MONTANA FISH, WILDLIFE & PARKS
PROJECT PERFORMANCE REPORT

STATE:	**MONTANA**
GRANT TITLE:	**Native Prairie Fish Survey and Inventory (2005)**
GRANT AGREEMENT:	
PERIOD COVERED:	**November 1, 2004 through December 31, 2005**
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Date:	**May 1, 2006**

Introduction

An analysis of Montana Fish, Wildlife and Park's (FWP) Montana River Information System (MRIS) database revealed that more than 4,200 streams comprising more than 18,000 stream miles in the Montana database are unsurveyed. The overwhelming majority of these waters are small, warm water prairie streams located in the eastern half of Montana. With little potential for sport fish, there is a strong likelihood that many contain intact, diverse assemblages of native fish, reptiles and amphibian species, at least during parts of the year. There is a need to survey these prairie streams to gain a greater understanding of the fisheries fauna that occur there. The baseline information collected will be used to generate a comprehensive fish and wildlife plan that Montana Fish, Wildlife and Parks has agreed to develop in compliance with the State Wildlife Grants Program (SWiG). This baseline data will also enable resource managers to better understand and manage prairie species and their habitats (McDonald, 2003).

Objective

The primary objective of this project is to inventory and document the occurrence and distribution of native fish species in prairie streams of eastern Montana, and to gather baseline data to be used to develop Montana's comprehensive fish and wildlife plan (McDonald, 2003). A secondary objective is to determine the presence and distribution of reptile and amphibian species in order to better complete the FWP and National Heritage Program's joint Point Observation Database (POD).

Expected Results and Benefits

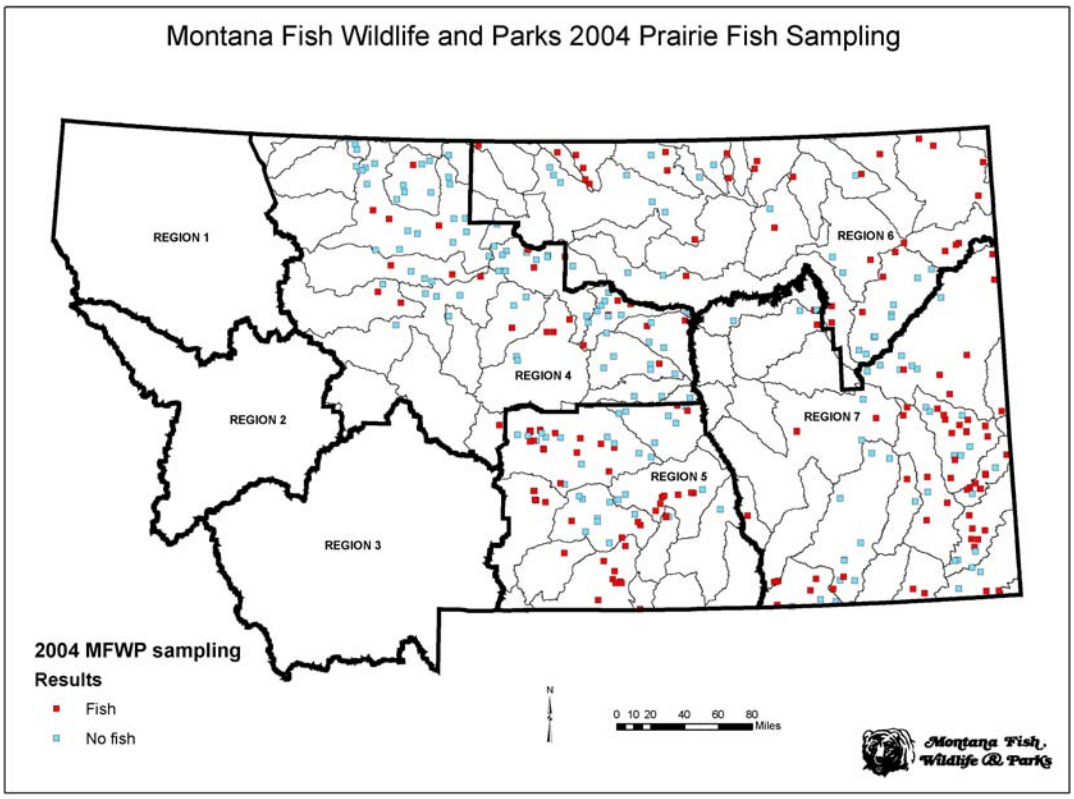
The expected benefits of this project include:

- Filling in data gaps on distribution and occurrence of native prairie fish as well as amphibians and reptiles.
- Determining where intact assemblages of native fish species occur.
- Increasing knowledge about the distribution of sensitive species.
- Gathering information on the spatial and temporal use of prairie streams by native fish species.
- Gathering baseline data to respond to resource pressures such as land management practices, coal bed methane extraction, and bait fish seining (McDonald, 2003).

Methods

Montana Fish Wildlife and Parks (FWP) technicians from administrative Regions 4, 5, and 6 surveyed at least 162 random stream sites in 2005 (Figure 1). Steve Carson, FWP Programmer/Analyst, generated the list of random survey sites. Lack of historical sampling, stream length, and 4th Code Hydrologic Unit (HUC) were all factors used in selecting the random sample sites. The complete protocol for randomly selecting previously unsampled sites is described in **Appendix A** (Tabor, 2004). Each random site was also generated with an alternate site. The alternate sites were used if permission to the primary site was denied/unobtained or if no water was found within one mile up and downstream of the primary sample site. FWP technicians obtained permission to access sample sites on private land by telephoning landowners to give basic survey information or personally meeting with landowners. If access was denied on both primary and secondary random sites, BLM maps were used to determine nearest access on public land or the Montana Cadastral Mapping Program (http://gis.doa.state.mt.us/) was used to determine other landowners to contact on the same drainage.

Figure 1.



At least 123 non-random sites were sampled during the 2005 field season. FWP fisheries staff from all four regions chose the sites based on various factors. Sites located on public lands that were easily accessible by county roads were sampled. Fisheries staff also chose sample sites in order to update historical data. Each administrative region chose specific

sample sites to further the knowledge of land management and stream use. To help account for year-to-year sampling differences, Region 4 selected 26 sites to sample based on prior sampling and interest in updated results. Six non-random sites that were previously sampled in 2003 and 2004 were resampled in 2005 (tabor, 2005). Region 5 included streams in their non-random list that traditionally serve as irrigation returns. Streams were sampled before and during and after the irrigation season to compare species diversity and abundance. Region 6 chose 11 non-random sites in order to fill data gaps in the distribution and occurrence of native prairie fishes (Boyce and Hiland, 2005). All Region 7 sample sites were non-randomly selected based on a variety of factors. Twelve, sampled historically, were chosen so that comparisons of historic and recent data could be made. Eleven sample sites lie within the Powder River Coalbed Methane Basin and currently are or may be subject to CBM discharge water. These sites were sampled twice during the 2005 field season. Two sites were sampled at the request of the highway department to determine fish presence that would dictate embedment of road culverts containing substrate to enable fish passage. The remaining sites were chosen because of access and proximity to road crossings where fish passage may be inhibited (Sampson, 2006).

After all sample sites were chosen, FWP technicians obtained permission to access sample sites on private land by telephoning landowners to give basic survey information or by personally meeting with landowners. After access was granted, sites were located using a Garmin eTrex Vista GPS and a BLM map. Longitude and latitude were taken at the middle of the survey area and pictures of the site were taken with a digital camera. If water was located a survey perimeter of 300 meters was marked off and fish and habitat sampling were completed following Bramblett's prairie stream sampling protocol (2002) (Appendix B). Water temperature, conductivity, dissolved oxygen, and salinity were measured using a YSI 85 water quality meter. A Hanna Instruments 98127 pH and temperature meter was used to measure pH. All water quality sampling was completed prior to fish sampling in order to ensure accurate readings. Fish were surveyed at each site using, one of three, ¼" mesh seines that was appropriate for the depth and width of the stream channel. A total of 300 meters of the stream was seined at each wetted site. Captured fish were identified using Holton and Johnson (2003). Lengths (mm) from 20 randomly selected individuals of each species were recorded. At least one fish per species from each sample site was vouchered and preserved in formalin to later validate identification. For all unknown fish and *Hybognathus* spp. at least five voucher specimens were preserved to take to the lab for later identification. Amphibians and reptiles caught in the seine were identified, counted, documented, and released. All herpetological observations made during the fish and habitat sampling portions of the survey were recorded. Werner et al. (2004) was used for reference in reptile and amphibian identification. Examination of habitat variables included measuring channel dimension as well as substrate size and type. All of the fish, amphibian, reptile and habitat data was recorded on "Rite in the Rain" data sheets (**Appendix C**).

Summary of Results

The prairie stream field season began in March and ended in early September. In just over six months 515 sample sites were visited. Forty-three percent of the sites sampled were on

private property. The remaining were located on Bureau of Land Management (BLM), State, United States Fish and Wildlife Service, or National Forest Service lands. Of the 515 sites, 285 were dry and 230 had water (Table 1). In 170 of the wet sites fish were sampled and in the remaining 60 streams no fish were found (Table 1). All site statuses, locations, and dates sampled can be found in **Appendix D**, arranged by administrative region and HUC name.

Table 1. 2005 Statewide prairie stream summary statistics by region.

	R-4	**R-5**	**R-6**	**R-7**	**Total**
# of Sites where Access Denied	0	n/a	1	4	**5**
# of Sites Visited	123	206	100	86	**515**
# of Dry Sites	70	160	51	4	**285**
# of Sites with Water but no Fish	21	5	15	19	**60**
# of Sites with Water and Fish	32	41	34	63	**170**
# of Private Sites	99	n/a	56	64	**219**
# of Public Sites	24	n/a	20	22	**66**
# of Random Sites	97	n/a	65	0	**162**
# of Non-random Sites	26	n/a	11	86	**123**
Total # Fish Species Identified	29	27	24	29	**41**
Total # of Fish Sampled	16,325	19,304	7,024	19,495	**62,148**
Total # Reptile Species Identified	8	3	6	6	**10**
Total # Amphibian Species Identified	5	3	4	5	**5**

Forty-one species of fish were identified. Twenty-five of the species are native to Montana and the remaining 16 are introduced (Table 2). The common carp was the most commonly encountered introduced fish (35 sites) followed by the black bullhead and green sunfish, found in 23 and 21 sites respectively (Table 2). The fathead minnow was the most highly distributed fish, being sampled in 129 sites or 76% of locations (Table 2). A total of 62,148 individual fish were documented (Table 3).

The mean number of fish species per site was 4.8 with the range numbering between 1 and 17 species per site (Figure 2). The most abundant species sampled was the fathead minnow, accounting for 36.31% of all fish sampled (Table 2). The brook stickleback and plains minnow were the next most abundant species, making up respectively 7.26% and 7.13% of all individuals sampled (Table 2). The largest number of fish species documented at one site totaled 17. Only one sample site, Region four's Teton River site, recorded seventeen species. Species records for all sites, arranged by administrative region and HUC, can be found in Appendix E. The greatest number of individual fish recorded at a single site was 5,722 at Region four's Horsetheif Coulee in the Box Elder HUC (Appendix E). Arrow Creek, in the Region 4 Upper Yellowstone-Pompey's Pillar HUC, followed with 3,840 individual fish, consisting of 14 species. Thirty-five of the streams contained 500 or more fish. Forty-seven percent of the sites had 5 or more species of fish,

while the remaining 53% contained 4 or fewer species. Thirty-three sites contained only one species of fish. At 42% (14) of those sites it was a fathead minnow and at 12% of the sites the single species was a brook stickleback.

Figure 2.

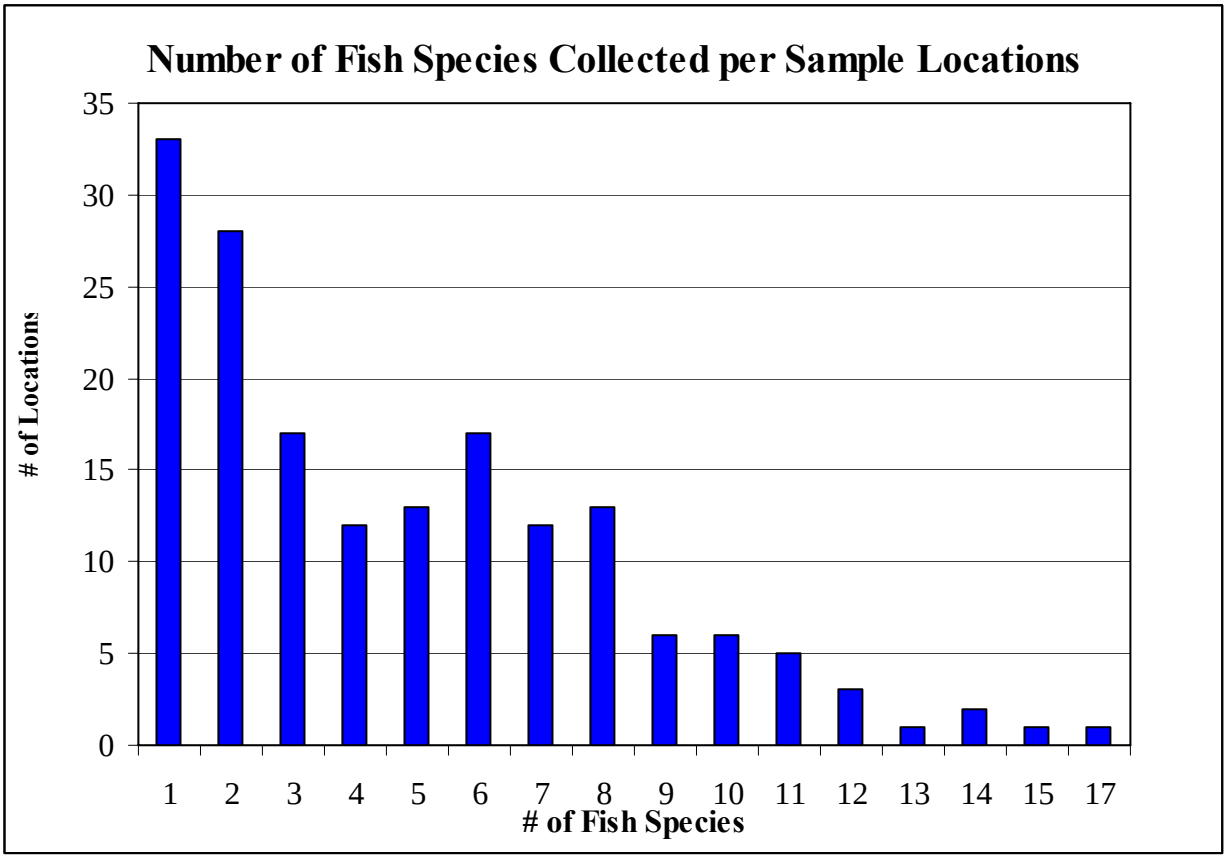


Table 2. Fish species identified, number and percent of locations sampled and number and percent of individuals sampled for statewide prairie stream surveys. Sorted decreasing by number of locations sampled.

Species Common Name	Species Scientific Name	# locations sampled	% of locations sampled	# individuals sampled	% of total sampled
fathead minnow	*Pimephales promelas*	129	75.9	22,614	36.31
white sucker	*Catostomus commersoni*	80	47.1	2,391	3.84
lake chub	*Couesius plumbeus*	64	37.6	3,942	6.33
longnose dace	*Rhinichthys cataractae*	48	28.2	1,227	1.97
brook stickleback	*Culaea inconstans*	47	27.6	4,518	7.26
plains minnow	*Hybognathus placitus*	38	22.4	4,442	7.13
brassy minnow	*Hybognathus hankinsoni*	37	21.8	2,073	3.33
common carp*	*Cyprinus carpio*	35	20.6	1,383	2.22
flathead chub	*Platygobio gracilis*	30	17.6	7,263	11.66
sand shiner	*Notropis stramineus*	30	17.6	3,287	5.28
black bullhead*	*Ameiurus melas*	23	13.5	326	0.52
northern redbelly dace	*Phoxinus eos*	23	13.5	655	1.05
green sunfish*	*Lepomis cyanellus*	21	12.4	216	0.35
longnose sucker	*Catostomus catostomus*	21	12.4	400	0.64
creek chub	*Semotilus atromaculatus*	19	11.2	528	0.85
western silvery minnow	*Hybognathus argyritis*	19	11.2	3,713	5.96
emerald shiner	*Notropis antherinoides*	17	10.0	1,083	1.74
river carpsucker	*Carpiodes carpio*	17	10.0	641	1.03
shorthead redhorse	*Maxostoma macrolepidotum*	17	10.0	124	0.20
mounain sucker	*Catostomus platyrhynchus*	15	8.8	305	0.49
plains killifish*	*Fundulus zebrinus*	15	8.8	703	1.13
northern pike*	*Esox lucius*	10	5.9	46	0.07
channel catfish	*Ictalurus punctatus*	8	4.7	108	0.17
pumpkinseed*	*Lepomis gibbosus*	8	4.7	33	0.05
yellow perch*	*Perca flavescens*	8	4.7	55	0.09
goldeye	*Hiodon alosoides*	6	3.5	50	0.08
Iowa darter	*Etheostoma exile*	6	3.5	22	0.04
stonecat	*Noturus flavus*	5	2.9	12	0.02
walleye*	*Sander vitreum*	4	2.4	5	0.01
golden shiner*	*Notemigonus chrysoleucas*	3	1.8	54	0.09
brown trout*	*Salmo trutta*	2	1.2	3	0.00
spottail shiner*	*Notropis hudsonius*	2	1.2	2	0.00
white crappie*	*Pomoxis annularis*	2	1.2	2	0.00
brook trout*	*Salvelinus fontinalis*	1	0.6	28	0.04
freshwater drum	*Aplodinotus grunniens*	1	0.6	1	0.00
hybrid dace	*Phoxinus eos x P. neogaeus*	1	0.6	2	0.00
largemouth bass*	*Micropterus salmoides*	1	0.6	6	0.01
mottled sculpin	*Cottus Bairdi*	1	0.6	1	0.00
rainbow trout*	*Oncorhynchus mykiss*	1	0.6	2	0.00
smallmouth buffalo	*Ictiobus bubalus*	1	0.6	4	0.01
yellow bullhead*	*Ameiurus natalis*	1	0.6	2	0.00
Grand Total		170		62, 148	

*= Introduced species

Prairie stream surveys documented 1,675 amphibians and reptiles (Table 5). Ten reptile and five amphibian species were recorded. The northern leopard frog, the most highly distributed and abundant positively identified amphibian (433) was found at 56 sites. The reptile observed most frequently was the painted turtle, 62 individuals were recorded at 26 sites. All amphibian and reptile data by site can be found in Appendix F.

