mixed conifer	42780.2	58.3
ALL	Water	3209.7	4.4
ALL	Farmyard	42.0	0.1
ALL	**TOTAL**	**73351.1**	**100.0**
Alpine glaical basin	Wet meadow	5.8	0.3
Alpine glaical basin	Mixed conifer/riparian shrub	1494.7	85.3
Alpine glaical basin	Mixed conifer	113.8	6.5
Alpine glaical basin	Water	138.9	7.9
Alpine glaical basin	**TOTAL**	**1753.2**	**100.0**
Alpine glacial train	Mixed conifer/riparian shrub	805.4	91.2
Alpine glacial train	Mixed conifer	77.6	8.8
Alpine glacial train	**TOTAL**	**882.9**	**100.0**
Alpine glacial outwash	Wet meadow	157.3	2.6
Alpine glacial outwash	Mesic meadow	30.2	0.5
Alpine glacial outwash	Riparian shrub	225.1	3.8
Alpine glacial outwash	Riparian shrub/wet meadow	44.6	0.8
Alpine glacial outwash	Mixed conifer/riparian shrub	3390.4	57.0
Alpine glacial outwash	Mixed conifer	2049.2	34.5
Alpine glacial outwash	Water	49.5	0.8
Alpine glacial outwash	**TOTAL**	**5946.3**	**100.0**
Fluvial cascade	Mixed conifer/riparian shrub	1869.1	99.7
Fluvial cascade	Water	6.4	0.3
Fluvial cascade	**TOTAL**	**1875.4**	**100.0**
Fluvial basin	Mesic meadow	6.5	0.2
Fluvial basin	Riparian shrub	18.1	0.5
Fluvial basin	Mixed conifer/riparian shrub	3990.2	99.4
Fluvial basin	**TOTAL**	**4014.8**	**100.0**

Table 3.8-1. Areas of valley-bottom habitats by valley-bottom type.

VALLEY-BOTTOM TYPE	HABITAT	AREA	
		Acres	Percent
Fluvial V-erosional canyon	Riparian shrub	19.7	1.2
Fluvial V-erosional canyon	Mixed conifer/riparian shrub	1687.9	98.8
Fluvial V-erosional canyon	**TOTAL**	**1707.6**	**100.0**
Fluvial V-depositional canyon	Wet meadow	1.4	0.1
Fluvial V-depositional canyon	Mesic meadow	6.8	0.4
Fluvial V-depositional canyon	Irrigated pasture	0.1	0.0
Fluvial V-depositional canyon	Riparian shrub	177.7	9.6
Fluvial V-depositional canyon	Mixed conifer/riparian shrub	1082.8	58.6
Fluvial V-depositional canyon	Mixed conifer	580.3	31.4
Fluvial V-depositional canyon	**TOTAL**	**1849.2**	**100.0**
Continental cascade	**Mixed conifer/riparian shrub**	**99.8**	**100.0**
Continental fluvial basin	Wet meadow	0.1	0.0
Continental fluvial basin	Mesic meadow	2.0	0.1
Continental fluvial basin	Mixed conifer/riparian shrub	1822.8	99.8
Continental fluvial basin	Water	1.4	0.1
Continental fluvial basin	**TOTAL**	**1826.3**	**100.0**
Continental V-erosional canyon	Mesic meadow	0.7	0.2
Continental V-erosional canyon	Riparian shrub	19.4	5.5
Continental V-erosional canyon	Mixed conifer/riparian shrub	329.1	94.2
Continental V-erosional canyon	**TOTAL**	**349.2**	**100.0**
Continental V-depositional canyon	Wet meadow	8.8	0.9
Continental V-depositional canyon	Mesic meadow	41.8	4.3
Continental V-depositional canyon	Riparian shrub	193.7	19.9
Continental V-depositional canyon	Mixed conifer/riparian shrub	400.9	41.2
Continental V-depositional canyon	Mixed conifer	328.0	33.7
Continental V-depositional canyon	**TOTAL**	**973.3**	**100.0**

Table 3.8-1. Areas of valley-bottom habitats by valley-bottom type.

VALLEY-BOTTOM TYPE	HABITAT	AREA	
		Acres	Percent
Glacio-lacustrine basin (unconfined)	Wet meadow	254.9	3.4
Glacio-lacustrine basin (unconfined)	Mesic meadow	21.6	0.3
Glacio-lacustrine basin (unconfined)	Irrigated pasture	1604.3	21.6
Glacio-lacustrine basin (unconfined)	Riparian shrub	47.3	0.6
Glacio-lacustrine basin (unconfined)	Riparian shrub/wet meadow	271.1	3.6
Glacio-lacustrine basin (unconfined)	Deciduous tree	195.4	2.6
Glacio-lacustrine basin (unconfined)	Mixed conifer/riparian shrub	1422.8	19.1
Glacio-lacustrine basin (unconfined)	Mixed conifer	636.2	8.6
Glacio-lacustrine basin (unconfined)	Water	2954.4	39.7
Glacio-lacustrine basin (unconfined)	Farmyard	30.5	0.4
Glacio-lacustrine basin (unconfined)	**TOTAL**	**7438.6**	**100.0**
Glacio-lacustrine basin (confined)	Wet meadow	160.7	0.4
Glacio-lacustrine basin (confined)	Mesic meadow	180.3	0.4
Glacio-lacustrine basin (confined)	Irrigated pasture	136.4	0.3
Glacio-lacustrine basin (confined)	Riparian shrub	104.3	0.2
Glacio-lacustrine basin (confined)	Riparian shrub/wet meadow	18.2	0.0
Glacio-lacustrine basin (confined)	Mixed conifer/riparian shrub	2438.4	5.8
Glacio-lacustrine basin (confined)	Mixed conifer	38995.1	92.6
Glacio-lacustrine basin (confined)	Water	49.4	0.1
Glacio-lacustrine basin (confined)	Farmyard	11.5	0.0
Glacio-lacustrine basin (confined)	**TOTAL**	**42094.3**	**100.0**
Glacio-lacustrine canyon	Wet meadow	8.3	0.4
Glacio-lacustrine canyon	Irrigated pasture	153.4	6.8
Glacio-lacustrine canyon	Riparian shrub	467.2	20.6
Glacio-lacustrine canyon	Mixed conifer/riparian shrub	1633.3	72.2
Glacio-lacustrine canyon	Water	0.4	0.0
Glacio-lacustrine canyon	**TOTAL**	**2262.5**	**100.0**
Not in valley-bottom	Mixed conifer/riparian shrub	236.8	85.3
Not in valley-bottom	Water	0.7	0.3
Not in valley-bottom	Wet meadow	31.6	11.4
Not in valley-bottom	Water	8.5	3.1
Not in valley-bottom	**TOTAL**	**277.7**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
ALL	ALL	Wet meadow	629	0.9
ALL	ALL	Mesic meadow	290	0.4
ALL	ALL	Irrigated pasture	1894	2.6
ALL	ALL	Riparian shrub	1272	1.7
ALL	ALL	Riparian shrub/wet meadow	334	0.5
ALL	ALL	Decidous tree	195	0.3
ALL	ALL	Mixed conifer/riparian shrub	22704	31.0
ALL	ALL	Mixed conifer	42780	58.3
ALL	ALL	Water	3210	4.4
ALL	ALL	Farmyard	42	0.1
ALL	**ALL**	**TOTAL**	**73351**	**100.0**
Upper Thompson River	ALL	Wet meadow	360.4	2.6
Upper Thompson River	ALL	Mesic meadow	63.0	0.4
Upper Thompson River	ALL	Irrigated pasture	702.2	5.0
Upper Thompson River	ALL	Riparian shrub	43.7	0.3
Upper Thompson River	ALL	Riparian shrub/wet meadow	116.3	0.8
Upper Thompson River	ALL	Decidous tree	195.4	1.4
Upper Thompson River	ALL	Mixed conifer/riparian shrub	2681.1	19.1
Upper Thompson River	ALL	Mixed conifer	6936.1	49.3
Upper Thompson River	ALL	Water	2951.7	21.0
Upper Thompson River	ALL	Farmyard	8.8	0.1
Upper Thompson River	**ALL**	**TOTAL**	**14058.9**	**100.0**
Upper Thompson	Thompson Lakes	Wet meadow	245	3.8
Upper Thompson	Thompson Lakes	Mesic meadow	55	0.8
Upper Thompson	Thompson Lakes	Irrigated pasture	104	1.6
Upper Thompson	Thompson Lakes	Riparian shrub	27	0.4
Upper Thompson	Thompson Lakes	Riparian shrub/wet meadow	26	0.4
Upper Thompson	Thompson Lakes	Decidious tree	125	1.9
Upper Thompson	Thompson Lakes	Mixed conifer/riparian shrub	1360	21.1
Upper Thompson	Thompson Lakes	Mixed conifer	3107	48.2
Upper Thompson	Thompson Lakes	Water	1385	21.5
Upper Thompson	Thompson Lakes	Farmyard	9	0.1
Upper Thompson	**Thompson Lakes**	**TOTAL**	**6442**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Upper Thompson	Lang Creek	Wet meadow	0	0.1
Upper Thompson	Lang Creek	Irrigated pasture	116	19.0
Upper Thompson	Lang Creek	Riparian shrub/wet meadow	2	0.3
Upper Thompson	Lang Creek	Mixed conifer/riparian shrub	169	27.5
Upper Thompson	Lang Creek	Mixed conifer	326	53.2
Upper Thompson	**Lang Creek**	**TOTAL**	**613**	**100.0**
Upper Thompson	McGregor Creek	Wet meadow	72	1.3
Upper Thompson	McGregor Creek	Mesic meadow	2	0.0
Upper Thompson	McGregor Creek	Irrigated pasture	352	6.1
Upper Thompson	McGregor Creek	Riparian shrub/wet meadow	29	0.5
Upper Thompson	McGregor Creek	Mixed conifer/riparian shrub	804	14.0
Upper Thompson	McGregor Creek	Mixed conifer	2904	50.7
Upper Thompson	McGregor Creek	Water	1564	27.3
Upper Thompson	**McGregor Creek**	**TOTAL**	**5728**	**100.0**
Upper Thompson	Boiling Springs Creek	Mesic meadow	7	1.3
Upper Thompson	Boiling Springs Creek	Irrigated pasture	12	2.3
Upper Thompson	Boiling Springs Creek	Riparian shrub	8	1.5
Upper Thompson	Boiling Springs Creek	Riparian shrub/wet meadow	60	11.6
Upper Thompson	Boiling Springs Creek	Mixed conifer/riparian shrub	192	37.1
Upper Thompson	Boiling Springs Creek	Mixed conifer	194	37.6
Upper Thompson	Boiling Springs Creek	Wet meadow	43	8.3
Upper Thompson	Boiling Springs Creek	Water	2	0.4
Upper Thompson	**Boiling Springs Creek**	**TOTAL**	**517**	**100.0**
Upper Thompson	Davis Creek	Irrigated pasture	118	15.6
Upper Thompson	Davis Creek	Riparian shrub	9	1.2
Upper Thompson	Davis Creek	Decidious tree	71	9.3
Upper Thompson	Davis Creek	Mixed conifer/riparian shrub	156	20.6
Upper Thompson	Davis Creek	Mixed conifer	405	53.4
Upper Thompson	**Davis Creek**	**TOTAL**	**758**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Middle Thompson River	ALL	Wet meadow	69.2	0.2
Middle Thompson River	ALL	Mesic meadow	71.3	0.2
Middle Thompson River	ALL	Irrigated pasture	1192.0	3.5
Middle Thompson River	ALL	Riparian shrub	796.9	2.4
Middle Thompson River	ALL	Riparian shrub/wet meadow	15.4	0.0
Middle Thompson River	ALL	Mixed conifer/riparian shrub	7489.7	22.3
Middle Thompson River	ALL	Mixed conifer	23924.6	71.1
Middle Thompson River	ALL	Water	58.4	0.2
Middle Thompson River	ALL	Farmyard	33.2	0.1
Middle Thompson River	**ALL**	**TOTAL**	**33650.8**	**100.0**
Middle Thompson	Middle Thompson	Wet meadow	30	0.2
Middle Thompson	Middle Thompson	Mesic meadow	0	0.0
Middle Thompson	Middle Thompson	Irrigated pasture	1181	6.5
Middle Thompson	Middle Thompson	Riparian shrub	468	2.6
Middle Thompson	Middle Thompson	Mixed conifer/riparian shrub	2137	11.8
Middle Thompson	Middle Thompson	Mixed conifer	14193	78.6
Middle Thompson	Middle Thompson	Water	33	0.2
Middle Thompson	Middle Thompson	Farmyard	23	0.1
Middle Thompson	**Middle Thompson**	**TOTAL**	**18065**	**100.0**
Middle Thompson	Murr Creek	Wet meadow	8	0.6
Middle Thompson	Murr Creek	Mesic meadow	19	1.5
Middle Thompson	Murr Creek	Irrigated pasture	3	0.2
Middle Thompson	Murr Creek	Riparian shrub	128	9.9
Middle Thompson	Murr Creek	Mixed conifer/riparian shrub	872	67.2
Middle Thompson	Murr Creek	Mixed conifer	256	19.7
Middle Thompson	Murr Creek	Water	1	0.1
Middle Thompson	Murr Creek	Farmyard	10	0.8
Middle Thompson	**Murr Creek**	**TOTAL**	**1296**	**100.0**
Middle Thompson	Shroder Creek	Riparian shrub	20	9.1
Middle Thompson	Shroder Creek	Mixed conifer/riparian shrub	190	87.1
Middle Thompson	Shroder Creek	Mixed conifer	8	3.8
Middle Thompson	**Shroder Creek**	**TOTAL**	**218**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Middle Thompson	Big Rock Creek	Mesic meadow	11	0.7
Middle Thompson	Big Rock Creek	Riparian shrub	22	1.4
Middle Thompson	Big Rock Creek	Mixed conifer/riparian shrub	1221	75.8
Middle Thompson	Big Rock Creek	Mixed conifer	349	21.7
Middle Thompson	Big Rock Creek	Water	7	0.4
Middle Thompson	**Big Rock Creek**	**TOTAL**	**1611**	**100.0**
Middle Thompson	Semem Creek	Mixed conifer/riparian shrub	175	18.4
Middle Thompson	Semem Creek	Mixed conifer	773	81.6
Middle Thompson	**Semem Creek**	**TOTAL**	**948**	**100.0**
Middle Thompson	Chippy Creek	Mixed conifer/riparian shrub	628	50.3
Middle Thompson	Chippy Creek	Mixed conifer	617	49.4
Middle Thompson	Chippy Creek	Water	3	0.2
Middle Thompson	**Chippy Creek**	**TOTAL**	**1248**	**100.0**
Middle Thompson	Bear Creek	Mixed conifer/riparian shrub	430	68.0
Middle Thompson	Bear Creek	Mixed conifer	202	31.9
Middle Thompson	Bear Creek	Water	0	0.0
Middle Thompson	**Bear Creek**	**TOTAL**	**632**	**100.0**
Middle Thompson	Meadow Creek	Mesic meadow	7	0.6
Middle Thompson	Meadow Creek	Irrigated pasture	0	0.0
Middle Thompson	Meadow Creek	Riparian shrub	113	9.6
Middle Thompson	Meadow Creek	Mixed conifer/riparian shrub	604	51.3
Middle Thompson	Meadow Creek	Mixed conifer	452	38.4
Middle Thompson	**Meadow Creek**	**TOTAL**	**1176**	**100.0**
Middle Thompson	Lazier Creek	Wet meadow	28	0.6
Middle Thompson	Lazier Creek	Mesic meadow	34	0.7
Middle Thompson	Lazier Creek	Irrigated pasture	8	0.2
Middle Thompson	Lazier Creek	Riparian shrub	22	0.4
Middle Thompson	Lazier Creek	Riparian shrub/wet meadow	15	0.3
Middle Thompson	Lazier Creek	Mixed conifer/riparian shrub	773	15.8
Middle Thompson	Lazier Creek	Mixed conifer	4013	81.9
Middle Thompson	Lazier Creek	Water	6	0.1
Middle Thompson	**Lazier Creek**	**TOTAL**	**4899**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Middle Thompson	Indian Creek	Wet meadow	3	0.1
Middle Thompson	Indian Creek	Riparian shrub	24	0.7
Middle Thompson	Indian Creek	Mixed conifer/riparian shrub	460	12.9
Middle Thompson	Indian Creek	Mixed conifer	3062	86.1
Middle Thompson	Indian Creek	Water	8	0.2
Middle Thompson	**Indian Creek**	**TOTAL**	**3557**	**100.0**
Fishtrap Creek	ALL	Wet meadow	21.9	0.3
Fishtrap Creek	ALL	Riparian shrub	226.7	2.8
Fishtrap Creek	ALL	Riparian shrub/wet meadow	157.6	2.0
Fishtrap Creek	ALL	Mixed conifer/riparian shrub	3755.6	46.5
Fishtrap Creek	ALL	Mixed conifer	3804.0	47.1
Fishtrap Creek	ALL	Water	103.1	1.3
Fishtrap Creek	**ALL**	**TOTAL**	**8069.0**	**100.0**
Fishtrap	Upper Fishtrap Creek	Wet meadow	22	0.5
Fishtrap	Upper Fishtrap Creek	Riparian shrub	148	3.2
Fishtrap	Upper Fishtrap Creek	Riparian shrub/wet meadow	158	3.4
Fishtrap	Upper Fishtrap Creek	Mixed conifer/riparian shrub	1457	31.8
Fishtrap	Upper Fishtrap Creek	Mixed conifer	2752	60.0
Fishtrap	Upper Fishtrap Creek	Water	48	1.0
Fishtrap	**Upper Fishtrap Creek**	**TOTAL**	**4585**	**100.0**
Fishtrap	Lower Fishtrap Creek	Riparian shrub	76	3.8
Fishtrap	Lower Fishtrap Creek	Mixed conifer/riparian shrub	973	49.0
Fishtrap	Lower Fishtrap Creek	Mixed conifer	937	47.2
Fishtrap	**Lower Fishtrap Creek**	**TOTAL**	**1986**	**100.0**
Fishtrap	West Fork Fishtrap Creek	Riparian shrub	2	0.2
Fishtrap	West Fork Fishtrap Creek	Mixed conifer/riparian shrub	796	85.5
Fishtrap	West Fork Fishtrap Creek	Mixed conifer	78	8.3
Fishtrap	West Fork Fishtrap Creek	Water	55	5.9
Fishtrap	**West Fork Fishtrap Creek**	**TOTAL**	**931**	**100.0**
Fishtrap	Beatrice Creek	Mixed conifer/riparian shrub	336	99.9
Fishtrap	Beatrice Creek	Water	0	0.1
Fishtrap	**Beatrice Creek**	**TOTAL**	**336**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Fishtrap	Jungle Creek	Riparian shrub	0	0.0
Fishtrap	Jungle Creek	Mixed conifer/riparian shrub	194	84.0
Fishtrap	Jungle Creek	Mixed conifer	37	15.9
Fishtrap	**Jungle Creek**	**TOTAL**	**231**	**100.0**
Little Thompson	ALL	Wet meadow	170.8	1.3
Little Thompson	ALL	Mesic meadow	149.3	1.1
Little Thompson	ALL	Riparian shrub	195.8	1.5
Little Thompson	ALL	Riparian shrub/wet meadow	44.6	0.3
Little Thompson	ALL	Mixed conifer/riparian shrub	5653.0	43.2
Little Thompson	ALL	Mixed conifer	6850.5	52.3
Little Thompson	ALL	Water	30.7	0.2
Little Thompson	**ALL**	**TOTAL**	**13094.8**	**100.0**
Little Thompson	Upper Little Thompson River	Wet meadow	119	2.9
Little Thompson	Upper Little Thompson River	Mesic meadow	2	0.0
Little Thompson	Upper Little Thompson River	Riparian shrub	90	2.2
Little Thompson	Upper Little Thompson River	Riparian shrub/wet meadow	45	1.1
Little Thompson	Upper Little Thompson River	Mixed conifer/riparian shrub	3623	87.6
Little Thompson	Upper Little Thompson River	Mixed conifer	228	5.5
Little Thompson	Upper Little Thompson River	Water	31	0.7
Little Thompson	**Upper Little Thompson River**	**TOTAL**	**4137**	**100.0**
Little Thompson	Mudd Creek	Wet meadow	1	0.2
Little Thompson	Mudd Creek	Mesic meadow	1	0.1
Little Thompson	Mudd Creek	Riparian shrub	19	2.2
Little Thompson	Mudd Creek	Mixed conifer/riparian shrub	720	80.9
Little Thompson	Mudd Creek	Mixed conifer	148	16.7
Little Thompson	**Mudd Creek**	**TOTAL**	**889**	**100.0**
Little Thompson	Lower Little Thompson	Wet meadow	25	0.4
Little Thompson	Lower Little Thompson	Mesic meadow	147	2.4
Little Thompson	Lower Little Thompson	Riparian shrub	79	1.3
Little Thompson	Lower Little Thompson	Mixed conifer/riparian shrub	825	13.7
Little Thompson	Lower Little Thompson	Mixed conifer	4942	82.1
Little Thompson	**Lower Little Thompson**	**TOTAL**	**6016**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Little Thompson	Little Rock Creek	Wet meadow	26	1.6
Little Thompson	Little Rock Creek	Riparian shrub	8	0.5
Little Thompson	Little Rock Creek	Mixed conifer/riparian shrub	165	10.5
Little Thompson	Little Rock Creek	Mixed conifer	1372	87.3
Little Thompson	**Little Rock Creek**	**TOTAL**	**1571**	**100.0**
Little Thompson	North Fork Little Thompson	Mixed conifer/riparian shrub	320	66.6
Little Thompson	North Fork Little Thompson	Mixed conifer	160	33.4
Little Thompson	**North Fork Little Thompson**	**TOTAL**	**480**	**100.0**
West Fork Thompson	ALL	Mixed conifer/riparian shrub	826.1	93.4
West Fork Thompson	ALL	Water	58.1	6.6
West Fork Thompson	**ALL**	**TOTAL**	**884.2**	**100.0**
West Fork Thompson	Middle West Fork	Mixed conifer/riparian shrub	576	95.7
West Fork Thompson	Middle West Fork	Water	26	4.3
West Fork Thompson	**Middle West Fork**	**TOTAL**	**602**	**100.0**
West Fork Thompson	Four Lakes Creek	Mixed conifer/riparian shrub	165	83.8
West Fork Thompson	Four Lakes Creek	Water	32	16.2
West Fork Thompson	**Four Lakes Creek**	**TOTAL**	**197**	**100.0**
West Fork Thompson	**Anne Creek**	**Mixed conifer/riparian shrub**	**85**	**100.0**
Lower Thompson River	ALL	Wet meadow	6.6	0.2
Lower Thompson River	ALL	Mesic meadow	6.2	0.2
Lower Thompson River	ALL	Irrigated pasture	0.0	0.0
Lower Thompson River	ALL	Riparian shrub	9.2	0.3
Lower Thompson River	ALL	Mixed conifer/riparian shrub	2298.8	64.0
Lower Thompson River	ALL	Mixed conifer	1264.9	35.2
Lower Thompson River	ALL	Water	7.7	0.2
Lower Thompson River	**ALL**	**TOTAL**	**3593.5**	**100.0**
Lower Thompson	Lower Thompson	Mixed conifer/riparian shrub	1295	60.2
Lower Thompson	Lower Thompson	Mixed conifer	848	39.4
Lower Thompson	Lower Thompson	Water	7	0.3
Lower Thompson	**Lower Thompson**	**TOTAL**	**2150**	**100.0**

