Aquatic Macroinvertebrate Survey and Assessment of Smith Creek, Park Co., MT

Prepared for the USFS Northern Region Livingston Ranger District
by

David M. Stagliano
Aquatic Ecologist
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Aquatic Assessment Summary

Project goals of the Aquatic Surveys and Assessment of Smith Creek were to: **1)** identify macroinvertebrate samples collected by the Fisheries Biologist, **2)** assess aquatic macroinvertebrate community integrity in relation to reference condition, **3)** identify and interpret key community indicators (against reference condition standards) to observed silt and sedimentation impacts in this mountain stream system (sites >1600m) (Pers. comm. with Scott Schuler, 6/5/2006). This report represents the local reach-scale, aquatic macroinvertebrate portion of a larger assessment that included habitat and fish surveys.

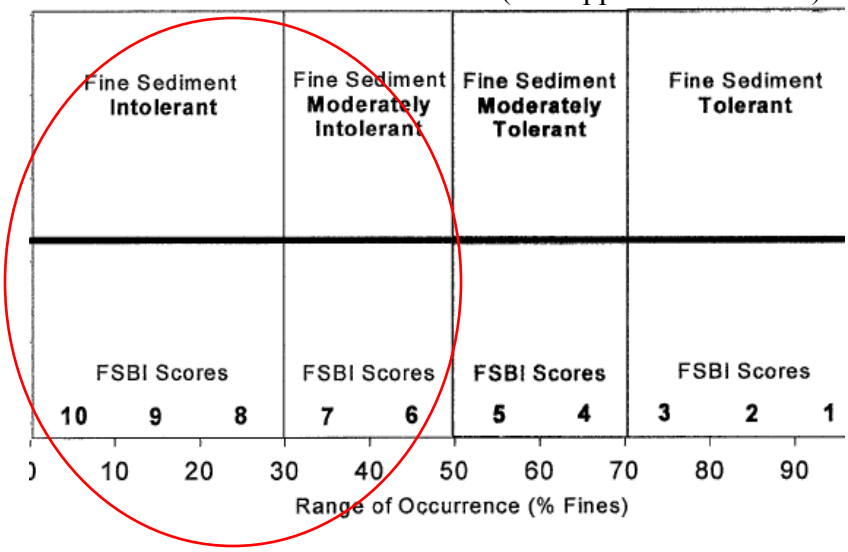
Methods. Three replicate macroinvertebrate samples were taken in July 2006 at 2 mainstem Smith Creek sites, the East Fork of Smith Creek, and a single sample at an unnamed tributary to Smith Creek. Macroinvertebrate samples were taken using the DEQ traveling kick method with a 500 micron mesh, D-frame dip-net and preserved in 95% ETOH. These samples were processed (sorting, identification, and data analysis) by David Stagliano at the Montana Natural Heritage Program Helena lab following DEQ protocols (MT DEQ 2005). Macroinvertebrates were identified to the lowest taxonomic level, imported into EDAS (Jessup 2006), and biological metrics were calculated from the data using the Montana Department of Environmental Quality's newest multimetric macroinvertebrate (MMI) protocols (Jessup et al. 2005, Feldman 2006). Metric results were then scored using the Montana DEQ bioassessment criteria and each sample categorized as non-impaired or impaired according to threshold values (Table 1).

Table 1. Impairment determinations of the DEQ MMI results**.**

Ecoregion	RIVPACS	MMI	Impairment Determination
Mountain	≥ 0.8	≥ 63	Unimpaired
	< 0.8	< 63	Impaired

The macroinvertebrate data was also imported into PC-ORD (MjM Software Design 2002), relativized and analyzed using cluster analysis. The cluster analysis used flexible beta linkage (β = -0.25) and Sorensen's distance measure (McCune and Mefford 2002, Hawkins and Norris 2000). Relative percent of sediment-intolerant macroinvertebrates (i.e., sensitive taxa that decrease w/ increased sediment) used in a Fine Sediment Biotic Index (FSBI) were ranked using Relyea et al. (2000) (Table 2 & Appendix I).

Table 2. FSBI macroinvertebrate scoring relationship. Red circle outlines the sensitive FSBI taxon scores (see Appendix I for taxa)

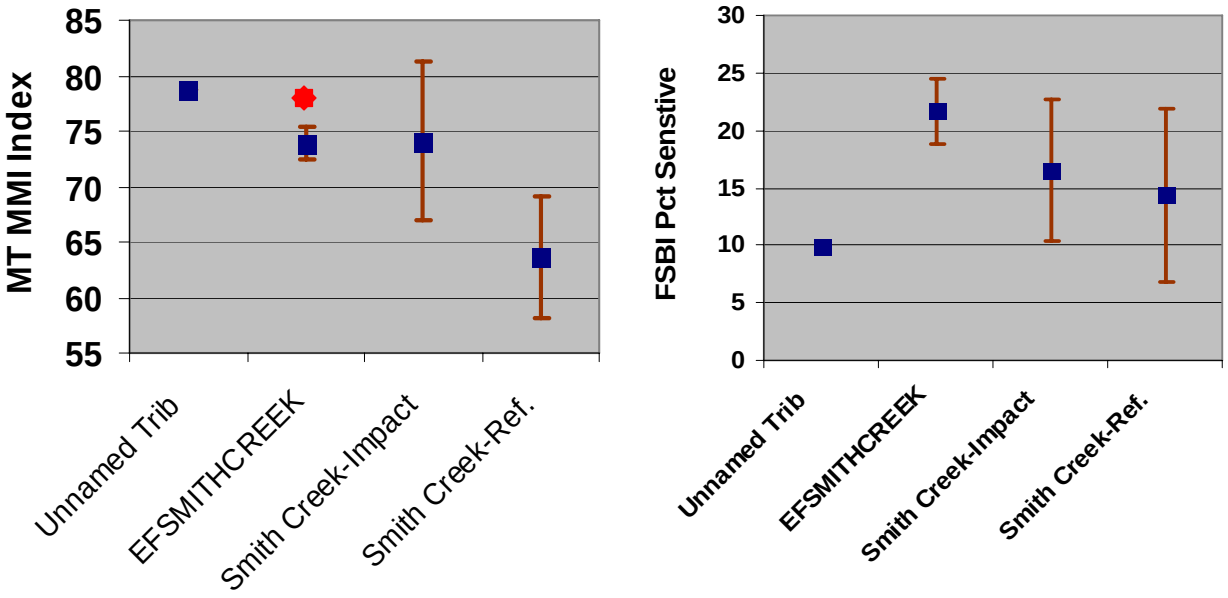


The FSBI can be used in northwestern biomonitoring protocols either alone or in concert with other metrics (Relyea et al. 2000).