Table 3. 2005 reptile and amphibian species identified including number of locations and individuals sampled.

Species Common Name	Species Scientific Name	Region 4	Region 5	Region 6	Region 7	# Individuals Sampled	# Locations Sampled	% Total Sampled
Boreal Chorus Frog	*Pseudacris maculata*	29	6	18	82	135	14	8.06
Boreal Chorus Frog Tadpole	*Pseudacris maculata*	26	5	-----	115	146	17	8.72
Common Garter Snake	*Thamnophis sirtalis*	3	-----	-----	11	14	9	0.84
Eastern Racer	*Coluber constrictor*	2	-----	1	5	8	5	0.48
Gophersnake	*Pituophis catenifer*	6	3	2	1	12	11	0.72
Great Plains Toad	*Bufo cognatus*	2	-----	-----	143	145	8	8.66
Northern Leopard Frog	*Rana pipiens*	41	17	140	235	433	56	25.85
Northern Leopard Frog Tadpole	*Rana pipiens*	15	-----	31	18	64	7	3.82
Painted Turtle	*Chrysemys picta*	3	9	11	39	62	26	3.70
Plains Gartersnake	*Thamnophis radix*	3	-----	19	2	24	12	1.43
Short Horned Lizard	*Phrynosoma hernandesi*	-----	-----	1	-----	1	1	0.06
Snapping Turtle	*Chelydra serpentina*	-----	-----	-----	9	9	6	0.54
Spiny Softshell Turtle	*Apalone spinifera*	9	8	-----	-----	17	6	1.01
Terrestrial Garter Snake	*Thamnophis elegans*	2	-----	-----	-----	2	2	0.12
Tiger Salamander	*Ambystoma tigrinum*	5	2	20	26	53	24	3.16
Tiger Salamander Larva	*Ambystoma tigrinum*	136	13	124	61	334	19	19.94
Unknown Tadpole		-----	-----	18	17	35	5	2.09
Western Rattlesnake	*Crotalus viridis*	3	-----	2	-----	5	5	0.30
Woodhouse's Toad	*Bufo woodhousii*	19	-----	5	10	34	14	2.03
Woodhouse's Toad Tadpole	*Bufo woodhousii*	-----	-----	142	-----	142	1	8.48
Total		304	63	534	774	1,675		100.00

Discussion

A total of 515 stream sites were visited during the 2005 field season, and the distribution of 41 different fish species were better documented throughout eastern Montana. In addition, field crews recorded 15 reptile and amphibian species while surveying sites. The 2005 field season documented a high number of dewatered streams due to the ephemerality of the streams and the continued drought conditions occurring in Montana.

Region 4 fisheries staff repeated five sample sites that were previously sampled in 2003 and 2004. Many of the streams had similar results with differences of only 2 or 3 species. The Teton River sampling documented five species not previously documented and lacked one species sampled in 2003 and 2004. Arrow Creek proved to have similar fish species at all three sampling events. The Armells Creek data showed an increase of two species not previously documented. The 2005 sampling of

Crooked Creek documented similar species to the 2004 sampling, but neither one has shown as much species variation as the 2003 sampling. Similarly the Musselshell River sampling documented two species in 2003 that have not been observed in more recent sampling efforts (Tabor, 2005).

Region 5 sampled five stream sites that serve as irrigation returns to compare species diversity and abundance before during and after irrigation seasons. Each site was sampled prior to irrigation discharge and during irrigation discharge and after the season was over. Initial results show differences in abundance and species diversity depending on which part of the irrigation season the sampling took place.

Region six chose 11 non-random sites to sample in 2005. Non-random sites such as Milk River at Vandalia Dam and the Dodson Canal were sampled in order to provide up to date species information.

The Region 7 fisheries staff chose sites along water systems where coal bed methane extraction is currently taking place in order to document baseline data for fish species and water quality. Data collected on small prairie streams in SE Montana during 2003 through 2005 have provided base-line information on fish abundance and distribution prior to the expected influences of CBM development. Natural variation found within these populations due to environmental stochasticity was documented. Factors such as drought, impacted hydrograph, or even drainage geology were observed to influence fisheries. These data will be used to monitor the additional influence of CBM development on fish populations (Sampson, 2006)

In Regions 4, 5, and 6, crews of 2 people performed the surveys, while Region 7 used a 3-person crew. Acquiring permission to access private lands was done over the telephone or in-person while out in the field. Most landowners allowed access to the site after an explanation of the project was given. A few landowners denied access to their land citing past differences with Montana Fish, Wildlife and Parks or stated that they didn't allow anyone access to their land. Streams on tribal land were not sampled in any region. Some landowners didn't believe that they had enough water to sustain fish populations and were surprised when fish were sampled, but were disappointed that no "real" fish like trout were documented. Other landowners knew that their streams contained fish, but thought all of the fish were called minnows and didn't realize the diversity of species within prairie streams.

Sampling in 2005 was able to determine fish presence and population. The difference in species richness between sites sampled multiple times shows that a single sampling event on most of these streams is inadequate. In the future, after all baseline data is recorded, the sample sites should be resampled during different times of the year to account for yearly and seasonal differences. The current study is occurring during a drought cycle. Normal to wet conditions may show very different sampling results. It is recommended that the prairie stream survey be continued in order to fill in data gaps on distribution and occurrence of native prairie fish as well as amphibians and reptiles (Sampson, 2005).

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Appendix A. Protocol used to select Eastern Montana Prairie Stream sample sites

Goal: Select 160 eastern Montana streams by HUC that have not been sampled before and fall within the Northern Plains area ecoregion.

Data Layers used:

- Bailey's Ecoregions layer-Great Plains polygon, too gross a scale for analysis
- Climax vegetation layer-from Natural resources Information System (NRIS) represents the same Great Plains Prairie area as Bailey's but at a finer scale.
- 100,000K stream routes-MFWP-built on the National Hydrography from the named streams 4th code HUCs- from Natural resources Information System (NRIS)
- Montana Rivers Information System (MRIS) database-for determining sampled streams

Steps:

1. Intersected the Prairie area (climax veg layer) with the 4th code HUCs to find HUCs that fell within the prairie. Dropped those HUCs that are less than 50% Prairie.
2. Determined the number of streams to sample in each HUC by dividing the amount of prairie in each HUC by the total amount of Prairie in Eastern Montana and then multiplying by 160(the total number of streams to be sampled).
3. Generated a list of streams that are sampled within the HUC's in step 1.
4. Intersected the remainder of streams (the unsurveyed with the Prairie Area) to remove streams that were in a HUC but not in an area of Prairie.
5. Sorted these unsurveyed streams by HUC and descending by length.
6. Selected the number of streams to sample for each HUC (from step 2) starting with the longest streams. The alternatives were selected by taking the next consecutive streams in the list (approximately twice the number of sample streams). Length was chosen as the criteria as the perennial-intermittent stream category was not useable.`
7. A random river mile was derived from each selected stream. A Lat-Long was determined for each point and whether that point fell within public land.

The Numbers:

- 52 HUC's determined to fall within the Prairie ecoregion.
- 4207 unsurveyed streams in these 52 HUC's.
- 367 streams surveyed in these 52 HUC's
- 1-9 streams selected to sample in each HUC.
- 160 samples, 264 alternates, total of 424 streams selected
- 84% if the streams have some public access along them
- 21% of the selected sample points fall in public land (Tabor, 2004)

Appendix B. Fish and Habitat Sampling Protocol for Prairie Streams

1. ***Site location***. -Locate the sampling site using GPS for random sites, or by convenience for non-random sites. The GPS location will be the center of the reach, this is where you place the "F" flag (see Step 2). If the site is dry, shift the reach up or downstream to capture the most wetted channel possible on the parcel of land where you have permission for sampling.

2. ***Laying out the sample reach***. -Lay out a 300 m sample reach using a measuring tape and a set of 11 pin flags (labeled A-K). Follow the curves in the stream channel with the measuring tape; do not cut across curves. To avoid spooking fish, walk along the bank, not in the stream. Place a flag every 30 m. The "A" flag will be at the downstream end; the "K" flag will be at the upstream end of the reach. The "F" flag will go in the center of the reach.

3. ***Block nets***. -Place block nets (these can be old seines, 1/4" mesh) at the upstream (K flag) and downstream (A flag) ends of the sample reach if the water in the channel is continuous, deeper than 25 cm, and relatively clear. This prevents fish from leaving the sample reach.

4. ***Seining***. -Select the seine based on the size of the stream to be sampled. The seine length to be used should be approximately equal to or slightly greater than the stream width, and the seine height should be about 1.5 to 2 times greater than the depth of the stream. Dip nets can be used in very shallow, small habitats. Seining begins at the upstream end (K flag) and proceeds downstream to the A flag. Two people perform seining, one on each end of the seine. In pools, the seine is pulled down the stream channel, using the shore and other natural habitat features as barriers. Begin with the seine rolled up on each seine braille. The seine is typically set perpendicular to shore and hauled downstream parallel to shore. As you proceed, let out enough seine so that the seine forms a "U" shape, but not so much that the net is hard to control. Adjust the length of the seine by rolling or un-rolling net on the seine braille. The speed of seining should be fast enough to maintain the "U" shape, but not so fast that the floats become submerged, or that the seine's lead line come way up off the bottom of the stream. If rocks or other snags are on the bottom, the seine can be lifted off the bottom for a moment to avoid the snag, or one of the netters can bring the seine around the snag to avoid it, all the while maintaining the forward progress of the seine. Similarly, areas of dense aquatic vegetation can be avoided. It is important not to stop the forward progress, because fish will swim out of the seine. It is better to avoid a snag while keeping moving than to become snagged, which will allow fish to escape. In "snaggy" waters, keep more of your seine rolled up for better control.

   Proceed downstream while seining. In narrow streams, the entire channel width is spanned with the seine. In wider streams, one person walks along the shore, while the other wades through the channel. The length of each seine haul will depend on the natural features of the stream channel and shoreline, but seine hauls should not

Appendix B continued.

normally be more than 60 or 90 m long. Side channel bars or the end of a standing pool are good areas to haul out or "beach" the seine. Where a large bar or end of a standing pool is present both netters can simply run the net up on the shore. In streams with steep banks or lack of obvious seine beaching areas the "snap" technique can be used. At the end of the haul, the person near shore stops, while the person farthest out turns into shore, quickly, until the seine is up against the bank. The two netters then walk away from each other, taking the slack out of the seine, and keeping the seine's lead line up against the bank.

In riffles, with moderate to fast current, the "kick seine" technique can be used. The seine is held stationary in a "U" shape, while the other team member disturbs the substrate immediately upstream of the net. Then the net is quickly "snapped" out of the water by both team members using an upstream scooping motion.

Seine the entire 300 m reach, covering the linear distance at least once. If part of the 300 m is dry, just skip it. If the stream is much wider than your seine, do extra seine hauls in the large pools to cover the extra width. Sample all habitat types (shoreline, thalweg, side channels, backwaters).

After each seine haul, place fish in a bucket. If the water is warm, or you have captured many fish, place fish in a fish bag to keep them alive until seining is completed. If you have to work up fish before seining is completed, release processed fish in an area that has already been seined, as far away from the area remaining to be seined as possible (or outside of the block nets). Large fish such as northern pike, common carp, white sucker, shorthead redhorse, or channel catfish, can be measured, given a small clip to the lower caudal fin and released immediately.

4. ***Processing captured fish***. -Record the species of each fish captured, and measure 20 "randomly" selected fish to the nearest millimeter, total length. If the species of fish is unknown, try to at least record it as Unknown type 1, Unknown type 2, etc. Keep track of and record the minimum and maximum length of each species.

For each species, preserve a sub sample of at least 10 individuals per site to serve as voucher specimens. Record a small letter "v" next to the recorded length of the fish that is vouchered to allow for later validation. For *Hybognathus* spp., voucher up to 20 individuals per site. Kill the fish to be vouchered by placing them in a small bucket or 1000 ml nalgene jar with an overdose solution of MS-222. After fish processing is completed, drain the MS-222 solution and place the fish in a 1000 ml nalgene jar with a 10% solution of formalin (in clear water, if possible). For specimens longer than 150 mm, an incision should be made on the right ventral side of the abdomen after death, to allow fixative to enter the body cavity. The volume of formalin solution should be approximately equal to the twice the volume of fish tissue to be preserved, and the fish volume should be considered water when concentrations are determined. For example, if the fish take up 250 ml of the 1000 ml volume, you need about 500 ml of 10 % formalin solution (75 ml formalin and 425 ml water) in

Appendix B continued.

the 1000 ml nalgene jar. If necessary, use a second jar to accommodate all of the specimens. Use safety glasses and gloves when pouring formalin. Do not let the fish "cook" in the sun for a while and preserve them later, do it as soon as possible. Label all jars inside and out with Site, Site Number, Lat/Long, Date, Collectors names. Use pencil on Write-In-the-Rain or high rag paper for inside labels (just put the label right in with the fish), use a sticker label on the outside, cover it with clear (ScotchPad high performance packing tape pad 3750-P). Fish specimens should be left in formalin solution for at least 2-7 days. Fish specimens must have formalin solution soaked out before being handled extensively. Specimens should be soaked in water for at least 2 days, and water should be changed at least four times during this period. After soaking out the formalin, the fish specimens should be placed in either 70% ethanol or 40% isopropanol for long-term storage.

6. ***Habitat survey***. -Channel width, depth of water, and substrate will be measured at 11 transects perpendicular to the stream channel (located at Flags A-K), and along the thalweg in 10 thalweg intervals between transects (deepest part of channel). Stream width is measured to the nearest 0.1 m, depth is measured to the nearest cm, and substrate sizes and codes are on the data sheet. One person will be in the stream taking measurements while the other records data. Record the Latitude and Longitude (in decimal degrees) of the F flag, the stream name, site number, the date, the flow status (flowing, continuous standing water, or interrupted standing water) and the names of the crewmembers on the data sheet. Take photographs of the site, capturing as much of the sampling reach as possible. Make sure the date feature on the camera is turned on, to allow for later identification of site photographs.

   Transects. -Start on the left bank (facing downstream) at Flag A. Measure and record the wetted width of the channel to the nearest 0.1 m. Measure and record (separated by a comma on the data sheet) five equally spaced depth and substrate measurements across the wetted stream channel:

      1. Left Bank-5 cm from the left bank;
      2. Left Center-halfway between the Center and the Left Bank;
      3. Center-center of the wetted stream;
      4. Right Center-halfway between the Center and the Right Bank;
      5. Right Bank-5 cm from the right bank

   Thalweg. -Begin by recording the depth and substrate 3 m upstream of the transect, in the deepest part of the channel (thalweg). Proceed up the thalweg to Flag B, recording depth and substrate every 3 m along the thalweg. You will record a total of 10 depths and substrates between each pair of transects. If the stream channel is dry, record a 0 for depth, and record the substrate. The last thalweg measurement point should fall on the next upstream transect. The 3 m interval can be estimated, and it is helpful if the data recorder helps to keep the person in the stream from "squeezing" or "stretching" the thalweg measurements.

Repeat this procedure until all 11 transects and 10 thalweg intervals are completed.

Appendix B continued.

Gear List

- 20', x 6' x ¼" heavy delta seine
- 15' x 4' x ¼" heavy delta seine
- 30' x 6' x ¼" heavy delta seine (or delta) with 6' x 6' x 6' bag
- Fish bags: nylon diver's bags, ¼" mesh 18" x 30"
- Mudders – $109.00 at Ben Meadows
- Lug sole wading boots (Cabelas)
- Habitat pole (I make habitat poles out of 1.0" OD PVC pipe. 1.5 m long including caps. Score the pipe every 10 cm with a pipe cutter, then use a Sharpie to mark rings around the pole at the scores, and label the pole 10, 20, 30, etc. 5 cm marks are made between the 10 cm rings, you can visually estimate between the 5 cm marks to get to the nearest cm. Spray or brush a Urethane finish on the pole or your marks will come off fast with sunscreen and bug dope.)
- Metric 30 m tape (Ace Hardware actually carries a tape with metric on one side)
- Labels and tape pads for fish samples
- 1000 ml Nalgene jars
- Formalin (buffered is great, but more expensive-I throw a Rolaids in each jar of fish to neutralize the acidity)
- Block nets, Tent stakes
- Stream Conductivity meter
- Thermometer
- Turbidity meter (LaMotte, Ben Meadows 224805, $795.00-might try the "transparency tube" Ben Meadows 224196, $52.95)
- Waders (breathable waders are essential for this work-Cabelas has them for about $100/pair), hip boots are usually too low
- Measuring boards, one short 300 mm (half a 6" PVC works well for *Hybognathus* "fin flotation", one long, ~0.5-1 m, you can just use a meter stick for the odd big fish)
- Hand lens
- Small 1 gallon red bucket from Ace for doping fish
- 5 gallon buckets
- MS-222
- Clipboard
- 11 Pin flags labeled A-F

Appendix C. Sample of fish data sheet

Site: ______ Date: ______ water flowing? ______

Page___of___ continuous standing water? ______

Lat/Long: ______ Observers: ______ interrupted standing pools? ______

Species		Total Lengths (mm)					
	Total Count						max length
							min length
	Total Count						max length
							min length
	Total Count						max length
							min length
	Total Count						max length
							min length
	Total Count						max length
							min length
	Total Count						max length
							min length
	Total Count						max length
							min length

Appendix C. Sample of habitat data sheet.