Table 3.8-2. Areas of valley-bottom habitats, subbasins and watersheds of Thompson River basin

SUBBASIN	WATERSHED	HABITAT	AREA	
			Acres	Percent
Lower Thompson	Deerhorn Creek	Mixed conifer/riparian shrub	494	99.6
Lower Thompson	Deerhorn Creek	Mixed conifer	1	0.3
Lower Thompson	Deerhorn Creek	Water	0	0.1
Lower Thompson	**Deerhorn Creek**	**TOTAL**	**496**	**100.0**
Lower Thompson	**Bay State Creek**	**Mixed conifer/riparian shrub**	**95**	**100.0**
Lower Thompson	Big Hole Creek	Mixed conifer/riparian shrub	221	46.5
Lower Thompson	Big Hole Creek	Mixed conifer	254	53.5
Lower Thompson	**Big Hole Creek**	**TOTAL**	**474**	**100.0**
Lower Thompson	Calico Creek	Wet meadow	7	1.7
Lower Thompson	Calico Creek	Mesic meadow	6	1.6
Lower Thompson	Calico Creek	Irrigated pasture	0	0.0
Lower Thompson	Calico Creek	Riparian shrub	9	2.4
Lower Thompson	Calico Creek	Mixed conifer/riparian shrub	193	51.2
Lower Thompson	Calico Creek	Mixed conifer	162	42.9
Lower Thompson	**Calico Creek**	**TOTAL**	**377**	**100.0**

3.9 Vegetation Response Units (VRUs)

Vegetation Response Units (VRUs) were defined based on the productivity of potential vegetation (i.e. habitat type groups) identified for landtypes and distinctive landscape dynamics driving forest succession, which tend to correlate with subsections. VRUs were first developed by the USFS (Bollenbacher et al. 1996) as a combination of productivity classes (represented by habitat type groups) and associations of landtypes. VRUs were developed in an attempt to delineate distinct landscape units with inherent disturbance regimes, which facilitates modeling landscape dynamics and forest successional pathways. Understanding the dynamics of vegetation provides a quantitative process for the assessment of wildlife habitat conditions and habitat optimization opportunities.

Upland VRUs were predicted from Lolo NF landtypes, Kootenai NF landtypes or NRCS soil types (see chapter 3.5), and subsections (see chapter 3.3). Riparian/wetland VRUs were predicted from valley-bottom types (see chapter 3.7) and valley-bottom habitat types (see chapter 3.8). A map showing the extent of map sources used to predict VRUs is presented as Figure 3.9-1. Where map sources overlapped, the priority used to predict VRU was: 1) PCTC valley-bottom type and habitat mapping; 2) Lolo NF landtype mapping; 3) Kootenai NF landtype mapping; and 4) NRCS soil mapping.

Upland VRUs were predicted based on the subsections and the major habitat types associated with Lolo and Kootenai NF landtypes, as described in APPENDIX D and E. Major habitat types were assigned to a productivity class. Descriptions of productivity classes follow.

Productivity Class 1: This class is characterized by warm and dry vegetation. Productivity is limited primarily by moisture and is characterized by forests at lower elevations and on drier, exposed sites at moderate elevation. Forests in this class range from open grown ponderosa pine and grass stands, through Douglas-fir/Ponderosa pine and grass/shrub stands, to dense, transitional stands dominated by Douglas-fir, grand fir, and including other conifer species (western larch, lodgepole pine) with shrub understories. Due to this range in ecological conditions, average yield varies widely within this class from approximately 20 to 105 ft^3/acre/yr, with an average of approximately 70 ft^3/acre/yr (Appendix E-3, Pfister et al. 1977). Habitat types included in this class are: grand fir/twinflower, grand fir/beargrass, Douglas-fir series, and Ponderosa Pine series.

Productivity Class 2: This class is characterized by moderately cool and moist vegetation. This group has the greatest ecological productivity and is characterized by forests on lower slopes and valley bottoms and in riparian influence zones. Forests in this class are generally made up of a wide range of overstory and understory vegetation, with western red cedar, western hemlock, and grand fir dominating at climax. Average yield is consistently high, ranging from 102 to 105 ft^3/acre/yr, with an average of approximately 103 ft^3/acre/yr (Appendix E-3, Pfister et al. 1977). Habitat types included in this class are: grand fir/queen's cup beadlily, western hemlock/queen's cup beadlily, and western red cedar/queen's cup beadlily.

