

**Report on Amphibian and Aquatic Reptile Inventories  
Conducted On and Around the Beaverhead-Deerlodge National Forest  
2001-2003**

(March 7, 2004)

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**Suggested Citation:**

Maxell, B.A. 2004. Report on amphibian and aquatic reptile inventories conducted on and around the Beaverhead-Deerlodge National Forest 2001-2003. Report to Region 1 Office of the U.S. Forest Service, Montana State Office of the Bureau of Land Management, and Montana Department of Fish, Wildlife, and Parks. Montana Cooperative Wildlife Research Unit and Wildlife Biology Program, University of Montana, Missoula, MT. 260 pp.

## ACKNOWLEDGEMENTS

I thank Linda Ulmer and Tom Wittinger at the Region 1 Office of the U.S. Forest Service, Jim Brammer at Supervisor's Office of the Beaverhead-Deerlodge National Forest, Chris Riley at the Madison Ranger District of the Beaverhead-Deerlodge National Forest, Marc Whisler and Roxanne Falise at the Montana State Office of the Bureau of Land Management, Kristi Dubois and Heidi Youmans at the Montana Department of Fish, Wildlife, and Parks, and Lynda Saul and Randy Apfelbeck at the Montana Department of Environmental Quality for providing funding for this project. Jim Brammer, Buddy Drake, Daniel Gomez, Chris Riley, and Jim Roscoe provided access to aerial photos and/or helped coordinate accessing sites scheduled for survey. Steve Amish, Matthew Bell, Mickey Bland, Anna Breuninger, Jessica Easley, Ryan Killackey, Gary Maag, Lorraine McInnes, Thomas Schemm, Keif Storrar, and Ryan Zajac helped conduct field surveys. Steve Amish, Teri Hamm, Ryan Killackey, and Amy Puett helped review and manage data. Steve Amish coordinated access to some of the private lands surveyed. Existing records of herpetofauna in the area came from the Point Observation Database at the Montana Natural Heritage Program and the book *Herpetology in Montana* (Maxell et al. 2003) for which Kirwin Werner, at the Confederated Salish-Kootenai College, helped write many museums across the country to obtain information on museum voucher specimens in their collections. The majority of herpetofauna records in this region prior to this survey were gathered by Barbara Garcia, Jim Reichel, and Kirwin Werner. Steve Kujala provided records of herpetofauna gathered by USFS personnel on the Beaverhead-Deerlodge National Forest in recent years. Randy Gazda at the U.S. Fish and Wildlife Service provided helpful information for accessing private lands in the Dillon area and he, Teri Nall, and Jeff Marks were instrumental in tracking down breeding populations of the Plains Spadefoot (*Spea bombifrons*) near Dillon. Randy Apfelbeck at the Montana Department of Environmental Quality and Marc Jones at the Montana Natural Heritage Program helped develop a scheme for evaluating livestock grazing impacts on wetlands. This project benefited greatly from discussions on sampling design and survey methods with Steve Corn, Blake Hossack, Mark Lindberg, and Chuck Peterson. Steve Carson and Bob McFarland, at the Montana Department of Fish, Wildlife, and Parks, provided a statewide database of fish stocking records. Many GIS layers were provided by the Montana Natural Resources Information System and I would like to specifically thank Gerry Daumiller and Duane Lund for their assistance with these. Vanetta Burton and Joe Ball, at the Montana Wildlife Cooperative Research Unit, were instrumental in managing the contracts and accounts for this project.

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**Sample Stratum 4**

- Flint Creek (Philipsburg Valley) - (HUC ID = 4\_012 & ICBEMP HUC ID=170102021501))
- Speculator Upper Rock Creek (Sluice Gulch) - (HUC ID = 4\_015 & ICBEMP HUC ID =170102020701)
- Rock Creek (Alder Creek and Cougar Creek) - (HUC ID = 4\_023 & ICBEMP HUC ID =170102020302)
- Tolan Creek - (HUC ID = 4\_026 & ICBEMP HUC ID =170102052903)
- Willow, Dolus, and Pikes Peak Creeks - (HUC ID = 4\_027 & ICBEMP HUC ID =170102010803)
- Carpp Creek - (HUC ID = 4\_028 & ICBEMP HUC ID =170102021002)
- Wyman Gulch - (HUC ID = 4\_031 & ICBEMP HUC ID =170102020403)
- Beefstraight Creek - (HUC ID = 4\_053 & ICBEMP HUC ID = 170102012005)
- Basin Creek - (HUC ID = 4\_057 & ICBEMP HUC ID =170102012305)
- German Gulch - (HUC ID = 4\_060 & ICBEMP HUC ID =170102012004)
- Boulder Creek - (HUC ID = 4\_063 & ICBEMP HUC ID =170102021303)
- East Fork of Rock Creek - (HUC ID = 4\_067 & ICBEMP HUC ID =170102020703)
- Ranch Creek and Grizzly Creek - (HUC ID = 4\_068 & ICBEMP HUC ID =170102020203)
- Peterson Creek - (HUC ID = 4\_078 & ICBEMP HUC ID =170102011503)

**Sample Stratum 6**

- Berry Creek - (HUC ID = 6\_001 & ICBEMP HUC ID = 100200042801)
- Lowland Creek - (HUC ID = 6\_002 & ICBEMP HUC ID =100200060701)
- Cabin Creek - (HUC ID = 6\_003 & ICBEMP HUC ID =100200071604)
- Little Pipestone Creek - (HUC ID = 6\_004 & ICBEMP HUC ID = 100200051203)
- Bear Creek - (HUC ID = 6\_005 & ICBEMP HUC ID = 100200071001)
- French Creek - (HUC ID = 6\_006 & ICBEMP HUC ID = 100200041401)
- Unnamed Drainage on Lower Big Hole River - (HUC ID = 6\_007 & ICBEMP HUC ID = 100200040104)
- Wade, Cliff, and Hidden Lake - (HUC ID = 6\_008 & ICBEMP HUC ID =100200072501)
- Little Sheep Creek - (HUC ID = 6\_009 & ICBEMP 100200010601)
- Tucker Creek - (HUC ID = 6\_010 & ICBEMP HUC ID =100200040905)
- Nez Perce Creek - (HUC ID = 6\_011 & ICBEMP HUC ID =100200040103)
- Ruby River - (HUC ID = 6\_012 & ICBEMP HUC ID =100200031001)
- Warm Springs Creek - (HUC ID = 6\_013 & ICBEMP HUC ID =100200042602)
- Beaverhead River (Clark Canyon) - (HUC ID = 6\_014 & ICBEMP HUC ID =100200020702)
- Birch Creek - (HUC ID = 6\_015 & ICBEMP HUC ID =100200040402)
- Grayling Creek - (HUC ID = 6\_016 & ICBEMP HUC ID =100200071901)
- Little Lake Creek - (HUC ID = 6\_017 & ICBEMP HUC ID =100200042505)
- Browns Gulch - (HUC ID = 6\_018 & ICBEMP HUC ID = 100200060301)
- Upper Horse Prairie Creek - (HUC ID = 6\_019 & ICBEMP HUC ID = 100200011704)
- Cedar Creek - (HUC ID = 6\_020 & ICBEMP HUC ID = 100200070802)
- Grasshopper Creek - (HUC ID = 6\_021 & ICBEMP HUC ID = 100200021001)
- Little Boulder River - (Sample HUC ID = 6\_022 & ICBEMP HUC ID = 100200060302)
- Madison River (Dry Hollow) - (HUC ID = 6\_023 & ICBEMP HUC ID = 100200071101)
- Alder Creek - (HUC ID = 6\_024 & ICBEMP HUC ID = 100200041302)
- Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002) - 2001
- Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002) - 2002
- Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002) - 2003
- Boulder River (Unnamed Tributary to Upper Boulder River) - (HUC ID = 6\_026 & ICBEMP HUC ID = 100200060205)
- West Fork of Madison River (Tepee Creek) - (HUC ID = 6\_027 & ICBEMP HUC ID = 100200072602)
- Cataract Creek - (HUC ID = 6\_028 & ICBEMP HUC ID =100200060504)
- Lower Wise River - (HUC ID = 6\_029 & ICBEMP HUC ID = 100200041101)

Upper Medicine Lodge Creeks - (HUC ID = 6\_030 & ICBEMP HUC ID = 100200011202)  
Bloody Dick Creek - (HUC ID = 6\_031 & ICBEMP HUC ID = 100200011503)  
Wisconsin Creek - (HUC ID = 6\_032 & ICBEMP HUC ID = 100200030102)  
Nicholia Creek - (HUC ID = 6\_033 & ICBEMP HUC ID = 100200011006)  
Jourdain Creek - (HUC ID = 6\_034 & ICBEMP HUC ID = 100200070602)  
Pintler Creek - (HUC ID = 6\_035 & ICBEMP HUC ID = 100200041705)  
Deadman Creek - (HUC ID 6\_036 ICBEMP HUC ID = 100200011002 and HUC ID = 6\_301 & New USFS HUC ID = 100200010502)  
Pole Creek & Divide Creek - (HUC ID = 6\_037 & ICBEMP HUC ID = 100200021002)  
Sheep Creek - (HUC ID = 6\_038 & ICBEMP HUC ID = 100200071601)  
Odell Creek & Nye Creek - (HUC ID = 6\_039 & ICBEMP HUC ID = 100200012102)  
Deer Canyon Creek - (HUC ID = 6\_040 & ICBEMP HUC ID = 100200011103)  
Red Rock River (Lima Reservoir) - (HUC ID = 6\_041 & ICBEMP HUC ID = 100200011801)  
Miner Creek - (HUC ID = 6\_042 & ICBEMP HUC ID = 100200042504)  
Boulder River - (HUC ID = 6\_043 & ICBEMP HUC ID = 100200060501)  
Hebgen Lake (Red Canyon Creek) - (HUC ID = 6\_044 & ICBEMP HUC ID = 100200071701)  
Jefferson River (Cottonwood, Currant, and Spring Creeks) - (HUC ID = 6\_045 & ICBEMP HUC ID = 100200051601)  
Upper West Fork of Madison River - (HUC ID = 6\_046 & ICBEMP HUC ID = 100200072603)  
North Meadow Creek - (HUC ID = 6\_047 & ICBEMP HUC ID = 100200072801)  
Indian Creek - (HUC ID = 6\_048 & ICBEMP HUC ID = 100200030103)  
East Fork of Blacktail Deer Creek - (HUC ID = 6\_049 & ICBEMP HUC ID = 100200021701)  
North Willow Creek - (HUC ID = 6\_050 & ICBEMP HUC ID = 100200050601)  
Lower Red Rock River - (HUC ID = 6\_051 & ICBEMP HUC ID = 100200010102)  
Nez Perce Creek - (HUC ID = 6\_052 & ICBEMP HUC ID = 100200060602)  
Cabin Gulch - (HUC ID = 6\_053 & ICBEMP HUC ID = 100200060203)  
Corral Creek - (HUC ID = 6\_054 & ICBEMP HUC ID = 100200071302)  
Spring Canyon - (HUC ID = 6\_055 & ICBEMP HUC ID = 100200020104)  
Sweetwater Creek - (HUC ID = 6\_056 & ICBEMP HUC ID = 100200031402)  
Squaw Creek - (HUC ID = 6\_057 & ICBEMP HUC ID = 100200041703)  
Coyote Creek - (HUC ID = 6\_058 & ICBEMP HUC ID = 100200011501)  
Dry Creek - (HUC ID = 6\_059 & ICBEMP HUC ID = 100200051402)  
Trail Creek - (HUC ID = 6\_060 & ICBEMP HUC ID = 100200041901)  
Thompson Creek - (HUC ID = 6\_061 & ICBEMP HUC ID = 100200041806)  
Harkness Creek & Noble Creek - (HUC ID = 6\_062 & ICBEMP HUC ID = 100200011102)  
Beaverhead River and Small Horn Canyon - (HUC ID = 6\_063 & ICBEMP HUC ID = 100200020701)  
Meadow Creek, Rock Creek, & Nicholia Creek - (HUC ID = 6\_206 & New USFS HUC ID = 100200010503)  
Deadman Creek - (HUC ID = 6\_301 & New USFS HUC ID = 100200010502 and HUC ID 6\_036 ICBEMP HUC ID = 100200011002)  
Long Creek - (HUC ID = 6\_302 & New USFS HUC ID = 100200010702)  
Shenon Creek - (HUC ID = 6\_303 & New USFS HUC ID = 100200011005)  
Maiden Creek and Jeff Davis Creek - (HUC ID = 6\_403 & New USFS HUC ID = 100200011002)  
Sage Creek - (HUC ID = 6\_501 & New USFS HUC ID = 100200010703)  
Medicine Lodge Creek & Kate Creek - (HUC ID = 6\_502 & New USFS HUC ID = 100200011205)  
Muddy Creek - (HUC ID = 6\_602 & New USFS HUC ID = 100200010504)  
Medicine Lodge Creek (Dad & Pass Creeks) - (HUC ID = 6\_604 & New USFS HUC ID = 100200011202)  
Papoose Creek - (HUC ID = 6\_997 & ICBEMP HUC ID = 100200071501)  
Squaw Creek - (HUC ID = 6\_998 & ICBEMP HUC ID = 100200071502)  
Moose Creek - (HUC ID = 6\_999 & ICBEMP HUC ID = 100200071401)

## EXECUTIVE SUMMARY

Amphibian populations around the world and in Montana have undergone local and regional declines (Alford and Richards 2000; Houlahan et al. 2000; Maxell 2000; Maxell et al. 2003; Werner 2003). Prior to the surveys summarized in this report, southwestern Montana had a notable lack of baseline information on the distribution, biology, and status of amphibians and aquatic reptile species (Maxell et al. 2003). Furthermore, the status of species such as the Western Toad and Northern Leopard Frog was largely unknown even though they were listed as “Sensitive Species” by the U.S. Forest Service and the Bureau of Land Management and Montana “Species of Concern” by the Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks (Carlson 2003). Thus, there was a great need for the baseline surveys summarized in this report.

In light of these concerns, a multi-agency funded project to conduct baseline inventories for amphibians and aquatic reptiles at all standing water bodies in randomly selected watersheds across western Montana was undertaken during the 2000-2003 field seasons. The primary response variables of interest for this project are the percent of watersheds and sites occupied by each species and the percent of watersheds and sites with breeding detected for each species. These response variables are valuable measures of the regional and local status of amphibian and aquatic reptile species that can be used for determining the management status of individual species across the region so that agency plans can be appropriately revised and project-level planning can take appropriate measures to ensure the persistence of species of concern. Furthermore, these surveys will serve as a valuable baseline for comparison with future surveys so that trends in status of species can be determined over time. In addition, because these baseline surveys are conducted at all standing water bodies on public land in each watershed, patterns of detection/non-detection and relative abundance of amphibians and aquatic reptiles can be correlated with landscape level characteristics, including anthropogenic impacts, that allow populations to persist not only at individual sites but across entire watersheds.

Of the 686 6<sup>th</sup> code (12 digit) hydrologic unit watersheds in this region, 78 were randomly selected for complete surveys of all potential lentic sites. Sixty-eight of these contained at least one potential lentic site (total = 1,481,  $X = 22$ ;  $SE = 2.2$ ), 67 of these contained at least one dry or wet lentic site that would support amphibian reproduction (total = 1,020,  $X = 15$ ;  $SE = 1.7$ ) and there was a total of 883 wet lentic sites that would support amphibian reproduction ( $X = 13$ ;  $SE = 1.5$ ). Twelve additional 6<sup>th</sup> code hydrologic unit watersheds in the region were nonrandomly selected for survey to evaluate the potential impacts of fish stocking and to develop rapid bioassessment procedures for amphibians and aquatic reptiles. These 12 watershed contained a total of 338 ( $X = 28$ ;  $SE = 6.6$ ) potential lentic sites and 191 ( $X = 16$ ;  $SE = 3.4$ ) of these were evaluated as being capable of supporting amphibian reproduction. Finally, more than 60 lentic sites were surveyed one or more times because of the potential presence of a Western Toad breeding population. In addition to field surveys conducted in 2001-2003, historic observations and museum records of amphibian and reptile species were gathered from the Point Observation Database at the Montana Natural Heritage Program and by writing museums across the country. Survey results were placed in a database compatible with the “Fauna” and “Water” modules of the U.S. Forest Service’s “NRIS” database and the U.S. Geological Survey’s National Amphibian Research and Monitoring Initiative (ARMI) database and will eventually be loaded into these databases. In the mean time, a copy of the distribution and relative abundance information (only with positive detection information and without the habitat information) has been placed in the Point Observation Database at the Montana Natural Heritage Program.

Eight amphibian and 8 reptile species have been definitively documented on and around the Beaverhead-Deerlodge National Forest. Three of these amphibian species and 1 of these reptile species are listed as Montana State Species of Concern by the Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks. Although undetected to date, 3 additional amphibian species and 5 additional reptile species are potentially present in this region as well (4 of these are listed as State Species of Concern) (Carlson 2003). The status of all of these species is summarized in the table immediately following the executive summary. As a result of surveys conducted in 2000-2003 and the gathering of observation and museum

voucher records, confidence intervals were able to be calculated for watershed and site occupancy and breeding rates for 7 of these species. In addition to geographic distribution maps of records for these species gathered prior to and during our recent survey records, elevation distributions, and graphic displays of the percent of lentic sites surveyed with reproduction in each watershed surveyed were able to be produced. Only geographic distribution maps and qualitative subjective assessments of status were able to be made for the other 9 herpetofauna species definitively documented in the area.

Although the surveys summarized in this report have greatly increased our understanding of the distribution and status of amphibians and reptiles on and around the Beaverhead-Deerlodge National Forest, there is still a great deal to learn about a number of species in the region so that proper actions can be taken to ensure their persistence in the future (see section on suggestions for future). Perhaps the most important issue that still needs to be addressed is a lack of understanding of the distribution and status of several species in the region. No extant Northern Leopard Frog populations were identified with our surveys so systematic visual encounter and dipnet surveys should be focused on public and private lands at lower elevations and any populations identified through these efforts should be monitored intensively and all feasible measures should be taken to ensure their persistence. If no Northern Leopard Frog populations are identified with thorough systematic surveys at lower elevations, efforts should be undertaken to reintroduce populations in the region. Western toads were still found to be widespread in the region (detected in 37% of watersheds and breeding detected in 26% of watersheds), but they appear to be very rare (detected at only 7% of wet lentic sites and breeding at only 4% of wet lentic sites). Only approximately 35 clusters of breeding activity were detected in the region and only a few of these breeding clusters appeared to support large populations of breeding adults. Identification and monitoring of as many breeding populations as possible is clearly important so that all feasible measures can be taken to ensure the persistence of remaining populations. Systematic visual encounter surveys in suitable terrestrial habitats on public and private lands need to be conducted for the Greater Short-horned Lizard, Rubber Boa, Eastern Racer, Gophersnake, and Western Rattlesnake in order to better understand their status across the region. Similar systematic surveys should be conducted for the Coeur d'Alene Salamander, Northern Alligator Lizard, and Western Skink on the east side of the Sapphire Mountains, the Milksnake near the Three Forks area, and the Pigmy Short-horned Lizard in the Centennial Valley area, in order to determine if these species are present in the region.

In addition to surveys whose sole purpose is to identify herpetofauna, our knowledge of the distribution and status of these species is likely to be greatly enhanced by simply informing agency personnel of the need to search for and report herpetofauna incidental to other job duties. However, due to the recent detection of fungal pathogens that have been associated with amphibian die-offs in other parts of the world (see pathogen section), and the possible presence of other viral pathogens, personnel working in lentic waters or combinations of lentic and lotic waters should be required to use pathogen decontamination procedures between sites separated by significant distances (see attached protocols).

A variety of human activities, including road maintenance and use, livestock grazing, pesticide and herbicide application, piscicide application, prescribed fire, timber harvest, mining, damming and diverting of waters, reservoir water level manipulation, introduction of exotic species including fish, introduction of pathogens, and destruction of wetlands may potentially present threats to the viability of amphibian and reptile populations in the region. Only a handful of these potential activities were evaluated in association with surveys. These include fish stocking, heavy structural impacts to wetlands as a result of livestock grazing, damming and diverting of waters, the creation of wetland habitats by beaver and the presence of the fungal pathogen, *Batrachochytrium dendrobatidis*.

Of the 56 watersheds randomly selected for survey which had at least 1 permanent lentic site, 41 (73%) had fish stocked in at least 1 of these sites. Of the 415 permanent lentic sites in these watersheds, 158 (38%) were stocked with fish through direct stocking of the site or through secondary colonization of the site by fish introduced into waters nearby. Our surveys detected fish at 118 permanent lentic sites where there were no

records of stocking in the statewide Department of Fish, Wildlife, and Parks (DFWP) fish stocking database. All information on sites where we detected fish has been given to the statewide DFWP fish stocking database at the State Library in Helena. This information is summarized in a table in this report so that DFWP, BLM, or USFS biologists can carry out additional studies at sites of particular interest. The impact of fish stocking on Montana's amphibians has not been thoroughly examined and will not be thoroughly examined in this report. However, impacts appear to be related to the potential degree in overlap in habitat use between fish and amphibians and the amount of protective cover available to amphibians. For example, of the 114 sites in the statewide amphibian monitoring database with breeding by Tiger Salamanders, fish were only found in 4 and all 4 sites had cover which would allow larvae to be protected from fish predators. Similarly, of the 118 sites in the statewide database with records of Boreal Chorus Frog breeding, fish were only found in 5 and all 5 sites had protective cover. Of the 392 sites in the statewide database with records of Long-toed Salamander breeding, fish were found in 36, 31 of these sites had protective cover, and the 5 remaining sites all had fewer than 10 larvae detected. Finally, of the 795 sites in the statewide database with records of Columbia Spotted Frog breeding, fish were found in 96, 90 of these sites had protective cover, 5 of the 6 sites without protective cover had fewer than 100 larvae detected, and the 1 remaining site without protective cover had fewer than 1,000 larvae detected. Because stocking exotic and nonindigenous fishes has been shown to have a variety of negative effects on amphibians and aquatic reptiles in other regions (see literature review in Maxell 2000) it is probably wise to take a cautious approach when considering the impacts of fish stocking programs until this issue has been thoroughly investigated for all Montana amphibians. Thus, when fish introductions are being considered, thorough surveys of all standing waters in the watershed where the introductions would take place should be undertaken in order to determine what the likely consequences would be to amphibian populations in the area. This will allow common sense management decisions to be made in individual local watersheds in order to allow for conservation of native amphibians and aquatic reptiles and native fish species while maintaining fishing opportunities for the public. However, long-term maintenance of sport fishing opportunities and conservation of a variety of native taxa in lentic ecosystems across western Montana is probably only likely to be accomplished through a regional plan collaboratively developed between state and federal agencies. A regional plan successfully balancing these objectives is likely to set aside a certain percentage of watersheds to be maintained in a naturally fishless state, allow a certain percentage of watersheds to continue to be heavily managed for sport fishing opportunities for the public, and allow a certain percentage of watersheds to have a mixture of fish introductions and naturally fishless sites under a common sense framework that allows fishless sites in these watersheds to be least impacted while providing the public with the greatest possible access to fishing opportunities. Such a plan is most likely to be successful if it is developed as soon as possible so that local stocking efforts promoting the conservation of native fish species can be placed into a regional framework.

Alteration of natural hydrologic regimes by damming or diverting waters can impact wetlands that support amphibian breeding, foraging, and overwintering. Thus, the degree of damming and diverting of waters was evaluated as a potential issue impacting amphibians in the region. A total of 149 wetlands and 90 lentic sites evaluated as capable of supporting amphibian reproduction in the region had had their hydrological regimes altered by damming or diverting of waters. Of the 68 randomly selected watersheds that contained at least one potential lentic site, 43 (63%) had at least 1 potential lentic site that had been dammed or diverted and of the 67 randomly selected watersheds that contained at least one potential lentic site capable of supporting amphibian reproduction, 35 (52%) had at least one lentic site capable of supporting amphibian reproduction that had been dammed or diverted. Of the 1,481 potential lentic sites surveyed in the randomly selected watersheds, 107 (7%) had been dammed or diverted and of the 1,020 lentic sites evaluated as being capable of supporting amphibian reproduction, 71 (7%) had been dammed or diverted. Watersheds with sites dammed or diverted are identified in the watershed summary of damming and diverting of waters and individual sites are identified as having been dammed or diverted in the amphibian inventory and monitoring database. The significance of these hydrological alterations to amphibians deserves additional research.

Because the impact of livestock grazing can be difficult to determine relative to background levels of disturbance by native ungulates that might be considered within the range of natural variation, impacts of livestock grazing were evaluated as one of 5 categories: (1) no impact noted; (2) grazing noted in the area, but no heavy structural impacts noted; (3) heavy structural impacts noted, such as outright destruction of vegetation resulting in large amounts of bare ground and hummocking that would alter the hydrology of the wetland; (4) heavy structural impacts as described in number 3 and impacts to water quality noted as a result of livestock defecating and urinating directly in the wetland in large numbers; and (5) no heavy structural impacts, but impacts to water quality as described in number 4. A total of 80 wetlands and 55 lentic sites evaluated as capable of supporting amphibian reproduction were evaluated as having been heavily structurally impacted by livestock grazing so that wetland functions were likely being impaired. Of the 68 randomly selected watersheds that contained at least one potential lentic site, 20 (29%) had at least 1 potential lentic site that was heavily structurally impacted by livestock grazing and of the 67 randomly selected watersheds that contained at least one potential lentic site capable of supporting amphibian reproduction, 17 (25%) had at least one lentic site capable of supporting amphibian reproduction that was heavily structurally impacted. Of the 1,481 potential lentic sites surveyed in the randomly selected watersheds, 46 (3.1%) were evaluated as having been heavily structurally impacted and of the 1,020 lentic sites evaluated as being capable of supporting amphibian reproduction, 36 (3.5%) were evaluated as having been heavily structurally impacted. The full significance of these impacts to amphibians deserves additional research. In the meantime, watersheds with sites heavily impacted by livestock grazing are identified in the watershed summary of heavy livestock grazing impacts and sites heavily impacted are identified in the individual watershed summaries so that these sites can be revisited and corrective measures can be taken if deemed warranted by management personnel.

Our surveys found that beaver had created wetland habitats capable of supporting amphibian reproduction in 32 (48%) of the 67 randomly selected watersheds in the region that had at least 1 site evaluated as capable of supporting amphibian reproduction. Furthermore, in these watersheds, beaver created 163 (16%) of the lentic sites that would support amphibian reproduction across the region and in some watersheds beaver created as much as 87% of the lentic sites capable of supporting amphibian reproduction in the watershed. These beaver created habitats are clearly important to the persistence of amphibians in some watersheds across the region because throughout the successional duration of these habitats they provide breeding, foraging, and aquatic overwintering habitat for amphibians and increase connectivity between populations that would otherwise be restricted to isolated depressional wetlands. Furthermore, beaver created habitats provide habitat for a variety of other wildlife and fish species, provide water for cattle, improve water quality by trapping sediments, and probably enhance late season in-stream flows by holding water on the landscape. Because beaver play these important roles, it is important that the status of beaver and beaver created habitats is better understood across this region. The following questions deserve research with regards to beaver and beaver created habitats:

1. What is the regional carrying capacity for beaver and how does this compare with current numbers?
2. What topography, hydrologic regime, and successional stage of vegetation are beaver limited to?
3. How do grazing impacts on riparian vegetation affect beaver dynamics in watersheds?
4. Do current beaver harvest regimes limit beaver below the carrying capacity of the landscape?
5. What should be considered a baseline for the ratio of the number of active to inactive beaver sites and the numbers of watersheds with and without current beaver activity?

A detection summary is included for each of the 89 watersheds surveyed on and around the Beaverhead-Deerlodge National Forest and in cases where a watershed was surveyed in multiple years a watershed summary is included for each year since site occupancy and breeding may vary from year to year. Each watershed summary consists of a map paired with a table summarizing the results of the surveys. The map and table can be used together to identify likely combinations of breeding, foraging, and overwintering habitats in the watershed given what is known about habitat use for each species so that likely impacts of a variety of human actions can be determined. It is important to note that, in most cases, surveys are a single visit snapshot of detection/nondetection and true detection probabilities were not identified. Furthermore, this study really focused on identifying breeding sites and sites used by adults and juveniles for summer foraging. While this study was able to identify potential overwintering sites based on habitat characteristics, actual sites used for overwintering are unknown.

## Summary of Status of Amphibians and Reptiles On and Around the Beaverhead-Deerlodge National Forest

Eight amphibian and 8 reptile species have been documented on and around the Beaverhead-Deerlodge National Forest. Three of these amphibian species and 1 of these reptile species are listed as Montana State Species of Concern by the Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks. Although undetected to date, 3 additional amphibian species and 5 additional reptile species are potentially present in this region as well.

### Species for Which Confidence Intervals Can Be Calculated for Watershed and Site Occupancy and Breeding Rates

Species	Detected in Watershed (Y/N)	Breeding in Watershed (Y/N)	Number & Percent of Lentic Sites Detected	Number & Percent of Lentic Sites Breeding
Long-toed Salamander ( <i>Ambystoma macrodactylum</i> )	23 (68%) (95%CI = 53-83%)	23 (68%) (95%CI = 53-83%)	88 (19%) (95%CI = 15-22%)	87 (19%) (95%CI = 15-22%)
Tiger Salamander ( <i>Ambystoma tigrinum</i> )	6 (38%) (95%CI = 15-61%)	6 (38%) (95%CI = 15-61%)	40 (21%) (95%CI = 15-27%)	40 (21%) (95%CI = 15-27%)
<sup>1</sup> Western Toad ( <i>Bufo boreas</i> )	25 (37%) (95%CI = 26-48%)	18 (26%) (95%CI = 16-36%)	61 (7%) (95%CI = 5.3-8.7%)	29 (4%) (95%CI = 2.7-5.3%)
Boreal Chorus Frog ( <i>Pseudacris maculata</i> )	10 (53%) (95%CI = 31-75%)	10 (53%) (95%CI = 31-75%)	41 (13%) (95%CI = 9-17%)	35 (11%) (95%CI = 7-15%)
Columbia Spotted Frog ( <i>Rana luteiventris</i> )	55 (81%) (95%CI = 72-90%)	48 (71%) (95%CI = 61-81%)	510 (58%) (95%CI = 55-61%)	284 (32%) (95%CI = 29-35%)
<sup>3</sup> Terrestrial Gartersnake ( <i>Thamnophis elegans</i> )	30 (44%) (95%CI = 33-55%)	-	60 (6.8%) (95%CI = 5.1-8.5%)	-
<sup>3</sup> Common Gartersnake ( <i>Thamnophis sirtalis</i> )	7 (10%) (95%CI = 3-17%)	-	7 (0.8%) (95%CI = 0.2-1.4%)	-

### Species Definitely Documented in the Area for which only Qualitative and Subjective Assessments of Status Can be Made

Species	Qualitative and Subjective Assessment of Status	Comments
Rocky Mountain Tailed Frog ( <i>Ascaphus montanus</i> )	Common	Common west of Continental Divide, but less common east of Continental Divide
<sup>2</sup> Plains Spadefoot ( <i>Spea bombifrons</i> )	Rare	Only a handful of records, but probably limited to valley areas
<sup>1</sup> Northern Leopard Frog ( <i>Rana pipiens</i> )	Potentially Extirpated	Potentially extirpated from all of historic range in the region
Painted Turtle ( <i>Chrysemys picta</i> )	Common	Common only in valley areas
<sup>2</sup> Greater Short-horned Lizard ( <i>Phrynosoma hernandesi</i> )	Rare and Potentially Extirpated	Only a handful of records prior to 1954 & potentially extirpated from all of former range in the region
Rubber Boa ( <i>Charina bottae</i> )	Common	Few records, but a secretive species that is common in adjacent areas of western Montana
Eastern Racer ( <i>Coluber constrictor</i> )	Common	Common in valleys and foothills in northeastern portion of region and less common elsewhere
Gophersnake ( <i>Pituophis catenifer</i> )	Common	Common in valleys and foothills in northeastern portion of region and less common elsewhere
Western Rattlesnake ( <i>Crotalus viridis</i> )	Common	Common only in valleys and foothills of region and more common in northeastern portion of region

### Species Potentially Present in the Area, but Lacking Definitive Proof of an Established Breeding Population

Species	Comments
<sup>1</sup> Coeur d'Alene Salamander ( <i>Plethodon idahoensis</i> )	Potentially present on the east side of the Sapphire Mountains due to proximity of records in the Bitterroot Mountains and lack of baseline surveys
American Bullfrog ( <i>Rana catesbeiana</i> )	Exotic to the region Unconfirmed records of introductions in the Madison River Valley
Great Basin Spadefoot ( <i>Spea intermontana</i> )	Potentially present due to presence in northeastern Idaho and continuous habitat
<sup>2</sup> Snapping Turtle ( <i>Chelydra serpentina</i> )	Exotic to the region. Unconfirmed records of introductions from near Hebgen Lake and a confirmed record of an introduction near Bozeman
Pigmy Short-horned Lizard ( <i>Phrynosoma douglasii</i> )	An unconfirmed observation and a museum record from "Centennial Valley, Montana" collected in 1936 which must be regarded as questionable without additional documentation
<sup>3</sup> Northern Alligator Lizard ( <i>Elgaria coerulea</i> )	Potentially present on the east side of the Sapphire Mountains due to proximity of records on the west side of the Sapphire Mountains and lack of baseline surveys
<sup>2</sup> Western Skink ( <i>Eumeces skiltonianus</i> )	Potentially present on the east side of the Sapphire Mountains due to proximity of records on the west side of the Sapphire Mountains and lack of baseline surveys
<sup>2</sup> Milksnake ( <i>Lampropeltis triangulum</i> )	Unconfirmed record from near Threeforks

<sup>1</sup> Listed as a Sensitive Species on Forests in western Montana by the U.S. Forest Service and a Montana State Species of Concern by the Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks (Carlson 2003).

<sup>2</sup> Listed as a Montana State Species of Concern by the Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks (Carlson 2003).

<sup>3</sup> Detection probabilities of Terrestrial and Common Gartersnakes are almost certainly very low as a result of their non-continuous presence at lentic sites. However, there is no reason to believe that this index of relative abundance would not be consistently biased by the same magnitude so results of future surveys conducted using the same methods should be directly comparable to these.

## INTRODUCTION

Amphibian populations around the world and in Montana have undergone local and regional declines (Alford and Richards 2000; Houlahan et al. 2000; Maxell 2000; Maxell et al. 2003; Werner 2003). Seven major factors, and their interaction, have been implicated as causative agents of these declines. These include: (1) loss, deterioration, and fragmentation of aquatic and terrestrial habitats (e.g., Beebee 1997); (2) introduction of nonindigenous species (e.g., Bradford et al. 1993); (3) environmental pollutants (e.g., Dunson et al. 1992); (4) increased ambient UV-B radiation (e.g., Blaustein et al. 1994); (5) climate change (e.g., Pounds et al. 1999); (6) pathogens (e.g., Lips 1999); and (7) human commerce (e.g., Pough 1998).

In light of a lack of baseline information on the distribution, biology, and status of amphibian and aquatic reptile species in Montana (Maxell and Hokit 1999; Maxell 2000; Maxell et al. 2003), a multi-agency funded project to conduct baseline inventories for amphibians and aquatic reptiles at all standing water bodies in randomly selected watersheds across western Montana has been undertaken during the 2000-2003 field seasons. The primary response variables of interest for this project are the percent of watersheds and sites occupied by each species and the percent of watersheds and sites with breeding detected for each species. These response variables are valuable measures of the regional and local status of amphibian and aquatic reptile species that can be used for determining the management status of individual species across the region so that agency plans can be appropriately revised and project-level planning can take appropriate measures to ensure the persistence of species of concern. Furthermore, these surveys will serve as a valuable baseline for comparison with future surveys so that trends in status of species can be determined over time. In addition, because these baseline surveys are conducted at all standing water bodies on public land in each watershed, patterns of detection/non-detection and relative abundance of amphibians and aquatic reptiles can be correlated with landscape level characteristics, including anthropogenic impacts, that allow populations to persist not only at individual sites but across entire watersheds. This is an important advance over looking at detection/nondetection and relative abundance at individual sites because the health of individual populations is often tied to neighboring habitats and populations and human, biotic, and abiotic factors often have impacts at the watershed scale (e.g., watershed size and topography, number of breeding sites in a watershed, creation of breeding habitats by beaver, fish stocking, damming and diverting of waters, livestock grazing, roads, mining, and timber harvest).

Prior to the surveys summarized in this report, southwestern Montana had an even more notable lack of baseline information on the distribution, biology, and status of amphibians and aquatic reptile species than other regions of western Montana (Maxell et al. 2003). Furthermore, the status of species such as the Western Toad and Northern Leopard Frog was largely unknown in this region even though they were listed as “Sensitive Species” by the U.S. Forest Service and the Bureau of Land Management and Montana “Species of Concern” by the Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks (Carlson 2003). Thus, there was a great need for the baseline surveys summarized in this report.

## METHODS

### Sampling Design

Because the status of amphibian populations is often dependent on adjacent populations, and human activities and management actions often take place at the scale of a local watershed, our sampling scheme uses watersheds as the basic sampling unit. Within each watershed we survey all potential lentic water bodies identified on 7.5-minute (1:24,000 scale) topographic maps and aerial photographs. To have inference to watersheds of interest across western Montana we applied a stratified random sampling design with the boundaries of 9 strata based on a combination of level three ecoregions (Nesser et al. 1997), 4th field (8 digit) hydrological unit code (HUC) watersheds and regions of particular conservation concern (e.g., island mountain ranges with the potential for isolated populations) (see PDF file of overall sampling scheme). Within each of these strata, 6th field (12 digit) HUC watersheds containing at least 25 percent federal or state land ownership (i.e., the target population to which inferences can be drawn) were randomly selected. The number and total area of 6th level HUC watersheds chosen within each stratum is proportional to the total area of each individual stratum relative to the other strata (see PDF file provided). The watersheds randomly selected for survey on and around the Beaverhead-Deerlodge National Forest all lie within sampling strata 4 and 6 and are shown on the following page.

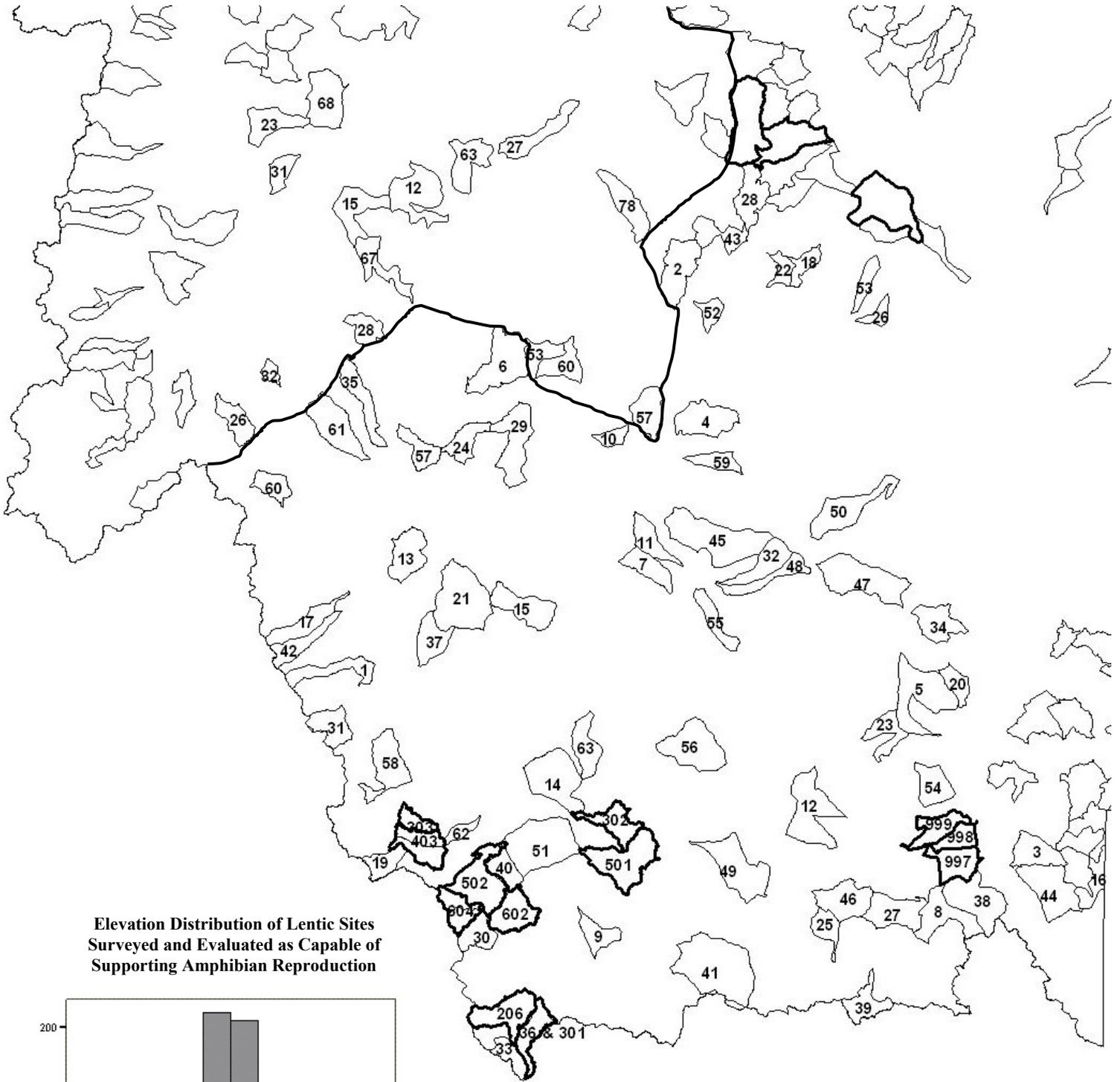
### Survey Methods and Database Management

Within each watershed we surveyed all potential lentic water bodies identified on 7.5-minute (1:24,000 scale) topographic maps and aerial photographs. In addition, we searched areas within a 200-meter radius of these potential sites for additional “incidental” water bodies that may be utilized by amphibians or aquatic reptiles. Finally, we surveyed any other lentic sites encountered incidentally while navigating to potential lentic sites identified on maps and aerial photographs. At each standing water body field crews conducted timed visual encounter and dipnet surveys of all shallow (<50cm) water habitats, which yielded information on both detection/non detection and relative abundance (number of individuals detected per surveyor per unit time) of each species and life history stage encountered (Heyer et al. 1994; Olson et al. 1997). Field crews took digital photographs of all sites and photographs of species were taken when of particular interest. GPS units were used to identify the exact UTM coordinates of each site. Museum voucher specimens and tissue samples that can be used for future genetic analysis were gathered at at least one site in each watershed for each species encountered (adult western toads were not collected because they are a species of concern). Pathogen decontamination procedures were followed between individual watersheds (see attached). Site, habitat, and species information was recorded on standardized hard copy data sheets (see attached) and entered into a database on a handheld computer at the time of the survey. Incidental observations of species away from standing water bodies were also recorded on a standardized data sheet (see attached) and entered into a databases on a handheld computer. Finally, after all surveys were completed in a watershed, site occupancy and breeding data was summarized for that watershed (see watershed summaries). The site occupancy and breeding database (with habitat information and both detection and non-detection information) is compatible with the “Fauna” and “Water” modules of the U.S. Forest Service’s “NRIS” database, the U.S. Geological Survey’s National Amphibian Research and Monitoring Initiative (ARMI) database and will eventually be loaded into these databases. In the mean time, a copy of the distribution and relative abundance information (only with positive detection information and without the habitat information) has been placed in the Point Observation Database at the Montana Natural Heritage Program.

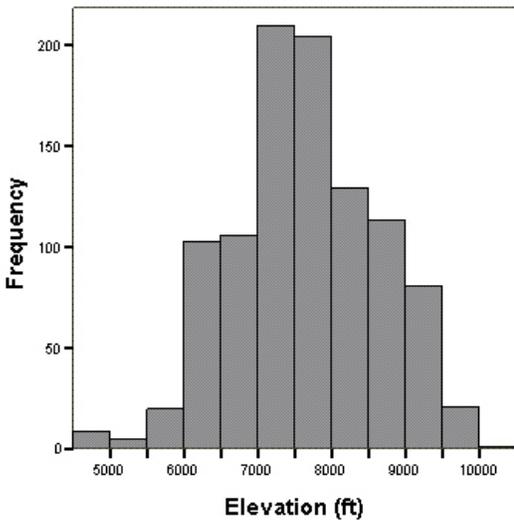
### Detection of Amphibians and Aquatic Reptiles

It is important to realize that the detection information included in this report is only an index. The true probability of detecting each life history stage of a species, given that it is indeed present at a particular lentic site, can only be determined by visiting a site multiple times. The detection/nondetection information from the multiple visits can then be used in a maximum likelihood framework analogous to mark-recapture data in order to determine the true probability of detecting each life history stage of a species (White et al. 1982; White and Burnham 1999). Multiple visits to sites were not feasible in this study due to budgetary and logistical constraints, so the true probability of detection is unknown. Multiple visits to a small subset of watersheds across western Montana is being undertaken in order to estimate general probabilities of detection for each species in the future. In general, for experienced field assistants, we believe that detection probabilities are high for most life history stages of most amphibian species. Detection probabilities of Terrestrial Gartersnakes and Common Gartersnakes are almost certainly an exception to this and are probably very low as a result of their non-continuous presence at lentic sites. However, there is no reason to believe that this index of relative abundance would not be consistently biased by the same magnitude so results of future surveys conducted using the same methods should be directly comparable.

# Watersheds Surveyed On and Near the Beaverhead-Deerlodge National Forest 2001-2003



**Elevation Distribution of Lentic Sites Surveyed and Evaluated as Capable of Supporting Amphibian Reproduction**



**Map Legend**  
 Light Outlines = Watersheds Randomly Selected for Survey  
 Bold Outlines = Watersheds Non-Randomly Selected for Survey  
 Long Light Line = State Boundary  
 Long Bold Line = Boundary between Sampling Strata 4 (north) and 6 (south).  
 Numbers = Sample Number of Watershed. Watershed Reports are Included for all Watersheds with Sample Numbers

## Assessment of Some Anthropogenic Impacts Potentially Impacting Amphibians and Aquatic Reptiles

### Exotic and Nonindigenous Fish Introductions

The amphibian and aquatic reptile survey crews searched for fish incidental to searching for herpetofauna, and only used visual encounter methods. Therefore, the probability of fish detection is uncertain and it is possible that fish were not detected at some water bodies when they actually were present. In addition, no special effort was made to determine species identity with certainty so, for example, at many sites fish were only identified as an unknown trout species. Furthermore, no measures of the relative abundance or distribution of size classes of fish present were recorded as part of the survey unless an individual crew member chose to make a comment with regards to this information. Adequately measuring these variables would have required an entirely different level of survey involving gill nets and/or mark recapture analysis.

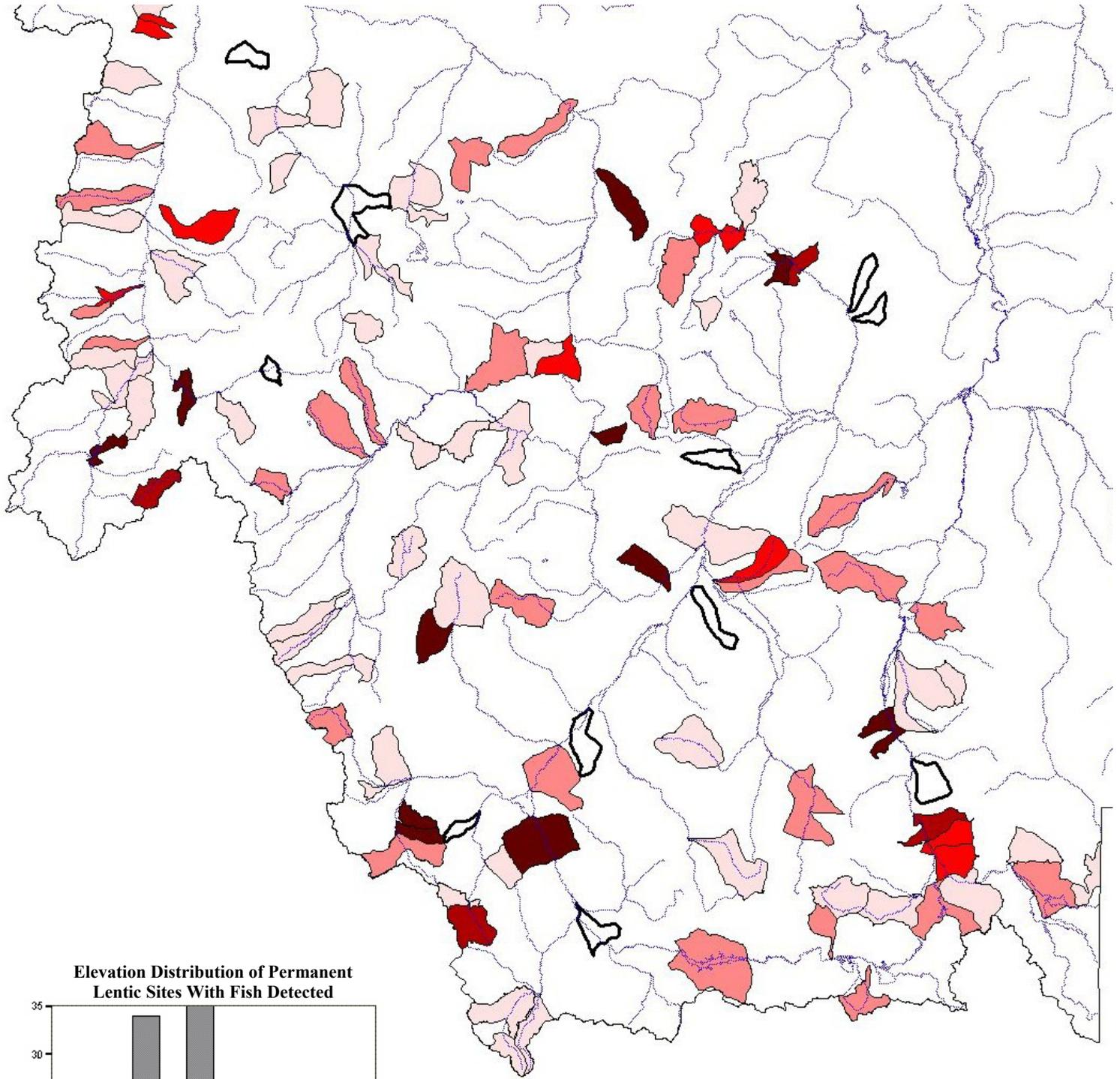
Our surveys detected fish at 118 permanent lentic sites where there were no records of stocking in the statewide Department of Fish, Wildlife, and Parks (DFWP) fish stocking database. In many of these cases fish populations are probably native to these sites. However, in the majority of cases these sites are above steep gradients and other barriers and probably represent introductions at these sites or at other sites in the watershed with secondary colonization of these sites. All information on sites where we detected fish has been given to the statewide DFWP fish stocking database at the State Library in Helena. This information is summarized in the table below so that DFWP, BLM, or U.S. Forest Service biologists can carry out additional studies at sites of particular interest.