Results

Macroinvertebrate Communities: Overall, 79 taxa were reported from 10 samples at the four Smith Creek Study Sites (Appendix II). Average macroinvertebrate taxa richness per site was 34.4 (range 28-44). All three replicate samples at 2 of 3 sites were in agreement for ranking the reach as unimpaired with DEQ MMI index scores >63 (Table 3), and the Unnamed Tributary sample also was determined to be unimpaired using the index threshold. However, the Smith Creek "reference" reach (samples 7,8 & 9) yielded conflicting MMI index scores, one sample ranked the reach as "unimpaired"(MMI=69), while the 2 other replicates rated the reach as "slightly impaired"(MMI=59,62) (Table 3). E.F. Smith Creek reported MMI scores significantly higher than the mainstem Smith Creek reference site (FTEST, $p<0.05$), although no significant differences were detected in the FSBI between the Smith Creek sediment-impaired and reference sites (Figure 1).

Figure 1. DEQ MT MMI index & FSBI Pct Sensitive taxa for the sites in the Smith Creek Drainage. Error bars for replicate samples are Confidence Intervals (95% CI). ✸ Indicates a significant difference from the reference reach.

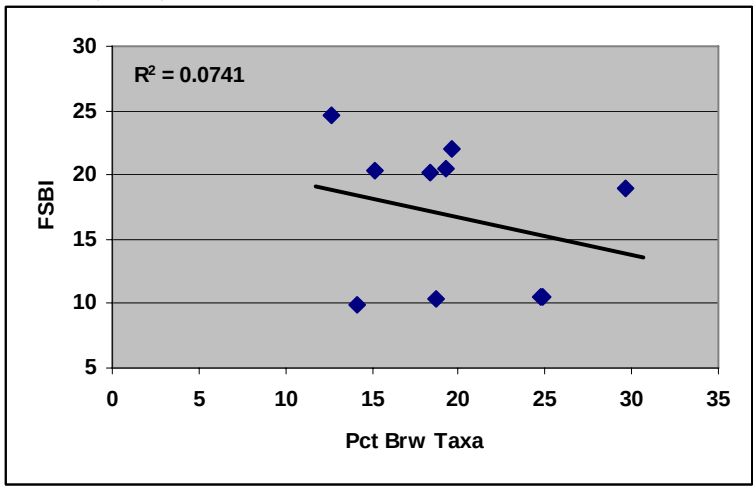


Despite observed sediment impairment to one of the mainstem Smith Creek sites, the 2 sites (samples {4, 5, 6} {7, 8, 9}) clustered together when using presence/absence data (Figure 3, top), but separated out when using relativized abundance data (Figure 3, middle). This indicates that the site differences are due to the abundance of particular taxa and not in the exclusion/inclusion of taxa between sites. East Fork Smith Creek has a significantly different macroinvertebrate community composition than the Smith Creek sites and is more closely related to the smaller unnamed tributary site (Figure 3). Considering all sites, when Shannon's Diversity (H') dropped below 2.4 for a site it was ranked impaired, this may be another useful indicator metric in the assessment toolbox (Table 3). Dominance of particular taxa can skew Shannon's Diversity Index, as well as the MMI, and in the case of the 2 reference site samples (#8 & 9), the dominant taxon was the riffle-beetle, *Heterlimnius* (Appendix II). This beetle is moderately tolerant of silt (FSBI=5) and has an overall tolerance value (TV) of 3 on a scale of 0-10. This may seem low, but a score of 3 is fairly

tolerant for a mountain stream taxon, which more commonly have TV's of 0, 1 or 2 (MT DEQ 2005). Although, this doesn't explain why sediment impacted sites are not being ranked as impaired by DEQ's MMI. The Mountain MMI is designed to detect decreased sensitive taxa (e.g. EPT) and increased percentages of non-insect and tolerant taxa in streams that usually result from increased sedimentation, nutrient enrichment, and temperature, and the MMI metric Percent Burrowing Taxa should identify problem sediment areas. Burrower taxa increases in mountain streams when there is an increase in fine sediment (Jessup et al., 2005). This "burrower taxa" metric is elevated in one "impacted" Smith Creek site (#6-29.6%), but also in 2 samples of the "reference" reach (#7 & 8, 24.9 & 24.7, respectively)(Table 3).

Using Fine Sediment Biotic Index (FSBI) rankings of sediment-sensitive taxa, we found no significant differences in the number or relative abundance of these taxa between the "reference" Smith Creek reach and the impacted Smith Creek reach (FTEST, p=0.80) or E.F.Smith Creek reach (FTEST, p=0.25). Surprisingly, lower numbers of sediment sensitive taxa did not significantly correlate with increases in the Percent Burrowing Taxa at a site, although there was a slight negative relationship (R^2=0.074) (Figure 2).

Figure 2. Relationship between the Percent Burrower Taxa (PctBrwTax) and the Percent Sensitive Fine Sediment Biotic Index (FSBI).



Macroinvertebrates have proven to be robust indicators in assessing organic enrichments and non-organic pollutants (i.e. metals) in Montana mountain streams (Richards 1996, Jessup et al 2005), but assessing differences between natural levels of bedload sediment and anthropogenically increased levels has not been as successful (Relyea et al. 2000). We usually feel confident that aquatic invertebrates present in the stream represent physical and chemical conditions within the system at least within the last year, and can be used successfully in monitoring these streams for sediment change. Unfortunately, local reach factors, such as small-scale differences in the quality of riffle substrate or presence of large woody debris, may be confounding factors in the ability of macroinvertebrates to accurately assess various levels of siltation.