Productivity Class 3: This class is characterized by cool and moist vegetation. This class has moderate productivity and is characterized by forests at moderate elevations and on moist sites and in riparian influence zones. Forests in this class generally have high tree species diversity and are characterized by relatively dense stands dominated by subalpine fir, Engelmann spruce, and mountain hemlock at climax, although lodgepole pine dominates on some sites. Average yield is moderately high, ranging from approximately 63 to 86 ft^3/acre/yr, with an average of approximately 80 ft^3/acre/yr (Appendix E-3, Pfister et al. 1977). Habitat types included in this class are: subalpine fir/bluejoint reedgrass, subalpine fir/queen's cup beadlily, subalpine fir/twinflower, subalpine fir/false huckleberry, Engelmann spruce/field horsetail, and Engelmann spruce/queen's cup beadlily.

Productivity Class 4: This class is characterized by cool and moderately dry vegetation. This class has moderate productivity and is characterized by forests at moderate to high elevations on drier, exposed sites and where frost is a major factor. Forests in this class generally characterized by relatively dense stands dominated by subalpine fir and Engelmann spruce at climax, with a considerable portion dominated by seral communities of lodgepole pine. Berry producing shrubs (*Vaccinium spp.*) and grasses (beargrass and pinegrass) dominate the understory vegetation. Yield is moderate, averaging approximately 65 ft^3/acre/yr (Appendix E-3, Pfister et al. 1977). Habitat types included in this class are: subalpine fir/grouse whortleberry, and subalpine fir/beargrass.

Productivity Class 5: This class is characterized by cold and moderately dry vegetation. This class has low productivity and is characterized by forests at high elevations. Forests in this class generally characterized by relatively open stands dominated by subalpine fir, mountain hemlock, and whitebark pine at climax, with a some portion dominated by seral communities of lodgepole pine. This class ranges from the cold limits of conifers such as Douglas-fir and western larch to near timberline. Understory vegetation is dominated by grasses (wood rush). Yield is low, ranging from 10 to 33 ft^3/acre/yr and averaging approximately 24 ft^3/acre/yr (Appendix E-3, Pfister et al. 1977). The dominant habitat type in the Thompson River basin that is in this class is subalpine fir/wood rush.

Some landtypes included several major habitat types in different productivity classes distributed in response to elevation or aspect. The distributions of contrasting productivity classes within a landtype were predicted based on elevation, slope and aspect classes generated from 1:24,000 scale DEMs (see Figure 2-4 and 2-6). Elevation, slope and aspect class polygons less than 100 acres were merged with the adjacent polygon sharing the longest boundary. Production classes and VRUs for positions of Forest Service landtypes and subsections are listed in Table 3.9-1.

Habitat types were not identified for soil types identified by the NRCS. A productivity class was assigned to combinations of landtype association, elevation class and aspect class for the area mapped only by the NRCS. VRUs were then assigned based on productivity class and subsection (see Table 3.9-2).

Riparian VRUs were predicted based on valley-bottom type (see chapter 3.7) and valley-bottom habitat (see chapter 3.8), as listed in Table 3.9-3. A base map of VRUs predicted from Lolo NF, Kootenai NF and NRCS mapping was first compiled. The map of riparian VRUs was then laid over the base map, replacing the base map VRUs that it covered[1]. The overlay of riparian VRUs

[1] An exception was *mixed conifer* in *confined glacio-lacustrine basin* valley-bottom type. These polygons were deleted from the map of riparian VRUs before overlaying on the base map. VRUs for these areas are those identified based on landtype and soil mapping.

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
10UA	LNF	1200	PSME SERIES	ALL	1	20												
10UA	LNF	1300	PSME SERIES	ALL	1	15												
10UA	LNF	1400	PSME SERIES	ALL	1	10												
10UB	LNF	1100	ABLA/CACA	ALL	3	22	PICEA/EQAR	ALL	3	22	PICEA/EQAR	ALL	3	22				
10UB	LNF	1200	ABLA/CACA	ALL	3	22	PICEA/EQAR	ALL	3	22	PICEA/EQAR	ALL	3	22				
10UE	LNF	1300	ABLA/CACA	ALL	3	17	PICEA/EQAR	ALL	3	17	PICEA/EQAR	ALL	3	17				
10UC	LNF	1100	ABLA/CLUN	ALL	3	22	AELA/MEFE	ALL	3	22	THPL/CLUN	ALL	2	21	ABLA/CACA	ALL	3	22
10UC	LNF	1200	ABLA/CLUN	ALL	3	22	AELA/MEFE	ALL	3	22	THPL/CLUN	ALL	2	21	ABLA/CACA	ALL	3	22
10UC	LNF	1300	ABLA/CLUN	ALL	3	17	AELA/MEFE	ALL	3	17	THPL/CLUN	ALL	2	16	ABLA/CACA	ALL	3	17
10UC	LNF	1400	ABLA/CLUN	ALL	3	12	AELA/MEFE	ALL	3	12	THPL/CLUN	ALL	2	11	ABLA/CACA	ALL	3	12
13JA	LNF	1200	PSME/VACA	SE, S, SW, W	1	20	PSME/SYAL	SE, S, SW, W	1	20	ABGR/LIBO	SE, S, SW, W	1	20	ABGR/CLUN	N, NE, E, NW	2	21
13JA	LNF	1300	PSME/VACA	SE, S, SW, W	1	15	PSME/SYAL	SE, S, SW, W	1	15	ABGR/LIBO	SE, S, SW, W	1	15	ABGR/CLUN	N, NE, E, NW	2	16
13JA	LNF	1400	PSME/VACA	SE, S, SW, W	1	10	PSME/SYAL	SE, S, SW, W	1	10	ABGR/LIBO	SE, S, SW, W	1	10	ABGR/CLUN	N, NE, E, NW	2	11
13JB	LNF	1200	PSME/VACA	SE, S, SW, W	1	20	PSME/SYAL	SE, S, SW, W	1	20	ABGR/LIBO	SE, S, SW, W	1	20	ABGR/CLUN	N, NE, E, NW	2	21
13UA	LNF	1100	PSME/PHMA	ALL	1	20	PSME-LIBO	ALL	1	20	PSME/VACA	ALL	1	20	PSME SERIES	ALL	1	20
13UA	LNF	1200	PSME/PHMA	ALL	1	20	PSME-LIBO	ALL	1	20	PSME/VACA	ALL	1	20	PSME SERIES	ALL	1	20
13UA	LNF	1300	PSME/PHMA	ALL	1	15	PSME-LIBO	ALL	1	15	PSME/VACA	ALL	1	15	PSME SERIES	ALL	1	15
13UA	LNF	1400	PSME/PHMA	ALL	1	10	PSME-LIBO	ALL	1	10	PSME/VACA	ALL	1	10	PSME SERIES	ALL	1	10
13UB	LNF	1100	THPL/CLUN	<4600'	2	21	ABGR/CLUN	<4600'	2	21	ABLA/MEFE	N, NE, E, NW, >4600'	3	22	ABLA/XETE-VAGLE	SE, S, SW, W, >4600'	4	23
13UB	LNF	1200	THPL/CLUN	<4600'	2	21	ABGR/CLUN	<4600'	2	21	ABLA/MEFE	N, NE, E, NW, >4600'	3	22	ABLA/XETE-VAGLE	SE, S, SW, W, >4600'	4	23
13UB	LNF	1300	THPL/CLUN	<4600'	2	16	ABGR/CLUN	<4600'	2	16	ABLA/MEFE	N, NE, E, NW, >4600'	3	17	ABLA/XETE-VAGLE	SE, S, SW, W, >4600'	4	18
13UB	LNF	1400	THPL/CLUN	<4600'	2	11	ABGR/CLUN	<4600'	2	11	ABLA/MEFE	N, NE, E, NW, >4600'	3	12	ABLA/XETE-VAGLE	SE, S, SW, W, >4600'	4	13
15JA	LNF	1100	PSME/VACA	ALL	1	20	PSME/SYAL	ALL	1	20	PSME/CARU	ALL	1	20	PSME SERIES	ALL	1	20
15JA	LNF	1200	PSME/VACA	ALL	1	20	PSME/SYAL	ALL	1	20	PSME/CARU	ALL	1	20	PSME SERIES	ALL	1	20
15JA	LNF	1300	PSME/VACA	ALL	1	15	PSME/SYAL	ALL	1	15	PSME/CARU	ALL	1	15	PSME SERIES	ALL	1	15
15JA	LNF	1400	PSME/VACA	ALL	1	10	PSME/SYAL	ALL	1	10	PSME/CARU	ALL	1	10	PSME SERIES	ALL	1	10
15JB	LNF	1100	ABLA/LIBO	>4000	3	22	ABGR/CLUN	<4000'	2	21	THPL/CLUN	<4000'	2	21				
15JB	LNF	1200	ABLA/LIBO	>4000	3	22	ABGR/CLUN	<4000'	2	21	THPL/CLUN	<4000'	2	21				
15JB	LNF	1300	ABLA/LIBO	>4000	3	17	ABGR/CLUN	<4000'	2	16	THPL/CLUN	<4000'	2	16				
15JB	LNF	1400	ABLA/LIBO	>4000	3	12	ABGR/CLUN	<4000'	2	11	THPL/CLUN	<4000'	2	11				
15UA	LNF	1100	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20	PSME/PHMA-PHMA	ALL	1	20				
15UA	LNF	1200	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20	PSME/PHMA-PHMA	ALL	1	20				

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
15UA	LNF	1300	PSME/PHMA-CARU	ALL	1	15	PSME/CARU	ALL	1	15	PSME/PHMA-PHMA	ALL	1	15				
15UA	LNF	1400	PSME/PHMA-CARU	ALL	1	10	PSME/CARU	ALL	1	10	PSME/PHMA-PHMA	ALL	1	10				
15UB	LNF	1100	PSME/LIBO	ALL	1	20	ABGR/LIBO	ALL	1	20								
15UB	LNF	1200	PSME/LIBO	ALL	1	20	ABGR/LIBO	ALL	1	20								
15UB	LNF	1300	PSME/LIBO	ALL	1	15	ABGR/LIBO	ALL	1	15								
15UB	LNF	1400	PSME/LIBO	ALL	1	10	ABGR/LIBO	ALL	1	10								
16LA	LNF	1200	PSME/FESC	ALL	1	20	PSME/CARU	ALL	1	20	PSME/FEID	ALL	1	20				
16LA	LNF	1300	PSME/FESC	ALL	1	15	PSME/CARU	ALL	1	15	PSME/FEID	ALL	1	15				
16UA	LNF	1400	PSME/FESC	ALL	1	10	PSME/CARU	ALL	1	10	PSME/FEID	ALL	1	10				
22NA	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/LIBO	ALL	1	20	ABGR/LIBO	ALL	1	20				
22NA	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	ABGR/LIBO	ALL	1	10	ABGR/LIBO	ALL	1	10				
22UA	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	PSME/CARU	ALL	1	20	ABGR/LIBO	ALL	1	20				
22UA	LNF	1300	PSME/PHMA-PHMA	ALL	1	15	PSME/CARU	ALL	1	15	ABGR/LIBO	ALL	1	15				
22UA	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	PSME/CARU	ALL	1	10	ABGR/LIBO	ALL	1	10				
26UA	LNF	1100	PSME/PHMA-CARU	ALL	1	20	SCREE	ALL	0	25	PSME/AGSP	ALL	1	20	PSME/SYAL	ALL	1	20
26UA	LNF	1200	PSME/PHMA-CARU	ALL	1	20	SCREE	ALL	0	25	PSME/AGSP	ALL	1	20	PSME/SYAL	ALL	1	20
26UA	LNF	1300	PSME/PHMA-CARU	ALL	1	15	SCREE	ALL	0	25	PSME/AGSP	ALL	1	15	PSME/SYAL	ALL	1	15
26UA	LNF	1400	PSME/PHMA-CARU	ALL	1	10	SCREE	ALL	0	25	PSME/AGSP	ALL	1	10	PSME/SYAL	ALL	1	10
30EA	LNF	1300	ABGR/LIBO	ALL	1	15	PSME/VAGL-XETE	ALL	1	15	PSME/VAGL-XETE	ALL	1	15				
30EB	LNF	1200	ABGR/LIBO	ALL	1	20	PSME/VAGL-XETE	ALL	1	20	PSME/VAGL-XETE	ALL	1	20				
30EB	LNF	1300	ABGR/LIBO	ALL	1	15	PSME/VAGL-XETE	ALL	1	15	PSME/VAGL-XETE	ALL	1	15				
30MB	LNF	1200	PSME/PHMA-CARU	ALL	1	20	PSME/SYAL	ALL	1	20								
30MC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
30MC	LNF	1300	PSME/PHMA-PHMA	ALL	1	15	ABGR/XETE	ALL	1	15								
30MC	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	ABGR/XETE	ALL	1	10								
30MD	LNF	1200	THPL/CLUN	ALL	2	21	ABGR/CLUN	ALL	2	21								
30MD	LNF	1300	THPL/CLUN	ALL	2	16	ABGR/CLUN	ALL	2	16								
30MD	LNF	1400	THPL/CLUN	ALL	2	11	ABGR/CLUN	ALL	2	11								
30ME	LNF	1200	ABLA/MEFE	N, NE, NW	3	22	ABLA/XETE	E, SE, S SW, W	4	23								
30MG	LNF	1200	PSME/VAGL-XETE	ALL	1	20												
30QA	LNF	1200	PSME/AGSP	ALL	1	20	PSME/FESC	ALL	1	20	PSME/FEID	ALL	1	20				