#### Water Bodies Where Fish Were Detected, But With No Record of Stocking in DFWP Database

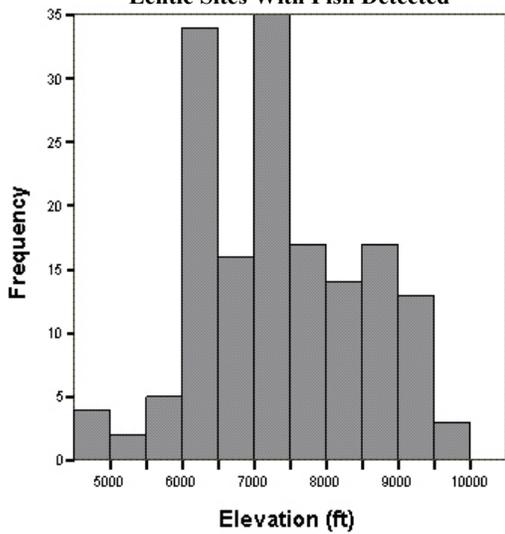
Site ID	12 digit Watershed ID	Drainage Name	Habitat Type	Site Number On Watershed Report
4027003	170102010803	Willow, Dolus, and Pikes Peak Creeks	Active Beaver Pond	003
4027010	170102010803	Willow, Dolus, and Pikes Peak Creeks	Lake/Pond	010
4027018	170102010803	Willow, Dolus, and Pikes Peak Creeks	Lake/Pond	018
4027021	170102010803	Willow, Dolus, and Pikes Peak Creeks	Backwater/Oxbow	021
4027022	170102010803	Willow, Dolus, and Pikes Peak Creeks	Active Beaver Pond	022
4057009	170102012305	Basin Creek	Inactive Beaver Pond	009
4057011	170102012305	Basin Creek	Reservoir	011
4063002	170102021303	Boulder Creek	Inactive Beaver Pond	002
4063003	170102021303	Boulder Creek	Inactive Beaver Pond	003
4063006	170102021303	Boulder Creek	Lake/Pond	006
4063007	170102021303	Boulder Creek	Lake/Pond	007
4063028	170102021303	Boulder Creek	Inactive Beaver Pond	028
4063051	170102021303	Boulder Creek	Inactive Beaver Pond	051
6002009	100200060701	Lowland Creek	Inactive Beaver Pond	009
6002010	100200060701	Lowland Creek	Active Beaver Pond	010
6002011	100200060701	Lowland Creek	Active Beaver Pond	011
6002018	100200060701	Lowland Creek	Backwater/Oxbow	018
6002085	100200060701	Lowland Creek	Backwater/Oxbow	085
6002100	100200060701	Lowland Creek	Ditch	100
6003025	100200071604	Cabin Creek	Inactive Beaver Pond	025
6004001	100200051203	Little Pipestone Creek	Lake/Pond	001
6004002	100200051203	Little Pipestone Creek	Lake/Pond	002
6004004	100200051203	Little Pipestone Creek	Inactive Beaver Pond	004
6004006	100200051203	Little Pipestone Creek	Inactive Beaver Pond	006
6006001	100200041401	French Creek	Inactive Beaver Pond	001
6006006	100200041401	French Creek	Inactive Beaver Pond	006
6006008	100200041401	French Creek	Inactive Beaver Pond	008
6006011	100200041401	French Creek	Inactive Beaver Pond	011
6006020	100200041401	French Creek	Inactive Beaver Pond	020
6006021	100200041401	French Creek	Inactive Beaver Pond	021
6006025	100200041401	French Creek	Inactive Beaver Pond	025
6013009	100200042602	Warm Springs Creek	Backwater/Oxbow	009
6013010	100200042602	Warm Springs Creek	Wetland	010
6013013	100200042602	Warm Springs Creek	Lake/Pond	013
6013027	100200042602	Warm Springs Creek	Wetland	027
6013046	100200042602	Warm Springs Creek	Wetland	046
6014030	100200020702	Beaverhead River (Clark Canyon)	Spring Pool	030
6015021	100200040402	Birch Creek	Lake/Pond	021
6015022	100200040402	Birch Creek	Lake/Pond	022
6015025	100200040402	Birch Creek	Lake/Pond	025
6015026	100200040402	Birch Creek	Inactive Beaver Pond	026
6015028	100200040402	Birch Creek	Backwater/Oxbow	028
6016003	100200071901	Grayling Creek	Lake/Pond	003
6019011	100200011704	Upper Horse Prairie Creek	Active Beaver Pond	011
6019012	100200011704	Upper Horse Prairie Creek	Active Beaver Pond	012

6019077	100200011704	Upper Horse Prairie Creek	Inactive Beaver Pond	077
6019078	100200011704	Upper Horse Prairie Creek	Active Beaver Pond	078
6019079	100200011704	Upper Horse Prairie Creek	Inactive Beaver Pond	079
6019110	100200011704	Upper Horse Prairie Creek	Inactive Beaver Pond	110
6021003	100200021001	Grasshopper Creek	Inactive Beaver Pond	003
6021009	100200021001	Grasshopper Creek	Lake/Pond	009
6021018	100200021001	Grasshopper Creek	Inactive Beaver Pond	018
6022004	100200060302	Little Boulder River	Lake/Pond	004
6028010	100200060504	Cataract Creek	Backwater/Oxbow	010
6028075	100200060504	Cataract Creek	Multipooled Site	075
6031003	100200011503	Bloody Dick Creek	Backwater/Oxbow	003
6031004	100200011503	Bloody Dick Creek	Backwater/Oxbow	004
6031006	100200011503	Bloody Dick Creek	Backwater/Oxbow	006
6031026	100200011503	Bloody Dick Creek	Active Beaver Pond	026
6031032	100200011503	Bloody Dick Creek	Inactive Beaver Pond	032
6031037	100200011503	Bloody Dick Creek	Lake/Pond	037
6031040	100200011503	Bloody Dick Creek	Active Beaver Pond	040
6031044	100200011503	Bloody Dick Creek	Active Beaver Pond	044
6031056	100200011503	Bloody Dick Creek	Inactive Beaver Pond	056
6031057	100200011503	Bloody Dick Creek	Inactive Beaver Pond	057
6031058	100200011503	Bloody Dick Creek	Active Beaver Pond	058
6031059	100200011503	Bloody Dick Creek	Inactive Beaver Pond	059
6031061	100200011503	Bloody Dick Creek	Backwater/Oxbow	061
6032016	100200030102	Wisconsin Creek	Lake/Pond	016
6033002	100200011006	Nicholia Creek	Active Beaver Pond	002
6035028	100200041705	Pintler Creek	Wetland	028
6035043	100200041705	Pintler Creek	Lake/Pond	043
6036010	100200011002	Deadman Creek	Lake/Pond	010
6036076	100200011002	Deadman Creek	Backwater/Oxbow	076
6037001	100200021002	Pole Creek and Divide Creek	Reservoir	001
6038007	100200071601	Sheep Creek	Lake/Pond	007
6042003	100200042504	Miner Creek	Lake/Pond	003
6042004	100200042504	Miner Creek	Lake/Pond	004
6042006	100200042504	Miner Creek	Lake/Pond	006
6042036	100200042504	Miner Creek	Backwater/Oxbow	036
6043002	100200060501	Boulder River	Multipooled Site	002
6044009	100200071701	Hebgen Lake (Red Canyon Creek)	Wetland	009
6044010	100200071701	Hebgen Lake (Red Canyon Creek)	Wetland	010
6044045	100200071701	Hebgen Lake (Red Canyon Creek)	Active Beaver Pond	045
6047019	100200072801	North Meadow Creek	Lake/Pond	019
6047032	100200072801	North Meadow Creek	Lake/Pond	032
6047043	100200072801	North Meadow Creek	Lake/Pond	043
6047045	100200072801	North Meadow Creek	Lake/Pond	045
6047074	100200072801	North Meadow Creek	Backwater/Oxbow	074
6048002	100200030103	Indian Creek	Lake/Pond	002
6050009	100200050601	North Willow Creek	Reservoir	009
6050018	100200050601	North Willow Creek	Wetland	018
6052001	100200060602	Nez Perce Creek	Inactive Beaver Pond	001
6052002	100200060602	Nez Perce Creek	Inactive Beaver Pond	002
6052004	100200060602	Nez Perce Creek	Lake/Pond	004
6057005	100200041703	Squaw Creek	Lake/Pond	005
6057007	100200041703	Squaw Creek	Inactive Beaver Pond	007
6057009	100200041703	Squaw Creek	Active Beaver Pond	009
6060096	100200041901	Trail Creek	Inactive Beaver Pond	096
6060097	100200041901	Trail Creek	Inactive Beaver Pond	097
6060098	100200041901	Trail Creek	Lake/Pond	098
6303005	100200011005	Shenon Creek	Inactive Beaver Pond	005
6403011	100200011002	Maiden Creek and Jeff Davis Creek	Active Beaver Pond	011
6403012	100200011002	Maiden Creek and Jeff Davis Creek	Active Beaver Pond	012
6403015	100200011002	Maiden Creek and Jeff Davis Creek	Active Beaver Pond	015
6403079	100200011002	Maiden Creek and Jeff Davis Creek	Inactive Beaver Pond	079
6403095	100200011002	Maiden Creek and Jeff Davis Creek	Active Beaver Pond	095
6403098	100200011002	Maiden Creek and Jeff Davis Creek	Active Beaver Pond	098
6403110	100200011002	Maiden Creek and Jeff Davis Creek	Inactive Beaver Pond	110
6997020	100200071501	Papoose Creek	Lake/Pond	020
6997099	100200071501	Papoose Creek	Lake/Pond	099
6997100	100200071501	Papoose Creek	Lake/Pond	100
6998016	100200071502	Squaw Creek	Lake/Pond	016
6999010	100200071401	Moose Creek	Lake/Pond	010
6999011	100200071401	Moose Creek	Wetland	011
6999015	100200071401	Moose Creek	Inactive Beaver Pond	015
6999089	100200071401	Moose Creek	Reservoir	089

## Regional Assessment of Fish Detection at Permanent Lentic Sites



**Elevation Distribution of Permanent Lentic Sites With Fish Detected**



**Map Legend**

- Light Black Outline = Watersheds surveyed
- Bold Outline = Watersheds with no wet lentic sites on public land
- Light Blue = Major hydrological features
- 0
- 1 - 25
- 26 - 50
- 51 - 75
- 76 - 100

**Summary of Watershed and Permanent Lentic Site Rates of Fish Detection<sup>1, 2 & 3</sup>**

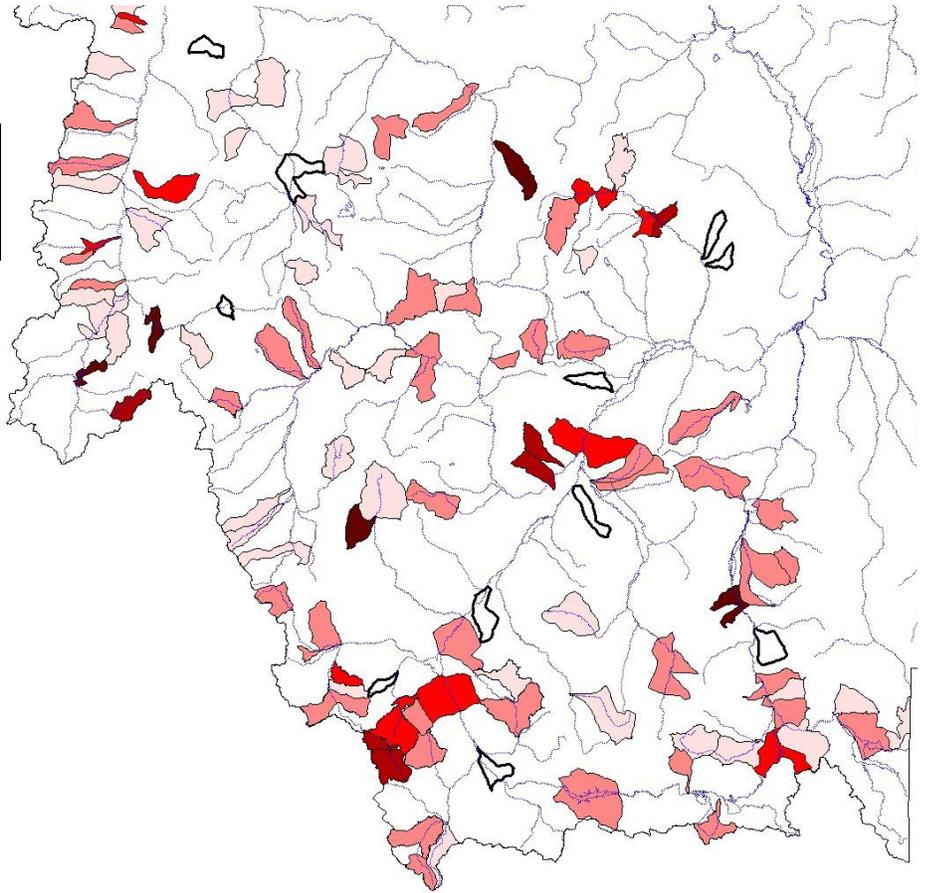
Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>4</sup>	Number & Percent of Permanent Lentic Sites With Fish Detected <sup>5</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)		No Permanent Lentic Sites
4_015	170102020701	Upper Rock Creek (Sluice Gulch)		No Permanent Lentic Sites
4_023	170102020302	Alder Gulch		No Permanent Lentic Sites
4_026	170102052903	Tolan Creek	N	0 (0%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Creeks	Y	7 (50%)
4_028	170102021002	Carpp Creek	Y	5 (38%)
4_031	170102020403	Rock Creek	N	0 (0%)
4_032	170102053001	East Fork of Bitterroot River (Echo Gulch)		No Permanent Lentic Sites
4_053	170102012005	Beefstraight Creek		No Permanent Lentic Sites
4_057	170102012305	Basin Creek	Y	2 (29%)
4_060	170102012004	German Gulch	N	0 (0%)
4_063	170102021303	Boulder Creek	Y	14 (54%)
4_067	170102020703	East Fork of Rock Creek		No Permanent Lentic Sites
4_068	170102020203	Ranch Creek	N	0 (0%)
4_078	170102011503	Peterson Creek	N	0 (0%)
6_001	100200042801	Berry Creek	Y	2 (18%)
6_002	100200060701	Lowland Creek	Y	8 (57%)
6_003	100200071604	Cabin Creek	Y	1 (8%)
6_004	100200051203	Little Pipestone Creek	Y	4 (67%)
6_005	100200071001	Bear Creek	N	0 (0%)
6_006	100200041401	French Creek	Y	7 (30%)
6_007	100200040104	Unnamed Drainage on Lower Big Hole River		No Permanent Lentic Sites
6_008	100200072501	Wade, Cliff, & Hidden Lakes	Y	5 (71%)
6_009	100200010601	Little Sheep Creek	N	0 (0%)
6_010	100200040905	Tucker Creek	N	0 (0%)
6_011	100200040103	Nez Perce Creek		No Permanent Lentic Sites
6_012	100200031001	Ruby River	N	0 (0%)
6_013	100200042602	Warm Springs	Y	6 (50%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	1 (8%)
6_015	100200040402	Birch Creek	Y	9 (75%)
6_016	100200071901	Grayling Creek	Y	1 (50%)
6_017	100200042505	Little Lake Creek	Y	1 (13%)
6_018	100200060301	Browns Gulch		No Permanent Lentic Sites
6_019	100200011704	Upper Horse Prairie Creek	Y	6 (75%)
6_020	100200070802	Cedar Creek	Y	1 (100%)
6_021	100200021001	Grasshopper Creek	Y	5 (38%)
6_022	100200060302	Little Boulder River	Y	1 (50%)
6_023	100200071101	Madison River		No Permanent Lentic Sites
6_024	100200041302	Alder Creek	Y	3 (50%)
6_025	100200012002	Metzel Creek & Fish Creek	N	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek	N	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek	N	0 (0%)
6_026	100200060205	Unnamed Tributary to upper Boulder River		No Permanent Lentic Sites
6_027	100200072602	West Fork of Madison River (Teepee Creek)	N	0 (0%)
6_028	100200060504	Cataract Creek	Y	2 (29%)
6_029	100200041101	Lower Wise River		No Permanent Lentic Sites
6_030	100200011202	Upper Medicine Lodge Creek	N	0 (0%)
6_031	100200011503	Bloody Dick Creek	Y	6 (33%)
6_032	100200030102	Wisconsin Creek	Y	4 (50%)
6_033	100200011006	Nicholia Creek	Y	2 (100%)
6_034	100200070602	Jourdain Creek	Y	2 (50%)
6_035	100200041705	Pintler Creek	Y	3 (33%)
6_036	100200011002	Deadman Creek	Y	2 (25%)
6_037	100200021002	Pole Creek & Divide Creek	Y	1 (100%)
6_038	100200071601	Sheep Creek	Y	1 (33%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	1 (20%)
6_040	100200011103	Deer Canyon Creek	N	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	N	0 (0%)
6_042	100200042504	Miner Creek	Y	7 (50%)
6_043	100200060501	Boulder River	Y	1 (50%)

6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	4 (21%)
6_045	100200051601	Cottonwood Creek	No Permanent Lentic Sites	
6_046	100200072603	Upper West Fork of Madison River	N	0 (0%)
6_047	100200072801	North Meadow Creek	Y	11 (55%)
6_048	100200030103	Indian Creek	Y	2 (22%)
6_049	100200021701	East Fork of Blacktail Deer Creek	N	0 (0%)
6_050	100200050601	North Willow Creek	Y	7 (70%)
6_051	100200010102	Lower Red Rock River	Y	1 (50%)
6_052	100200060602	Nez Perce Creek	Y	3 (100%)
6_053	100200060203	Cabin Gulch	No Permanent Lentic Sites	
6_054	100200071302	Indian Creek	No Permanent Lentic Sites	
6_055	100200020104	Spring Canyon	No Permanent Lentic Sites	
6_056	100200031402	Sweetwater Creek	No Permanent Lentic Sites	
6_057	100200041703	Squaw Creek	Y	3 (50%)
6_058	100200011501	Coyote Creek	No Permanent Lentic Sites	
6_059	100200051402	Dry and Fish Creeks	No Permanent Lentic Sites	
6_060	100200041901	Trail Creek	Y	3 (75%)
6_061	100200041806	Thompson Creek	Y	3 (50%)
6_062	100200011102	Harkness and Noble Creeks	No Permanent Lentic Sites	
6_063	100200020701	Beaverhead River & Small Horn Canyon	No Permanent Lentic Sites	
6_206	100200010503	Meadow Creek, Nicholia Creek, Rock Creek	N	0 (0%)
6_301	100200011002	Deadman Creek	Y	2 (25%)
6_302	100200010702	Long Creek	No Permanent Lentic Sites	
6_303	100200011005	Shenon and Jeff Davis Creeks	Y	1 (100%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	Y	7 (78%)
6_501	100200010703	Sage Creek	No Permanent Lentic Sites	
6_502	100200011205	Kate Creek & Medicine Lodge Creek	No Permanent Lentic Sites	
6_602	100200010504	Muddy Creek	No Permanent Lentic Sites	
6_604	100200011202	Medicine Lodge Creek (Dad & Pass Creeks)	Y	1 (50%)
6_997	100200071501	Papoose Creek	Y	5 (38%)
6_998	100200071502	Squaw Creek	Y	4 (31%)
6_999	100200071401	Moose Creek	Y	5 (63%)
<b>Total Number and Percent of Watersheds and Permanent Lentic Sites with Fish Detected</b>			<b>41 (73%)</b> (95%CI = 62-84%)	<b>158 (38%)</b> (95%CI = 33-43%)

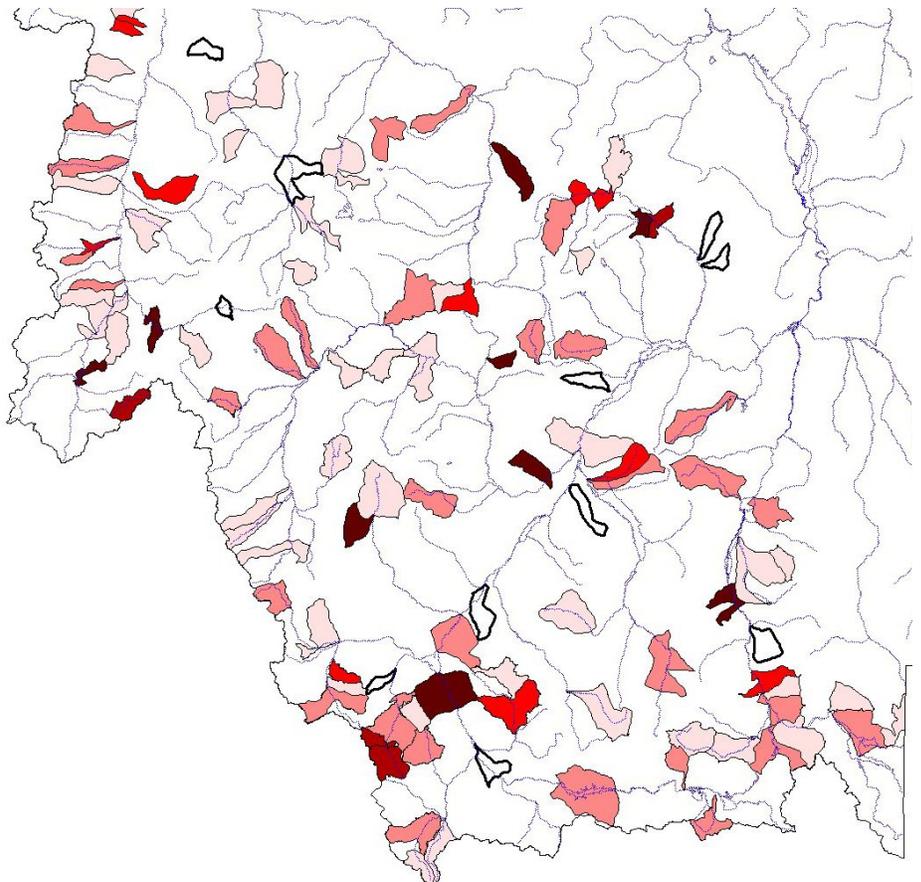
- <sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.
- <sup>2</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest, 78 were randomly selected for complete surveys of all standing water bodies and 56 of these contained at least 1 permanent water body. These 56 watersheds contained a total of 415 permanent lentic sites ( $X = 7$ ;  $SE = 0.8$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.
- <sup>3</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.
- <sup>4</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N)))$  where  $n$  = sample size and  $N$  = total population size). In this case  $n = 56$  and  $N = 686$ .
- <sup>5</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$  where  $n$  = sample size = 415).

## Regional Assessment of Damming and Diverting Waters

**Percent of Potential Lentic Sites Surveyed With Water Dammed or Diverted**



**Percent of Lentic Sites Capable of Supporting Amphibian Reproduction With Water Dammed or Diverted**



**Map Legend**

Light Black Outline = Watersheds surveyed  
 Bold Outline = Watersheds with no wet lentic sites on public land  
 Light Blue = Major hydrological features

- 0
- 1 - 25
- 26 - 50
- 51 - 75
- 76 - 100

**Summary of Watershed and Site Rates of Damming and Diverting Potential Lentic Sites  
and Lentic Sites Capable of Supporting Amphibian Reproduction<sup>1 & 2</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Damming or Diverting Any Potential Lentic Site Detected in Watershed (Y/N) <sup>3</sup>	Damming or Diverting Sites Capable of Supporting Reproduction Detected in Watershed (Y/N) <sup>3</sup>	Number & Percent of Potential Lentic Sites Surveyed With Water Dammed or Diverted <sup>4</sup>	Number & Percent of Lentic Sites Capable of Supporting Reproduction With Water Dammed or Diverted <sup>4</sup>
4 012	170102021501	Flint Creek (Philipsburg Valley)	N	N	0 (0%)	0 (0%)
4 015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4 023	170102020302	Alder Gulch	N	N	0 (0%)	0 (0%)
4 026	170102052903	Tolan Creek	N	N	0 (0%)	0 (0%)
4 027	170102010803	Willow, Dolus, & Pikes Peak Crks	Y	Y	3 (14%)	1 (5%)
4 028	170102021002	Carpp Creek	N	N	2 (9%)	1 (4%)
4 031	170102020403	Rock Creek	N	N	0 (0%)	0 (0%)
4 032	170102053001	E Fk Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4 053	170102012005	Beefstraight Creek	N	N	0 (0%)	0 (0%)
4 057	170102012305	Basin Creek	Y	Y	3 (23%)	2 (15%)
4 060	170102012004	German Gulch	Y	Y	2 (33%)	2 (33%)
4 063	170102021303	Boulder Creek	Y	Y	2 (5%)	2 (5%)
4 067	170102020703	East Fork of Rock Creek	N	N	0 (0%)	0 (0%)
4 068	170102020203	Ranch Creek	N	N	0 (0%)	0 (0%)
4 078	170102011503	Peterson Creek	Y	Y	1 (100%)	1 (100%)
6 001	100200042801	Berry Creek	N	N	0 (0%)	0 (0%)
6 002	100200060701	Lowland Creek	Y	Y	5 (31%)	1 (6%)
6 003	100200071604	Cabin Creek	N	N	3 (8%)	0 (0%)
6 004	100200051203	Little Pipestone Creek	Y	Y	0 (0%)	0 (0%)
6 005	100200071001	Bear Creek	Y	N	0 (0%)	0 (0%)
6 006	100200041401	French Creek	Y	Y	0 (0%)	0 (0%)
6 007	100200040104	Drainage on Big Hole River	Y	Y	0 (0%)	0 (0%)
6 008	100200072501	Wade, Cliff, & Hidden Lakes	Y	Y	0 (0%)	0 (0%)
6 009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6 010	100200040905	Tucker Creek	Y	Y	0 (0%)	0 (0%)
6 011	100200040103	Nez Perce Creek	Y	N	0 (0%)	0 (0%)
6 012	100200031001	Ruby River	Y	Y	1 (2%)	0 (0%)
6 013	100200042602	Warm Springs	N	N	7 (23%)	2 (7%)
6 014	100200020702	Beaverhead River (Clark Canyon)	Y	Y	3 (12%)	0 (0%)
6 015	100200040402	Birch Creek	Y	Y	2 (10%)	2 (10%)
6 016	100200071901	Grayling Creek	N	N	0 (0%)	0 (0%)
6 017	100200042505	Little Lake Creek	N	N	0 (0%)	0 (0%)
6 018	100200060301	Browns Gulch	Y	Y	0 (0%)	0 (0%)
6 019	100200011704	Upper Horse Prairie Creek	Y	Y	0 (0%)	0 (0%)
6 020	100200070802	Cedar Creek	Y	N	0 (0%)	0 (0%)
6 021	100200021001	Grasshopper Creek	N	N	0 (0%)	0 (0%)
6 022	100200060302	Little Boulder River	Y	Y	0 (0%)	0 (0%)
6 023	100200071101	Madison River	Y	Y	0 (0%)	0 (0%)
6 024	100200041302	Alder Creek	N	N	3 (19%)	1 (6%)
6 025	100200012002	Metzel Creek & Fish Creek - 2001	Y	Y	1 (10%)	1 (10%)
6 025	100200012002	Metzel Creek & Fish Creek - 2002	Y	Y	2 (20%)	2 (20%)
6 025	100200012002	Metzel Creek & Fish Creek - 2003	Y	Y	0 (0%)	0 (0%)
6 026	100200060205	Unnamed Trib upper Boulder River	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6 027	100200072602	W Fk Madison River (Teepee Crk)	N	N	0 (0%)	0 (0%)
6 028	100200060504	Cataract Creek	N	N	1 (9%)	1 (9%)
6 029	100200041101	Lower Wise River	Y	N	0 (0%)	0 (0%)
6 030	100200011202	Upper Medicine Lodge Creek	Y	Y	0 (0%)	0 (0%)
6 031	100200011503	Bloody Dick Creek	Y	Y	1 (2%)	1 (2%)
6 032	100200030102	Wisconsin Creek	Y	Y	0 (0%)	0 (0%)
6 033	100200011006	Nicholia Creek	Y	N	1 (8%)	0 (0%)
6 034	100200070602	Jourdain Creek	Y	Y	0 (0%)	0 (0%)
6 035	100200041705	Pintler Creek	Y	Y	0 (0%)	0 (0%)
6 036	100200011002	Deadman Creek	N	N	0 (0%)	0 (0%)
6 037	100200021002	Pole Creek & Divide Creek	Y	Y	0 (0%)	0 (0%)
6 038	100200071601	Sheep Creek	N	N	0 (0%)	0 (0%)
6 039	100200012102	O'Dell Creek & Nye Creek	Y	Y	1 (7%)	0 (0%)

6_040	100200011103	Deer Canyon Creek	Y	N	0 (0%)	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	Y	Y	0 (0%)	0 (0%)
6_042	100200042504	Miner Creek	N	N	0 (0%)	0 (0%)
6_043	100200060501	Boulder River	Y	Y	2 (100%)	2 (100%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	Y	4 (13%)	3 (10%)
6_045	100200051601	Cottonwood Creek	Y	N	0 (0%)	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	N	N	3 (16%)	2 (11%)
6_047	100200072801	North Meadow Creek	Y	Y	4 (10%)	1 (2%)
6_048	100200030103	Indian Creek	Y	Y	0 (0%)	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	N	N	0 (0%)	0 (0%)
6_050	100200050601	North Willow Creek	Y	Y	0 (0%)	0 (0%)
6_051	100200010102	Lower Red Rock River	Y	Y	0 (0%)	0 (0%)
6_052	100200060602	Nez Perce Creek	N	N	3 (100%)	2 (67%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	N	N	0 (0%)	0 (0%)
6_057	100200041703	Squaw Creek	N	N	2 (18%)	0 (0%)
6_058	100200011501	Coyote Creek	Y	N	0 (0%)	0 (0%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	Y	Y	0 (0%)	0 (0%)
6_061	100200041806	Thompson Creek	Y	Y	0 (0%)	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead Rvr & Small Horn Cyn	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia, & Rock Crks	Y	Y	0 (0%)	0 (0%)
6_301	100200011002	Deadman Creek	Y	Y	0 (0%)	0 (0%)
6_302	100200010702	Long Creek	N	N	0 (0%)	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	Y	Y	0 (0%)	0 (0%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	N	N	0 (0%)	0 (0%)
6_501	100200010703	Sage Creek	Y	Y	0 (0%)	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Crk	Y	Y	0 (0%)	0 (0%)
6_602	100200010504	Muddy Creek	Y	Y	0 (0%)	0 (0%)
6_604	100200011202	Med Lodge Crk (Dad & Pass Crks)	Y	Y	0 (0%)	0 (0%)
6_997	100200071501	Papoose Creek	Y	Y	0 (0%)	0 (0%)
6_998	100200071502	Squaw Creek	N	N	0 (0%)	0 (0%)
6_999	100200071401	Moose Creek	Y	Y	0 (0%)	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Damming and Diverting of Waters Detected at any Potential Lentic Sites and at Lentic Sites Capable of Supporting Amphibian Reproduction</b>			<b>43 (63%)</b> (95%CI = 52-74%)	<b>35 (52%)</b> (95%CI = 40-64%)	<b>107 (7%)</b> (95%CI = 5.7-8.3%)	<b>71 (7%)</b> (95%CI = 5.4-8.6%)

<sup>1</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least one potential lentic site ( $X = 22$ ;  $SE = 2.2$ ) and 67 of these contained at least one lentic site that would support amphibian reproduction ( $X = 15$ ;  $SE = 1.7$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

<sup>2</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

<sup>3</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N))$ ) where  $n$  = sample size and  $N$  = total population size). In this case  $n = 68$  for watersheds with at least one potential lentic site and 67 for watersheds with at least one lentic site that would support reproduction and  $N = 686$ .

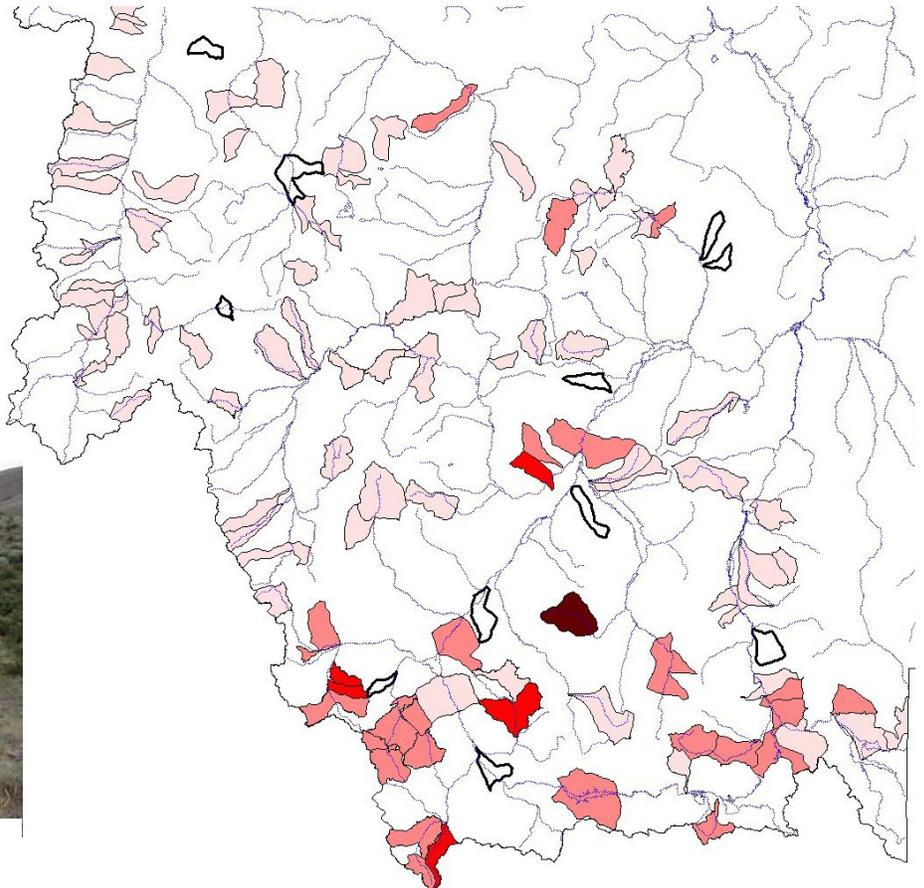
<sup>4</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$ ) where  $n$  = sample size = 1481 for potential lentic sites and 1020 for sites that would support amphibian reproduction).

# Regional Assessment of Heavy Structural Impacts to Wetlands by Livestock Grazing

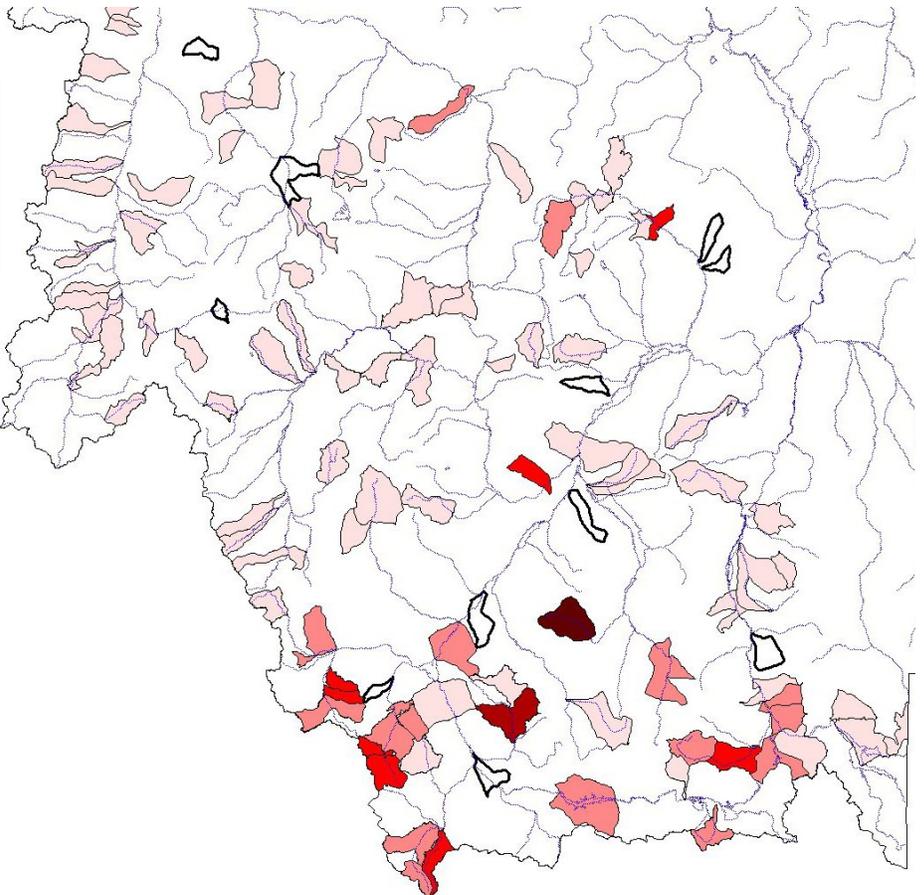
**Percent of Potential Lentic Sites Surveyed Noted as Having Been Heavily Structurally Impacted by Livestock Grazing**



Example: Site 6\_206\_014



**Percent of Lentic Sites Capable of Supporting Amphibian Reproduction Noted as Having Been Heavily Structurally Impacted by Livestock Grazing**



**Map Legend**

- Light Black Outline = Watersheds surveyed
- Bold Outline = Watersheds with no wet lentic sites on public land
- Light Blue = Major hydrological features

	0
	1 - 25
	26 - 50
	51 - 75
	76 - 100

**Summary of Watershed and Site Rates of Heavy Structural Livestock Grazing Impacts to Potential Lentic Sites and Lentic Sites Capable of Supporting Amphibian Reproduction<sup>1 & 2</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Potential Lentic Site Heavily Impacted by Grazing Detected in Watershed (Y/N) <sup>3</sup>	Site Capable of Supporting Reproduction Heavily Impacted by Grazing Detected in Watershed (Y/N) <sup>3</sup>	Number & Percent of Potential Lentic Sites Surveyed Heavily Impacted by Grazing <sup>4</sup>	Number & Percent of Lentic Sites Capable of Supporting Reproduction Heavily Impacted by Grazing <sup>4</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	N	N	0 (0%)	0 (0%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	N	0 (0%)	0 (0%)
4_026	170102052903	Tolan Creek	N	N	0 (0%)	0 (0%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Crks	Y	Y	1 (4%)	1 (5%)
4_028	170102021002	Carpp Creek	N	N	0 (0%)	0 (0%)
4_031	170102020403	Rock Creek	N	N	0 (0%)	0 (0%)
4_032	170102053001	E Fk Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	N	N	0 (0%)	0 (0%)
4_057	170102012305	Basin Creek	N	N	0 (0%)	0 (0%)
4_060	170102012004	German Gulch	N	N	0 (0%)	0 (0%)
4_063	170102021303	Boulder Creek	N	N	0 (0%)	0 (0%)
4_067	170102020703	East Fork of Rock Creek	N	N	0 (0%)	0 (0%)
4_068	170102020203	Ranch Creek	N	N	0 (0%)	0 (0%)
4_078	170102011503	Peterson Creek	N	N	0 (0%)	0 (0%)
6_001	100200042801	Berry Creek	N	N	0 (0%)	0 (0%)
6_002	100200060701	Lowland Creek	Y	Y	1 (5%)	1 (6%)
6_003	100200071604	Cabin Creek	Y	N	1 (2%)	0 (0%)
6_004	100200051203	Little Pipestone Creek	N	N	0 (0%)	0 (0%)
6_005	100200071001	Bear Creek	N	N	0 (0%)	0 (0%)
6_006	100200041401	French Creek	N	N	0 (0%)	0 (0%)
6_007	100200040104	Drainage on Big Hole River	Y	Y	2 (50%)	1 (50%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	Y	Y	1 (4%)	1 (7%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_010	100200040905	Tucker Creek	N	N	0 (0%)	0 (0%)
6_011	100200040103	Nez Perce Creek	Y	N	1 (13%)	0 (0%)
6_012	100200031001	Ruby River	Y	Y	8 (12%)	7 (13%)
6_013	100200042602	Warm Springs	N	N	0 (0%)	0 (0%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	Y	2 (4%)	2 (6%)
6_015	100200040402	Birch Creek	N	N	0 (0%)	0 (0%)
6_016	100200071901	Grayling Creek	N	N	0 (0%)	0 (0%)
6_017	100200042505	Little Lake Creek	N	N	0 (0%)	0 (0%)
6_018	100200060301	Browns Gulch	Y	Y	1 (14%)	1 (33%)
6_019	100200011704	Upper Horse Prairie Creek	Y	Y	1 (3%)	1 (4%)
6_020	100200070802	Cedar Creek	N	N	0 (0%)	0 (0%)
6_021	100200021001	Grasshopper Creek	N	N	0 (0%)	0 (0%)
6_022	100200060302	Little Boulder River	N	N	0 (0%)	0 (0%)
6_023	100200071101	Madison River	N	N	0 (0%)	0 (0%)
6_024	100200041302	Alder Creek	N	N	0 (0%)	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2001	N	N	0 (0%)	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2002	N	N	0 (0%)	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2003	N	N	0 (0%)	0 (0%)
6_026	100200060205	Unnamed Trib upper Boulder River	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_027	100200072602	W Fk Madison River (Teepee Crk)	Y	Y	3 (21%)	3 (38%)
6_028	100200060504	Cataract Creek	N	N	0 (0%)	0 (0%)
6_029	100200041101	Lower Wise River	N	N	0 (0%)	0 (0%)
6_030	100200011202	Upper Medicine Lodge Creek	Y	Y	5 (25%)	4 (36%)
6_031	100200011503	Bloody Dick Creek	N	N	0 (0%)	0 (0%)
6_032	100200030102	Wisconsin Creek	N	N	0 (0%)	0 (0%)
6_033	100200011006	Nicholia Creek	Y	Y	1 (3%)	1 (6%)
6_034	100200070602	Jourdain Creek	N	N	0 (0%)	0 (0%)
6_035	100200041705	Pintler Creek	N	N	0 (0%)	0 (0%)
6_036	100200011002	Deadman Creek	N	N	0 (0%)	0 (0%)
6_037	100200021002	Pole Creek & Divide Creek	N	N	0 (0%)	0 (0%)
6_038	100200071601	Sheep Creek	N	N	0 (0%)	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	Y	4 (13%)	4 (20%)
6_040	100200011103	Deer Canyon Creek	Y	Y	1 (6%)	1 (13%)

6_041	100200011801	Red Rock River (Lima Reservoir)	Y	Y	4 (10%)	3 (17%)
6_042	100200042504	Miner Creek	N	N	0 (0%)	0 (0%)
6_043	100200060501	Boulder River	N	N	0 (0%)	0 (0%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	N	N	0 (0%)	0 (0%)
6_045	100200051601	Cottonwood Creek	Y	N	1 (10%)	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	Y	Y	3 (8%)	1 (4%)
6_047	100200072801	North Meadow Creek	N	N	0 (0%)	0 (0%)
6_048	100200030103	Indian Creek	N	N	0 (0%)	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	N	N	0 (0%)	0 (0%)
6_050	100200050601	North Willow Creek	N	N	0 (0%)	0 (0%)
6_051	100200010102	Lower Red Rock River	N	N	0 (0%)	0 (0%)
6_052	100200060602	Nez Perce Creek	N	N	0 (0%)	0 (0%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	Y	Y	3 (100%)	2 (100%)
6_057	100200041703	Squaw Creek	N	N	0 (0%)	0 (0%)
6_058	100200011501	Coyote Creek	Y	Y	2 (3%)	2 (15%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	N	N	0 (0%)	0 (0%)
6_061	100200041806	Thompson Creek	N	N	0 (0%)	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead Rvr & Small Horn Cyn	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia, & Rock Crks	Y	Y	2 (8%)	1 (9%)
6_301	100200011002	Deadman Creek	Y	Y	7 (9%)	2 (5%)
6_302	100200010702	Long Creek	N	N	0 (0%)	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	Y	Y	2 (50%)	1 (33%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	Y	Y	10 (38%)	10 (45%)
6_501	100200010703	Sage Creek	Y	Y	3 (38%)	2 (67%)
6_502	100200011205	Kate Creek & Medicine Lodge Crk	Y	Y	5 (9%)	1 (4%)
6_602	100200010504	Muddy Creek	Y	N	1 (7%)	0 (0%)
6_604	100200011202	Med Lodge Crk (Dad & Pass Crks)	N	N	0 (0%)	0 (0%)
6_997	100200071501	Papoose Creek	Y	Y	1 (3%)	1 (4%)
6_998	100200071502	Squaw Creek	Y	Y	3 (7%)	1 (4%)
6_999	100200071401	Moose Creek	N	N	0 (0%)	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Heavy Grazing Impacts Detected at any Potential Lentic Sites and at Lentic Sites Capable of Supporting Amphibian Reproduction</b>			<b>20 (29%)</b> (95%CI = 19-39%)	<b>17 (25%)</b> (95%CI = 15-35%)	<b>46 (3.1%)</b> (95%CI = 2.2-4.0%)	<b>36 (3.5%)</b> (95%CI = 2.3-4.7%)

<sup>1</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least one potential lentic site ( $X = 22$ ;  $SE = 2.2$ ) and 67 of these contained at least one lentic site that would support amphibian reproduction ( $X = 15$ ;  $SE = 1.7$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

<sup>2</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

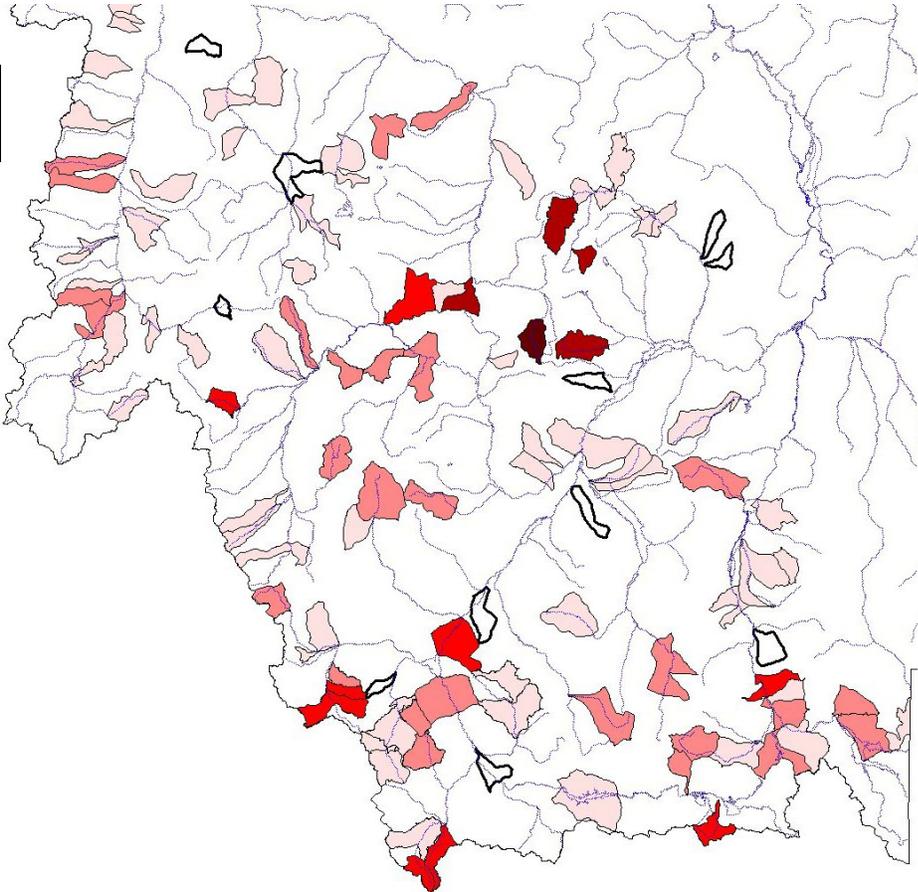
<sup>3</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N))$ ) where  $n$  = sample size and  $N$  = total population size). In this case  $n = 68$  for watersheds with at least one potential lentic site and 67 for watersheds with at least one lentic site that would support reproduction and  $N = 686$ .

<sup>4</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$ ) where  $n$  = sample size = 1,481 for potential lentic sites and 1,020 for sites that would support amphibian reproduction).

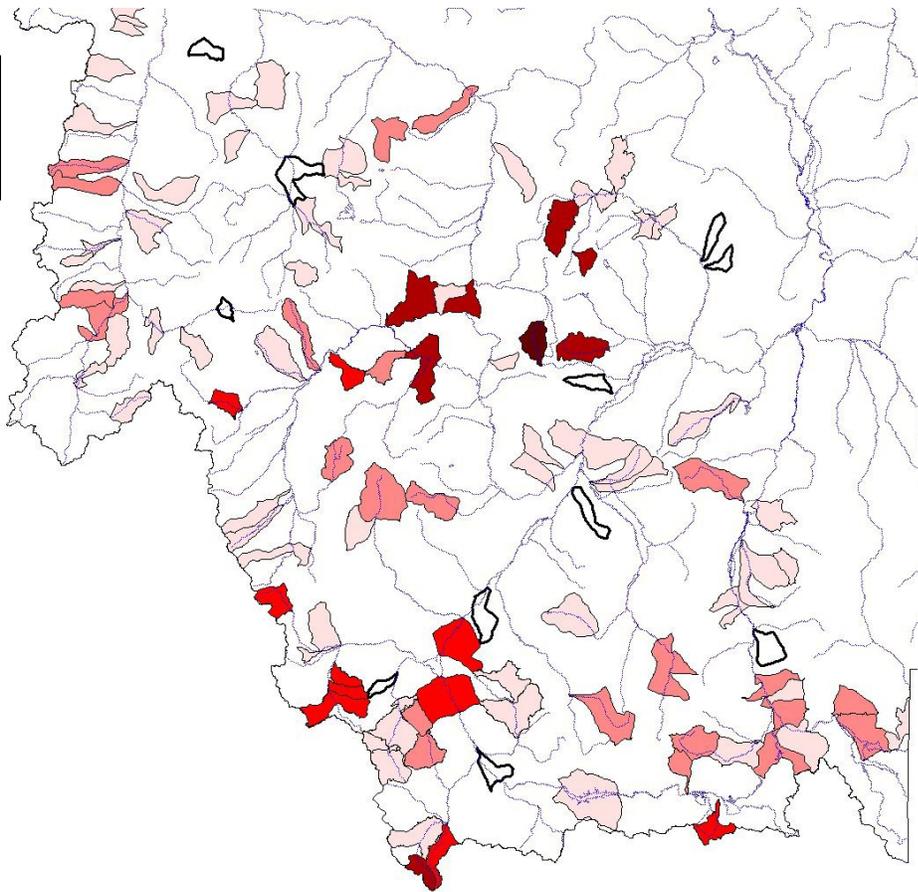
# Beaver as a Natural Disturbance Regime Creating Lentic Habitats for Amphibians and Aquatic Reptiles

## Regional Assessment of Beaver Creation of Wetland Habitats

**Percent of Potential Lentic Sites Surveyed Created By Beaver**



**Percent of Lentic Sites Capable of Supporting Amphibian Reproduction Created By Beaver**



**Map Legend**

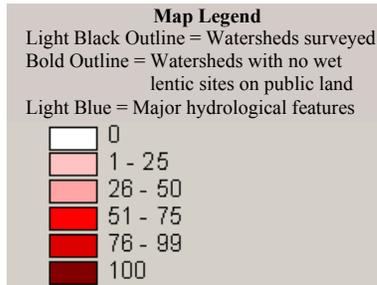
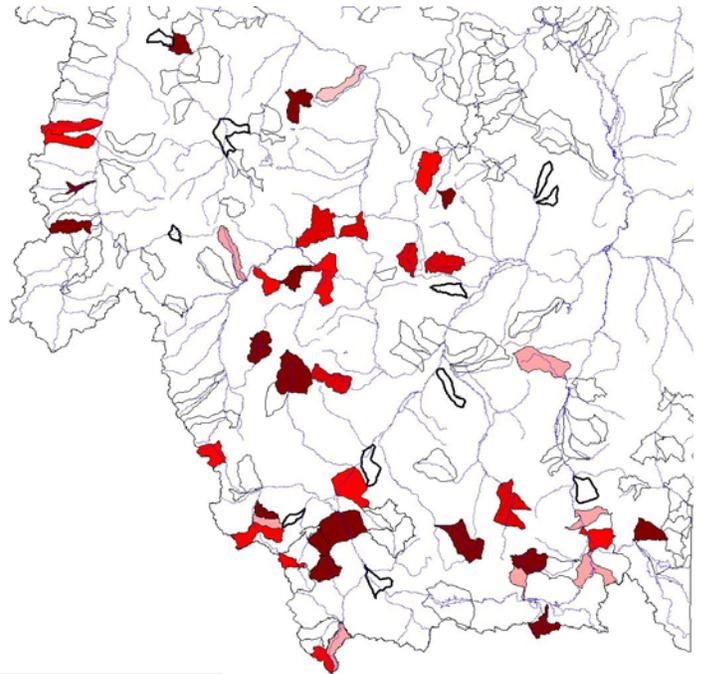
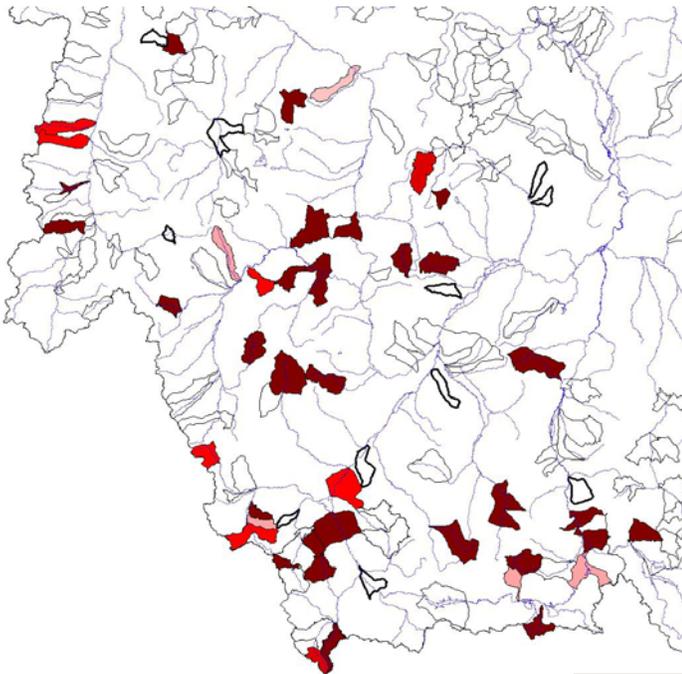
- Light Black Outline = Watersheds surveyed
- Bold Outline = Watersheds with no wetland lentic sites on public land
- Light Blue = Major hydrological features

Light Pink	0
Light Red	1 - 25
Red	26 - 50
Dark Red	51 - 75
Very Dark Red	76 - 100

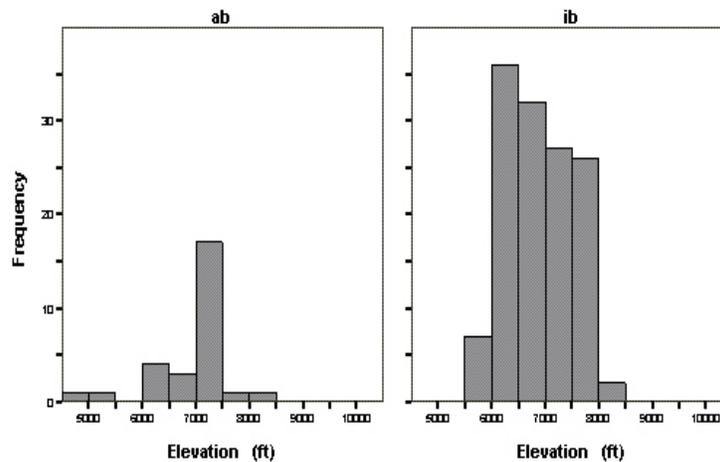
## Regional Assessment of Status of all Beaver Created Sites