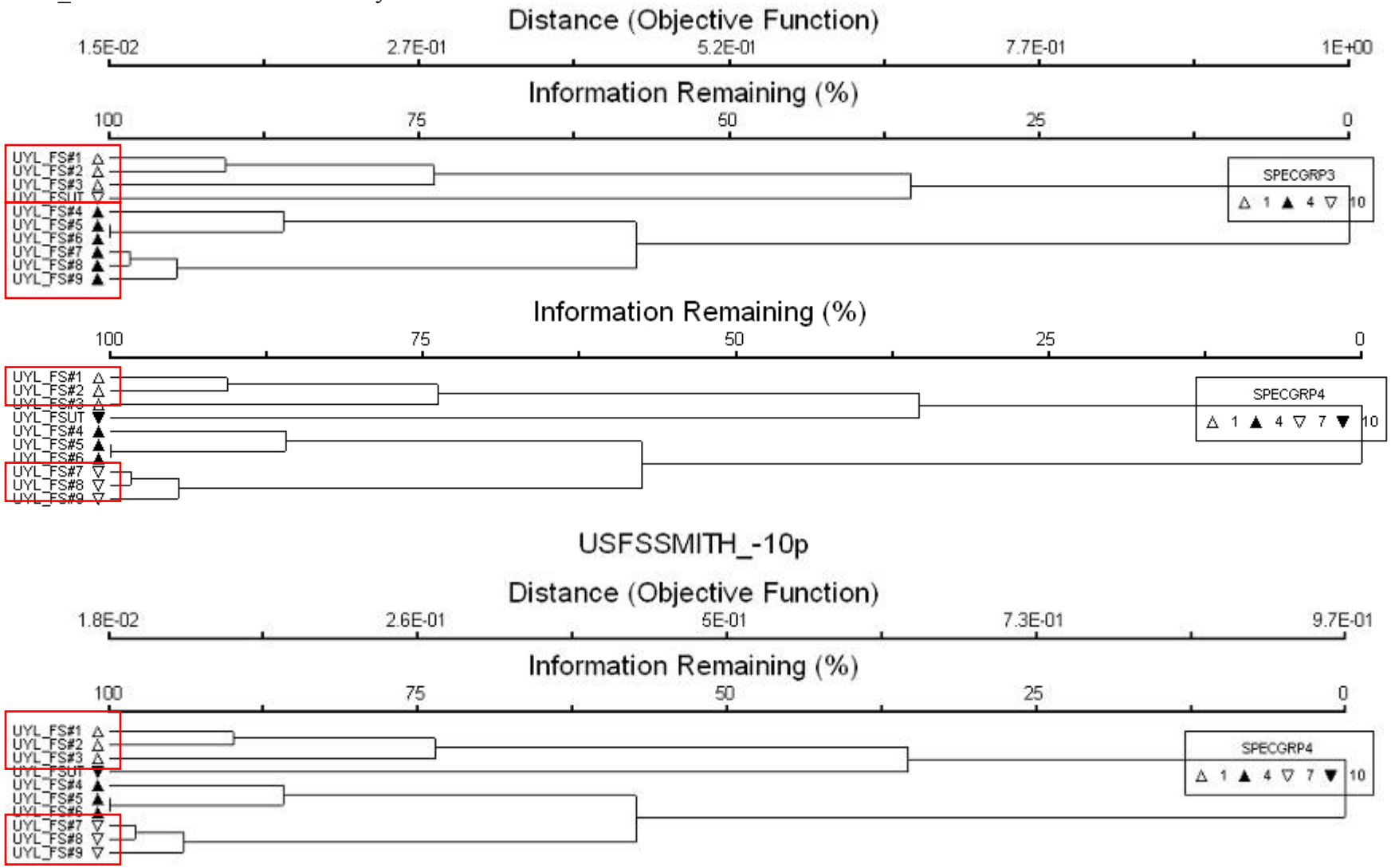
In this study, the East Fork Smith Creek site seems significantly different enough in macroinvertebrate composition to not be compared to the Smith Creek "reference site". When we used the same FSBI sensitive percentage metric in DEQ reference-quality, upper Yellowstone and Missouri basin streams (West Fork Stillwater & Beehive Basin), the FSBI reported 52.5% and 50.1% of the macroinvertebrate community, respectively, was sediment-intolerant taxa. Thus, FSBI percent measures of ~18 % (9.9-24%) at Smith Creek sites seem significantly lower (impacted) at the outset than other high-quality mountain streams.

Table 3. Site Macroinvertebrate Information, Taxa Richness, DEQ Mtn MMI Index Scores/Ranking, Ephemeroptera taxa (Ephem Tax), Plecoptera Taxa (Plec Tax), Ephemeroptera, Plecoptera & Trichoptera Percentage (EPT Pct), Non-Insect Percentage (NonInsPct), Predator Percent (Pred Pct), Burrower Taxa Percent (BrwTaxPct), Hilsenhoff Biotic Index (HBI) and the Percent Sensitive Fine Sediment Biotic Index (FSBI).

Waterbody Name:	Coll Date:	Rep Num	Total Ind ID'ed	Taxa Richness	Mtn MMI Index	DEQ Ranking	Shannon Diversity H'	Ephem Tax	Plec Tax	EPT Pct	Non Ins Pct	Pred Pct	Brw Tax Pct	HBI	FSBI Sensitive Pct
TRIB to SMITHCREEK	7/7/2006	1	435	35	78.6	Unimpaired	2.78	7.0	6.8	73.3	5.1	14.0	14.2	2.28	9.9
EFSMITHCREEK 1	7/5/2006	1	431	39	72.7	Unimpaired	2.76	6.0	3.9	76.6	3.5	16.7	18.3	2.28	20.2
EFSMITHCREEK 2	7/5/2006	2	388	33	75.2	Unimpaired	2.82	6.8	4.0	73.5	3.9	19.8	15.2	2.24	20.4
EFSMITHCREEK 3	7/5/2006	3	353	28	73.6	Unimpaired	2.77	5.0	3.8	63.5	3.4	21.0	12.7	1.57	24.6
SMITHCREEK 4	7/6/2006	1	372	44	79.1	Unimpaired	2.70	8.5	5.8	58.6	1.3	20.7	19.3	2.54	20.4
SMITHCREEK 5	7/6/2006	2	424	34	76.3	Unimpaired	2.54	9.8	4.8	41.7	3.5	25.0	18.7	2.82	10.4
SMITHCREEK 6	7/6/2006	3	332	34	67.0	Unimpaired	2.50	3.0	6.0	44.3	7.2	27.4	29.6	2.42	19.0
SMITHCREEK 7	7/6/2006	1	333	35	62.1	Slightly Impaired	2.18	3.8	5.0	27.3	7.2	21.3	24.9	2.44	10.5
SMITHCREEK 8	7/6/2006	2	359	29	59.7	Slightly Impaired	2.02	3.7	4.7	27.3	15.3	29.0	24.7	2.56	10.6
SMITHCREEK 9	7/6/2006	3	340	34	69.0	Unimpaired	2.48	4.8	5.0	40.6	5.6	23.2	19.6	2.07	22.1

If all sampled sites within the Smith Creek Basin are ranking Unimpaired or only Slightly Impaired, and indicating naturally or artificially low percentages of sediment-intolerant taxa compared to a “true reference stream”, than the hypothesis of a reference reach and impacted reach is not valid for this stream. A null hypothesis of “no significant difference from reference” can not be rejected in this case, if the reference site itself is impaired or at least showing signs of impairment. Macroinvertebrate data not sufficient to show convincingly that a difference in sedimentation between sites is occurring, does not mean that the sites are not undergoing siltation, only that the control (reference) site may not truly be a control. Additional site evaluation with sediment traps or other siltation indicators may be necessary, as well as random macroinvertebrate sampling of similarly classified “Best Professional Judgement reference reaches” within the basin to evaluate the true natural variability of these metrics.

Figure 3. Cluster analysis results of macroinvertebrate presence/absence (top dendrogram), relativized abundance data (middle dendrogram) and with the rare species removed (bottom dendrogram) for the Smith Creek sites. UYL_FS#1-3 are EF Smith Creek and UYL_FSUT is the unnamed tributary.



