
UPPER GALLATIN TMDL PLANNING AREA BIOLOGICAL MONITORING

Sampling and Analysis Plan

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TABLE OF CONTENTS

1.0 Introduction	1
1.1 Water Quality Assessment and Restoration Planning Process	1
1.1.1 Sediment Impairments	1
1.1.2 Nutrient Impairments	2
1.2 Previous Investigations	2
2.0 Objectives and Design	2
2.1 Biological Monitoring Sites	2
2.1.1 South Fork West Fork Gallatin River	3
2.1.2 Middle Fork West Fork Gallatin River	5
2.1.3 North Fork West Fork Gallatin River	5
2.1.4 West Fork Gallatin River	6
2.1.5 Squaw Creek	6
2.1.6 Dudley Creek	6
2.1.7 Swan Creek	7
2.1.8 Hell Roaring Creek	7
3.0 Field Sampling Methods	7
4.0 Sample Handling Procedures	8
5.0 Laboratory Analytical Methods	8
6.0 Quality Assurance and Quality Control Requirements	8
7.0 Data Analysis, Record Keeping and Reporting Requirements	8
8.0 Schedule for Completion	8
9.0 Project Team and Responsibilities	9
10.0 References	10

APPENDICES

- Appendix A *Biological Data Matrix*
- Appendix B *Biological Monitoring Site Maps*

LIST OF TABLES

Table 2-1 *Biological Monitoring Sites*

Table 8-1 *Project Personnel Rolls*

1.0 Introduction

The Montana Department of Environmental Quality (DEQ) is required to develop a TMDL water quality restoration plan for the Upper Gallatin TMDL Planning Area (TPA) in order to satisfy state law as well as federal court requirements. This Sampling and Analysis Plan addresses biological monitoring planned for several tributaries listed as impaired on the 303(d) List in the Upper Gallatin TPA, including the Middle Fork West Fork Gallatin River, South Fork West Fork Gallatin River, West Fork Gallatin River and Squaw Creek. Several additional streams will also be monitored as potential reference conditions, including Dudley Creek, Hell Roaring Creek, Swan Creek and the North Fork West Fork Gallatin River.

1.1 Water Quality Assessment and Restoration Planning Process

In the State of Montana, the growth and propagation of fish and associated aquatic life, drinking water, agriculture, industrial supply, recreation, and wildlife are considered beneficial uses of water bodies. Water bodies failing to support one or more beneficial uses are described as impaired on the *303(d) List of Impaired and Threatened Waterbodies in Need of Water Quality Restoration* and the development of a water quality restoration plan is required. The State of Montana classifies tributaries of the Gallatin River outside of Yellowstone National Park as B-1. Waters classified B-1 are to be maintained suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply [MCA 17.30.623(1)].

In 2004, the *303(d) List of Impaired and Threatened Waterbodies in Need of Water Quality Restoration* was combined with the 305(b) Report into the *2004 Montana Water Quality Integrated Report*. The 2004 Integrated Report incorporates new guidance from the EPA which requires TMDLs be developed for waters impaired by “pollutants,” such as nutrients, sediment, or metals. TMDLs are not required for waters impaired solely by “pollution,” such as flow alterations or habitat degradation (MDEQ 2004). On the 2004 Integrated Report, the Middle Fork West Fork Gallatin River, South Fork West Fork Gallatin River, West Fork Gallatin River and Squaw Creek are considered Category 5 waterbodies with one or more impaired uses that require the development of a TMDL. The collection of biological data will provide information useful in assessing both sediment and nutrient related impairments in the Upper Gallatin TPA.

1.1.1 Sediment Impairments

In the Upper Gallatin TPA, the South Fork West Fork Gallatin River and West Fork Gallatin River are listed as impaired due to sediment. The Middle Fork West Fork Gallatin River and Squaw Creek are listed as impaired due to other habitat alterations, which will be addressed as a sediment related impairment. In addition, Cache Creek and the Taylor Fork are also listed as impaired due to sediment in the Upper Gallatin TPA. However, these stream segments are beyond the scope of this assessment.