**Percent of Beaver Created Lentic and Lotic Sites that are Inactive**

**Percent of Beaver Created Sites that are Capable of Supporting Amphibian Reproduction and are Inactive**



## Elevation Distribution of Beaver Created Lentic Sites Capable of Supporting Amphibian Reproduction



N for Active Beaver (AB) = 28  
N for Inactive Beaver (IB) = 130

**Summary of Watershed and Site Rates of Beaver Creation of Potential Lentic Sites  
and Lentic Sites Capable of Supporting Amphibian Reproduction<sup>1 & 2</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Potential Lentic Site Created by Beaver Detected in Watershed (Y/N) <sup>3</sup>	Site Capable of Supporting Reproduction Created by Beaver Detected in Watershed (Y/N) <sup>3</sup>	Number & Percent of Potential Lentic Sites Surveyed Created by Beaver <sup>4</sup>	Number & Percent of Lentic Sites Capable of Supporting Reproduction Created by Beaver <sup>4</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	N	N	0 (0%)	0 (0%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	N	0 (0%)	0 (0%)
4_026	170102052903	Tolan Creek	N	N	0 (0%)	0 (0%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Crks	Y	Y	4 (16%)	4 (19%)
4_028	170102021002	Carpp Creek	N	N	0 (0%)	0 (0%)
4_031	170102020403	Rock Creek	N	N	0 (0%)	0 (0%)
4_032	170102053001	E Fk Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	N	N	0 (0%)	0 (0%)
4_057	170102012305	Basin Creek	Y	Y	17 (81%)	13 (87%)
4_060	170102012004	German Gulch	Y	Y	5 (56%)	4 (67%)
4_063	170102021303	Boulder Creek	Y	Y	8 (16%)	8 (17%)
4_067	170102020703	East Fork of Rock Creek	N	N	0 (0%)	0 (0%)
4_068	170102020203	Ranch Creek	N	N	0 (0%)	0 (0%)
4_078	170102011503	Peterson Creek	N	N	0 (0%)	0 (0%)
6_001	100200042801	Berry Creek	N	N	0 (0%)	0 (0%)
6_002	100200060701	Lowland Creek	Y	Y	13 (68%)	11 (69%)
6_003	100200071604	Cabin Creek	Y	Y	1 (2%)	1 (3%)
6_004	100200051203	Little Pipestone Creek	Y	Y	5 (63%)	4 (67%)
6_005	100200071001	Bear Creek	N	N	0 (0%)	0 (0%)
6_006	100200041401	French Creek	Y	Y	22 (49%)	19 (53%)
6_007	100200040104	Drainage on Big Hole River	N	N	0 (0%)	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	Y	Y	2 (9%)	2 (14%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_010	100200040905	Tucker Creek	N	N	0 (0%)	0 (0%)
6_011	100200040103	Nez Perce Creek	N	N	0 (0%)	0 (0%)
6_012	100200031001	Ruby River	Y	Y	10 (15%)	9 (16%)
6_013	100200042602	Warm Springs	Y	Y	1 (2%)	1 (3%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	Y	12 (27%)	12 (36%)
6_015	100200040402	Birch Creek	Y	Y	6 (21%)	5 (22%)
6_016	100200071901	Grayling Creek	N	N	0 (0%)	0 (0%)
6_017	100200042505	Little Lake Creek	N	N	0 (0%)	0 (0%)
6_018	100200060301	Browns Gulch	N	N	0 (0%)	0 (0%)
6_019	100200011704	Upper Horse Prairie Creek	Y	Y	9 (29%)	9 (39%)
6_020	100200070802	Cedar Creek	N	N	0 (0%)	0 (0%)
6_021	100200021001	Grasshopper Creek	Y	Y	2 (11%)	2 (11%)
6_022	100200060302	Little Boulder River	N	N	0 (0%)	0 (0%)
6_023	100200071101	Madison River	N	N	0 (0%)	0 (0%)
6_024	100200041302	Alder Creek	Y	Y	1 (6%)	1 (6%)
6_025	100200012002	Metzel Creek & Fish Creek - 2001	Y	Y	2 (13%)	2 (14%)
6_025	100200012002	Metzel Creek & Fish Creek - 2002	Y	Y	2 (14%)	2 (14%)
6_025	100200012002	Metzel Creek & Fish Creek - 2003	Y	Y	1 (9%)	1 (10%)
6_026	100200060205	Unnamed Trib upper Boulder River	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_027	100200072602	W Fk Madison River (Teepee Crk)	N	N	0 (0%)	0 (0%)
6_028	100200060504	Cataract Creek	N	N	0 (0%)	0 (0%)
6_029	100200041101	Lower Wise River	Y	Y	4 (24%)	3 (60%)
6_030	100200011202	Upper Medicine Lodge Creek	N	N	0 (0%)	0 (0%)
6_031	100200011503	Bloody Dick Creek	Y	Y	15 (22%)	15 (26%)
6_032	100200030102	Wisconsin Creek	N	N	0 (0%)	0 (0%)
6_033	100200011006	Nicholia Creek	Y	Y	13 (37%)	9 (56%)
6_034	100200070602	Jourdain Creek	N	N	0 (0%)	0 (0%)
6_035	100200041705	Pintler Creek	Y	Y	2 (7%)	2 (7%)
6_036	100200011002	Deadman Creek	Y	Y	9 (11%)	3 (8%)
6_037	100200021002	Pole Creek & Divide Creek	N	N	0 (0%)	0 (0%)
6_038	100200071601	Sheep Creek	N	N	0 (0%)	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	Y	8 (26%)	8 (40%)
6_040	100200011103	Deer Canyon Creek	Y	Y	1 (6%)	1 (13%)

6_041	100200011801	Red Rock River (Lima Reservoir)	N	N	0 (0%)	0 (0%)
6_042	100200042504	Miner Creek	N	N	0 (0%)	0 (0%)
6_043	100200060501	Boulder River	N	N	0 (0%)	0 (0%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	Y	1 (3%)	1 (3%)
6_045	100200051601	Cottonwood Creek	N	N	0 (0%)	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	Y	Y	1 (3%)	1 (4%)
6_047	100200072801	North Meadow Creek	Y	Y	4 (6%)	2 (5%)
6_048	100200030103	Indian Creek	N	N	0 (0%)	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	Y	Y	3 (8%)	3 (8%)
6_050	100200050601	North Willow Creek	N	N	0 (0%)	0 (0%)
6_051	100200010102	Lower Red Rock River	Y	Y	1 (17%)	1 (50%)
6_052	100200060602	Nez Perce Creek	Y	Y	2 (67%)	2 (67%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	N	N	0 (0%)	0 (0%)
6_057	100200041703	Squaw Creek	Y	Y	3 (21%)	3 (27%)
6_058	100200011501	Coyote Creek	N	N	0 (0%)	0 (0%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	Y	Y	2 (50%)	2 (50%)
6_061	100200041806	Thompson Creek	N	N	0 (0%)	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead Rvr & Small Horn Cyn	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia, & Rock Crks	N	N	0 (0%)	0 (0%)
6_301	100200011002	Deadman Creek	Y	Y	9 (11%)	3 (8%)
6_302	100200010702	Long Creek	N	N	0 (0%)	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	Y	Y	1 (25%)	1 (33%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	Y	Y	10 (38%)	10 (45%)
6_501	100200010703	Sage Creek	N	N	0 (0%)	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Crk	N	N	0 (0%)	0 (0%)
6_602	100200010504	Muddy Creek	Y	Y	1 (7%)	1 (14%)
6_604	100200011202	Med Lodge Crk (Dad & Pass Crks)	Y	Y	3 (20%)	2 (18%)
6_997	100200071501	Papoose Creek	Y	Y	3 (9%)	2 (8%)
6_998	100200071502	Squaw Creek	N	N	0 (0%)	0 (0%)
6_999	100200071401	Moose Creek	Y	Y	9 (29%)	4 (21%)
<b>Total Number and Percent of Watersheds and Sites with Potential Lentic Sites and Lentic Sites Capable of Supporting Amphibian Reproduction Created by Beaver</b>			<b>32 (47%)</b> <i>(95%CI = 36-58%)</i>	<b>32 (48%)</b> <i>(95%CI = 36-60%)</i>	<b>189 (13%)</b> <i>(95%CI = 11-15%)</i>	<b>163 (16%)</b> <i>(95%CI = 14-18%)</i>

<sup>1</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least one potential lentic site ( $X = 22$ ;  $SE = 2.2$ ) and 67 of these contained at least one lentic site that would support amphibian reproduction ( $X = 15$ ;  $SE = 1.7$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

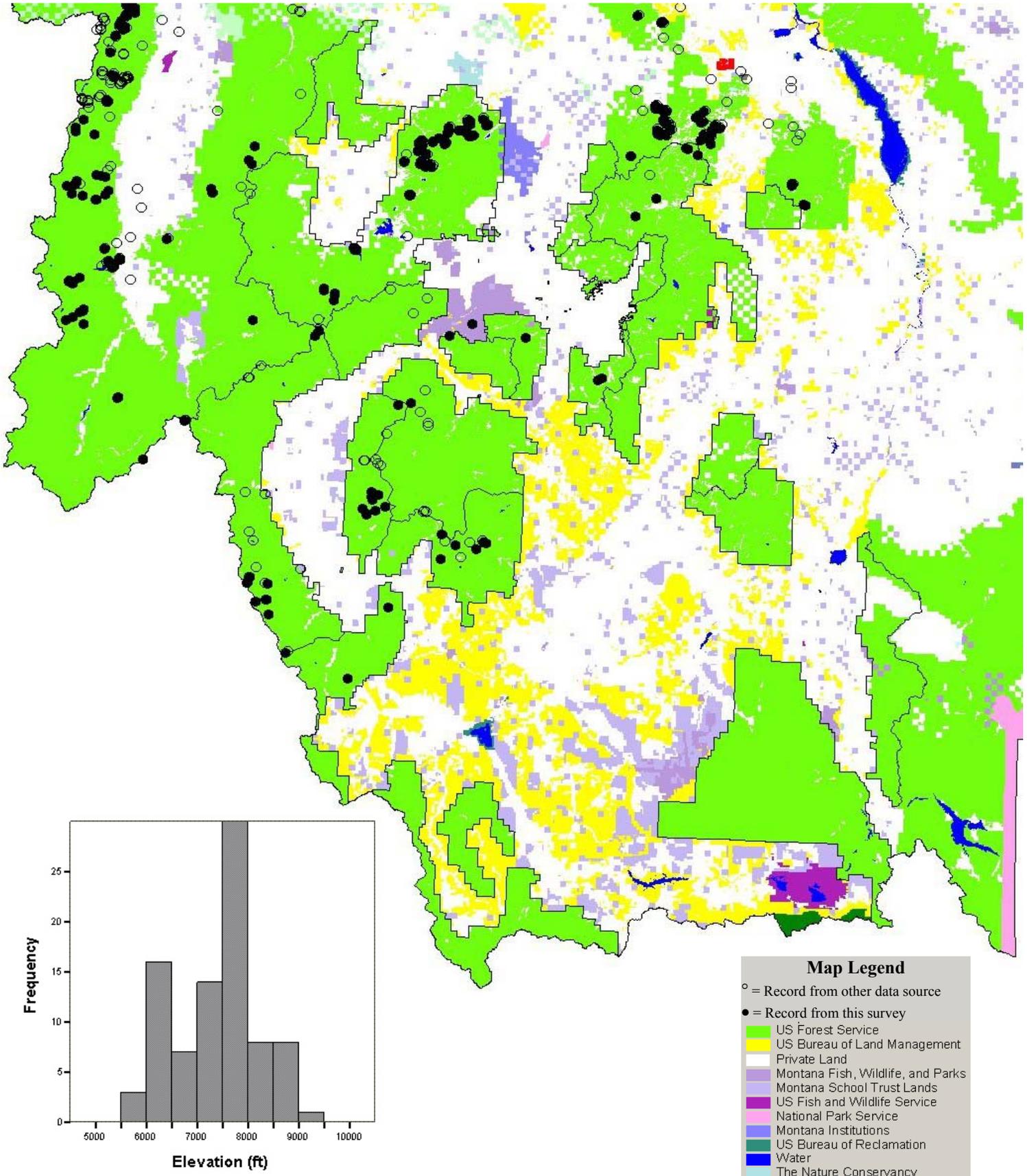
<sup>2</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

<sup>3</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N))$ ) where  $n$  = sample size and  $N$  = total population size). In this case  $n = 68$  for watersheds with at least one potential lentic site and 67 for watersheds with at least one lentic site that would support reproduction and  $N = 686$ .

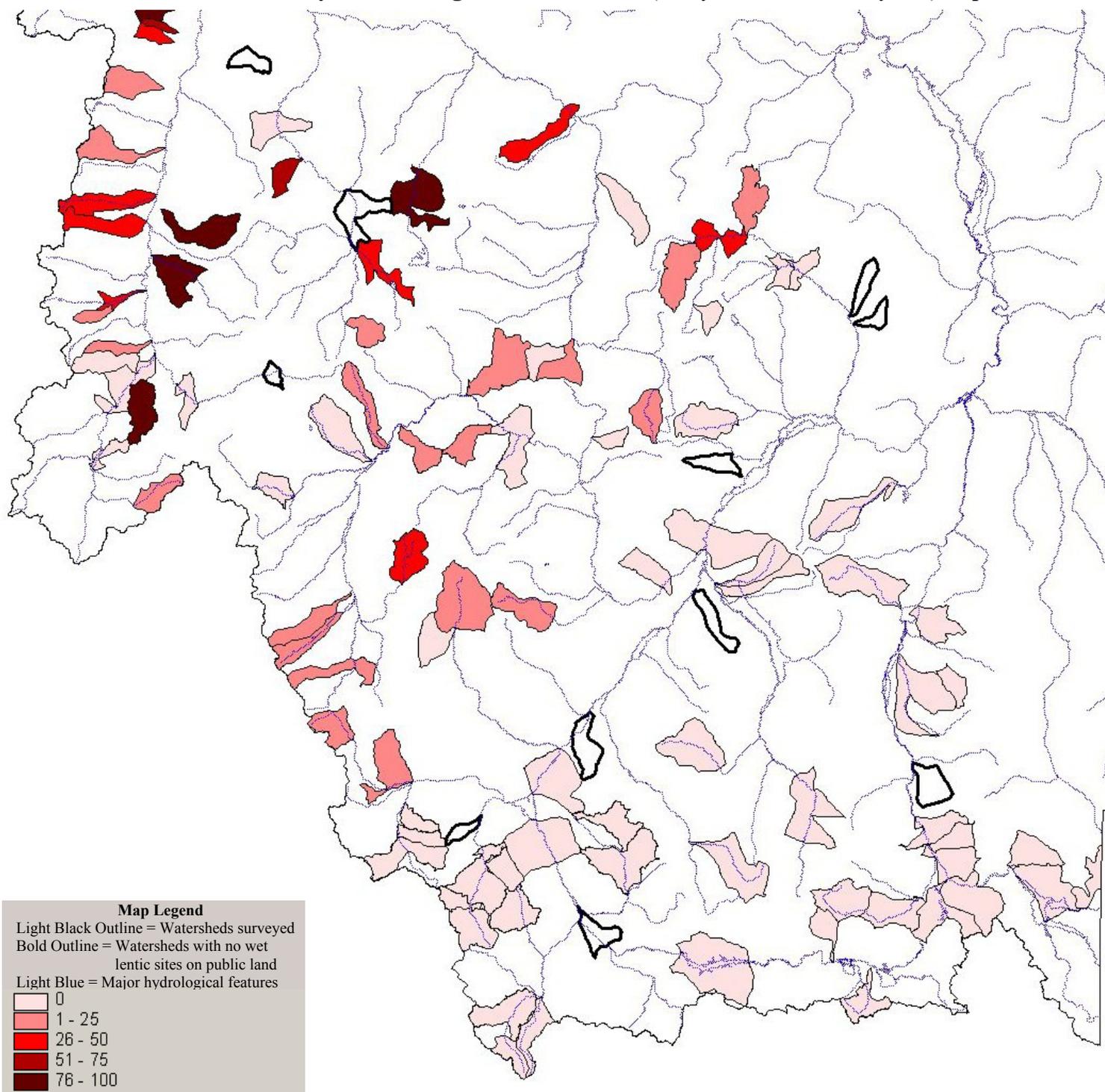
<sup>4</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$ ) where  $n$  = sample size = 1,481 for potential lentic sites and 1,020 for sites that would support amphibian reproduction).

# Amphibians & Reptiles Detected On & Around the Beaverhead-Deerlodge National Forest & Overviews of Watershed & Site Occupancy & Breeding Rates for Species Inhabiting Lentic Sites

## Geographic and Elevation Distribution of Long-toed Salamander (*Ambystoma macrodactylum*)



# Percent of Lentic Sites Surveyed with Long-toed Salamander (*Ambystoma macrodactylum*) Reproduction



**Long-toed Salamander (*Ambystoma macrodactylum*) Watershed & Site Occupancy & Breeding Summary<sup>1 & 2</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>3</sup>	Breeding in Watershed (Y/N) <sup>3</sup>	Number & Percent of Lentic Sites Detected <sup>4</sup>	Number & Percent of Lentic Sites Breeding <sup>4</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	Y	Y	4 (100%)	4 (100%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	N	0 (0%)	0 (0%)
4_026	170102052903	Tolan Creek	N	N	0 (0%)	0 (0%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Creeks	Y	Y	10 (48%)	10 (48%)
4_028	170102021002	Carpp Creek	Y	Y	5 (22%)	5 (22%)
4_031	170102020403	Rock Creek	Y	Y	4 (67%)	4 (67%)
4_032	170102053001	East Fk Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	N	N	0 (0%)	0 (0%)
4_057	170102012305	Basin Creek	Y	Y	2 (15%)	2 (15%)
4_060	170102012004	German Gulch	Y	Y	1 (17%)	1 (17%)
4_063	170102021303	Boulder Creek	Y	Y	23 (56%)	23 (56%)
4_067	170102020703	East Fork of Rock Creek	Y	Y	4 (50%)	4 (50%)
4_068	170102020203	Ranch Creek	N	N	0 (0%)	0 (0%)
4_078	170102011503	Peterson Creek	N	N	0 (0%)	0 (0%)
6_001	100200042801	Berry Creek	Y	Y	1 (6%)	1 (6%)
6_002	100200060701	Lowland Creek	Y	Y	1 (6%)	1 (6%)
6_006	100200041401	French Creek	Y	Y	2 (6%)	2 (6%)
6_010	100200040905	Tucker Creek	N	N	0 (0%)	0 (0%)
6_013	100200042602	Warm Springs	Y	Y	9 (30%)	9 (30%)
6_015	100200040402	Birch Creek	Y	Y	3 (14%)	3 (14%)
6_017	100200042505	Little Lake Creek	Y	Y	3 (18%)	3 (18%)
6_021	100200021001	Grasshopper Creek	Y	Y	2 (11%)	2 (11%)
6_024	100200041302	Alder Creek	Y	Y	1 (6%)	1 (6%)
6_028	100200060504	Cataract Creek	Y	Y	3 (27%)	2 (18%)
6_029	100200041101	Lower Wise River	N	N	0 (0%)	0 (0%)
6_031	100200011503	Bloody Dick Creek	Y	Y	1 (2%)	1 (2%)
6_035	100200041705	Pintler Creek	Y	Y	2 (9%)	2 (9%)
6_037	100200021002	Pole Creek & Divide Creek	N	N	0 (0%)	0 (0%)
6_042	100200042504	Miner Creek	Y	Y	4 (20%)	4 (20%)
6_043	100200060501	Boulder River	Y	Y	1 (50%)	1 (50%)
6_057	100200041703	Squaw Creek	Y	Y	1 (9%)	1 (9%)
6_058	100200011501	Coyote Creek	Y	Y	1 (13%)	1 (13%)
6_060	100200041901	Trail Creek	N	N	0 (0%)	0 (0%)
6_061	100200041806	Thompson Creek	N	N	0 (0%)	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>23 (68%)</b> <small>(95%CI = 53-83%)</small>	<b>23 (68%)</b> <small>(95%CI = 53-83%)</small>	<b>88 (19%)</b> <small>(95%CI = 15-22%)</small>	<b>87 (19%)</b> <small>(95%CI = 15-22%)</small>

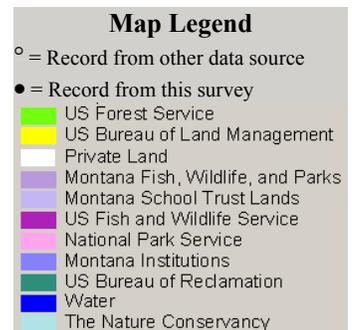
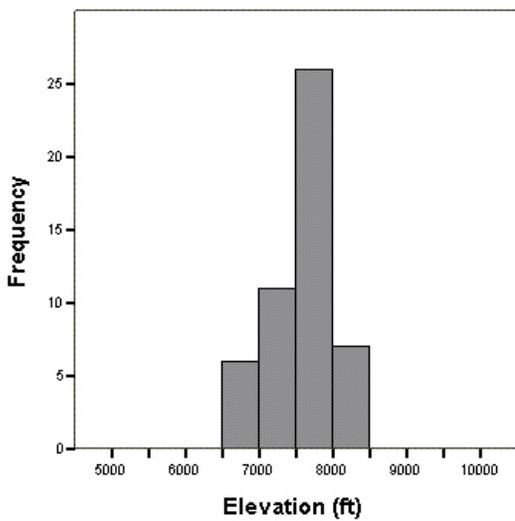
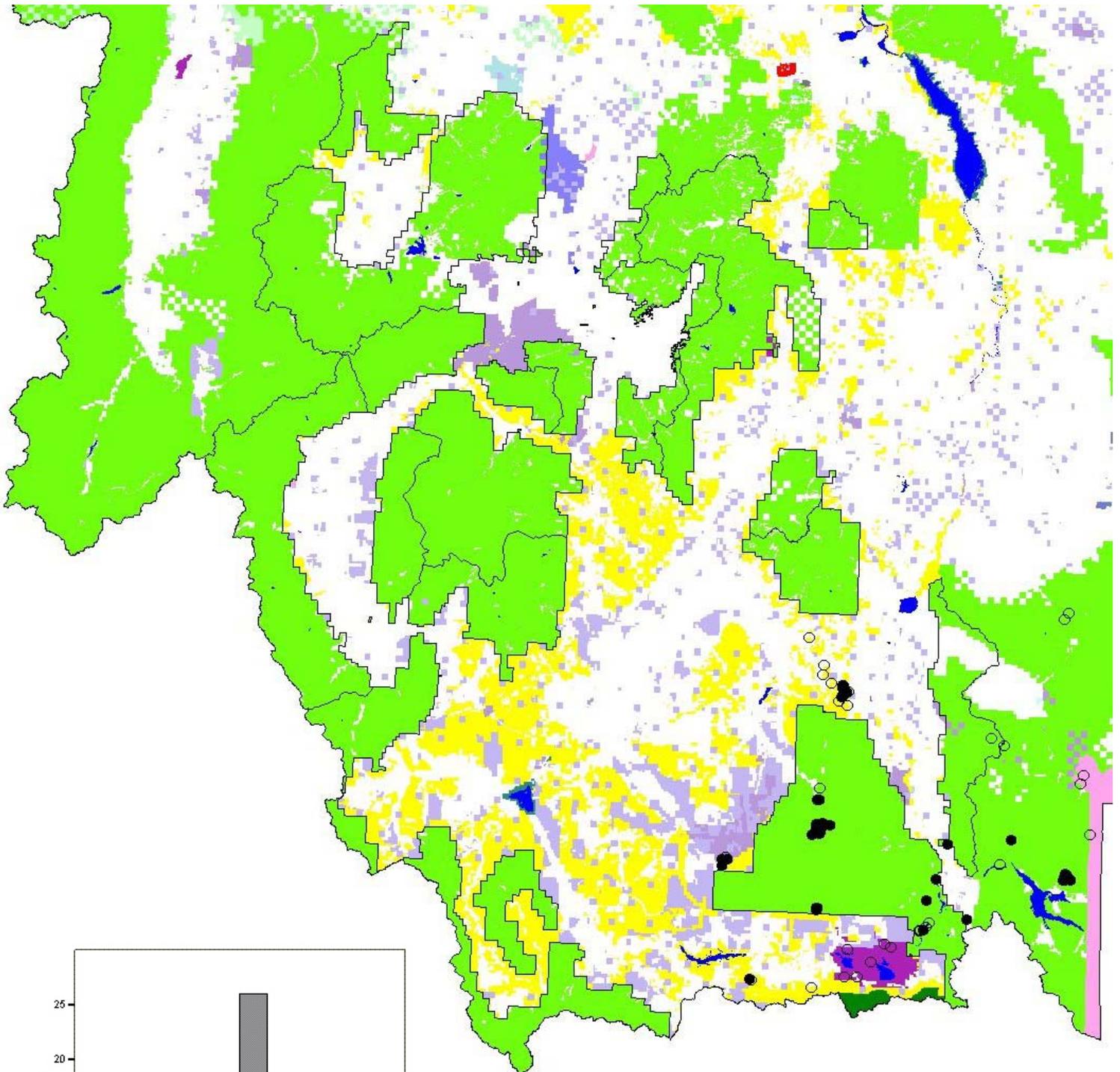
<sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.

<sup>2</sup> Of the 237 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Long-toed Salamander, 35 were randomly selected for complete surveys of all standing water bodies and 33 of these contained at least 1 water body. These 33 watersheds contained a total of 455 wet lentic sites (X = 13; SE = 2.3).

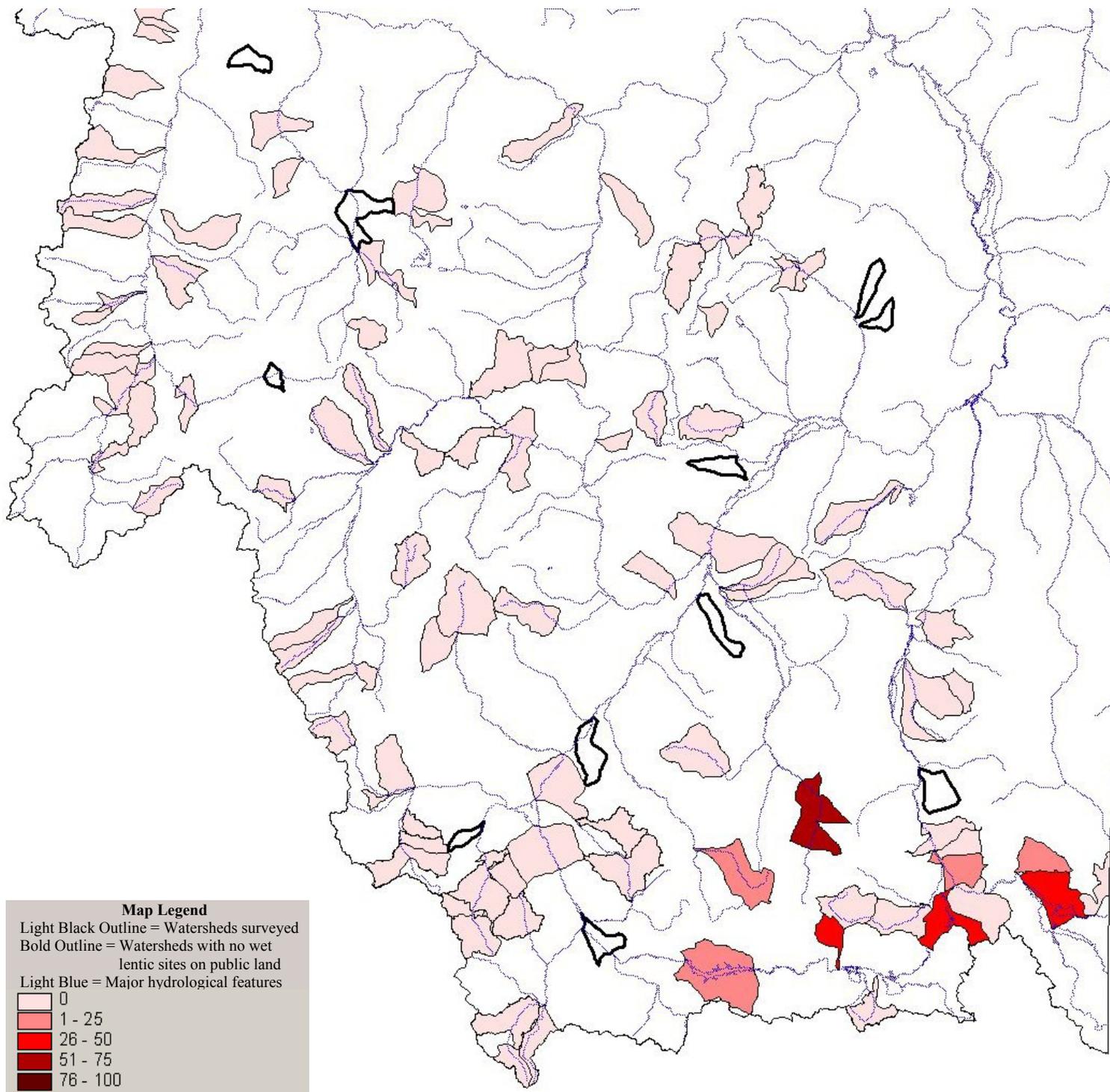
<sup>3</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor (SE = square root (((occupancy rate \* (1 - occupancy rate)) / n) \* (1 - n/N))) where n = sample size and N = total population size. In this case n = 33 and N = 237.

<sup>4</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown (SE = square root (((occupancy rate \* (1 - occupancy rate)) / n) where n = sample size = 455).

# Geographic and Elevation Distribution of Tiger Salamander (*Ambystoma tigrinum*)



# Percent of Lentic Sites Surveyed with Tiger Salamander (*Ambystoma tigrinum*) Reproduction



**Tiger Salamander (*Ambystoma tigrinum*) Watershed & Site Occupancy & Breeding Summary<sup>1, 2 & 3</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>4</sup>	Breeding in Watershed (Y/N) <sup>4</sup>	Number & Percent of Lentic Sites Detected <sup>5</sup>	Number & Percent of Lentic Sites Breeding <sup>5</sup>
6_003	100200071604	Cabin Creek	1	1	1 (3%)	1 (3%)
6_005	100200071001	Bear Creek	0	0	0 (0%)	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	1	1	4 (31%)	4 (31%)
6_012	100200031001	Ruby River	1	1	24 (56%)	24 (56%)
6_016	100200071901	Grayling Creek	0	0	0 (0%)	0 (0%)
6_020	100200070802	Cedar Creek	0	0	0 (0%)	0 (0%)
6_023	100200071101	Madison River	0	0	0 (0%)	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek	1	1	4 (40%)	4 (40%)
6_025	100200012002	Metzel Creek & Fish Creek	1	1	7 (70%)	7 (70%)
6_025	100200012002	Metzel Creek & Fish Creek	0	0	0 (0%)	0 (0%)
6_027	100200072602	West Fk Madison River (Teepee Creek)	0	0	0 (0%)	0 (0%)
6_034	100200070602	Jourdain Creek	0	0	0 (0%)	0 (0%)
6_038	100200071601	Sheep Creek	0	0	0 (0%)	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	0	0	0 (0%)	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	1	1	1 (9%)	1 (9%)
6_046	100200072603	Upper West Fork of Madison River	0	0	0 (0%)	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	1	1	3 (15%)	3 (15%)
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	0	0	0 (0%)	0 (0%)
6_997	100200071501	Papoose Creek	1	1	1 (5%)	1 (5%)
6_998	100200071502	Squaw Creek	0	0	0 (0%)	0 (0%)
6_999	100200071401	Moose Creek	0	0	0 (0%)	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>6 (38%)</b> <small>(95%CI = 15-61%)</small>	<b>6 (38%)</b> <small>(95%CI = 15-61%)</small>	<b>40 (21%)</b> <small>(95%CI = 15-27%)</small>	<b>40 (21%)</b> <small>(95%CI = 15-27%)</small>

<sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.

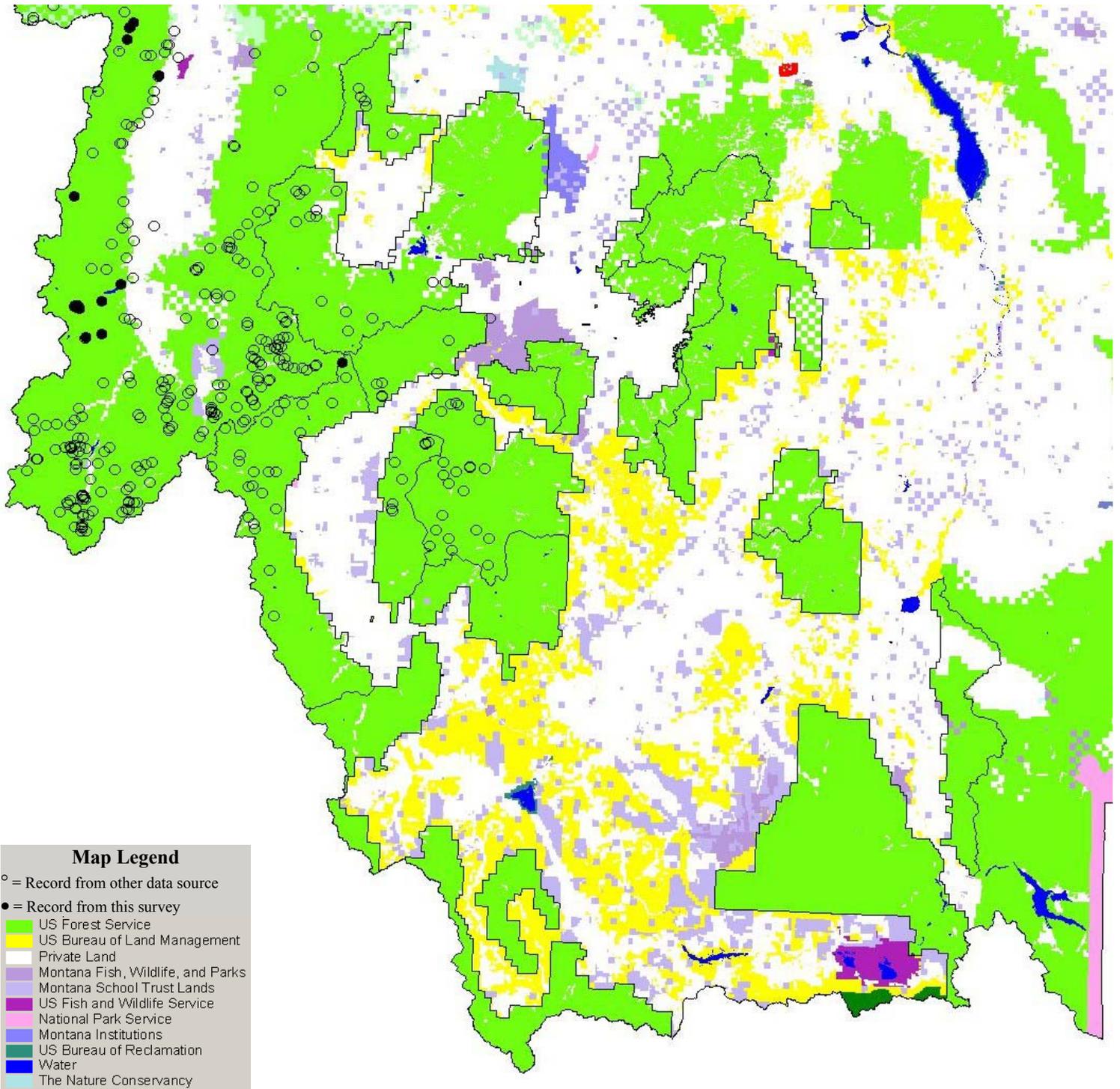
<sup>2</sup> Of the 217 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Tiger Salamander, 17 were randomly selected for complete surveys of all standing water bodies and 16 of these contained at least 1 water body. These 16 watersheds contained a total of 193 wet lentic sites (X = 12; SE = 3.1). Watersheds with sampling numbers greater than 6\_056 (i.e. the last 3 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

<sup>3</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

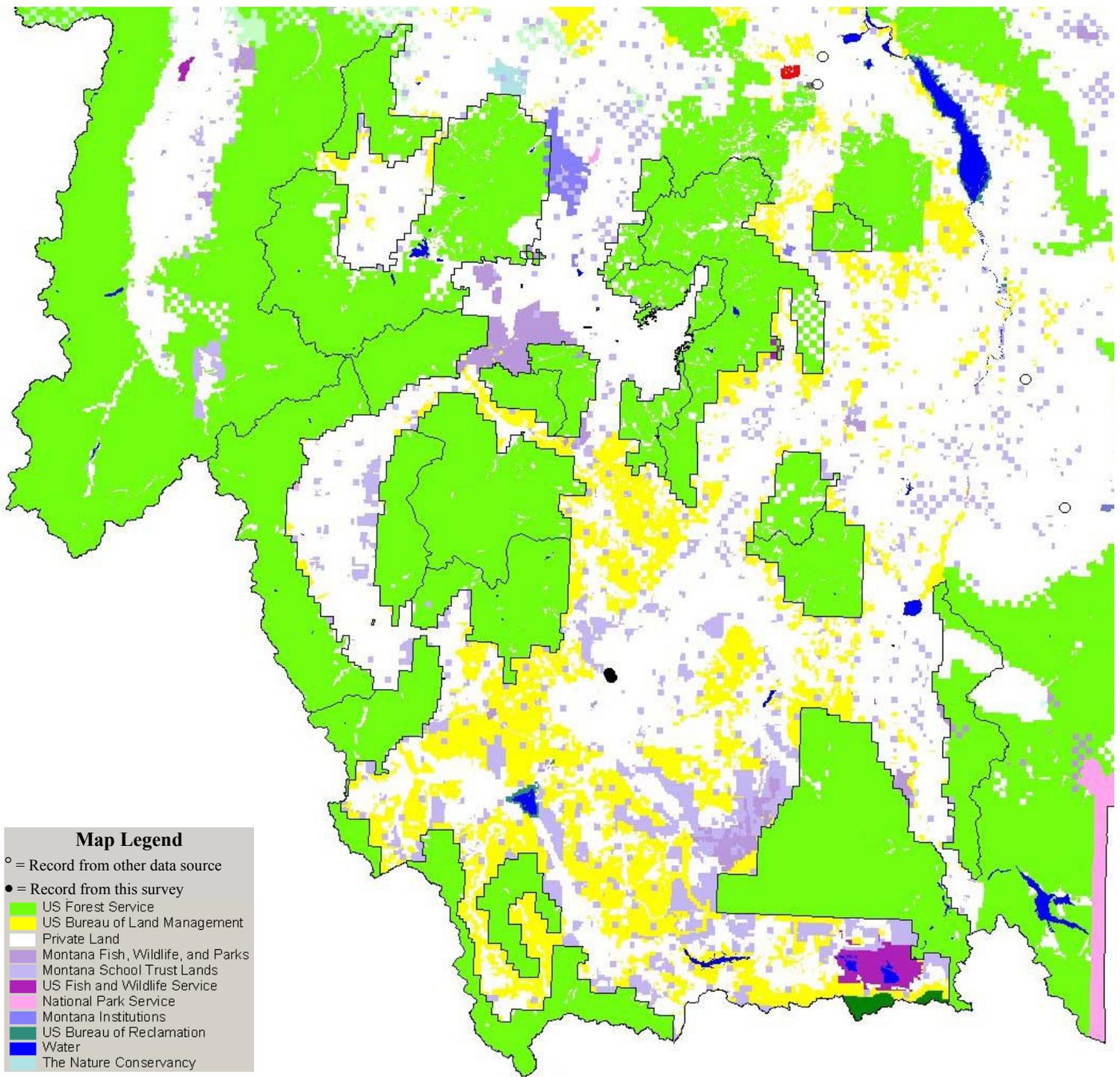
<sup>4</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor (SE = square root (((occupancy rate \* (1 - occupancy rate)) / n) \* (1 - n/N))) where n = sample size and N = total population size). In this case n = 16 and N = 217.

<sup>5</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown (SE = square root (((occupancy rate \* (1 - occupancy rate)) / n) where n = sample size = 193).

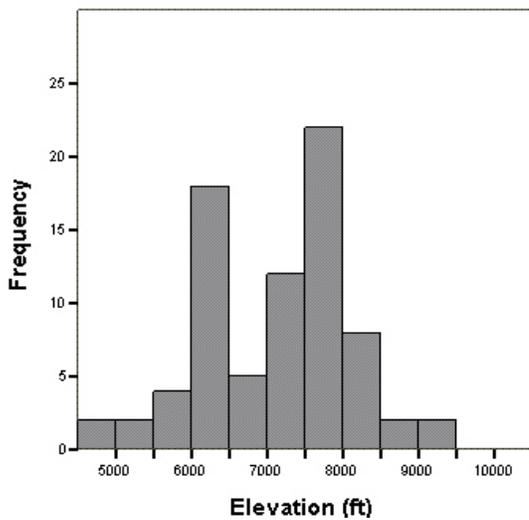
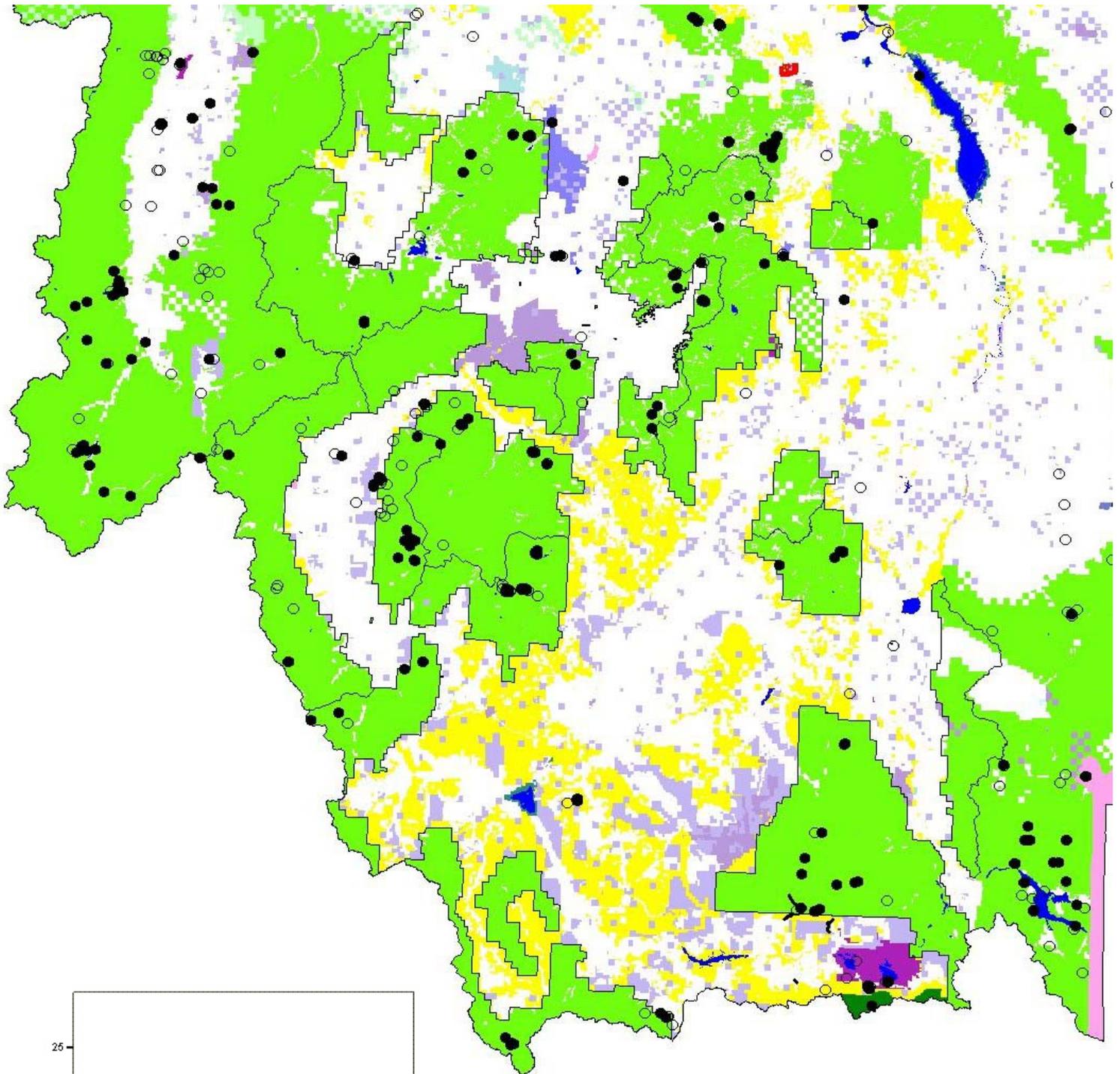
## Geographic Distribution of Rocky Mountain Tailed Frog (*Ascaphus montanus*)



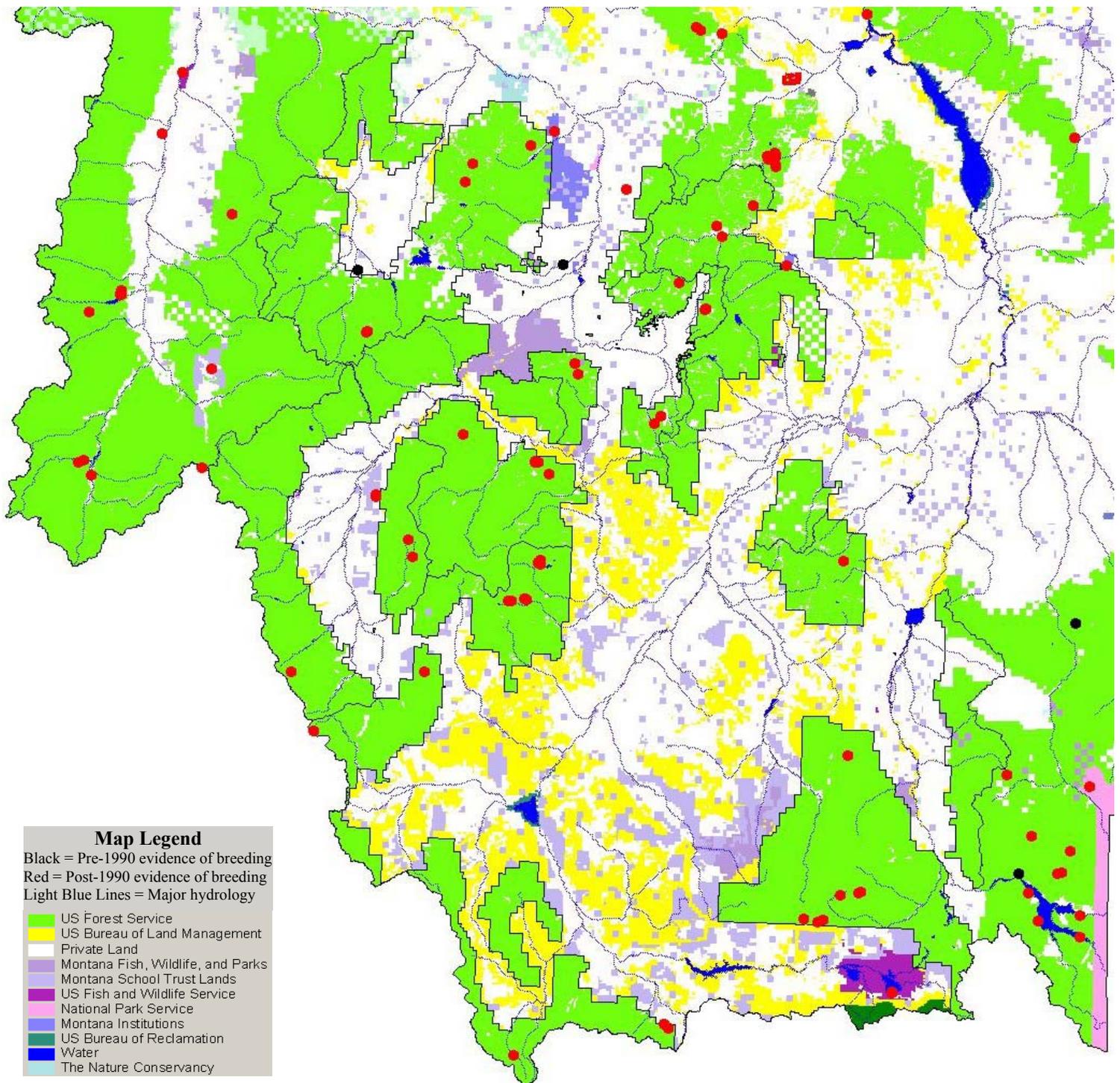
## Geographic Distribution of Plains Spadefoot (*Spea bombifrons*)



## Geographic and Elevation Distribution of Western Toad (*Bufo boreas*)

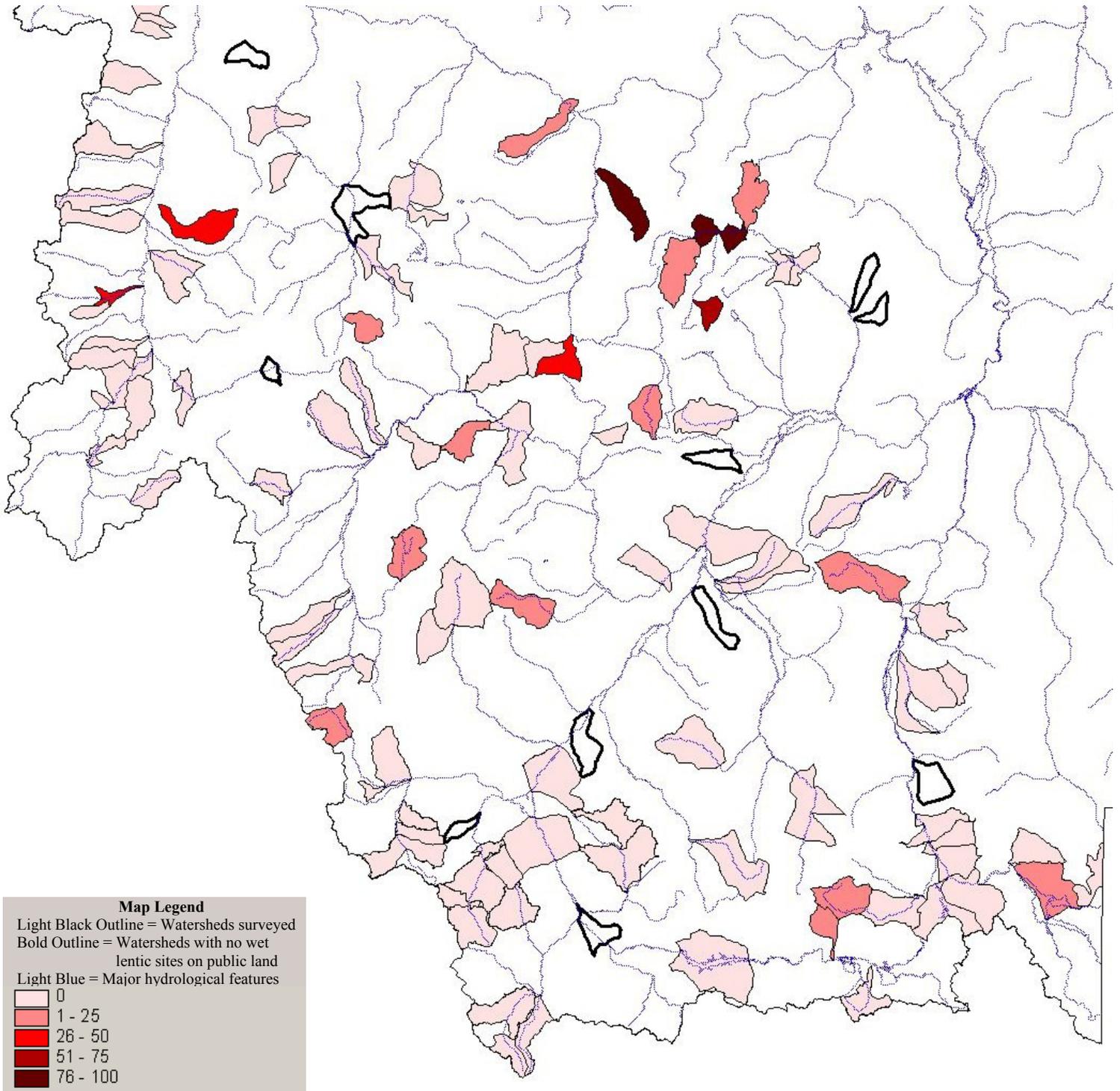


## Regional Distribution of All Known Western Toad (*Bufo boreas*) Breeding Sites



Please report all additional observations of Western Toad breeding activity so that this information can be added to the statewide Western Toad breeding monitoring database.

# Percent of Lentic Sites Surveyed with Western Toad (*Bufo boreas*) Reproduction



**Western Toad (*Bufo boreas*) Watershed & Site Occupancy & Breeding Summary<sup>1, 2 & 3</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>4</sup>	Breeding in Watershed (Y/N) <sup>4</sup>	Number & Percent of Lentic Sites Detected <sup>5</sup>	Number & Percent of Lentic Sites Breeding <sup>5</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	N	N	0 (0%)	0 (0%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	N	0 (0%)	0 (0%)
4_026	170102052903	Tolan Creek	N	N	0 (0%)	0 (0%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Creeks	Y	Y	3 (14%)	1 (5%)
4_028	170102021002	Carpp Creek	Y	Y	2 (9%)	1 (4%)
4_031	170102020403	Rock Creek	N	N	0 (0%)	0 (0%)
4_032	170102053001	East Fork of Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	N	N	0 (0%)	0 (0%)
4_057	170102012305	Basin Creek	Y	Y	3 (23%)	2 (15%)
4_060	170102012004	German Gulch	Y	Y	2 (33%)	2 (33%)
4_063	170102021303	Boulder Creek	Y	Y	2 (5%)	2 (5%)
4_067	170102020703	East Fork of Rock Creek	N	N	0 (0%)	0 (0%)
4_068	170102020203	Ranch Creek	N	N	0 (0%)	0 (0%)
4_078	170102011503	Peterson Creek	Y	Y	1 (100%)	1 (100%)
6_001	100200042801	Berry Creek	N	N	0 (0%)	0 (0%)
6_002	100200060701	Lowland Creek	Y	Y	5 (31%)	1 (6%)
6_003	100200071604	Cabin Creek	Y	N	3 (8%)	0 (0%)
6_004	100200051203	Little Pipestone Creek	N	N	0 (0%)	0 (0%)
6_005	100200071001	Bear Creek	N	N	0 (0%)	0 (0%)
6_006	100200041401	French Creek	N	N	0 (0%)	0 (0%)
6_007	100200040104	Unnamed Drainage - Lower Big Hole River	N	N	0 (0%)	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	N	N	0 (0%)	0 (0%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_010	100200040905	Tucker Creek	N	N	0 (0%)	0 (0%)
6_011	100200040103	Nez Perce Creek	N	N	0 (0%)	0 (0%)
6_012	100200031001	Ruby River	Y	N	1 (2%)	0 (0%)
6_013	100200042602	Warm Springs	Y	Y	7 (23%)	2 (7%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	N	3 (12%)	0 (0%)
6_015	100200040402	Birch Creek	Y	Y	2 (10%)	2 (10%)
6_016	100200071901	Grayling Creek	N	N	0 (0%)	0 (0%)
6_017	100200042505	Little Lake Creek	N	N	0 (0%)	0 (0%)
6_018	100200060301	Browns Gulch	N	N	0 (0%)	0 (0%)
6_019	100200011704	Upper Horse Prairie Creek	N	N	0 (0%)	0 (0%)
6_020	100200070802	Cedar Creek	N	N	0 (0%)	0 (0%)
6_021	100200021001	Grasshopper Creek	N	N	0 (0%)	0 (0%)
6_022	100200060302	Little Boulder River	N	N	0 (0%)	0 (0%)
6_023	100200071101	Madison River	N	N	0 (0%)	0 (0%)
6_024	100200041302	Alder Creek	Y	Y	3 (19%)	1 (6%)
6_025	100200012002	Metzel Creek & Fish Creek - 2001	Y	Y	1 (10%)	1 (10%)
6_025	100200012002	Metzel Creek & Fish Creek - 2002	Y	Y	2 (20%)	2 (20%)
6_025	100200012002	Metzel Creek & Fish Creek - 2003	N	N	0 (0%)	0 (0%)
6_026	100200060205	Unnamed Tributary to upper Boulder River	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_027	100200072602	West Fk Madison River (Teepee Creek)	N	N	0 (0%)	0 (0%)
6_028	100200060504	Cataract Creek	Y	Y	1 (9%)	1 (9%)
6_029	100200041101	Lower Wise River	N	N	0 (0%)	0 (0%)
6_030	100200011202	Upper Medicine Lodge Creek	N	N	0 (0%)	0 (0%)
6_031	100200011503	Bloody Dick Creek	Y	Y	1 (2%)	1 (2%)
6_032	100200030102	Wisconsin Creek	N	N	0 (0%)	0 (0%)
6_033	100200011006	Nicholia Creek	Y	N	1 (8%)	0 (0%)
6_034	100200070602	Jourdain Creek	N	N	0 (0%)	0 (0%)
6_035	100200041705	Pintler Creek	N	N	0 (0%)	0 (0%)
6_036	100200011002	Deadman Creek	N	N	0 (0%)	0 (0%)
6_037	100200021002	Pole Creek & Divide Creek	N	N	0 (0%)	0 (0%)
6_038	100200071601	Sheep Creek	N	N	0 (0%)	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	N	1 (7%)	0 (0%)
6_040	100200011103	Deer Canyon Creek	N	N	0 (0%)	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	N	N	0 (0%)	0 (0%)
6_042	100200042504	Miner Creek	N	N	0 (0%)	0 (0%)

6_043	100200060501	Boulder River	Y	Y	2 (100%)	2 (100%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	Y	4 (13%)	3 (10%)
6_045	100200051601	Cottonwood Creek	N	N	0 (0%)	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	Y	Y	3 (16%)	2 (11%)
6_047	100200072801	North Meadow Creek	Y	Y	4 (10%)	1 (2%)
6_048	100200030103	Indian Creek	Y	N	0 (0%)	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	N	N	0 (0%)	0 (0%)
6_050	100200050601	North Willow Creek	N	N	0 (0%)	0 (0%)
6_051	100200010102	Lower Red Rock River	N	N	0 (0%)	0 (0%)
6_052	100200060602	Nez Perce Creek	Y	Y	3 (100%)	2 (67%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	N	N	0 (0%)	0 (0%)
6_057	100200041703	Squaw Creek	Y	N	2 (18%)	0 (0%)
6_058	100200011501	Coyote Creek	N	N	0 (0%)	0 (0%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	N	N	0 (0%)	0 (0%)
6_061	100200041806	Thompson Creek	N	N	0 (0%)	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead River & Small Horn Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia Creek, & Rock Creeks	N	N	0 (0%)	0 (0%)
6_301	100200011002	Deadman Creek	N	N	0 (0%)	0 (0%)
6_302	100200010702	Long Creek	N	N	0 (0%)	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	N	N	0 (0%)	0 (0%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	N	N	0 (0%)	0 (0%)
6_501	100200010703	Sage Creek	N	N	0 (0%)	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Creek	N	N	0 (0%)	0 (0%)
6_602	100200010504	Muddy Creek	N	N	0 (0%)	0 (0%)
6_604	100200011202	Medicine Lodge Crk (Dad & Pass Creeks)	N	N	0 (0%)	0 (0%)
6_997	100200071501	Papoose Creek	N	N	0 (0%)	0 (0%)
6_998	100200071502	Squaw Creek	N	N	0 (0%)	0 (0%)
6_999	100200071401	Moose Creek	N	N	0 (0%)	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>25 (37%)</b> <small>(95%CI = 26-48%)</small>	<b>18 (26%)</b> <small>(95%CI = 16-36%)</small>	<b>61 (7%)</b> <small>(95%CI = 5.3-8.7%)</small>	<b>29 (4%)</b> <small>(95%CI = 2.7-5.3%)</small>

<sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.