Conclusions

- **Despite 8 of 10 samples in the study indicating Unimpaired Macroinvertebrate Communities (2 Slightly-Impaired),** the Percent of Sediment Intolerant Taxa is low compared to other Mountain Stream Reference Sites, indicating possible sediment impairment of all Smith Creek sites.

- The **East Fork Smith Creek** site (Samples #1, 2 & 3) had the least variability in the field replicate samples, the highest average diversity index (H'=2.78), the second highest average MMI scores (73.9), and the highest percentage of FSBI sensitive taxa (21.7%). This site may have a sufficiently distinctive macroinvertebrate community to make comparisons to the mainstem Smith Creek sites unreliable (see Figure 3).

- The **Unnamed Tributary** had the highest diversity index (H'=2.78) and most distinctive taxa (Figure 3); one of the highest MMI scores (78), but the lowest percentage of FSBI sensitive taxa (9.9%), indicating probable sediment impairment. This stream is more similar in community structure to E.F. Smith Cr.

- The **Smith Creek "Silt-Impaired"** reach (Samples 4, 5 & 6) had the next highest average diversity index (H'=2.58), the highest average MMI scores (74.1), and the next highest average percentage of FSBI sensitive taxa (16.6%). Sample 6 did have the highest percentage of Burrower Taxa (29.6%) indicating possible sediment impairment.

- The **Smith Creek "Reference"** reach (Samples 7, 8 & 9) had the lowest average diversity index (H'=2.23), the lowest average MMI scores (63.1), and the lowest average percentage of FSBI sensitive taxa (14.4%). ***Based on macroinvertebrates, maybe its status as a reference reach should be reevaluated or at least resampled.**

- **The macroinvertebrate community relationship** between the sites does not significantly change when we eliminate "rare taxa" found in fewer than 2 sites (Figure 3, bottom dendrogram).

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Appendix I. FSBI Taxa/Scores reported in the Smith Creek samples and used in calculating the Percent FSBI Sensitive Metric.

INTOLERANT TO FINE SEDIMENT (0-31% fines)

Plecoptera

Megarcys spp. **8**

Trichoptera

Ecclisomyia spp. **8**

Oligophlebodes spp. **8**

MODERATELY INTOLERANT TO FINE SEDIMENT (31% to 50% fines)

Ephemeroptera

*Acentrella spp.**6***

Cinygmula spp. ***6***

Drunella coloradensis/flavilinea ***7***

Drunella doddsi ***7***

Drunella spinifera ***7***

Drunella sp. ***6***

Epeorus longimanus ***6***

Epeorus spp. ***6***

Rhithrogena spp. ***6***

Plecoptera

Doroneuria sp. **7**

Hesperoperla pacifica **7**

Zapada oregonensis **6**

Trichoptera

Dicosmoecus spp. **6**

Glossosoma spp. **6**

Neophylax spp. **6**

Rhyacophila Betteni grp. **6**

Appendix II. Taxa Lists and MMI Metric Scores reported in the Smith Creek samples.

Waterbody Name: EFSMITHCREEK1 **Benthic Sample ID:** 14916

Station ID: YLUSFSQ105 **Rep. Num:** 0

Reference **STORET Activity ID:** USF1Q1-M

Site Classification: Mountain **Collection Date:** 07/05/2006

Collection MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	38	3	SC/CG	"CN/50%, BU/50%"
Coleoptera	Hydrobius	Hydrobius	1			
Diptera	Ceratopogoninae	Bezzia/Palpomyia	1	6	PR	BU/SW
Diptera	Chironominae	Micropsectra	3	4	CG	CN/SP
Diptera	Chironominae	Stempellinella	1	4	CG	BU
Diptera	Orthocladiinae	Brillia	1	4	SH	BU/SP
Diptera	Orthocladiinae	Eukiefferiella Brehmi Gr.	1	2	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	3	5	CG	SP
Diptera	Orthocladiinae	Rheocricotopus	7	4	CG/SH/PR	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	1	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	7	1	PR	SP
Diptera	Simuliidae	Prosimulium	21	3	CF	CN
Diptera	Tanypodinae	Paramerina	1		PR	SP
Ephemeropte	Baetis	Baetis tricaudatus	57	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygmula	Cinygmula	53	0	SC	CN
Ephemeropte	Drunella	Drunella coloradensis	3	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella doddsi	Drunella doddsi	5	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	31	1	CG	CN
Ephemeropte	Serratella	Serratella tibialis	7	2	CG	CN
Haplotaxida	Oligochaeta	Enchytraeidae	1	4	CG	BU
Non-Insect	Ostracoda	Ostracoda	9		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	17	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	2	0	unk	CN
Plecoptera	Megarcys	Megarcys	12	1	PR	CN
Plecoptera	Zapada	Zapada cinctipes	2	3	SH	CN
Plecoptera	Zapada	Zapada columbiana	95	2	SH	CN
Trichoptera	Anagapetus	Anagapetus	1	0	SC	CN
Trichoptera	Glossosoma	Glossosoma	3	0	SC	CN
Trichoptera	Micrasema	Micrasema	1	1	SH	CN
Trichoptera	Neothremma	Neothremma	11	1	SC	CN
Trichoptera	Parapsyche	Parapsyche elsis	5	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	9	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	9	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	2	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	5	0	PR	CN
Tricladida	Turbellaria	Polycelis	1		PR	unk
Trombidiform	Acarina	Protzia	3	4	PR	unk
Trombidiform	Acarina	Sperchon	1	5	PR	unk

Appendix II (cont.) Taxa Lists and MMI Metric Scores reported in the Smith Creek samples.

Montana Bioassessment Report

Waterbody Name: EFSMITHCREEK1
Benthic Sample ID: 14916
Station ID: YLUSFSQ105
Rep. Num: 0
Reference
STORET Activity ID: USF1Q1-M
Site Classification:
Collect. Date: 07/05/2006
Latitude:
Collect Method: MTkick500
Longitude:
Total Number of Individuals in Sample: 431

Mountain MMI:
72.7

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**6.0**	***59.7***
Plecoptera Taxa:	**3.9**	***55.8***
EPT Percent:	**76.6**	***85.1***
Non-Insect Percent:	**3.5**	***87.6***
Predator Percent:	**16.7**	***42.8***
Burrower Taxa %:	**18.3**	***91.1***
HBI:	**2.28**	***86.9***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: EFSMITHCREEK2 **Benthic Sample ID:** 14918