1.1.2 Nutrient Impairments

In the Upper Gallatin TPA, the South Fork West Fork Gallatin River and the West Fork Gallatin River are listed as impaired due to nutrients and algal growth/chlorophyll *a*, while the Middle Fork West Fork Gallatin River is listed as impaired due to nutrients. Squaw Creek is listed as impaired due to nutrients and phosphorus.

1.2 Previous Investigations

To address water quality impairments in the Upper Gallatin TPA, the U.S. Environmental Protection Agency (EPA) and Montana DEQ have begun inventorying the available data on stream segments that are listed as impaired on the 2004 303(d) List. In April of 2005, the *Upper Gallatin Total Maximum Daily Load Planning Area Phase I TMDL Status Report* was completed (CDM, 2005). This report provided a general characterization of the watershed and summarized the existing data. Through this assessment, areas where recently collected data was lacking were identified. The current study is geared towards collecting biological data at sites identified as lacking up-to-date data, as well as at sites which potentially represent reference conditions.

The recently completed *Upper Gallatin Watershed Aerial Photo Assessment and Reach Stratification* provided an assessment of existing stream conditions along several streams in the Upper Gallatin TPA, including Cache Creek, Taylor Fork, Dudley Creek, Squaw Creek and the mainstem of the Gallatin River between Specimen Creek and Spanish Creek (PBS&J, 2005). This assessment provided a characterization of existing channel and riparian conditions, along with identifying potential sources of pollution. Information from this assessment will be used to select sample sites on Squaw Creek and Dudley Creek. An additional aerial photo assessment is planned for the Middle Fork West Fork Gallatin River, South Fork West Fork Gallatin River, and West Fork Gallatin River, along with the mainstem of the Gallatin River within Yellowstone National Park. This assessment is scheduled to be completed in 2006.

2.0 Objectives and Design

The objective of this study is to fill identified gaps in the biological database for the Upper Gallatin TPA. In addition, reference sites will be sampled for use in the development of appropriate TMDL water quality targets for the Upper Gallatin TPA. The existing biological data for the Upper Gallatin TPA is summarized in **Appendix A**. Macroinvertebrate and periphyton data collected prior to 1998 were not included within this data matrix. Chlorophyll *a* data was limited throughout the Upper Gallatin TPA. The few sites sampled were included in the data matrix for comparison purposes.

2.1 Biological Monitoring Sites

A total of 17 biological sample sites are described within this Sampling and Analysis Plan. This includes three sites on the South Fork West Fork Gallatin River, two sites on the Middle Fork West Fork Gallatin River, three sites on the West Fork Gallatin River and three sites on Squaw Creek (**Table 2-1**). Thus, biological sampling will occur at a total of eleven sites on stream

segments that are listed as impaired on the 303(d) List. In addition, biological monitoring will occur at one site each on Dudley Creek and Hell Roaring Creek, along with two sites on Swan Creek and the North Fork West Fork Gallatin River, in an attempt to define reference conditions within the Upper Gallatin TPA. Overall, biological sampling will occur on eight streams in the Upper Gallatin TPA in September of 2005. Biological monitoring sites are presented in **Appendix B**.

There are six sites within the West Fork Gallatin River watershed in which macroinvertebrate and periphyton data has recently been collected. Thus, macroinvertebrate and periphyton data will only be collected at the eleven sites that lack recent data. Chlorophyll *a* data will be collected at all of the biological samples sites. In addition, pebble counts will be performed during this sampling event to characterize the amount of fine sediment throughout the Upper Gallatin TPA and to aid in the development of sediment TMDLs for impaired waterbodies.