Site:_____ Date:_____ Water Flowing_____

Lat/Long:_____ Observers:_____ Continuous Standing Water_____
Interrupted Standing Pools_____

					Transect Cross Section		
Transect	Width (XX.Xm)	Left Bank Depth/Sub	Left Center Depth/Sub	Center Depth/Sub	Right Center Depth/Sub	Right Bank Depth/Sub	Temp_____°C Ph_____ O_2_____mg/L Salinity_____PPT Conductivity_____US
A		/	/	/	/	/	BR=Bedrock(>4000mm) (larger than a car)
B		/	/	/	/	/	BL=Boulder(250 to 4000mm) (basketball to car)
C		/	/	/	/	/	CB=Cobble(64-254mm) (tennis ball to basketball)
D		/	/	/	/	/	CG=Coarse Gravel(16 - 64mm) (marble to tennis ball)
E		/	/	/	/	/	FG=Fine Gravel(2 to 16mm) (ladybug to marble)
F		/	/	/	/	/	SA=Sand(0.06 to 2 mm) (gritty up to ladybug size)
G		/	/	/	/	/	FN=Silt/Clay/Muck (not gritty)
H		/	/	/	/	/	HP=Hardpan(Firm, Consolidated, Fine Substrate)
I		/	/	/	/	/	WD=Wood (any size)
J		/	/	/	/	/	OT=Other (describe in comments)
K		/	/	/	/	/	

					Thalweg Profile					
Station	A-B Depth/Sub	B-C Depth/Sub	C-D Depth/Sub	D-E Depth/Sub	E-F Depth/Sub	F-G Depth/Sub	G-H Depth/Sub	H-I Depth/Sub	I-J Depth/Sub	J-K Depth/Sub
1	/	/	/	/	/	/	/	/	/	/
2	/	/	/	/	/	/	/	/	/	/
3	/	/	/	/	/	/	/	/	/	/
4	/	/	/	/	/	/	/	/	/	/
5	/	/	/	/	/	/	/	/	/	/
6	/	/	/	/	/	/	/	/	/	/
7	/	/	/	/	/	/	/	/	/	/
8	/	/	/	/	/	/	/	/	/	/
9	/	/	/	/	/	/	/	/	/	/
10	/	/	/	/	/	/	/	/	/	/

Comments/Observations:

Appendix D. Region 4 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Ownership	Status	Water
Arrow Creek HUC						
Arrow Creek	5/2/2005	47.4063	110.2004	Public	Fish, Herp	F
Little Battle Creek	6/13/2005	47.42586	110.15466	Private	Fish, Herp	F
Unnamed	6/13/2005	47.75886	110.18983	Private	None	Dry
Boxelder HUC						
Briggs Coulee	5/23/2005	46.89239	108.96901	Private	None	Dry
Duck Creek	6/9/2005	47.05939	108.67043	Private	Herp	ISP
Gorman Coulee	6/9/2005	47.01208	108.09877	Private	None	Dry
Horsetheif Coulee	4/13/2005	47.01698	109.16201	Private	Fish	F
Rose Canyon	4/13/2005	46.93039	109.03014	Private	None	Dry
Shale Coulee	6/9/2005	47.09369	108.3377	Private	Fish, Herp	ISP
Surenuff Creek	4/26/2005	46.95215	109.10086	Private	Fish	F
Tyler Creek	4/26/2005	46.92678	109.16387	Private	Fish	F
Bullwhacker-Dog HUC						
Alkali Creek	7/26/2005	48.01664	110.11694	Private	Fish, Herp	ISP
Arrow Creek	7/28/2005	47.7121	109.83593	Private	Fish, Herp	F
Birch Creek	8/1/2005	47.7511	109.57202	Private	Fish, Herp	F
Bullwhacker Creek	8/2/2005	47.80219	109.01928	Public	Fish, Herp	ISP
Butcher Knife Canyon	7/26/2005	47.87071	110.05739	Private	None	Dry
Coal Mine Coulee	7/26/2005	47.87645	110.06953	Public	None	Dry
Crooked Coulee	6/13/2005	47.97736	110.05117	Private	None	F
Cutbank Coulee	7/26/2005	47.94145	110.06254	Private	None	Dry
Dog Creek	8/1/2005	47.73529	109.61942	Private	Fish	ISP
Dry Fork Coulee	6/13/2005	48.13279	110.27768	Private	None	Dry
Eagle Creek	7/26/2005	47.91523	110.05815	Public	Fish, Herp	F
Eightmile Coulee	5/31/2005	47.77957	109.81558	Private	None	Dry
Holden Coulee	5/31/2005	47.80654	109.66665	Public	None	Dry
Jackson Coulee	7/25/2005	48.01131	110.23808	Private	None	Dry
Little Sandy Creek	7/25/2005	48.02903	110.13522	Public	Fish, Herp	ISP
Lonetree Coulee	6/13/2005	48.01665	110.00774	Private	None	Dry
Mud Spring Coulee	7/27/2005	47.81859	110.06269	Public	None	Dry
Pigtail Coulee	5/31/2005	47380381	109.66412	Public	Herp	Dry
Rattlesnake Coulee	7/26/2005	48.00285	110.12675	Private	None	Dry
Sage Coulee	5/31/2005	47.8297	109.80544	Private	None	Dry
Sandstone Coulee	5/31/2005	47.85881	109.81679	Private	None	Dry
Sheep Shed Coulee	7/27/2005	47.7574	109.92622	Private	Herp	Dry
Sherry Coulee	7/27/2005	47.84132	110.07384	Public	None	Dry
Flatwillow HUC						
Beaver Ball Creek	4/13/2005	46.88855	108.93444	Private	None	Dry
Johnson Coulee	5/23/2005	46.91008	108.23327	Public	Fish, Herp	F
Potter Creek	4/13/2005	46.9045	109.07624	Private	None	Dry
Racehorse Coulee	6/9/2005	46.96448	108.20799	Private	None	Dry
Snoose Creek	5/10/2005	46.88427	108.54388	Private	Herp	Dry
Yellow Water Creek	5/10/2005	46.92102	108.56281	Private	Fish	F
Yellow Water Creek	5/10/2005	46.91817	108.53629	Private	None	Dry

F=Flowing Water CS=Continuous Standing Water ISP=Interrupted Standing Pools

Appendix D. Region 4 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Ownership	Status	Water
Fort Peck Reservior HUC						
Antelope Creek	8/4/2005	47.65292	108.7648	Public	None	Dry
Armells Creek	8/30/2005	47.60796	108.70341	Public	Fish	ISP
Bull Creek	8/3/2005	47.78267	108.94009	Private	Fish	CS
Cow Creek	8/3/2005	47.78615	108.93509	Private	None	Dry
Two Calf Creek	8/4/2005	47.64494	108.77841	Public	Fish, Herp	ISP
Woodhawk Creek	8/3/2005	47.74471	108.94968	Public	Fish	ISP
Judith HUC						
Ming Coulee	5/11/2005	47.34521	109.59641	Private	None	ISP
Ox Creek	5/25/2005	47.33981	109.81131	Private	None	Dry
Plum Creek	5/11/2005	47.41854	109.616	Private	Fish	F
Squaw Coulee	5/25/2005	47.14942	109.90123	Private	Herp	ISP
Willow Creek	5/11/2005	47.36938	109.62598	Public	None	F
Wolf Creek	5/25/2005	47.37299	109.75768	Public	Fish	F
Lower Musselshel HUC						
Crooked Creek	9/1/2005	47.46106	108.02051	Private	Fish	ISP
Musselshell River	8/16/2005	47.35946	107.95768	Public	Fish, Herp	F
Marias HUC						
Arnst Coulee	6/16/2005	48.40754	111.09783	Private	None	Dry
Badger Coulee	6/16/2005	48.52906	110.98872	Private	None	Dry
Beebe Coulee	6/16/2005	48.40053	111.0806	Private	None	Dry
Bourne Coulee	6/21/2005	48.53843	110.86852	Private	None	Dry
Bison Coulee	6/28/2005	48.70578	111.09898	Private	None	Dry
Clausen Coulee	6/14/2005	48.46289	110.92926	Private	None	Dry
Clayton Coulee	6/28/2005	48.52507	110.89149	Private	None	Dry
Cox Coulee	6/14/2005	48.43959	110.92919	Private	None	Dry
Eagle Creek	6/29/2005	48.44801	111.19202	Private	None	Dry
Feye Coulee	6/16/2005	48.45667	111.03719	Private	None	Dry
Goosebill Coulee	6/15/2005	48.08368	110.76151	Private	None	Dry
Heimbigner Coulee	6/28/2005	48.54756	110.93164	Private	None	Dry
Horse Coulee	6/15/2005	48.21144	110.89144	Private	None	Dry
Jensen Coulee	7/13/2005	48.15408	112.42506	Private	Fish, Herp	CS
Keith Coulee	6/28/2005	48.56654	110.96786	Private	None	Dry
Kjar Coulee	6/29/2005	48.36395	110.86998	Private	None	Dry
Larson Coulee	6/29/2005	48.36353	110.8686	Private	None	Dry
Layton Coulee	6/29/2005	48.37878	110.91241	Private	None	Dry
Little Horse Creek	6/22/2005	48.71807	111.16156	Private	None	Dry
Manton Coulee	6/29/2005	48.49416	110.92917	Private	None	Dry
McTosh Coulee	6/21/2005	48.79578	111.07175	Public	Herp	F
Middle Fork of Dry Fork Marias	7/13/2005	48.1553	112.42915	Private	Fish, Herp	ISP
Poverty Coulee	6/14/2005	48.44947	110.95254	Public	None	Dry
Sagebrush Coulee	6/15/2005	48.40786	111.03873	Private	None	Dry
Slide Out Coulee	6/15/2005	48.00455	110.7603	Private	None	ISP
South Fk of Dry Fk Marias	7/14/2005	48.1373	112.38736	Private	Fish, Herp	ISP
Spring Coulee	6/21/2005	48.28357	111.00766	Private	Herp	ISP
Stellner Coulee	6/14/2005	48.43669	110.92911	Private	None	Dry
Stewart Coulee	6/16/2005	48.42583	111.08064	Private	None	Dry
Tiber Coulee	6/16/2005	48.4901	111.00803	Private	None	Dry
Tootsie Creek	6/21/2005	48.83897	111.05421	Public	None	F
Twelvemile Coulee	6/29/2005	48.38261	110.97174	Public	None	Dry
Wolfe Coulee	6/15/2005	48.26848	110.86468	Private	None	Dry

Appendix D. Region 4 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Ownership	Status	Water
Sage HUC						
Bobcat Coulee	6/28/2005	48.91105	110.84743	Private	Herp	F
Carvers Coulee	6/22/2005	48.97583	110.98474	Private	Herp	ISP
Chicken Coulee	6/28/2005	48.93324	110.97357	Private	None	Dry
Desert Coulee	6/28/2005	48.82662	110.92567	Private	None	Dry
Flat Coulee	6/22/2005	48.96627	110.06512	Private	None	ISP
Kinreed Coulee	6/22/2005	48.99386	111.00414	Private	None	ISP
Lost Coulee	6/28/2005	48.94365	110.85118	Private	Herp	ISP
Mac Coulee	6/22/2005	48.93739	110398036	Private	None	Dry
Simminook Creek	6/28/2005	48.97025	110.39351	Private	None	Dry
Strode Coulee	6/28/2005	48.94288	110.74555	Private	None	Dry
Sun River HUC						
Dipping Tank Creek	7/14/2005	47.635	112.06577	Private	Fish	ISP
Teton HUC						
Bullberry Coulee	6/15/2005	47.97802	110.86665	Public	Herp	CS
Chimney Rock Coulee	6/15/2005	48.04627	110.89566	Private	None	Dry
Muddy Creek	7/12/2005	47.98363	112.31196	Private	Fish	F
Teton River	8/18/2005	47.8552	110.96716	Private	Fish	ISP
W. Dry Fk Coulee	6/15/2005	47.91719	110.89104	Private	None	Dry
Two Medicine HUC						
Sheep Creek	8/24/2005	48.20447	112.49483	Private	Fish, Herp	F
Sheep Creek (Oxbow Pond)	8/24/2005	48.2041	112.4879	Private	Fish	CS
Upper Milk HUC						
Police Creek	6/22/2005	48.98624	111.12893	Private	None	ISP
Ribbon Gulch	6/22/2005	48.85875	111.18063	Private	Fish, Herp	F
Upper Missouri HUC						
Blackhorse Lake Flat	6/16/2005	47.59268	111.28226	Private	Herp	ISP
Boyle Coulee	6/15/2005	47.78672	110.55296	Private	None	F
Early Coulee	6/15/2005	47.79954	110.5888	Private	None	F
Foucher Coulee		47.78488	110.50447	Private	None	F
Upper Musselshell HUC						
Gillis Creek	5/24/2005	46.48963	110.35972	Public	None	Dry
Willow HUC						
Clift Coulee	6/29/2005	48.46665	111.32465	Private	None	Dry
Coyote Coulee	6/29/2005	48.46174	111.45907	Public	None	Dry
Dodge Coulee	6/29/2005	48.46516	111.50055	Private	None	Dry
Edmister Coulee	6/29/2005	48.43615	111.37	Private	None	Dry
Kolstad Coulee	6/29/2005	48.42157	111.25261	Private	None	Dry
Moran Coulee	6/29/2005	48.4484	111.27588	Private	None	Dry
Sleeper Coulee	6/22/2005	48.7799	111.26337	Private	None	Dry
Snow Coulee	6/22/2005	48.81021	111.25243	Private	None	F
Wilson Coulee	6/29/2005	48.41987	111.25459	Private	None	Dry