Station ID: YLUSFSQ205 **Rep. Num:** 0

Reference **STORET Activity ID:** USF2Q2-M

Site Classification: Mountain **Collection Date:** 07/05/2006

Collection MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	56	3	SC/CG	"CN/50%, BU/50%"
Diptera	Chironominae	Micropsectra	2	4	CG	CN/SP
Diptera	Chironominae	Stempellinella	1	4	CG	BU
Diptera	Orthocladiinae	Brillia	3	4	SH	BU/SP
Diptera	Orthocladiinae	Eukiefferiella Brehmi Gr.	1	2	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	4	5	CG	SP
Diptera	Orthocladiinae	Rheocricotopus	3	4	CG/SH/PR	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	7	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	8	1	PR	SP
Diptera	Simuliidae	Prosimulium	3	3	CF	CN
Ephemeropte	Baetis	Baetis tricaudatus	65	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygmula	Cinygmula	27	0	SC	CN
Ephemeropte	Diphetor	Diphetor hageni	1	5	CG	"SW/10%, CN/90%"
Ephemeropte	Drunella	Drunella coloradensis	12	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella doddsi	Drunella doddsi	9	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	12	1	CG	CN
Ephemeropte	Serratella	Serratella tibialis	3	2	CG	CN
Haplotaxida	Oligochaeta	Enchytraeidae	3	4	CG	BU
Non-Insect	Ostracoda	Ostracoda	11		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	29	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	4	0	unk	CN
Plecoptera	Megarcys	Megarcys	7	1	PR	CN
Plecoptera	Zapada	Zapada columbiana	51	2	SH	CN
Trichoptera	Anagapetus	Anagapetus	3	0	SC	CN
Trichoptera	Glossosoma	Glossosoma	3	0	SC	CN
Trichoptera	Micrasema	Micrasema	1	1	SH	CN
Trichoptera	Neothremma	Neothremma	23	1	SC	CN
Trichoptera	Parapsyche	Parapsyche elsis	6	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	17	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	7	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	3	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	2	0	PR	CN
Tricladida	Turbellaria	Polycelis	1		PR	unk

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: EFSMITHCREEK2 **Benthic Sample ID:** 14918

Station ID: YLUSFSQ205 **Rep. Num:** 0

Reference **STORET Activity ID:** USF2Q2-M

Site Classification: **Collect. Date:** 07/05/2006

Latitude: **Collect Method:** MTkick500

Longitude: **Total Number of Individuals in Sample:** 388

Mountain MMI:
75.2

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**6.8**	***67.6***
Plecoptera Taxa:	**4.0**	***57.1***
EPT Percent:	**73.5**	***81.6***
Non-Insect Percent:	**3.9**	***86.2***
Predator Percent:	**19.8**	***50.9***
Burrower Taxa %:	**15.2**	***95.6***
HBI:	**2.24**	***87.7***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: EFSMITHCREEK3 **Benthic Sample ID:** 14919

Station ID: YLUSFSQ305 **Rep. Num:** 0

Reference **STORET Activity ID:** USF3Q3-M

Site Classification: Mountain **Collection Date:** 07/05/2006

Collection MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	73	3	SC/CG	"CN/50%, BU/50%"
Diptera	Chironominae	Stempellinella	2	4	CG	BU
Diptera	Orthocladiinae	Brillia	4	4	SH	BU/SP
Diptera	Orthocladiinae	Eukiefferiella Brehmi Gr.	5	2	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	3	5	CG	SP
Diptera	Orthocladiinae	Rheocricotopus	1	4	CG/SH/PR	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	8	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	20	1	PR	SP
Diptera	Simuliidae	Prosimulium	1	3	CF	CN
Ephemeropte	Baetis	Baetis tricaudatus	8	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygmula	Cinygmula	11	0	SC	CN
Ephemeropte	Drunella	Drunella coloradensis	22	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella doddsi	Drunella doddsi	15	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	9	1	CG	CN
Non-Insect	Ostracoda	Ostracoda	10		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	20	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	14	0	unk	CN
Plecoptera	Megarcys	Megarcys	1	1	PR	CN
Plecoptera	Zapada	Zapada columbiana	22	2	SH	CN
Trichoptera	Anagapetus	Anagapetus	3	0	SC	CN
Trichoptera	Glossosoma	Glossosoma	2	0	SC	CN
Trichoptera	Micrasema	Micrasema	2	1	SH	CN
Trichoptera	Neothremma	Neothremma	51	1	SC	CN
Trichoptera	Parapsyche	Parapsyche elsis	15	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	22	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	6	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	1	0	PR	CN
Trombidiform	Acarina	Protzia	2	4	PR	unk

Total Number of Individuals in Sample: 353

Mountain MMI:
73.6

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**5.0**	***50.0***
Plecoptera Taxa:	**3.8**	***55.0***
EPT Percent:	**63.5**	***70.5***
Non-Insect Percent:	**3.4**	***87.9***
Predator Percent:	**21.0**	***53.8***
Burrower Taxa %:	**12.7**	***99.0***
HBI:	**1.57**	***98.9***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK4 **Benthic Sample ID:** 14920

Station ID: YLUSFSQ405 **Rep. Num:** 0

Reference **STORET Activity ID:** USF4Q4-M

Site Classification: Mountain **Collection Date:** 07/06/2006

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Cleptelmis	Cleptelmis	1	4	CG	"CN/50%, BU/50%"
Coleoptera	Heterlimnius	Heterlimnius	96	3	SC/CG	"CN/50%, BU/50%"
Coleoptera	Oreodytes	Oreodytes	1	5	PR	"CM (la), DI, SW (ad)"
Diptera	Chironominae	Micropsectra	3	4	CG	CN/SP
Diptera	Chironominae	Rheotanytarsus	2	6	CF	CN
Diptera	Diamesinae	Pagastia	2	1	CG	SP
Diptera	Dicranota	Dicranota	1	0	PR	SP
Diptera	Hexatoma	Hexatoma	1	2	PR	BU
Diptera	Orthocladiinae	Brillia	3	4	SH	BU/SP
Diptera	Orthocladiinae	Cricotopus	3	8	CG/SH	BU
Diptera	Orthocladiinae	Eukiefferiella Gracei Gr.	1	4	CG	SP
Diptera	Orthocladiinae	Eukiefferiella	2	4	CG	SP
Diptera	Orthocladiinae	Parakiefferiella	1	6	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	20	5	CG	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	1	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	9	1	PR	SP
Diptera	Simuliidae	Prosimulium	2	3	CF	CN
Ephemeropte	Acentrella	Acentrella turbida	2	4	CG	"SW/10%, CN/90%"
Ephemeropte	Ameletus	Ameletus	2	0	SC	"SW/10%, CN/90%"
Ephemeropte	Baetis	Baetis tricaudatus	71	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygma	Cinygma	1	0	SC	CN
Ephemeropte	Cinygmula	Cinygmula	10	0	SC	CN
Ephemeropte	Drunella	Drunella coloradensis	1	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella doddsi	Drunella doddsi	15	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	6	1	CG	CN
Ephemeropte	Serratella	Serratella tibialis	12	2	CG	CN
Haplotaxida	Oligochaeta	Lumbricina	1	4	CG	BU
Non-Insect	Nematoda	Nematoda	1	5	unk	BU
Non-Insect	Ostracoda	Ostracoda	2		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	24	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	27	0	unk	CN
Plecoptera	Hesperoperla	Hesperoperla pacifica	2	1	PR	CN
Plecoptera	Kogotus	Kogotus	1	1	PR	CN
Plecoptera	Megarcys	Megarcys	15	1	PR	CN
Plecoptera	Zapada	Zapada columbiana	8	2	SH	CN
Plecoptera	Zapada	Zapada Oregonensis gr.	1	2	SH	CN
Trichoptera	Anagapetus	Anagapetus	1	0	SC	CN
Trichoptera	Onocosmoecus	Onocosmoecus	1	3	SH	"SP/75%, CG/25%"
Trichoptera	Parapsyche	Parapsyche elsis	1	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	3	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	10	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	2	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	2	0	PR	CN
Trombidiform	Acarina	Lebertia	1		PR	unk