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
30QA	LNF	1300	PSME/AGSP	ALL	1	15	PSME/FESC	ALL	1	15	PSME/FEID	ALL	1	15				
30QA	LNF	1400	PSME/AGSP	ALL	1	10	PSME/FESC	ALL	1	10	PSME/FEID	ALL	1	10				
30QB	LNF	1200	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20								
30QB	LNF	1300	PSME/PHMA-CARU	ALL	1	15	PSME/CARU	ALL	1	15								
30QB	LNF	1400	PSME/PHMA-CARU	ALL	1	10	PSME/CARU	ALL	1	10								
30QC	LNF	1100	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
30QC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
30QC	LNF	1300	PSME/PHMA-PHMA	ALL	1	15	ABGR/XETE	ALL	1	15								
30QC	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	ABGR/XETE	ALL	1	10								
30QD	LNF	1100	ABGR/CLUN	N, NE, NW	2	21	THPL/CLUN	E, SE, S, SW, W	1	20								
30QD	LNF	1200	ABGR/CLUN	N, NE, NW	2	21	THPL/CLUN	E, SE, S, SW, W	1	20								
30QD	LNF	1300	ABGR/CLUN	N, NE, NW	2	16	THPL/CLUN	E, SE, S, SW, W	1	15								
30QD	LNF	1400	ABGR/CLUN	N, NE, NW	2	11	THPL/CLUN	E, SE, S, SW, W	1	10								
30QE	LNF	1100	ABLA/MEFE	N, NE, NW	3	22	ABLA/XETE	E, SE, S, SW, W	4	23								
30QE	LNF	1200	ABLA/MEFE	N, NE, NW	3	22	ABLA/XETE	E, SE, S, SW, W	4	23								
30QE	LNF	1300	ABLA/MEFE	N, NE, NW	3	17	ABLA/XETE	E, SE, S, SW, W	4	18								
30QG	LNF	1100	PSME/VAGL	ALL	1	20												
30QG	LNF	1200	PSME/VAGL	ALL	1	20												
30QG	LNF	1300	PSME/VAGL	ALL	1	15												
32MA	LNF	1100	ABLA/XETE	ALL	4	23												
32MA	LNF	1200	ABLA/XETE	ALL	4	23												
32QA	LNF	1100	ABLA/XETE	ALL	4	23												
32QA	LNF	1200	ABLA/XETE	ALL	4	23												
32QA	LNF	1300	ABLA/XETE	ALL	4	18												
32QC	LNF	1200	PSME/VAGL-XETE	ALL	1	20												
33UA	LNF	1100	ABLA/LUHI	ALL	5	24												
33UA	LNF	1200	ABLA/LUHI	ALL	5	24												
38QA	LNF	1100	ABLA/MEFE	ALL	3	22												
38QA	LNF	1200	ABLA/MEFE	ALL	3	22												
40QA	LNF	1100	ABLA/LUHI	>6000'	5	24	ABLA/MEFE-LUHI	<6000'	3	22								
40QA	LNF	1200	ABLA/LUHI	>6000'	5	15	ABLA/MEFE-LUHI	<6000'	3	22								

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
41QA	LNF	1100	ABLA/MEFE	ALL	3	22												
41QA	LNF	1200	ABLA/MEFE	ALL	3	22												
42QA	LNF	1100	ABLA/MEFE	<6100'	3	22	ABLA/LUHI	>6100'	5	24								
42QA	LNF	1200	ABLA/MEFE	<6100'	3	22	ABLA/LUHI	>6100'	5	24								
43QA	LNF	1100	ABLA/MEFE	ALL	3	22												
43QA	LNF	1200	ABLA/MEFE	ALL	3	22												
45LA	LNF	1100	AVALANCHE CHUTE	ALL	0	25												
45LA	LNF	1200	AVALANCHE CHUTE	ALL	0	25												
46QA	LNF	1100	ABLA/MEFE	ALL	3	22	ABLA/CLUN	ALL	3	22								
46QA	LNF	1200	ABLA/MEFE	ALL	3	22	ABLA/CLUN	ALL	3	22								
47QA	LNF	1100	ABLA/MEFE	N, NE, E, NW	3	22	ABLA/XETE-VAGL	SE, S, SW, W	4	23								
47QA	LNF	1200	ABLA/MEFE	N, NE, E, NW	3	22	ABLA/XETE-VAGL	SE, S, SW, W	4	23								
48QA	LNF	1100	ABLA/MEFE	ALL	3	22	ABLA/CLUN	ALL	3	22								
48QA	LNF	1200	ABLA/MEFE	ALL	3	22	ABLA/CLUN	ALL	3	22								
60MA	LNF	1200	PSME/FESC	ALL	1	20												
60MB	LNF	1200	PSME/SYAL	ALL	1	20	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20				
60MC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
60MD	LNF	1200	ABGR/CLUN	N, NE, NW	2	21	THPL/CLUN	E, SE, S SW, W	1	20								
60QA	LNF	1100	PSME/AGSP	ALL	1	20												
60QA	LNF	1200	PSME/AGSP	ALL	1	20												
60QA	LNF	1300	PSME/AGSP	ALL	1	15												
60QA	LNF	1400	PSME/AGSP	ALL	1	10												
60QB	LNF	1200	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20								
60QB	LNF	1400	PSME/PHMA-CARU	ALL	1	10	PSME/CARU	ALL	1	10								
60QC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
60QC	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	ABGR/XETE	ALL	1	10								
60QD	LNF	1100	ABGR/CLUN	N, NE, NW	2	21	THPL/CLUN	E, SE, S SW, W	1	20								
60QD	LNF	1200	ABGR/CLUN	N, NE, NW	2	21	THPL/CLUN	E, SE, S SW, W	1	20								
61MC	LNF	1200	PSME/PHMA	ALL	1	20	PSME/AGSP	ALL	1	20								
61MD	LNF	1200	ABGR/CLUN	ALL	2	21	THPL/CLUN	ALL	2	21								
61QC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	PSME/LIBO	ALL	1	20	ABGR/XETE	ALL	1	20				

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
61QC	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	PSME/LIBO	ALL	1	10	ABGR/XETE	ALL	1	10				
61QD	LNF	1200	ABGR/CLUN	<4600'	2	21	ABLA/MEFE	>4600'	3									
64MA	LNF	1200	PSME/AGSP	ALL	1	20	PSME/FESC	ALL	1	20	PSME/FEID	ALL	1	20				
64MA	LNF	1300	PSME/AGSP	ALL	1	15	PSME/FESC	ALL	1	15	PSME/FEID	ALL	1	15				
64MA	LNF	1400	PSME/AGSP	ALL	1	10	PSME/FESC	ALL	1	10	PSME/FEID	ALL	1	10				
64MB	LNF	1200	PSME/PHMA-CARU	ALL	1	20	PSME/SYAL	ALL	1	20								
64MC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
64MD	LNF	1200	THPL/CLUN	N, NE, NW	2	21	THPL/CLUN	E, SE, S, SW, W	1	20								
64ME	LNF	1200	ABLA/MEFE	N, NE, NW	3	22	ABLA/XETE	E, SE, S, SW, W	4	23								
64MG	LNF	1200	PSME/VAGL-XETE	ALL	1	20												
64QA	LNF	1200	PSME/AGSP	ALL	1	20	PSME/FESC	ALL	1	20	PSME/FEID	ALL	1	20				
64QA	LNF	1400	PSME/AGSP	ALL	1	10	PSME/FESC	ALL	1	10	PSME/FEID	ALL	1	10				
64QB	LNF	1100	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20								
64QB	LNF	1200	PSME/PHMA-CARU	ALL	1	20	PSME/CARU	ALL	1	20								
64QB	LNF	1300	PSME/PHMA-CARU	ALL	1	15	PSME/CARU	ALL	1	15								
64QB	LNF	1400	PSME/PHMA-CARU	ALL	1	10	PSME/CARU	ALL	1	10								
64QC	LNF	1100	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
64QC	LNF	1200	PSME/PHMA-PHMA	ALL	1	20	ABGR/XETE	ALL	1	20								
64QC	LNF	1300	PSME/PHMA-PHMA	ALL	1	15	ABGR/XETE	ALL	1	15								
64QC	LNF	1400	PSME/PHMA-PHMA	ALL	1	10	ABGR/XETE	ALL	1	10								
64QD	LNF	1100	ABGR/CLUN	ALL	2	21	THPL/CLUN	ALL	2	21								
64QD	LNF	1200	ABGR/CLUN	ALL	2	21	THPL/CLUN	ALL	2	21								
64QD	LNF	1300	ABGR/CLUN	ALL	2	16	THPL/CLUN	ALL	2	16								
64QD	LNF	1400	ABGR/CLUN	ALL	2	11	THPL/CLUN	ALL	2	11								
64QE	LNF	1100	ABLA/MEFE	N, NE, NW	3	22	ABLA/XETE	E, SE, S, SW, W	4	23								
64QE	LNF	1200	ABLA/MEFE	N, NE, NW	3	22	ABLA/XETE	E, SE, S, SW, W	4	23								
72BA	LNF	1300	ABGR/CLUN	<4000', >20%	2	16	ABLA/LIBO	>4000', >20%	3	17	ABLA/VACA	>4000', <20%	4	18	PSME/VACA (FLAT)	<4000', <20%	1	15
72BA	LNF	1400	ABGR/CLUN	<4000', >20%	2	11	ABLA/LIBO	>4000', >20%	3	12	ABLA/VACA	>4000', <20%	4	13	PSME/VACA (FLAT)	<4000', <20%	1	10
72OA	LNF	1200	ABLA/CLUN	N, NE, E, NW, >4000'	3	22	ABGR/CLUN	N, NE, E, NW, <4000'	2	21	ABGR/LIBO	SE, S, SW, W	1	20	ABGR/XETE (KNOLLS&S)	SE, S, SW, W	1	20
72OA	LNF	1300	ABLA/CLUN	N, NE, E, NW, >4000'	3	17	ABGR/CLUN	N, NE, E, NW, <4000'	2	16	ABGR/LIBO	SE, S, SW, W	1	15	ABGR/XETE (KNOLLS&S)	SE, S, SW, W	1	15
72OA	LNF	1400	ABLA/CLUN	N, NE, E, NW, >4000'	3	12	ABGR/CLUN	N, NE, E, NW, <4000'	2	11	ABGR/LIBO	SE, S, SW, W	1	10	ABGR/XETE (KNOLLS&S)	SE, S, SW, W	1	10

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
73UA	LNF	1300	PSME/VACA	ALL	1	15	PSME/CARU	ALL	1	15	PSME/LIBO	ALL	1	15				
73UA	LNF	1400	PSME/VACA	ALL	1	10	PSME/CARU	ALL	1	10	PSME/LIBO	ALL	1	10				
73UB	LNF	1100	PICEA/EQAR	ALL	3	22	PICEA/CLUN	ALL	3	22	ABLA/CACA	ALL	3	22				
73UB	LNF	1200	PICEA/EQAR	ALL	3	22	PICEA/CLUN	ALL	3	22	ABLA/CACA	ALL	3	22				
74BA	LNF	1200	ABGR/CLUN	N, NE, E NW, <4000'	2	21	ABGR/LIBO	SE, S, SW, W	1	20	ABLA/MEFE	N, NE, E, NW, >4000	3	22	PSME SERIES	SE, S, SW, W	1	20
74BA	LNF	1300	ABGR/CLUN	N, NE, E NW, <4000'	2	16	ABGR/LIBO	SE, S, SW, W	1	15	ABLA/MEFE	N, NE, E, NW, >4000	3	17	PSME/CARU (S SLOPE)	SE, S, SW, W	1	15
74BA	LNF	1400	ABGR/CLUN	N, NE, E NW, <4000'	2	11	ABGR/LIBO	SE, S, SW, W	1	10	ABLA/MEFE	N, NE, E, NW, >4000	3	12	PSME/CARU (S SLOPE)	SE, S, SW, W	1	10
74UA	LNF	1200	ABGR/CLUN	N, NE, E NW	2	21	ABGR/LIBO	SE, S, SW, W	1	20	PSME/CARU	SE, S, SW, W	1	20	PSME/SYAL (S SLOPE)	SE, S, SW, W	1	20
74UA	LNF	1300	ABGR/CLUN	N, NE, E NW	2	16	ABGR/LIBO	SE, S, SW, W	1	15	PSME/CARU	SE, S, SW, W	1	15	PSME/SYAL (S SLOPE)	SE, S, SW, W	1	15
74UA	LNF	1400	ABGR/CLUN	N, NE, E NW	2	11	ABGR/LIBO	SE, S, SW, W	1	10	PSME/CARU	SE, S, SW, W	1	10	PSME/SYAL (S SLOPE)	SE, S, SW, W	1	10
W	LNF	1100	WATER	ALL	0	26												
W	LNF	1300	WATER	ALL	0	26												
W	LNF	1400	WATER	ALL	0	26												
102	KNF	1200	PSME/LIBO	ALL	1	20												
102	KNF	1300	PSME/LIBO	ALL	1	15												
102	KNF	1400	PSME/LIBO	ALL	1	10												
103	KNF	1400	THPL/CLUN	ALL	2	11	TSHE/CLUN	ALL	2	11								
104	KNF	1300	THPL/CLUN	ALL	2	16	TSHE/CLUN	ALL	2	16								
104	KNF	1400	THPL/CLUN	ALL	2	11	TSHE/CLUN	ALL	2	11								
106	KNF	1300	THPL/CLUN	ALL	2	16	TSHE/CLUN	ALL	2	16								
106	KNF	1400	THPL/CLUN	ALL	2	11	TSHE/CLUN	ALL	2	11								
108	KNF	1200	THPL/CLUN	ALL	2	21	TSHE/CLUN	ALL	2	21								
108	KNF	1300	THPL/CLUN	ALL	2	16	TSHE/CLUN	ALL	2	16								
108	KNF	1400	THPL/CLUN	ALL	2	11	TSHE/CLUN	ALL	2	11								
110	KNF	1300	THPL/CLUN	ALL	2	16	TSHE/CLUN	ALL	2	16								
110	KNF	1400	THPL/CLUN	ALL	2	11	TSHE/CLUN	ALL	2	11								
112	KNF	1300	THPL/CLUN	ALL	2	16	TSHE/CLUN	ALL	2	16								
112	KNF	1400	THPL/CLUN	ALL	2	11	TSHE/CLUN	ALL	2	11								
201	KNF	1200	PSME/PHMA	ALL	1	20												
301	KNF	1300	PSME/SYAL	ALL	1	15												
301	KNF	1400	PSME/SYAL	ALL	1	10												

Table 3.9-1. Production classes (PC) and VRUs for habitats of landtypes and subsection (subs).