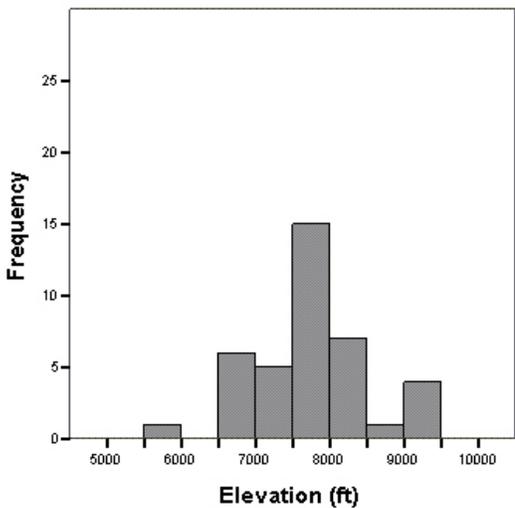
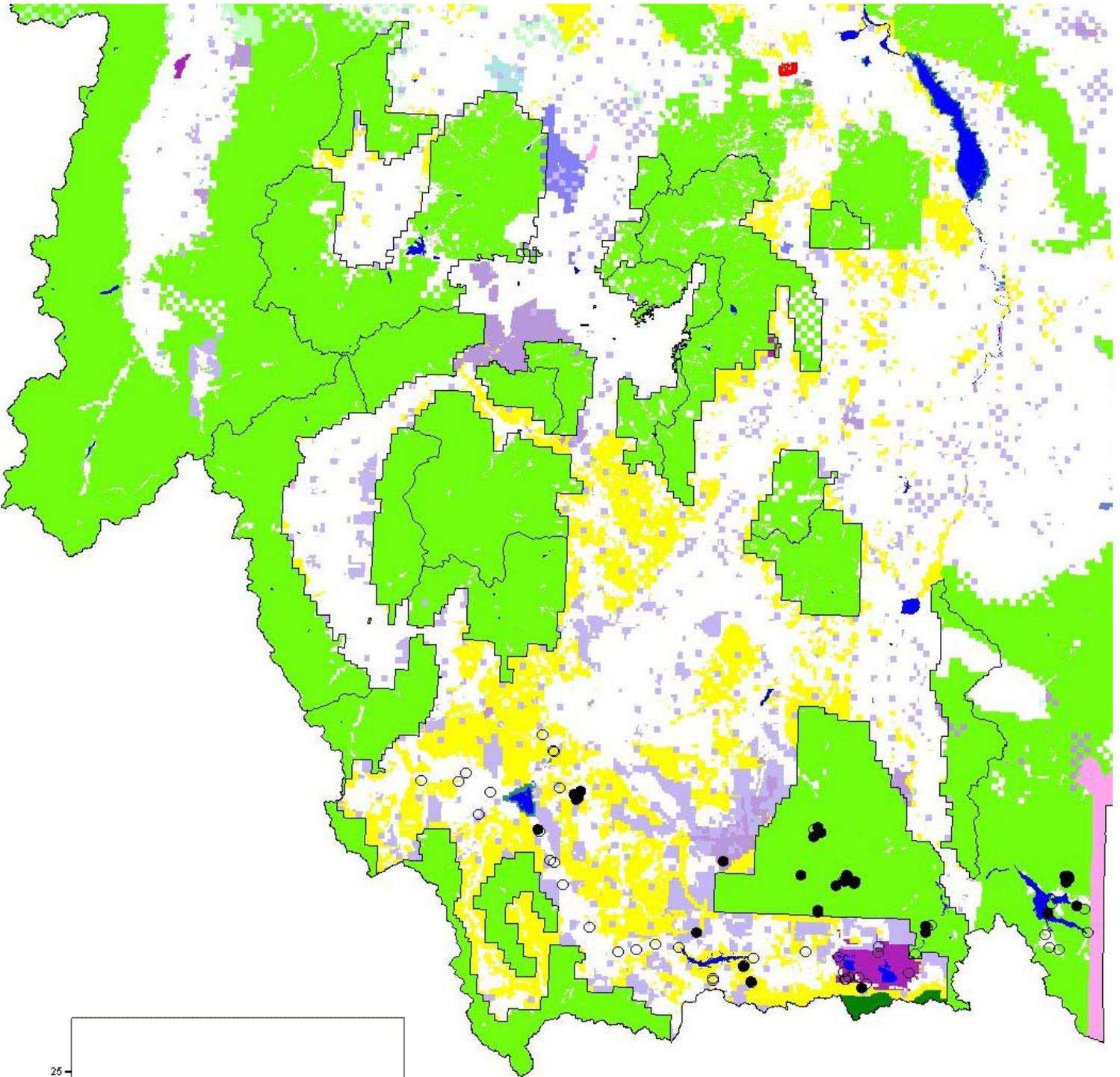
<sup>2</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Western Toad, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least 1 water body. These 68 watersheds contained a total of 883 wet lentic sites ( $X = 13$ ;  $SE = 1.5$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

<sup>3</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

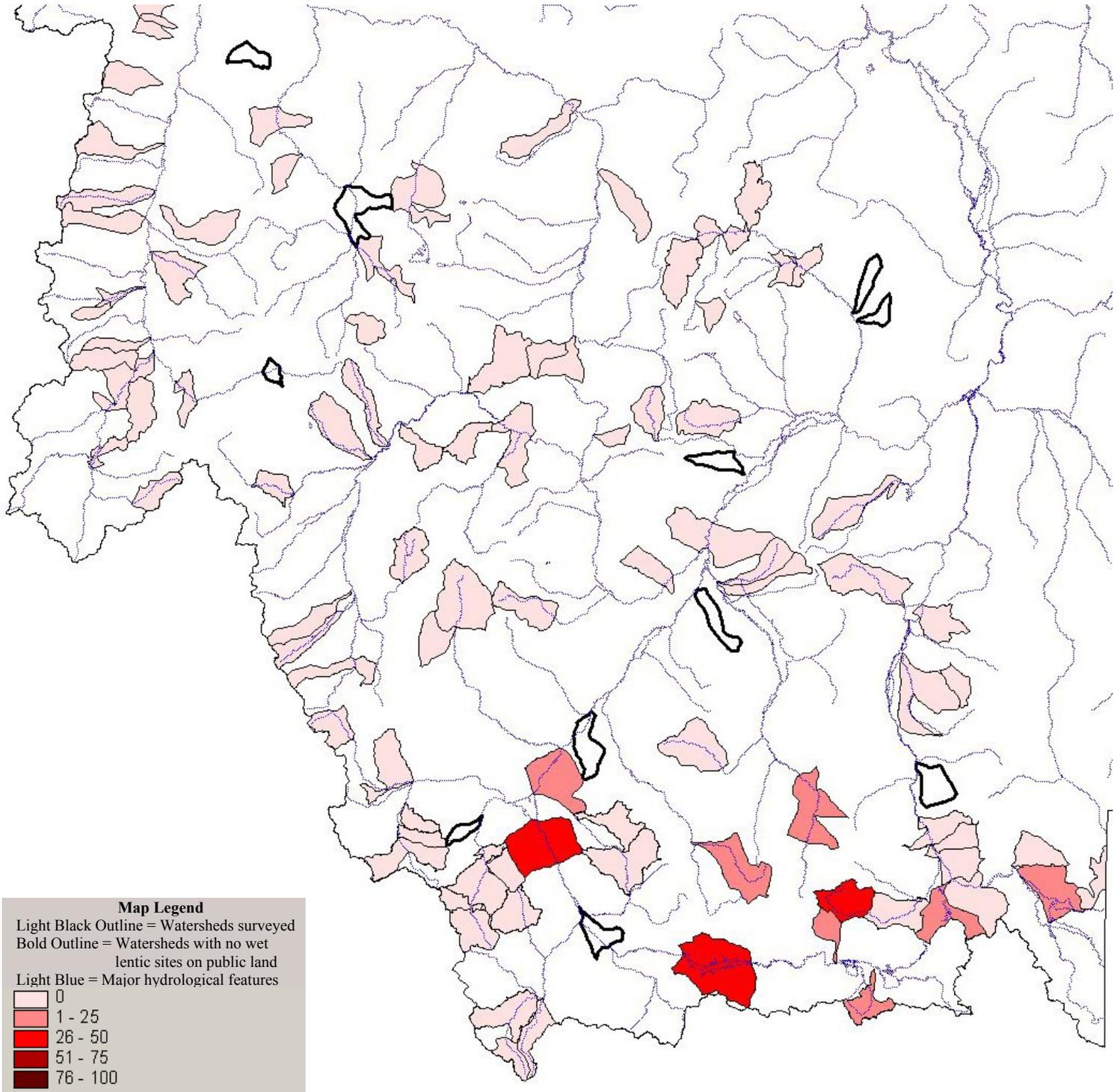
<sup>4</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N))$ ) where  $n$  = sample size and  $N$  = total population size). In this case  $n = 68$  and  $N = 686$ .

<sup>5</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$  where  $n$  = sample size = 883).

# Geographic and Elevation Distribution of Boreal Chorus Frog (*Pseudacris maculata*)



**Percent of Lentic Sites Surveyed with Boreal Chorus Frog (*Pseudacris maculata*) Reproduction**



**Boreal Chorus Frog (*Pseudacris maculata*) Watershed & Site Occupancy & Breeding Summary<sup>1, 2 & 3</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>4</sup>	Breeding in Watershed (Y/N) <sup>4</sup>	Number & Percent of Lentic Sites Detected <sup>5</sup>	Number & Percent of Lentic Sites Breeding <sup>5</sup>
6_003	100200071604	Cabin Creek	N	N	0 (0%)	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	Y	Y	2 (15%)	2 (15%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_012	100200031001	Ruby River	Y	Y	3 (7%)	2 (5%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	Y	7 (27%)	5 (19%)
6_016	100200071901	Grayling Creek	N	N	0 (0%)	0 (0%)
6_019	100200011704	Upper Horse Prairie Creek	N	N	0 (0%)	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek	Y	Y	2 (20%)	2 (20%)
6_025	100200012002	Metzel Creek & Fish Creek	Y	Y	9 (90%)	9 (90%)
6_025	100200012002	Metzel Creek & Fish Creek	Y	Y	1 (14%)	1 (14%)
6_027	100200072602	West Fork Madison River (Teepee Creek)	N	N	0 (0%)	0 (0%)
6_030	100200011202	Upper Medicine Lodge Creek	N	N	0 (0%)	0 (0%)
6_036	100200011002	Deadman Creek	N	N	0 (0%)	0 (0%)
6_038	100200071601	Sheep Creek	N	N	0 (0%)	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	Y	1 (7%)	1 (7%)
6_040	100200011103	Deer Canyon Creek	N	N	0 (0%)	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	Y	Y	3 (27%)	3 (27%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	Y	8 (27%)	6 (20%)
6_046	100200072603	Upper West Fork of Madison River	Y	Y	6 (32%)	5 (26%)
6_049	100200021701	East Fork of Blacktail Deer Creek	Y	Y	1 (5%)	1 (5%)
6_051	100200010102	Lower Red Rock River	Y	Y	1 (50%)	1 (50%)
6_058	100200011501	Coyote Creek	N	N	0 (0%)	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead River & Small Horn Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia, and Rock Creeks	N	N	0 (0%)	0 (0%)
6_301	100200011002	Deadman Creek	N	N	0 (0%)	0 (0%)
6_302	100200010702	Long Creek	N	N	0 (0%)	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	N	N	0 (0%)	0 (0%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	N	N	0 (0%)	0 (0%)
6_501	100200010703	Sage Creek	N	N	0 (0%)	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Creek	N	N	0 (0%)	0 (0%)
6_602	100200010504	Muddy Creek	N	N	0 (0%)	0 (0%)
6_604	100200011202	Medicine Lodge Crk (Dad & Pass Creeks)	N	N	0 (0%)	0 (0%)
6_997	100200071501	Papoose Creek	N	N	0 (0%)	0 (0%)
6_998	100200071502	Squaw Creek	N	N	0 (0%)	0 (0%)
6_999	100200071401	Moose Creek	N	N	0 (0%)	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>10 (53%)</b> (95%CI = 31-75%)	<b>10 (53%)</b> (95%CI = 31-75%)	<b>41 (13%)</b> (95%CI = 9-17%)	<b>35 (11%)</b> (95%CI = 7-15%)

<sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.

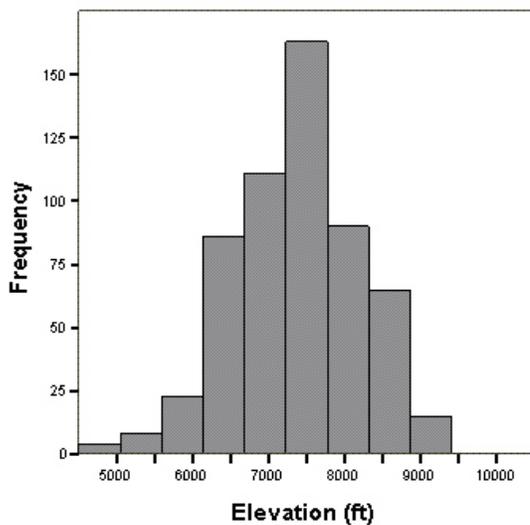
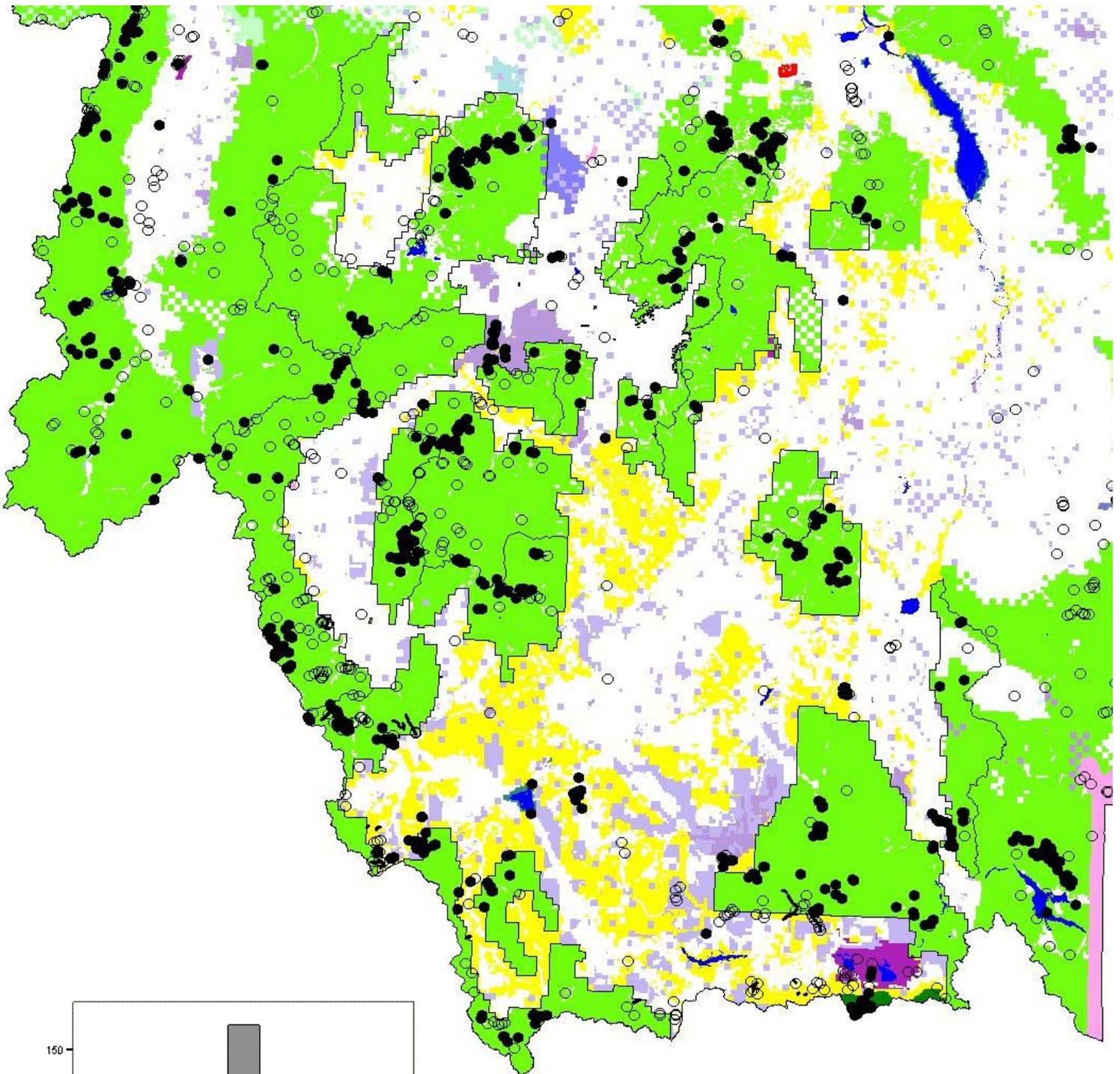
<sup>2</sup> Of the 332 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Boreal Chorus Frog, 22 were randomly selected for complete surveys of all standing water bodies and 19 of these contained at least 1 water body. These 19 watersheds contained a total of 313 wet lentic sites (X = 16; SE = 2.8). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

<sup>3</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

<sup>4</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor (SE = square root (((occupancy rate \* (1 - occupancy rate)) / n) \* (1 - n/N))) where n = sample size and N = total population size). In this case n = 19 and N = 332.

<sup>5</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown (SE = square root (((occupancy rate \* (1 - occupancy rate)) / n) where n = sample size = 313).

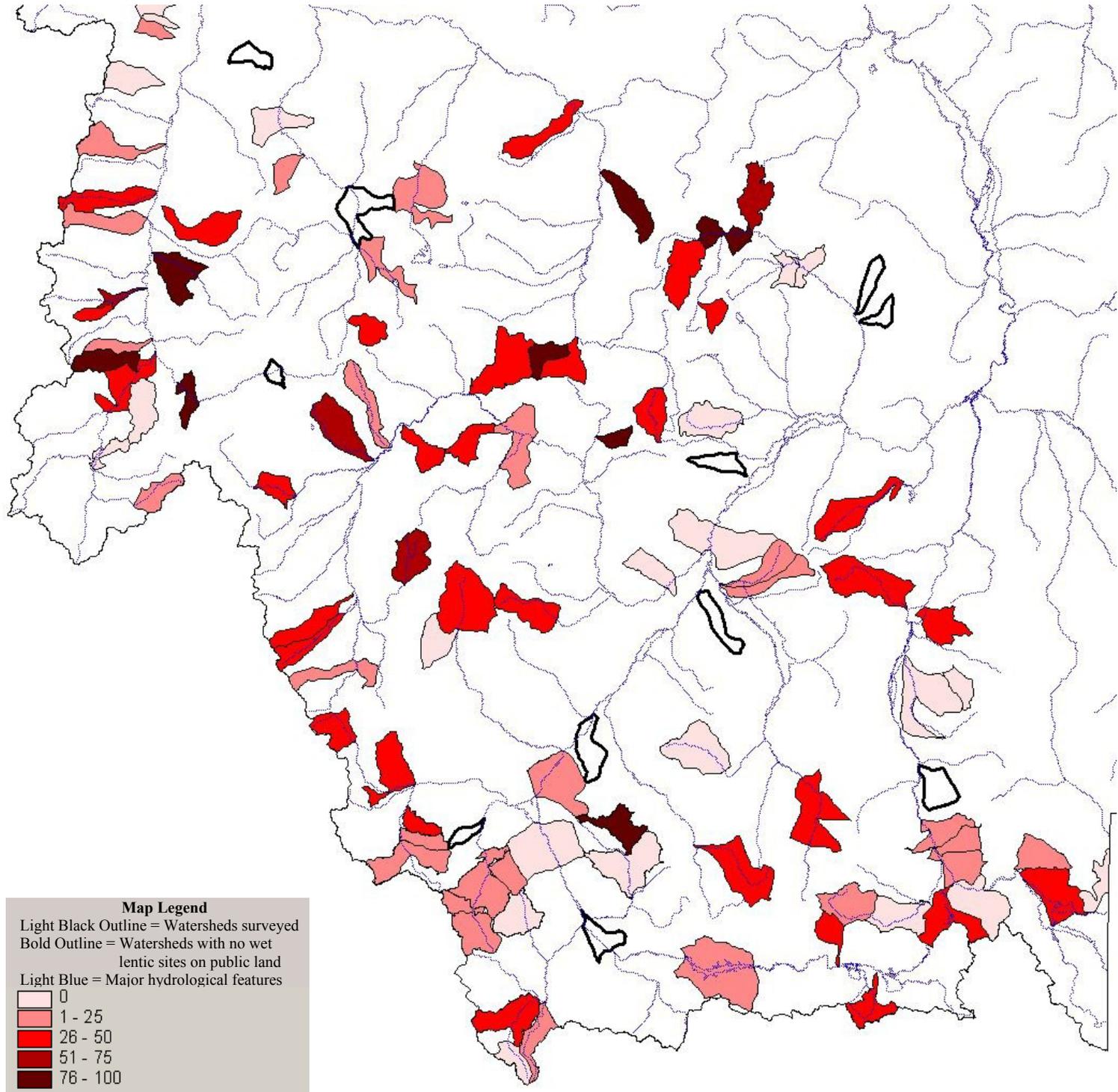
# Geographic and Elevation Distribution of Columbia Spotted Frog (*Rana luteiventris*)



**Map Legend**

- = Record from other data source
- = Record from this survey
- Black Lines = USFS records from stream surveys
- Green = US Forest Service
- Yellow = US Bureau of Land Management
- White = Private Land
- Purple = Montana Fish, Wildlife, and Parks
- Pink = Montana School Trust Lands
- Light Purple = US Fish and Wildlife Service
- Light Blue = National Park Service
- Dark Blue = Montana Institutions
- Teal = US Bureau of Reclamation
- Blue = Water
- Light Cyan = The Nature Conservancy

Percent of Lentic Sites Surveyed with Columbia Spotted Frog (*Rana luteiventris*) Reproduction



**Columbia Spotted Frog (*Rana luteiventris*) Watershed & Site Occupancy & Breeding Summary<sup>1, 2 & 3</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>4</sup>	Breeding in Watershed (Y/N) <sup>4</sup>	Number & Percent of Lentic Sites Detected <sup>5</sup>	Number & Percent of Lentic Sites Breeding <sup>5</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	Y	Y	2 (50%)	1 (25%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	N	0 (0%)	0 (0%)
4_026	170102052903	Tolan Creek	Y	Y	1 (100%)	1 (100%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Creeks	Y	Y	14 (67%)	9 (43%)
4_028	170102021002	Carpp Creek	Y	Y	12 (52%)	9 (39%)
4_031	170102020403	Rock Creek	Y	Y	2 (33%)	1 (17%)
4_032	170102053001	East Fork of Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	Y	Y	1 (100%)	1 (100%)
4_057	170102012305	Basin Creek	Y	Y	8 (62%)	4 (31%)
4_060	170102012004	German Gulch	Y	Y	6 (100%)	2 (33%)
4_063	170102021303	Boulder Creek	Y	Y	38 (93%)	20 (49%)
4_067	170102020703	East Fork of Rock Creek	Y	Y	4 (50%)	2 (25%)
4_068	170102020203	Ranch Creek	N	N	0 (0%)	0 (0%)
4_078	170102011503	Peterson Creek	Y	Y	1 (100%)	1 (100%)
6_001	100200042801	Berry Creek	Y	Y	5 (29%)	2 (12%)
6_002	100200060701	Lowland Creek	Y	Y	12 (75%)	6 (38%)
6_003	100200071604	Cabin Creek	Y	Y	26 (72%)	9 (25%)
6_004	100200051203	Little Pipestone Creek	Y	N	2 (33%)	0 (0%)
6_005	100200071001	Bear Creek	Y	N	1 (50%)	0 (0%)
6_006	100200041401	French Creek	Y	Y	20 (56%)	12 (33%)
6_007	100200040104	Unnamed Drainage - Lower Big Hole River	N	N	0 (0%)	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	Y	Y	5 (38%)	4 (31%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_010	100200040905	Tucker Creek	Y	Y	1 (100%)	1 (100%)
6_011	100200040103	Nez Perce Creek	N	N	0 (0%)	0 (0%)
6_012	100200031001	Ruby River	Y	Y	34 (79%)	17 (40%)
6_013	100200042602	Warm Springs	Y	Y	29 (97%)	21 (70%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	Y	12 (46%)	5 (19%)
6_015	100200040402	Birch Creek	Y	Y	7 (33%)	6 (29%)
6_016	100200071901	Grayling Creek	N	N	0 (0%)	0 (0%)
6_017	100200042505	Little Lake Creek	Y	Y	6 (35%)	5 (29%)
6_018	100200060301	Browns Gulch	N	N	0 (0%)	0 (0%)
6_019	100200011704	Upper Horse Prairie Creek	Y	Y	16 (80%)	4 (20%)
6_020	100200070802	Cedar Creek	Y	N	1 (20%)	0 (0%)
6_021	100200021001	Grasshopper Creek	Y	Y	8 (44%)	6 (33%)
6_022	100200060302	Little Boulder River	Y	N	2 (100%)	0 (0%)
6_023	100200071101	Madison River	N	N	0 (0%)	0 (0%)
6_024	100200041302	Alder Creek	Y	Y	12 (75%)	5 (31%)
6_025	100200012002	Metzel Creek & Fish Creek - 2001	Y	Y	8 (80%)	4 (40%)
6_025	100200012002	Metzel Creek & Fish Creek - 2002	Y	Y	8 (80%)	5 (50%)
6_025	100200012002	Metzel Creek & Fish Creek - 2003	Y	Y	6 (86%)	2 (29%)
6_026	100200060205	Unnamed Tributary to upper Boulder River	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_027	100200072602	West Fk Madison River (Teepee Creek)	Y	N	4 (80%)	0 (0%)
6_028	100200060504	Cataract Creek	Y	Y	6 (55%)	6 (55%)
6_029	100200041101	Lower Wise River	Y	Y	4 (80%)	1 (20%)
6_030	100200011202	Upper Medicine Lodge Creek	Y	Y	2 (22%)	1 (11%)
6_031	100200011503	Bloody Dick Creek	Y	Y	39 (68%)	27 (47%)
6_032	100200030102	Wisconsin Creek	Y	Y	2 (20%)	2 (20%)
6_033	100200011006	Nicholia Creek	Y	N	3 (23%)	0 (0%)
6_034	100200070602	Jourdain Creek	Y	Y	2 (50%)	2 (50%)
6_035	100200041705	Pintler Creek	Y	Y	15 (65%)	5 (22%)
6_036	100200011002	Deadman Creek	Y	Y	9 (26%)	6 (18%)
6_037	100200021002	Pole Creek & Divide Creek	N	N	0 (0%)	0 (0%)
6_038	100200071601	Sheep Creek	N	N	0 (0%)	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	Y	12 (86%)	4 (29%)
6_040	100200011103	Deer Canyon Creek	Y	Y	3 (75%)	1 (25%)
6_041	100200011801	Red Rock River (Lima Reservoir)	Y	Y	1 (9%)	1 (9%)
6_042	100200042504	Miner Creek	Y	Y	15 (75%)	10 (50%)

6_043	100200060501	Boulder River	Y	Y	2 (100%)	2 (100%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	Y	18 (60%)	8 (27%)
6_045	100200051601	Cottonwood Creek	N	N	0 (0%)	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	Y	Y	6 (32%)	4 (21%)
6_047	100200072801	North Meadow Creek	Y	Y	20 (49%)	12 (29%)
6_048	100200030103	Indian Creek	Y	Y	6 (40%)	3 (20%)
6_049	100200021701	East Fork of Blacktail Deer Creek	Y	Y	14 (70%)	9 (45%)
6_050	100200050601	North Willow Creek	Y	Y	4 (27%)	4 (27%)
6_051	100200010102	Lower Red Rock River	Y	N	1 (50%)	0 (0%)
6_052	100200060602	Nez Perce Creek	Y	Y	2 (67%)	1 (33%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	N	N	0 (0%)	0 (0%)
6_057	100200041703	Squaw Creek	Y	Y	7 (64%)	3 (27%)
6_058	100200011501	Coyote Creek	Y	Y	5 (63%)	4 (50%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	Y	Y	3 (75%)	2 (50%)
6_061	100200041806	Thompson Creek	Y	Y	9 (69%)	7 (54%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead River & Small Horn Canyon	No Lentic Sites	No Lentic Sites	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia Creek, & Rock Creeks	Y	Y	2 (40%)	2 (40%)
6_301	100200011002	Deadman Creek	Y	Y	9 (26%)	6 (18%)
6_302	100200010702	Long Creek	Y	Y	1 (100%)	1 (100%)
6_303	100200011005	Shenon and Jeff Davis Creeks	Y	Y	1 (50%)	1 (50%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	Y	Y	16 (84%)	4 (21%)
6_501	100200010703	Sage Creek	N	N	0 (0%)	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Creek	Y	Y	6 (46%)	2 (15%)
6_602	100200010504	Muddy Creek	N	N	0 (0%)	0 (0%)
6_604	100200011202	Medicine Lodge Crk (Dad & Pass Creeks)	Y	Y	2 (22%)	2 (22%)
6_997	100200071501	Papoose Creek	Y	Y	6 (29%)	3 (14%)
6_998	100200071502	Squaw Creek	Y	Y	5 (21%)	3 (13%)
6_999	100200071401	Moose Creek	Y	Y	7 (47%)	3 (20%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>55 (81%)</b> <small>(95%CI = 72-90%)</small>	<b>48 (71%)</b> <small>(95%CI = 61-81%)</small>	<b>510 (58%)</b> <small>(95%CI = 55-61%)</small>	<b>284 (32%)</b> <small>(95%CI = 29-35%)</small>

<sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.

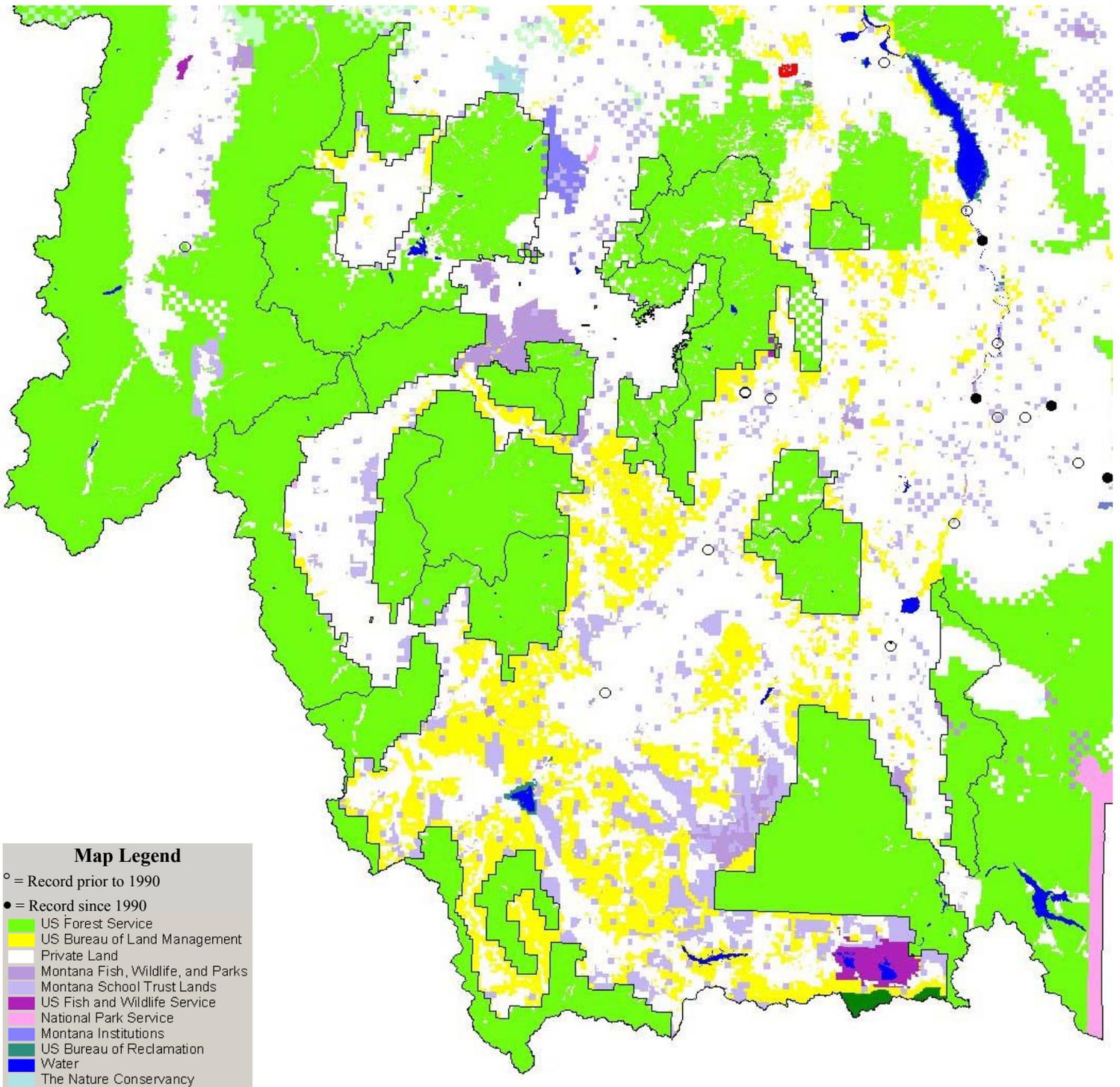
<sup>2</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Columbia Spotted Frog, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least 1 water body. These 68 watersheds contained a total of 883 wet lentic sites ( $X = 13$ ;  $SE = 1.5$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.

<sup>3</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.

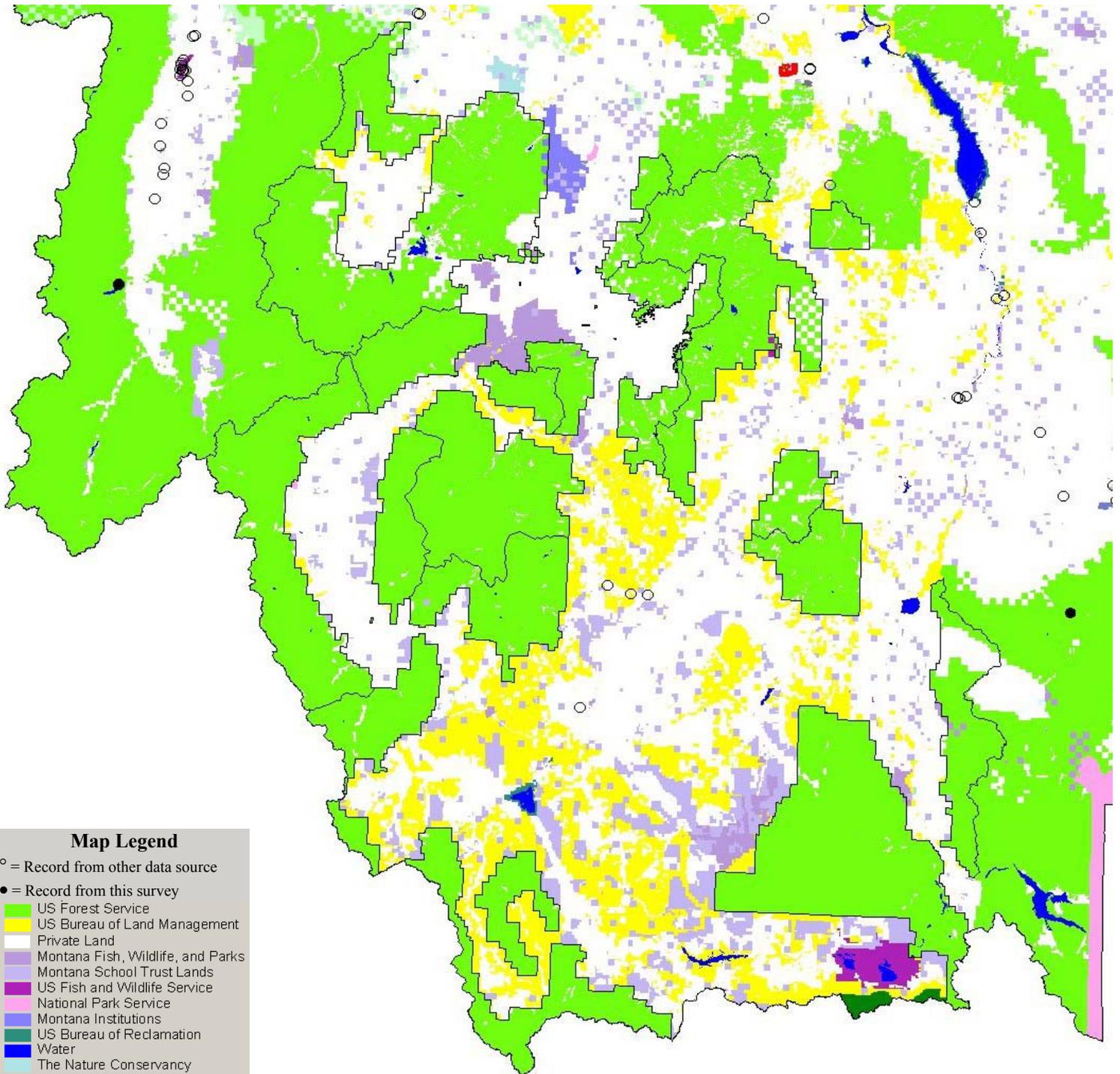
<sup>4</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N)))$  where  $n = \text{sample size}$  and  $N = \text{total population size}$ ). In this case  $n = 68$  and  $N = 686$ .

<sup>5</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$  where  $n = \text{sample size} = 883$ ).

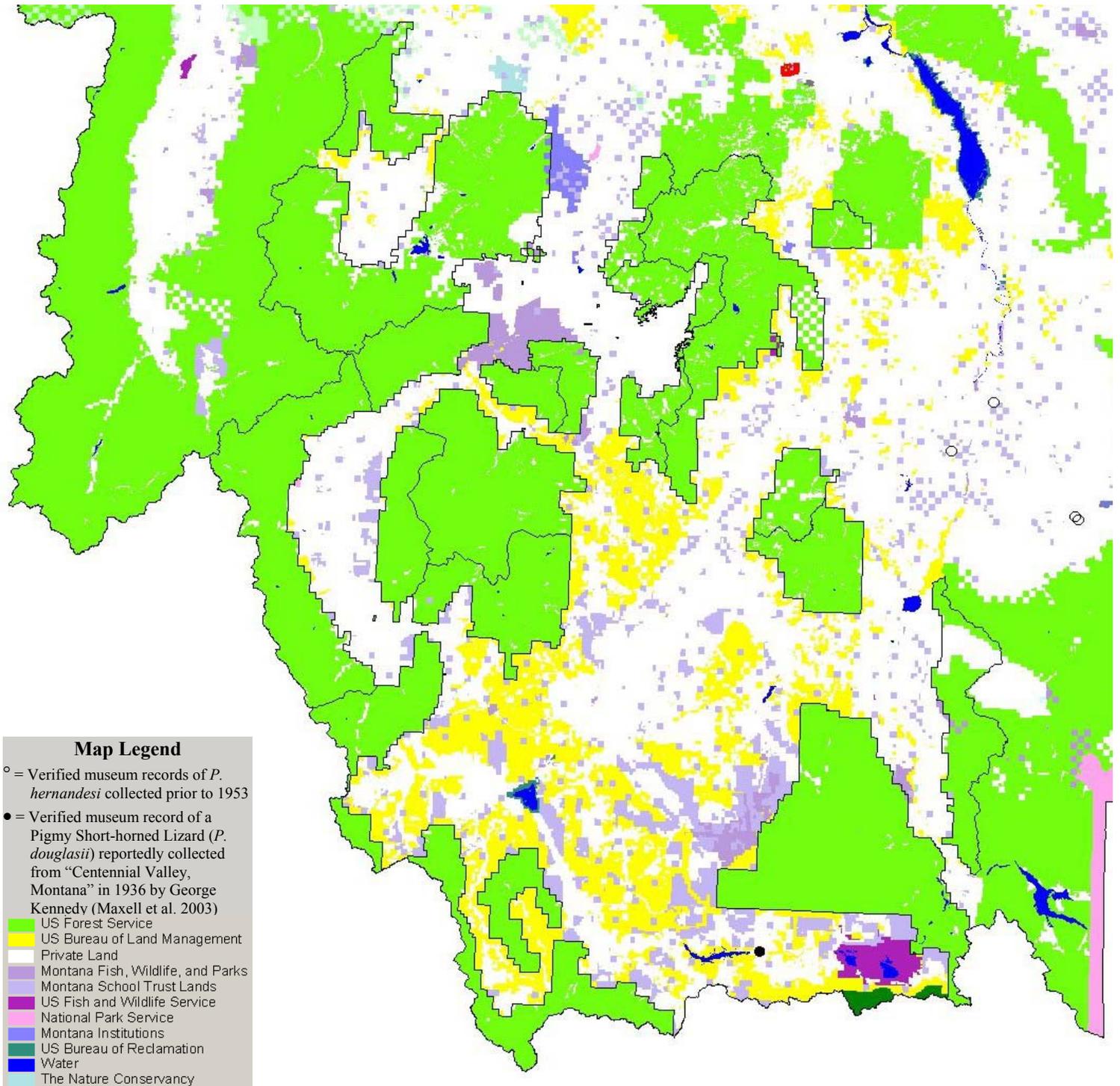
**Historic (Pre-1990) and Recent (Post-1990) Geographic Distribution of Northern Leopard Frog (*Rana pipiens*)**



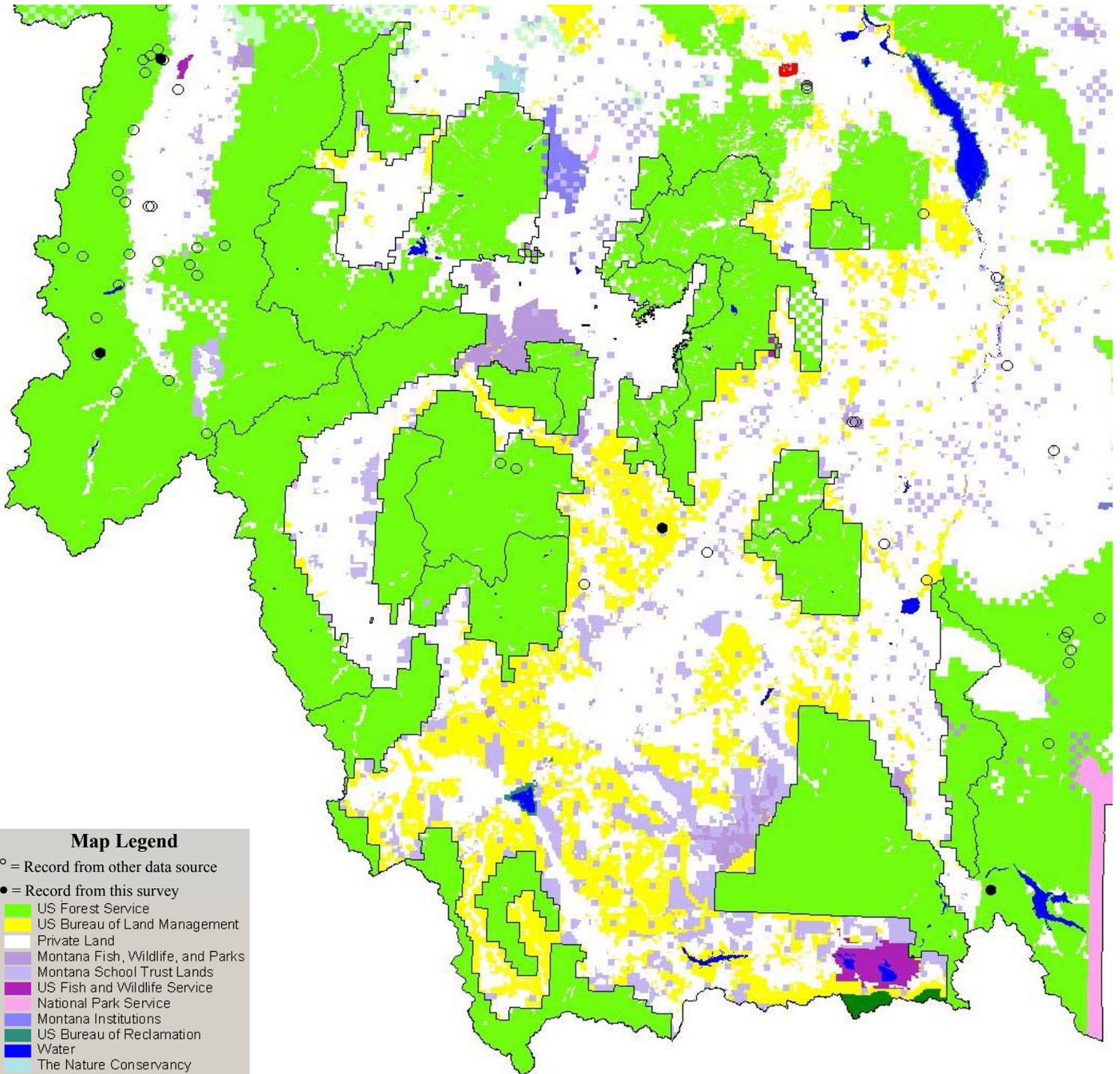
## Geographic Distribution of Painted Turtle (*Chrysemys picta*)



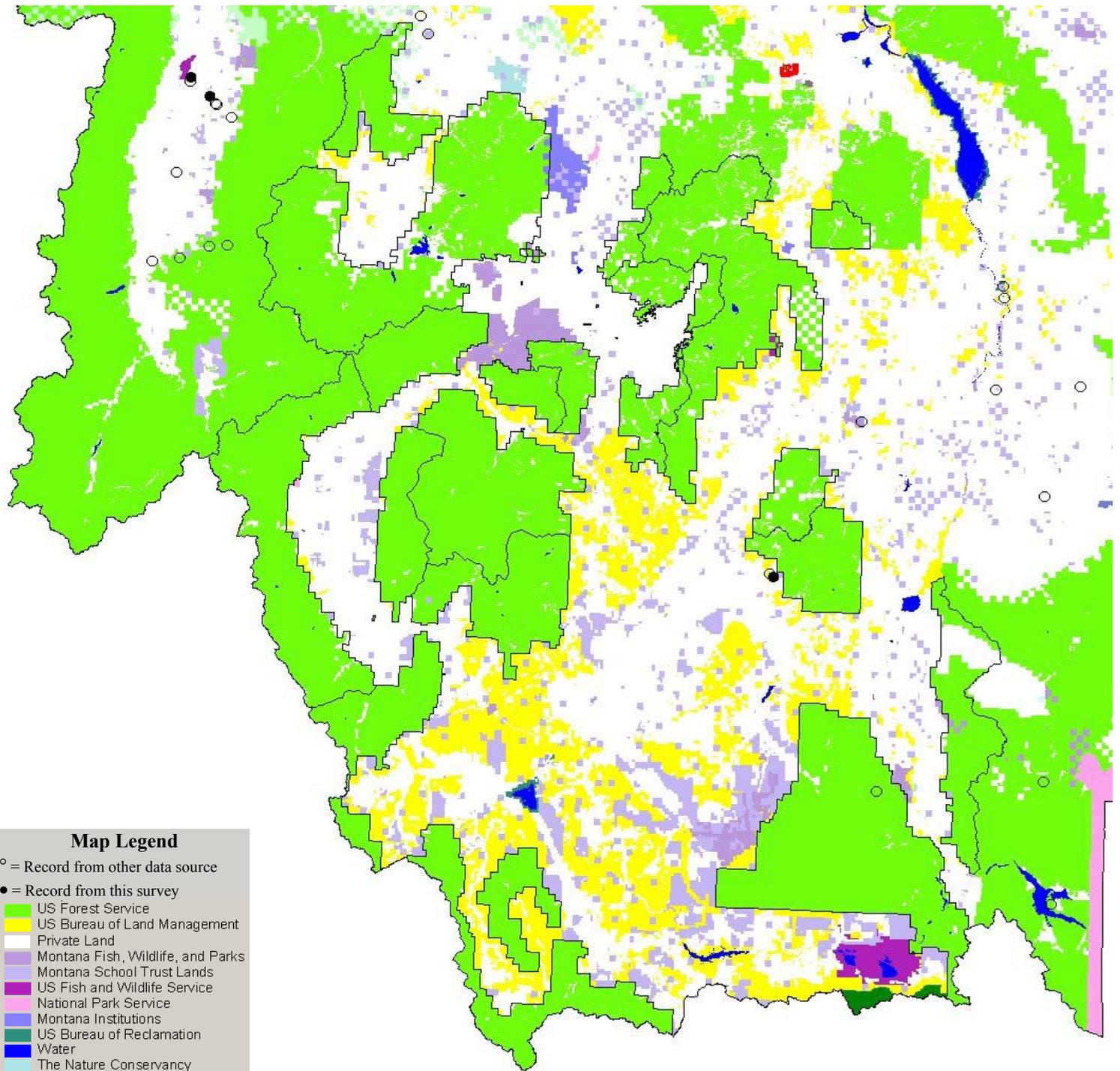
## Geographic Distribution of Greater Short-Horned Lizard (*Phrynosoma hernandesi*)



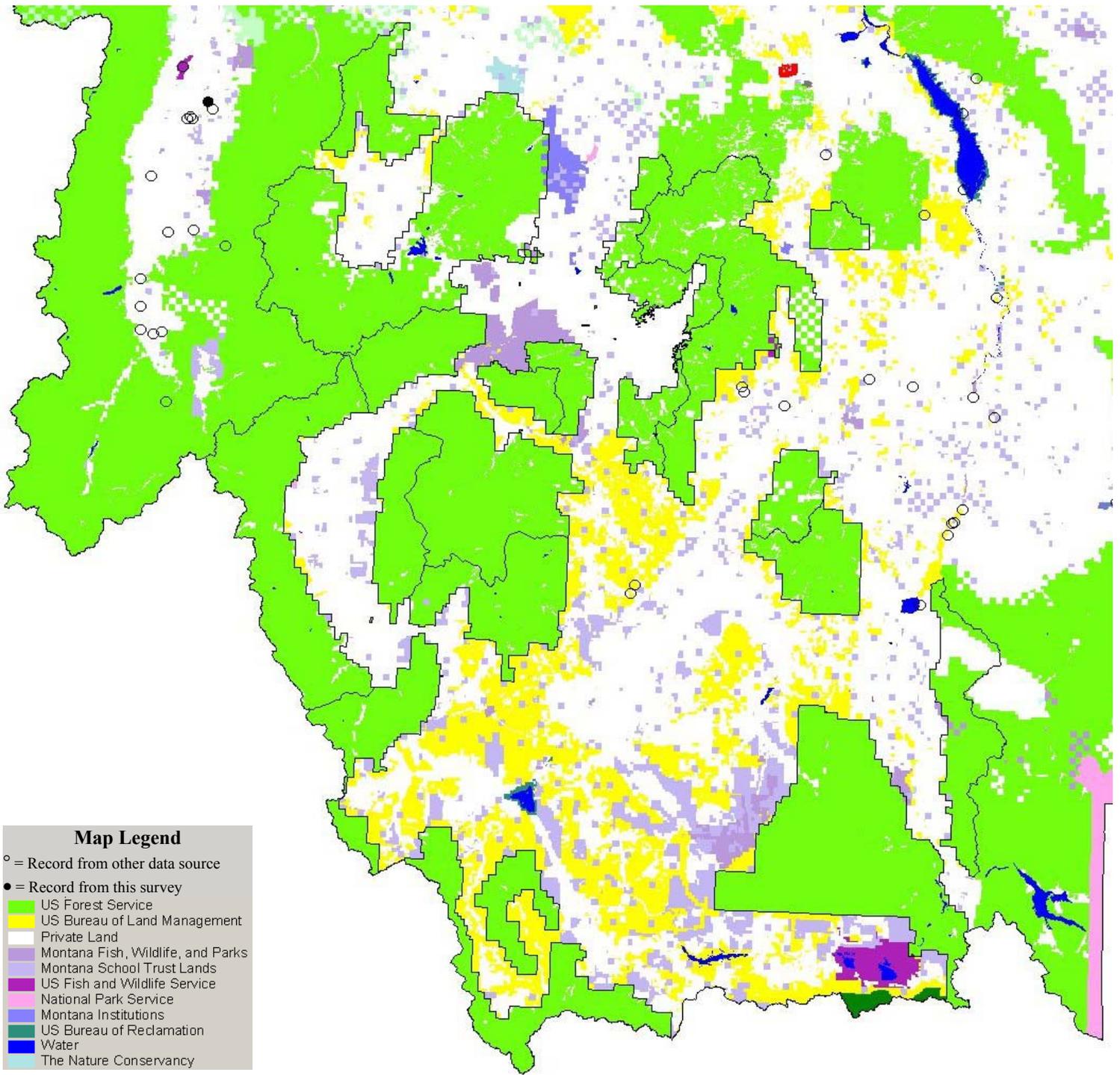
## Geographic Distribution of Rubber Boa (*Charina bottae*)