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK4
Benthic Sample ID: 14920
Station ID: YLUSFSQ405
Rep. Num: 0
Reference
STORET Activity ID: USF4Q4-M
Site Classification:
Collect. Date: 07/06/2006
Latitude:
Collect Method: MTkick500
Longitude:
Total Number of Individuals in Sample: 372

Mountain MMI:
79.1

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**8.5**	***85.4***
Plecoptera Taxa:	**5.8**	***82.4***
EPT Percent:	**58.6**	***65.1***
Non-Insect Percent:	**1.3**	***95.2***
Predator Percent:	**20.7**	***53.1***
Burrower Taxa %:	**19.3**	***89.7***
HBI:	**2.54**	***82.6***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK5 **Benthic Sample ID:** 14921

Station ID: YLUSFSQ505 **Rep. Num:** 0

Reference **STORET Activity ID:** USF5Q5-M

Site Classification: Mountain **Collection Date:** 07/06/2006

Collection MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	127	3	SC/CG	"CN/50%, BU/50%"
Coleoptera	Microcylloepus	Microcylloepus pusillus	1	5	CG	"CN/50%, BU/50%"
Coleoptera	Narpus	Narpus	1	2	CG	"CN/50%, BU/50%"
Diptera	Chironominae	Polypedilum	15	6	SH	CN
Diptera	Chironominae	Rheotanytarsus	7	6	CF	CN
Diptera	Chironominae	Robackia	1	4	CG	unk
Diptera	Diamesinae	Diamesa	1	5	CG	SP
Diptera	Hexatoma	Hexatoma	1	2	PR	BU
Diptera	Orthocladiinae	Cricotopus	1	8	CG/SH	BU
Diptera	Orthocladiinae	Eukiefferiella Gracei Gr.	2	4	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	26	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	18	1	PR	SP
Diptera	Simuliidae	Prosimulium	1	3	CF	CN
Diptera	Simuliidae	Simulium	17	5	CF	CN
Ephemeropte		Raptoheptagenia cruentata	13	2	PR	CN
Ephemeropte	Ameletus	Ameletus	3	0	SC	"SW/10%, CN/90%"
Ephemeropte	Baetis	Baetis tricaudatus	41	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygmula	Cinygmula	5	0	SC	CN
Ephemeropte	Drunella	Drunella coloradensis	3	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella doddsi	Drunella doddsi	5	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	7	1	CG	CN
Ephemeropte	Isonychia	Isonychia	4	2	CF	SW/CN
Ephemeropte	Leucrocuta	Leucrocuta	3	1	SC	CN
Ephemeropte	Pseudocloeon	Pseudocloeon	2	4	CG	"SW/10%, CN/90%"
Ephemeropte	Serratella	Serratella tibialis	14	2	CG	CN
Haplotaxida	Oligochaeta	Lumbricina	2	4	CG	BU
Non-Insect	Ostracoda	Ostracoda	2		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	14	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	23	0	unk	CN
Plecoptera	Hesperoperla	Hesperoperla pacifica	2	1	PR	CN
Plecoptera	Megarcys	Megarcys	2	1	PR	CN
Plecoptera	Zapada	Zapada columbiana	7	2	SH	CN
Trichoptera	Lepidostoma	Lepidostoma	3	1	SH	CM/SP
Trichoptera	Nectopsyche	Nectopsyche	2	2	SH	CM/SP/CN
Trichoptera	Neophylax	Neophylax splendens	1		unk	unk
Trichoptera	Parapsyche	Parapsyche elsis	1	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Angelita Gr.	1	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	3	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	22	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	4	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	5	0	PR	CN
Trombidiform	Acarina	Lebertia	2		PR	unk
Trombidiform	Acarina	Protzia	7	4	PR	unk
Trombidiform	Acarina	Sperchon	2	5	PR	unk

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Waterbody Name: SMITHCREEK5 **Benthic Sample ID:** 14921

Station ID: YLUSFSQ505 **Rep. Num:** 0

Reference **STORET Activity ID:** USF5Q5-M

Site Classification: **Collect. Date:** 07/06/2006

Latitude: **Collect Method:** MTkick500

Longitude: **Total Number of Individuals in Sample:** 424

Mountain MMI:
76.3

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**9.8**	***98.3***
Plecoptera Taxa:	**4.8**	***69.0***
EPT Percent:	**41.7**	***46.4***
Non-Insect Percent:	**3.5**	***87.4***
Predator Percent:	**25.0**	***64.1***
Burrower Taxa %:	**18.7**	***90.6***
HBI:	**2.82**	***78.0***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK6 **Benthic Sample ID:** 14922

Station ID: YLUSFSQ605 **Rep. Num:** 0

Reference **STORET Activity ID:** USF6Q6-M

Site Classification: Mountain **Collection Date:** 07/06/2006

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	110	3	SC/CG	"CN/50%, BU/50%"
Diptera	Ceratopogoninae	Bezzia/Palpomyia	1	6	PR	BU/SW
Diptera	Chelifera_Metache	Chelifera	1	5	unk	SP
Diptera	Chironominae	Micropsectra	1	4	CG	CN/SP
Diptera	Chironominae	Rheotanytarsus	2	6	CF	CN
Diptera	Hexatoma	Hexatoma	2	2	PR	BU
Diptera	Orthocladiinae	Brillia	1	4	SH	BU/SP
Diptera	Orthocladiinae	Eukiefferiella Gracei Gr.	1	4	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	23	5	CG	SP
Diptera	Orthocladiinae	Psilometriocnemus	1		CG	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	1	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	11	1	PR	SP
Diptera	Rhabdomastix	Rhabdomastix	6	1	unk	BU
Ephemeropte	Baetis	Baetis tricaudatus	35	4	CG	"SW/10%, CN/90%"
Ephemeropte	Drunella	Drunella coloradensis	3	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella doddsi	Drunella doddsi	7	1	SC	"CN/75%, SP/25%"
Haplotaxida	Oligochaeta	Lumbricina	3	4	CG	BU
Non-Insect	Ostracoda	Ostracoda	1		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	15	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	40	0	unk	CN
Plecoptera	Hesperoperla	Hesperoperla pacifica	3	1	PR	CN
Plecoptera	Kogotus	Kogotus	2	1	PR	CN
Plecoptera	Megarcys	Megarcys	5	1	PR	CN
Plecoptera	Zapada	Zapada columbiana	5	2	SH	CN
Trichoptera	Neophylax	Neophylax splendens	1		unk	unk
Trichoptera	Parapsyche	Parapsyche elsis	1	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Angelita Gr.	1	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	4	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	18	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	3	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	4	0	PR	CN
Trombidiform	Acarina	Lebertia	5		PR	unk
Trombidiform	Acarina	Protzia	14	4	PR	unk
Veneroida	Pisidiidae	Sphaerium	1	8	CF	BU