2.1.1 South Fork West Fork Gallatin River

There are two sample sites on the South Fork West Fork Gallatin River with recently collected biological data: Streamside (M05GALWFSS) and Elkhorn (M05GALWFEH). The Streamside sample site is located in the Firelight Meadows Subdivision at the Stream Side road crossing. The Elkhorn sample site is located just upstream of the confluence with the West Fork. Macroinvertebrate samples were collected at these sites in September of 2002, June and September of 2003, and July of 2004 (Bollman 2004). Periphyton samples were collected at these two sites in August of 2002, July and September of 2003, and July of 2004 (Bahls 2004). Since there is recently collected macroinvertebrate and periphyton data at these two sites, no additional sampling is required. However, chlorophyll *a* data has not been collected on the South Fork West Fork Gallatin River since 1998. Thus, chlorophyll *a* data will be collected at these two sites in September 2005.

Chlorophyll *a* data was collected on the South Fork West Fork Gallatin River in 1995 and 1996 at two sites: Ousel Falls and at the mouth. Chlorophyll *a* data was also collected at site SWG, which is near the mouth, in 1998. Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at Ousel Falls in September 2005.

Recent water quality monitoring has also been conducted on Yellowstone Club property, though no additional sample sites are proposed on Yellowstone Club property at this time.

Table 2-1. Biological Monitoring Sites.

Stream Segment	STORET ID	Sample Site	Established Site	Macroinvertebrates	Periphyton	Chlorophyll a
South Fork West Fork Gallatin River	UG05SFWF01	South Fk West Fk Gallatin R upstrm of Ousel Falls	H, E	x	x	x
	UG05SFWF03	South Fk West Fk Gallatin R at Stream Side road	M05GALWFSS			x
	UG05SFWF03	South Fk West Fk Gallatin R upstrm of West Fk	M05GALWFEH			x
Middle Fork West Fork Gallatin River	UG05MFWF01	Middle Fk West Fk Gallatin R upstrm of Beehive Ck	A, F, J	x	x	x
	UG05MFWF02	Middle Fk West Fk Gallatin R upstrm of North Fk	M05GALWFBD			x
North Fork West Fork Gallatin River	UG05NFWF01	North Fk West Fk Gallatin R upstrm Lone Mt Ranch	M05GALWFWW			x
	UG05NFWF02	North Fk West Fk Gallatin dwnstrm Lone Mt Ranch	M05GALWFLM			x
West Fork Gallatin River	UG05WFGR01	West Fk Gallatin R dwnstrm North Fk and Middle Fk	MWG-1	x	x	x
	UG05WFGR02	West Fk Gallatin R upstrm of South Fk Gallatin R	M05GALWFJW			x
	UG05WFGR03	West Fk Gallatin R at mouth	West Fork	x	x	x
Squaw Creek	UG05SQAW01	Squaw Creek upper	Reach 3	x	x	x
	UG05SQAW02	Squaw Creek at Rat Lake bridge	at mouth	x	x	x
	UG05SQAW03	Squaw Creek at mouth	at Rat Lake Bridge	x	x	x
Dudley Creek	UG05DDL01	Dudley Creek	Dudley Creek	x	x	x
Swan Creek	UG05SWAN01	Swan Creek above trailhead, lower		x	x	x
Swan Creek	UG05SWAN02	Swan Creek above trailhead, upper		x	x	x
Hell Roaring Creek	UG05HLRG01	Hell Roaring Creek		x	x	x

2.1.2 Middle Fork West Fork Gallatin River

There is one sample site on the Middle Fork West Fork Gallatin River with recently collected biological data. This site is identified as Beaver Dam (M05GALWFBD) and is located upstream of the confluence with the North Fork West Fork Gallatin River. Macroinvertebrate samples were collected at this site in September of 2002, June and September of 2003, and July of 2004 (Bollman 2004). Periphyton samples were collected at this site in August of 2002, July and September of 2003, and July of 2004 (Bahls 2004). Since there is recently collected macroinvertebrate and periphyton data at this site, no additional sampling is required. However, chlorophyll *a* data has not been collected on the Middle Fork West Fork Gallatin River. Thus, chlorophyll *a* data will be collected at this site in September 2005.