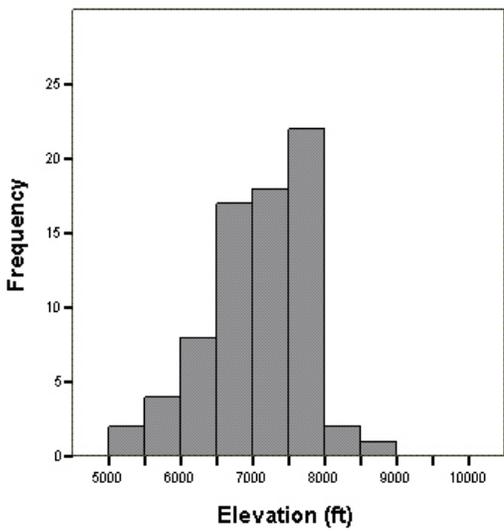
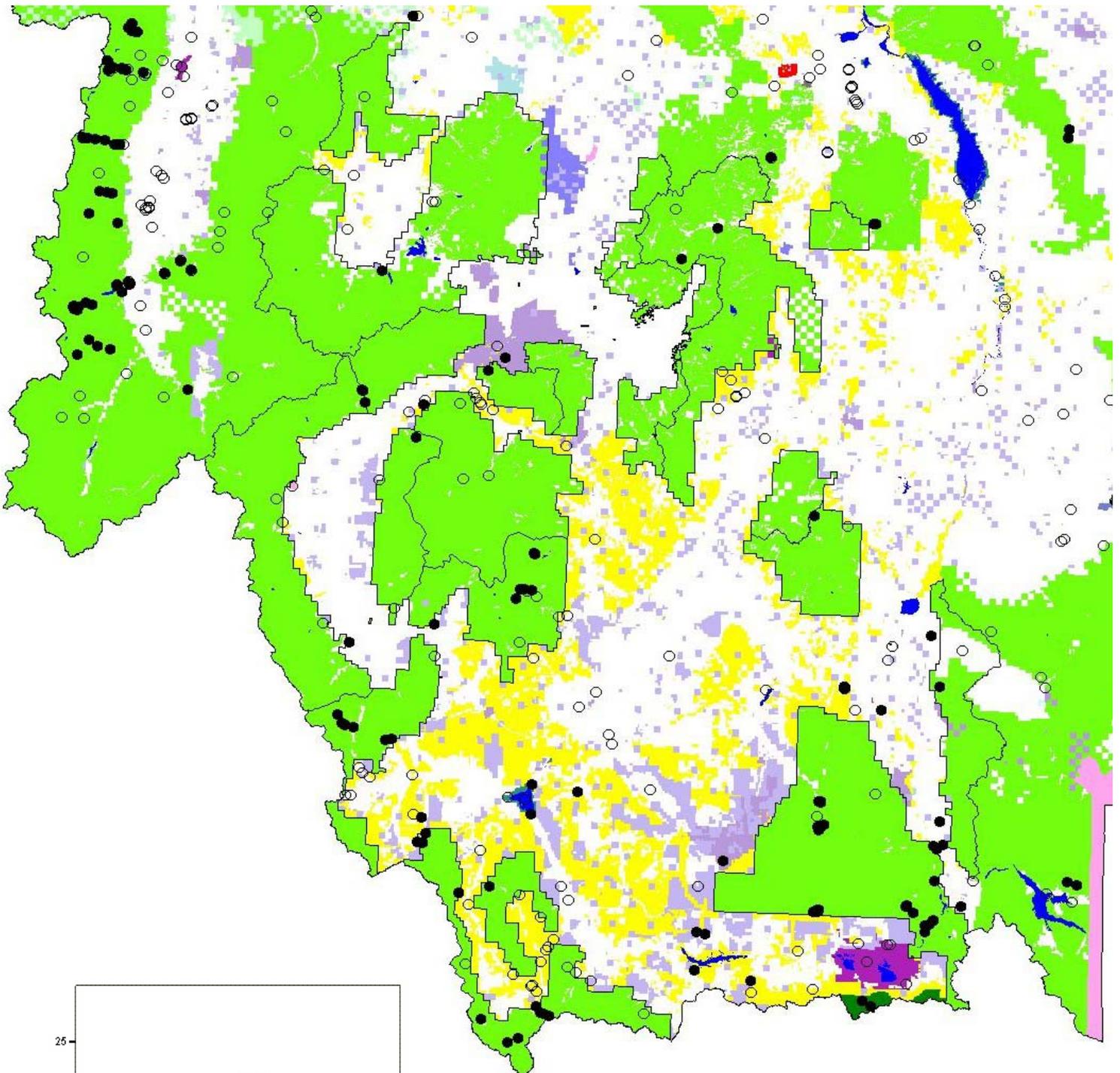
## Geographic Distribution of Eastern Racer (*Coluber constrictor*)



## Geographic Distribution of Gophersnake (*Pituophis catenifer*)



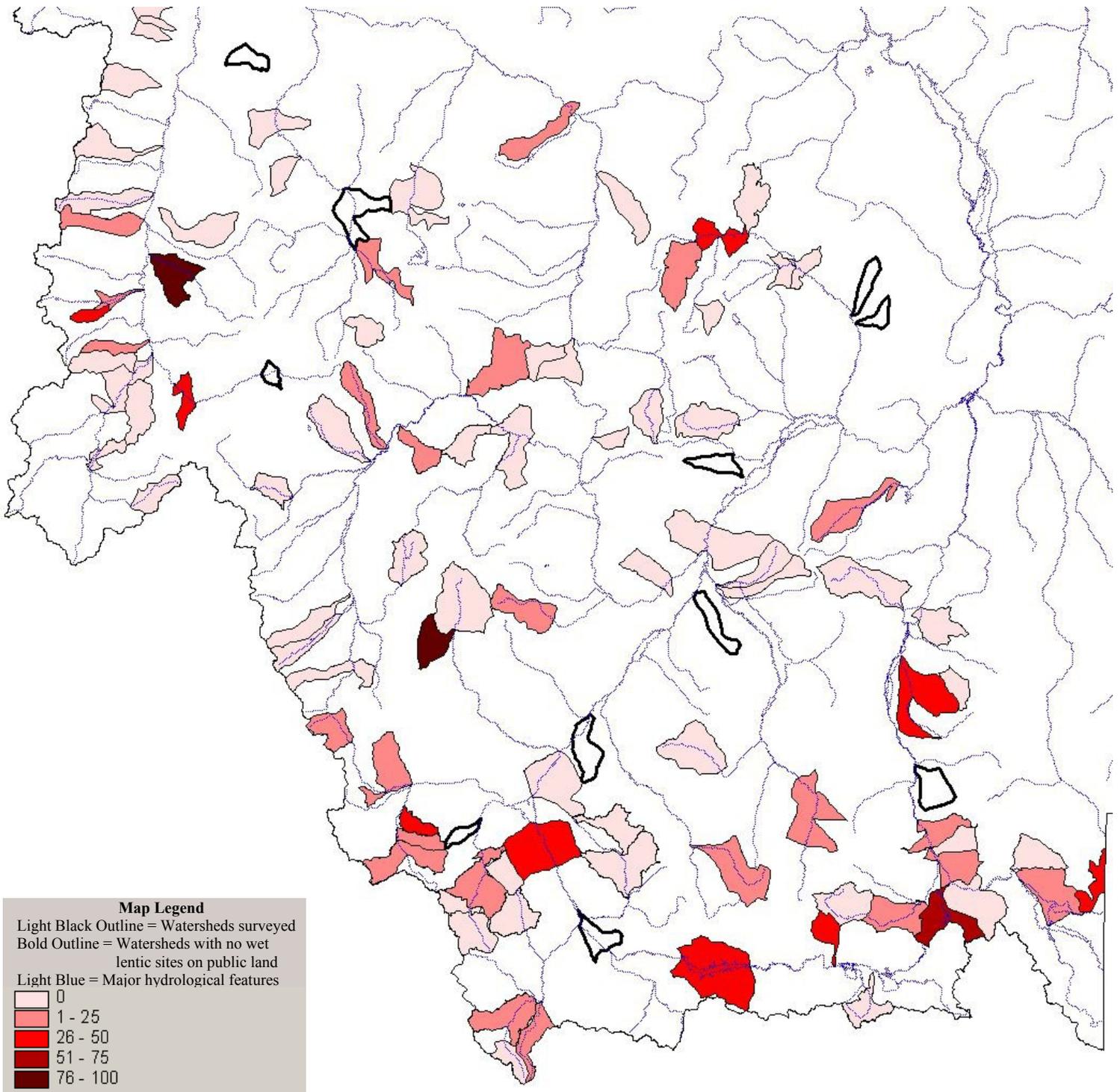
# Geographic and Elevation Distribution of Terrestrial Gartersnake (*Thamnophis elegans*)



**Map Legend**

- = Record from other data source
- = Record from this survey
- (Green) = US Forest Service
- (Yellow) = US Bureau of Land Management
- (White) = Private Land
- (Purple) = Montana Fish, Wildlife, and Parks
- (Light Purple) = Montana School Trust Lands
- (Magenta) = US Fish and Wildlife Service
- (Pink) = National Park Service
- (Blue) = Montana Institutions
- (Dark Green) = US Bureau of Reclamation
- (Dark Blue) = Water
- (Light Blue) = The Nature Conservancy

# Percent of Lentic Sites Surveyed Where Terrestrial Gartersnakes (*Thamnophis elegans*) Were Detected



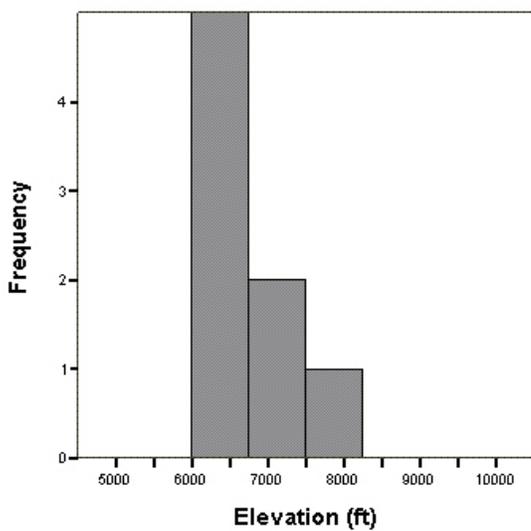
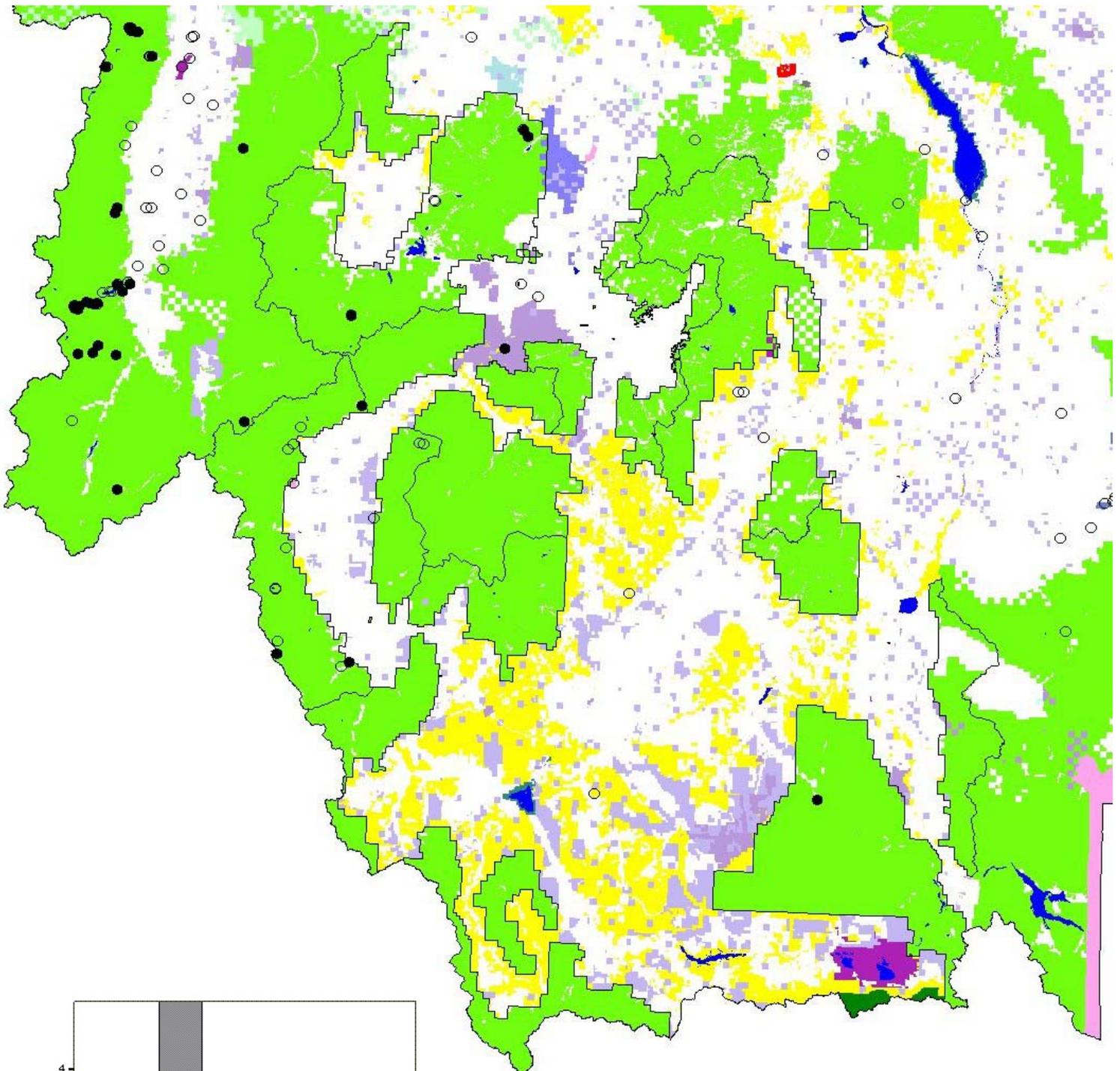
**Terrestrial Gartersnake (*Thamnophis elegans*) Watershed & Site Occupancy & Breeding Summary<sup>1, 2, 3 & 4</sup>**

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>5</sup>	Number & Percent of Lentic Sites Detected <sup>6</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	N	0 (0%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	0 (0%)
4_026	170102052903	Tolan Creek	N	0 (0%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Creeks	Y	1 (5%)
4_028	170102021002	Carpp Creek	N	0 (0%)
4_031	170102020403	Rock Creek	N	0 (0%)
4_032	170102053001	East Fork of Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	N	0 (0%)
4_057	170102012305	Basin Creek	N	0 (0%)
4_060	170102012004	German Gulch	N	0 (0%)
4_063	170102021303	Boulder Creek	N	0 (0%)
4_067	170102020703	East Fork of Rock Creek	Y	1 (13%)
4_068	170102020203	Ranch Creek	N	0 (0%)
4_078	170102011503	Peterson Creek	N	0 (0%)
6_001	100200042801	Berry Creek	Y	0 (0%)
6_002	100200060701	Lowland Creek	Y	1 (6%)
6_003	100200071604	Cabin Creek	N	0 (0%)
6_004	100200051203	Little Pipestone Creek	N	0 (0%)
6_005	100200071001	Bear Creek	Y	1 (50%)
6_006	100200041401	French Creek	Y	2 (6%)
6_007	100200040104	Unnamed Drainage - Lower Big Hole River	N	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	Y	7 (54%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites
6_010	100200040905	Tucker Creek	N	0 (0%)
6_011	100200040103	Nez Perce Creek	N	0 (0%)
6_012	100200031001	Ruby River	Y	7 (16%)
6_013	100200042602	Warm Springs	N	0 (0%)
6_014	100200020702	Beaverhead River (Clark Canyon)	Y	0 (0%)
6_015	100200040402	Birch Creek	Y	2 (10%)
6_016	100200071901	Grayling Creek	Y	1 (50%)
6_017	100200042505	Little Lake Creek	N	0 (0%)
6_018	100200060301	Browns Gulch	N	0 (0%)
6_019	100200011704	Upper Horse Prairie Creek	Y	2 (10%)
6_020	100200070802	Cedar Creek	N	0 (0%)
6_021	100200021001	Grasshopper Creek	N	0 (0%)
6_022	100200060302	Little Boulder River	N	0 (0%)
6_023	100200071101	Madison River	Y	(0%)
6_024	100200041302	Alder Creek	N	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2001	Y	5 (50%)
6_025	100200012002	Metzel Creek & Fish Creek - 2002	Y	10 (100%)
6_025	100200012002	Metzel Creek & Fish Creek - 2003	Y	1 (14%)
6_026	100200060205	Unnamed Tributary to upper Boulder River	No Lentic Sites	No Lentic Sites
6_027	100200072602	West Fk Madison River (Teepee Creek)	Y	1 (20%)
6_028	100200060504	Cataract Creek	N	0 (0%)
6_029	100200041101	Lower Wise River	N	0 (0%)
6_030	100200011202	Upper Medicine Lodge Creek	N	0 (0%)
6_031	100200011503	Bloody Dick Creek	Y	5 (9%)
6_032	100200030102	Wisconsin Creek	N	0 (0%)
6_033	100200011006	Nicholia Creek	Y	0 (0%)
6_034	100200070602	Jourdain Creek	Y	0 (0%)
6_035	100200041705	Pintler Creek	Y	3 (13%)
6_036	100200011002	Deadman Creek	Y	3 (9%)
6_037	100200021002	Pole Creek & Divide Creek	Y	1 (100%)
6_038	100200071601	Sheep Creek	N	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	Y	(0%)
6_040	100200011103	Deer Canyon Creek	N	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	Y	4 (36%)
6_042	100200042504	Miner Creek	N	0 (0%)

6_043	100200060501	Boulder River	Y	1 (50%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	Y	1 (3%)
6_045	100200051601	Cottonwood Creek	N	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	N	0 (0%)
6_047	100200072801	North Meadow Creek	N	0 (0%)
6_048	100200030103	Indian Creek	N	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	Y	1 (5%)
6_050	100200050601	North Willow Creek	Y	1 (7%)
6_051	100200010102	Lower Red Rock River	Y	1 (50%)
6_052	100200060602	Nez Perce Creek	N	0 (0%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	N	0 (0%)
6_057	100200041703	Squaw Creek	Y	1 (9%)
6_058	100200011501	Coyote Creek	Y	2 (25%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	N	0 (0%)
6_061	100200041806	Thompson Creek	N	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead River & Small Horn Canyon	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia Creek, & Rock Creeks	Y	1 (20%)
6_301	100200011002	Deadman Creek	Y	3 (9%)
6_302	100200010702	Long Creek	N	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	Y	1 (50%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	Y	3 (16%)
6_501	100200010703	Sage Creek	N	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Creek	Y	1 (8%)
6_602	100200010504	Muddy Creek	N	0 (0%)
6_604	100200011202	Medicine Lodge Crk (Dad & Pass Creeks)	Y	1 (11%)
6_997	100200071501	Papoose Creek	Y	2 (10%)
6_998	100200071502	Squaw Creek	Y	0 (0%)
6_999	100200071401	Moose Creek	Y	1 (7%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>30 (44%)</b> (95% CI = 33-55%)	<b>60 (6.8%)</b> (95% CI = 5.1-8.5%)

- <sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.
- <sup>2</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Terrestrial Gartersnake, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least 1 water body. These 68 watersheds contained a total of 883 wet lentic sites ( $X = 13$ ;  $SE = 1.5$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.
- <sup>3</sup> Terrestrial Gartersnakes do not breed in standing water bodies so breeding rates were not calculated. Also, because Terrestrial Gartersnakes may only spend brief periods of time foraging around lentic sites, there is a strong reason to believe that watershed and site occupancy rates are strongly biased low for this species. However, future visual encounter surveys conducted in the same manner as this study are likely to be directly comparable with this study because biases would almost certainly be in the same direction and the same magnitude.
- <sup>4</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.
- <sup>5</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N))$ ) where  $n = \text{sample size}$  and  $N = \text{total population size}$ ). In this case  $n = 68$  and  $N = 686$ .
- <sup>6</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$  where  $n = \text{sample size} = 883$ ).

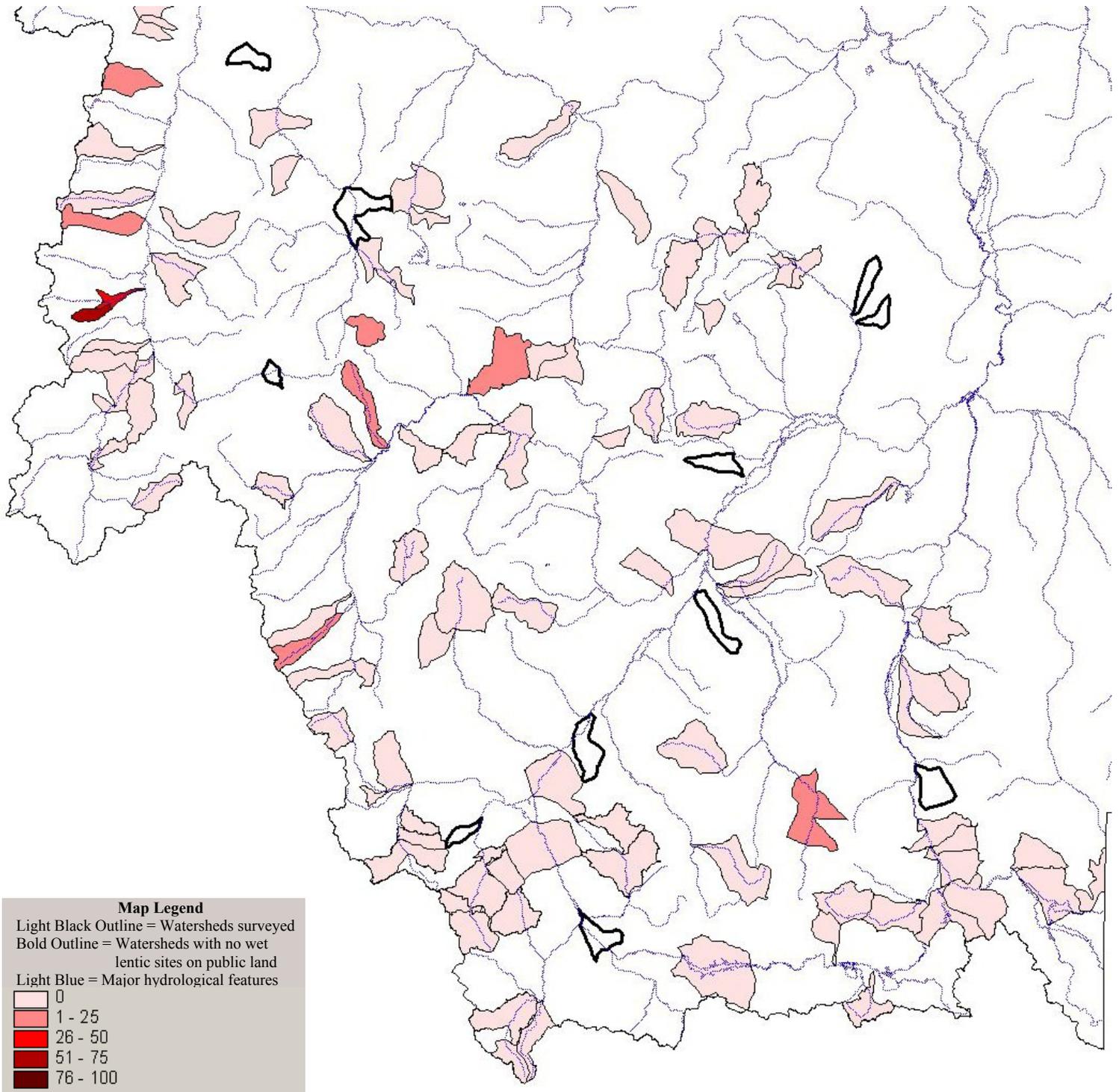
# Geographic and Elevation Distribution of Common Gartersnake (*Thamnophis sirtalis*)



**Map Legend**

- = Record from other data source
- = Record from this survey
- US Forest Service
- US Bureau of Land Management
- Private Land
- Montana Fish, Wildlife, and Parks
- Montana School Trust Lands
- US Fish and Wildlife Service
- National Park Service
- Montana Institutions
- US Bureau of Reclamation
- Water
- The Nature Conservancy

# Percent of Lentic Sites Surveyed Where Common Gartersnakes (*Thamnophis sirtalis*) Were Detected



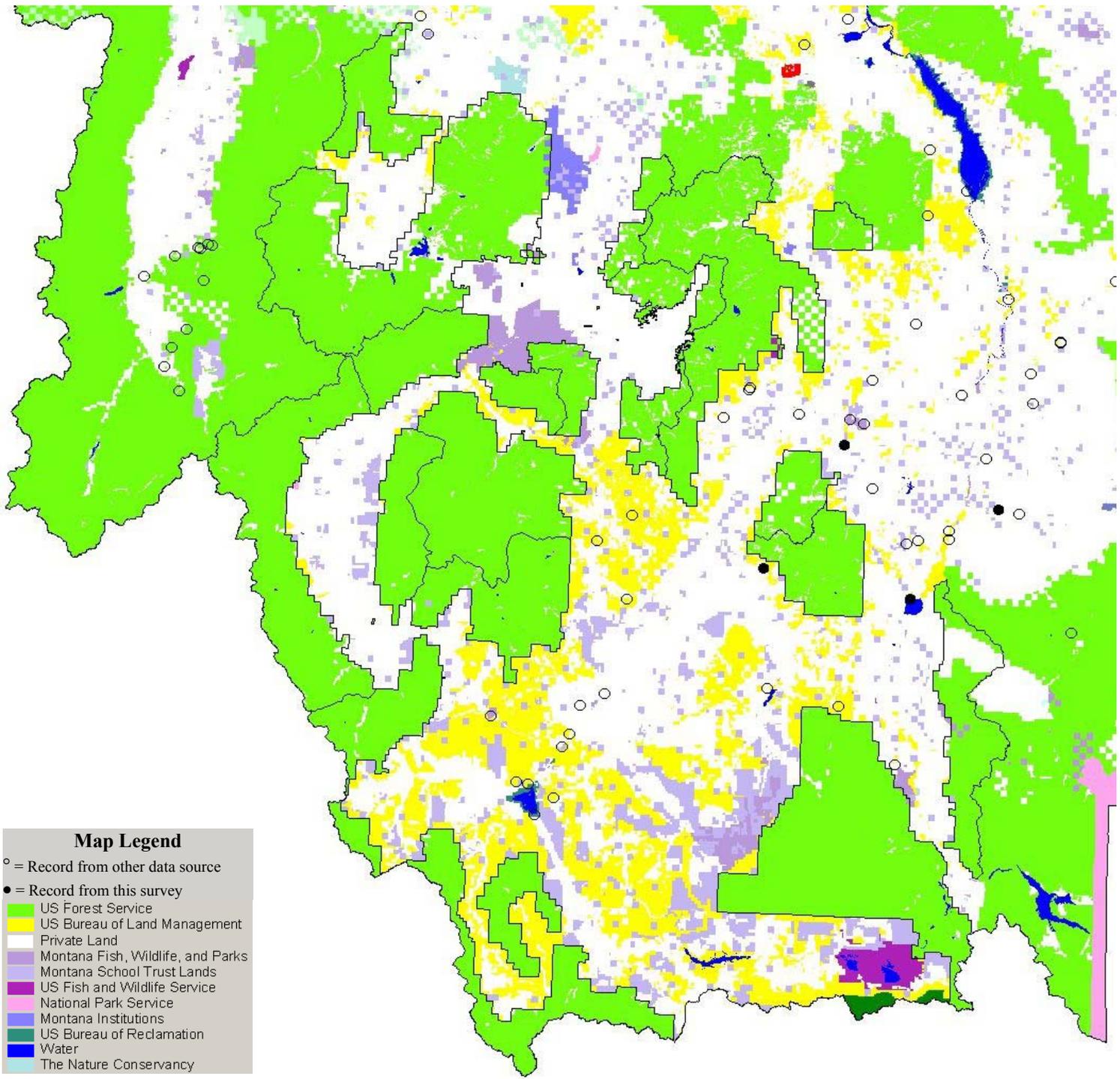
Common Gartersnake (*Thamnophis sirtalis*) Watershed & Site Occupancy & Breeding Summary<sup>1, 2, 3 & 4</sup>

Sample Strata_HUC Numbers	12 Digit Hydrologic Unit Code	Drainage Name	Detected in Watershed (Y/N) <sup>5</sup>	Number & Percent of Lentic Sites Detected <sup>6</sup>
4_012	170102021501	Flint Creek (Philipsburg Valley)	N	0 (0%)
4_015	170102020701	Upper Rock Creek (Sluice Gulch)	No Lentic Sites	No Lentic Sites
4_023	170102020302	Alder Gulch	N	0 (0%)
4_026	170102052903	Tolan Creek	Y	1 (100%)
4_027	170102010803	Willow, Dolus, & Pikes Peak Creeks	N	0 (0%)
4_028	170102021002	Carpp Creek	Y	2 (9%)
4_031	170102020403	Rock Creek	N	0 (0%)
4_032	170102053001	East Fork of Bitterroot River (Echo Gulch)	No Lentic Sites	No Lentic Sites
4_053	170102012005	Beefstraight Creek	N	0 (0%)
4_057	170102012305	Basin Creek	N	0 (0%)
4_060	170102012004	German Gulch	N	0 (0%)
4_063	170102021303	Boulder Creek	N	0 (0%)
4_067	170102020703	East Fork of Rock Creek	N	0 (0%)
4_068	170102020203	Ranch Creek	N	0 (0%)
4_078	170102011503	Peterson Creek	N	0 (0%)
6_001	100200042801	Berry Creek	Y	0 (0%)
6_002	100200060701	Lowland Creek	N	0 (0%)
6_003	100200071604	Cabin Creek	N	0 (0%)
6_004	100200051203	Little Pipestone Creek	N	0 (0%)
6_005	100200071001	Bear Creek	N	0 (0%)
6_006	100200041401	French Creek	Y	1 (3%)
6_007	100200040104	Unnamed Drainage - Lower Big Hole River	N	0 (0%)
6_008	100200072501	Wade, Cliff, & Hidden Lakes	N	0 (0%)
6_009	100200010601	Little Sheep Creek	No Lentic Sites	No Lentic Sites
6_010	100200040905	Tucker Creek	N	0 (0%)
6_011	100200040103	Nez Perce Creek	N	0 (0%)
6_012	100200031001	Ruby River	Y	1 (2%)
6_013	100200042602	Warm Springs	N	0 (0%)
6_014	100200020702	Beaverhead River (Clark Canyon)	N	0 (0%)
6_015	100200040402	Birch Creek	N	0 (0%)
6_016	100200071901	Grayling Creek	N	0 (0%)
6_017	100200042505	Little Lake Creek	N	0 (0%)
6_018	100200060301	Browns Gulch	N	0 (0%)
6_019	100200011704	Upper Horse Prairie Creek	N	0 (0%)
6_020	100200070802	Cedar Creek	N	0 (0%)
6_021	100200021001	Grasshopper Creek	N	0 (0%)
6_022	100200060302	Little Boulder River	N	0 (0%)
6_023	100200071101	Madison River	N	0 (0%)
6_024	100200041302	Alder Creek	N	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2001	N	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2002	N	0 (0%)
6_025	100200012002	Metzel Creek & Fish Creek - 2003	N	0 (0%)
6_026	100200060205	Unnamed Tributary to upper Boulder River	No Lentic Sites	No Lentic Sites
6_027	100200072602	West Fk Madison River (Teepee Creek)	N	0 (0%)
6_028	100200060504	Cataract Creek	N	0 (0%)
6_029	100200041101	Lower Wise River	N	0 (0%)
6_030	100200011202	Upper Medicine Lodge Creek	N	0 (0%)
6_031	100200011503	Bloody Dick Creek	N	0 (0%)
6_032	100200030102	Wisconsin Creek	N	0 (0%)
6_033	100200011006	Nicholia Creek	N	0 (0%)
6_034	100200070602	Jourdain Creek	N	0 (0%)
6_035	100200041705	Pintler Creek	Y	1 (4%)
6_036	100200011002	Deadman Creek	N	0 (0%)
6_037	100200021002	Pole Creek & Divide Creek	N	0 (0%)
6_038	100200071601	Sheep Creek	N	0 (0%)
6_039	100200012102	O'Dell Creek & Nye Creek	N	0 (0%)
6_040	100200011103	Deer Canyon Creek	N	0 (0%)
6_041	100200011801	Red Rock River (Lima Reservoir)	N	0 (0%)
6_042	100200042504	Miner Creek	Y	1 (5%)

6_043	100200060501	Boulder River	N	0 (0%)
6_044	100200071701	Hebgen Lake (Red Canyon Creek)	N	0 (0%)
6_045	100200051601	Cottonwood Creek	N	0 (0%)
6_046	100200072603	Upper West Fork of Madison River	N	0 (0%)
6_047	100200072801	North Meadow Creek	N	0 (0%)
6_048	100200030103	Indian Creek	N	0 (0%)
6_049	100200021701	East Fork of Blacktail Deer Creek	N	0 (0%)
6_050	100200050601	North Willow Creek	N	0 (0%)
6_051	100200010102	Lower Red Rock River	N	0 (0%)
6_052	100200060602	Nez Perce Creek	N	0 (0%)
6_053	100200060203	Cabin Gulch	No Lentic Sites	No Lentic Sites
6_054	100200071302	Indian Creek	No Lentic Sites	No Lentic Sites
6_055	100200020104	Spring Canyon	No Lentic Sites	No Lentic Sites
6_056	100200031402	Sweetwater Creek	N	0 (0%)
6_057	100200041703	Squaw Creek	N	0 (0%)
6_058	100200011501	Coyote Creek	N	0 (0%)
6_059	100200051402	Dry and Fish Creeks	No Lentic Sites	No Lentic Sites
6_060	100200041901	Trail Creek	N	0 (0%)
6_061	100200041806	Thompson Creek	N	0 (0%)
6_062	100200011102	Harkness and Noble Creeks	No Lentic Sites	No Lentic Sites
6_063	100200020701	Beaverhead River & Small Horn Canyon	No Lentic Sites	No Lentic Sites
6_206	100200010503	Meadow, Nicholia Creek, & Rock Creeks	N	0 (0%)
6_301	100200011002	Deadman Creek	N	0 (0%)
6_302	100200010702	Long Creek	N	0 (0%)
6_303	100200011005	Shenon and Jeff Davis Creeks	N	0 (0%)
6_403	100200011002	Maiden Creek & Jeff Davis Creek	N	0 (0%)
6_501	100200010703	Sage Creek	N	0 (0%)
6_502	100200011205	Kate Creek & Medicine Lodge Creek	N	0 (0%)
6_602	100200010504	Muddy Creek	N	0 (0%)
6_604	100200011202	Medicine Lodge Crk (Dad & Pass Creeks)	N	0 (0%)
6_997	100200071501	Papoose Creek	N	0 (0%)
6_998	100200071502	Squaw Creek	N	0 (0%)
6_999	100200071401	Moose Creek	N	0 (0%)
<b>Total Number and Percent of Watersheds and Sites with Occupancy and Breeding Detected within the Species' Known Geographic Range</b>			<b>7 (10%)</b> (95%CI = 3-17%)	<b>7 (0.8%)</b> (95%CI = 0.2-1.4%)

- <sup>1</sup> Occupancy rates are apparent occupancy rates, not true occupancy rates, because sites were not surveyed multiple times in order to determine detection probabilities which would allow true occupancy rates to be estimated. See discussion of detection issues in methods section.
- <sup>2</sup> Of the 686 12-digit hydrologic unit code watersheds on or adjacent to the Beaverhead-Deerlodge National Forest within the known geographic range of the Common Gartersnake, 78 were randomly selected for complete surveys of all standing water bodies and 68 of these contained at least 1 water body. These 68 watersheds contained a total of 883 wet lentic sites ( $X = 13$ ;  $SE = 1.5$ ). Watersheds with sampling numbers greater than 6\_063 (i.e. the last 12 in the table above) were not used in calculations of watershed or site occupancy or breeding rates because they were not randomly selected from the entire region over which inference is being made.
- <sup>3</sup> Common Gartersnakes do not breed in standing water bodies so breeding rates were not calculated. Also, because Common Gartersnakes may only spend brief periods of time foraging around lentic sites, there is a strong reason to believe that watershed and site occupancy rates are strongly biased low for this species. However, future visual encounter surveys conducted in the same manner as this study are likely to be directly comparable with this study because biases would almost certainly be in the same direction and the same magnitude.
- <sup>4</sup> The Metzel Creek & Fish Creek watershed (Sample HUC ID = 6\_025 of 12 digit HUC ID = 100200012002) was surveyed in 2001, 2002, and 2003). Only year 2002 data was used in calculations of site occupancy rates because the greatest number of lentic sites was surveyed during 2002.
- <sup>5</sup> 95% confidence intervals for watershed occupancy and breeding rates were calculated using a standard error formula with a finite population correction factor ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n) * (1 - n/N)))$  where  $n$  = sample size and  $N$  = total population size). In this case  $n = 68$  and  $N = 686$ .
- <sup>6</sup> 95% confidence intervals for site occupancy were calculated using a standard error formula without a finite population correction factor because the total number of standing water bodies on or adjacent to the Beaverhead-Deerlodge National Forest is unknown ( $SE = \text{square root}(((\text{occupancy rate} * (1 - \text{occupancy rate})) / n)$  where  $n$  = sample size = 883).

## Geographic Distribution of Western Rattlesnake (*Crotalus viridis*)



## Suggestions for the Future

Although the surveys summarized in this report have greatly increased our understanding of the distribution and status of amphibians and reptiles on and around the Beaverhead-Deerlodge National Forest, there is still a great deal to learn about a number of species so that proper actions can be taken to ensure their persistence in the future. Perhaps the most important issue that still needs to be addressed for herpetofauna is a lack of understanding of the distribution and status of several species in the region. This issue should be addressed through a combination of surveys whose sole purpose is to detect herpetofauna and by informing agency personnel of the need to search for herpetofauna incidental to other job duties. In the process of carrying out their job duties all agency personnel should be required to use standardized protocols to prevent the spread of fungal, viral, and other pathogens between populations separated by significant distances (see section on decontamination procedures).

The issue of most immediate concern is the need to identify any extant Northern Leopard Frog populations in the area through systematic visual encounter and dipnet surveys on public and private lands at lower elevations. Any populations identified through these efforts should be monitored intensively and all feasible measures should be taken to ensure their persistence. If no populations are identified with thorough systematic surveys at lower elevations, efforts should be undertaken to reintroduce populations in the region.

Due to the status of Western Toad populations across western Montana, another issue of immediate concern is to identify and monitor as many breeding populations as possible so that all feasible measures can be taken to ensure the persistence of remaining populations. In the process of monitoring populations demographic rates (e.g., egg, larval, juvenile, and adult survival rates, breeding population size, and reproductive schedule) should be documented across a variety of elevations and in association with a variety of human activities so that the viability of populations can be modeled. Disease prevalence, such as prevalence of the chytrid fungus, *Batrachochytrium dendrobatidis* at these populations should also be monitored and modeled in order to understand their effects on population viability.

Nonrandom surveys on public and private lands, particularly at lower elevation, are needed around the periphery of the known geographic ranges of the Tiger Salamander, Plains Spadefoot, Boreal Chorus Frog, and Painted Turtles in order to more precisely document the edges of their ranges. Surveys for Tiger Salamanders and Painted Turtles will require direct visual encounter, dipnet, and trap surveys at lentic sites, but surveys for Plains Spadefoots and Boreal Chorus Frogs can be accomplished most efficiently with nighttime calling surveys during and immediately after late spring and early summer thundershowers.

Systematic visual encounter surveys in suitable terrestrial habitats on public and private lands need to be conducted for the Greater Short-horned Lizard, Rubber Boa, Eastern Racer, Gophersnake, and Western Rattlesnake in order to better understand their status across the region. Similar systematic surveys should be conducted for the Coeur d'Alene Salamander, Northern Alligator Lizard, and Western Skink on the east side of the Sapphire Mountains, the Milksnake near the Three Forks area, and the Pigmy Short-horned Lizard in the Centennial Valley area, in order to determine if these species are present in the region.

The surveys summarized in this report identified that beaver created 16% (95% CI = 14-18%) of the lentic sites in this region that would support amphibian reproduction. These beaver created habitats are clearly important to the persistence of amphibians in the region because they provide breeding, foraging, and aquatic overwintering habitat for amphibians and provide more connectivity between populations that would otherwise be restricted to isolated depressional wetlands. Furthermore, beaver created habitats provide habitat for a variety of other wildlife and fish species, provide water for cattle, improve water quality by trapping sediments, and probably enhance late season in-stream flows by holding water on the landscape. Because beaver play these important roles, it is important that the status of beaver and beaver created habitats is better understood across this region. The following questions deserve research with regards to beaver and beaver created habitats:

6. What is the regional carrying capacity for beaver and how does this compare with their current numbers?
7. What topography, hydrologic regime, and successional stage of vegetation are beaver limited to?
8. How do grazing impacts on riparian vegetation affect beaver dynamics in watersheds?
9. Do current beaver harvest regimes limit beaver below the carrying capacity of the landscape?
10. What should be considered a baseline for the ratio of the number of active to inactive beaver sites and the numbers of watersheds with and without current beaver activity?

Stocking exotic and nonindigenous fishes has been shown to have a variety of negative effects on amphibians and aquatic reptiles in other regions (see literature review in Maxell 2000). Thus, when fish introductions are being considered, thorough surveys of all standing waters in the watershed where the introduction would take place should be undertaken in order to determine what the likely consequences would be to amphibian populations in the area. This will allow common sense management decisions to be made in individual local watersheds in order to allow for conservation of native amphibians and aquatic reptiles and native fish species while maintaining fishing opportunities for the public. However, long-term maintenance of sport fishing opportunities and conservation of a variety of native taxa in lentic ecosystems across western Montana is probably only likely to be accomplished through a regional plan collaboratively developed between state and federal agencies. A regional plan successfully balancing these objectives is likely to set aside a certain percentage of watersheds to be maintained in a naturally fishless state, allow a certain percentage of watersheds to continue to be heavily managed for sport fishing opportunities for the public, and allow a certain percentage of watersheds to have a mixture of fish introductions and naturally fishless sites under a common sense framework that will allow fishless sites in these watersheds to be least impacted while providing the public with the greatest possible access to fishing opportunities. Such a plan is most likely to be successful if it is developed as soon as possible so that local stocking efforts promoting the conservation of native fish species can be placed into a regional framework.

## LITERATURE CITED

- Alford, R.A., and S.J. Richards. 2000. Global amphibian declines: a problem in applied ecology. *Annual Review of Ecology and Systematics* 31: 133-165.
- Beebee, T.J.C. 1997. Changes in dewpond numbers and amphibian diversity over 20 years on chalk downland in Sussex, England. *Biological Conservation* 81: 215-219.
- Blaustein, A.R., P.D. Hoffman, D.G. Hokit, J.M. Kiesecker, S.C. Walls, and J.B. Hays. 1994. UV repair and resistance to solar UV-B in amphibian eggs: a link to population declines? *Proceedings of the National Academy of Sciences* 91: 1791-1795.
- Bradford, D.F., F. Tabatabai, and D.M. Graber. 1993. Isolation of remaining populations of the native frog, *Rana muscosa*, by introduced fishes in Sequoia and Kings Canyon National Parks, California. *Conservation Biology* 7: 882-888.
- Carlson, J., Coordinator. 2003. Montana animal species of concern. Montana animal species of concern committee. Montana Natural Heritage Program and Montana Department of Fish, Wildlife, and Parks, Helena, MT. 14pp.
- Dunson, W.A., R.L. Wyman and E.S. Corbett. 1992. A symposium on amphibian declines and habitat acidification. *Journal of Herpetology* 26(4): 349-442.
- Heyer, W.R., M.A. Donnelly, R.W. McDiarmid, L.C. Hayek, and M.S. Foster editors. 1994. Measuring and monitoring biological diversity: standard methods for amphibians. Washington D.C. Smithsonian Institution Press. 364 pp.
- Houlahan, J.E., C.S. Findlay, B.R. Schmidt, A.H. Meyer, and S.L. Kuzmin. 2000. Quantitative evidence for global amphibian population declines. *Nature* 404(13): 752-755.
- Lips, K.R. 1999. Mass mortality and population declines of anurans at an upland site in Western Panama. *Conservation Biology* 13: 117-125.
- Maxell, B.A. 2000. Management of Montana's amphibians: a review of factors that may present a risk to population viability and accounts on the identification, distribution, taxonomy, habitat use, natural history, and the status and conservation of individual species. Report to USFS Region 1, Order Number 43-0343-0-0224. University of Montana, Wildlife Biology Program. Missoula, Montana. 161 pp.
- Maxell, B.A., and D.G. Hokit. 1999. Amphibians and reptiles. Pages 2.1– 2.30 *In* G. Joslin and H. Youmans, committee chairs. Effects of recreation on Rocky Mountain wildlife: a compendium of the current state of understanding in Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of the Wildlife Society.
- Maxell, B.A., J.K. Werner, P. Hendricks, and D. Flath, and. 2003. Herpetology in Montana: a history, status summary checklists, dichotomous keys, accounts for native, potentially native, and exotic species, and indexed bibliography. *Northwest Fauna* 5: 1-138.
- Nesser, J.A., G.L. Ford, C.L. Maynard, and D.S. Page-Dumroese. 1997. Ecological units of the Northern Region: Subsections. U.S. Department of Agriculture, Forest Service, Intermountain Research Station. INT-GTR-369. 88p.
- Olson, D.H., W.P. Leonard and R.B. Bury. 1997. Sampling amphibians in lentic habitats. *Northwest Fauna* Number 4. Society for Northwest Vertebrate Biology. 134 pp.
- Pough, F.H., R.M. Andrews, J.E. Cadle, M.L. Crump, A.H. Savitzky, and K.D. Wells. 1998. Herpetology. Prentice-Hall Inc. Upper Saddle River, New Jersey. 577 pp.
- Pounds, J.A., M.P.L. Fogden, and J.H. Campbell. 1999. Biological response to climate change on a tropical mountain. *Nature* 398: 611-615.
- Werner, J.K. 2003. Status of the northern leopard frog (*Rana pipiens*) in western Montana. *Northwestern Naturalist* 84(1): 24-30.
- White, C.G., D.R. Anderson, K.P. Burnham and D.L. Otis. 1982. Capture-recapture and removal methods for sampling closed populations. Los Alamos National Laboratory (LA 8787-NERP). Los Alamos, NM.
- White, G.C. and K. P. Burnham. 1999. Program MARK: Survival estimation from populations of marked animals. *Bird Study* 46 Supplement, 120-138.

# Site Data Form for Lentic Breeding Amphibian and Aquatic Reptile Surveys

Date		Observer(s)			GPS Receiver		GPS File		GPS Datum		GPS EPE	
Strata Number		HUC Number		Site Number		State		County		Map Name		
Locality					T		R		S		Section Description	
Owner		Map Elevation			FT		UTM Zone:		UTM East		UTM North	

## Habitat Information

Begin Time		End Time		Total Person Minutes of Search			Site Detection: Aerial Photo Topo Map NWI Map Incidental																
Camera Number		Photo Frame Number(s)/ Description(s)																					
Weather: Clear Partly Cloudy Overcast Rain Snow						Wind: Calm Light Strong																	
Air Temp °C		Water Temp °C		Water pH		Color: Clear Stained			Turbidity: Clear Cloudy														
Habitat Type: Lake/ Pond		Wetland/ Marsh		Bog/ Fen		Backwater/ Oxbow		Spring/ Seep		Active Beaver Pond		Inactive Beaver Pond		Site Dry		Site Multipooled		Ditch/ Puddle		Reservoir/ Stockpond		Well/ Tank	
Water Connectedness: Permanent Temporary Isolated				Water Permanence: Permanent Temporary				Max Depth: <1 M 1-2 M >2 M				Percent of Site > 2 M 0 1-25 26-50 51-75 76-100											
Site Length:		Site Width:		~Site Area:		Percentage of Site Searched: 1-25 26-50 51-75 76-100				Percent of Site at ≤50 cm Depth: 0 1-25 26-50 51-75 76-100				~ Emergent Veg Area (M <sup>2</sup> )									
Percentage of Site with Emergent Veg: 0 1-25 26-50 51-75 76-100						Percentage of Site with Larval Activity: 0 1-25 26-50 51-75 76-100																	
Rank Emergent Veg Species in Order of Abundance: Sedges Grasses Cattails Rushes Water Lily Shrubs Other																							
Primary Substrate Of Shallows: Silt/Mud Sand Gravel Cobble Boulder/ Bedrock						North Shoreline Characteristics: Present Absent		Shallows Present Absent		Emergent Veg Present Absent		Emergent Veg Present Absent											
Site Origin: Glacial Beaver Flooding Manmade Other						Human Impacts Or Modifications:																	
Distance (M) to Forest Edge:		Fish Detected?: Y N		Time at First Detection:		Fish Species If Identified:				Support Reproduction? Y N													
Fish Spawning Habitat Present? Y N U		Inlet Width:		Inlet Depth:		Inlet Substrate		Outlet Width		Outlet Depth		Outlet Substrate											

## Species Information

<b>Amphibian Species</b>		Time at first detection		E L M J A		No. Egg Masses		5-20mm larvae		≤10 ≤100 ≤1000 ≤10K >10K			
20-50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		>50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		Number Juveniles		Number Adults			
Tissue Number		Voucher Number		Breeding with Fish?		Y N		If breeding with fish is cover present?		Y N			
<b>Amphibian Species</b>		Time at first detection		E L M J A		No. Egg Masses		5-20mm larvae		≤10 ≤100 ≤1000 ≤10K >10K			
20-50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		>50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		Number Juveniles		Number Adults			
Tissue Number		Voucher Number		Breeding with Fish?		Y N		If breeding with fish is cover present?		Y N			
<b>Amphibian Species</b>		Time at first detection		E L M J A		No. Egg Masses		5-20mm larvae		≤10 ≤100 ≤1000 ≤10K >10K			
20-50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		>50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		Number Juveniles		Number Adults			
Tissue Number		Voucher Number		Breeding with Fish?		Y N		If breeding with fish is cover present?		Y N			
<b>Amphibian Species</b>		Time at first detection		E L M J A		No. Egg Masses		5-20mm larvae		≤10 ≤100 ≤1000 ≤10K >10K			
20-50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		>50mm larvae		≤10 ≤100 ≤1000 ≤10K >10K		Number Juveniles		Number Adults			
Tissue Number		Voucher Number		Breeding with Fish?		Y N		If breeding with fish is cover present?		Y N			
<b>Reptile Species</b>		Time at first detection		E J A		Number Individuals		SVL in CM		Tissue Number		Voucher Number	
<b>Reptile Species</b>		Time at first detection		E J A		Number Individuals		SVL in CM		Tissue Number		Voucher Number	
<b>Reptile Species</b>		Time at first detection		E J A		Number Individuals		SVL in CM		Tissue Number		Voucher Number	

# Site Map For Lentic Breeding Amphibian and Aquatic Reptile Surveys

Grid Scale:

														N ↑	

\* Indicate the following locations on the map: **T** = temperature, **G** = GPS reading, **C** = clinometer reading, and **P→** = photo locations and directions of photos. Indicate area with emergent vegetation with cross-hatching and indicate a 2-meter depth contour with a dashed line.

Other Notes:

<b>Compass Bearing</b>	70°	90°	110°	130°	150°	170°	190°	210°
<b>Inclination (degrees)</b>								

# Definitions of Variables on Lentic Breeding Amphibian Survey Data Sheet

## Site Information

**Date:** Use MM-DD-YY format (e.g. 05/12/00 for May, 12 of 2000).

**Observers:** List names or initials of individuals involved with survey of this site and circle the name of the recorder.

**GPS Receiver:** The equipment identification number on the GPS receiver.

**GPS File:** If recording differentially correctable GPS files record file name.

**GPS Datum:** The map datum used by the GPS receiver (use NAD 27 in order to correspond with topographic maps).

**GPS EPE:** The estimated positional error reported by the GPS receiver in meters.

**Strata Number:** The sample strata in which the 6<sup>th</sup> level HUC watershed lies (one of nine defined in western Montana).

**HUC Number:** The sample number of the 6<sup>th</sup> level HUC in one of the nine sample strata defined for western Montana.

**Site Number:** The number pre-assigned to the water body within each 6<sup>th</sup> level HUC. If the water body was not pre-assigned a number because it was not on topographic maps or aerial photos then assign it a sequential number and draw it on the topo map.

**State:** Use the two-letter abbreviation.

**County:** Use the full county name.

**Map Name:** List the name of the USGS 7.5-minute (1:24,000 scale) topographic quadrangle map.

**Locality:** Describe the specific geographic location of the site so that the type of site is described and the straight-line air distance from one or more permanent features on a 7.5-minute (1:24,000 scale) topographic map records the position of the site (e.g., Beaver pond, 1.5 miles south of Elephant Peak and 1.3 miles east of Engle Peak).

**T:** Record the Township number and whether it is north or south.

**R:** Record the Range number and whether it is east or west.

**S:** Record the Section number

**Section Description:** Describe the location of the site at the ¼ of ¼ section level (e.g., SENE indicates SE corner of NE corner).