Total Number of Individuals in Sample: 332

	Metric:	*Value*	*Score*
	Ephemeroptera Taxa:	**3.0**	***30.0***
	Plecoptera Taxa:	**6.0**	***85.6***
Mountain MMI:	**EPT Percent:**	**44.3**	***49.2***
67.0	**Non-Insect Percent:**	**7.2**	***74.2***
	Predator Percent:	**27.4**	***70.3***
	Burrower Taxa %:	**29.6**	***75.2***
	HBI:	**2.42**	***84.6***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK7 **Benthic Sample ID:** 14923

Station ID: YLUSFSQ705 **Rep. Num:** 0

Reference **STORET Activity ID:** USF7Q7-M

Site Classification: Mountain **Collection Date:** 07/07/2006

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	157	3	SC/CG	"CN/50%, BU/50%"
Diptera	Ceratopogoninae	Bezzia/Palpomyia	2	6	PR	BU/SW
Diptera	Chironominae	Rheotanytarsus	2	6	CF	CN
Diptera	Diamesinae	Diamesa	1	5	CG	SP
Diptera	Diamesinae	Pagastia	1	1	CG	SP
Diptera	Orthocladiinae	Cricotopus	20	8	CG/SH	CN
Diptera	Orthocladiinae	Cricotopus	26	8	CG/SH	BU
Diptera	Orthocladiinae	Parakiefferiella	1	6	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	1	5	CG	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	2	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	1	1	PR	SP
Diptera	Rhabdomastix	Rhabdomastix	1	1	unk	BU
Diptera	Simuliidae	Simulium	3	5	CF	CN
Ephemeropte	Ameletus	Ameletus	1	0	SC	"SW/10%, CN/90%"
Ephemeropte	Baetis	Baetis tricaudatus	4	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygmula	Cinygmula	2	0	SC	CN
Ephemeropte	Drunella doddsi	Drunella doddsi	1	1	SC	"CN/75%, SP/25%"
Haplotaxida	Oligochaeta	Tubificidae	2	10	CG	BU
Non-Insect	Nematoda	Nematoda	1	5	unk	BU
Non-Insect	Ostracoda	Ostracoda	6		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	12	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	21	0	unk	CN
Plecoptera	Megarcys	Megarcys	5	1	PR	CN
Plecoptera	Paraperla	Paraperla	2	1	unk	unk
Plecoptera	Zapada	Zapada Oregonensis gr.	3	2	SH	CN
Trichoptera	Ecclisomyia	Ecclisomyia	1	4	CG	CN/SP/CM
Trichoptera	Micrasema	Micrasema	1	1	SH	CN
Trichoptera	Neothremma	Neothremma	4	1	SC	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	2	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	27	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	3	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	2	0	PR	CN
Tricladida	Turbellaria	Polycelis	3		PR	unk
Trombidiform	Acarina	Protzia	11	4	PR	unk
Trombidiform	Acarina	Sperchon	1	5	PR	unk

Total Number of Individuals in Sample: 333

Mountain MMI:
62.1

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**3.8**	***37.9***
Plecoptera Taxa:	**5.0**	***71.3***
EPT Percent:	**27.3**	***30.4***
Non-Insect Percent:	**7.2**	***74.3***
Predator Percent:	**21.3**	***54.7***
Burrower Taxa %:	**24.9**	***81.9***
HBI:	**2.44**	***84.4***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK8 **Benthic Sample ID:** 14924

Station ID: YLUSFSQ805 **Rep. Num:** 0

Reference **STORET Activity ID:** USF8Q8-M

Site Classification: Mountain **Collection Date:** 07/07/2006

Collection MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	173	3	SC/CG	"CN/50%, BU/50%"
Diptera	Chironominae	Rheotanytarsus	2	6	CF	CN
Diptera	Diamesinae	Diamesa	6	5	CG	SP
Diptera	Diamesinae	Pagastia	2	1	CG	SP
Diptera	Orthocladiinae	Cricotopus	8	8	CG/SH	CN
Diptera	Orthocladiinae	Cricotopus	10	8	CG/SH	BU
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	1	5	CG	SP
Diptera	Pelecorhynchidae	Glutops	2	1	PR	SP
Diptera	Rhabdomastix	Rhabdomastix	1	1	unk	BU
Diptera	Simuliidae	Simulium	1	5	CF	CN
Ephemeropte	Ameletus	Ameletus	1	0	SC	"SW/10%, CN/90%"
Ephemeropte	Baetis	Baetis tricaudatus	3	4	CG	"SW/10%, CN/90%"
Ephemeropte	Drunella doddsi	Drunella doddsi	5	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	1	1	CG	CN
Haplotaxida	Oligochaeta	Tubificidae	2	10	CG	BU
Non-Insect	Nematoda	Nematoda	1	5	unk	BU
Non-Insect	Ostracoda	Ostracoda	12		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	5	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	22	0	unk	CN
Plecoptera	Megarcys	Megarcys	7	1	PR	CN
Plecoptera	Paraperla	Paraperla	1	1	unk	unk
Plecoptera	Zapada	Zapada Oregonensis gr.	1	2	SH	CN
Trichoptera	Micrasema	Micrasema	4	1	SH	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	3	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	41	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	3	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	1	0	PR	CN
Trombidiform	Acarina	Protzia	39	4	PR	unk
Trombidiform	Acarina	Sperchon	1	5	PR	unk

Total Number of Individuals in Sample: 359

Mountain MMI:
59.7

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**3.7**	***36.7***
Plecoptera Taxa:	**4.7**	***66.7***
EPT Percent:	**27.3**	***30.3***
Non-Insect Percent:	**15.3**	***45.3***
Predator Percent:	**29.0**	***74.3***
Burrower Taxa %:	**24.7**	***82.1***
HBI:	**2.56**	***82.4***