It should be noted that both the Bollman report (2004) and the Bahls report (2004) identify the J Walker sample (M05GALWFJW) as being on the Middle Fork West Fork Gallatin River above the confluence with the South Fork West Fork Gallatin River. The recently completed *Upper Gallatin Total Maximum Daily Load Planning Area Phase I TMDL Status Report* indicates that the South Fork West Fork Gallatin River flows into West Fork Gallatin River, which begins at the confluence of the Middle Fork West Fork Gallatin River and North Fork West Fork Gallatin River (CDM, 2005). Thus, the following discussion assumes that the J Walker site is actually on the West Fork Gallatin River and not the Middle Fork West Fork Gallatin River.

There is historic data on the Middle Fork West Fork Gallatin River above the confluence with Beehive Creek. Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected upstream of Beehive Creek in September 2005.

2.1.3 North Fork West Fork Gallatin River

The North Fork West Fork Gallatin River is being monitored as a potential reference condition for streams in the Upper Gallatin TPA, especially streams in the West Fork Gallatin River watershed. There are two sample sites on the North Fork West Fork Gallatin River with recently collected biological data: WOW (M05GALWFWW) and LMR (M05GALWFLM). Site WOW is upstream of the Lone Mountain Ranch, while site LMR is downstream of the Lone Mountain Ranch. Macroinvertebrate samples were collected at these two sites in September of 2002, June and September of 2003, and July of 2004 (Bollman 2004). Periphyton samples were collected at these two sites in August of 2002, July and September of 2003, and July of 2004 (Bahls 2004). Macroinvertebrate data was also collected in August of 2000 and October of 2001 on the North Fork in Bear Basin (Bollman 2002). Since there is recently collected macroinvertebrate and periphyton data at these sites, no additional sampling is required. However, chlorophyll *a* data has not been collected on the North Fork West Fork Gallatin River. Thus, chlorophyll *a* data will be collected at upstream and downstream of the Lone Mountain Ranch in September 2005.

2.1.4 West Fork Gallatin River

There is one sample site on the West Fork Gallatin River with recently collected biological data. This site is identified as J Walker (M05GALWFJW) and is located upstream of the confluence with the South Fork West Fork Gallatin River within the Meadow Village development. As mentioned previously, both the Bollman report (2004) and the Bahls report (2004) identify the J Walker sample site (M05GALWFJW) as being on the Middle Fork West Fork Gallatin River above the confluence with the South Fork West Fork Gallatin River. Macroinvertebrate samples were collected at this site in September of 2002, June and September of 2003, and July of 2004 (Bollman 2004). Periphyton samples were collected at this site in August of 2002, July and September of 2003, and July of 2004 (Bahls 2004). Since there is recently collected macroinvertebrate and periphyton data at this site, no additional sampling is required. Chlorophyll *a* data was collected above the confluence with the South Fork in 1995 and 1996. Thus, chlorophyll *a* data will be collected at this site in September 2005.

Two additional sites on the West Fork will also be monitored. One site located at the head of the West Fork just downstream of the Middle Fork and North Fork confluence, while a second site will be located near the mouth, which corresponds with the Blue Water Task Force “West Fork” sampling site. Periphyton data was collected at the upper site in 1998, while macroinvertebrate data was collected at the lower site in August of 2000 and March, July and October of 2001 (Bollman 2002). Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at both of these sites in September 2005.