F=Flowing Water CS=Continuous Standing Water ISP=Interrupted Standing Pools

Appendix D Continued. Region 5 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Lower Bighorn HUC					
Chapman Coulee (Lower Bighorn_R5_223A_05)	8/3/2005	45.83912	107.56239	None	Dry
Mission Creek (Lower Bighorn_R5_226A_05)	7/22/2005	46.02041	107.5556	None	Dry
Ninemile Creek (Lower Bighorn_R5_221A_05)	7/22/2005	45.82365	107.5806	None	Dry
North Fork Whitman Coulee (Lower Bighorn_R5_220A_05)	7/22/2005	45.78284	107.69907	None	Dry
Peritsa Creek (Lower Bighorn_R5_219A_05)	7/22/2005	45.71123	107.66215	None	Dry
Sorrel Horse Creek (Lower Bighorn_R5_225A_05)	7/22/2005	46.00734	107.55409	None	Dry
South Cottonwood Creek (Lower Bighorn_R5_224A_05)	7/22/2005	45.88264	107.5499	None	Dry
Lower Yellowstone-Sunday HUC					
Cabin Creek (Lower Yellowstone-Sunday_R5_270A_05)	8/3/2005	46.48018	107.81344	None	Dry
Middle Fork Allen Creek (Lower Yellowstone-Sunday_R5_187A_05)	6/9/2005	46.22	107.56972	None	Dry
North Fork Allen Creek (Lower Yellowstone-Sunday_R5_186A_05)	6/9/2005	46.23765	107.55339	None	Dry
South Fork Allen Creek (Lower Yellowstone-Sunday_R5_188A_05)	6/9/2005	46.20986	107.57015	None	Dry
South Fork Edwards Creek (Lower Yellowstone-Sunday_R5_189A_05)	6/9/2005	46.228184	107.47569	None	Dry
Spring Creek (Lower Yellowstone-Sunday_R5_271A_05)	8/3/2005	46.41525	107.82421	None	Dry
Weed Creek (Lower Yellowstone-Sunday_R5_272A_05)	8/3/2005	46.39201	107.82363	None	Dry
Wolf Spring Creek (Lower Yellowstone-Sunday_R5_273A_05)	8/3/2005	46.37569	107.82164	None	Dry
Middle Musselshell HUC					
Alkali Creek (Middle Musselshell_R5_260A_05)	8/3/2005	46.48008	108.5636	None	Dry
Angus Bell Coulee (Middle Musselshell_R5_248A_05)	8/3/2005	46.50159	107.91492	None	Dry
Barrigan Coulee (Middle Musselshell_R5_210A_05)	6/21/2005	46.44093	108.46203	None	Dry
Burnt Shed Coulee (Middle Musselshell_R5_275A_05)	8/3/2005	46.5113	107.93838	None	Dry
Butts Coulee (Middle Musselshell_R5_261A_05)	8/3/2005	46.64674	107.82135	None	Dry
Carters Coulee (Middle Musselshell_R5_262A_05)	8/3/2005	46.40196	108.19878	None	Dry
Dry Creek (Middle Musselshell_R5_263A_05)	8/3/2005	46.55542	107.90112	None	Dry
East Fork carpenter Creek (Middle Musselshell_R5_277A_05)	8/3/2005	46.52032	107.91362	None	Dry
Finnan Coulee (Middle Musselshell_R5_264A_05)	8/3/2005	46.5526	107.91376	None	Dry
Fourmile Creek (Middle Musselshell_R5_279A_05)	8/3/2005	46.53261	108.09969	None	Dry
Gremmert Coulee (Middle Musselshell_R5_274A_05)	8/3/2005	46.73411	107.8346	None	Dry
Lost Horse Creek (Middle Musselshell_R5_265A_05)	8/3/2005	46.55132	107.85193	None	Dry
North Willow Creek(Middle Musselshell_R5_40A_05)	5/5/2005	46.68805	108.01057	Fish, Herp	ISP
Seventynine Coulee (Middle Musselshell_R5_266A_05)	8/3/2005	46.71387	107.83318	None	Dry
Shovel Creek (Middle Musselshell_R5_267A_05)	8/3/2005	46.3612	108.00778	None	Dry
Tepee Coulee (Middle Musselshell_R5_278A_05)	8/3/2005	46.39839	108.23206	None	Dry
West Keggy Coulee (Middle Musselshell_R5_268A_05)	8/3/2005	46.67105	107.81823	None	Dry
Wilson Coulee (Middle Musselshell_R5_269A_05)	8/3/2005	46.62357	107.83572	None	Dry
Y Bar Coulee (Middle Musselshell_R5_276A_05)	8/3/2005	46.40489	108.25334	None	Dry
Upper Musselshell HUC					
Altman Coulee(Upper Musselshell_R5_158A_05)	7/20/2005	46.26598	109.77798	None	Dry
Andrews Creek(Upper Musselshell_R5_173A_05)	7/20/2005	46.18476	109.61113	None	F
Antelope Creek(Upper Musselshell_R5_88A_05)	5/23/2005	46.51349	109.81978	Fish, Herp	F
Big Coulee Crk (Upper Musselshell_R5_42A1_05)	4/26/2005	46.26336	109.34601	Fish	F
Big Coulee Crk (Upper Musselshell_R5_42A2_05)	6/30/2005	46.13579	109.34601	Fish	F
Big Coulee Crk (Upper Musselshell_R5_42C1_05)	5/2/2005	46.28082	108.93583	Fish	F
Big Coulee Crk (Upper Musselshell_R5_42C2_05)	6/27/2005	46.26336	108.95275	Fish, Herp	F
Big Coulee Crk (Upper Musselshell_R5_42D1_05)	5/2/2005	46.28082	108.93583	Fish	F
Big Coulee Crk (Upper Musselshell_R5_42D2_05)	6/21/2005	46.28082	108.93583	Fish, Herp	F
Blake Creek (Upper Musselshell_R5_256A_05)	7/25/2005	46.60652	109.62237	None	Dry
Cabin Gulch Creek(Upper Musselshell_290A_05)	5/31/2005	46.15521	109.15294	None	Dry
Cherry Creek (Upper Musselshell_R5_256A_05)	7/20/2005	46.15066	109.59054	None	Dry
Cottonwood Coulee(Upper Musselshell_R5_157A_05)	7/25/2005	46.41402	109.70523	None	Dry

F=Flowing Water CS=Continuous Standing Water ISP=Interrupted Standing Pools

Appendix D Continued. Region 5 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Upper Musselshell HUC continued					
Cottonwood Creek (Upper Musselshell_R5_154A_05)	6/6/2005	46.1726	108.90677	None	Dry
Cottonwood Creek (Upper Musselshell_R5_201A_05)	6/21/2005	46.33259	108.79912	None	Dry
Custer Creek(Upper Musselshell_R5_137A_05)	6/21/2005	46.18972	109.20149	None	Dry
Deadman Coulee (Upper Musselshell_R5_212A_05)	6/21/2005	46.40423	108.54326	None	Dry
Dean Creek (Upper Musselshell_R5_199A_05)	6/21/2005	46.23429	108.54326	None	Dry
East Fork Dean Creek (Upper Musselshell_R5_200A_05)	6/21/2005	46.24175	108.66871	None	Dry
East Fork Roberts Creek (Upper Musselshell_R5_252A_05)	7/25/2005	46.63401	109.72076	None	Dry
Ethels Coulee(Upper Musselshell_R5_139A_05)	7/25/2005	46.38882	109.63256	None	Dry
Fish Creek (Upper Musselshell_R5_49B1_05)	6/6/2005	46.23384	109.47277	Fish, Herp	F
Fish Creek (Upper Musselshell_R5_49B2_05)	7/20/2005	46.23384	109.47277	Fish	F
Fish Creek (Upper Musselshell_R5_49C1_05)	5/31/2005	46.28835	109.22387	Fish, Herp	F
Fish Creek (Upper Musselshell_R5_49C2_05)	7/20/2005	46.28835	109.22387	Fish	F
Fish Creek (Upper Musselshell_R5_49D1_05)	6/14/2005	46.21426	109.93342	Fish	F
Fish Creek (Upper Musselshell_R5_49D2_05)	7/20/2005	46.21426	109.93542	Fish	F
Fivemile Creek (Upper Musselshell_R5_155A_05)	6/27/2005	46.33325	109.02081	None	Dry
Fletchers Coulee (Upper Musselshell_R5_211A_05)	6/21/2005	46.41509	108.55344	None	Dry
Fredrickson Coulee(Upper Musselshell_R5_160A_05)	7/25/2005	46.164876	109.79407	None	Dry
Fulcher Creek (Upper Musselshell_R5_202A_05)	6/21/2005	46.20496	108.70566	None	Dry
Gooseneck Creek (Upper Musselshell_R5_153A_05)	6/27/2005	46.08698	108.9865	None	Dry
Gougley Creek(Upper Musselshell_R5_159A_05)	7/25/2005	46.22273	109.80953	None	Dry
Harper Coulee (Upper Musselshell_R5_205A_05)	6/21/2005	46.31495	108.60125	None	Dry
Hay Coulee (Upper Musselshell_R5_204A_05)	6/21/2005	46.32821	108.5903	None	Dry
Hop Creek(Upper Musselshell_290A_05)	5/31/2005	46.13369	109.08052	None	Dry
Jim Creek(Upper Musselshell_R5_161A_05)	8/15/2005	46.18685	109.63752	None	Dry
Mcvey Creek (Upper Musselshell_R5_198A_05)	6/14/2005	46.37313	109.85743	None	Dry
Mead Creek (Upper Musselshell_R5_253A_05)	7/25/2005	46.67897	109.95568	None	Dry
Milton Creek(Upper Musselshell_R5_171A_05)	7/5/2005	46.42651	109.89598	Fish	F
Ninemile Creek (Upper Musselshell_R5_156A_05)	6/6/2005	46.30318	109.07539	None	Dry
Oka Coulee (Upper Musselshell_R5_255A_05)	7/25/2005	46.67513	109.75677	None	Dry
Potato Creek(Upper Musselshell_162A_05)	8/15/2005	46.19044	109.66355	None	Dry
Road Coulee (Upper Musselshell_R5_206A_05)	6/21/2005	46.2831	108.62442	None	Dry
Sadie Creek (Upper Musselshell_R5_254A_05)	7/25/2005	46.19471	109.90007	None	Dry
Shed Gulch Creek(Upper Musselshell_259A_05)	5/31/2005	46.15193	109.04617	None	Dry
Sjandy Coulee (Upper Musselshell_R5_207A_05)	6/21/2005	46.27032	108.64296	None	Dry
Stanley Creek (Upper Musselshell_R5_203A_05)	6/21/2005	46.35305	108.68918	None	Dry
Stevens Gulch (Upper Musselshell_R5_257A_05)	7/25/2005	46.67179	109.79031	None	Dry
Stockade Gulch(Upper Musselshell_R5_136A_05)	6/21/2005	46.21547	109.18383	None	Dry
Van Winkle Creek(Upper Musselshell_R5_138A_05)	6/21/2005	46.11031	109.41123	None	Dry
Willow Creek (Upper Musselshell_R5_209A_05)	6/21/2005	46.55239	108.59124	None	Dry
Upper Yellowstone-Lake Basin HUC					
Allen Creek (Upper Yellowstone-Lake Basin_R5_124A_05)	7/1/2005	45.59762	109.0586	None	Dry
Baney Coulee(Upper Yellowstone-Lake Basin_R5_163A_05)	7/26/2005	45.66766	109.33995	None	Dry
Barley Coulee (Upper Yellowstone-Lake Basin_R5_143A_05)	7/26/2005	45.91315	107.98724	None	Dry
Bellion Creek (Upper Yellowstone-Lake Basin_R5_135A_05)	6/1/2005	45.56344	108.95066	None	Dry
Benedict Gulch (Upper Yellowstone-Lake Basin_R5_231A_05)	7/7/2005	45.67782	108.89884	None	Dry
Berry Creek (Upper Yellowstone-Lake Basin_R5_243A_05)	7/13/2005	45.70561	109.3914	None	Dry
Big Spring Gulch (Upper Yellowstone-Lake Basin_R5_240A_05)	7/13/2005	45.64519	109.66795	None	Dry
Bitter Creek (Upper Yellowstone-Lake Basin_R5_141A_05)	6/2/2005	45.73999	108.43832	None	Dry
Brown Creek(Upper Yellowstone_Lake Basin_R5_289A_05)	8/17/2005	45.65287	109.181	None	Dry
Camp Creek (Upper Yellowstone-Lake Basin_R5_250A_05)	7/18/2005	45.88321	109.4434	None	Dry
Carlton Coulee (Upper Yellowstone-Lake Basin_R5_236A_05)	7/13/2005	45.64181	109.35066	None	Dry

F=Flowing Water CS=Continuous Standing Water ISP=Interrupted Standing Pools

Appendix D Continued. Region 5 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Upper Yellowstone-Lake Basin HUC continued					
Cottonwood Creek (Upper Yellowstone-Lake Basin_R5_125A_05)	6/1/2005	45.68626	108.98665	None	Dry
Coulee Creek (Upper Yellowstone-Lake Basin_R5_244A_05)	7/13/2005	45.69785	109.4063	None	Dry
Cow Creek (Upper Yellowstone-Lake Basin_R5_132A_05)	6/1/2005	45.54598	109.11494	None	Dry
Curtis Gulch (Upper Yellowstone-Lake Basin_R5_239A_05)	7/13/2005	45.68726	109.6356	None	Dry
Deer Creek (Upper Yellowstone-Lake Basin_R5_134A_05)	6/1/2005	45.53865	109.02592	None	Dry
Dirt Creek (Upper Yellowstone-Lake Basin_R5_147A_05)	6/2/2005	45.74705	108.43983	None	Dry
Dry Creek (Upper Yellowstone-Lake Basin_R5_123A_05)	6/1/2005	45.64974	108.70889	None	Dry
Dry Creek (Upper Yellowstone-Lake Basin_R5_127A_05)	6/1/2005	45.66038	108.97324	None	Dry
Dry Creek (Upper Yellowstone-Lake Basin_R5_130A_05)	6/1/2005	45.66538	109.23344	None	Dry
Dry Creek (Upper Yellowstone-Lake Basin_R5_227A_05)	7/7/2005	45.71965	108.80199	None	Dry
Duck Creek (Upper Yellowstone-Lake Basin_R5_121A_05)	6/1/2005	45.68317	108.63809	None	Dry
Dusty Creek (Upper Yellowstone-Lake Basin_R5_148A_05)	6/6/2005	45.86789	108.69889	None	Dry
East Fork Duck Creek (Upper Yellowstone-Lake Basin_R5_120A_05)	6/1/2005	45.646401	108.62598	None	Dry
Gurney Creek(Upper Yellowstone_Lake Basin_R5_288A_05)	8/17/2005	45.91307	109.31763	None	Dry
Haystack Coulee (Upper Yellowstone-Lake Basin_R5_238A_05)	7/13/2005	45.67464	109.37034	None	Dry
Hump Creek(Upper Yellowstone-Lake Basin_R5_177A-05)	7/27/2005	45.69879	109.58189	None	F
Huntley Creek (Upper Yellowstone-Lake Basin_R5_233A_05)	7/13/2005	45.62379	109.3196	None	Dry
Indian Gulch (Upper Yellowstone-Lake Basin_R5_232A_05)	7/7/2005	45.68311	108.85849	None	Dry
Kennedy Coulee (Upper Yellowstone-Lake Basin_R5_237A_05)	7/13/2005	45.60979	109.41249	None	Dry
Kenyon Creek (Upper Yellowstone-Lake Basin_R5_285A_05)	7/1/2005	45.84174	109.36421	None	Dry
Line Creek (Upper Yellowstone-Lake Basin_R5_122A_05)	6/1/2005	45.66612	108.67276	None	Dry
Little Basin Creek (Upper Yellowstone-Lake Basin_R5_145A_05)	6/2/2005	45.67608	108.50345	None	Dry
Mcnally Creek(Upper Yellowston-Lake Basin_R5_190A_05)	7/18/2005	45.86421	109.36426	None	Dry
Mills Creek(Upper Yellowston-Lake Basin_R5_287A_05)	8/17/2005	45.96743	109.25544	None	Dry
Newman Creek (Upper Yellowstone-Lake Basin_R5_140A_05)	6/2/2005	45.63191	108.60932	None	Dry
North Fork Canyon Creek (Upper Yellowstone-Lake Basin_R5_228A_05)	7/7/2005	45.78862	108.82326	None	Dry
North Fork Cedar Creek (Upper Yellowstone-Lake Basin_R5_249A_05)	7/18/2005	45.94883	109.47745	None	Dry
Porter Coulee (Upper Yellowstone-Lake Basin_R5_234A_05)	7/13/2005	45.62374	109.34028	None	Dry
Quinn Coulee (Upper Yellowstone-Lake Basin_R5_235A_05)	7/13/2005	45.63227	109.35716	None	Dry
Red and King Gulch (Upper Yellowstone-Lake Basin_R5_230A_05)	7/7/2005	45.69214	108.89535	None	Dry
Rye Grass Creek (Upper Yellowstone-Lake Basin_R5_133A_05)	6/1/2005	45.52192	109.09404	None	Dry
Sawmill Gulch (Upper Yellowstone-Lake Basin_R5_229A_05)	7/7/2005	45.72248	109.0024	None	Dry
Sheep Creek(Upper Yellowstone-Lake Basin_R5_258A-05)	7/18/2005	45.83524	109.42224	None	Dry
Smith Coulee(Upper Yellowstone-Lake Basin_R5_164A_05)	7/26/2005	45.66403	109.32958	None	Dry
South Fork Cedar Creek (Upper Yellowstone-Lake Basin_R5_247A_05)	7/18/2005	45.93568	109.46432	None	Dry
South Fork Cottonwood Creek (Upper Yellowstone-Lake Basin_R5_142A_05)	6/1/2005	45.68948	109.01249	None	Dry
South Fork Countryman Creek(Upper Yellowstone-Lake Basin_R5_175A_05)	7/27/2005	45.62914	109.54625	Fish	F
Spring Creek (Upper Yellowstone-Lake Basin_R5_216A_05)	6/22/2005	45.77652	107.95642	None	Dry
Swamp Creek (Upper Yellowstone-Lake Basin_R5_126A_05)	6/1/2005	45.67485	108.98055	None	Dry
Tilden Creek (Upper Yellowstone-Lake Basin_R5_128A_05)	6/1/2005	45.61525	109.00761	None	Dry
Tom Benson Gulch (Upper Yellowstone-Lake Basin_R5_241A_05)	7/13/2005	45.66693	109.64905	None	Dry
Toms Creek(Upper Yellowstone-Lake Basin_R5_286A_05)	8/17/2005	45.681	109.17426	None	Dry
Tucker Creek (Upper Yellowstone-Lake Basin_R5_129A_05)	6/1/2005	45.593128	109.08484	None	Dry
Tutt Creek (Upper Yellowstone-Lake Basin_R5_131A_05)	6/1/2005	45.56982	109.16209	None	Dry
Whistle Creek (Upper Yellowstone-Lake Basin_R5_242A_05)	7/13/2005	45.70715	109.5023	None	Dry
Whitney Creek (Upper Yellowstone-Lake Basin_R5_246A_05)	7/18/2005	45.98889	109.47214	None	Dry
Work Creek(Upper Yellowstone-Lake Basin_R5_172A_05)	7/27/2005	45.69497	109.62469	Fish	F
Wullum Gulch (Upper Yellowstone-Lake Basin_R5_245A_05)	7/18/2005	45.83051	109.58323	None	Dry
Wyman Creek (Upper Yellowstone-Lake Basin_R5_144A_05)	6/2/2005	45.61082	108.53523	None	Dry