**Owner:** Use abbreviation of the government agency responsible for managing the land you surveyed. (e.g. USFS, BLM). If private land was surveyed list the owner's full name to indicate that you did not trespass.

**Map Elevation:** The elevation of the site as indicated by the topographic map in feet (avoid using elevations from a GPS)

**UTM Zone:** Universal Transverse Mercator zone recorded on the topographic map.

**UTM East:** Universal Transverse Mercator easting coordinate in meters as recorded on the topographic map or GPS receiver. Be sure to note any major differences between UTM coordinates on the map and those on the GPS receiver.

**UTM North:** Universal Transverse Mercator northing coordinate in meters as recorded on the topographic map or GPS receiver. Be sure to note any major differences between UTM coordinates on the map and those on the GPS receiver.

## Habitat/Survey Information

**Begin Time:** List the time the survey began in 24-hour format.

**End Time:** List the time the survey ended in 24-hour format.

**Total Person Minutes of Search:** Record the total person minutes the site was searched (e.g. if one person surveys for 15 minutes and another surveys for 30 minutes, but takes 5 minutes to measure a specimen the total person minutes is 40 minutes).

**Site Detection:** Was site detected on aerial photo, topographic map, NWI map, or was it observed incidentally while in the field.

**Camera Number:** The equipment identification number on the camera.

**Photo Frame Number(s) / Descriptions:** The number of the photo as viewed on the camera's view screen and a description of the contents of the photograph (e.g., 13 = 1 x ASMO larvae and 14 = 1 x habitat). Take photos of all portions of the site and anything else that may be of interest (e.g., areas where fish are found versus areas where amphibians are found).

**Weather:** Circle weather condition during survey.

**Wind:** Circle wind condition during survey (> 20 mph winds should be classified as strong).

**Air Temp:** Record air temperature at chest height in the shade. Record temperature in Celsius.  $^{\circ}\text{C} = (^{\circ}\text{F} - 32)/1.8$

**Water Temp:** Record water temperature where larvae or egg masses are observed or at 2cm depth 1 meter from the margin of the water body. Record temperature in Celsius.  $^{\circ}\text{C} = (^{\circ}\text{F} - 32)/1.8$

**Water pH:** Record water pH at the same location water temperature was recorded.

**Color:** Circle whether the water is clear or stained a tea or rust color from organic acids.

**Turbidity:** Circle whether water is clear or cloudy.

**Habitat Type:** Circle the appropriate habitat type of the site being surveyed. If site is multi-pooled water information does not need to be gathered for every pool, but you may wish to record this information on the map. If breeding activity is limited to one pool at a multi-pooled site water information should be recorded for this pool and this should be noted in the comments.

**Water Connectedness:** Circle if water body has permanent connection to flowing water (Permanent), is connected to flowing water for a temporary period each year (Temporary), or is never connected to flowing waters or other water bodies (Isolated).

**Water Permanence:** Circle whether the site contains water throughout the entire year (Permanent), or contains water for only a portion of the year (Temporary).

**Max Depth:** Circle the category corresponding to the maximum depth of the water body.

**Percent of Site > 2 M:** Circle the percentage of the site with water depth greater than 2 meters deep.

**Site Length:** The length of the longest dimension of the standing water body.

**Site Width:** The width of the second longest dimension of the standing water body.

**Approximate Site Area:** The product of site length and site width as defined above.

**Percentage of Site Searched:** Circle the percentage of the site surveyed.

**Percentage of the Site at  $\leq 50$  cm Depth:** Circle the appropriate percentage.

**Approximate Area with Emergent Veg ( $M^2$ ):** The approximate area of the site that contains emergent vegetation.

**Percentage of Site with Emergent Veg:** Circle the percentage of the entire site with emergent vegetation.

**Percentage of Site with Larval Activity:** Circle the percentage of the site where amphibian larvae were observed.

**Rank Emergent Veg Species in Order of Abundance:** Record the rank order of abundance in front of the 3 most prevalent emergent vegetation species. If the vegetation present is "other" indicate what it is.

**Primary Substrate:** Circle the substrate that covers the majority of the bottom of the site.

**North Shoreline Characteristics:** Circle whether shallows and emergent vegetation are present or absent on the north shoreline.

**Site Origin:** Circle whether the site origin is glacial, beaver, flooding, manmade, or describe other processes of creation.

**Human Impacts or Modifications:** Briefly describe if, how, and when the site has been altered by human activities. If the site has not been altered record none for not altered. If multiple anthropogenic impacts exist document all of these using the back of the data sheet if necessary.

**Distance (M) to Forest Edge:** Record the closest distance between the water's edge and the forest margin in meters.

**Fish Detected?:** Circle whether or not fish were detected.

**Time at First Detection:** If fish were detected, indicate the time in total person minutes of survey when they were first detected.

**Fish Species if Identified:** List the fish species identified.

**Support Reproduction:** Is site capable of supporting reproduction so it is worth resurveying (e.g. in wetter years if now dry)?

**Fish Spawning Habitat Present?:** Are shallow waters with adequate gravels/cobbles present that would allow fish to spawn?

An active search for fry is also a good idea.

**Inlet Width:** What is the average width of the inlet stream in meters?

**Inlet Depth:** What is the average depth of the inlet stream in centimeters?

**Inlet Substrate:** What is the primary substrate at the inlet stream (Silt/Mud, Sand, Gravel, Cobble, or Boulder/Bedrock)?

**Outlet Width:** What is the average width of the outlet stream in meters?

**Outlet Depth:** What is the average depth of the outlet stream in centimeters?

**Outlet Substrate:** What is the primary substrate at the outlet stream (Silt/Mud, Sand, Gravel, Cobble, or Boulder/Bedrock)?

### **Herpetofauna Species Information**

For each species record the first two letters of the scientific genus and species names for all amphibian and reptile species found at the site (e.g., BUBO for *Bufo boreas*). Record the total number of person minutes of survey required before each life history stage of each species was encountered beside the E (egg), L (larvae), M (metamorph), J (juvenile), or A (adult). Record the number or category of number of each of the specified life history and/or size classes. For amphibians indicate whether they have bred in the same water body where fish are present, and if they have, indicate whether there is protective cover (e.g., extensive shallows with emergent vegetation, a log barrier, talus). Record the tissue number or range of tissue numbers for tissue samples collected (see tissue collection protocols). Record the preliminary museum voucher specimen number for voucher specimens collected (see voucher specimen collection protocols).

### **Site Map for Lentic Breeding Amphibian Surveys**

**General:** Include a rough sketch of the site including the shape of the site and the shape and spatial relations of surrounding biotic and abiotic features. Indicate the area covered with emergent vegetation with cross-hatching. Indicate a 2-meter depth contour for the water body with a dashed line. Indicate the location where the water temperature was taken, the location where the GPS position was taken, the location where clinometer readings for southern exposure were taken, and the location of any photographs with an arrow indicating the direction in which the photo(s) were taken. Make sure that the orientation of the sketch (i.e. the north arrow) corresponds to the orientation of the site.

**Grid Scale:** Indicate the approximate scale of the grid lines relative to the site sketched in meters.

**Other Notes:** Include any other notes of interest in this space. Examples: (1) areas of highest larval density; (2) thoughts on why a species may not have been detected at a site; (3) problems associated with the survey of the site (e.g., dangerous boggy conditions); (4) If a site was dry would it support reproduction during wetter years.

**Southern Exposure:** From a site on along the northern shoreline that would most likely to be used as an oviposition or larval rearing area (e.g., shallow waters with emergent vegetation in the NW corner of the water body) record the degree inclination from your position to the skyline (e.g., mountain or solid tree line) at each of the eight compass bearings listed. Note that the compass bearings are true north so you will need to adjust your compass according to the map being used to correct for the deviation from magnetic north (15 to 19.5 degrees in western Montana).

# Incidental Observation Form for Amphibians and Reptiles

Contact Information for Individual Reporting Observations: Name \_\_\_\_\_; Phone Number \_\_\_\_\_; \*Use NAD 27 as a datum or indicate otherwise.

1. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
2. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
3. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
4. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
5. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
6. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
7. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
8. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
9. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
10. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				
11. Species	Locality	County	Township Range Section ¼ ¼ Section	UTM Zone	UTM North	UTM East	Date	Elevation Ft / M
Observer	Life History Stage (Circle Most Appropriate) Egg Larvae Metamorph Juvenile Adult	Number _____ 100-1000 1000-10000 >10000	10-100	Comments				

# Instructions and Definitions of Variables on Incidental Observation Form for Amphibians and Reptiles

## Instructions

Use this sheet to report incidental observations of all amphibian and reptile species, especially those with limited distribution data or of management concern. DO NOT report observations unless you are absolutely certain of the identification of the species. This information is highly important for most amphibian and reptile species. Documentation with photographs or collection of individual animals is necessary for records outside the documented range of species and for all of the following species, which are undocumented, but possibly present, in Montana: Idaho giant salamander (western edge of state), Canadian toad (NE corner of state), wood frog (NW corner of state or Bighorn Mountains), and pigmy short-horned lizards (SW Montana). Individuals reporting incidental observations should send this data sheet to the Montana Natural Heritage Program, 1515 East 6<sup>th</sup> Avenue, P.O. Box 201800, Helena, Montana 59620-1800, or enter the data on their website. Employees of federal or state agencies should enter this observational data in a database with data fields that correspond to those in the statewide point observation database at the Montana Natural Heritage Program and then forward a digital copy of this database to the Heritage Program. A template of this database can be obtained by contacting the Montana Heritage Program or Bryce A. Maxell.

## Data Definitions

**Species:** For each species record the first two letters of the genus and species names for all amphibian and reptile species found at the site. (e.g., BUBO for *Bufo boreas*).

**Locality:** Describe the specific geographic location of the site so that the type of site is described and the straight-line distance from one or more permanent features on a 7.5 minute (1:24,000 scale) topographic map records the position of the site (e.g., Beaver pond, 1.5 miles south of Elephant Peak and 1.3 miles east of Engle Peak).

**County:** Use the full county name.

**Township Range Section ¼ ¼ Section:** Describe the location of the site in reference to a 1:24,000 or 1:100,000 scale map by recording the Township number and whether it is north or south, the Range number and whether it is east or west, the Section number, and at the location with the section at the ¼ of ¼ level (e.g., SENE indicates SE corner of NE corner).

**UTM Zone:** Universal Transverse Mercator zone recorded on the topographic map. Note: It is important to report this information in addition to Township, Range, Section information because UTM's are more precise, are easier to map in a GIS, and provide double confirmation of the site locality.

**UTM East:** Universal Transverse Mercator easting coordinate in meters as recorded on a 1:24,000 scale topographic or GPS receiver (it is best to compare the GPS coordinates with map coordinates to check for agreement). Note: It is important to report this information in addition to Township, Range, Section information because UTM's are more precise, are easier to map in a GIS, and provide double confirmation of the site locality.

**UTM North:** Universal Transverse Mercator northing coordinate in meters as recorded on a 1:24,000 scale topographic map or GPS receiver (it is best to compare the GPS coordinates with map coordinates to check for agreement). Note: It is important to report this information in addition to Township, Range, Section information because UTM's are more precise, are easier to map in a GIS, and provide double confirmation of the site locality.

**Date:** Use MM-DD-YY format (e.g. 05/12/00 for May, 12 of 2000).

**Map Elevation:** The elevation of the site as indicated by the topographic map in feet (GPS elevations are often inaccurate).

**Observer:** Record the full name or names of individuals who made the observation.

**Life History Stage:** Circle the appropriate life history stage of the amphibian or reptile. If multiple life history stages are present circle all that apply.

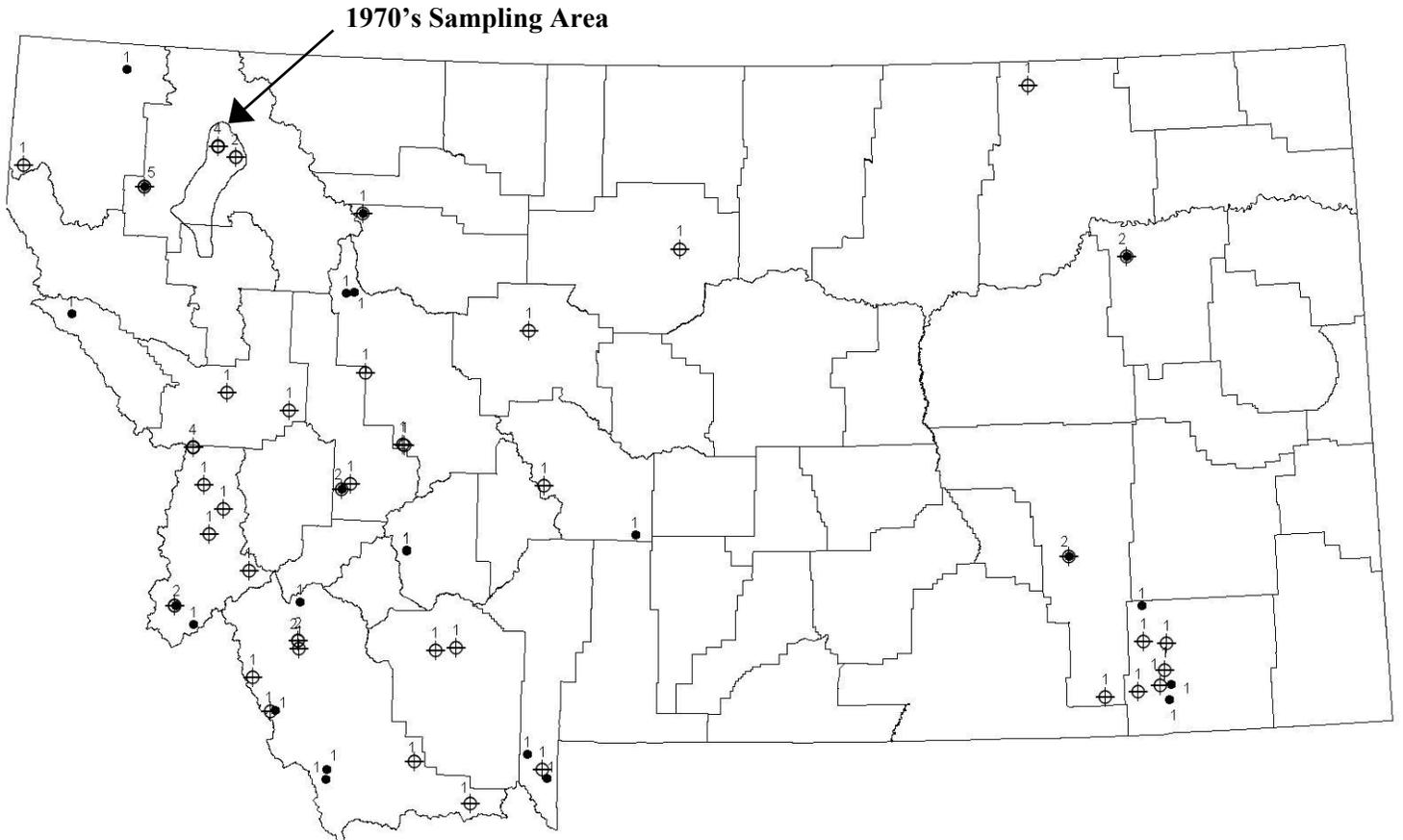
**Number:** Enter the number of individuals or circle the most appropriate category of numbers of individuals for each life history stage present. If multiple life history stages are present enter the first letter of the life history stage by the number or number category (e.g., E 50 for 50 eggs, L 1000-10000 for 1000-10000 larvae, etc.).

**Comments:** Include method of observation (i.e., heard individuals calling or incidental visual observation), measurements of the snout-to-vent length, total length, or the length and width of the carapace and plastron, habitat observed in, and how specimen was identified if a rare species. If tissue samples are collected record the tissue number or range of tissue sample numbers. If a museum voucher specimen was collected record the preliminary museum voucher specimen number assigned to the animal. Attach additional pages if necessary.

## Detection of (*Batrachochytrium dendrobatidis*), the Chytrid Fungus Associated with Global Amphibian Declines, in Montana Amphibians

In order to identify potential causes of declines in the northern leopard frog (*Rana pipiens*) and western toad (*Bufo boreas*) which have been noted since the 1980s and assess the risk posed to other amphibian species whose status is uncertain, we submitted 98 tissue samples gathered from 8 amphibian species across Montana for PCR based identification of the chytrid fungus (*Batrachochytrium dendrobatidis*). This chytrid fungus has been associated with declines, extirpations, and losses of numerous amphibian populations and entire species around the globe over the last 2 decades. Tissue samples from 30 museum voucher specimens of 3 species collected in the Flathead Valley in the 1970s, prior to amphibian declines in the area, were all negative for *B. dendrobatidis*. However, 4 species and 26 of 68 tissue samples gathered during inventory work across the state since 1998 tested positive for *B. dendrobatidis*. In light of its association with other amphibian declines, *B. dendrobatidis*, acting alone or synergistically with other stressors, is a potential cause of the declines observed and should be regarded as an ongoing threat to Montana amphibians. In order to prevent additional spread of this fungal pathogen personnel working in either lentic or lotic systems should thoroughly rinse and decontaminate all equipment with 10% bleach between (1) any sites where dead, dying, or ill amphibians are encountered, (2) sites located in different local watersheds or definitive clusters of sites, (3) all breeding sites of sensitive species separated by more than 1 kilometer.

**Spatial Distribution of Tissues Tested for *Batrachochytrium dendrobatidis***  
 Positive = ●      Negative = ⊕      Sample sizes are listed above symbols



## **Fungal and Viral Pathogen Decontamination Procedures**

### When to Decontaminate

1. After any site where dead, dying, or ill animals are encountered
2. Between sites located in different watersheds
3. Between individual sites that are surveyed when traveling distances greater than 5 kilometers or between definitive clusters of sites.
4. Between all breeding sites of sensitive species that are surveyed and separated by more than 1 kilometer.

### What to Decontaminate

1. Boots
2. Dipnets
3. Socks
4. Fingernails
5. Any other body parts, clothing, or other equipment that was exposed to waters or mud.

### Washing and Decontamination Procedures (separate issues)

1. Washing - Once surveys are completed at a site or watershed scrub and rinse all equipment to remove any lingering mud. In general it is a good idea to do this between all sites if possible.
2. Decontamination - Prepare a mixture of 10% bleach by putting 4 ounces of bleach (half cup) in one gallon of clean water in a waterproof tub or bucket that can be carried in your vehicle between watersheds or sites. Use a fresh bottle of bleach each field season for this. Also in order to ensure that concentrations remain around 10%, a new bleach mixture should be made on a regular basis. If the solution of disinfectant becomes cloudy or brown with mud, silt, and vegetation, it should be discarded and a fresh solution made. Diluted bleach solutions should also be discarded after decontaminating equipment from any site where dead, dying, or ill animals are encountered. When discarding used bleach pour it out at least 30-40 meters away from water.
3. After rinsing equipment dip and thoroughly scrub individual items in the container of 10% bleach. An alternative approach for remote sites and where carrying a tub of bleach is impractical is to spray rinsed equipment with a concentrated (25-30%) bleach solution out of a large spray bottle and then let equipment dry between sites.
4. Do not rinse bleached equipment between sites. Instead allow the bleach to remain on the equipment to ensure that all fungal pathogens are killed. Most bleach will evaporate between sites so the amount of bleach introduced at the next site should be quickly diluted.

### Handling Ill or Dying Animals

1. When handling ill or dying animals at a site use fresh rubber gloves for each animal to ensure that you are not transferring pathogens between individual animals.
2. Place individual animals in individual zip lock bags and keep them on ice continuously prior to shipping them to a pathologist for analysis

### Useful References on Amphibian Pathogens

- Berger, L., R. Speare, P. Daszak, D.E. Green, A.A. Cunningham, C.L. Goggin, R. Slocombe, M.A. Ragan, A.D. Hyatt, K.R. McDonald, H.B. Hines, K.R. Lips, G. Marantelli and H. Parkes. 1998. Chytridiomycosis causes amphibian mortality associated with population declines in the rain forests of Australia and Central America. *Proceedings of the National Academy of Sciences* 95: 9031-9036.
- Berger, L., R. Speare, and A. Hyatt. 1999. Chytrid fungi and amphibian declines: Overview, implications, and future directions. In A. Campbell (ed.), *Declines and Disappearances of Australian Frogs*, pp. 21-31. Environment Australia, Canberra.
- Blaustein, A.R., D.G. Hokit, R.K. O'Hara, and R.A. Holt. 1994. Pathogenic fungus contributes to amphibian losses in the Pacific Northwest. *Biological Conservation* 67: 251-254.
- Bollinger, T.K., J. Mao, D. Schock, R.M. Brigham, and V.G. Chinchar. 1999. Pathology, isolation, and preliminary molecular characterization of a novel iridovirus from tiger salamanders in Saskatchewan. *Journal of Wildlife Diseases* 35(3): 413-429.
- Bosch, J., I. Martinez-Solano, and M. Garcia-Paris. 2001. Evidence of a chytrid fungus infection involved in the decline of the common midwife toad (*Alytes obstetricans*) in protected areas of central Spain. *Biological Conservation* 97(3): 331-337.
- Briggs, C. and S. Burgin. 2003. A rapid technique to detect chytrid infection in adult frogs. *Herpetological Review* 34(2): 124-126.
- Carey, C., N. Cohen, and L. Rollins-Smith. 1999. Amphibian declines: an immunological perspective. *Developmental and Comparative Immunology* 23: 459-472.
- Cunningham, A.A., P. Daszak, and J.P. Rodriguez. 2003. Pathogen pollution: defining a parasitological threat to biodiversity conservation. *Journal of Parasitology* 89(Supplemental):S78-S83.
- Daszak, P., L. Berger, A.A. Cunningham, A.D. Hyatt, D.E. Green, and R. Speare. 1999. Emerging infectious diseases and amphibian population declines. *Emerging Infectious Diseases* 5(6): 735-748.
- Daszak, P., A. Cunningham and A.D. Hyatt. 2000. Emerging infectious diseases of wildlife-threats to biodiversity and human health. *Science* 287:443-449.
- Daszak, P., A.A. Cunningham and A.D. Hyatt. 2003. Infectious disease and amphibian population declines. *Diversity and Distribution* 9: 141-150.
- Davidson, E.W., M. Parris, J.P. Collins, J.E. Longcore, A.P. Pessier, and J. Brunner. 2003. Pathogenicity and transmission of Chytridiomycosis in tiger salamanders (*Ambystoma tigrinum*). *Copeia* 2003(3): 601-607.
- Dusi, J.L. 1949. The natural occurrence of "red leg", *Pseudomonas hydrophila*, in a population of American toads, *Bufo americanus*. *Ohio Journal of Sciences* 49: 70-71.
- Fellers, G.M., D.E. Green, and J.E. Longcore. 2001. Oral chytridiomycosis in mountain yellow-legged frogs (*Rana muscosa*). *Copeia* 2001(4): 945-953.
- Green, D.E. and C. Kagaris-Sherman. 2001. Diagnostic histological findings in Yosemite toads (*Bufo canorus*) from a die-off in the 1970s. *Journal of Herpetology* 35(1): 92-103.
- Kiesecker, J.M. and A.R. Blaustein. 1997a. Influences of egg laying behavior on pathogenic infection of amphibian eggs. *Conservation Biology* 11: 214-220.
- Kiesecker, J.M., and A.R. Blaustein. 1999. Pathogen reverses competition between larval amphibians. *Ecology* 80(7): 2442-2448.
- Lips, K.R. 1999. Mass mortality and population declines of anurans at an upland site in Western Panama. *Conservation Biology* 13: 117-125.
- Lips, K.R. D.E. Green, and R. Papendick. Chytridiomycosis in wild frogs from southern Costa Rica. *Journal of Herpetology* 37(1): 215-218.
- Livo, L. J., and M. S. Jones. 2000. Amphibian death kits. *FrogLog* 39:3-4.
- Longcore, J.E., A.P. Pessier, and D.K. Nichols, D.K. 1999. *Batrachochytrium dendrobatidis* gen. et sp. nov., a chytrid pathogenic to amphibians. *Mycologia* 91: 219-227.

- Maniero, G.D. and C. Carey. 1997. Changes in selected aspects of immune function in the leopard frog, *Rana pipiens*, associated with exposure to cold. *Journal of Comparative Physiology B* 167: 256-263.
- Martinez-Solano, I., J. Bosch, and M. Garcia-Paris. 2003. Demographic trends and community stability in a montane amphibian assemblage. *Conservation Biology* 17(1): 238-244.
- Maxell, B.A., J.K. Werner, P. Hendricks, and D. Flath. 2003. Herpetology in Montana: a history, status summary, checklists, dichotomous keys, accounts for native, potentially native, exotic species, and indexed bibliography. Olympia, WA: Society for Northwestern Vertebrate Biology. *Northwest Fauna* 5:1-138.
- Milius, S. 1999. Killer skin fungus nails boreal toads. *Science News* 156: 219.
- Milius, S. 2000. New frog-killing disease may not be so new. *Science News* 157: 133.
- Morehouse, E.A., T.Y. James, A.R.D. Ganley, R. Vilgalys, L. Berger, P.J. Murphy, and J.E. Longcore. 2003. Multilocus sequence typing suggests the chytrid pathogen of amphibians is a recently emerged clone. *Molecular Ecology* 12: 395-403.
- Morell, V. 1999. Are pathogens felling frogs? *Science* 284: 728-731.
- Muths, E., P.S. Corn, A.P. Pessier, and D.E. Green. 2003. Evidence for disease-related amphibian decline in Colorado. *Biological Conservation* 110:357-365.
- Nichols, D.K. and E.W. Lamirande. 2001. Successful treatment of chytridiomycosis. *Froglog* 46 August 2001.
- Nichols, D.K., E.W. Lamirande, A.P. Pessier, and J.E. Longcore. 2001. Experimental transmission of cutaneous chytridiomycosis in dendrobatid frogs. *Journal of Wildlife Diseases* 37: 1-11.
- Pessier, A.P., D.K. Nichols, J.E. Longcore, and M.S. Fuller. 1999. Cutaneous chytridiomycosis in poison dart frogs (*Dendrobates* spp.) and White's tree frogs (*Litoria caerulea*). *Journal of Veterinary Diagnostic Investigation* 11: 194-199.
- Rollins-Smith, L.A., C. Carey, J.M. Conlon, L.K. Reinert, J.K. Doersam, T. Bergman, J. Silberring, H. Lankinen, and D. Wade. 2003. Activities of Temporin family peptides against the chytrid fungus (*Batrachochytrium dendrobatidis*) associated with global amphibian declines. *Antimicrobial Agents and Chemotherapy* 47(3): 1157-1160.
- Rollins-Smith, L.A., C. Carey, J. Longcore, J.K. Doersam, A. Boutte, J.E. Bruzgal, and J.M. Conlon. 2002. Activity of antimicrobial skin peptides from ranid frogs against *Batrachochytrium dendrobatidis*, the chytrid fungus associated with global amphibian declines. *Developmental & Comparative Immunology* 26:471-479.
- Rollins-Smith, L.A., J.K. Doersam, J.E. Longcore, S.K. Taylor, J.C. Shamblin, C. Carey, and M.A. Zasloff. 2002. Antimicrobial peptide defenses against pathogens associated with global amphibian declines. *Developmental and Comparative Immunology* 26: 63-72.
- Simmaco, M., A. Boman, M.L. Mangoni, G. Mignogna, R. Miele, D. Barra, and H.G. Boman. 1997. Effect of glucocorticoids on the synthesis of antimicrobial peptides in amphibian skin. *FEBS Letters* 416: 273-275.
- Speare, R., and L. Berger. 2000. Global distribution of chytridiomycosis in amphibians. Last updated: 29 October 2002. <http://www.jcu.edu.au/school/phtm/PHTM/frogs/chyglob.htm> Originated: 11 November 2002. Accessed 26 January 2004.
- Speare, R. 2000. Global distribution of chytridiomycosis in amphibians. Last updated: 9 January 2004. <http://www.jcu.edu.au/school/phtm/PHTM/frogs/ampdis.htm> Originated: 12 April 1999. Accessed 26 January 2004.
- Vredenburg, V.T. and A.P. Summers. 2001. Field identification of Chytridiomycosis in *Rana muscosa* (Camp 1915). *Herpetological Review* 32(3):151-152.
- Waldman, B., K.E. Van de Wolfshaar, J.D. Klena, V. Andjic, P.J. Bishop, R.J. de Norman, and B. de Norman. 2001. Chytridiomycosis in New Zealand frogs. *Surveillance* 28: 9-11.
- Woodhams, D.C., R.A. Alford, and G. Marantelli. 2003. Emerging disease of amphibians cured by elevated body temperature. *Diseases of Aquatic Organisms* 55(1): 65-67.
- Young, B.E., K.R. Lips, J.K. Reaser, R. Ibanez, A.W. Salas, J.R. Cedeno, L.A. Coloma, S. Ron, E. La marca, J.R. Meyer, A. Munoz, F. Bolanos, G. Chaves, and D. Romo. 2001. Population declines and priorities for amphibian conservation in Latin America. *Conservation Biology* 15(5): 1213-1223.

## Introduction to Detection Summaries for Watersheds Surveyed

A detection summary is included for each of the 89 watersheds surveyed on and around the Beaverhead-Deerlodge National Forest and in cases where a watershed was surveyed in multiple years a watershed summary is included for each year since site occupancy and breeding may vary from year to year. Each watershed summary consists of a map paired with a table summarizing the results of the surveys as described below. The map and table can be used together to identify likely combinations of breeding, foraging, and overwintering habitats in the watershed given what is known about habitat use for each species so that likely impacts of a variety of human actions can be determined. See Maxell (2000) for a review of habitat use and migration distances by Montana amphibian species.

Each watershed map consists of:

1. A title identifying the major drainage in the watershed, the sampling strata and watershed numbers, and the 12 digit hydrological unit code watershed identification number.
2. A 1:25,000 scale topographic map image showing the outline of the 12 digit (6<sup>th</sup> code) hydrologic unit watershed boundary.
3. Symbols showing the location and site identification number for each potential lentic site that was identified on the topographic map or aerial photograph of the watershed.
4. A map legend identifying the map symbols as follows:
  - Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
  - Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the watershed notes.
  - Black Square = Incidental observation of species indicated.
  - Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
  - Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
  - Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
  - Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.
  - Red Triangle = Western toad (BUBO) breeding site that is being monitored.

Each watershed summary table consists of:

1. A title identifying the major drainage in the watershed, the sampling strata and watershed numbers, and the 12 digit hydrological unit code watershed identification number.
2. The number of potential lentic sites identified on the topo maps and aerial photos that were surveyed.
3. The number of wet lentic sites that would support amphibian reproduction.
4. The number of dry lentic sites that would support amphibian reproduction in a wetter year.
5. The number of permanent lentic sites that have potential for supporting amphibian aquatic overwintering.
6. The number of fishless potential amphibian aquatic overwintering sites.
7. Site numbers for all permanent potential amphibian aquatic overwintering sites and those permanent potential amphibian aquatic overwintering sites with and without emergent vegetation.
8. Site numbers, and total numbers and percentages of sites where each herpetofauna and fish species was detected and detected breeding.
9. Notes indicating why some potential lentic sites were not surveyed.
10. Notes indicating why some potential lentic sites surveyed are not worth future survey.
11. Notes identifying what flowing waters in the watershed might potentially support aquatic overwintering.
12. Notes indicating how various percentages were calculated.
13. Notes identifying previous observations and museum voucher records of herpetofauna in the watershed.
14. A summary of fish stocking records in the watershed from the statewide DFWP fish stocking database.
15. Notes identifying sites that were noted as having been heavily impacted by grazing.
16. Other notes of observations of particular interest in the watershed.



## Flint Creek (Philipsburg Valley) - (HUC ID = 4\_012 & ICBEMP HUC ID =170102021501)

### 2001 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	5
Number of Wet Lentic Sites	4
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

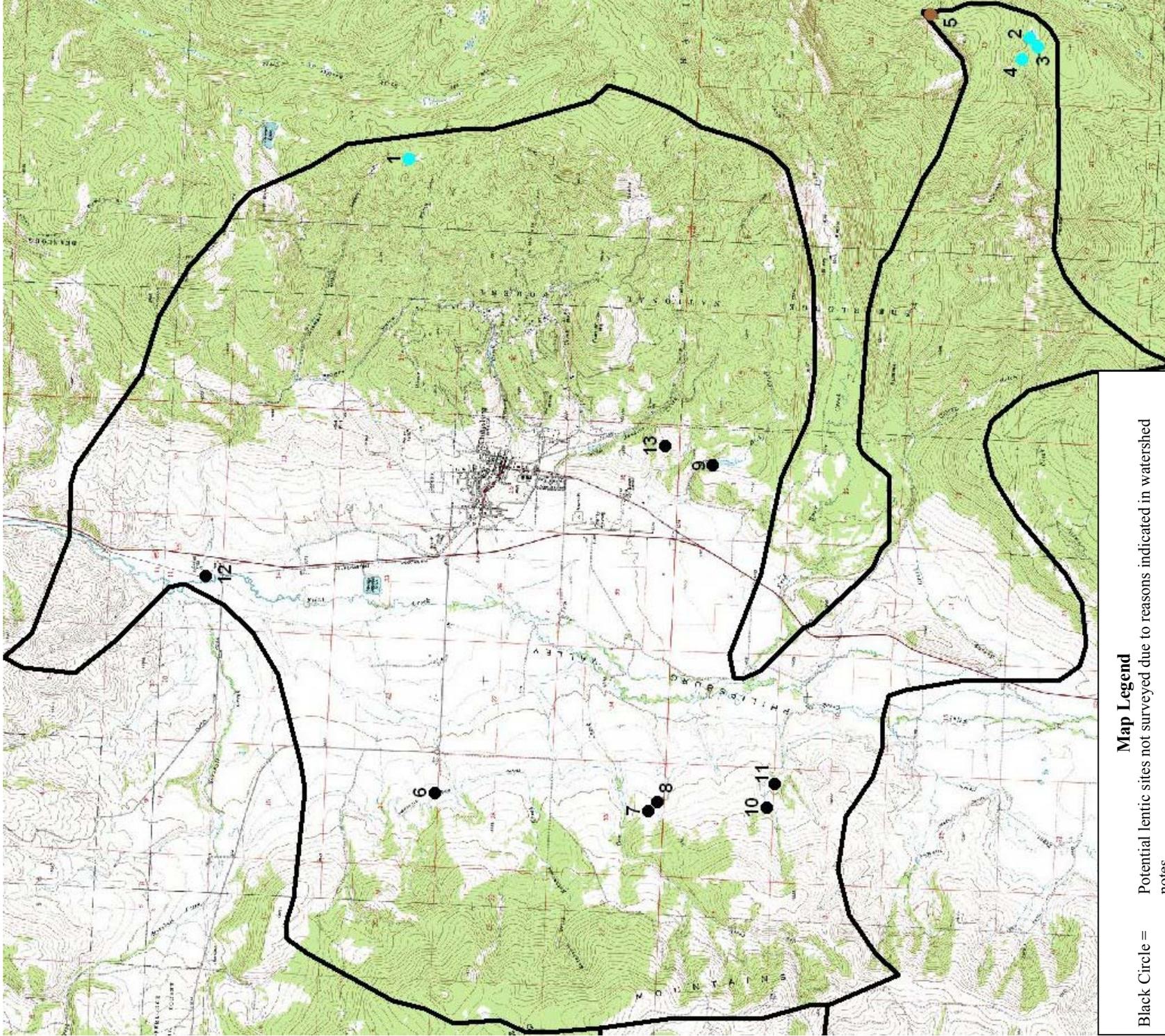
### 2001 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>001</u> , <u>002</u> , <u>003</u> , <u>004</u>	4 (100%)	4 (100%)	-
<b>Columbia Spotted Frog (RALU)</b>	001, <u>002</u>	2 (50%)	1 (25%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 006-013 are on private land and were not surveyed in 2001.
2. Other potential aquatic overwintering areas in this watershed are Flint Creek within the watershed boundary and Summer Gulch below 6,000 feet.
3. The DFWP fish stocking database has 5 different records of stocking cutthroat trout in Douglas Creek between 1931 and 1953, 4 different records of stocking arctic grayling, 13 different records of stocking brown trout, 27 different records of stocking cutthroat trout, and 32 different records of stocking rainbow trout in Flint Creek between 1928 and 1973, and 2 different records of stocking rainbow trout and 1 record of stocking brook trout in Spring Creek between 1947 and 1949.

# Flint Creek (Philipsburg Valley) - (HUC ID = 4\_012 & ICBEMP HUC ID =170102021501)



## Map Legend

- Black Circle =** Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Brown Circle =** Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle =** Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.

## Upper Rock Creek (Sluice Gulch) - (HUC ID = 4\_015 & ICBEMP HUC ID =170102020701)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0
Number of Dry Lentic Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

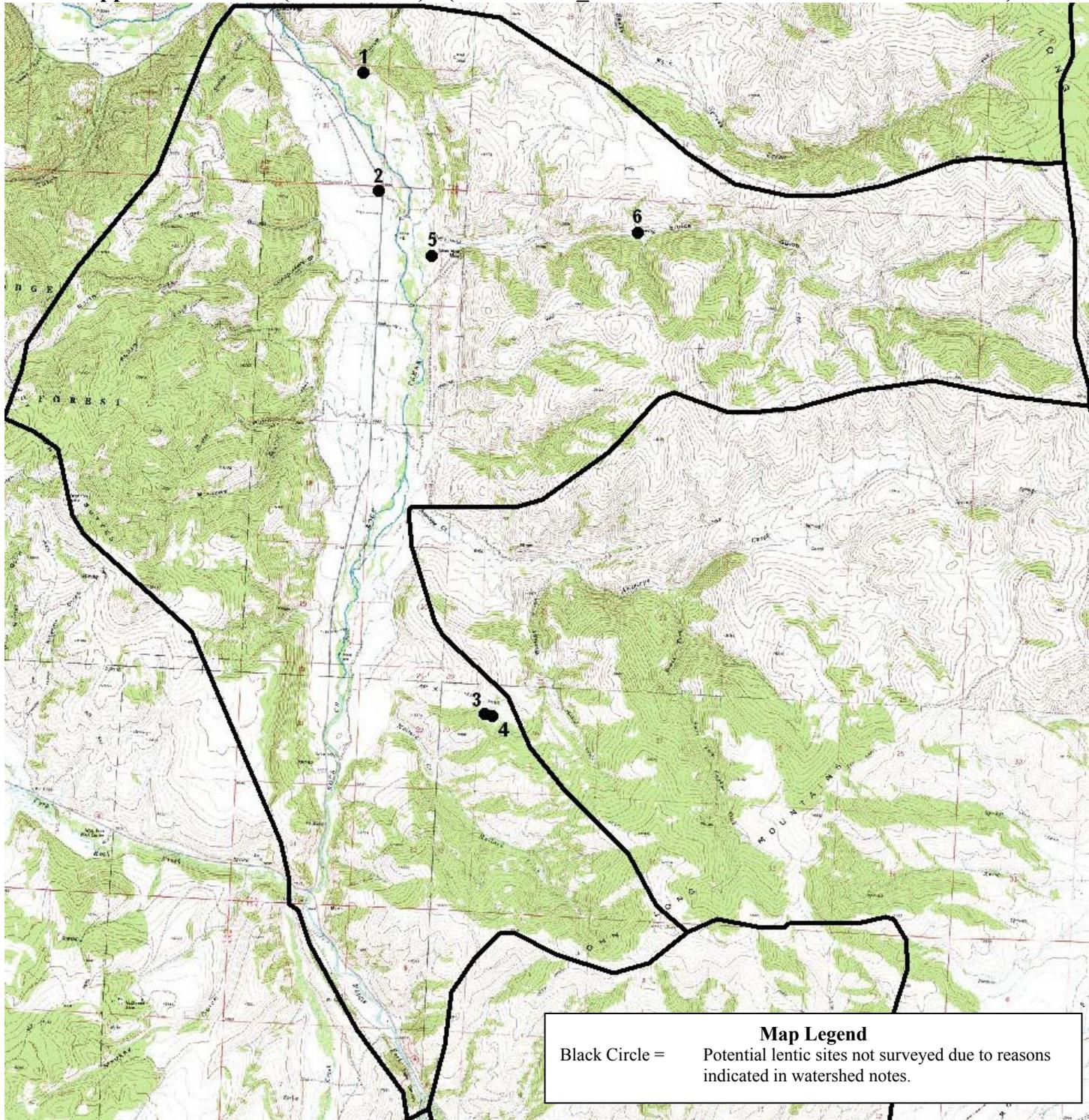
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No herpetofauna species were detected in this watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 001-004 and 006 are on private land and were not surveyed in 2003.
2. Site 005 is on BLM land, but was not surveyed in 2003 because it was inadvertently missed when potential lentic sites were numbered on the topographic map.
3. The watershed is very dry and is largely on private land.
4. The watershed was ground truthed in 2003 and no additional potential lentic sites were identified incidentally. Some of the potential lentic sites on private land could be seen from the road and appeared to be able to support amphibian reproduction.
5. Other potential aquatic overwintering areas in this watershed are limited to areas along Rock Creek within the watershed boundary and Sluice Gulch below 5200 feet.
6. Five museum voucher specimens of terrestrial gartersnakes (THEL) were collected 0.2 miles east of the Rock Creek Bridge on highway 38 on 8/31/1989 by Ronald A. Nussbaum (UMMZ 190134-190138).

Upper Rock Creek (Sluice Gulch) - (HUC ID = 4\_015 & ICBEMP HUC ID =170102020701)



**Rock Creek (Alder Creek and Cougar Creek) - (HUC ID = 4\_023 & ICBEMP HUC ID =170102020302)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	2
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

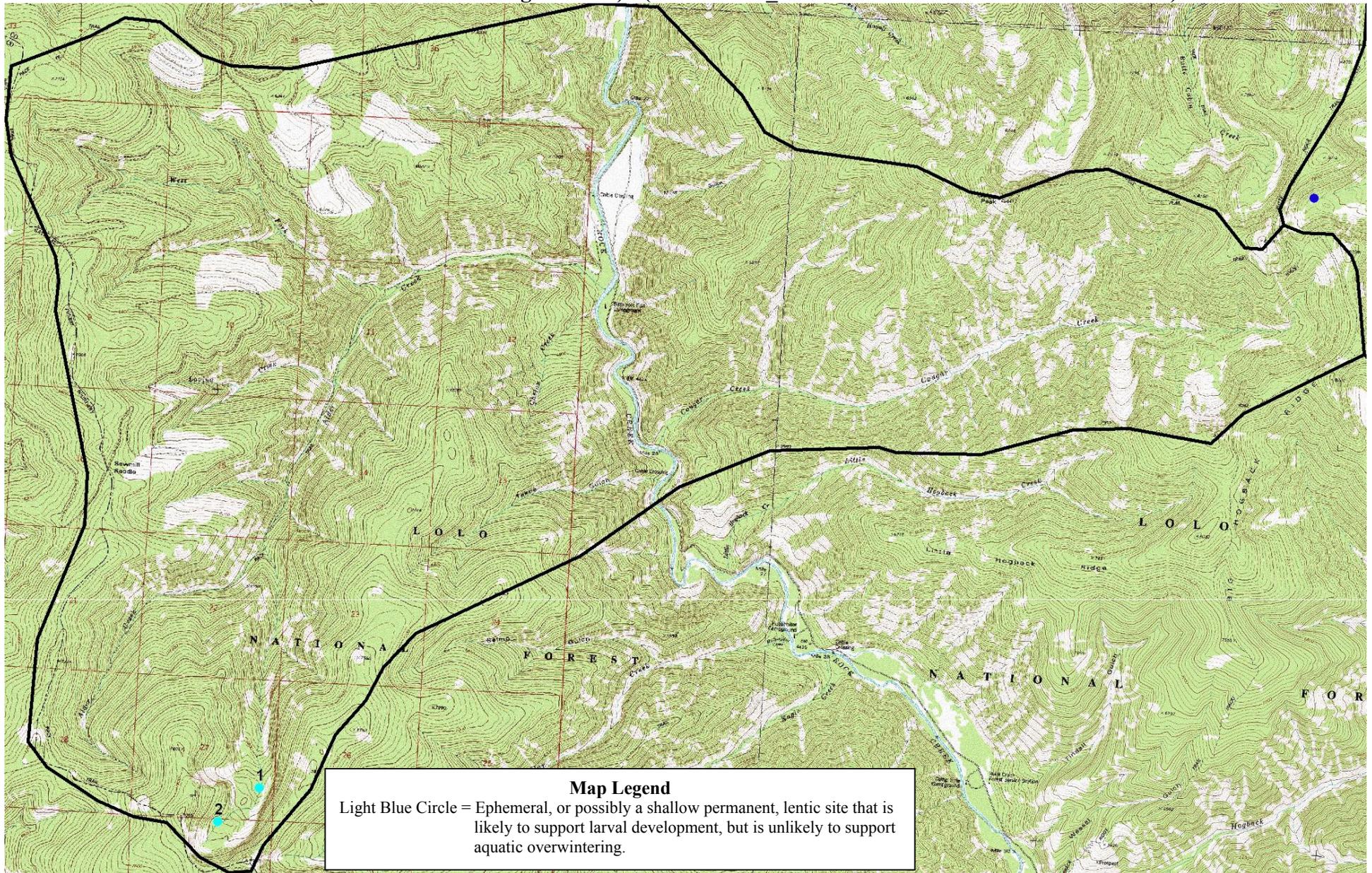
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species Were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

- Lack of aquatic overwintering habitat adjacent to the 2 potential breeding sites in this watershed is probably the reason that no amphibians were detected in this watershed.
- Other potential aquatic overwintering areas in this watershed are areas along Alder Creek below 5,200 feet.
- The DFWP fish stocking database has 4 different records of stocking rainbow trout in Alder Creek between 1942 and 1949, and 2 different records of stocking rainbow trout and 1 record of stocking cutthroat trout in Cougar Creek between 1932 and 1949.

Rock Creek (Alder Creek and Cougar Creek) - (HUC ID = 4\_023 & ICBEMP HUC ID =170102020302)



**Tolan Creek - (HUC ID = 4\_026 & ICBEMP HUC ID =170102052903)**

**2001 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	8
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	001 (marginal)
Permanent Lentic Sites with Emergent Vegetation	001
Permanent Lentic Sites without Emergent Vegetation	None

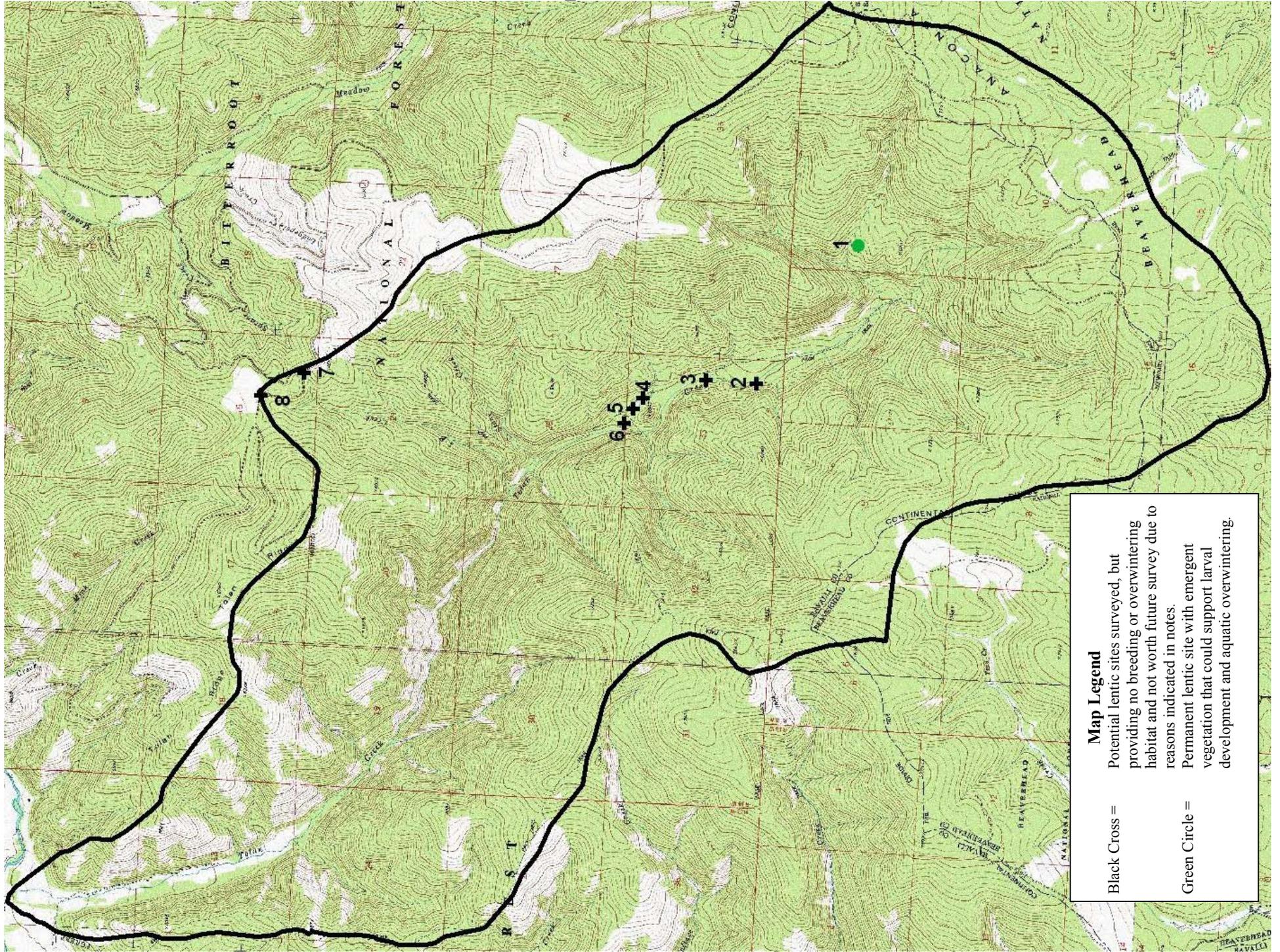
**2001 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u>	1 (100%)	1 (100%)	-
<b>Common Gartersnake (THSI)</b>	001	1 (100%)	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 002-008 were identified as potential lentic sites by topographic maps and aerial photos, but no lentic sites worth future survey were detected and these areas are not worth future survey.
2. Columbia spotted frogs (RALU) must overwinter at site 001 because they would otherwise have to have migrated from the East Fork of Bitterroot River in order to breed there. Site 001 had been burned in 2000 fires and RALU adults obviously survived.
3. Other potential aquatic overwintering areas in this watershed are areas along Tolan Creek below 5,400 feet.
4. Columbia spotted frog (RALU) adults were observed at the headwaters of Tolan Creek on 7/31/1997 by C. Odegard.
5. Rocky Mountain tailed frogs (ASMO) were observed at 5 different localities along the entire length of Tolan Creek by USFS personnel on 9/4/1990, 8/1/1991, 7/21/1995, 7/31/1995.

Tolan Creek - (HUC ID = 4\_026 & ICBEMP HUC ID =170102052903)



Map Legend	
Black Cross =	Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
Green Circle =	Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Willow, Dolus, and Pikes Peak Creeks - (HUC ID = 4\_027 & ICBEMP HUC ID =170102010803)**

**2000 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	25
Number of Wet Lentic Sites	21
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	14

Number of Fishless Potential Lentic Overwintering Sites	7
Potential Lentic Overwintering Sites	001, 003, 006, 010, 011, 012, 018, 019, 020, 021, 022, 023, 026, 027
Permanent Lentic Sites with Emergent Vegetation	001, 003, 006, 010, 012, 019, 020, 021, 022, 023, 026, 027
Permanent Lentic Sites without Emergent Vegetation	011, 018

**2000 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>001</u> , <u>004</u> , <u>005</u> , <u>011</u> , <u>012</u> , <u>013</u> , <u>016</u> , <u>019</u> , <u>020</u> , <u>023</u>	10 (48%)	10 (48%)	-
<b>Western Toad (BUBO)</b>	003, <u>006</u> , 009	3 (14%)	1 (5%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u> , <u>006</u> , <u>007</u> , <u>008</u> , <u>011</u> , 012, <u>013</u> , 014, <u>016</u> , 019, <u>020</u> , 021, <u>022</u> , <u>023</u>	14 (67%)	9 (43%)	-
<b>Common Gartersnake (THSI)</b>	001	1 (5%)	-	-
<b>Incidental Herpetofauna Observations</b>	-	-	-	-
<b>Fish Detected</b>	003 (Rainbow Trout, Westslope Cutthroat Trout), 006 (arctic grayling) <sup>8</sup> , 010 (unknown), 018 (unknown), 021 (unknown), 022 (Westslope Cutthroat Trout), 023 (Golden Trout)	7 (50%) <sup>6</sup>	-	-

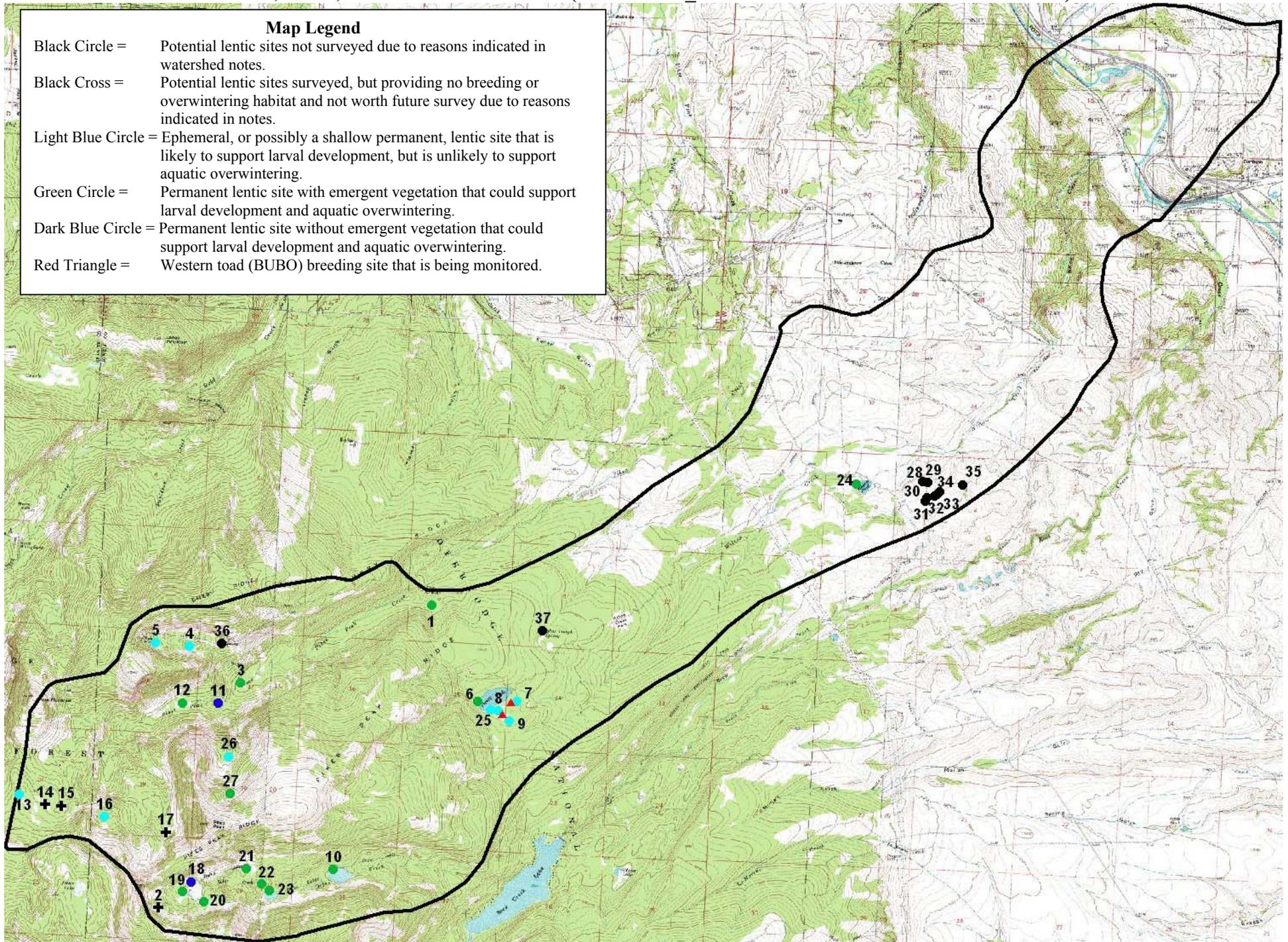
Notes:

- Sites 028-035 are on private land and were not surveyed in 2000.
- Sites 024 and 025 were not surveyed in 2000 due to logistical constraints. However, they were surveyed in 2001. On 6/26/01 at site 024 we detected >10,000 x BUBO larvae, and 4 x BUBO adults. On 6/27/01 at site 025 we detected 2 x adult RALU.
- Site 002 is a lentic site, but would be very unlikely to ever hold enough water to support amphibian reproduction and is not worth future survey.
- Sites 036 and 037 were not surveyed in 2000 because it was not standard practice to survey springs until 2001.
- Sites 014, 015, and 017 are not lentic sites, only had flowing water present, and are not worth future survey.
- Other potential aquatic overwintering areas in this watershed are areas with surface flow on Dolus Creek below site 018, areas with surface flow on Pikes Peak Creek below 7,000 feet, and areas on Willow Creek below site 006.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- The DFWP fish stocking database has 4 different records of stocking brown trout and 3 different records of stocking cutthroat trout in upper Dolus Lake (site 023) between 1942 and 1963, a record of stocking 50,000 arctic grayling in Doney Lake (site 006) on 7/28/1943, and 3 different records of stocking cutthroat trout and 2 different records of stocking brown trout in Willow Creek between 1931 and 1951.
- Site 024 was noted as having been heavily impacted by grazing both structurally and from the standpoint of water quality.