2.1.5 Squaw Creek

The recently completed *Upper Gallatin Total Maximum Daily Load Planning Area Phase I TMDL Status Report* indicated that macroinvertebrate samples were collected at three sites in 1995 on Squaw Creek, though sample sites were not described (CDM, 2005). The U.S. Forest Service conducted water quality monitoring at two sites in the late 1970's. These sites were located at the mouth and at the Rat Lake Bridge. Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at both of these sites in September 2005. The recently completed *Upper Gallatin Watershed Aerial Photo Assessment and Reach Stratification* indicated that anthropogenic disturbance has extended deep into the watershed. Thus, macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at additional site in Reach 3 as delineated in the aerial photo assessment.

2.1.6 Dudley Creek

Dudley Creek is being monitored as potential reference conditions for streams in the West Fork Gallatin River watershed. The sample site is upstream of the mouth and corresponds to the Reach 7 as delineated in the recently completed aerial photo assessment. This site also corresponds with Blue Water Task Force “Dudley Creek” sample site. Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at this site in September 2005.

2.1.7 Swan Creek

Swan Creek is being monitored as potential reference conditions for streams in the Upper Gallatin TPA. The sample sites are located upstream of the forest road switchback where the road leaves the valley bottom. The lower sample site is upstream of the beaver complex. The upper sample site is approximately 100 yards upstream of the lower sample site. Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at these two sites in September 2005.

2.1.8 Hell Roaring Creek

Hell Roaring Creek is being monitored as potential reference conditions for streams in the West Fork Gallatin River watershed. The sample site is located upstream the of the Highway 191 crossing. Macroinvertebrate, periphyton, and chlorophyll *a* data will be collected at this site in September 2005.

3.0 Field Sampling Methods

Field sampling methods for chlorophyll *a*, macroinvertebrates, periphyton, and pebble counts will follow established DEQ protocols outlined in the Montana Department of Environmental Quality Standard Operation Procedure (SOP) manual, which is available on the internet at <http://www.deq.state.mt.us/wqinfo/monitoring/SOP/sop.asp>.

Chlorophyll *a* will be collected using the template method described in *Sample Collection and Laboratory Analysis of Chlorophyll-a SOP*, which is available on the internet at <http://www.deq.state.mt.us/wqinfo/QAProgram/SOP%20WQPBWQM-011.pdf>. A total of five replicate samples will be collected at each site.

Macroinvertebrate data will be collected using the traveling kick method in a riffle as described in *Sample Collection, Sorting, and Taxonomic Identification of Benthic Macroinvertebrates SOP*, which is available on the internet at <http://www.deq.state.mt.us/wqinfo/QAProgram/WQPBWQM-009.pdf>. The DEQ Macroinvertebrate Habitat Assessment Form (Riffle/Run Prevalence) will be completed at each site.

Periphyton samples will be collected using standard procedures as outlined the Section 12.1.2 of the SOP manual.

Pebble counts will be collected in a riffle following established DEQ protocols. A total of 100 particles will be tallied. Pebble counts will be performed perpendicular to the stream channel across the riffle and will include the entire channel within the bankfull zone.

4.0 Sample Handling Procedures

All biological monitoring samples will be handled following established DEQ protocols as described in the Standard Operation Procedure manual.

5.0 Laboratory Analytical Methods

All biological monitoring data will be analyzed by Montana DEQ certified vendors following appropriate analytical protocols. Chlorophyll *a* samples will be processed by the HKM Analytical laboratory in Butte, Montana. Macroinvertebrate samples will be analyzed by Rhithron Associates in Missoula, Montana. Periphyton samples will be processed by PhycoLogic in Helena, Montana.

6.0 Quality Assurance and Quality Control Requirements

All quality assurance and quality control (QA/QC) requirements followed by Montana DEQ will be instituted for this project. The QA/QC requirements are described in *Quality Assurance Project Plan (QAPP) Sampling and Water Quality Assessment of Streams and Rivers in Montana, 2005*, which is available on the internet at <http://www.deq.state.mt.us/wqinfo/QAProgram/WQPBQAP-02.pdf>.