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Appendix D Continued. Region 5 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Upper Yellowstone-Pompey's Pillar HUC					
Alkali Creek (Upper Yellowstone-Pompey's Pillar_R5_215A_05)	6/22/2005	45.77631	108.04367	None	Dry
Arrow Creek(Upper Yellowstone-Pompey's Pillar_R5_44B1_05)	4/13/2005	45.97787	108.14311	Fish	F
Arrow Creek(Upper Yellowstone-Pompey's Pillar_R5_44C1_05)	4/13/2005	45.99269	108.12125	Fish	F
Arrow Creek(Upper Yellowstone-Pompey's Pillar_R5_44D1_05)	5/4/2005	45.8685	108.16214	None	F
Arrow Creek(Upper Yellowstone-Pompey's Pillar_R5_44D2_05)	8/4/2005	45.8685	108.16214	Fish, Herp	F
Automatic Creek (Upper Yellowstone-Pompey's Pillar_R5_169A_05)	6/9/2005	46.05974	107.73167	None	Dry
Bergum Coulee (Upper Yellowstone-Pompey's Pillar_R5_180A_05)	6/9/2005	46.06271	107.71422	None	Dry
Big Coulee (Upper Yellowstone-Pompey's Pillar_R5_184A_05)	6/9/2005	46.14932	107.57289	None	Dry
Carson Coulee (Upper Yellowstone-Pompey's Pillar_R5_191A_05)	6/9/2005	46.13882	107.62579	None	Dry
Churn Dash Creek (Upper Yellowstone-Pompey's Pillar_R5_195A_05)	6/13/2005	46.16514	108.25182	None	Dry
Cotton Creek (Upper Yellowstone-Pompey's Pillar_R5_280A_05)	8/3/2005	46.04452	108.34073	None	Dry
Cow Gulch (Upper Yellowstone-Pompey's Pillar_R5_197A_05)	6/13/2005	46.26456	108.17338	None	Dry
Cowgirl Creek (Upper Yellowstone-Pompey's Pillar_R5_193A_05)	6/9/2005	46.06278	107.90109	None	Dry
Crooked Creek(Upper Yellowstone-Pompeys Pillar_R5_22D1_05)	3/21/2005	45.94418	108.29887	Fish	F
Crooked Creek(Upper Yellowstone-Pompeys Pillar_R5_22E1_05	4/6/2005	45.96264	108.35209	Fish	F
Crooked Creek(Upper Yellowstone-Pompeys Pillar_R5_22F1_05	4/11/2005	45.98785	108.42406	Fish	CS
Crooked Creek(Upper Yellowstone-Pompeys Pillar_R5_22F2_05)	6/28/2005	45.98785	108.42406	Fish	CS
Difficulty Creek (Upper Yellowstone-Pompey's Pillar_R5_151A_05)	6/16/2005	45.92911	108.75799	None	Dry
Dry Creek (Upper Yellowstone-Pompey's Pillar_R5_146A_05)	6/9/2005	45.79556	108.42569	None	Dry
East Prong Reed Creek (Upper Yellowstone-Pompey's Pillar_R5_168A_05)	6/9/2005	46.10027	107.40662	None	Dry
Fivemile Creek (Upper Yellowstone-Pompey's Pillar_R5_185A_05)	6/9/2005	46.1474	107.54361	None	Dry
Fivemile Creek(Upper Yellowstone-Pompey's Pillar_R5_60A1_05)	3/16/2005	45.84481	108.423	Fish	F
Fivemile Creek(Upper Yellowstone-Pompey's Pillar_R5_60B1_05)	5/9/2005	45.85714	108.49313	Fish	F
Fivemile Creek(Upper Yellowstone-Pompey's Pillar_R5_60B2_05)	6/28/2005	45.85714	108.49313	Fish	F
Fivemile Creek(Upper Yellowstone-Pompey's Pillar_R5_60C1_05)	5/18/2005	45.87908	108.53107	Herp	F
Fivemile Creek(Upper Yellowstone-Pompey's Pillar_R5_60C2_05)	6/29/2005	45.87908	108.53107	Herp	F
Gravel Pit Coulee (Upper Yellowstone-Pompey's Pillar_R5_176A_05)	7/26/2005	45.95772	108.08582	Fish	F
Hawk Coulee (Upper Yellowstone-Pompey's Pillar_R5_183A_05)	6/22/2005	46.16041	107.51886	None	Dry
Hay Creek (Upper Yellowstone-Pompey's Pillar_R5_217A_05)	6/22/2005	45.7953	107.95931	None	Dry
Laylan Coulee (Upper Yellowstone-Pompey's Pillar_R5_192A_05)	6/9/2005	46.1248	107.37251	None	Dry
Mill Creek (Upper Yellowstone-Pompey's Pillar_R5_165A_05)	6/9/2005	46.01593	107.8915	None	Dry
North Fork Cotton Creek (Upper Yellowstone-Pompey's Pillar_R5_281A_05)	8/3/2005	46.04716	108.34473	None	Dry
North Fork Crooked Creek (Upper Yellowstone-Pompey's Pillar_R5_283A_05)	8/3/2005	46.01794	108.46714	None	Dry
North Fork Fivemile Creek (Upper Yellowstone-Pompey's Pillar_R5_150A_05)	6/6/2005	45.90738	108.66643	None	Dry
North Telegraph Creek (Upper Yellowstone-Pompey's Pillar_R5_214A_05)	6/22/2005	45.72312	108.01228	None	Dry
Railroad Creek (Upper Yellowstone-Pompey's Pillar_R5_194A_05)	6/9/2005	46.06006	107.90435	None	Dry
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68A1_05)	3/29/2005	45.97096	108.31714	Fish	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68A2_05)	6/13/2005	45.97096	108.31714	Fish, Herp	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68B1_05)	3/28/2005	45.95704	108.281	Fish	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68B2_05)	6/10/2005	45.95704	108.281	Fish, Herp	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68C1_05)	4/4/2005	45.99362	108.35151	Fish	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68C2_05)	6/10/2005	45.99362	108.35151	Fish	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68D1_05)	4/5/2005	46.02237	108.36622	Fish	F
Razor Creek(Upper Yellowstone-Pompey's Pillar_R5_68D2_05)	6/20/2005	46.02237	108.36622	Fish, Herp	F
Reed Creek (Upper Yellowstone-Pompey's Pillar_R5_167A_05)	6/9/2005	45.99276	107.71329	None	Dry
Rough Coulee(Upper Yellowstone_Pompey's Pillar_R5_208A_05)	6/9/2005	46.02573	107.80856	None	Dry
Sand Creek (Upper Yellowstone-Pompey's Pillar_R5_23C_05)	5/26/2005	46.00565	107.91418	Fish	F
Sevenmile Creek (Upper Yellowstone-Pompey's Pillar_R5_170A_05)	6/2/2005	45.87077	108.42332	Fish	F
South Comanche Creek (Upper Yellowstone-Pompey's Pillar_R5_152A_05)	6/27/2005	46.0173	108.88258	None	Dry

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Appendix D Continued. Region 5 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Upper Yellowstone-Pompey's Pillar HUC continued					
South Fork Crooked Creek (Upper Yellowstone-Pompey's Pillar_R5_282A_05)	8/3/2005	46.0082	108.46708	None	Dry
South Fork Fivemile Creek (Upper Yellowstone-Lake Basin_R5_149A_05)	6/6/2005	45.90409	108.66628	None	Dry
South Fork Railroad Creek (Upper Yellowstone-Pompey's Pillar_R5_196A_05)	6/13/2005	46.19513	108.19091	None	Dry
Spring Creek (Upper Yellowstone-Pompey's Pillar_R5_166A_05)	6/9/2005	46.04794	107.78508	None	Dry
Telegraph Creek (Upper Yellowstone-Pompey's Pillar_R5_213A_05)	6/22/2005	45.71815	108.03692	None	Dry
Tenmile Creek (Upper Yellowstone-Pompey's Pillar_R5_218A_05)	6/22/2005	45.85419	107.96465	None	Dry
Thurmond Coulee (Upper Yellowstone-Pompey's Pillar_R5_182A_05)	6/9/2005	46.08155	107.66851	None	Dry
Twelvemile Creek (Upper Yellowstone- Pompey's Pillar_R5_48A1_05)	4/7/2005	45.90312	108.36614	Fish	F
Twelvemile Creek (Upper Yellowstone- Pompey's Pillar_R5_48A2_05)	7/14/2005	45.90312	108.36614	Fish	F
Twelvemile Creek (Upper Yellowstone- Pompey's Pillar_R5_48B1_05)	4/25/2005	45.92079	108.92079	Fish, Herp	F
Witham Coulee (Upper Yellowstone-Pompey's Pillar_R5_181A_05)	6/9/2005	46.06667	107.69737	None	Dry

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Appendix D Continued. Region 6 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Battle HUC					
Lyons Coulee 20	6/23/2005	48.57117	109.1111	Fish, Herp	F
Beaver (Milk) HUC					
Big Warm Creek 26	6/30/2005	48.03571	108.1888	Fish, Herp	F
Button Butte Coulee 24	6/29/2005	48.03666	107.53476	Fish	ISP
Larb Creek 22	6/28/2005	48.26591	107.17281	Fish, Herp	F
Lost Coulee 23	6/28/2005	48.34453	104.42646	Herp	CS
Nelson Coulee 3722-1	6/29/2005	48.07359	107.9105	None	Dry
Nelson Coulee 3722-2	6/29/2005	48.09783	107.96311	None	Dry
Sage Creek 32	7/12/2005	47.94435	107.64159	Fish, Herp	ISP
Sevenmile Creek 28	7/6/2005	48.2067	107.65405	Fish, Herp	ISP
Third Creek 3281-1	6/29/2005	48.35631	107.28957	None	Dry
Third Creek 3281-2	6/29/2005	48.36017	107.40484	None	Dry
White Rock Coulee	6/30/2005	48.0327	108.03363	Herp	CS
Windmill Coulee 29	7/6/2005	48.10576	107.51697	Fish, Herp	ISP
Big Muddy HUC					
Ford Creek 35	7/19/2005	48.66943	104.692	None	Dry
Lake Creek	6/8/2005	48.69833	104.6677	None	Dry
Lost Creek 13	7/19/2005	48.33117	104.42646	None	Dry
Marron Creek 1113-1	7/19/2005	48.78711	104.50902	None	Dry
Marron Creek 1113-2	7/19/2005	47.79439	104.50113	None	Dry
Shippe Canyon 1123-1	7/19/2005	48.69793	104.58076	None	Dry
Shippe Canyon 1123-2	7/19/2005	48.74098	104.56133	None	Dry
Bullwhacker-Dog HUC					
Coal Mine Coulee 4476-1	5/24/2005	47.92198	109.19631	None	Dry
Coal Mine Coulee 4476-2	5/24/2005	47.94803	109.21891	None	Dry
East Fork Black Coulee 4	5/24/2005	47.9576	109.4003	Herp	ISP
West Fork Black Coulee 4324-1	5/24/2005	47.9403	109.43786	None	Dry
West Fork Black Coulee 4324-2	5/24/2005	47.96371	109.44741	None	Dry
Charlie-Little Muddy HUC					
Little Muddy Creek 48	8/15/2005	48.06894	104.09812	Fish	F
Shotgun Creek 14	6/8/2005	48.11977	104.16611	Fish, Herp	F
Fort Peck Reservoir HUC					
Box Elder Creek 30	7/7/2005	47.75135	107.71956	Herp	ISP
Cabin Creek 4117-1	5/25/2005	47.8571	108.89789	None	Dry
Cabin Creek 4117-2	5/25/2005	47.84982	108.91337	None	Dry
Cottonwood Creek 5	5/25/2005	47.74126	108.57681	Fish, Herp	F
Fifth Coulee 2749-1	8/1/2005	47.85309	106.64613	None	Dry
Fifth Coulee 2749-2	8/1/2005	47.865	106.67698	None	Dry
Hay Creek 15	6/15/2005	47.20565	106.08569	Herp	CS
Lodgepole Creek 45	8/10/2005	47.80544	108.56635	Fish	F
Nelson Creek 11	6/2/2005	n/a	n/a	Fish, Herp	F
Plum Coulee 34	7/14/2005	47.77272	107.3621	Fish, Herp	ISP
Rock Creek 21	6/27/2005	47.36738	108.28253	Fish, Herp	F

F=Flowing Water CS=Continuous Standing Water ISP=Interrupted Standing Pools

Appendix D Continued. Region 6 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Fort Peck Reservoir HUC Continued					
Skull Creek 7	5/27/2005	n/a	n/a	None	Dry
Spring Creek 16	6/16/2005	47.83195	106.36227	Fish, Herp	F
Square Creek 2886-1	7/13/2005	47.86754	107.65405	None	Dry
Square Creek 2886-2	7/13/2005	47.85117	107.2883	None	Dry
Timber Creek 33	7/13/2005	47.76916	107.32545	Fish, Herp	ISP
Tin Cup Coulee 4136-1	5/25/2005	48.06333	109.00704	None	Dry
Tin Cup Coulee 4136-2	5/25/2005	48.09458	109.09335	None	Dry
Lower Milk HUC					
Bear Creek 9	6/1/2005	48.47196	106.81348	Herp	ISP
Beaver Creek 39	7/28/2005	48.01795	106.7422	Fish	n/a
Chapman Coulee 10	6/1/2005	48.3202	106.71099	Herp	CS
Dessert Coulee 41	8/2/2005	47.84843	107.12047	Fish, Herp	ISP
East Fork Cherry Creek 2791-1	6/6/2005	48.26456	106.50031	None	Dry
East Fork Cherry Creek 2791-2	6/6/2005	48.34276	106.49475	None	Dry
Foss Coulee 2778-1	6/6/2005	48.29864	106.57419	None	Dry
Foss Coulee 2778-2	6/6/2005	48.30373	106.57419	None	Dry
Hardscrabble Creek 40	8/1/2005	48.26903	107.00823	Fish, Herp	ISP
Hay Coulee 2966-1	7/27/2005	48.31557	106.87649	None	Dry
Hay Coulee 2966-2	7/27/2005	48.27915	106.89139	None	Dry
Milk River at Vandalia Dam 37	7/25/2005	n/a	n/a	Fish	F
Mooney Coulee 8	6/1/2005	48.31762	106.685	Herp	ISP
North Fork Antelope Creek 38	7/26/2005	48.29024	107.09555	Fish, Herp	ISP
North Fork Lone Tree Creek 3	5/20/2005	48.07351	107.13831	Fish, Herp	ISP
Middle Milk HUC					
Dodson Canal 31	7/11/2005	48.30511	108.2295	Fish	ISP
East Branch Thirtymile 19	6/22/2005	48.42772	108.52273	Fish, Herp	CS
Fresno Coulee 4664-1	5/16/2005	48.56584	109.8985	None	Dry
Fresno Coulee 4664-2	5/16/2005	48.56638	109.8947	None	Dry
Harts Coulee 4061-1	6/21/2005	48.58619	108.65916	None	Dry
Harts Coulee 4061-2	6/21/2005	48.61903	108.67129	None	Dry
Nessler Creek 4112-1	6/21/2005	48.57476	108.91195	None	Dry
Nessler Creek 4112-2	6/21/2005	48.58512	108.91409	None	Dry
North Branch White Bear Coulee 4370-1	5/24/2005	48.36357	108.89075	None	Dry
North Branch White Bear Coulee 4370-2	5/24/2005	48.36574	108.94702	None	Dry
North Branch White Bear Creek	7/5/2005	48.21576	108.52667	Herp	ISP
Sixmile Coulee 2	5/18/2005	48.45749	109.23935	None	ISP
Thirtymile Creek 18	6/21/2005	48.34796	108.29767	Fish	CS
Threemile Coulee 4491-1	5/18/2005	48.47901	109.34606	None	Dry
Threemile Coulee 4491-2	5/18/2005	48.54894	109.23086	None	Dry
West Fork Wayne Creek 4352-1	6/23/2005	48.68813	108.7679	None	Dry
West Fork Wayne Creek 4352-2	6/23/2005	48.70256	108.78114	None	Dry
Poplar HUC					
Outlook Creek 1604-1	7/18/2005	48.96933	105.38243	None	Dry
Outlook Creek 1604-2	7/18/2005	48.97456	105.35595	None	Dry
Spring Creek 36	7/19/2005	48.80665	105.65313	Fish, Herp	F

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Appendix D Continued. Region 6 2005 Sample site information, arranged by HUC name

Site Name	Date	Latitude	Longitude	Status	Water
Porcupine HUC					
East Fork Snow Coulee 1670-1	8/9/2005	48.64147	106.19575	None	Dry
East Fork Snow Coulee 1670-2	8/9/2005	48.67817	106.16911	None	Dry
Prairie Elk-Wolf HUC					
Shade Creek 17	6/20/2005	47.82694	106.006	Fish, Herp	CS
South Fork Shade Creek 1	5/11/2005	47.82335	105.88604	Fish, Herp	F
Redwater HUC					
East Fork Pasture Creek 47	8/12/2005	47.57652	104.99859	Fish, Herp	ISP
Stoney Butte Creek 6	5/27/2005	47.32355	105.71327	Herp	ISP
West Fork Pasture Creek 46	8/11/2005	47.58817	105.14286	Fish	ISP
Rock HUC					
Lone Tree Coulee 43	8/8/2005	48.77846	106.72808	Fish	ISP
Morgan Creek 44	8/9/2005	48.98509	106.54435	Fish	ISP
North Fork South Creek 42	8/3/2005	48.92155	106.62496	Fish, Herp	ISP
Papoose Creek 2641-1	8/11/2005	48.53055	107.02987	None	Dry
Papoose Creek 2641-2	8/11/2005	48.59463	107.08184	Herp	Dry
Sage HUC					
Faulkners Coulee 4746-1	5/16/2005	48.43878	110.36695	None	Dry
Faulkners Coulee 4746-2	5/16/2005	48.449	110.20028	None	Dry
Miranda Coulee 4820-1	5/18/2005	48.76983	110.50319	None	Dry
Miranda Coulee 4820-2	5/18/2005	48.82093	110.66758	None	Dry
Russel Creek 4842-1	5/18/2005	48.90183	110.67846	None	Dry
Russel Creek 4842-2	5/18/2005	48.92737	110.70858	None	Dry