LT	SOURCE	SUBS	HABITAT 1	POSITION 1	PC1	VRU1	HABITAT 2	POSITION 2	PC2	VRU2	HABITAT 3	POSITION 3	PC3	VRU3	HABITAT 4	POSITION 4	PC4	VRU4
302	KNF	1200	PSME/SYAL	ALL	1	20												
302	KNF	1300	PSME/SYAL	ALL	1	15												
302	KNF	1400	PSME/SYAL	ALL	1	10												
303	KNF	1200	PSME/AGSP	ALL	1	20												
303	KNF	1300	PSME/AGSP	ALL	1	15												
323	KNF	1200	PSME/CARU	ALL	1	20												
323	KNF	1300	PSME/CARU	ALL	1	15												
323	KNF	1400	PSME/CARU	ALL	1	10												
324	KNF	1300	PSME/CARU	ALL	1	15												
324	KNF	1400	PSME/CARU	ALL	1	10												
328	KNF	1200	PSME/LIBO	ALL	1	20												
328	KNF	1300	PSME/LIBO	ALL	1	15												
328	KNF	1400	PSME/LIBO	ALL	1	10												
329	KNF	1200	PSME/LIBO	ALL	1	20												
329	KNF	1300	PSME/LIBO	ALL	1	15												
329	KNF	1400	PSME/LIBO	ALL	1	10												
352	KNF	1200	ABLA/CLUN	ALL	3	22												
352	KNF	1300	ABLA/CLUN	ALL	3	17												
352	KNF	1400	ABLA/CLUN	ALL	3	12												
353	KNF	1200	ABLA/XETE	SE, S, SW, W	4	23	ABLA/LIBO	N, NE, E NW	3	22								
353	KNF	1300	ABLA/XETE	SE, S, SW, W	4	18	ABLA/LIBO	N, NE, E NW	3	17								
353	KNF	1400	ABLA/XETE	SE, S, SW, W	4	13	ABLA/LIBO	N, NE, E NW	3	12								
355	KNF	1200	ABLA/CLUN	ALL	3	22												
355	KNF	1300	ABLA/CLUN	ALL	3	17												
357	KNF	1200	ALBA/MEFE	ALL	3	22												
357	KNF	1300	ALBA/MEFE	ALL	3	17												
360	KNF	1300	ABLA/XETE	ALL	4	18												
403	KNF	1200	ROCK	ALL	0	25												
405	KNF	1200	ABLA/XETE	ALL	4	23												
406	KNF	1200	ABLA/XETE	ALL	4	23												
406	KNF	1300	ABLA/XETE	ALL	4	18												
999	KNF	1300	WATER	ALL	W	26												
999	KNF	1400	WATER	ALL	W	26												

Table 3.9-2. VRU for positions of landtype associations in the NRCS map area.

LANDTYPE ASSOCIATION	POSITION		PC	VRU
	Elevation (ft)	Aspect		
Mountain ridge	< 4600	N	4	23
Mountain ridge	< 4600	S	4	23
Mountain ridge	> 4600	N	4	23
Mountain ridge	> 4600	S	4	23
Mountain slope	< 4600	N	1	20
Mountain slope	< 4600	S	1	20
Mountain slope	> 4600	N	2	21
Mountain slope	> 4600	S	1	20
Breakland	< 4600	N	2	21
Breakland	< 4600	S	1	20
Breakland	> 4600	N	2	21
Breakland	> 4600	S	1	20
Glacial ridge and slope	< 4600	N	1	15
Glacial ridge and slope	< 4600	S	1	15
Glacial ridge and slope	> 4600	N	3	17
Glacial ridge and slope	> 4600	S	1	15
High Terrace	< 4600	N	1	10
High Terrace	< 4600	S	1	10
Floodplain and alluvium	< 4600	N	1	10
Floodplain and alluvium	< 4600	S	1	10

Table 3.9-3. VRUs for valley-bottom type and valley-bottom habitat.

VALLEY-BOTTOM TYPE	VALLEY-BOTTOM HABITAT	VRU
ALL	Wet meadow	5
ALL	Mesic meadow	5
ALL	Irrigated pasture	5
ALL	Riparian shrub	6
ALL	Riparian shrub/wet meadow	6
ALL	Deciduous tree	4
Glacio-lacustrine canyon	Mixed conifer/riparian shrub	4
Not in valley-bottom	Mixed conifer/riparian shrub	3
Glacio-lacustrine basin (confined)	Mixed conifer/riparian shrub	7
Glacio-lacustrine basin (unconfined)	Mixed conifer/riparian shrub	4
Fluvial basin	Mixed conifer/riparian shrub	9
Fluvial V-erosional canyon	Mixed conifer/riparian shrub	8
Fluvial V-depositional canyon	Mixed conifer/riparian shrub	7
Fluvial cascade	Mixed conifer/riparian shrub	9
Alpine glacial basin	Mixed conifer/riparian shrub	9
Alpine glacial train	Mixed conifer/riparian shrub	8
Alpine glacial outwash	Mixed conifer/riparian shrub	8
Continental cascade	Mixed conifer/riparian shrub	9
Continental fluvial basin	Mixed conifer/riparian shrub	8
Continental V-erosional canyon	Mixed conifer/riparian shrub	8
Continental V-depositional canyon	Mixed conifer/riparian shrub	7
Glacio-lacustrine basin (confined)	Mixed conifer	0
Alpine glacial outwash	Mixed conifer	8
Continental V-depositional canyon	Mixed conifer	7
Alpine glacial train	Mixed conifer	8
Alpine glacial basin	Mixed conifer	9
Fluvial V-depositional canyon	Mixed conifer	7
Glacio-lacustrine basin (unconfined)	Mixed conifer	4
ALL	Water	26
Glacio-lacustrine basin (unconfined)	Farmyard	4
Glacio-lacustrine basin (confined)	Farmyard	7

resulted in many small (sliver) polygons. VRU polygons less than 20 acres and outside of the valley-bottom landtype were merged with the adjacent VRU sharing the longest boundary. VRU polygons less than 20 acres within the valley-bottom landtype (small valley-bottom habitats) were maintained.

Descriptions of VRUs identified in Thompson River basin follow.

VRU 4 (Flat Streams): Areas of *deciduous tree, mixed conifer, mixed conifer/riparian shrub and farmyard* valley-bottom habitats in *glacio-lacustrine basin (unconfined) and glacio-lacustrine basin (confined)* valley-bottom types. A total of 33 polygons comprise 4,131 acres (1.0 percent) of Thompson River basin.

VRU 5 (Wetlands): Areas of *wet meadow, mesic meadow and irrigated pasture* valley-bottom habitats in any valley-bottom type. A total of 115 polygons comprise 2,864 acres (0.7 percent) of Thompson River basin.

VRU 6 (Willow and Sedge): Areas of *riparian shrub and riparian shrub/wet meadow* valley-bottom habitats in any valley-bottom type. A total of 77 polygons comprise 1,618 acres (0.4 percent) of Thompson River basin.

VRU 7 (Nearly level streams): Areas of *mixed conifer/riparian shrub* valley-bottom habitat in *alpine glacial outwash, fluvial V-depositional canyon, continental V-depositional canyon and glacio-lacustrine basin (confined)* valley-bottom types. A total of 140 polygons comprise 7,981 acres (1.9 percent) of Thompson River basin.

VRU 8 (sloping streams): Areas of *mixed conifer and mixed conifer/riparian shrub* valley-bottom habitats in *alpine glacial train, fluvial V-erosional canyon and continental fluvial basin* valley-bottom types. A total of 157 polygons comprise 5,363 acres (1.3 percent) of Thompson River basin.

VRU 9 (steep streams): Areas of *mixed conifer/riparian shrub* valley-bottom habitat in *alpine glacial basin, fluvial cascade, fluvial basin and continental fluvial cascade* valley-bottom types. A total of 589 polygons comprise 7,624 acres (1.9 percent) of Thompson River basin.

VRU 10 (valley-bottom — warm and dry vegetation): Areas of *continental glaciated depositional lands* and habitat type groups 1 through 3 that make up productivity class 1. A total of 114 polygons comprise 32,395 acres (7.9 percent) of Thompson River basin.

VRU 11 (valley-bottom — moderately cool and moist vegetation): Areas of *continental glaciated depositional lands* and habitat type groups 4 through 6 that make up productivity class 2. A total of 25 polygons comprise 4,590 acres (1.1 percent) of Thompson River basin.

VRU 12 (valley-bottom — cool and moist vegetation): Areas of *continental glaciated depositional lands* and habitat type groups 7 and 8 that make up productivity class 3. A total of 9 polygons comprise 1,078 acres (0.3 percent) of Thompson River basin.

VRU 13 (valley-bottom — cool and moderately dry vegetation): Areas of *continental glaciated depositional lands* and habitat type group 9 that make up productivity class 4. A total of 7 polygons comprise 2,063 acres (0.5 percent) of Thompson River basin.

VRU 15 (mid-slope/foothills — warm and dry vegetation): Areas of *continental glaciated erosional lands* and habitat type groups 1 through 3 that make up productivity class 1. A total of 103 polygons comprise 46,986 acres (11.5 percent) of Thompson River basin.

VRU 16 (mid-slope/foothills — moderately cool and moist vegetation): Areas of *continental glaciated erosional lands* and habitat type groups 4 through 6 that make up productivity class 2. A total of 73 polygons comprise 14,692 acres (3.6 percent) of Thompson River basin.

VRU 17 (mid-slope/foothills — cool and moist vegetation): Areas of *continental glaciated erosional lands* and habitat type groups 7 and 8 that make up productivity class 3. A total of 36 polygons comprise 17,747 acres (4.3 percent) of Thompson River basin.

VRU 18 (mid-slope/foothills — cool and moderately dry vegetation): Areas of *continental glaciated erosional lands* and habitat type group 9 that make up productivity class 4. A total of 10 polygons comprise 2,258 acres (0.6 percent) of Thompson River basin.

VRU 20 (mountains — warm and dry vegetation): Areas of *alpine glaciated lands and fluvial lands* and habitat type groups 1 through 3 that make up productivity class 1. A total of 192 polygons comprise 110,189 acres (26.9 percent) of Thompson River basin.

VRU 21 (mountains — moderately cool and moist vegetation): Areas of *alpine glaciated lands and fluvial lands* and habitat type groups 4 through 6 that make up productivity class 2. A total of 176 polygons comprise 22,727 acres (5.5 percent) of Thompson River basin.

VRU 22 (mountains — cool and moist vegetation): Areas of *alpine glaciated lands and fluvial lands* and habitat type groups 7 and 8 that make up productivity class 3. A total of 192 polygons comprise 60,837 acres (14.8 percent) of Thompson River basin.

VRU 23 (mountains — warm and moderately dry vegetation): Areas of *alpine glaciated lands and fluvial lands* and habitat type group 9 that make up productivity class 4. A total of 80 polygons comprise 54,288 acres (13.2 percent) of Thompson River basin.

VRU 24 (mountains — cold and moderately dry vegetation): Areas of *alpine glaciated lands and fluvial lands* and habitat type groups 10 and 11 that make up productivity class 5. A total of 10 polygons comprise 6,981 acres (1.7 percent) of Thompson River basin.

VRU 25 (non-forest terrestrial features): Areas of scree and rock. A total of 9 polygons comprise 506 acres (0.1 percent) of Thompson River basin. Minor inclusions of this VRU also occur in other VRUs.

VRU 26 (water): Lakes and ponds that were identified in the Forest Service landtype map. A total of 113 polygons comprise 3,174 acres (0.8 percent) of Thompson River basin. Many smaller lakes not identified on the Forest Service landtype map were not included.

VRU maps follow the VRU map index (Figure 3.9-2). The areas of VRUs for subbasins and watersheds of Thompson River basin are summarized in Table 3.9-4.