7.0 Data Analysis, Record Keeping, and Reporting Requirements

Data generated during the Upper Gallatin TPA Biological Monitoring project will be stored in field notes, on field forms, and in spreadsheets obtained from the laboratories. Written field notes and measurements will be entered into a spreadsheet by PBS&J staff following QA/QC procedures to screen for data entry errors. PBS&J project staff will submit all biological monitoring data to the Blue Water Task Force and the Montana Department of Environmental Quality (DEQ) in a SIM-compatible format in an Excel spreadsheet that will provide for minimum data and metadata requirements for import into the EPA STORET database. All data generated during this project will be stored at PBS&J's Helena office, and will be made available to the public.

8.0 Schedule for Completion

Biological monitoring is scheduled to be performed the week of September 12-16th, 2005. Data assessment and reporting will be completed once all the laboratory analysis has been received and no later than June 30, 2006.

9.0 Project Team and Responsibilities

This project is a partnership between the Blue Water Task Force, Montana Department of Environmental Quality and PBS&J. Personnel involved in this project are presented in **Table 8-1**.

Table 8-1. Project Personnel Roles

Name	Organization	Project Responsibilities
Katie Alvin	Blue Water Task Force	Executive Director
Pete Schade	MT Dept. of Environmental Quality	Watershed Coordinator
Gary Ingman	PBS&J	Project Manager
Jeff Dunn	PBS&J	Watershed Specialist
Mark Bostrom	MT Dept. of Environmental Quality	DEQ QA Officer

Katie Alvin is the Executive Director for the Blue Water Task Force. Katie is responsible for contract oversight and review of project deliverables.

The Watershed Coordinator for the Upper Gallatin TPA at the Montana Department of Environmental Quality is Pete Schade. Pete is responsible for contract oversight and review of all project deliverables.

The Upper Gallatin TPA Biological Monitoring project manager is Gary Ingman, senior biologist with PBS&J. The project manager will provide general oversight and coordination to the monitoring project and monitoring activities. He will also be responsible for reviewing the monitoring procedures and results to ensure that measurement quality objectives and quality control requirements are met.

Jeff Dunn is a Watershed Specialist with PBS&J. Jeff's responsibilities include Sampling and Analysis Plan compilation, data collection, and data assessment and reporting.

Mark Bostrom of the Montana Department of Environmental Quality Water Quality Planning Bureau is the state water quality monitoring quality assurance officer.