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Appendix D Continued. R7 2005 Sample site information, arranged by HUC name

Site Name and Number	Date	Latitude	Longitude	Ownership	Status	Water
Beaver HUC						
Beaver Creek 1A-05	7/7/05	47.06299	104.05652	Private	Fish, Herp	F
Beaver Creek 1B-05	5/24/05	46.84005	104.18556	Private	Fish	F
Beaver Creek 1D-05	5/24/05	47.00404	104.19555	Private	Fish	F
Lame Steer Creek 3A-05	7/7/05	46.79665	104.16221	Private	Fish, Herp	F
Little Beaver Creek 2A-05	6/30/05	47.06409	104.09292	Private	Fish	F
Big Dry HUC						
Big Dry Creek 57B-05	7/11/05	47.3245	106.83706	Private	Fish, Herp	F
Second Creek 71A-05	7/12/05	47.18205	106.78313	Public	Fish, Herp	ISP
Steve Forks 59A-05	5/11/05	47.27052	107.19696	Public	Fish	ISP
Woody Creek 58A-05	8/25/05	47.48326	106.47046	Private	Herp	Dry
Big Porcupine HUC						
Big Porcupine Creek 87A-05	6/27/05	46.49182	107.00106	Public	Fish	F
Horse Creek 93A-05	6/27/05	46.40773	107.03221	Public	Fish, Herp	F
Fort Peck Reservoir HUC						
Hell Creek 61A-05	8/25/05	47.57468	106.9489	Private	Fish, Herp	ISP
Snow Creek 62A-05	8/23/05	47.59806	107.12628	Private	Fish, Herp	F
Little Dry HUC						
Little Dry Creek 56A-05	7/12/05	47.33971	106.36398	Private	Fish	F
Little Dry Creek 56C-05	7/13/05	47.02861	106.62757	Private	Fish, Herp	F
Little Dry Creek 56D-05	7/13/05	46.98256	106.67966	Private	Fish, Herp	F
Little Powder HUC						
Little Powder River 1-05	4/28/05	45.10371	105.33128	Private	Fish	F
Little Powder River 1-05 RE	7/28/05	45.10371	105.33128	Private	Fish, Herp	F
Lower Powder HUC						
Spring Creek 1-05	5/2/05	45.82289	104.85794	Private	Fish, Herp	F
Spring Creek 1-05 RE	7/21/05	45.823602	104.86151	Private	Fish, Herp	F
Lower Tongue HUC						
Pumpkin Creek 52E-05	4/13/05	46.0759	105.5537	Private	Fish, Herp	ISP
Pumpkin Creek 52E-05 RE	7/20/05	46.0759	105.5537	Private	Fish, Herp	CS
Lower Yellowstone HUC						
Alkali Creek 6B-05	6/21/05	47.54191	104.21863	Private	Herp	ISP
Bennie Peer Creek 4B-05	6/1/05	47.69643	104.08992	Private	Fish, Herp	F
Cabin Creek 16D-05	6/28/05	46.55309	104.35487	Private	Fish	F
Cedar Creek 15B-05	5/25/05	46.90257	104.70757	Public	Fish	F
Cedar Creek 15C-05	5/25/05	46.79058	104.55622	Public	Fish	F
Cedar Creek 43A-05	5/18/205	46.84982	105.32449	Public	Fish	F
First Hay Creek 20C-05	6/9/05	47.83764	104.27632	Public	Fish, Herp	F
Fox Creek 26A-05	6/9/05	47.63086	104.46538	Private	Fish, Herp	F
Fox Creek 26B-05	6/9/05	47.63801	104.4769	Private	Fish	F
Fox Creek 26C-05	6/2/05	47.64579	104.50796	Private	none	F
Griffith Creek 13A-05	5/19/05	47.1036	104.56501	Public	Fish, Herp	F
Lower Sevenmile Creek 33A-05	5/19/05	47.27774	104.77509	Public	none	Dry
Middle Fork Cabin Creek 68A-05	6/28/05	46.57879	104.35532	Private	Fish, Herp	F

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Appendix D Continued. R7 2005 Sample site information, arranged by HUC name

Site Name and Number	Date	Latitude	Longitude	Ownership	Status	Water
Lower Yellowstone HUC continued						
Morgan Creek 32A-05	6/14/05	47.26501	104.61871	Private	Fish, Herp	F
Morgan Creek 32B-05	6/15/05	47.27459	104.65341	Public	Fish	F
Morgan Creek 32C-05	6/15/05	47.29707	104.70988	Public	none	ISP
North Fork Burns Creek 95A-05	6/22/05	47.58165	104.66071	Public	Fish	CS
North Fork First Hay Creek 23A-05	6/2/05	47.80536	104.1882	Private	Herp	ISP
North Fork Fox Creek 70A-05	6/7/05	47.64968	104.30235	Private	Fish, Herp	F
North Fork Lonetree Creek 24A-05	6/9/05	47.79781	104.35717	Private	Herp	ISP
O'Brien Creek 5C-05	6/22/05	47.60418	104.14398	Private	Fish	CS
Sand Creek 14A-05	5/11/05	47.02472	104.74155	Public	none	Dry
Second Hay Creek 21B-05	6/2/05	47.82715	104.10902	Private	Herp	F
Shadwell Creek 7A-05	6/21/05	47.51231	104.24403	Private	Fish, Herp	F
Smith Creek 8C-05	6/1/05	47.36852	104.13458	Public	Fish, Herp	F
South Fork Lonetree Creek 25A-05	6/7/05	47.73381	104.37872	Private	Herp	F
Thirteenmile Creek 31C-05	6/14/05	47.38805	104.73473	Private	Fish	F
Thirteenmile Creek 31C-05RE	6/20/05	47.39221	104.73733	Private	Fish, Herp	F
Upper Sevenmile 36B-05	6/20/05	47.22517	105.22099	Public	Fish, Herp	CS
Upper Sevenmile 36A-05	5/11/05	47.09563	104.81792	Public	Fish	F
Lower Yellowstone-Sunday HUC						
Custer Creek 44A-05	5/26/05	46.72856	105.59398	Private	Fish	F
Custer Creek 44B-05	5/26/05	46.70041	105.48736	Private	Fish	F
Froze to Death 51A-05	7/8/05	46.33258	107.17617	Public	Fish	F
Grimes Creek 83A-05	6/29/05	46.61182	106.08075	Public	Herp	F
Harris Creek 45A-05	5/26/05	46.60735	105.61797	Private	Fish, Herp	ISP
Harris Creek 45B-05	5/9/05	46.59661	105.6079	Private	Fish	F
Little Porcupine Creek 77A-05	7/14/05	46.87638	107.03751	Public	Herp	ISP
Muster Creek 46A-05	5/4/05	46.61787	105.75288	Private	none	ISP
Sand Creek 47A-05	5/3/05	46.54241	105.72467	Private	Fish	CS
Sand Creek 47B-05	5/4/05	46.57911	105.76912	Private	none	ISP
Sand Creek 49A-05	6/6/05	46.29948	106.37576	Private	Fish	F
Sand Creek 49B-05	6/6/05	46.36906	106.34084	Private	Herp	ISP
Sarpy Creek 1-05	4/25/05	45.85078	107.10601	Private	Fish, Herp	CS
Sarpy Creek 1-05 RE	7/26/05	45.85078	107.10601	Private	Fish, Herp	F
Starved To Death Creek 50B-05	7/6/05	46.33286	107.05561	Private	Fish, Herp	F
Starved To Death Creek 50C-05	7/6/05	46.31734	107.05807	Private	Fish, Herp	F
Musselshell HUC						
Calf Creek 64B-05	8/24/05	47.04233	107.66991	Private	Fish, Herp	ISP
Lodgepole Creek 17B-05	8/24/05	47.26722	107.69148	Private	none	Dry
South Fork Lodgepole Creek 18A-05	8/24/05	47.15736	107.69422	Private	Herp	ISP
Rosebud HUC						
Rosebud Creek 26E-05	4/14/05	45.2201	106.95171	Private	Fish	ISP
Rosebud Creek 26E-05 RE	7/18/04	45.22036	106.95095	Private	Fish, Herp	ISP
Rosebud Creek 3-05	4/15/05	45.21363	107.00193	Private	Fish, Herp	CS
Rosebud Creek 3-05 RE	7/18/05	45.21363	107.00193	Private	Fish, Herp	F
Rosebud Creek Park-05	4/14/05	45.21564	106.97564	Public	Fish, Herp	ISP
Rosebud Creek Park-05 RE	7/19/05	45.21648	106.99321	Public	Fish, Herp	CS

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Appendix D Continued. R7 2005 Sample site information, arranged by HUC name

Site Name and Number	Date	Latitude	Longitude	Ownership	Status	Water
Upper Tongue HUC						
Deer Creek 19A-05 RE	7/19/05	45.05529	106.70295	Private	Herp	ISP
Deer Creek 19B-05	4/27/05	45.06566	106.75186	Private	Herp	CS
Deer Creek19A-05	4/27/05	45.05529	106.70296	Private	Herp	CS
Hanging Woman Creek 76E-05	4/26/05	45.22817	106.49747	Private	Fish, Herp	F
Hanging Woman Creek 76E-05 RE	7/20/05	45.22764	106.49904	Private	Fish, Herp	F
Waddle Creek 1-05 RE	7/19/05	45.04982	106.45166	Private	none	ISP
Waddle Creek1-05	4/26/05	45.04868	106.44972	Private	none	CS
Youngs Creek 1-05 RE	7/19/05	45.01468	106.97492	Private	Fish	F
Youngs Creek1-05	4/15/05	45.01468	106.97492	Private	none	F

F=Flowing Water CS=Continuous Standing Water ISP=Interrupted Standing Pools

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Arrow	Arrow Creek Mouth	Brassy Minnow	6
		Fathead Minnow	75
		Flathead Chub	106
		Lake Chub	252
		Longnose Dace	10
		Longnose Sucker	8
		Mountain Sucker	2
		Northern Redbelly Dace	46
		Plains Minnow	38
		White Sucker	13
		Total	**556**
Battle	Lyons Coulee	Fathead Minnow	2
		Northern Pike	12
		Total	**14**
Beaver	Beaver Creek 1A-05	Brassy Minnow	3
		Golden Shiner	36
		Green Sunfish	1
		Iowa Darter	4
		Northern Pike	14
		Walleye	1
		White Sucker	10
		Total	**69**
	Beaver Creek 1B-05	Black Bullhead	3
		Brassy Minnow	4
		Brook Stickleback	1
		Creek Chub	8
		Fathead Minnow	28
		Golden Shiner	16
		Green Sunfish	8
		Iowa Darter	8
		Northern Pike	2
		Sand Shiner	41
		Shorthead Redhorse	2
		White Sucker	8
		Total	**129**
	Beaver Creek 1D-05	Black Bullhead	9
		Fathead Minnow	34
		Shorthead Redhorse	1
		Walleye	2
		White Sucker	34
		Total	**80**
	Lame Steer Creek 3A-05	Brook Stickleback	790
		Fathead Minnow	1
		Green Sunfish	1
		Total	**792**
	Little Beaver Creek 2A-05	Fathead Minnow	10
		Golden Shiner	2
		Yellow Perch	1
		Total	**13**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Beaver (Milk) HUC	Big Warm Creek	Brassy Minnow	61
		Fathead Minnow	35
		Lake Chub	69
		Longnose Dace	37
		Northern Redbelly Dace	49
		White Sucker	21
		Total	**272**
	Button Butte Coulee	Fathead Minnow	195
		Total	**195**
	Larb Creek	Black Bullhead	3
		Brassy Minnow	3
		Common Carp	3
		Fathead Minnow	108
		Iowa Darter	2
		Lake Chub	24
		Plains Minnow	13
		White Sucker	26
		Total	**182**
	Sage Creek	Fathead Minnow	2
		Total	**2**
	Sevenmile Creek	Brook Stickleback	7
		Fathead Minnow	79
		Iowa Darter	3
		Total	**89**
	Windmill Coulee	Fathead Minnow	96
		Total	**96**
Big Dry	Big Dry Creek 57B-05	Black Bullhead	7
		Brook Stickleback	4
		Common Carp	3
		Fathead Minnow	54
		Lake Chub	4
		Plains Killifish	1
		Plains Minnow	1
		Sand Shiner	3
		Yellow Perch	2
		Total	**79**
	Second Creek 71A-05	Brook Stickleback	16
		Fathead Minnow	45
		Total	**61**
	Steve Forks Big Dry Creek 59A-05	Fathead Minnow	1
		Total	**1**
Big Muddy	Lake Creek	Fathead Minnow	260
		Lake Chub	1
		Northern Pike	3
		White Sucker	8
		Total	**272**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Big Porcupine	Big Porcupine Creek 87A-05	Fathead Minnow	307
		Green Sunfish	9
		Total	**316**
	Horse Creek 93A-05	Fathead Minnow	33
		Green Sunfish	1
		Total	**34**
Box Elder	Horsethief Coulee	Fathead Minnow	5,295
		Northern Redbelly Dace	427
		Total	**5,722**
	Shale Coulee	Fathead Minnow	1
		Total	**1**
	Surenuff Creek	Fathead Minnow	1
		Northern Redbelly Dace	2
		White Sucker	4
		Total	**7**
	Tyler Creek	Lake Chub	15
		Longnose Dace	3
		Northern Redbelly Dace	1
		White Sucker	1
		Total	**20**
Bullwhacker-Dog	Alkali Creek	Brook Stickleback	4
		Brown Trout	2
		Common Carp	3
		Fathead Minnow	26
		Plains Minnow	22
		River Carpsucker	1
		White Sucker	9
		Total	**67**
	Arrow Creek	Channel Catfish	1
		Common Carp	5
		Fathead Minnow	4
		Flathead Chub	123
		Goldeye	1
		Longnose Dace	6
		Longnose Sucker	11
		Plains Minnow	117
		River Carpsucker	4
		Stonecat	6
		Western Silvery Minnow	51
		Total	**329**
	Birch Creek	Flathead Chub	1
		Total	**1**
	Bullwhacker Creek	Common Carp	3
		Flathead Chub	5
		River Carpsucker	20
		Total	**28**
	Dog Creek	Fathead Minnow	1
		Total	**1**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Bullwhacker-Dog continued	Eagle Creek	Brassy Minnow	2
		Brook Stickleback	53
		Common Carp	53
		Fathead Minnow	413
		Lake Chub	5
		Plains Minnow	1
		Pumpkinseed	1
		Sand Shiner	5
		White Sucker	60
		Total	**593**
	Little Sandy Creek	Common Carp	11
		Emerald Shiner	42
		Fathead Minnow	713
		Flathead Chub	3
		Northern Redbelly Dace	1
		River Carpsucker	5
		Sand Shiner	12
		Western Silvery Minnow	6
		Total	**793**
Charlie-Little Muddy	Little Muddy Creek	Black Bullhead	2
		Brassy Minnow	13
		Common Carp	2
		Fathead Minnow	223
		Northern Pike	2
		White Sucker	119
		Total	**361**
	Shotgun Creek	Brassy Minnow	3
		Brook Stickleback	9
		Common Carp	1
		Fathead Minnow	2
		White Sucker	20
		Total	**35**
Flatwillow	Johnson Coulee	Fathead Minnow	86
		Northern Redbelly Dace	3
		Total	**89**
	Yellow Water Creek	Brassy Minnow	1
		Northern Redbelly Dace	1
		Total	**2**
Fort Peck Reservoir	Armells Creek	Common Carp	773
		Fathead Minnow	164
		Flathead Chub	50
		Longnose Sucker	4
		Plains Minnow	5
		River Carpsucker	447
		Sand Shiner	72
		Total	**1,515**