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
ALL	ALL	4	33	4131	1.0
ALL	ALL	5	115	2864	0.7
ALL	ALL	6	77	1618	0.4
ALL	ALL	7	140	7981	1.9
ALL	ALL	8	157	5363	1.3
ALL	ALL	9	589	7624	1.9
ALL	ALL	10	114	32395	7.9
ALL	ALL	11	25	4590	1.1
ALL	ALL	12	9	1078	0.3
ALL	ALL	13	7	2063	0.5
ALL	ALL	15	103	46986	11.5
ALL	ALL	16	73	14692	3.6
ALL	ALL	17	36	17747	4.3
ALL	ALL	18	10	2258	0.6
ALL	ALL	20	192	110189	26.9
ALL	ALL	21	176	22727	5.5
ALL	ALL	22	192	60837	14.8
ALL	ALL	23	80	54288	13.2
ALL	ALL	24	10	6981	1.7
ALL	ALL	25	9	506	0.1
ALL	ALL	26	113	3174	0.8
ALL	**ALL**	**TOTAL**	**2260**	**410092**	**100.0**
Upper Thompson River	ALL	4	20	1951	3.5
Upper Thompson River	ALL	5	60	1168	2.1
Upper Thompson River	ALL	6	12	160	0.3
Upper Thompson River	ALL	7	36	745	1.3
Upper Thompson River	ALL	8	40	722	1.3
Upper Thompson River	ALL	9	36	317	0.6
Upper Thompson River	ALL	10	16	1662	3.0
Upper Thompson River	ALL	11	15	2730	4.9
Upper Thompson River	ALL	12	3	84	0.2
Upper Thompson River	ALL	15	33	12475	22.6
Upper Thompson River	ALL	16	34	4633	8.4
Upper Thompson River	ALL	17	14	13509	24.5
Upper Thompson River	ALL	18	4	1050	1.9
Upper Thompson River	ALL	20	17	4223	7.6
Upper Thompson River	ALL	21	1	3	0.0
Upper Thompson River	ALL	22	12	3903	7.1
Upper Thompson River	ALL	23	21	2936	5.3
Upper Thompson River	ALL	26	26	2946	5.3
Upper Thompson River	**ALL**	**TOTAL**	**400**	**55217**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Upper Thompson River	Thompson Lakes	4	6	1228	6.2
Upper Thompson River	Thompson Lakes	5	38	433	2.2
Upper Thompson River	Thompson Lakes	6	6	53	0.3
Upper Thompson River	Thompson Lakes	7	14	197	1.0
Upper Thompson River	Thompson Lakes	8	18	312	1.6
Upper Thompson River	*Thompson Lakes*	*9*	*2*	*11*	*0.1*
Upper Thompson River	Thompson Lakes	10	10	821	4.1
Upper Thompson River	Thompson Lakes	11	10	2142	10.8
Upper Thompson River	Thompson Lakes	15	16	9323	46.9
Upper Thompson River	Thompson Lakes	16	7	682	3.4
Upper Thompson River	Thompson Lakes	17	4	1828	9.2
Upper Thompson River	Thompson Lakes	20	6	994	5.0
Upper Thompson River	Thompson Lakes	23	2	485	2.4
Upper Thompson River	Thompson Lakes	26	21	1385	7.0
Upper Thompson River	**Thompson Lakes**	**TOTAL**	**160**	**19895**	**100.0**
Upper Thompson River	Lang Creek	4	2	4	0.1
Upper Thompson River	Lang Creek	5	2	118	2.4
Upper Thompson River	Lang Creek	6	1	2	0.0
Upper Thompson River	Lang Creek	7	1	68	1.4
Upper Thompson River	Lang Creek	8	1	8	0.2
Upper Thompson River	Lang Creek	9	7	110	2.3
Upper Thompson River	Lang Creek	10	3	279	5.8
Upper Thompson River	Lang Creek	11	1	187	3.9
Upper Thompson River	Lang Creek	15	8	824	17.0
Upper Thompson River	Lang Creek	16	1	6	0.1
Upper Thompson River	Lang Creek	20	7	1987	41.0
Upper Thompson River	Lang Creek	23	1	1253	25.8
Upper Thompson River	**Lang Creek**	**TOTAL**	**35**	**4846**	**100.0**
Upper Thompson River	McGregor Creek	4	6	383	1.9
Upper Thompson River	McGregor Creek	5	12	417	2.1
Upper Thompson River	McGregor Creek	6	2	29	0.1
Upper Thompson River	McGregor Creek	7	16	429	2.2
Upper Thompson River	McGregor Creek	8	11	154	0.8
Upper Thompson River	McGregor Creek	9	20	176	0.9
Upper Thompson River	McGregor Creek	10	3	562	2.8
Upper Thompson River	McGregor Creek	15	2	166	0.8
Upper Thompson River	McGregor Creek	16	19	3635	18.4
Upper Thompson River	McGregor Creek	17	8	5043	25.5
Upper Thompson River	*McGregor Creek*	*18*	*4*	*1050*	*5.3*
Upper Thompson River	McGregor Creek	20	3	1240	6.3
Upper Thompson River	McGregor Creek	22	10	3865	19.6
Upper Thompson River	McGregor Creek	23	16	1028	5.2
Upper Thompson River	McGregor Creek	26	4	1559	7.9
Upper Thompson River	**McGregor Creek**	**TOTAL**	**136**	**19736**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Upper Thompson River	Boiling Springs Creek	4	5	261	4.8
Upper Thompson River	Boiling Springs Creek	5	6	54	1.0
Upper Thompson River	Boiling Springs Creek	6	2	68	1.2
Upper Thompson River	Boiling Springs Creek	8	5	125	2.3
Upper Thompson River	Boiling Springs Creek	9	7	19	0.3
Upper Thompson River	Boiling Springs Creek	12	1	23	0.4
Upper Thompson River	Boiling Springs Creek	15	2	1882	34.3
Upper Thompson River	Boiling Springs Creek	16	3	198	3.6
Upper Thompson River	Boiling Springs Creek	17	1	2660	48.5
Upper Thompson River	Boiling Springs Creek	20	1	2	0.0
Upper Thompson River	Boiling Springs Creek	21	1	3	0.1
Upper Thompson River	Boiling Springs Creek	22	1	29	0.5
Upper Thompson River	Boiling Springs Creek	23	1	163	3.0
Upper Thompson River	Boiling Springs Creek	26	1	2	0.0
Upper Thompson River	**Boiling Springs Creek**	**TOTAL**	**37**	**5490**	**100.0**
Upper Thompson River	Davis Creek	4	1	74	1.4
Upper Thompson River	Davis Creek	5	2	147	2.8
Upper Thompson River	Davis Creek	6	1	9	0.2
Upper Thompson River	Davis Creek	7	5	51	1.0
Upper Thompson River	Davis Creek	8	5	123	2.3
Upper Thompson River	Davis Creek	11	4	401	7.6
Upper Thompson River	Davis Creek	12	2	61	1.2
Upper Thompson River	Davis Creek	15	5	279	5.3
Upper Thompson River	Davis Creek	16	4	112	2.1
Upper Thompson River	Davis Creek	17	1	3979	75.8
Upper Thompson River	Davis Creek	22	1	9	0.2
Upper Thompson River	Davis Creek	23	1	7	0.1
Upper Thompson River	**Davis Creek**	**TOTAL**	**32**	**5250**	**100.0**
Middle Thompson River	ALL	4	22	1181	0.8
Middle Thompson River	ALL	5	20	1341	0.9
Middle Thompson River	ALL	6	28	824	0.6
Middle Thompson River	ALL	7	56	2067	1.4
Middle Thompson River	ALL	8	56	2324	1.6
Middle Thompson River	ALL	9	208	2348	1.6
Middle Thompson River	ALL	10	88	22174	14.8
Middle Thompson River	ALL	11	9	1334	0.9
Middle Thompson River	ALL	12	3	642	0.4
Middle Thompson River	ALL	15	81	23741	15.9
Middle Thompson River	ALL	16	41	4997	3.3
Middle Thompson River	ALL	17	29	1083	0.7
Middle Thompson River	ALL	18	8	882	0.6
Middle Thompson River	ALL	20	114	29596	19.8
Middle Thompson River	ALL	21	74	7600	5.1
Middle Thompson River	ALL	22	61	20130	13.5
Middle Thompson River	ALL	23	58	23080	15.4
Middle Thompson River	ALL	24	11	3984	2.7
Middle Thompson River	ALL	25	1	35	0.0
Middle Thompson River	ALL	26	14	25	0.0
Middle Thompson River	**ALL**	**TOTAL**	**982**	**149385**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Middle Thompson River	Middle Thompson	4	14	1122	2.5
Middle Thompson River	Middle Thompson	5	8	1227	2.7
Middle Thompson River	Middle Thompson	6	9	468	1.0
Middle Thompson River	Middle Thompson	7	27	358	0.8
Middle Thompson River	Middle Thompson	8	28	372	0.8
Middle Thompson River	Middle Thompson	9	40	426	0.9
Middle Thompson River	Middle Thompson	10	39	14070	31.1
Middle Thompson River	Middle Thompson	11	1	121	0.3
Middle Thompson River	Middle Thompson	15	37	12213	27.0
Middle Thompson River	Middle Thompson	16	8	1544	3.4
Middle Thompson River	Middle Thompson	17	3	120	0.3
Middle Thompson River	Middle Thompson	18	2	622	1.4
Middle Thompson River	Middle Thompson	20	39	9081	20.1
Middle Thompson River	Middle Thompson	21	20	1478	3.3
Middle Thompson River	Middle Thompson	22	2	597	1.3
Middle Thompson River	Middle Thompson	23	18	1349	3.0
Middle Thompson River	Middle Thompson	24	1	33	0.1
Middle Thompson River	Middle Thompson	26	1	0	0.0
Middle Thompson River	**Middle Thompson**	**TOTAL**	**297**	**45202**	**100.0**
Middle Thompson River	Murr Creek	5	4	30	0.2
Middle Thompson River	Murr Creek	6	5	136	0.7
Middle Thompson River	Murr Creek	7	4	435	2.2
Middle Thompson River	Murr Creek	8	2	183	0.9
Middle Thompson River	Murr Creek	9	19	277	1.4
Middle Thompson River	Murr Creek	10	3	235	1.2
Middle Thompson River	Murr Creek	15	3	82	0.4
Middle Thompson River	Murr Creek	16	1	218	1.1
Middle Thompson River	Murr Creek	17	12	20	0.1
Middle Thompson River	Murr Creek	20	7	3246	16.3
Middle Thompson River	Murr Creek	21	5	684	3.4
Middle Thompson River	Murr Creek	22	14	6555	32.9
Middle Thompson River	Murr Creek	23	6	7346	36.9
Middle Thompson River	Murr Creek	24	4	472	2.4
Middle Thompson River	**Murr Creek**	**TOTAL**	**89**	**19918**	**100.0**
Middle Thompson River	Shroder Creek	4	1	5	0.1
Middle Thompson River	Shroder Creek	6	1	20	0.5
Middle Thompson River	Shroder Creek	7	1	2	0.1
Middle Thompson River	Shroder Creek	8	1	106	2.4
Middle Thompson River	Shroder Creek	9	9	86	2.0
Middle Thompson River	Shroder Creek	10	2	9	0.2
Middle Thompson River	Shroder Creek	15	1	60	1.4
Middle Thompson River	Shroder Creek	16	6	428	9.8
Middle Thompson River	Shroder Creek	17	2	12	0.3
Middle Thompson River	Shroder Creek	20	4	767	17.6
Middle Thompson River	Shroder Creek	21	6	961	22.0
Middle Thompson River	Shroder Creek	22	2	768	17.6
Middle Thompson River	Shroder Creek	23	1	1148	26.2
Middle Thompson River	**Shroder Creek**	**TOTAL**	**37**	**4373**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Middle Thompson River	Big Rock Creek	4	1	0	0.0
Middle Thompson River	Big Rock Creek	5	1	11	0.1
Middle Thompson River	Big Rock Creek	6	6	22	0.1
Middle Thompson River	Big Rock Creek	7	2	561	2.7
Middle Thompson River	Big Rock Creek	8	2	157	0.7
Middle Thompson River	Big Rock Creek	9	47	540	2.6
Middle Thompson River	Big Rock Creek	10	4	263	1.2
Middle Thompson River	Big Rock Creek	15	4	251	1.2
Middle Thompson River	Big Rock Creek	16	5	63	0.3
Middle Thompson River	Big Rock Creek	18	2	39	0.2
Middle Thompson River	Big Rock Creek	20	6	4716	22.4
Middle Thompson River	Big Rock Creek	21	7	940	4.5
Middle Thompson River	Big Rock Creek	22	18	6957	33.1
Middle Thompson River	Big Rock Creek	23	7	5271	25.1
Middle Thompson River	Big Rock Creek	24	2	1188	5.7
Middle Thompson River	Big Rock Creek	25	1	35	0.2
Middle Thompson River	Big Rock Creek	26	5	7	0.0
Middle Thompson River	**Big Rock Creek**	**TOTAL**	**122**	**21024**	**100.0**
Middle Thompson River	Semem Creek	4	1	2	0.1
Middle Thompson River	Semem Creek	7	2	77	2.0
Middle Thompson River	Semem Creek	8	3	46	1.2
Middle Thompson River	Semem Creek	9	9	67	1.8
Middle Thompson River	Semem Creek	10	1	89	2.3
Middle Thompson River	Semem Creek	11	1	531	14.0
Middle Thompson River	Semem Creek	15	9	421	11.1
Middle Thompson River	Semem Creek	16	6	368	9.7
Middle Thompson River	Semem Creek	17	3	59	1.6
Middle Thompson River	Semem Creek	18	4	221	5.8
Middle Thompson River	Semem Creek	20	6	1277	33.5
Middle Thompson River	Semem Creek	23	1	526	13.8
Middle Thompson River	Semem Creek	24	1	123	3.2
Middle Thompson River	**Semem Creek**	**TOTAL**	**47**	**3807**	**100.0**
Middle Thompson River	Chippy Creek	4	1	0	0.0
Middle Thompson River	Chippy Creek	7	2	210	1.8
Middle Thompson River	Chippy Creek	8	1	111	0.9
Middle Thompson River	Chippy Creek	9	28	322	2.7
Middle Thompson River	Chippy Creek	10	1	198	1.7
Middle Thompson River	Chippy Creek	11	1	385	3.2
Middle Thompson River	Chippy Creek	15	2	125	1.0
Middle Thompson River	Chippy Creek	16	1	35	0.3
Middle Thompson River	Chippy Creek	20	9	2285	19.1
Middle Thompson River	Chippy Creek	21	12	955	8.0
Middle Thompson River	Chippy Creek	22	12	2763	23.1
Middle Thompson River	Chippy Creek	23	5	3317	27.7
Middle Thompson River	Chippy Creek	24	1	1249	10.4
Middle Thompson River	Chippy Creek	26	2	3	0.0
Middle Thompson River	**Chippy Creek**	**TOTAL**	**78**	**11958**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Middle Thompson River	Bear Creek	4	1	26	0.3
Middle Thompson River	Bear Creek	7	1	26	0.3
Middle Thompson River	Bear Creek	8	1	160	1.9
Middle Thompson River	Bear Creek	9	22	232	2.8
Middle Thompson River	Bear Creek	10	2	191	2.3
Middle Thompson River	Bear Creek	15	2	11	0.1
Middle Thompson River	Bear Creek	20	9	1467	17.6
Middle Thompson River	Bear Creek	21	7	690	8.3
Middle Thompson River	Bear Creek	22	11	2362	28.3
Middle Thompson River	Bear Creek	23	12	2269	27.2
Middle Thompson River	Bear Creek	24	2	919	11.0
Middle Thompson River	Bear Creek	26	1	0	0.0
Middle Thompson River	**Bear Creek**	**TOTAL**	**71**	**8352**	**100.0**
Middle Thompson River	Meadow Creek	4	1	4	0.0
Middle Thompson River	Meadow Creek	5	1	7	0.1
Middle Thompson River	Meadow Creek	6	2	115	1.2
Middle Thompson River	Meadow Creek	7	4	252	2.6
Middle Thompson River	Meadow Creek	8	6	179	1.9
Middle Thompson River	Meadow Creek	9	23	279	2.9
Middle Thompson River	Meadow Creek	10	2	436	4.6
Middle Thompson River	Meadow Creek	15	5	1741	18.2
Middle Thompson River	Meadow Creek	16	3	30	0.3
Middle Thompson River	Meadow Creek	17	1	68	0.7
Middle Thompson River	Meadow Creek	20	13	4042	42.2
Middle Thompson River	Meadow Creek	21	13	1288	13.5
Middle Thompson River	Meadow Creek	22	2	127	1.3
Middle Thompson River	Meadow Creek	23	2	1007	10.5
Middle Thompson River	**Meadow Creek**	**TOTAL**	**78**	**9575**	**100.0**
Middle Thompson River	Lazier Creek	4	1	14	0.1
Middle Thompson River	Lazier Creek	5	6	66	0.4
Middle Thompson River	Lazier Creek	6	4	38	0.2
Middle Thompson River	Lazier Creek	7	9	129	0.9
Middle Thompson River	Lazier Creek	8	8	667	4.4
Middle Thompson River	Lazier Creek	9	4	23	0.1
Middle Thompson River	Lazier Creek	10	24	3576	23.5
Middle Thompson River	Lazier Creek	11	6	297	2.0
Middle Thompson River	Lazier Creek	12	2	630	4.1
Middle Thompson River	Lazier Creek	15	9	5574	36.7
Middle Thompson River	Lazier Creek	16	10	2272	14.9