10.0 References

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Appendix A

BIOLOGICAL DATA MATRIX

Upper Gallatin TPA

Stream Segment	Sample Site ID	Sample Site Description	Water Quality Sample Date	Chlorophyll a (mg/m ²)	Macroinvertebrate Bioassessment Metric	Macroinvertebrate HBI	Macroinvertebrate "Clinger" Taxa Richness	Macroinvertebrate Trichoptera Taxa Richness	Periphyton Pollution Index	Periphyton Siltation Index	
South Fork West Fork Gallatin River	SS1	Streamside	9/21/2002		100	1.76	22	7			
	SS2		6/26/2003		67	1.68					
	SS3		9/24/2003		100	2.72	17	5			
	SS4		7/20/2004		83	2.97					
	ELK1	Elkhorn	9/21/2002		89	4.91	12	5			
	ELK2		6/26/2003		72	2.27					
	ELK3		9/24/2003		100	3.58	17	7			
	ELK4		7/20/2004		72	5.14	12	2			
	M05GALWFSS	South Fork in Firelight Meadows Subdivision	8/10/2002							2.29	3.45
			7/14/2003							2.30	5.55
			9/24/2003							2.50	13.66
			7/20/2004							2.30	4.23
	M05GALWFEH	South Fork near Confluence with Middle Fork	8/10/2002							2.52	13.93
			7/14/2003							2.28	4.22
			9/24/2003							2.24	6.20
			7/20/2004							2.47	6.89
SWG-1	South Fork West Fork Gallatin River near Mouth	1998		?	?			2.53	16.67		
SWG		10/23/1998	36.1								
S Fk ab Ousel Falls		8/22/1995	123								
			62.1								
OF-2 Ousel Falls		9/10/1996	6.2								
S Fk near mouth		8/22/1995	107								
			439								
SF-2 S Fk at Mouth		9/10/1996	1000								
Middle Fork West Fork Gallatin River	J	Middle Fork Below Mad Wolf Lift	1998		?	?					
	BD1	Beaver Dam	9/21/2002		94	3.04	18	7			
	BD2		6/26/2003		94	2.30		5			
	BD3		9/24/2003		100	2.83	16	6			
	BD4		7/20/2004		89	2.71	17	5			
	M05GALWFBD	Middle Fork above North Fork	8/10/2002							2.53	13.39
			7/14/2003							2.38	5.73
			9/24/2003							2.47	32.88
7/20/2004									2.54	14.65	
North Fork West Fork Gallatin River	5	Bear Basin	8/2/2000		100	1.76	17	9			
			10/31/2001		100	3.12	15	9			
	WOW1	WOW (above Lone Mountain Ranch)	9/21/2002		100	0.92	15	8			
	WOW2		6/26/2003		94	0.78					
	WOW3		9/24/2003		100	1.50	17	10			
	WOW4		7/20/2004		83	0.92		6			
	LMR1	LMR (below Lone Mountain Ranch)	9/21/2002		100	2.70	17	8			
	LMR2		6/26/2003		83	0.40					
	LMR3		9/24/2003		100	2.43					
	LMR4		7/20/2004		100	1.96	19	8			
	M05GALWFWW	North Fork above Lone Mountain Ranch	8/10/2002							2.62	1.73
			7/14/2003							2.75	7.10
			9/24/2003							2.78	0.25
			7/20/2004							2.76	11.94
	M05GALWFLM	North Fork below Lone Mountain Ranch	8/10/2002							2.65	1.00
7/14/2003									2.45	0.74	
9/24/2003									2.49	0.61	
7/20/2004									2.85	0.00	

Stream Segment	Sample Site ID	Sample Site Description	Water Quality Sample Date	Chlorophyll a (mg/m ²)	Macroinvertebrate Bioassessment Metric	Macroinvertebrate HBI	Macroinvertebrate "Clinger" Taxa Richness	Macroinvertebrate Trichoptera Taxa Richness	Periphyton Pollution Index	Periphyton Siltation Index	
West Fork Gallatin River	4	West Fork, 200m above the confluence	8/2/2000		67	4.00	13	7			
			3/24/2001		83	3.99	12	7			
			7/14/2001		67	4.61	16	4			
			10/13/2001		89	4.19	12	5			
	MWG-1	Middle Fork West Fork Gallatin River ab SF	6/20/1995						2.39	10.78	
	JW1	J Walker	9/21/2002		83	4.86	11	3			
	JW2		6/26/2003		78	2.92	16	6			
	JW3		9/24/2003		72	5.03	11	6			
	JW4		7/20/2004		72	5.04					
	M05GALWFJW	Middle Fork above South Fork	8/10/2002							2.37	19.29
			7/14/2003							2.09	1.07
			9/24/2003							2.26	12.63
			7/20/2004							2.34	5.30
	Middle Fork above SF		8/22/1995	79.2							
MF-4 Middle Fork above SF		9/10/1996	492								