Appendix II (Cont.) Taxa Lists and MMI Metric Scores

Montana Bioassessment Report

Waterbody Name: SMITHCREEK9 **Benthic Sample ID:** 14925

Station ID: YLUSFSQ905 **Rep. Num:** 0

Reference **STORET Activity ID:** USF9Q9-M

Site Classification: Mountain **Collection Date:** 07/07/2006

Collection MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	127	3	SC/CG	"CN/50%, BU/50%"
Diptera	Ceratopogoninae	Bezzia/Palpomyia	1	6	PR	BU/SW
Diptera	Ceratopogoninae	Probezzia	2	6	PR	BU/SW
Diptera	Chelifera_Metache	Chelifera	1	5	unk	SP
Diptera	Diamesinae	Diamesa	6	5	CG	SP
Diptera	Diamesinae	Pagastia	9	1	CG	SP
Diptera	Hexatoma	Hexatoma	2	2	PR	BU
Diptera	Orthocladiinae	Cricotopus	20	8	CG/SH	CN
Diptera	Orthocladiinae	Cricotopus	9	8	CG/SH	BU
Diptera	Orthocladiinae	Eukiefferiella Brehmi Gr.	3	2	CG	SP
Diptera	Orthocladiinae	Parametriocnemus	2	5	CG	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	1	5	CG	SP
Ephemeropte	Ameletus	Ameletus	8	0	SC	"SW/10%, CN/90%"
Ephemeropte	Baetis	Baetis tricaudatus	3	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygmula	Cinygmula	1	0	SC	CN
Ephemeropte	Drunella doddsi	Drunella doddsi	8	1	SC	"CN/75%, SP/25%"
Ephemeropte	Epeorus	Epeorus longimanus	1	1	CG	CN
Non-Insect	Nematoda	Nematoda	2	5	unk	BU
Non-Insect	Ostracoda	Ostracoda	5		unk	SW
Plecoptera	Chloroperlidae	Sweltsa	11	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	38	0	unk	CN
Plecoptera	Megarcys	Megarcys	22	1	PR	CN
Plecoptera	Paraperla	Paraperla	2	1	unk	unk
Plecoptera	Zapada	Zapada columbiana	3	2	SH	CN
Plecoptera	Zapada	Zapada Oregonensis gr.	3	2	SH	CN
Trichoptera	Ecclisomyia	Ecclisomyia	1	4	CG	CN/SP/CM
Trichoptera	Micrasema	Micrasema	5	1	SH	CN
Trichoptera	Neothremma	Neothremma	1	1	SC	CN
Trichoptera	Parapsyche	Parapsyche elsis	2	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	2	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	21	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	3	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila sibirica Gr.	3	0	PR	CN
Trombidiform	Acarina	Protzia	12	4	PR	unk

Total Number of Individuals in Sample: 340

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**4.8**	***47.6***
Plecoptera Taxa:	**5.0**	***71.2***
EPT Percent:	**40.6**	***45.1***
Non-Insect Percent:	**5.6**	***80.0***
Predator Percent:	**23.2**	***59.6***
Burrower Taxa %:	**19.6**	***89.3***
HBI:	**2.07**	***90.4***

Mountain MMI:
69.0

Montana Bioassessment Report

Waterbody Name: TRIBSMITHCREEK **Benthic Sample ID:** 14917

Station ID: YLUSFSQ115 **Rep. Num:** 0

Reference **STORET Activity ID:** USFQ10-M

Site Classification: **Collection Date:** 07/07/2006

Latitude: **Collection** MTkick500

Order:	*OTU name:*	*FinalID:*	*Individuals*	*Tol Val:*	*FFG:*	*Habit:*
Coleoptera	Heterlimnius	Heterlimnius	52	3	SC/CG	"CN/50%, BU/50%"
Diptera	Diamesinae	Diamesa	3	5	CG	SP
Diptera	Diamesinae	Pseudodiamesa	4	2	CG	SP
Diptera	Dicranota	Dicranota	3	0	PR	SP
Diptera	Hexatoma	Hexatoma	1	2	PR	BU
Diptera	Ormosia	Ormosia	3	6	CG	BU
Diptera	Orthocladiinae	Brillia	4	4	SH	BU/SP
Diptera	Orthocladiinae	Cricotopus	8	8	CG/SH	CN
Diptera	Orthocladiinae	Eukiefferiella Gracei Gr.	6	4	CG	SP
Diptera	Orthocladiinae	Rheocricotopus	1	4	CG/SH/PR	SP
Diptera	Orthocladiinae	Tvetenia Bavarica Gr.	8	5	CG	SP
Diptera	Simuliidae	Simulium	1	5	CF	CN
Ephemeropte	Ameletus	Ameletus	6	0	SC	"SW/10%, CN/90%"
Ephemeropte	Baetis	Baetis tricaudatus	42	4	CG	"SW/10%, CN/90%"
Ephemeropte	Cinygma	Cinygma	1	0	SC	CN
Ephemeropte	Cinygmula	Cinygmula	3	0	SC	CN
Ephemeropte	Drunella	Drunella coloradensis	6	0	SC	"CN/75%, SP/25%"
Ephemeropte	Drunella spinifera	Drunella spinifera	1	0	PR	"CN/75%, SP/25%"
Ephemeropte	Paraleptophlebia	Paraleptophlebia	1	1	CG	SW/CN/SP
Ephemeropte	Serratella	Serratella tibialis	64	2	CG	CN
Plecoptera	Chloroperlidae	Suwallia	1	1	PR	unk
Plecoptera	Chloroperlidae	Sweltsa	7	0	PR	CN
Plecoptera	Doroneuria	Doroneuria	20	0	unk	CN
Plecoptera	Kogotus	Kogotus	2	1	PR	CN
Plecoptera	Malenka	Malenka	3	1	unk	CN
Plecoptera	Megarcys	Megarcys	10	1	PR	CN
Plecoptera	Paraperla	Paraperla	2	1	unk	unk
Plecoptera	Zapada	Zapada cinctipes	88	3	SH	CN
Plecoptera	Zapada	Zapada columbiana	42	2	SH	CN
Trichoptera	Micrasema	Micrasema	1	1	SH	CN
Trichoptera	Parapsyche	Parapsyche elsis	5	1	CF	CN
Trichoptera	Rhyacophila	Rhyacophila Betteni Gr.	3	1	PR	CN
Trichoptera	Rhyacophila	Rhyacophila Brunnea Gr.	5	0	PR	CN
Trichoptera	Rhyacophila	Rhyacophila narvae	6	0	PR	CN
Tricladida	Turbellaria	Polycelis	22		PR	unk

Total Number of Individuals in Sample: 435

Mountain MMI:
78.6

Metric:	*Value*	*Score*
Ephemeroptera Taxa:	**7.0**	***70.4***
Plecoptera Taxa:	**6.8**	***96.8***
EPT Percent:	**73.3**	***81.5***
Non-Insect Percent:	**5.1**	***81.9***
Predator Percent:	**14.0**	***36.0***
Burrower Taxa %:	**14.2**	***96.9***
HBI:	**2.28**	***86.9***