HUC (Drainage)	Site Name	Species	Number
Fort Peck Reservoir cont.	Bull Creek	Common Carp	23
		Emerald Shiner	17
		Fathead Minnow	7
		Flathead Chub	21
		Goldeye	9
		Plains Minnow	112
		River Carpsucker	4
		Walleye	1
		Western Silvery Minnow	123
		White Sucker	2
		Total	**319**
	Cottonwood Creek	Brassy Minnow	4
		Brook Stickleback	6
		Fathead Minnow	1
		White Sucker	31
		Total	**42**
	Hell Creek 61A-05	Common Carp	4
		Fathead Minnow	34
		Flathead Chub	20
		Lake Chub	26
		Longnose Dace	36
		Plains Minnow	354
		Sand Shiner	57
		Total	**531**
	Lodgepole Creek	Brassy Minnow	2
		Brook Stickleback	13
		Longnose Dace	62
		Longnose Sucker	1
		Northern Redbelly Dace	2
		White Sucker	4
		Total	**84**
	Nelson Creek	Brook Stickleback	50
		Creek Chub	1
		Fathead Minnow	46
		Lake Chub	7
		Longnose Dace	7
		Plains Killifish	26
		Plains Minnow	2
		Sand Shiner	12
		White Sucker	2
		Total	**153**
	Plum Coulee	Fathead Minnow	150
		Plains Minnow	8
		White Sucker	6
		Total	**164**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Fort Peck Reservoir cont.	Rock Creek	Brassy Minnow	11
		Brook Stickleback	1
		Common Carp	6
		Fathead Minnow	11
		Flathead Chub	11
		Longnose Dace	1
		White Sucker	6
		Total	**47**
	Snow Creek 62A-05	Brassy Minnow	120
		Lake Chub	37
		Plains Minnow	65
		Sand Shiner	173
		White Sucker	27
		Total	**422**
	Spring Creek	Northern Redbelly Dace	58
		Total	**58**
	Timber Creek	Fathead Minnow	138
		Plains Minnow	42
		Total	**180**
	Two Calf Creek	Common Carp	67
		Flathead Chub	30
		Plains Minnow	4
		River Carpsucker	115
		Spottail Shiner	1
		Western Silvery Minnow	4
		White Sucker	3
		Total	**224**
	Woodhawk Creek	Common Carp	1
		Total	**1**
Judith	Plum Creek	Lake Chub	28
		Total	**28**
	Squaw Coulee	Fathead Minnow	149
		Total	**149**
	Wolf Creek	Fathead Minnow	6
		Lake Chub	357
		Longnose Dace	25
		Northern Redbelly Dace	2
		White Sucker	50
		Total	**440**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Little Dry	Little Dry Creek 56A-05	Black Bullhead	3
		Brassy Minnow	1
		Brook Stickleback	1
		Creek Chub	21
		Fathead Minnow	23
		Flathead Chub	5
		Plains Killifish	1
		Plains Minnow	21
		River Carpsucker	1
		Sand Shiner	14
		White Sucker	18
		Total	**109**
	Little Dry Creek 56C-05	Channel Catfish	1
		Fathead Minnow	256
		Lake Chub	116
		Longnose Dace	11
		Plains Killifish	1
		Plains Minnow	603
		Sand Shiner	10
		White Sucker	33
		Total	**1,031**
	Little Dry Creek 56D-05	Black Bullhead	28
		Brassy Minnow	2
		Common Carp	22
		Fathead Minnow	71
		Lake Chub	12
		largemouth bass	6
		Plains Killifish	2
		White Sucker	13
		Yellow Perch	44
		Total	**200**
Little Powder	Little Powder River 1L-05	Common Carp	6
		Fathead Minnow	9
		Green Sunfish	1
		Sand Shiner	307
		Shorthead Redhorse	11
		White Sucker	67
		Total	**401**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Little Powder continued	Little Powder River 1L-05 RE	Black Bullhead	9
		Brassy Minnow	103
		Channel Catfish	3
		Common Carp	14
		Creek Chub	1
		Fathead Minnow	112
		Green Sunfish	32
		Plains Minnow	1
		Sand Shiner	302
		Shorthead Redhorse	14
		Stonecat	2
		White Sucker	33
		Total	**626**
Lower Milk	Beaver Creek	Black Bullhead	8
		Common Carp	33
		Fathead Minnow	42
		Lake Chub	6
		Plains Minnow	6
		River Carpsucker	2
		White Sucker	1
		Yellow Perch	1
		Total	**99**
	Dessert Coulee	Fathead Minnow	171
		Yellow Perch	3
		Total	**174**
	Hardscrabble Creek	Black Bullhead	109
		Brook Stickleback	2
		Fathead Minnow	111
		White Sucker	2
		Total	**224**
	Milk River at Vandalia Dam	Channel Catfish	1
		Common Carp	2
		Emerald Shiner	81
		Freshwater Drum	1
		Goldeye	23
		Smallmouth Buffalo	4
		white crappie	1
		Total	**113**
	North Fork Antelope Creek	Black Bullhead	61
		Fathead Minnow	214
		Total	**275**
	North Fork Lone Tree Creek	Common Carp	2
		Fathead Minnow	50
		Lake Chub	65
		Total	**117**
Lower Musselshell	Calf Creek 64B-05	Brassy Minnow	1,539
		Green Sunfish	49
		Total	**1,588**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Lower Musselshell continued	Crooked Creek	Common Carp	4
		Fathead Minnow	75
		Lake Chub	91
		Longnose Dace	1
		Plains Minnow	504
		Sand Shiner	36
		Total	**711**
	Musselshell River	Channel Catfish	92
		Common Carp	30
		Emerald Shiner	15
		Fathead Minnow	4
		Flathead Chub	1
		Goldeye	14
		Green Sunfish	8
		Lake Chub	2
		Plains Minnow	2
		River Carpsucker	5
		Sand Shiner	1
		Shorthead Redhorse	4
		Walleye	1
		Western Silvery Minnow	47
		Total	**226**
Lower Powder	Spring Creek 1Z-05	Common Carp	2
		Fathead Minnow	65
		Green Sunfish	2
		Lake Chub	24
		Plains Killifish	22
		Sand Shiner	35
		Total	**150**
	Spring Creek 1Z-05 RE	Black Bullhead	1
		Fathead Minnow	10
		Green Sunfish	5
		Plains Killifish	29
		Plains Minnow	5
		Sand Shiner	2
		Total	**52**
Lower Tongue	Pumpkin Creek 52E-05	Brassy Minnow	1
		Fathead Minnow	3
		Total	**4**
	Pumpkin Creek 52E-05 RE	Fathead Minnow	109
		Green Sunfish	4
		White Sucker	12
		Total	**125**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Lower Yellowstone	Bennie Peer Creek 4B-05	Black Bullhead	2
		Brassy Minnow	2
		Common Carp	2
		Creek Chub	1
		Emerald Shiner	8
		Fathead Minnow	148
		Plains Minnow	16
		Sand Shiner	2
		White Sucker	12
		Total	**193**
	Cabin Creek 16D-05	Fathead Minnow	9
		Total	**9**
	Cedar Creek 15B-05	Creek Chub	2
		Fathead Minnow	75
		Plains Killifish	3
		Plains Minnow	155
		Total	**235**
	Cedar Creek 15C-05	Fathead Minnow	35
		Lake Chub	43
		Plains Minnow	58
		Total	**136**
	Cedar Creek 43A-05	Brassy Minnow	1
		Creek Chub	12
		Fathead Minnow	105
		Green Sunfish	1
		Lake Chub	1
		Plains Killifish	1
		White Sucker	19
		Total	**140**
	First Hay Creek 20C-05	Brook Stickleback	68
		Fathead Minnow	3
		Total	**71**
	Fox Creek 26A-05	Black Bullhead	22
		Northern Pike	2
		Total	**24**
	Fox Creek 26B-05	Black Bullhead	5
		Northern Pike	3
		Total	**8**
	Griffith Creek 13A-05	Brook Stickleback	667
		Creek Chub	32
		Fathead Minnow	263
		Plains Killifish	589
		Total	**1,551**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Lower Yellowstone continued	Middle Fork Cabin Creek 68A-05	Fathead Minnow	1,006
		Lake Chub	75
		Longnose Dace	10
		Plains Killifish	1
		Plains Minnow	41
		White Sucker	13
		Total	**1,146**
	Morgan Creek 32A-05	Black Bullhead	4
		Brook Stickleback	2
		Creek Chub	128
		Fathead Minnow	66
		Lake Chub	1
		Longnose Dace	26
		Plains Killifish	4
		White Sucker	26
		Total	**257**
	Morgan Creek 32B-05	Brook Stickleback	1
		Creek Chub	82
		Longnose Dace	15
		Total	**98**
	North Fork Burns Creek 95A-05	Brook Stickleback	20
		Total	**20**
	North Fork Fox Creek 70A-05	Northern Pike	4
		Total	**4**
	O'Brien Creek 5C-05	Brook Stickleback	102
		Fathead Minnow	139
		Total	**241**
	Shadwell Creek 7A-05	Black Bullhead	2
		Brassy Minnow	1
		Brook Stickleback	321
		Creek Chub	6
		Fathead Minnow	132
		Green Sunfish	19
		Plains Killifish	9
		River Carpsucker	8
		Total	**498**
	Smith Creek 8C-05	Brook Stickleback	669
		Creek Chub	2
		Fathead Minnow	133
		Green Sunfish	1
		Total	**805**
	Thirteenmile Creek 31C-05	Brassy Minnow	2
		Brook Stickleback	42
		Creek Chub	21
		Fathead Minnow	7
		Longnose Dace	1
		Northern Redbelly Dace	7
		White Sucker	43
		Total	**123**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Lower Yellowstone continued	Thirteenmile Creek 31C-05 RE	Brook Stickleback	36
		Creek Chub	168
		Northern Redbelly Dace	1
		White Sucker	46
		Total	**251**
	Upper Sevenmile Creek 36B-05	Brook Stickleback	2
		Total	**2**
	Upper Sevenmile Creek 36A-05	Brassy Minnow	7
		Creek Chub	2
		Fathead Minnow	97
		Plains Killifish	3
		Sand Shiner	11
		Total	**120**
Lower Yellowstone-Sunday	Custer Creek 44A-05	Black Bullhead	1
		Creek Chub	20
		Fathead Minnow	103
		Plains Killifish	11
		Plains Minnow	160
		Sand Shiner	16
		Total	**311**
	Custer Creek 44B-05	Creek Chub	9
		Fathead Minnow	74
		Longnose Sucker	2
		River Carpsucker	2
		Sand Shiner	14
		Shorthead Redhorse	1
		Western Silvery Minnow	71
		White Sucker	15
		Total	**188**
	Froze to Death Creek 51A-05	Black Bullhead	2
		Brassy Minnow	3
		Channel Catfish	2
		Common Carp	79
		Emerald Shiner	6
		Fathead Minnow	27
		River Carpsucker	17
		Western Silvery Minnow	398
		White Sucker	28
		Total	**562**
	Harris Creek 45A-05	Fathead Minnow	1
		Total	**1**
	Harris Creek 45B-05	Creek Chub	1
		Emerald Shiner	5
		Fathead Minnow	5
		Flathead Chub	3
		Green Sunfish	2
		Longnose Dace	5
		Longnose Sucker	3
		Western Silvery Minnow	6
		Total	**30**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Lower Yellowstone-Sunday continued	Sand Creek(Lower Yellowstone-Sunday-R7-4AB-05)	Channel Catfish	2
		Emerald Shiner	4
		Fathead Minnow	3
		Flathead Chub	1
		Goldeye	2
		Sand Shiner	1
		Shorthead Redhorse	9
		Western Silvery Minnow	19
		Total	**41**
	Sand Creek(R7-Lower Yellowstone-Sunday 47A-05)	Black Bullhead	39
		Fathead Minnow	39
		Plains Minnow	130
		Sand Shiner	1
		White Sucker	1
		Total	**210**
	Sarpy Creek 1S-05	Fathead Minnow	180
		Total	**180**
	Sarpy Creek 1S-05 RE	Fathead Minnow	3
		Total	**3**
	Starved To Death Creek 50B-05	Fathead Minnow	55
		Plains Minnow	67
		Total	**122**
	Starved To Death Creek 50C-05	Common Carp	89
		Fathead Minnow	155
		Flathead Chub	9
		Lake Chub	1
		Longnose Dace	1
		Plains Minnow	530
		River Carpsucker	6
		White Sucker	2
		Total	**793**
Marias	Jensen Coulee	Brassy Minnow	12
		Brook Stickleback	566
		Fathead Minnow	256
		Lake Chub	36
		Mountain Sucker	1
		White Sucker	66
		Total	**937**
	Middle Fork of Dry Fork of Marias	Brook Stickleback	162
		Fathead Minnow	72
		Lake Chub	1
		White Sucker	29
		Total	**264**
	South Fork of Dry Fork of Marias	Brassy Minnow	3
		Brook Stickleback	469
		Fathead Minnow	230
		Lake Chub	10
		Longnose Dace	1
		White Sucker	28
		Total	**741**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Middle Milk	Dodson Canal	Common Carp	125
		Emerald Shiner	1
		Fathead Minnow	1,043
		White Sucker	64
		Yellow Perch	2
		Total	**1,235**
	East Branch Thirtymile Creek	Brook Stickleback	1
		Fathead Minnow	321
		Total	**322**
	Thirtymile Creek	Brook Stickleback	2
		Fathead Minnow	35
		Total	**37**
Middle Musselshell	North Willow Creek(Middle Musselshell_R5_40A_05)	Black Bullhead	1
		Brassy Minnow	79
		Fathead Minnow	170
		Green Sunfish	14
		Lake Chub	9
		Plains Minnow	1,030
		Sand Shiner	69
		White Sucker	28
		Total	**1,400**
Poplar	Spring Creek	Fathead Minnow	499
		Northern Pike	2
		White Sucker	9
		Total	**510**
Prairie Elk-Wolf	Shade Creek	Fathead Minnow	46
		Flathead Chub	17
		Lake Chub	65
		Longnose Dace	32
		Plains Minnow	93
		Total	**253**
	South Fork Shade Creek	Fathead Minnow	19
		Plains Minnow	110
		Total	**129**
Redwater	East Fork Pasture Creek	Brook Stickleback	54
		Fathead Minnow	517
		Lake Chub	9
		Total	**580**
	West Fork Pasture Creek	Northern Pike	2
		Total	**2**
Rock	Lone Tree Coulee	Fathead Minnow	161
		Iowa Darter	2
		Lake Chub	19
		Plains Minnow	23
		Total	**205**
	Morgan Creek	Brook Stickleback	24
		Fathead Minnow	449
		Total	**473**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Rock continued	North Fork South Creek	Fathead Minnow	70
		Iowa Darter	3
		White Sucker	1
		Total	**74**
Rosebud	Rosebud Creek 26E-05	Fathead Minnow	972
		Total	**972**
	Rosebud Creek 26E-05 RE	Fathead Minnow	906
		Lake Chub	7
		White Sucker	9
		Total	**922**
	Rosebud Creek 3-05	Fathead Minnow	574
		Lake Chub	122
		Longnose Dace	17
		White Sucker	47
		Total	**760**
	Rosebud Creek 3-05 RE	Brassy Minnow	1
		Fathead Minnow	239
		Lake Chub	196
		Longnose Dace	16
		White Sucker	12
		Total	**464**
	Rosebud Creek Park -05 RE	Fathead Minnow	1,015
		Lake Chub	2
		Total	**1,017**
	Rosebud Creek Park-05	Fathead Minnow	94
		Total	**94**
Sun River	Dipping Tank Creek	Brook Stickleback	114
		Total	**114**
Teton	Muddy Creek	Brook Stickleback	15
		Lake Chub	20
		Longnose Dace	196
		Mountain Sucker	13
		Northern Redbelly Dace	3
		White Sucker	9
		Yellow Perch	1
		Total	**257**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Teton continued	Teton River	Brassy Minnow	2
		Brook Stickleback	1
		Channel Catfish	6
		Common Carp	5
		Emerald Shiner	1
		Fathead Minnow	97
		Flathead Chub	8
		Lake Chub	89
		Longnose Dace	16
		Longnose Sucker	39
		Mountain Sucker	9
		River Carpsucker	2
		Sand Shiner	1,183
		Shorthead Redhorse	18
		Spottail Shiner	1
		Western Silvery Minnow	1
		White Sucker	387
		Total	**1,865**
Two Medicine	Sheep Creek	Brassy Minnow	15
		Fathead Minnow	49
		Lake Chub	49
		Longnose Dace	17
		Mottled Sculpin	1
		Mountain Sucker	13
		Northern Redbelly Dace	2
		White Sucker	135
		Total	**281**
	Sheep Creek (oxbow pond)	Northern Redbelly Dace	20
		Hybrid Dace	2
		Total	**22**
Upper Milk	Ribbon Gulch	Brook Trout	28
		Total	**28**
Upper Musselshell	Antelope Creek(Upper Musselshell_R5_88A_05)	Fathead Minnow	13
		Total	**13**
	Big Coulee Crk (Upper Musselshell_R5_42A1_05)	White Sucker	1
		Total	**1**
	Big Coulee Crk (Upper Musselshell_R5_42A2_05)	Northern Redbelly Dace	1
		Total	**1**
	Big Coulee Crk (Upper Musselshell_R5_42C1_05)	Brassy Minnow	15
		Lake Chub	9
		Longnose Dace	1
		Total	**25**
	Big Coulee Crk (Upper Musselshell_R5_42C2_05)	Brassy Minnow	9
		Fathead Minnow	1
		Lake Chub	1
		Longnose Dace	1
		Northern Redbelly Dace	1
		Plains Minnow	34
		Total	**47**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Upper Musselshell continued	Big Coulee Crk (Upper Musselshell_R5_42D1_05)	Brassy Minnow	28
		Lake Chub	19
		Longnose Dace	9
		Northern Redbelly Dace	1
		White Sucker	5
		Total	**62**
	Big Coulee Crk (Upper Musselshell_R5_42D2_05)	Brassy Minnow	7
		Fathead Minnow	2
		Lake Chub	1
		Northern Redbelly Dace	5
		White Sucker	2
		Total	**17**
	Fish Creek (Upper Musselshell_R5_49B1_05)	Fathead Minnow	76
		Lake Chub	34
		Longnose Dace	18
		Northern Redbelly Dace	1
		Plains Minnow	6
		White Sucker	57
		Total	**192**
	Fish Creek (Upper Musselshell_R5_49B2_05)	Common Carp	2
		Fathead Minnow	63
		Lake Chub	22
		Longnose Dace	18
		Plains Minnow	57
		White Sucker	34
		Total	**196**
	Fish Creek (Upper Musselshell_R5_49C1_05)	Brassy Minnow	5
		Fathead Minnow	69
		Lake Chub	21
		Longnose Dace	6
		Mountain Sucker	2
		Northern Redbelly Dace	3
		Stonecat	1
		White Sucker	34
		Total	**141**
	Fish Creek (Upper Musselshell_R5_49C2_05)	Brassy Minnow	1
		Common Carp	3
		Fathead Minnow	6
		Lake Chub	12
		Longnose Dace	1
		Shorthead Redhorse	7
		White Sucker	41
		Total	**71**
	Fish Creek (Upper Musselshell_R5_49D1_05)	Longnose Dace	47
		Total	**47**
	Fish Creek (Upper Musselshell_R5_49D2_05)	Longnose Dace	41
		Total	**41**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Upper Musselshell continued	Milton Creek(Upper Musselshell_R5_171A_05)	Fathead Minnow	27
		Northern Redbelly Dace	18
		White Sucker	7
		Total	**52**
Upper Tongue	Hanging Woman Creek 76E-05	Black Bullhead	3
		Brassy Minnow	1
		Common Carp	2
		Fathead Minnow	1
		Green Sunfish	45
		White Sucker	7
		Total	**59**
	Hanging Woman Creek 76E-05 RE	Green Sunfish	2
		Total	**2**
	Youngs Creek 1Y-05 RE	Creek Chub	11
		Longnose Dace	6
		Total	**17**
Upper Yellowstone-Lake Basin	South Fork Countryman Creek (Upper Yellowstone-Lake Basin_R5_175A_05)	Lake Chub	5
		Total	**5**
	Work Creek (Upper Yellowstone-Lake Basin_R5_172A_05)	Brown Trout	1
		Total	**1**
Upper Yellowstone-Pompey's Pillar	Arrow Creek (Upper Yellowstone-Pompey's Pillar_R5_44B1_05)	Emerald Shiner	813
		Fathead Minnow	7
		Flathead Chub	1,087
		Goldeye	1
		Lake Chub	143
		Longnose Dace	16
		Longnose Sucker	16
		Mountain Sucker	184
		Plains Minnow	3
		River Carpsucker	1
		Sand Shiner	4
		Shorthead Redhorse	17
		Western Silvery Minnow	1,495
		White Sucker	53
		Total	**3,840**
	Arrow Creek (Upper Yellowstone-Pompey's Pillar_R5_44C1_05)	Emerald Shiner	2
		White Sucker	2
		Total	**4**
	Arrow Creek (Upper Yellowstone-Pompey's Pillar_R5_44D2_05)	Lake Chub	12
		Total	**12**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Upper Yellowstone-Pompey's Pillar continued	Crooked Creek (Upper Yellowstone-Pompeys Pillar_R5_22D1_05)	Brook Stickleback	1
		Emerald Shiner	77
		Fathead Minnow	5
		Flathead Chub	1,723
		Longnose Dace	1
		Longnose Sucker	41
		Mountain Sucker	8
		Sand Shiner	55
		Western Silvery Minnow	429
		White Sucker	6
		Total	**2,346**
	Crooked Creek (Upper Yellowstone-Pompeys Pillar_R5_22E1_05	Brook Stickleback	68
		Common Carp	1
		Fathead Minnow	11
		Flathead Chub	56
		Lake Chub	127
		Longnose Sucker	1
		Mountain Sucker	1
		Pumpkinseed	1
		Shorthead Redhorse	11
		White Sucker	17
		Total	**294**
	Crooked Creek (Upper Yellowstone-Pompeys Pillar_R5_22F1_05	Brook Stickleback	4
		Total	**4**
	Crooked Creek (Upper Yellowstone-Pompeys Pillar_R5_22F2_05)	Brook Stickleback	70
		Fathead Minnow	2
		Total	**72**
	Fivemile Creek (Upper Yellowstone-Pompey's Pillar_R5_60A1_05)	Flathead Chub	5
		Longnose Sucker	1
		Rainbow trout	2
		Sand Shiner	1
		White Sucker	3
		Total	**12**
	Fivemile Creek (Upper Yellowstone-Pompey's Pillar_R5_60B1_05)	Fathead Minnow	61
		Lake Chub	49
		Longnose Dace	2
		Longnose Sucker	13
		Shorthead Redhorse	10
		White Sucker	113
		Total	**248**
	Fivemile Creek (Upper Yellowstone-Pompey's Pillar_R5_60B2_05)	Fathead Minnow	52
		Lake Chub	44
		Longnose Dace	10
		Longnose Sucker	2
		Mountain Sucker	2
		Shorthead Redhorse	9
		White Sucker	57
		Total	**176**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Upper Yellowstone-Pompey's Pillar continued	Gravel Pit Coulee (Upper Yellowstone-Pompey's Pillar_R5_176A_05)	Lake Chub	55
		Longnose Dace	87
		Total	**142**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68A1_05)	Brook Stickleback	5
		Emerald Shiner	1
		Fathead Minnow	10
		Flathead Chub	535
		Lake Chub	323
		Longnose Dace	2
		Pumpkinseed	1
		Sand Shiner	105
		Shorthead Redhorse	5
		Western Silvery Minnow	691
		White Sucker	5
		Total	**1,683**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68A2_05)	Common Carp	1
		Fathead Minnow	16
		Flathead Chub	114
		Lake Chub	149
		Longnose Dace	7
		Mountain Sucker	3
		Plains Minnow	3
		Sand Shiner	48
		Shorthead Redhorse	1
		Stonecat	2
		Western Silvery Minnow	31
		White Sucker	25
		Total	**400**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68B1_05)	Brook Stickleback	3
		Emerald Shiner	3
		Fathead Minnow	88
		Flathead Chub	2,754
		Lake Chub	7
		Longnose Dace	4
		Longnose Sucker	222
		Mountain Sucker	39
		River Carpsucker	1
		Sand Shiner	79
		Shorthead Redhorse	2
		Western Silvery Minnow	222
		White Sucker	105
		Total	**3,529**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Upper Yellowstone-Pompey's Pillar continued	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68B2_05)	Common Carp	1
		Emerald Shiner	3
		Fathead Minnow	7
		Flathead Chub	180
		Lake Chub	1
		Longnose Dace	2
		Longnose Sucker	1
		Mountain Sucker	4
		Sand Shiner	18
		Western Silvery Minnow	8
		White Sucker	12
		Total	**237**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68C1_05)	Brook Stickleback	32
		Fathead Minnow	255
		Flathead Chub	1
		Lake Chub	647
		Longnose Dace	59
		Longnose Sucker	1
		Mountain Sucker	1
		Pumpkinseed	4
		Sand Shiner	43
		Western Silvery Minnow	1
		White Sucker	14
		Total	**1,058**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68C2_05)	Brook Stickleback	29
		Fathead Minnow	266
		Flathead Chub	23
		Lake Chub	256
		Longnose Dace	135
		Longnose Sucker	2
		Pumpkinseed	5
		Sand Shiner	540
		Western Silvery Minnow	60
		White Sucker	46
		Total	**1,362**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68D1_05)	Brook Stickleback	2
		Fathead Minnow	4
		Total	**6**
	Razor Creek (Upper Yellowstone-Pompey's Pillar_R5_68D2_05)	Brook Stickleback	1
		Fathead Minnow	137
		Green Sunfish	2
		Pumpkinseed	2
		White Sucker	1
		Total	**143**