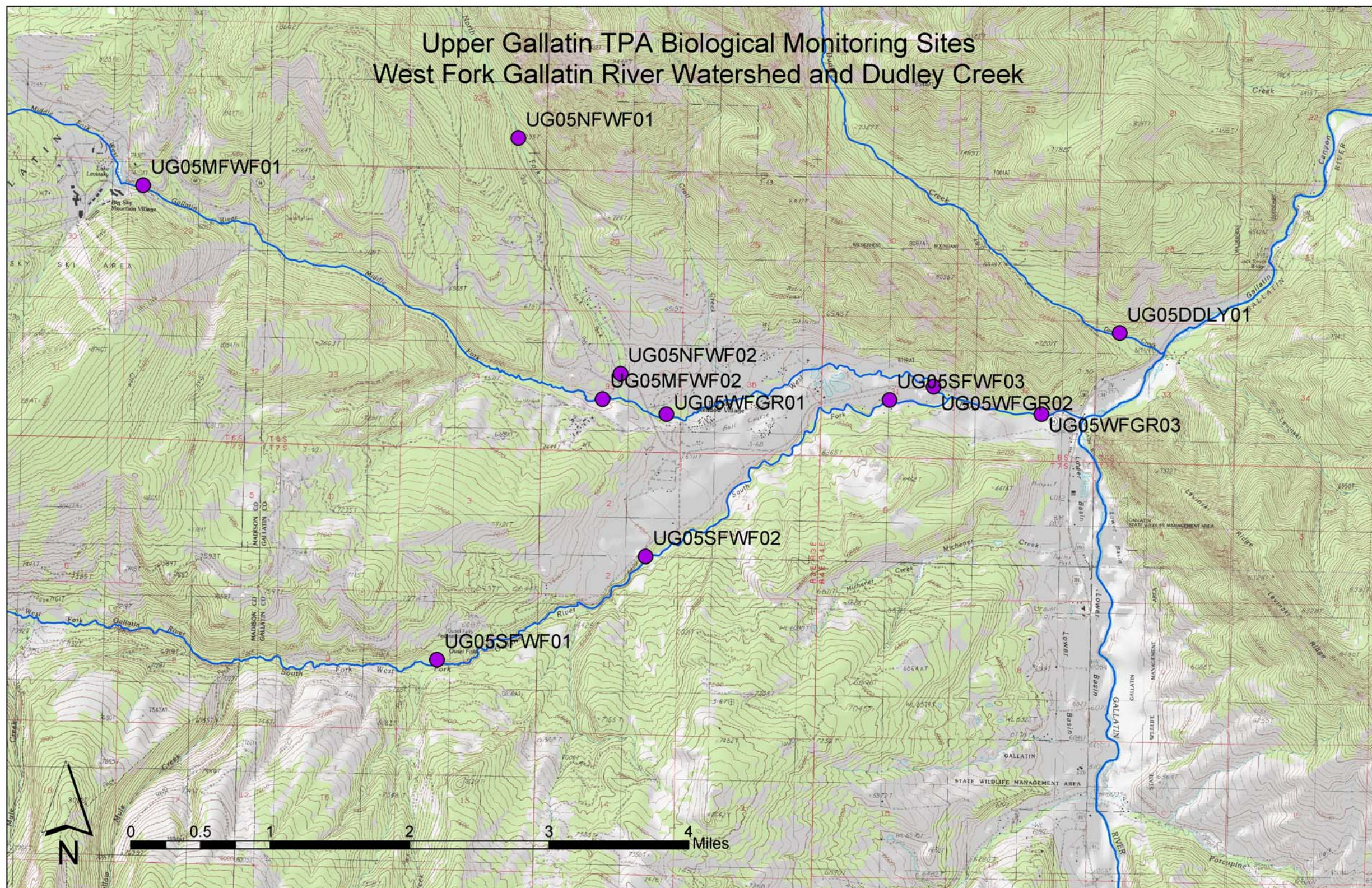
incorrectly labeled as Middle Fork West Fork when actually on the West Fork

Appendix B

BIOLOGICAL MONITORING SITE MAPS

Upper Gallatin TPA

Upper Gallatin TPA Biological Monitoring Sites West Fork Gallatin River Watershed and Dudley Creek



Upper Gallatin TPA Biological Monitoring Sites Squaw Creek, Swan Creek and Hell Roaring Creek