Middle Thompson River	Lazier Creek	17	6	497	3.3
Middle Thompson River	Lazier Creek	20	9	924	6.1
Middle Thompson River	Lazier Creek	21	1	356	2.3
Middle Thompson River	Lazier Creek	23	4	136	0.9
Middle Thompson River	Lazier Creek	26	3	6	0.0
Middle Thompson River	**Lazier Creek**	**TOTAL**	**106**	**15204**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Middle Thompson River	Indian Creek	4	1	8	0.1
Middle Thompson River	Indian Creek	6	1	25	0.3
Middle Thompson River	Indian Creek	7	4	17	0.2
Middle Thompson River	Indian Creek	8	4	343	3.4
Middle Thompson River	Indian Creek	9	7	97	1.0
Middle Thompson River	Indian Creek	10	10	3109	31.2
Middle Thompson River	Indian Creek	12	1	11	0.1
Middle Thompson River	Indian Creek	15	9	3264	32.7
Middle Thompson River	Indian Creek	16	1	39	0.4
Middle Thompson River	Indian Creek	17	2	307	3.1
Middle Thompson River	Indian Creek	20	10	1788	17.9
Middle Thompson River	Indian Creek	21	3	247	2.5
Middle Thompson River	Indian Creek	23	2	711	7.1
Middle Thompson River	Indian Creek	26	2	8	0.1
Middle Thompson River	**Indian Creek**	**TOTAL**	**57**	**9974**	**100.0**
Fishtrap Creek	ALL	4	7	751	1.3
Fishtrap Creek	ALL	5	4	22	0.0
Fishtrap Creek	ALL	6	19	384	0.6
Fishtrap Creek	ALL	7	34	424	0.7
Fishtrap Creek	ALL	8	22	1178	2.0
Fishtrap Creek	ALL	9	115	1532	2.6
Fishtrap Creek	ALL	10	21	1573	2.6
Fishtrap Creek	ALL	11	2	100	0.2
Fishtrap Creek	ALL	12	5	353	0.6
Fishtrap Creek	ALL	13	7	2063	3.4
Fishtrap Creek	ALL	15	23	3612	6.0
Fishtrap Creek	ALL	16	10	1362	2.3
Fishtrap Creek	ALL	17	11	1537	2.6
Fishtrap Creek	ALL	18	4	326	0.5
Fishtrap Creek	ALL	20	36	22427	37.3
Fishtrap Creek	ALL	21	42	3223	5.4
Fishtrap Creek	ALL	22	32	10840	18.0
Fishtrap Creek	ALL	23	32	8208	13.7
Fishtrap Creek	ALL	25	1	46	0.1
Fishtrap Creek	ALL	26	20	103	0.2
Fishtrap Creek	**ALL**	**TOTAL**	**447**	**60062**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Fishtrap Creek	Upper Fishtrap Creek	4	5	419	1.9
Fishtrap Creek	Upper Fishtrap Creek	5	4	22	0.1
Fishtrap Creek	Upper Fishtrap Creek	6	13	306	1.4
Fishtrap Creek	Upper Fishtrap Creek	7	21	262	1.2
Fishtrap Creek	Upper Fishtrap Creek	8	16	479	2.2
Fishtrap Creek	Upper Fishtrap Creek	9	31	413	1.9
Fishtrap Creek	Upper Fishtrap Creek	10	11	645	2.9
Fishtrap Creek	Upper Fishtrap Creek	12	5	353	1.6
Fishtrap Creek	Upper Fishtrap Creek	13	7	2063	9.3
Fishtrap Creek	Upper Fishtrap Creek	15	22	3472	15.6
Fishtrap Creek	Upper Fishtrap Creek	16	10	1362	6.1
Fishtrap Creek	Upper Fishtrap Creek	17	11	1537	6.9
Fishtrap Creek	Upper Fishtrap Creek	18	4	326	1.5
Fishtrap Creek	Upper Fishtrap Creek	20	13	4136	18.6
Fishtrap Creek	Upper Fishtrap Creek	21	12	1408	6.3
Fishtrap Creek	Upper Fishtrap Creek	22	8	2655	12.0
Fishtrap Creek	Upper Fishtrap Creek	23	3	2306	10.4
Fishtrap Creek	Upper Fishtrap Creek	26	8	48	0.2
Fishtrap Creek	**Upper Fishtrap Creek**	**TOTAL**	**204**	**22210**	**100.0**
Fishtrap Creek	Lower Fishtrap Creek	4	1	332	2.3
Fishtrap Creek	Lower Fishtrap Creek	6	4	76	0.5
Fishtrap Creek	Lower Fishtrap Creek	7	10	141	1.0
Fishtrap Creek	Lower Fishtrap Creek	8	3	100	0.7
Fishtrap Creek	Lower Fishtrap Creek	9	34	408	2.9
Fishtrap Creek	Lower Fishtrap Creek	10	10	928	6.5
Fishtrap Creek	Lower Fishtrap Creek	11	2	100	0.7
Fishtrap Creek	Lower Fishtrap Creek	20	10	11175	78.7
Fishtrap Creek	Lower Fishtrap Creek	21	7	467	3.3
Fishtrap Creek	Lower Fishtrap Creek	23	19	476	3.4
Fishtrap Creek	**Lower Fishtrap Creek**	**TOTAL**	**100**	**14203**	**100.0**
Fishtrap Creek	West Fork Fishtrap Creek	6	1	2	0.0
Fishtrap Creek	West Fork Fishtrap Creek	7	1	10	0.1
Fishtrap Creek	West Fork Fishtrap Creek	8	1	442	3.8
Fishtrap Creek	West Fork Fishtrap Creek	9	24	350	3.0
Fishtrap Creek	West Fork Fishtrap Creek	15	1	139	1.2
Fishtrap Creek	West Fork Fishtrap Creek	20	4	1566	13.5
Fishtrap Creek	West Fork Fishtrap Creek	21	6	540	4.7
Fishtrap Creek	West Fork Fishtrap Creek	22	17	4586	39.6
Fishtrap Creek	West Fork Fishtrap Creek	23	7	3896	33.6
Fishtrap Creek	West Fork Fishtrap Creek	26	11	55	0.5
Fishtrap Creek	**West Fork Fishtrap Creek**	**TOTAL**	**73**	**11586**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Fishtrap Creek	Beatrice Creek	7	1	1	0.0
Fishtrap Creek	Beatrice Creek	8	1	75	1.1
Fishtrap Creek	Beatrice Creek	9	11	260	4.0
Fishtrap Creek	Beatrice Creek	20	4	2730	41.6
Fishtrap Creek	Beatrice Creek	21	4	313	4.8
Fishtrap Creek	Beatrice Creek	22	3	2145	32.6
Fishtrap Creek	Beatrice Creek	23	2	1046	15.9
Fishtrap Creek	Beatrice Creek	26	1	0	0.0
Fishtrap Creek	**Beatrice Creek**	**TOTAL**	**27**	**6570**	**100.0**
Fishtrap Creek	Jungle Creek	4	1	1	0.0
Fishtrap Creek	Jungle Creek	6	1	0	0.0
Fishtrap Creek	Jungle Creek	7	1	11	0.2
Fishtrap Creek	Jungle Creek	8	1	80	1.5
Fishtrap Creek	Jungle Creek	9	15	102	1.8
Fishtrap Creek	Jungle Creek	20	5	2820	51.3
Fishtrap Creek	Jungle Creek	21	13	495	9.0
Fishtrap Creek	Jungle Creek	22	4	1454	26.5
Fishtrap Creek	Jungle Creek	23	1	484	8.8
Fishtrap Creek	Jungle Creek	25	1	46	0.8
Fishtrap Creek	**Jungle Creek**	**TOTAL**	**43**	**5493**	**100.0**
Little Thompson River	ALL	4	1	2	0.0
Little Thompson River	ALL	5	39	321	0.4
Little Thompson River	ALL	6	24	241	0.3
Little Thompson River	ALL	7	19	3796	4.8
Little Thompson River	ALL	8	35	766	1.0
Little Thompson River	ALL	9	124	1803	2.3
Little Thompson River	ALL	10	22	6051	7.7
Little Thompson River	ALL	15	24	6221	7.9
Little Thompson River	ALL	16	11	3102	4.0
Little Thompson River	ALL	17	6	1618	2.1
Little Thompson River	ALL	20	56	29376	37.4
Little Thompson River	ALL	21	30	4069	5.2
Little Thompson River	ALL	22	48	9984	12.7
Little Thompson River	ALL	23	28	8934	11.4
Little Thompson River	ALL	24	7	2152	2.7
Little Thompson River	ALL	25	1	62	0.1
Little Thompson River	ALL	26	36	29	0.0
Little Thompson River	**ALL**	**TOTAL**	**511**	**78525**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Little Thompson River	Upper Little Thompson River	5	20	121	0.3
Little Thompson River	Upper Little Thompson River	6	17	134	0.3
Little Thompson River	Upper Little Thompson River	7	3	2456	6.2
Little Thompson River	Upper Little Thompson River	8	4	192	0.5
Little Thompson River	Upper Little Thompson River	9	90	1145	2.9
Little Thompson River	*Upper Little Thompson River*	*10*	*3*	*71*	*0.2*
Little Thompson River	Upper Little Thompson River	15	1	208	0.5
Little Thompson River	Upper Little Thompson River	16	2	197	0.5
Little Thompson River	Upper Little Thompson River	17	1	21	0.1
Little Thompson River	Upper Little Thompson River	20	35	17506	44.5
Little Thompson River	Upper Little Thompson River	21	16	1689	4.3
Little Thompson River	Upper Little Thompson River	22	39	8194	20.8
Little Thompson River	Upper Little Thompson River	23	16	5688	14.5
Little Thompson River	Upper Little Thompson River	24	3	1596	4.1
Little Thompson River	Upper Little Thompson River	25	1	62	0.2
Little Thompson River	Upper Little Thompson River	26	36	29	0.1
Little Thompson River	**Upper Little Thompson River**	**TOTAL**	**287**	**39310**	**100.0**
Little Thompson River	Mudd Creek	5	2	2	0.0
Little Thompson River	Mudd Creek	6	2	19	0.1
Little Thompson River	Mudd Creek	7	1	255	1.8
Little Thompson River	Mudd Creek	8	9	205	1.5
Little Thompson River	Mudd Creek	9	17	429	3.1
Little Thompson River	Mudd Creek	15	7	784	5.6
Little Thompson River	Mudd Creek	16	6	1406	10.0
Little Thompson River	Mudd Creek	17	4	1541	11.0
Little Thompson River	Mudd Creek	20	11	7148	51.1
Little Thompson River	Mudd Creek	21	5	1452	10.4
Little Thompson River	Mudd Creek	22	2	298	2.1
Little Thompson River	Mudd Creek	23	5	447	3.2
Little Thompson River	Mudd Creek	24	1	5	0.0
Little Thompson River	**Mudd Creek**	**TOTAL**	**72**	**13991**	**100.0**
Little Thompson River	Lower Little Thompson	4	1	2	0.0
Little Thompson River	Lower Little Thompson	5	9	172	1.3
Little Thompson River	Lower Little Thompson	6	3	79	0.6
Little Thompson River	Lower Little Thompson	7	10	933	6.9
Little Thompson River	Lower Little Thompson	8	19	206	1.5
Little Thompson River	Lower Little Thompson	9	2	20	0.1
Little Thompson River	Lower Little Thompson	10	15	4501	33.5
Little Thompson River	*Lower Little Thompson*	*15*	*12*	*4526*	*33.7*
Little Thompson River	Lower Little Thompson	16	3	1499	11.2
Little Thompson River	Lower Little Thompson	17	1	56	0.4
Little Thompson River	Lower Little Thompson	20	3	1357	10.1
Little Thompson River	Lower Little Thompson	23	2	50	0.4
Little Thompson River	Lower Little Thompson	24	1	21	0.2
Little Thompson River	**Lower Little Thompson**	**TOTAL**	**81**	**13420**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Little Thompson River	Little Rock Creek	5	0	20	0.5
Little Thompson River	Little Rock Creek	6	2	8	0.2
Little Thompson River	Little Rock Creek	7	4	61	1.3
Little Thompson River	Little Rock Creek	8	2	48	1.0
Little Thompson River	Little Rock Creek	9	3	60	1.3
Little Thompson River	Little Rock Creek	10	2	1323	27.7
Little Thompson River	Little Rock Creek	15	4	703	14.7
Little Thompson River	Little Rock Creek	20	2	1283	26.9
Little Thompson River	Little Rock Creek	21	1	249	5.2
Little Thompson River	Little Rock Creek	22	1	238	5.0
Little Thompson River	Little Rock Creek	23	2	548	11.5
Little Thompson River	Little Rock Creek	24	1	223	4.7
Little Thompson River	**Little Rock Creek**	**TOTAL**	**32**	**4769**	**100.0**
Little Thompson River	North Fork Little Thompson	7	1	92	1.3
Little Thompson River	North Fork Little Thompson	8	1	115	1.6
Little Thompson River	North Fork Little Thompson	9	12	150	2.1
Little Thompson River	North Fork Little Thompson	10	2	155	2.2
Little Thompson River	North Fork Little Thompson	20	5	2082	29.6
Little Thompson River	North Fork Little Thompson	21	8	678	9.6
Little Thompson River	North Fork Little Thompson	22	6	1254	17.8
Little Thompson River	North Fork Little Thompson	23	3	2202	31.3
Little Thompson River	North Fork Little Thompson	24	1	307	4.4
Little Thompson River	**North Fork Little Thompson**	**TOTAL**	**39**	**7034**	**100.0**
West Fork Thompson	ALL	7	1	2	0.0
West Fork Thompson	ALL	8	4	256	1.1
West Fork Thompson	ALL	9	39	578	2.5
West Fork Thompson	ALL	20	19	4828	21.2
West Fork Thompson	ALL	21	20	1968	8.6
West Fork Thompson	ALL	22	28	7378	32.4
West Fork Thompson	ALL	23	11	7319	32.1
West Fork Thompson	ALL	24	2	88	0.4
West Fork Thompson	ALL	25	5	306	1.3
West Fork Thompson	ALL	26	11	58	0.3
West Fork Thompson	**ALL**	**TOTAL**	**140**	**22781**	**100.0**
West Fork	Middle West Fork	7	1	2	0.0
West Fork	Middle West Fork	8	1	215	1.5
West Fork	Middle West Fork	9	33	365	2.6
West Fork	Middle West Fork	20	12	4084	28.6
West Fork	Middle West Fork	21	14	1733	12.2
West Fork	Middle West Fork	22	15	4000	28.0
West Fork	Middle West Fork	23	8	3445	24.2
West Fork	Middle West Fork	24	2	88	0.6
West Fork	Middle West Fork	25	5	306	2.1
West Fork	Middle West Fork	26	4	26	0.2
West Fork	**Middle West Fork**	**TOTAL**	**95**	**14265**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
West Fork	Four Lakes Creek	8	2	30	0.5
West Fork	Four Lakes Creek	9	5	135	2.3
West Fork	Four Lakes Creek	20	4	267	4.5
West Fork	Four Lakes Creek	21	2	100	1.7
West Fork	Four Lakes Creek	22	10	2867	48.3
West Fork	Four Lakes Creek	23	2	2501	42.2
West Fork	Four Lakes Creek	26	7	32	0.5
West Fork	**Four Lakes Creek**	**TOTAL**	**32**	**5932**	**100.0**
West Fork	Anne Creek	8	1	11	0.4
West Fork	Anne Creek	9	1	79	3.0
West Fork	Anne Creek	20	3	476	18.4
West Fork	Anne Creek	21	4	135	5.2
West Fork	Anne Creek	22	3	511	19.8
West Fork	Anne Creek	23	1	1373	53.1
West Fork	**Anne Creek**	**TOTAL**	**13**	**2584**	**100.0**
Lower Thompson River	ALL	4	2	247	0.6
Lower Thompson River	ALL	5	2	13	0.0
Lower Thompson River	ALL	6	1	9	0.0
Lower Thompson River	ALL	7	7	948	2.1
Lower Thompson River	ALL	8	6	117	0.3
Lower Thompson River	ALL	9	67	1046	2.4
Lower Thompson River	ALL	10	4	936	2.1
Lower Thompson River	ALL	11	6	426	1.0
Lower Thompson River	ALL	15	7	936	2.1
Lower Thompson River	ALL	16	6	597	1.4
Lower Thompson River	ALL	20	62	19739	44.7
Lower Thompson River	ALL	21	55	5865	13.3
Lower Thompson River	ALL	22	31	8603	19.5
Lower Thompson River	ALL	23	21	3811	8.6
Lower Thompson River	ALL	24	4	757	1.7
Lower Thompson River	ALL	25	1	57	0.1
Lower Thompson River	ALL	26	6	13	0.0
Lower Thompson River	**ALL**	**TOTAL**	**288**	**44120**	**100.0**
Lower Thompson River	Lower Thompson	4	1	242	1.0
Lower Thompson River	Lower Thompson	7	2	841	3.3
Lower Thompson River	Lower Thompson	9	33	502	2.0
Lower Thompson River	Lower Thompson	10	2	808	3.2
Lower Thompson River	Lower Thompson	11	4	423	1.7
Lower Thompson River	Lower Thompson	15	6	233	0.9
Lower Thompson River	Lower Thompson	16	1	594	2.4
Lower Thompson River	Lower Thompson	20	27	14040	55.8
Lower Thompson River	Lower Thompson	21	30	3113	12.4
Lower Thompson River	Lower Thompson	22	12	2648	10.5
Lower Thompson River	Lower Thompson	23	11	1636	6.5
Lower Thompson River	Lower Thompson	24	1	39	0.2
Lower Thompson River	Lower Thompson	25	1	57	0.2
Lower Thompson River	Lower Thompson	26	3	7	0.0
Lower Thompson River	**Lower Thompson**	**TOTAL**	**134**	**25183**	**100.0**