Appendix E. Fish sampling results arranged by HUC and stream names.

HUC (Drainage)	Site Name	Species	Number
Upper Yellowstone-Pompey's Pillar continued	Sand Creek (Upper Yellowstone-Pompey's Pillar_R5_23C_05)	Black Bullhead	2
		Emerald Shiner	4
		Fathead Minnow	1
		Flathead Chub	289
		Green Sunfish	9
		Lake Chub	1
		Longnose Dace	200
		Longnose Sucker	23
		Mountain Sucker	23
		Pumpkinseed	18
		Sand Shiner	10
		Western Silvery Minnow	50
		white crappie	1
		White Sucker	28
		yellow bullhead	2
		Total	**661**
	Sevenmile Creek (Upper Yellowstone-Pompey's Pillar_R5_170A_05)	Lake Chub	6
		Longnose Dace	1
		Longnose Sucker	3
		White Sucker	1
		Total	**11**
	Twelvemile Creek (Upper Yellowstone- Pompey's Pillar_R5_48A1_05)	Brook Stickleback	6
		Fathead Minnow	2
		Flathead Chub	1
		Lake Chub	32
		Longnose Sucker	5
		Sand Shiner	1
		Stonecat	1
		White Sucker	8
		Total	**56**
	Twelvemile Creek (Upper Yellowstone- Pompey's Pillar_R5_48A2_05)	Fathead Minnow	4
		Flathead Chub	81
		Lake Chub	28
		Longnose Dace	1
		Longnose Sucker	1
		Pumpkinseed	1
		Sand Shiner	4
		Shorthead Redhorse	2
		White Sucker	35
		Yellow Perch	1
		Total	**158**
	Twelvemile Creek (Upper Yellowstone- Pompey's Pillar_R5_48B1_05)	Brook Stickleback	2
		Fathead Minnow	570
		Lake Chub	42
		Total	**614**

Appendix F. Region 4 Amphibian and reptile data arranged by HUC and stream name

Site Name	Boreal Chorus Frog	Boreal Chorus Frog Tadpole	Common Garter Snake	Eastern Racer	Gophersnake	Northern Leopard Frog	Northern Leopard Frog Tadpole	Painted Turtle	Plains Gartersnake	Spiny Softshell Turtle	Terrestrial Garter Snake	Tiger Salamander	Tiger Salamander Larva	Woodhouse's Toad
Arrow Creek HUC														
Arrow Creek	x				x									
Little Battle Creek	x													
Boxelder HUC														
Duck Creek												x	x	
Shale Coulee		x												
Bullwhacker-Dog HUC														
Alkali Creek		x				x				x				
Arrow Creek									x	x				x
Birch Creek						x								
Bullwhacker Creek									x	x				x
Eagle Creek						x								
Little Sandy Creek								x						
Pigtail Coulee				x										
Flatwillow HUC														
Johnson Coulee	x													x
Fort Peck Reservior HUC														
Two Calf Creek									x					x
Judith HUC														
Squaw Coulee												x		
Lower Musselshel HUC														
Musselshell River														x
Marias HUC														
Jensen Coulee							x							
McTosh Coulee	x													
Middle Fk of Dry Fk Marias			x											
South Fk of Dry Fk Marias													x	
Spring Coulee													x	
Sage HUC														
Bobcat Coulee	x													
Carvers Coulee													x	
Lost Coulee	x												x	
Teton HUC														
Bullberry Coulee												x	x	
Two Medicine HUC														
Sheep Creek						x								
Upper Milk HUC														
Ribbon Gulch											x			
Upper Missouri HUC														
Blackhorse Lake Flat	x													

Appendix F. Region 5 Amphibian and reptile data arranged by HUC and stream name

Site Name	Boreal Chorus Frog	Boreal Chorus Frog Tadpole	Gophersnake	Northern Leopard Frog	Northern Leopard Frog Tadpole	Painted Turtle	Spiny Softshell Turtle	Terrestrial Garter Snake	Tiger Salamander	Tiger Salamander Larva	Woodhouse's Toad	Woodhouse's Toad Tadpole
Middle Musselshell HUC												
North Willow Creek(R5_40A_05)	x					x						
Upper Musselshell HUC												
Antelope Creek (R5_88A_05)	x								x			
Big Coulee Crk (R5_42C2_05)	x											
Big Coulee Crk (R5_42D2_05)				x								
Fish Creek (R5_49B1_05)			x	x								
Fish Creek (R5_49C1_05)			x	x			x					
Upper Y'stone-Pompey's Pillar HUC												
Arrow Creek (R5_44D2_05)			x									
Fivemile Creek R5_60C1_05)		x										
Fivemile Creek (R5_60C2_05)										x		
Razor Creek(R5_68A2_05)				x								
Razor Creek (R5_68B2_05)				x								
Razor Creek (R5_68D2_05)				x		x				x		
Twelvemile Creek R5_48B1_05)	x								x			

Appendix F. Region 6 Amphibian and reptile data arranged by HUC and stream name

Site Name	Boreal Chorus Frog	Eastern Racer	Gophersnake	Northern Leopard Frog	Northern Leopard Frog Tadpole	Painted Turtle	Plains Gartersnake	Short Horned Lizard	Tiger Salamander	Tiger Salamander Larva	Unknown Tadpole	Western Rattlesnake	Woodhouse's Toad	Woodhouse's Toad Tadpole
Battle HUC														
Lyons Coulee 20									x					
Beaver (Milk) HUC														
Big Warm Creek 26				x	x									
Larb Creek 22			x	x		x								
Lost Coulee 23				x	x					x				
Sage Creek 32					x		x							
Sevenmile Creek 28	x			x		x	x							
White Rock Coulee	x			x			x							
Windmill Coulee 29		x										x		
Bullwhacker-Dog HUC														
East Fork Black Coulee 4	x			x										
Charlie-Little Muddy HUC														
Shotgun Creek 14				x										
Fort Peck Reservoir HUC														
Cottonwood Creek 5				x										
Nelson Creek 11				x		x							x	
Plum Coulee 34													x	x
Rock Creek 21							x							
Spring Creek 16				x									x	
Timber Creek 33													x	
Lower Milk HUC														
Bear Creek 9											x			
Chapman Coulee 10							x							
Dessert Coulee 41	x													
Hardscrabble Creek 40	x					x								
Mooney Coulee 8							x							
North Fork Antelope Creek 38	x						x							
North Fork Lone Tree Creek 3	x			x										
Middle Milk HUC														
East Branch Thirtymile 19	x													
North Branch White Bear Ck				x	x									
Poplar HUC														
Spring Creek 36				x										
Prairie Elk-Wolf HUC														
Shade Creek 17				x									x	
South Fork Shade Creek 1				x										
Redwater HUC														
East Fork Pasture Creek 47						x								
Stoney Butte Creek 6						x								
Rock HUC														
North Fork South Creek 42				x										

Appendix F. Region 7 2005 Amphibian and Reptile sampling results, arranged by HUC and stream name

	Boreal chorus frog	*Boreal chorus frog tadpole*	*Common garter snake*	*Eastern racer*	*Gopher snake*	*Great plains toad*	*Northern leopard frog*	*Northern Leopard Frog Tadpole*	*Painted turtle*	*Plains garter snake*	*Snapping turtle*	*Tiger salamander*	*Tiger salamander larvae*	*Unknown tadpole*	*Woodhouse's Toad*
Beaver HUC															
Beaver Creek 1A-05									x						
Lame Steer Creek 3A-05							x		x						
Big Dry HUC															
Big Dry Creek 57B-05							x	x							
Second Creek 71A-05													x	x	
Woody Creek 58A-05				x											
Big Porcupine HUC															
Horse Creek 93A-05							x	x				x			
Fort Peck Reservior HUC															
Hell Creek 61A-05						x									
Snow Creek 62A-05						x	x								
Little Dry HUC															
Little Dry Creek 56C-05							x				x				
Little Dry Creek 56D-05						x	x		x						x
Little Powder HUC															
Little Powder River 1-05 RE							x								
Lower Powder HUC															
Spring Creek 1-05							x				x				x
Spring Creek 1-05 RE							x						x		
Lower Tongue HUC															
Pumpkin Creek 52E-05	x														
Pumpkin Creek 52E-05 RE						x						x	x		

Appendix F. Region 7 2005 Amphibian and Reptile sampling results, arranged by HUC and stream name

	Boreal chorus frog	*Boreal chorus frog tadpole*	*Common garter snake*	*Eastern racer*	*Gopher snake*	*Great plains toad*	*Northern leopard frog*	*Northern Leopard Frog Tadpole*	*Painted turtle*	*Plains garter snake*	*Snapping turtle*	*Tiger salamander*	*Tiger salamander larvae*	*Unknown tadpole*	*Woodhouse's Toad*
Lower Yellowstone HUC															
Alkali Creek 6B-05							x		x			x	x		
Bennie Peer Creek 4B-05							x								x
First Hay Creek 20C-05			x				x								
Fox Creek 26A-05									x						
Griffith Creek 13A-05				x				x	x						x
Middle Fork Cabin Creek 68A-05												x			
Morgan Creek 32A-05							x								
North Fork First Hay Creek 23A-05			x				x		x						
North Fork Fox Creek 70A-05			x				x		x						
North Fork Lonetree Ck 24A-05													x		
Second Hay Creek 21B-05							x								
Shadwell Creek 7A-05					x				x						
Smith Creek 8C-05							x		x						
South Fork Lonetree Creek 25A-05			x				x		x						
Thirteenmile Creek 31C-05RE														x	
Upper Sevenmile 36B-05			x				x	x							
Lower Yellowstone-Sunday HUC															
Grimes Creek 83A-05			x										x	x	
Harris Creek 45A-05												x			
Little Porcupine Creek 77A-05	x	x								x					
Sand Creek 49B-05												x			
Sarpy Creek 1-05							x		x		x				
Sarpy Creek 1-05 RE							x				x				
Starved To Death Creek 50B-05	x					x									
Starved To Death Creek 50C-05	x														

Appendix F. Region 7 2005 Amphibian and Reptile sampling results, arranged by HUC and stream name

	Boreal chorus frog	*Boreal chorus frog tadpole*	*Common garter snake*	*Eastern racer*	*Gopher snake*	*Great plains toad*	*Northern leopard frog*	*Northern Leopard Frog Tadpole*	*Painted turtle*	*Plains garter snake*	*Snapping turtle*	*Tiger salamander*	*Tiger salamander larvae*	*Unknown tadpole*	*Woodhouse's Toad*
Musselshell HUC															
Calf Creek 64B-05							x					x	x		
South Fork Lodgepole Ck 18A-05												x	x		
Rosebud HUC															
Rosebud Creek 26E-05 RE							x								
Rosebud Creek 3-05							x		x						
Rosebud Creek 3-05 RE							x				x				
Rosebud Creek Park-05			x												
Rosebud Creek Park-05 RE							x		x					x	
Upper Tongue HUC															
Deer Creek 19A-05 RE						x						x			
Deer Creek 19B-05									x			x			
Deer Creek19A-05									x						
Hanging Woman Ck 76E-05							x		x						
Hanging Woman Ck 76E-05 RE							x				x				