Table 3.9-4. Areas of VRUs for subbasins and watersheds of Thompson River basin.

SUBBASIN	WATERSHED	VRU	N	AREA	
				Acres	Percent
Lower Thompson River	Deerhorn Creek	4	1	5	0.1
Lower Thompson River	Deerhorn Creek	8	1	62	1.0
Lower Thompson River	Deerhorn Creek	9	13	189	3.1
Lower Thompson River	Deerhorn Creek	11	2	4	0.1
Lower Thompson River	Deerhorn Creek	20	13	1330	21.6
Lower Thompson River	Deerhorn Creek	21	8	477	7.8
Lower Thompson River	Deerhorn Creek	22	8	3255	52.9
Lower Thompson River	Deerhorn Creek	23	2	822	13.4
Lower Thompson River	Deerhorn Creek	26	3	6	0.1
Lower Thompson River	**Deerhorn Creek**	**TOTAL**	**51**	**6149**	**100.0**
Lower Thompson River	Bay State Creek	7	1	0	0.0
Lower Thompson River	Bay State Creek	9	1	96	3.4
Lower Thompson River	Bay State Creek	20	8	1018	35.8
Lower Thompson River	Bay State Creek	21	3	381	13.4
Lower Thompson River	Bay State Creek	22	5	687	24.1
Lower Thompson River	Bay State Creek	23	3	582	20.4
Lower Thompson River	Bay State Creek	24	1	82	2.9
Lower Thompson River	**Bay State Creek**	**TOTAL**	**22**	**2846**	**100.0**
Lower Thompson River	Big Hole Creek	7	2	45	0.8
Lower Thompson River	Big Hole Creek	8	1	10	0.2
Lower Thompson River	Big Hole Creek	9	7	173	3.2
Lower Thompson River	Big Hole Creek	20	7	1033	19.4
Lower Thompson River	Big Hole Creek	21	9	1283	24.1
Lower Thompson River	Big Hole Creek	22	5	1666	31.3
Lower Thompson River	Big Hole Creek	23	3	545	10.3
Lower Thompson River	Big Hole Creek	24	1	561	10.5
Lower Thompson River	**Big Hole Creek**	**TOTAL**	**35**	**5316**	**100.0**
Lower Thompson River	Calico Creek	5	2	13	0.3
Lower Thompson River	Calico Creek	6	1	9	0.2
Lower Thompson River	Calico Creek	7	2	61	1.3
Lower Thompson River	Calico Creek	8	4	45	1.0
Lower Thompson River	Calico Creek	9	13	87	1.9
Lower Thompson River	Calico Creek	10	2	128	2.8
Lower Thompson River	Calico Creek	15	1	703	15.2
Lower Thompson River	Calico Creek	16	5	3	0.1
Lower Thompson River	Calico Creek	20	7	2318	50.1
Lower Thompson River	Calico Creek	21	5	610	13.2
Lower Thompson River	Calico Creek	22	1	347	7.5
Lower Thompson River	Calico Creek	23	2	226	4.9
Lower Thompson River	Calico Creek	24	1	76	1.6
Lower Thompson River	**Calico Creek**	**TOTAL**	**46**	**4625**	**100.0**

4.0 LITERATURE CITED

Alt, D. and D. Hydnman. 1986. Roadside geology of Montana. Montana Press Publishing Company. Missoula, Montana. 427 pp.

Bailey, R.G. 1995. Description of Ecoregions of the United States. USDA Forest Service. Miscellaneous Publication Number 1391. 108 pp.

Bollenbacher, B., Gilbert, S., Sirucek, D. and D. Atkins. 1996. Vegetation task group protocols for ecological pattern and process associated with Region 1 and 2 strategy landscape ecology peer group. Draft report. USFS Northern Region. 147 pp.

Crowley, J.M. 1967. Biogeography. Canadian Geographer 11:312-326.

Harrison, J.E., Cressman, E.R. and J.W. Whipple. 1992. Geologic and structure maps of the Kalispell 1X2 degree quadrangle, Montana (1:250,000 scale). USDI, USGS Miscellaneous Investigation Series, MAP I-2267.

Harrison, J.E., Griggs, A.B. and J.W. Wells. 1986. Geologic and structure maps of the Wallace 1X2 degree quadrangle, Montana and Idaho (1:250,000 scale). USDI, USGS Miscellaneous Investigation Series, MAP I-1509.

Hughes, R.M. and J.R. Gammon. 1986. Longitudinal changes in fish assemblages and water quality in the Williamette River, Oregon. Transactions of the American Fisheries Society. Vol. 116, No. 2, 196- 209.

Hughes, R.M. Rextad, E. and C.E. Bond. 1987. The relationship of aquatic ecoregions, river basins and physiographic provinces to the Ichthyogeographic regions of Oregon. Copeia, 1987 (2), pp. 423-432.

Johns, W.M. 1970. Geology and mineral deposits of Lincoln and Flathead Counties, Montana. State of Montana Bureau of Mines and Geology. Bulletin 79. 182 pp.

Koppen, W. 1931. Grundriss der Klimakunde. Berlin: Walter de Gnuyter Co. 388 pp.

Kuennen, L.J. and M.L. Nielson-Gerhardt. 1995. Soil survey of Kootenai National Forest area, Montana and Idaho. U.S. Forest Service and Natural Resource Conservation Service. 122 pp + maps.

Montague, C., Munn, L.C., Nielson, A., Rogers, J.W. and H.E. Hunter. 1982. Soils of Montana. Montana Agricultural Experiment Station, Montana State University, Bozeman, Montana 59717. Bulletan 744. 95 pp.

Omernik, J.M. 1987. Ecoregions of the conterminous United States. Annals of the Association of American Geographers. 77: 118-125.

Omernik, J.M. 1993. Digital map of ecoregions of the conterminous United States. Environmental Protection Agency, Corvallis, OR.

Pfister, R.D., Kovalchik, B.L., Arno, S.F and R.C. Presby. Forest habitat types of Montana. GTRINT-34. USFS, Ogden, Utah. 174 pp.

Rohm, C.M., Giese, J.W. and C.C. Bennett. 1987. Evaluation of an aquatic ecoregion classification of streams in Arkansas. Journal of Freshwater Ecology. Vol. 4, No. 1:127-140.

Sasich, J. and K. Lamotte-Hagen. 1989. Lolo National Forest land systems inventory. USDA Forest Service, Lolo NF. Missoula, Montana.

Strahler, A.N. 1957. Quantitative analysis of watershed geomorphology. Transactions, American Geophysical Union; Volume 38; pp 913-920.

Trewartha, G.T. 1968. An introduction to weather and climate. 4th ed. New York: McGraw-Hill. 408 pp.

USDA-NRCS. 1995. Soil survey of Kootenai National Forest area, Montana and Idaho. U.S. Government Printing Office: 1995— 387-974/20502/SCS. 122 pp + maps.

USDA-NRCS. 1997. Classification and correlation of the soils of Sanders County area and parts of Flathead and Lincoln Counties. NRCS Field Office, Kallispell, Montana. 115 pp.

USDA-SCS. 1994. Prism briefing packet and questionnaire, a description of the PRISM technique for spatially distributing observed precipitation. Presented by the Oregon Climate Service and Soil Conservation Service, West National Technical Center, Climatic Data Access Facility; Portland, Oregon.

Wertz, W.A. and J.F. Arnold. 1972. Land systems inventory. USDA Forest Service, Intermountain Region. Ogden, Utah.

Whittier, T.R., Hughes, R.M. and D.P. Larsen. 1988. The correspondence between ecoregions and spatial patterns in stream ecosystems in Oregon. Can. Jour. Fish. Aquat. Sci.

White Horse Associates. 1995. Ecological classification, Swan River Basin, Montana. Report to Plum Creek Timber Company, Columbia Falls, Montana.