# Willow, Dolus, and Pikes Peak Creeks - (HUC ID = 4\_027 & ICBEMP HUC ID =170102010803)

## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.
- Red Triangle = Western toad (BUBO) breeding site that is being monitored.



## Carpp Creek - (HUC ID = 4\_028 & ICBEMP HUC ID =170102021002)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	27
Number of Wet Lentic Sites	23
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	14

Number of Fishless Potential Lentic Overwintering Sites	9
Potential Lentic Overwintering Sites	001, 002, 003, 004, 005, 006, 007, 008, 009, 017, 018, 019, 020, 021
Permanent Lentic Sites with Emergent Vegetation	002, 003, 004, 005, 006, 007, 008, 017, 018, 020, 021
Permanent Lentic Sites without Emergent Vegetation	001, 019

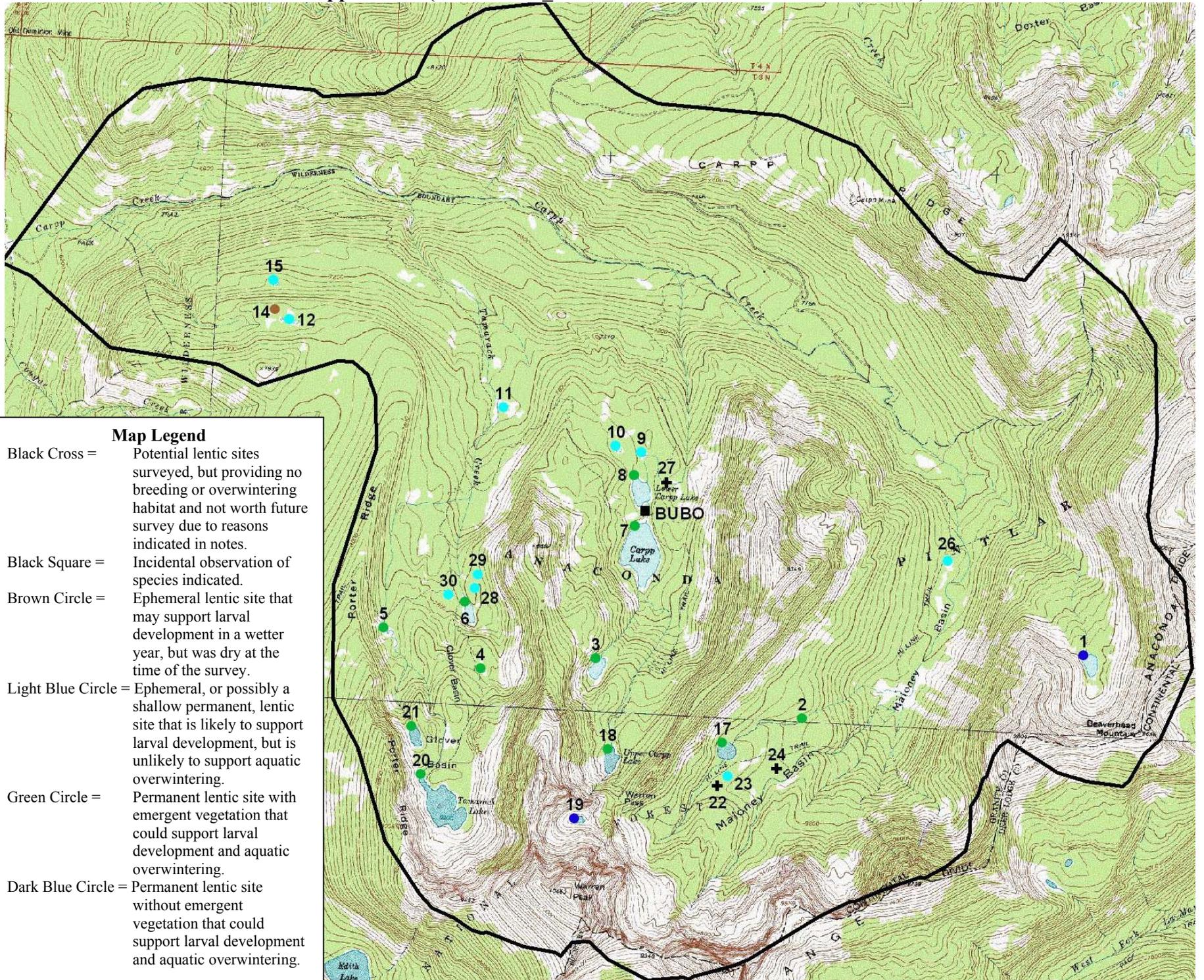
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Wet Lentic Sites Where Detected	Number and % of Wet Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>003, 009, 010, 012, 015</u>	5 (22%)	5 (22%)	-
<b>Western Toad (BUBO)</b>	<u>007, 008</u>	2 (9%)	1 (4%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>002, 003, 006, 007, 008, 009, 010, 012, 018, 028, 029, 030</u>	12 (52%)	9 (39%)	-
<b>Common Gartersnake (THSI)</b>	012, 015	2 (9%)	-	-
<b>Fish Detected</b>	005 (unidentified trout species), 007 (did not detect fish, but found lots of evidence of fishing), 008 (unidentified trout species), 020 (unidentified trout species), 021 (Rainbow Trout) <sup>7</sup>	5 (36%) <sup>4</sup>	-	-

Notes:

1. Sites 012, 013, and 016 were combined under site number 012. Sites 002 and 025 were combined under site number 002.
2. Sites 022, 024, and 027 are no longer lentic sites, only contain flowing water, and are not worth future survey.
3. Other potential aquatic overwintering areas in this watershed include portions of tributaries to upper Carpp Creek below sites 002 and 008 and portions of Tamarack Creek below site 006.
4. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
5. Rocky Mountain tailed frogs (ASMO) were observed in lower Carpp Creek on 9/16/1993 and in upper Carpp Creek on 8/23/1997 by Steve Gerdes.
6. Western toad (BUBO) juveniles were observed at Carpp Lake and Lower Carpp Lake on 8/17/2002 by Janel Corn (see black square on map).
7. The DFWP fish stocking database has 9 different records of stocking cutthroat trout in Lower Carpp Lake (site 008) between 1942 and 1954, a record of stocking 1,500 westslope cutthroat trout in Middle Carpp Lake (site 007) on 10/19/1988, a record of stocking 12,000 rainbow trout in Glover Lake (site 021) on 9/5/1941, and 4 different records of stocking cutthroat trout and 1 record of stocking rainbow trout in Tamarack Lake (site 020) between 1944 and 1994.

**Carpp Creek - (HUC ID = 4 028 & ICBEMP HUC ID =170102021002)**



**Wyman Gulch - (HUC ID = 4\_031 & ICBEMP HUC ID =170102020403)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	15
Number of Wet Lentic Sites	6
Number of Dry Lentic Sites	2
Number of Potential Lentic Overwintering Sites	3

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	007, 013, 080
Permanent Lentic Sites with Emergent Vegetation	007, 080
Permanent Lentic Sites without Emergent Vegetation	013

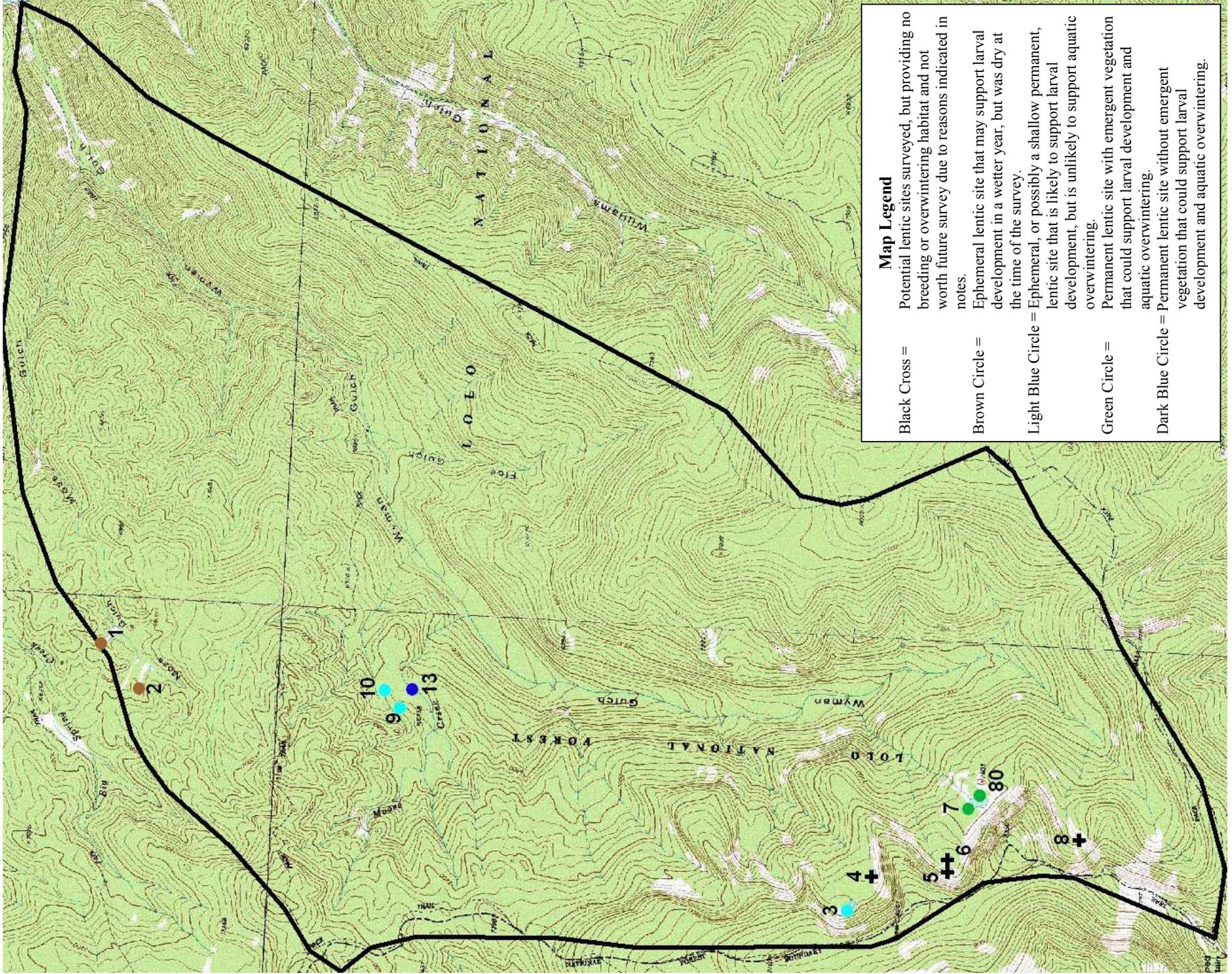
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>003, 007, 009, 080</u>	4 (67%)	4 (67%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>010, 080</u>	2 (33%)	1 (17%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 004, 005, and 006 were misclassified as lentic sites on the topographic map, have probably not held standing water in decades, and are not worth future survey. Site 008 was identified as a potential lentic site on aerial photos, but would only have flowing water immediately after snow melt and is not worth future survey.
2. Sites 011, 012, 013, and 014 were combined under site number 013 as a multipooled site because of their proximity.
3. Other potential aquatic overwintering areas in the watershed are Wyman Gulch below approximately 7,700 feet and the stream in Moss Gulch below site 001.
4. The DFWP fish stocking database has 3 different records of stocking cutthroat trout and 2 different records of stocking rainbow trout in Wyman Creek between 1931 and 1949.

Wyman Gulch - (HUC ID = 4\_031 & ICBEMP HUC ID =170102020403)



Map Legend	
Black Cross =	Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
Brown Circle =	Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
Light Blue Circle =	Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
Green Circle =	Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
Dark Blue Circle =	Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

**Beefstraight Creek - (HUC ID = 4\_053 & ICBEMP HUC ID = 170102012005)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	3
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

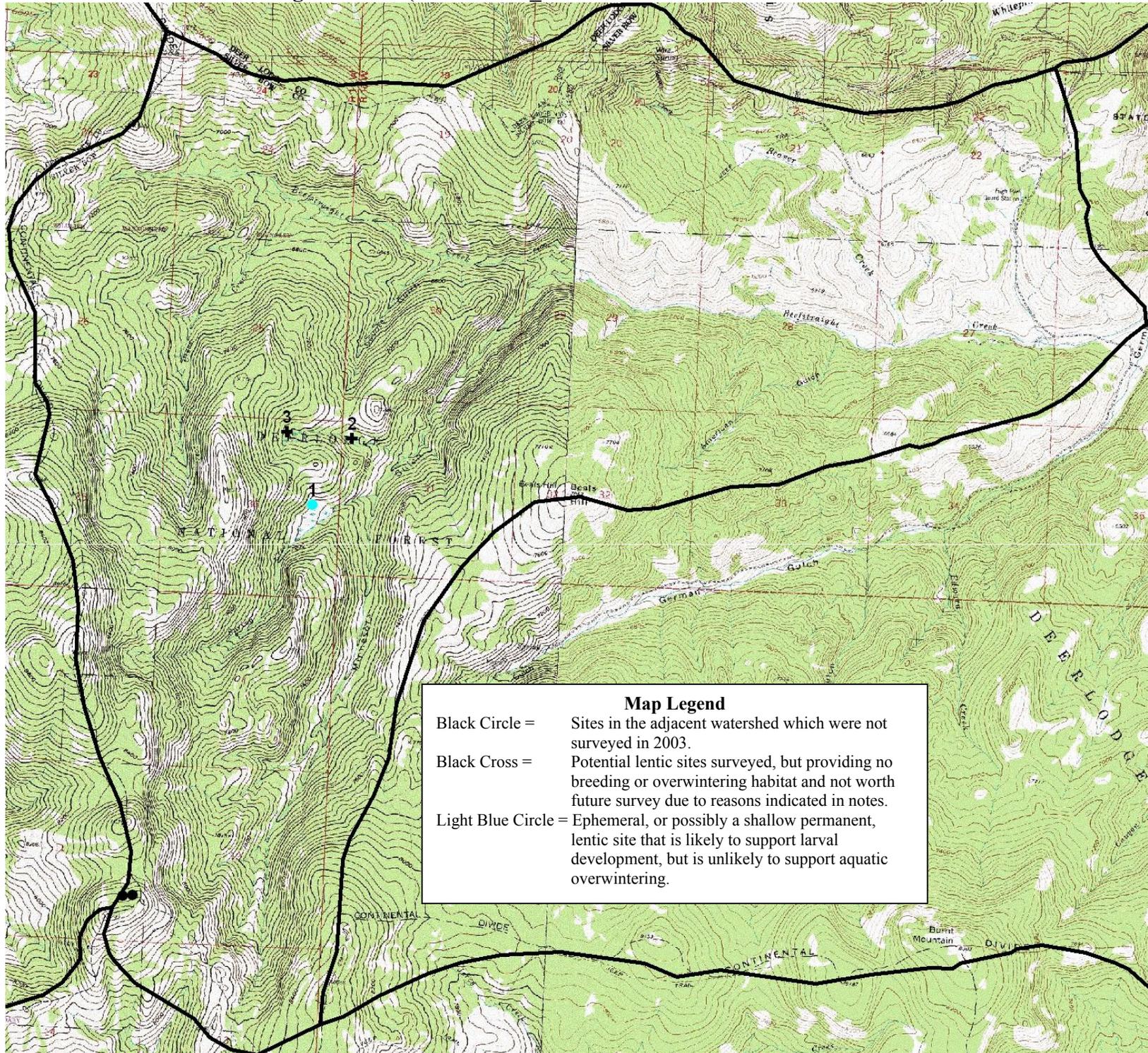
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u>	1 (100%)	1 (100%)	RALU that breed at site 001 apparently overwinter in the adjacent creek.
<b>Fish Detected</b>	None	-	-	-

Notes:

1. No aerial photos were found for this watershed so any potential lentic sites that might have been found on aerial photographs were not surveyed in 2003.
2. Sites 002 and 003 are not lentic sites, the only water present is flowing, and neither site is worth future survey.
3. Other potential aquatic overwintering areas in the watershed include areas along Beefstraight Creek below 6,800 feet and areas along Minnesota Gulch below 7,100 feet.
4. The DFWP fish stocking database has a record of stocking 5,000 cutthroat trout in Beaver Creek on 8/20/1941, and 5 different records of stocking brook trout, 3 different records of stocking cutthroat trout, and 7 different records of stocking rainbow trout in Beefstraight Creek between 1931 and 1964.

**Beefstraight Creek - (HUC ID = 4\_053 & ICBEMP HUC ID = 170102012005)**



**Basin Creek - (HUC ID = 4\_057 & ICBEMP HUC ID =170102012305)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	21
Number of Wet Lentic Sites	13
Number of Dry Lentic Sites	2
Number of Potential Lentic Overwintering Sites	7

Number of Fishless Potential Lentic Overwintering Sites	5
Potential Lentic Overwintering Sites	002 (marginal), 003, 009, 011, 020, 024, 030
Permanent Lentic Sites with Emergent Vegetation	002, 003, 009, 011, 020, 024, 030
Permanent Lentic Sites without Emergent Vegetation	None

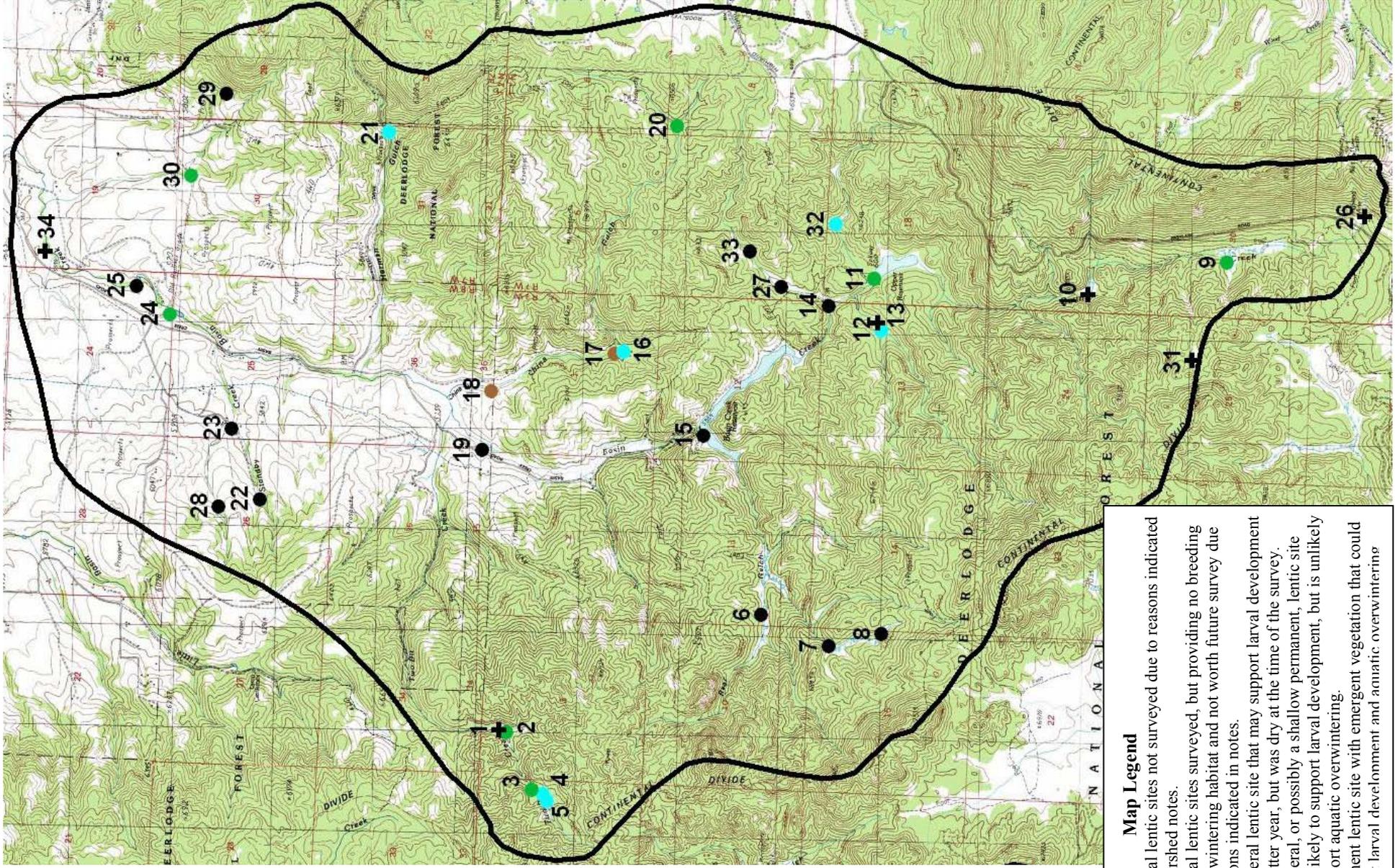
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>012</u> , <u>032</u>	2 (15%)	2 (15%)	-
<b>Western Toad (BUBO)</b>	009, <u>011</u> , <u>020</u>	3 (23%)	2 (15%)	-
<b>Columbia Spotted Frog (RALU)</b>	002, 003, <u>004</u> , <u>005</u> , <u>011</u> , <u>012</u> , 016, 030	8 (62%)	4 (61%)	-
<b>Fish Detected</b>	009 (unidentified trout species), 011 (unidentified trout species)	2 (29%) <sup>9</sup>	-	-

Notes:

- Sites 019, 022, 023, 025, 028, and 029 are on private land and were not surveyed in 2003.
- Sites 006, 007, 008, 014, 015, 027, 033 were not surveyed in 2003 because access was denied by the Butte City Council.
- Sites 001, 010, and 013 are not lentic sites, are old beaver ponds that no longer have any lentic breeding habitat, and are not worth future survey. Site 034 appears to be an area of historic beaver activity, has no lentic breeding habitat, and is not worth future survey.
- Site 026 is not a lentic site, is a spring with no place for water to pool, and is not worth future survey.
- Site 031 was identified as a potential lentic site by aerial photographs, probably was a lentic site in the past, but is now a damp meadow that is not worth future survey.
- Apparently there is an active program to exclude beaver from this watershed because it is a municipal watershed. If true, the long term consequences of this policy may have drastic effects on the amount of lentic habitat available to amphibians because almost all standing water bodies in this drainage have been created by beaver.
- Tim Lamar, a biologist with the USFS in Butte, found western toad (BUBO) larvae breeding at site 011 on 7/25/03, so it appears that either BUBO bred at this site after our surveys on 6/25/03 or we failed to detect eggs or small larvae. Perhaps the single adult we detected was the beginning of a breeding aggregation.
- Other potential aquatic overwintering areas in this watershed Basin Creek below site 009, Bear Gulch below site 006, Two Bit Creek below site 001, and Herman Gulch below site 021.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- Columbia spotted frog (RALU) adults were observed on China Gulch 200 yards above the Forest Service boundary on 9/10/1997 by Bruce Roberts.

Basin Creek - (HUC ID = 4\_057 & ICBEMP HUC ID =170102012305)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**German Gulch - (HUC ID = 4\_060 & ICBEMP HUC ID =170102012004)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	9
Number of Wet Lentic Sites	6
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	5

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	003 (marginal), 004 (marginal), 005, 006, 009
Permanent Lentic Sites with Emergent Vegetation	003, 004, 005, 006, 009
Permanent Lentic Sites without Emergent Vegetation	None

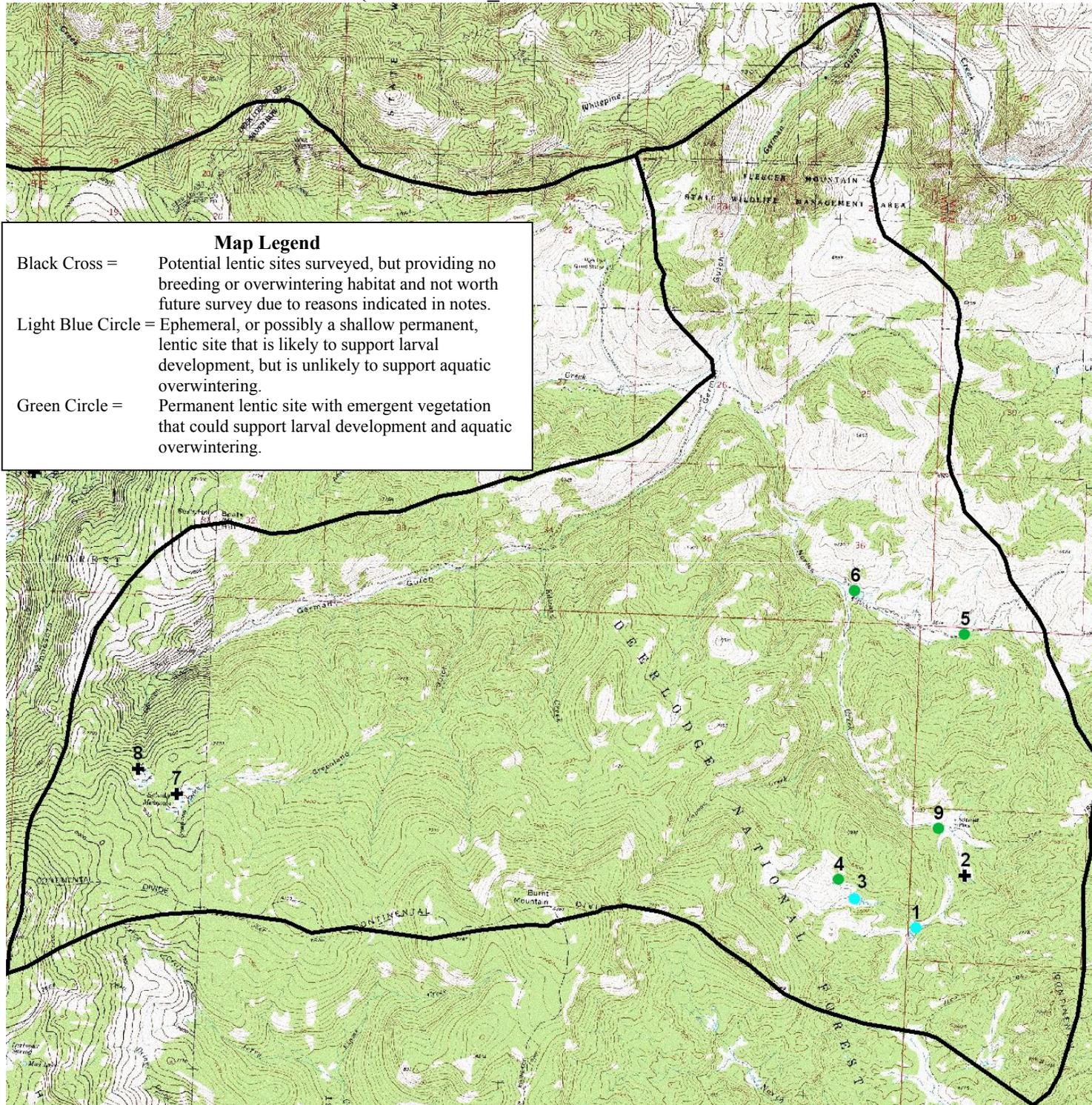
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>003</u>	1 (17%)	1 (17%)	-
<b>Western Toad (BUBO)</b>	<u>006</u> , <u>009</u>	2 (33%)	2 (33%)	-
<b>Columbia Spotted Frog (RALU)</b>	001, 003, 004, <u>005</u> , 006, <u>009</u>	6 (100%)	2 (33%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

- Some aerial photos were not found for this watershed so some potential lentic sites that might have been found on aerial photographs were not surveyed in 2003.
- Site 002 is not a lentic site, is dry, and is not worth future survey. Sites 007 and 008 are not lentic sites, only have flowing water, and are not worth future survey.
- Other potential aquatic overwintering areas in the watershed include Norton Creek below sites 005 and 009, Greenland Gulch below 7,000 feet, and German Gulch below 6,600 feet.
- Beaver appear to have been extirpated from this watershed.
- Columbia spotted frog (RALU) adults were observed on upper Norton Creek on 8/13/1997 and 9/11/1997 by Bruce Roberts.
- The DFWP fish stocking database has 4 different records of stocking brook trout and 3 different records of stocking cutthroat trout in German Gulch between 1931 and 1948, and 4 different records of stocking brook trout, 1 record of stocking coho salmon, 4 different records of stocking cutthroat trout, and 7 different records of stocking rainbow trout in Norton Gulch between 1931 and 1949.

# German Gulch - (HUC ID = 4\_060 & ICBEMP HUC ID =170102012004)



## Boulder Creek - (HUC ID = 4\_063 & ICBEMP HUC ID =170102021303)

### 2000 Water Body and Survey Summary

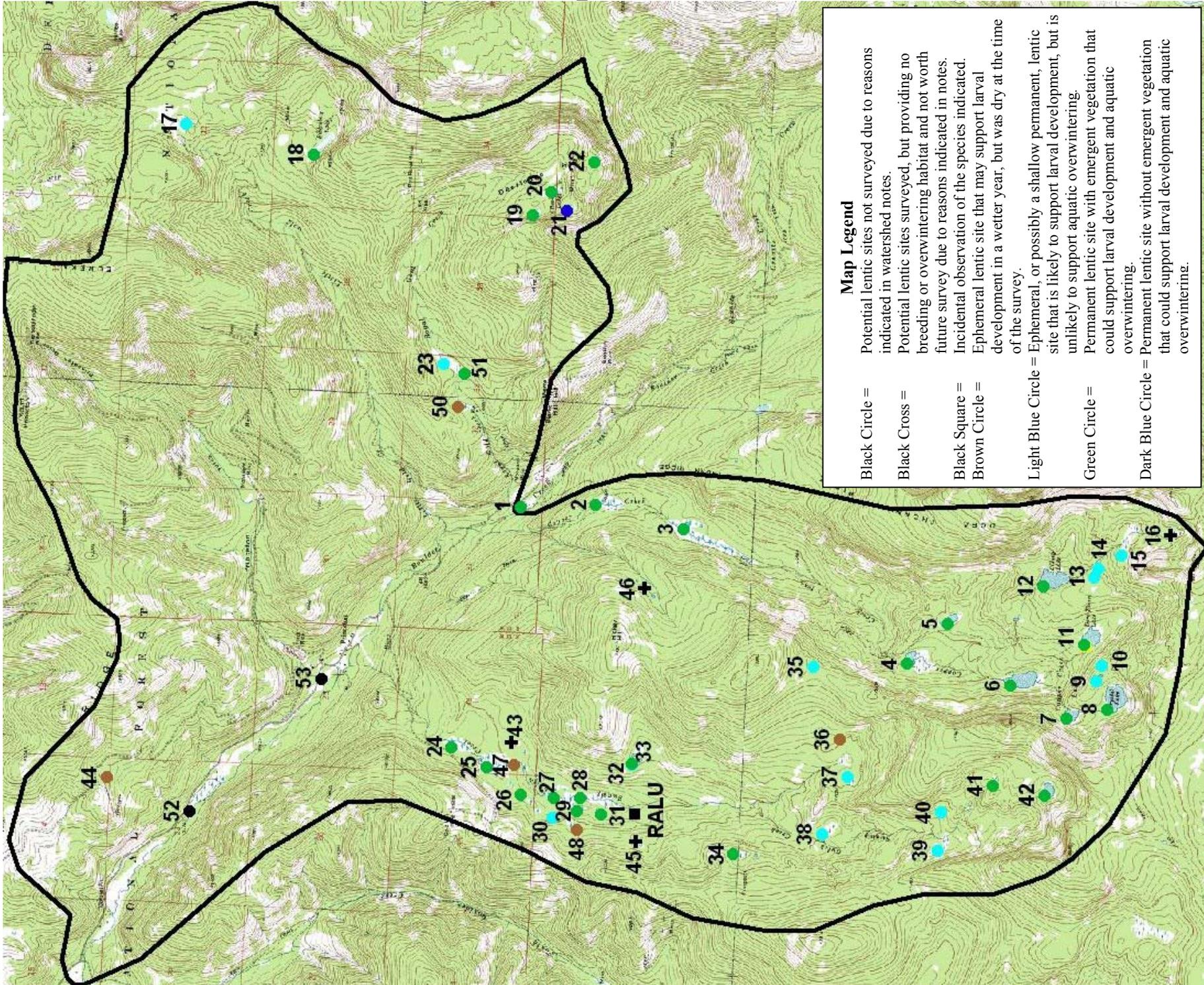
Number of Potential Lentic Sites Surveyed	50	Number of Fishless Potential Lentic Overwintering Sites	12
Number of Wet Lentic Sites	41	Potential Lentic Overwintering Sites	001, 002, 003, 004, 005, 006, 007, 008 (little emergent vegetation), 011, 012, 018, 019, 020, 021, 022, 024, 025, 026, 027, 028, 029, 031 (marginal), 033, (marginal), 034, 041, 042, 051 (marginal)
Number of Dry Lentic Sites	8	Permanent Lentic Sites with Emergent Vegetation	001, 002, 003, 004, 005, 006, 007, 008, 011, 012, 018, 019, 020, 022, 024, 025, 026, 027, 028, 029, 031, 033, 034, 041, 042, 051
Number of Potential Lentic Overwintering Sites	26	Permanent Lentic Sites without Emergent Vegetation	021

### 2000 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>001, 009, 010, 011, 013, 014, 015, 017, 018, 020, 021, 023, 025, 026, 027, 028, 030, 031, 032, 034, 035, 041, 042</u>	23 (56%)	23 (56%)	-
<b>Western Toad (BUBO)</b>	<u>001</u> - 6 x larvae <u>004</u> - ≤100 x larvae	2 (5%)	2 (5%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 002, 003, 004, 005, 007, 008, 009, 010, 011, 012, 013, 014, 015, 017, 018, 019, 020, 022, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 033, 034, 037, 038, 039, 040, 041, 042, 051</u>	38 (93%) <sup>5</sup>	20 (49%)	-
<b>Incidental Herpetofauna Observations</b>	3 x observations of Columbia spotted frogs (RALU) <sup>5</sup>	-	-	-
<b>Fish Detected</b>	002 (Rainbow Trout), 003 (Rainbow Trout), 004 (Rainbow Trout), 006 (unidentified trout), 007 (unidentified trout), 008 (unidentified trout), 011 (Westslope Cutthroat Trout), 012 (Westslope Cutthroat Trout, Rainbow Trout), 018 (Cutthroat Trout) <sup>8</sup> , 019 (unknown), 020 (Westslope Cutthroat Trout, Rainbow Trout), 021 (Cutthroat Trout) <sup>8</sup> , 028 (unidentified trout), 051 (unknown)	14 (54%) <sup>7</sup>	-	-

1. Other potential aquatic overwintering areas in this watershed are Boulder Creek below site 001, Swamp Creek below 6500 ft, Copper Creek below site 004, Little Gold Creek below 6600 ft, Royal Gold Creek below site 023.
2. Site 016 is not a lentic site, only has flowing water, and is not worth future survey.
3. Site 043, 045, 046 are lentic, but would not hold water long enough to support amphibian reproduction and are not worth future survey.
4. Site number 049 was not used when numbering potential lentic sites on topographic maps.
5. RALU were detected at sites 036 and 047 which were dry, and site 016, which was a lotic spring, so these sites were not used in calculations of numbers and percentages of sites detected and where breeding was detected.
6. Other potential aquatic overwintering areas in this watershed are Boulder Creek below site 001, Swamp Creek below 6500 ft, Copper Creek below site 004, Little Gold Creek below 6600 ft, Royal Gold Creek below site 023.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. The DFWP fish stocking database has records of stocking 7,200 cutthroat trout in Bielenberg Lake (site 018) on 8/8/1948, a record of stocking 18,000 cutthroat trout in lower Altuna Lake (site 019) on 8/8/1948, a record of stocking 18,000 cutthroat trout in upper Altuna Lake (site 021) on 8/8/1948, a record of stocking 17,000 cutthroat trout in the Altuna Lakes (sites 019, 020, and 021) on 8/31/1941, a record of stocking 11,560 rainbow trout in Crystal Lake (site 008) on 9/9/1941, 2 different records of stocking cutthroat trout and a record of stocking rainbow trout in Dora Thorn Lake (site 011) between 1936 and 1960, 2 different records of stocking rainbow trout in Sidney Lake (site 012) in 1960 and 1962, and a record of stocking cutthroat trout and a record of stocking rainbow trout in an unnamed lake on Copper Creek (site 004) in 1941.

**Boulder Creek - (HUC ID = 4\_063 & ICBEMP HUC ID =170102021303)**



**East Fork of Rock Creek - (HUC ID = 4\_067 & ICBEMP HUC ID =170102020703)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	9
Number of Wet Lentic Sites	8
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

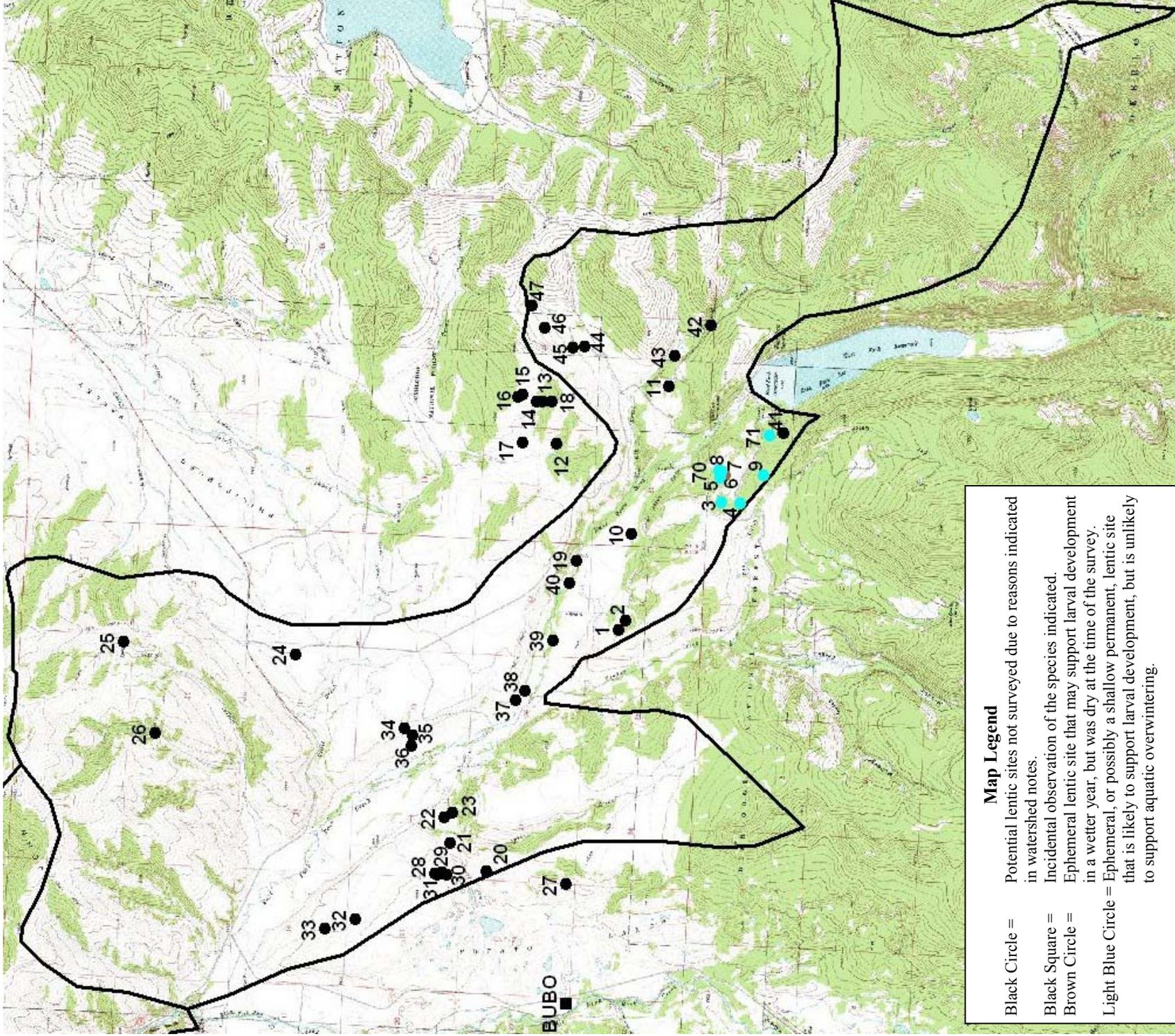
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>005, 007, 009, 071</u>	4 (50%)	4 (50%)	-
<b>Columbia Spotted Frog (RALU)</b>	003, <u>004, 009, 071</u>	4 (50%)	2 (25%)	-
<b>Terrestrial Gartersnake (THEL)</b>	003	1 (13%)	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 001 and 002 are on state owned land and site 041 is on U.S. Forest Service land, but none of these were surveyed in 2003 due to confusion over landownership. Sites need to be surveyed in the future.
2. Sites 010-040 and 042-047 are on private land and were not surveyed in 2003.
3. Other potential aquatic overwintering areas in this watershed are the East Fork of Rock Creek within the watershed boundary, Elk Creek below 6,200 feet, and Spring Creek below 5,800 feet.
4. A museum voucher specimen of a western toad (BUBO) juvenile was collected in a pond in the adjacent Middle Fork of Rock Creek drainage on 8/6/1975 by R. Driear (IMNH 1588).
5. The DFWP fish stocking database has 12 different records of stocking cutthroat trout and 5 different records of stocking rainbow trout in the East Fork of Rock Creek between 1932 and 1955.

East Fork of Rock Creek - (HUC ID = 4\_067 & ICBEMP HUC ID =170102020703)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.

## Ranch Creek and Grizzly Creek - (HUC ID = 4\_068 & ICBEMP HUC ID =170102020203)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	2
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	001 (marginal)
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	001

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 002, 003, and 005 are on private land and were not surveyed in 2003.
2. Site 004 is a spring without any place for water to pool and is not worth future survey.
3. Other potential aquatic overwintering areas in this watershed are Ranch Creek and its upper tributaries below 5400 feet, Grizzly Creek below 5200 feet.
4. A long-toed salamander (AMMA) larvae was observed in a small forest pool adjacent to upper Ranch Creek near the mouth of Ramona Creek on 10/5/1997 by Bryce Maxell.
5. A museum voucher specimen of a Rocky Mountain tailed frog (ASMO) was collected somewhere along Ranch Creek on 7/24/1958 by C.J.D. Brown (MSBU 3325).
6. The DFWP fish stocking database has 2 different records of stocking brook trout, 2 different records of stocking cutthroat trout, and 3 different records of stocking rainbow trout in Ranch Creek between 1932 and 1949, and 3 different records of stocking rainbow trout in Grizzly Creek between 1943 and 1949.

Ranch Creek and Grizzly Creek - (HUC ID = 4\_068 & ICBEMP HUC ID =170102020203)

**Map Legend**

**Black Circle**

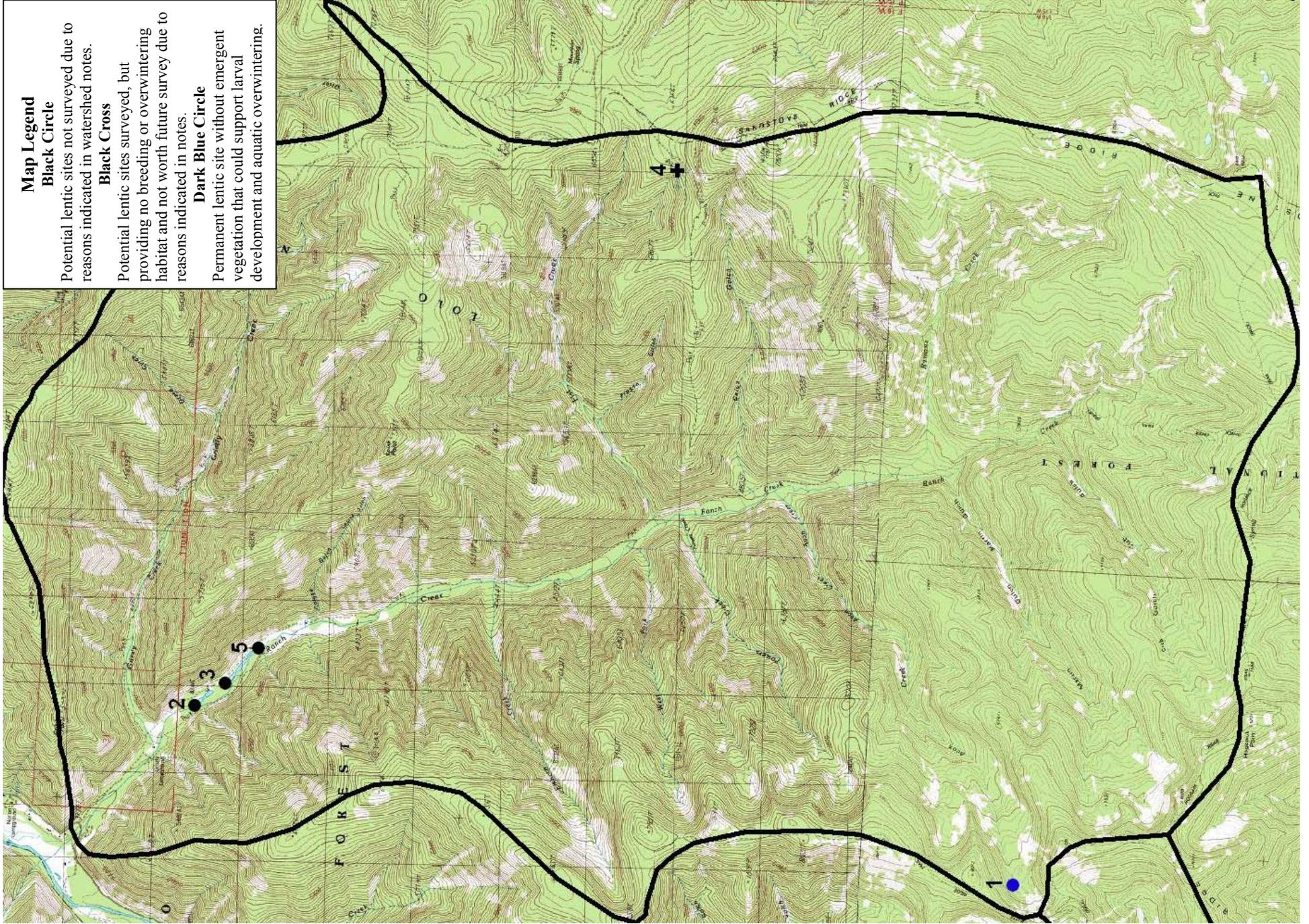
Potential lentic sites not surveyed due to reasons indicated in watershed notes.

**Black Cross**

Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.

**Dark Blue Circle**

Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



**Peterson Creek - (HUC ID = 4\_078 & ICBEMP HUC ID =170102011503)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	1
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	001
Permanent Lentic Sites with Emergent Vegetation	001
Permanent Lentic Sites without Emergent Vegetation	None

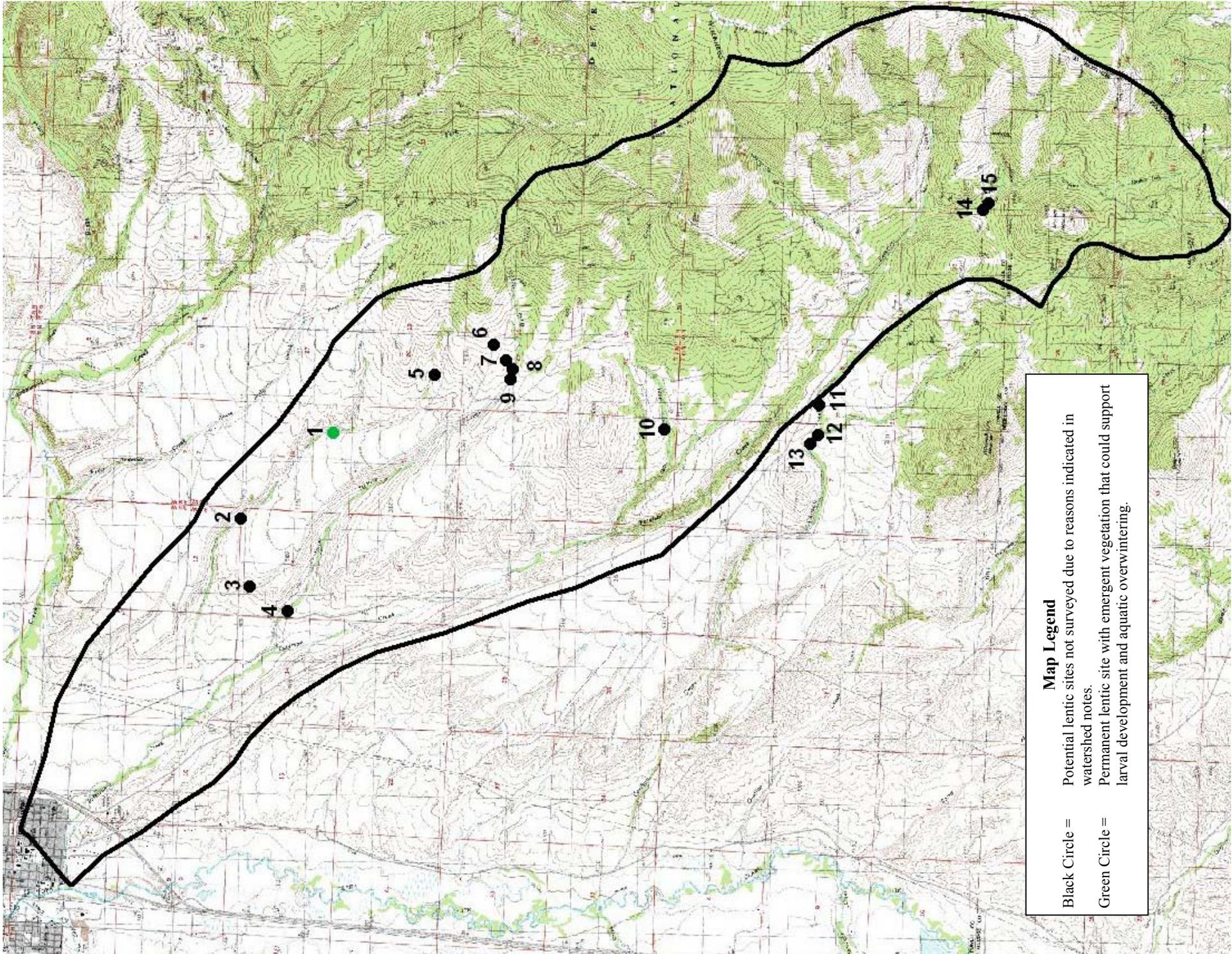
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	<u>001</u>	1 (100%)	1 (100%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u>	1 (100%)	1 (100%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. The majority of this watershed is on private land and even the one site on private land requires crossing private land in order to access it. Contact Alan Rome at Ace Hardware in Deerlodge for access through the gate into this watershed and Lem Oertman and Henry Sheeley for access to other sites on private land.
2. Much of the watershed was on private land and was not viewed directly. However, it seems likely that other potential aquatic overwintering areas would be found along Peterson Creek below 5,800 feet.
3. The DFWP fish stocking database has 1 record of stocking coho salmon, 3 different records of stocking cutthroat trout, and 5 different records of stocking brook trout in Peterson Creek between 1933 and 1953.

Peterson Creek - (HUC ID = 4\_078 & ICBEMP HUC ID =170102011503)



**Map Legend**

Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.

Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Berry Creek - (HUC ID = 6\_001 & ICBEMP HUC ID = 100200042801)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	27
Number of Wet Lentic Sites	17
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	11

Number of Fishless Potential Lentic Overwintering Sites	9
Potential Lentic Overwintering Sites	002, 003, 004, 005, 006, 007, 008, 009, 124, 995, 996
Permanent Lentic Sites with Emergent Vegetation	002
Permanent Lentic Sites without Emergent Vegetation	003, 004, 005, 006, 007, 008, 009, 124, 995, 996

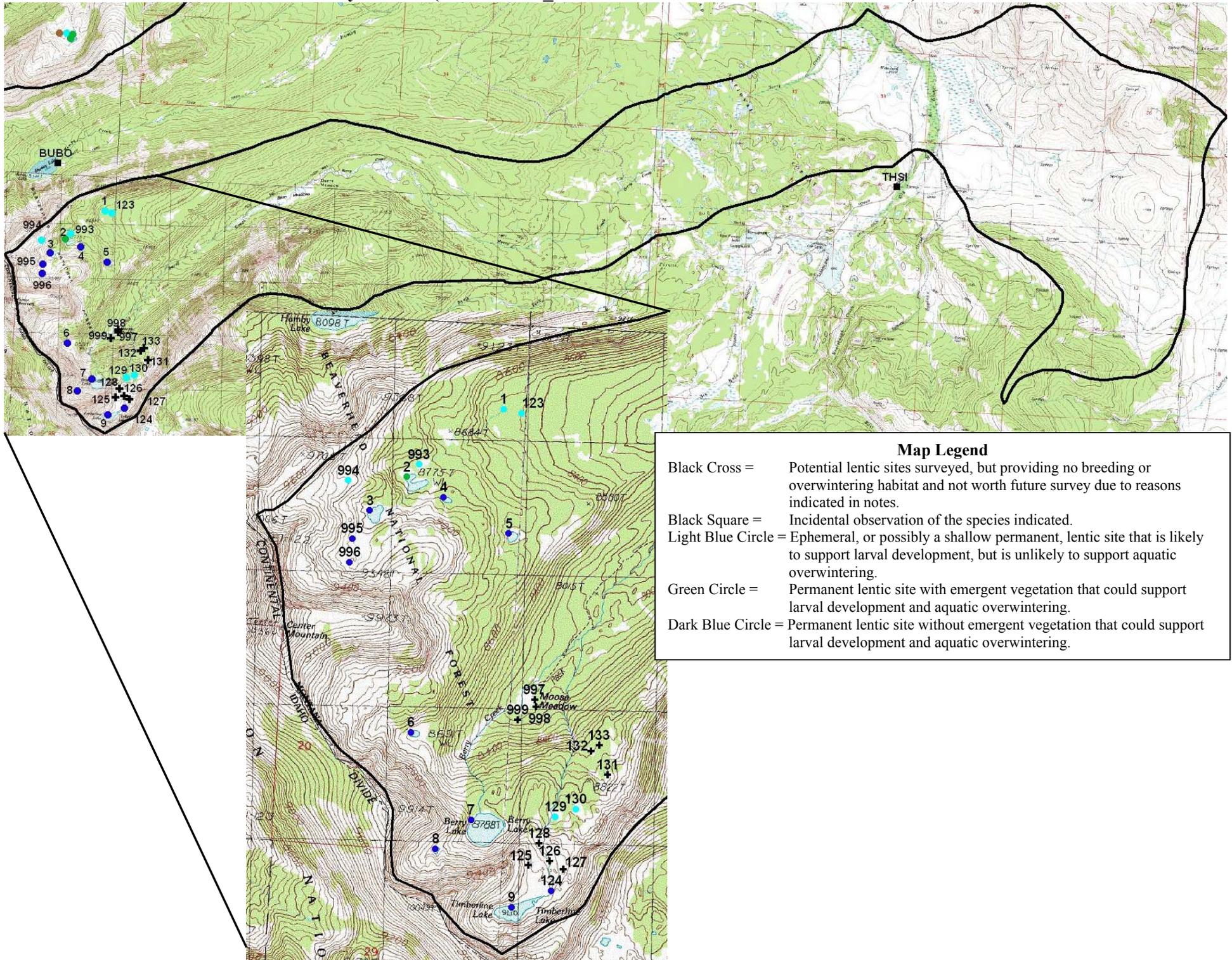
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>005</u>	1 (6%)	1 (6%)	-
<b>Columbia Spotted Frog (RALU)</b>	001, <u>002</u> , 003, 004, <u>993</u>	5 (29%)	2 (12%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of a Terrestrial Gartersnake (THEL) 1 x observation of a Common Gartersnake (THSI)			-
<b>Fish Detected</b>	007 (unidentified trout), 009 (Yellowstone Cutthroat Trout) <sup>6</sup> ,	2 (18%) <sup>5</sup>	-	-

Notes:

1. Sites 010-122 and 134-157 were not surveyed in 2003 because there was not enough time and ponds were drying so any detection information would not have been meaningful. We plan to survey these sites in the future.
2. Sites 126, 127, 128 were identified as a potential lentic sites on aerial photographs, but were not lentic sites worth future survey.
3. Although site 125 is lentic, it is not worth future survey because it remains under snow until late in the year and is so shallow that it would dry out only a few days after melt out.
4. Other potential aquatic overwintering areas in the watershed include areas below site 002 below an elevation of approximately 8700 feet and Berry Creek below Moose Meadows.
5. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
6. The DFWP fish stocking database has 7 different records of stocking Yellowstone cutthroat trout in Timberline Lake (site 009) between 1976 and 2002, 11 different records of stocking Yellowstone cutthroat trout in Berry Lake (site 007) between 1966 and 2002, and 7 different records of stocking cutthroat trout in Berry Creek between 1934 and 1950.

# Berry Creek - (HUC ID = 6\_001 & ICBEMP HUC ID = 100200042801)



## Map Legend

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## Lowland Creek - (HUC ID = 6\_002 & ICBEMP HUC ID =100200060701)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	19
Number of Wet Lentic Sites	16
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	14

Number of Fishless Potential Lentic Overwintering Sites	6
Potential Lentic Overwintering Sites	002, 003, 006, 007, 008, 009, 010, 011, 012, 013, 016, 018, 085, 100
Permanent Lentic Sites with Emergent Vegetation	002, 003, 006, 007, 008, 009, 010, 011, 012, 013, 016, 018, 085, 100
Permanent Lentic Sites without Emergent Vegetation	None

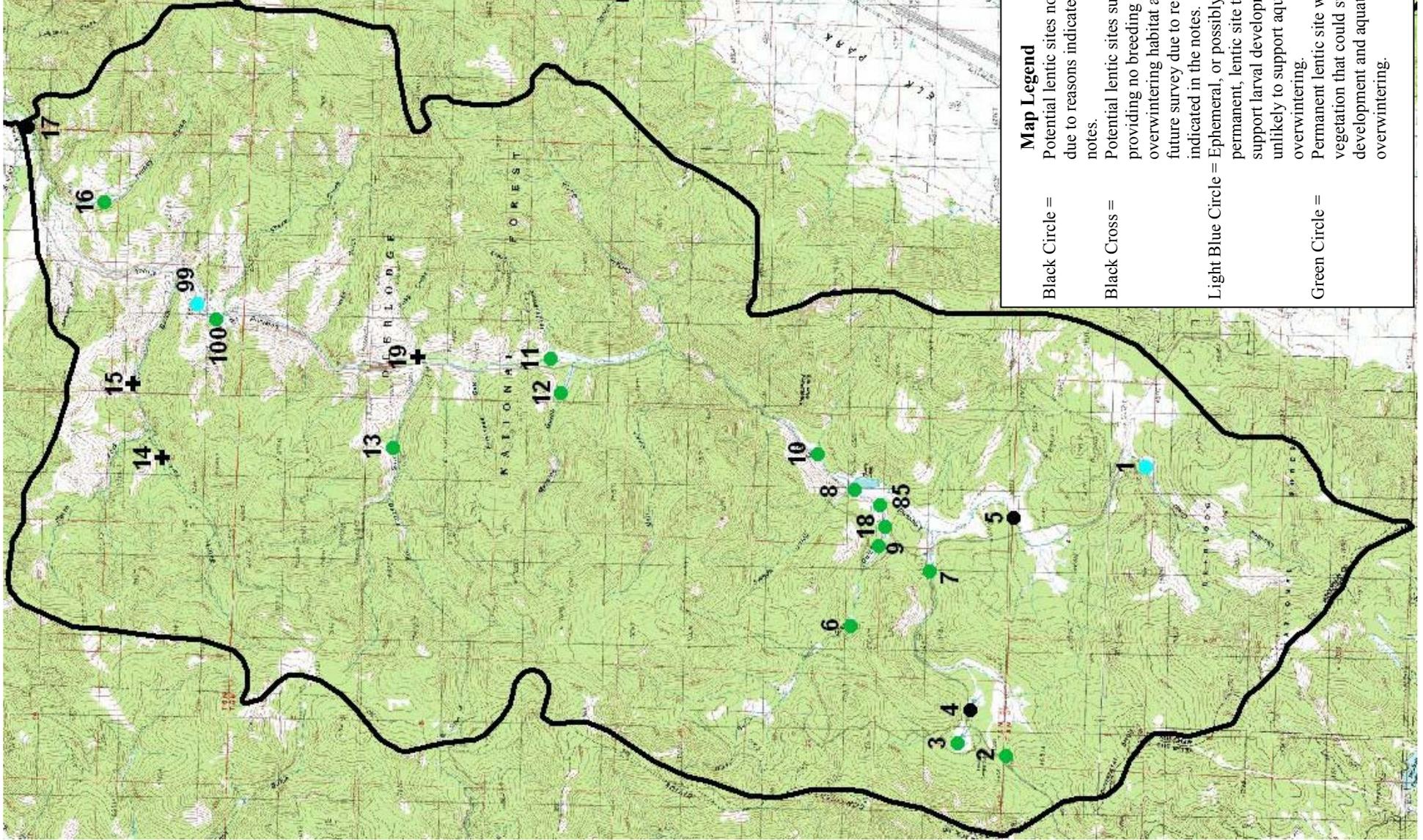
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>016</u>	1 (6%)	1 (6%)	-
<b>Western Toad (BUBO)</b>	001, <u>008</u> , 009, 018, 085	5 (31%)	1 (6%)	-
<b>Columbia Spotted Frog (RALU)</b>	001, 003, <u>007</u> , <u>008</u> , <u>010</u> , 011, <u>012</u> , 013, 016, <u>018</u> , 099, <u>100</u>	12 (75%)	6 (38%)	-
<b>Terrestrial Gartersnake (THEL)</b>	011	1 (6%)	-	-
<b>Incidental Herpetofauna Observations</b>	-	-	-	-
<b>Fish Detected</b>	007 (unidentified sculpin), 008 (unknown species), 009 (unknown species), 010 (unidentified sculpin, unidentified trout), 011 (Brook Trout), 018 (unknown species), 085 (unknown species), 100 (unidentified trout species)	8 (57%) <sup>4</sup>	-	-

Notes:

1. Sites 004, 005, and 017 are on private land and were not surveyed in 2003.
2. Sites 014 and 015 are not lentic sites, are old beaver dam complexes with only flowing water present, and are not worth future survey. Site 019 is a lentic site, but it is more of a seep without any standing water that would support amphibian reproduction so it is not worth future survey.
3. Other potential aquatic overwintering areas in this watershed are Lowland Creek below sites 001, 002, and 003, Olson Gulch below site 006, Kit Carson Gulch below 6200 feet, Moraine Gulch below 6200 feet, Dry Gulch below site 014, and Cluney Gulch below site 016.
4. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
5. The DFWP fish stocking database has 4 different records of stocking Yellowstone cutthroat trout in Maney Lake (site 008) between 1983 and 2001, and 1 record of stocking brook trout, 4 different records of stocking cutthroat trout, and 14 different records of stocking rainbow trout in Lowland Creek between 1928 and 1969.
6. Site 016 was noted as having been heavily impacted by grazing.

Lowland Creek - (HUC ID = 6\_002 & ICBEMP HUC ID =100200060701)



## Cabin Creek - (HUC ID = 6\_003 & ICBEMP HUC ID =100200071604)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	44
Number of Wet Lentic Sites	36
Number of Dry Lentic Sites	2
Number of Potential Lentic Overwintering Sites	13

Number of Fishless Potential Lentic Overwintering Sites	12
Potential Lentic Overwintering Sites	002, 003 (marginal), 004, 006, 007, 008, 009, 010, 011, 013, 018 (marginal), 025, 040
Permanent Lentic Sites with Emergent Vegetation	002, 003, 004, 007, 008, 009, 010, 011, 013, 018, 025, 040
Permanent Lentic Sites without Emergent Vegetation	006

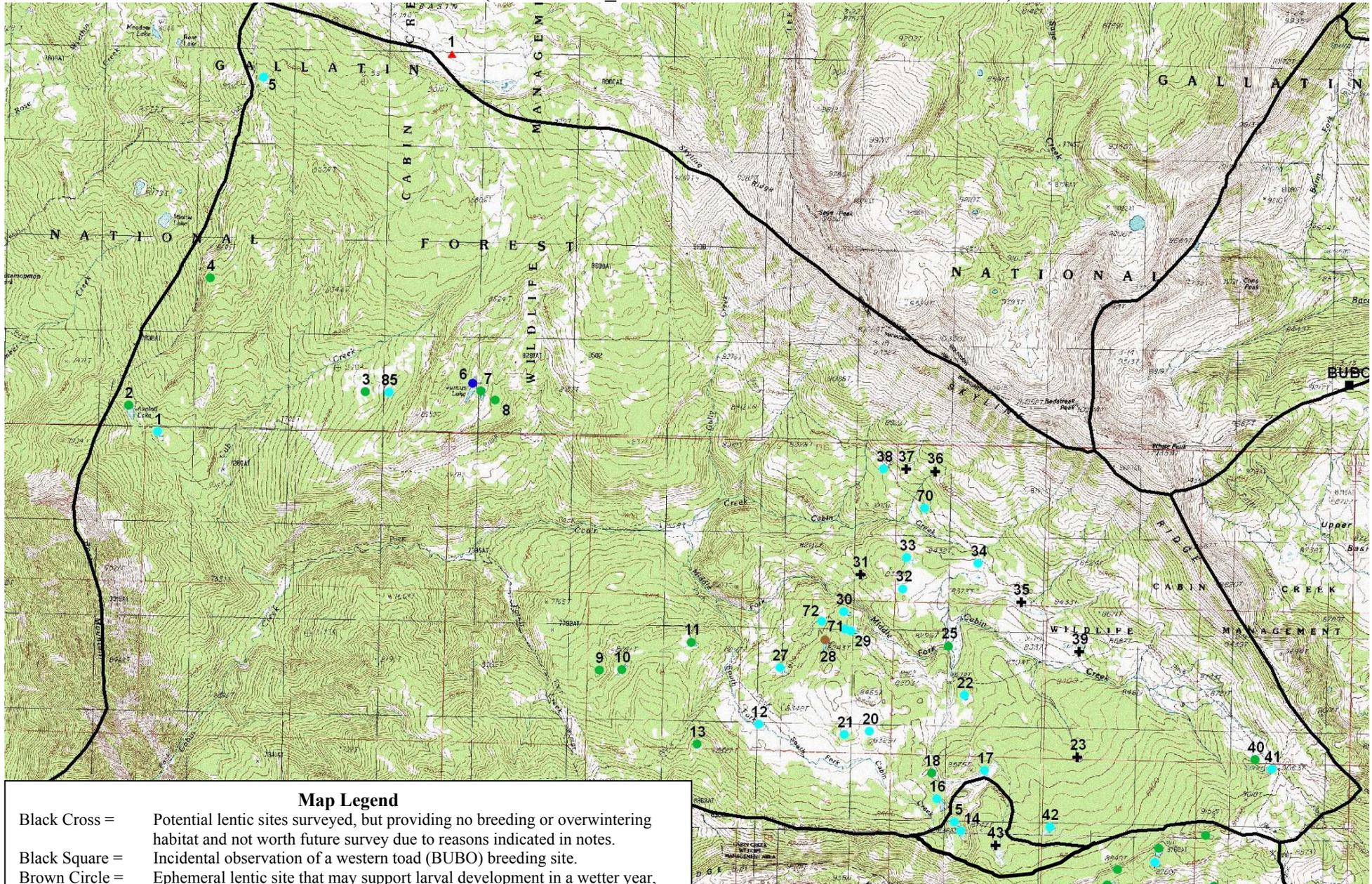
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>002</u>	1 (3%)	1 (3%)	-
<b>Western Toad (BUBO)</b>	003, 007, 085 <sup>9</sup>	3 (8%)	0 (0%)	-
<b>Columbia Spotted Frog (RALU)</b>	002, 003, 004, 006, 007, 008, <u>009</u> , 010, 012, 013, 014, 015, <u>016</u> , <u>020</u> , <u>021</u> , <u>022</u> , 023, 025, 027, <u>029</u> , <u>030</u> , <u>033</u> , 034, 038, 071, <u>085</u>	26 (72%)	9 (25%)	-
<b>Incidental Herpetofauna Observations</b>	4 x observations of Columbia spotted frog (RALU) <sup>5</sup>	-	-	-
<b>Fish Detected</b>	025 (unidentified trout)	1 (8%) <sup>6</sup>	-	-

Notes:

1. Sites 018 and 019 were combined under site number 018. Sites 024, 025, and 026 were combined under site number 025.
2. Sites 023 and 039 are not lentic sites, are only springs on the side of a mountain without any place for the water to pool, and are not worth future survey.
3. Site 035 is not a lentic site, is only a willow covered meadow with a stream flowing through it, and is not worth future survey.
4. Sites 036, 037, and 043 were identified as potential lentic sites on the topographic map, but were not lentic areas and are not worth future survey.
5. Columbia spotted frogs (RALU) were found at site 035. However, these were considered incidental observations because this is not a lentic site and is only a meadow with a stream flowing through it.
6. Other potential aquatic overwintering areas in this watershed are Cabin Creek and Middle Fork of Cabin Creek below 8400 feet, South Fork of Cabin Creek below 8200 feet, Cub Creek below 7500 feet, Forest Creek below 8000 feet, and Gully Creek below 8600 feet.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. Columbia spotted frogs (RALU) were reported in the Cabin Creek Drainage in 1997 and 1999 by Wally McClure.
9. We incidentally detected a western toad (BUBO) breeding site with between 1,000 and 10,000 larvae adjacent to the watershed on 7/12/2003 (see red triangle on watershed map). This may be the source of adults and juveniles detected at sites 003, 007, and 085 in the Cabin Creek watershed.
10. Western toad (BUBO) larvae were observed at a pond 1.4 miles east-northeast of White Peak by Robert Moore on 7/23/1999.
11. The DFWP fish stocking database has records of stocking 34,500 cutthroat trout in Cabin Creek on 8/19/1932.
12. Sites 023 was noted as having been heavily impacted by grazing.

## Cabin Creek - (HUC ID = 6\_003 & ICBEMP HUC ID =100200071604)



### Map Legend

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of a western toad (BUBO) breeding site.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.
- Red Triangle = Western toad (BUBO) breeding site adjacent to watershed.

## Little Pipestone Creek - (HUC ID = 6\_004 & ICBEMP HUC ID = 100200051203)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	8
Number of Wet Lentic Sites	6
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	6

Number of Fishless Potential Lentic Overwintering Sites	2
Potential Lentic Overwintering Sites	001, 002, 003, 004, 006, 007
Permanent Lentic Sites with Emergent Vegetation	001, 002, 003, 004, 006, 007
Permanent Lentic Sites without Emergent Vegetation	None

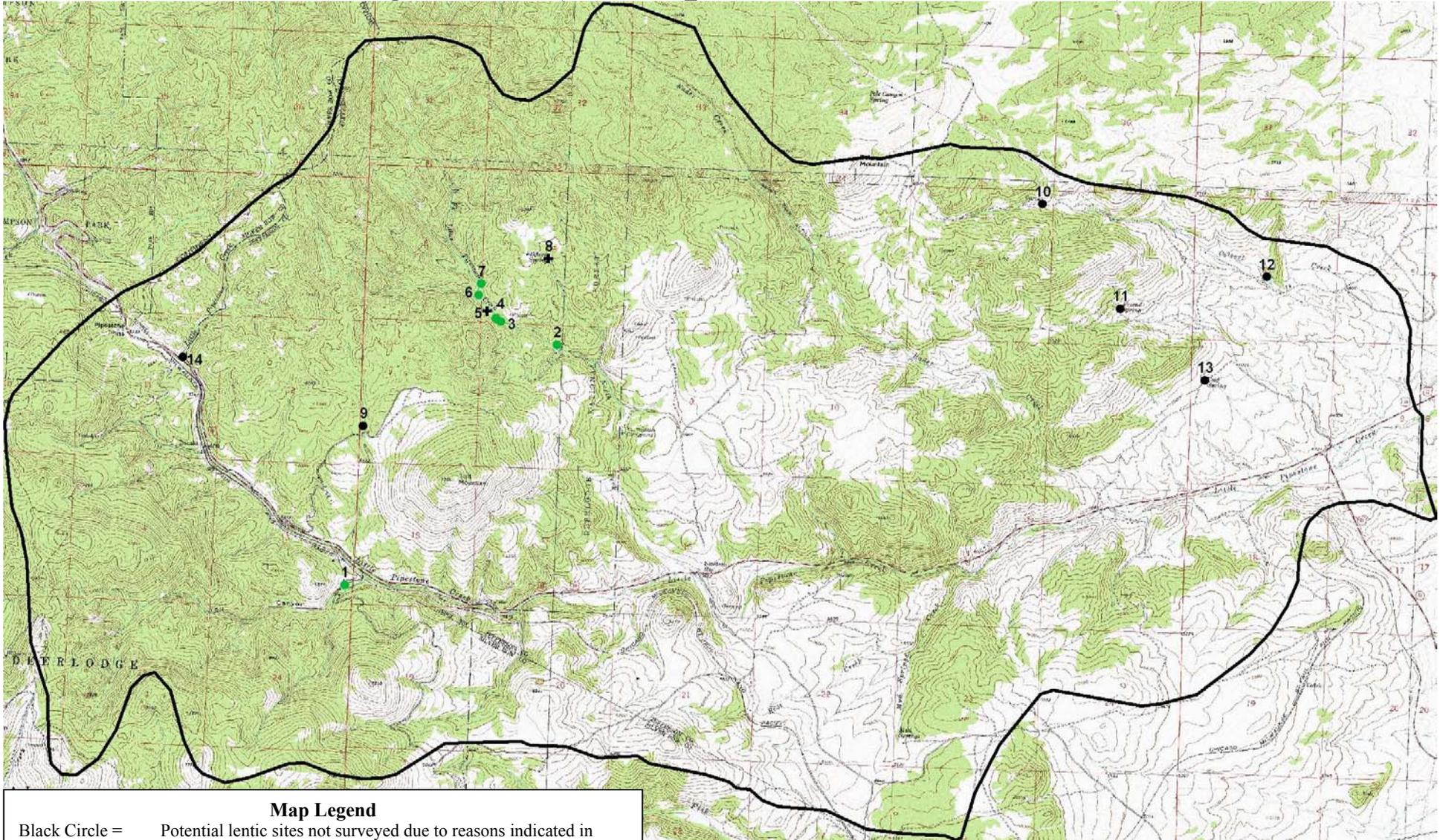
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	002, 007	2 (33%)	0 (0%)	-
<b>Fish Detected</b>	001 (unidentified trout), 002 (unidentified trout), 004 (unidentified trout), 006 (unidentified trout)	4 (67%)	-	-

Notes:

1. Sites 009-014 are on private land and were not surveyed in 2003.
2. Site 005 is not a lentic site, appears to be an old inactive beaver pond with nothing but flowing water present, and is not worth future survey.
3. Site 008 is not a lentic site, only has water flowing from a spring, and is not worth future survey.
4. Other potential aquatic overwintering areas in this watershed are the North Fork of Little Pipestone Creek below 6200 feet and Little Pipestone Creek below 6300 feet.
5. A museum voucher record of a western rattlesnake (CRVI) was collected on Little Pipestone Creek on 6/23/1944 by R.L. Fricke (CM 23415).
6. A museum voucher record of a terrestrial gartersnake (THEL) was collected near a small stream west of Cold Spring on 7/12/1941 by G.K. MacMillan (CM 20778).
7. A museum voucher record of Columbia spotted frog (RALU) was collected by a small stream near the highway on 8/2/1965 by F.J. Fell (MCZ A-52197).

## Little Pipestone Creek - (HUC ID = 6\_004 & ICBEMP HUC ID = 100200051203)



### Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Bear Creek - (HUC ID = 6\_005 & ICBEMP HUC ID = 100200071001)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	6
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	005
Permanent Lentic Sites with Emergent Vegetation	005
Permanent Lentic Sites without Emergent Vegetation	None

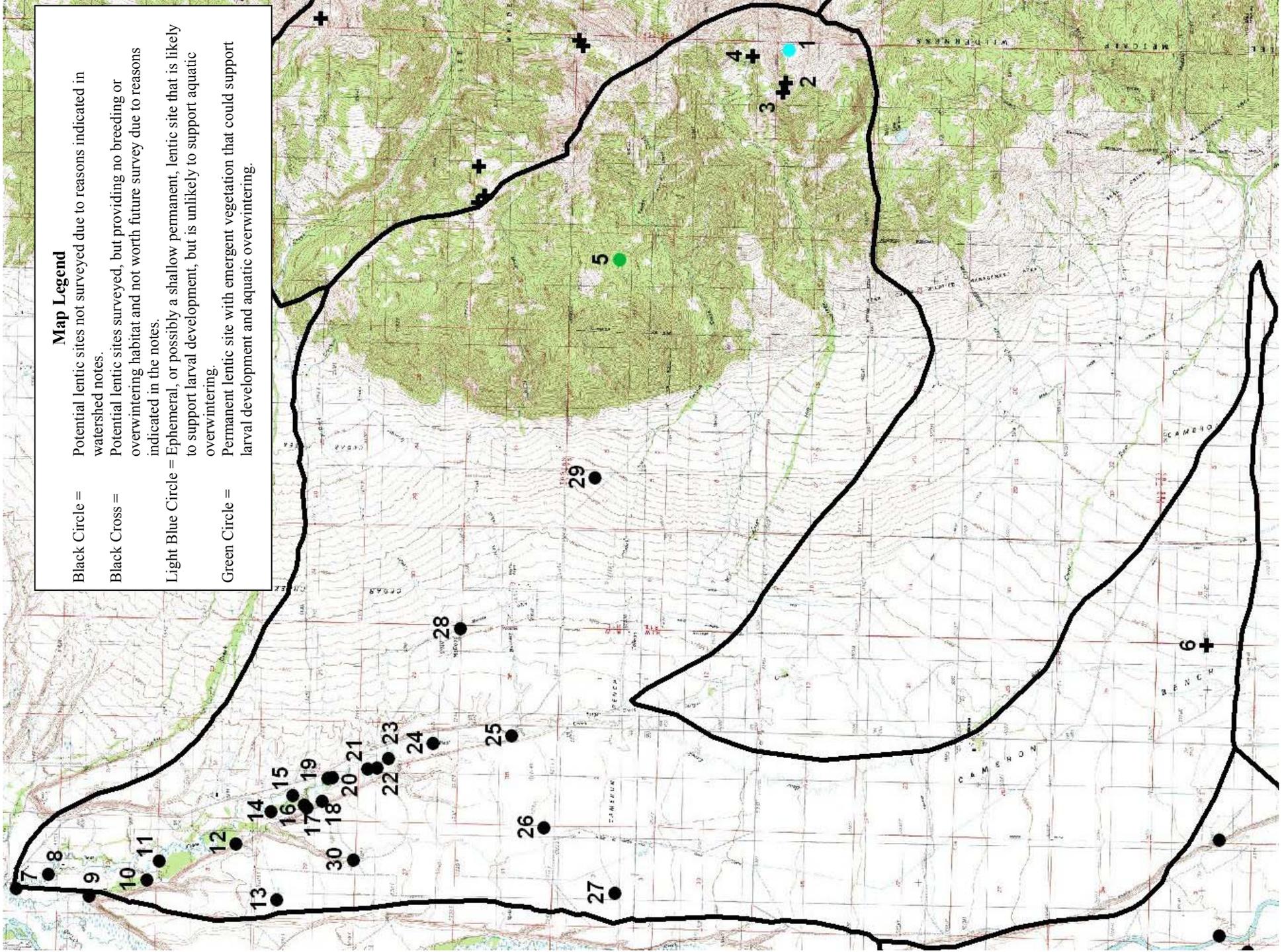
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	005	1 (50%)	0 (0%)	-
<b>Terrestrial Gartersnake (THEL)</b>	005	1 (50%)	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

- Sites 007-030 are on private land and were not surveyed in 2003.
- Sites 002, 003, and 004 are not lentic sites, are springs with only flowing water, and are not worth future survey.
- Site 006 is not a lentic site. Area identified as a potential lentic site on topo map, was only a metal pipe coming out of the ground. Site not worth future survey.
- Other potential aquatic overwintering areas in this watershed are Bear Creek within the watershed boundary, Boulder and McDeed Creeks below 5700 feet, and Shell, Tolman and Mill Creeks below 6200 feet.
- The DFWP fish stocking database has 1 record of stocking 40,000 cutthroat trout in Boulder Creek on 9/13/1928, 1 record of stocking 15,400 cutthroat trout in Bear Creek on 8/20/1931, and 2 different records of stocking rainbow trout in Bear Creek (10,750 on 8/12/1948 and 48,000 on 11/13/1946).

Bear Creek - (HUC ID = 6\_005 & ICBEMP HUC ID = 100200071001)



**French Creek - (HUC ID = 6\_006 & ICBEMP HUC ID = 100200041401)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	45	Number of Fishless Potential Lentic Overwintering Sites	16
Number of Wet Lentic Sites	36	Potential Lentic Overwintering Sites	001, 006, 007, 008, 011, 014, 015, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 031, 033, 034, 037, 044, 071
Number of Dry Lentic Sites	0	Permanent Lentic Sites with Emergent Vegetation	006, 007, 008, 014, 015, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 031, 033, 034, 037, 044, 071
Number of Potential Lentic Overwintering Sites	23	Permanent Lentic Sites without Emergent Vegetation	001, 011

**2003 Species Detection Summary**

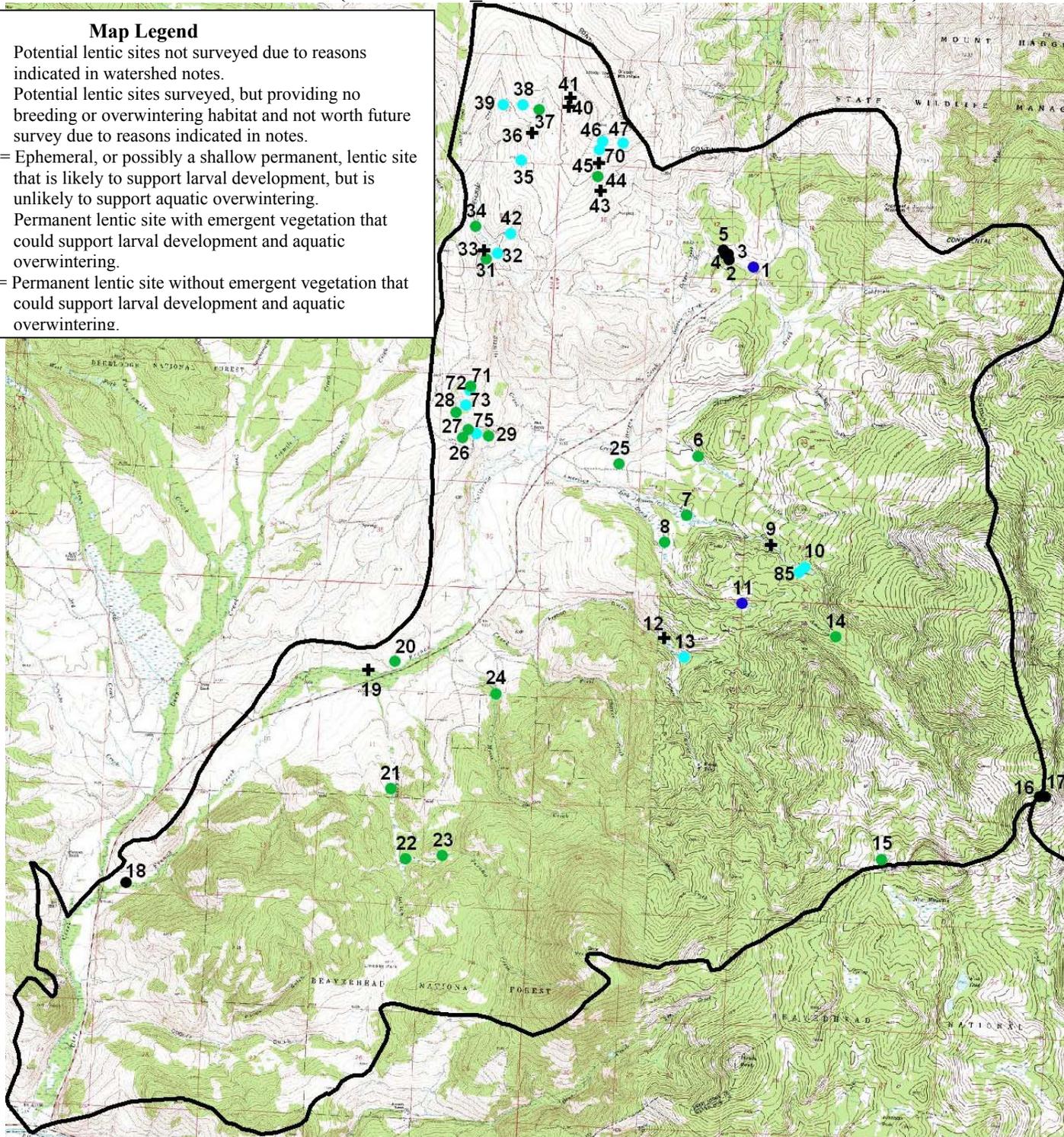
Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>021, 085</u>	2 (6%)	2 (6%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>007, 008, 013, 020, 021, 022, 024, 026, 027, 028, 029, 031, 034, 035, 038, 042, 071, 072, 073, 075</u>	20 (56%)	12 (33%)	-
<b>Terrestrial Gartersnake (THEL)</b>	013, 022	2 (6%)	-	-
<b>Common Gartersnake (THSI)</b>	007	1 (3%)	-	-
<b>Fish Detected</b>	001 (unidentified trout), 006 (Brown Trout), 008 (unidentified trout), 011 (unidentified trout), 020 (unidentified trout), 021 (unknown), 025 (unidentified trout)	7 (30%) <sup>8</sup>	-	-

- Sites 002-005 and 016-018 are on private land and were not surveyed in 2003.
- Sites 029 and 030 were combined under site number 029.
- Sites 009, 019, and 033 are areas of old beaver activity, but no longer have any lentic habitat, only have lotic habitat, and are not worth future survey.
- Sites 012 and 036 no longer have any lentic habitat, only have flowing water, and are not worth future survey.
- Sites 040 and 041 were lentic sites that still had water at the time of the survey, but they would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Sites 043 and 045 are only damp areas with springs on the side of a mountain with no place for water to pool and are not worth future survey.
- Other potential aquatic overwintering areas in this watershed are Sixmile Creek below 6,500 feet, American Creek below 7,350 feet, Oregon Creek below 6,600 feet, Little American Creek below site 010, French Gulch Creek below 6,800 feet, Little California below 7,400 feet, Crooked John Creek below 6,800 feet, California Creek below 6,600 feet, Lincoln Gulch below site 023, Moose Creek below 6,400 feet, and Connor Gulch below 6,100 feet.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- A terrestrial gartersnake (THEL) adult was observed in the Mount Haggin Wildlife Management Area on 8/21/1997 by Ryan Rauscher.
- Columbia spotted frog (RALU) adults were observed in Panama Gulch on 5/21/1998 by Bruce Roberts.
- The DFWP fish stocking database has 2 different records of stocking arctic grayling, 10 different records of stocking cutthroat trout, and 22 different records of stocking rainbow trout in Deep Creek between 1931 and 1966, 1 record of stocking 5,000 cutthroat trout in French Gulch on 9/6/1946, 1 record of stocking 1,000 cutthroat trout in Moose Creek on 8/5/1943, 4 records of stocking cutthroat trout in First Chance Creek between 1948 and 1952, 3 records of stocking cutthroat trout in Julius Gulch between 1948 and 1952, 1 record of stocking arctic grayling, 18 different records of stocking cutthroat trout, and 7 different records of stocking rainbow trout in California Creek between 1928 and 1952, 1 record of stocking rainbow trout and 10 different records of stocking cutthroat trout in American Creek between 1934 and 1952, 5 different records of stocking cutthroat trout in Little American Creek between 1943 and 1952, 4 different records of stocking cutthroat trout in Little California Creek between 1948 and 1952, and 4 different records of stocking cutthroat trout in Crooked John Creek between 1948 and 1952.

# French Creek - (HUC ID = 6 006 & ICBEMP HUC ID = 100200041401)

## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



## Unnamed Drainage on Lower Big Hole River - (HUC ID = 6\_007 & ICBEMP HUC ID = 100200040104)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	4
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

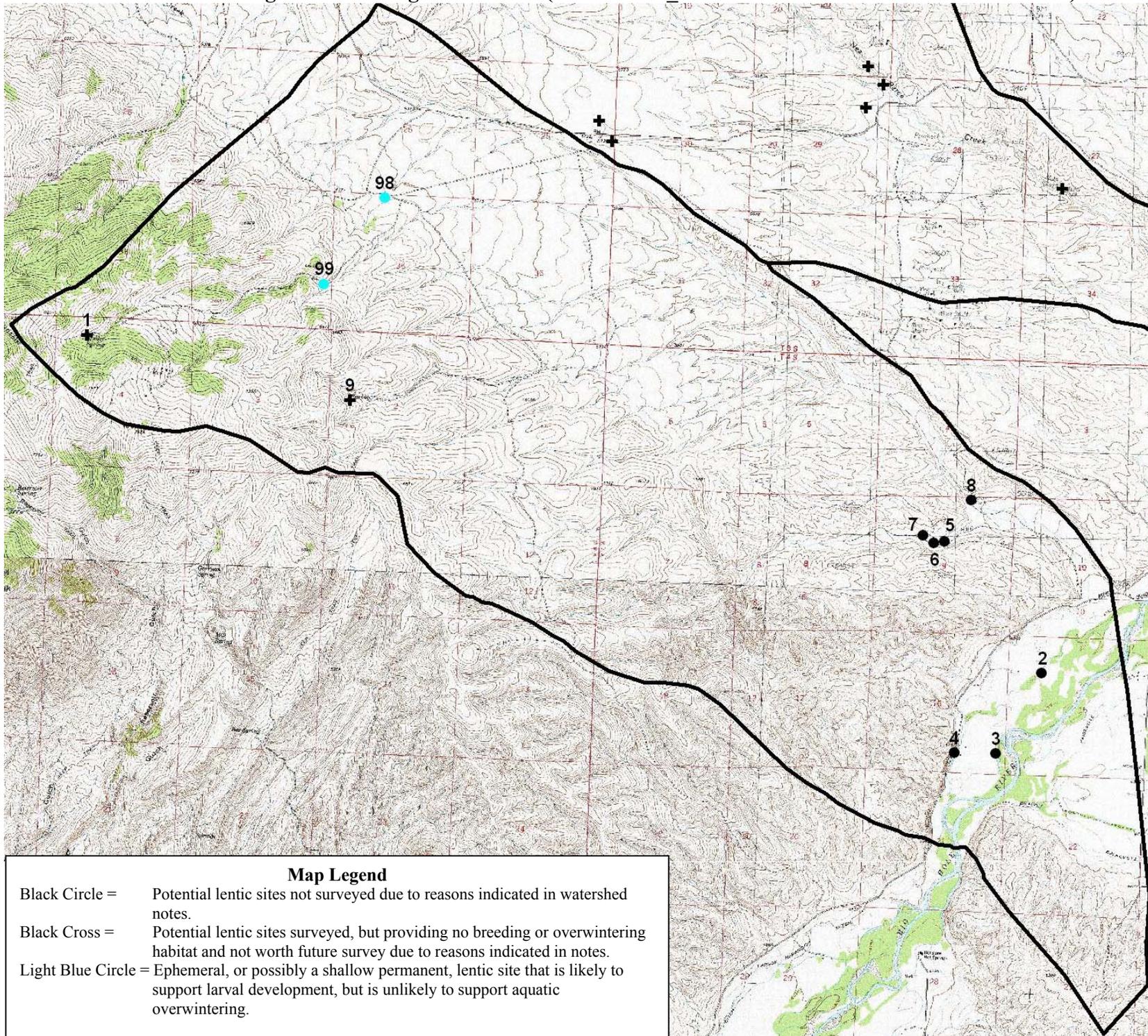
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Species Detected in this HUC</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 002-008 are on private land and were not surveyed in 2003.
2. Site 001 is not a lentic site, is only a spring on the side of a mountain with no place for water to pool, and is not worth future survey.
3. Site 007 is identified as a spring on the topographic, but the spring is fed directly into a cattle tank and provides no natural lentic habitat and is not worth future survey.
4. Other potential aquatic overwintering areas in this watershed are areas along the Big Hole River within the watershed boundary. Lack of aquatic overwintering habitat adjacent to the potential breeding areas surveyed may account for the lack of species detected.
5. Sites 009 and 099 were noted as having been heavily impacted by grazing.

# Unnamed Drainage on Lower Big Hole River - (HUC ID = 6\_007 & ICBEMP HUC ID = 100200040104)



## Wade, Cliff, and Hidden Lake - (HUC ID = 6\_008 & ICBEMP HUC ID =100200072501)

### 2003 Water Body and Survey Summary

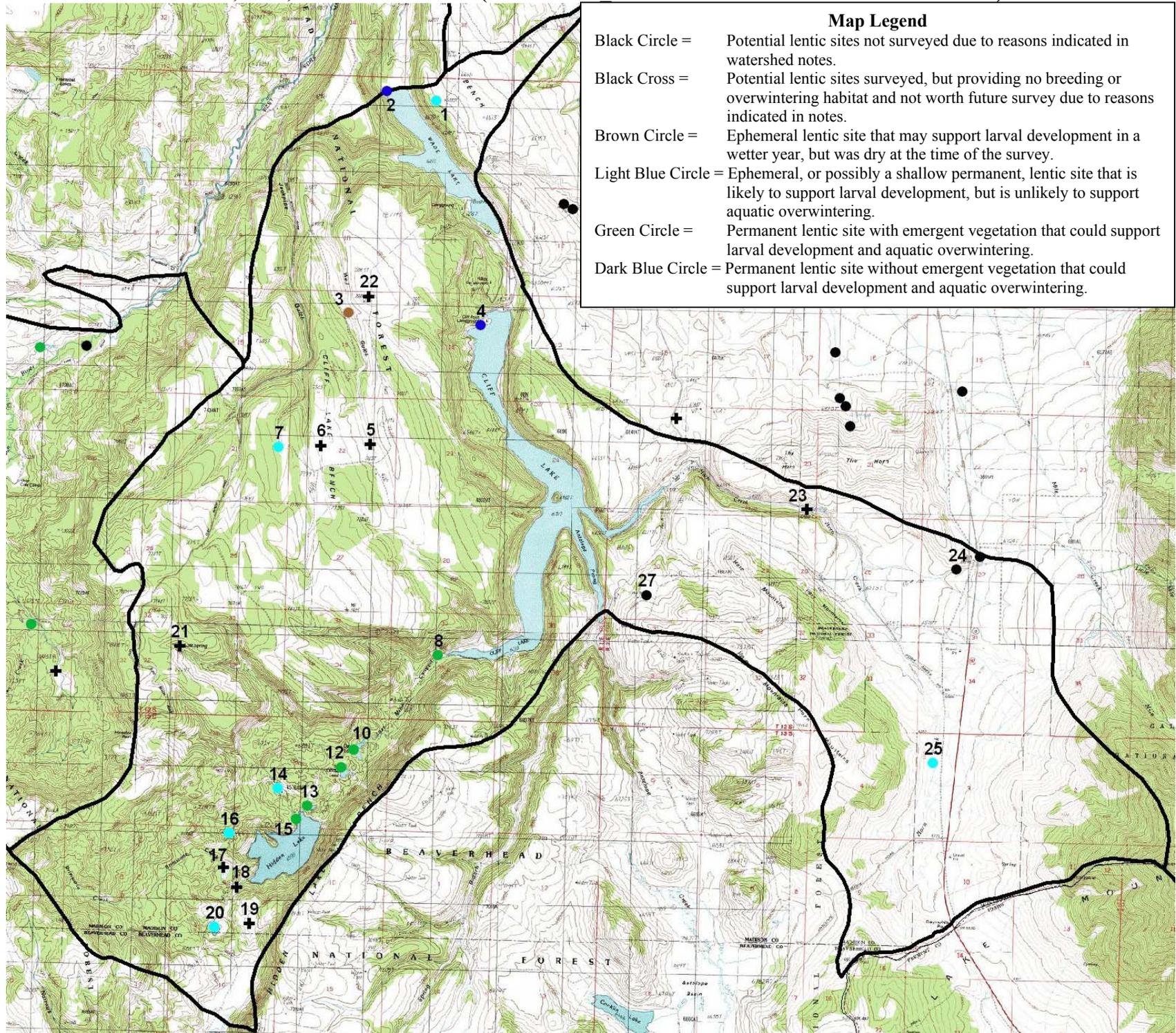
Number of Potential Lentic Sites Surveyed	23	Number of Fishless Potential Lentic Overwintering Sites	2
Number of Wet Lentic Sites	13	Potential Lentic Overwintering Sites	002, 004, 008, 010, 012, 013, 015
Number of Dry Lentic Sites	3	Permanent Lentic Sites with Emergent Vegetation	008, 010, 012, 013, 015
Number of Potential Lentic Overwintering Sites	7	Permanent Lentic Sites without Emergent Vegetation	002, 004

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>001, 007, 020, 025</u>	4 (31%)	4 (31%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>016, 020</u>	2 (15%)	2 (15%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>010, 012, 013, 015, 016</u>	5 (38%)	4 (31%)	-
<b>Terrestrial Gartersnake (THEL)</b>	002, 010, 012, 015, 016, 020, 023	7 (54%)	-	-
<b>Fish Detected</b>	002 (Brown Trout), 004 (unidentified trout), 010 (unidentified trout), 012 (unknown species), 015 (unidentified trout)	5 (71%) <sup>8</sup>	-	-

1. Sites 024 and 027 are on private land and were not surveyed in 2003. Site 024 could be seen from the road and looks like a great amphibian breeding habitat (see photo).
2. Sites 005, 006, 021, 022, and 026 were misclassified as lentic sites on the topographic map, are actually watering troughs/tanks, and are not worth future survey.
3. Sites 017 and 019 are lentic, but would never hold water long enough to support amphibian reproduction and are not worth future survey.
4. Sites 018 and 023 are not lentic sites, are springs with only lotic habitat, and are not worth future survey.
5. Sites 009 and 010 were combined under site number 010. Sites 011 and 012 were combined under site number 012.
6. Other potential aquatic overwintering sites in the watershed include areas along Lost Mine Canyon Creek below site 009 and Horn Creek below site 023.
7. In future surveys, potential lentic habitats at the ends of all the arms of sites 002 (Wade Lake) and 004 (Cliff Lake) should be surveyed.
8. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
9. Museum voucher specimens of boreal chorus frogs (PSMA) were collected at the pond just north of Hidden Lake (site 013) by Dan Gustafson on 7/22/1995 (IMNH 1917), and the pond just northwest of Hidden Lake (site 016) by Dan Gustafson on 7/26/1991 (MSBU 7062).
10. A Columbia spotted frog (RALU) museum voucher specimen was collected at Hidden Lake (site 015) on 8/3/1991 by Dan Gustafson (MSBU 7069).
11. Museum voucher specimens of tiger salamanders (AMTI) were collected at an unknown pond near Hidden Lake on 7/26/1991 by Dan Gustafson (MSBU 7082, 7083, and 7084), the pond just north of Hidden Lake (site 013) on 7/26/1991 by Dan Gustafson (IMNH 1881), an unknown pond near Elk Lake on 6/30/1990 by Dan Gustafson (MSBU 6910), and the pond on the border of Madison and Beaverhead Counties (site 020) on 7/22/1995 by Dan Gustafson (IMNH 1878 and 1879).
12. The DFWP fish stocking database has a record of stocking 9,000 rainbow trout at Goose Lake (site 012) on 10/27/1937, 2 different records of stocking rainbow trout in Otter Lake (site 010) in 1937 and 1952, 4 different records of stocking rainbow trout at Hidden Lake (site 015) between 1933 and 1947, 69 different records of stocking rainbow trout and 2 different records of stocking cutthroat trout in Cliff Lake (site 004) between 1928 and 1990, 137 different records of stocking rainbow trout, 4 different records of stocking Coho Salmon, 4 different records of stocking cutthroat trout, and 1 record of stocking brown trout in Wade Lake (site 002) between 1932 and 1991, and a record of stocking 23,000 rainbow trout in Antelope Creek on 8/25/1948.
13. Site 025 was noted as having been heavily impacted by grazing.

# Wade, Cliff, and Hidden Lake - (HUC ID = 6 008 & ICBEMP HUC ID =100200072501)



## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

**Little Sheep Creek - (HUC ID = 6\_009 & ICBEMP 100200010601)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	
Potential Lentic Overwintering Sites	-
Permanent Lentic Sites with Emergent Vegetation	
Permanent Lentic Sites without Emergent Vegetation	

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species were Detected in this Watershed</b>	-			
<b>Fish Detected</b>	None			

Notes:

1. No potential lentic sites were identified in this watershed on the topographic maps or aerial photos. When the watershed was ground truthed no lentic sites were encountered incidentally and no species were detected incidentally.
2. Boreal chorus frogs (PSMA) were observed calling from an irrigation canal 4 miles northwest of Lima on 5/30/1997 by Jim Reichel.



**Tucker Creek - (HUC ID = 6\_010 & ICBEMP HUC ID =100200040905)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	6
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0 <sup>4</sup>

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None this year <sup>4</sup>
Permanent Lentic Sites with Emergent Vegetation	002
Permanent Lentic Sites without Emergent Vegetation	None

**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>002</u>	1 (100%)	1 (100%)	-
<b>Fish Detected</b>	None	-	-	-

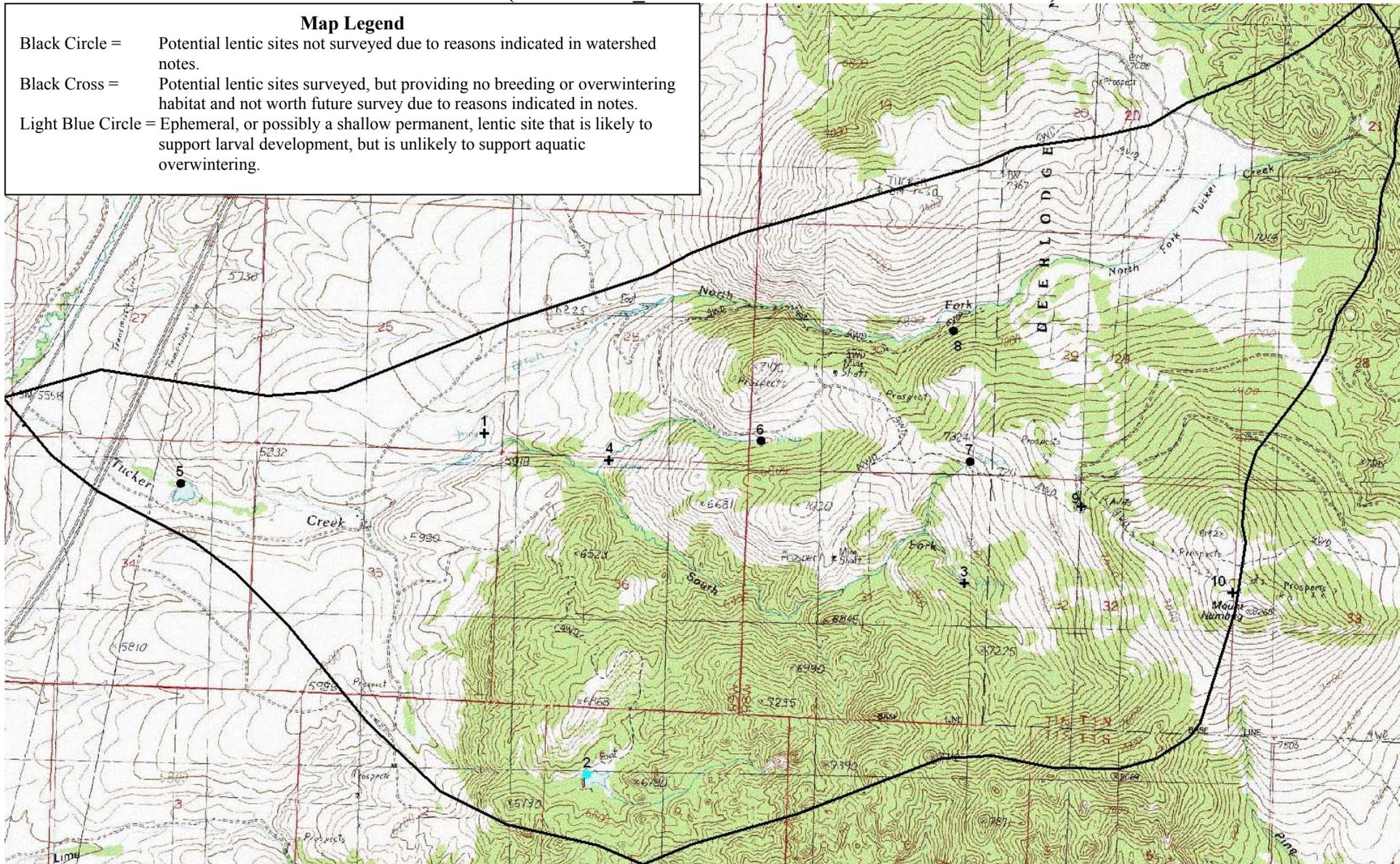
Notes:

1. Sites 005-008 are on private land and were not surveyed in 2003.
2. Sites 001, 003, and 004 were not lentic sites, were only springs (wet and dry) with no place for standing water to form, and are not worth future survey.
3. Sites 009 and 010 were identified as a potential lentic sites by aerial photo interpretation, but were actually just an area with mine spoils without any lentic habitat and are not worth future survey.
4. Site 002 is likely to support aquatic overwintering in wetter years, but residents say it has dried by the end of the summer in recent years.
5. Other potential aquatic overwintering areas in this watershed are areas along Tucker Creek and the North Fork of Tucker Creek below 7,000 feet.

# Tucker Creek - (HUC ID = 6\_010 & ICBEMP HUC ID =100200040905)

## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.



## Nez Perce Creek - (HUC ID = 6\_011 & ICBEMP HUC ID =100200040103)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	8
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

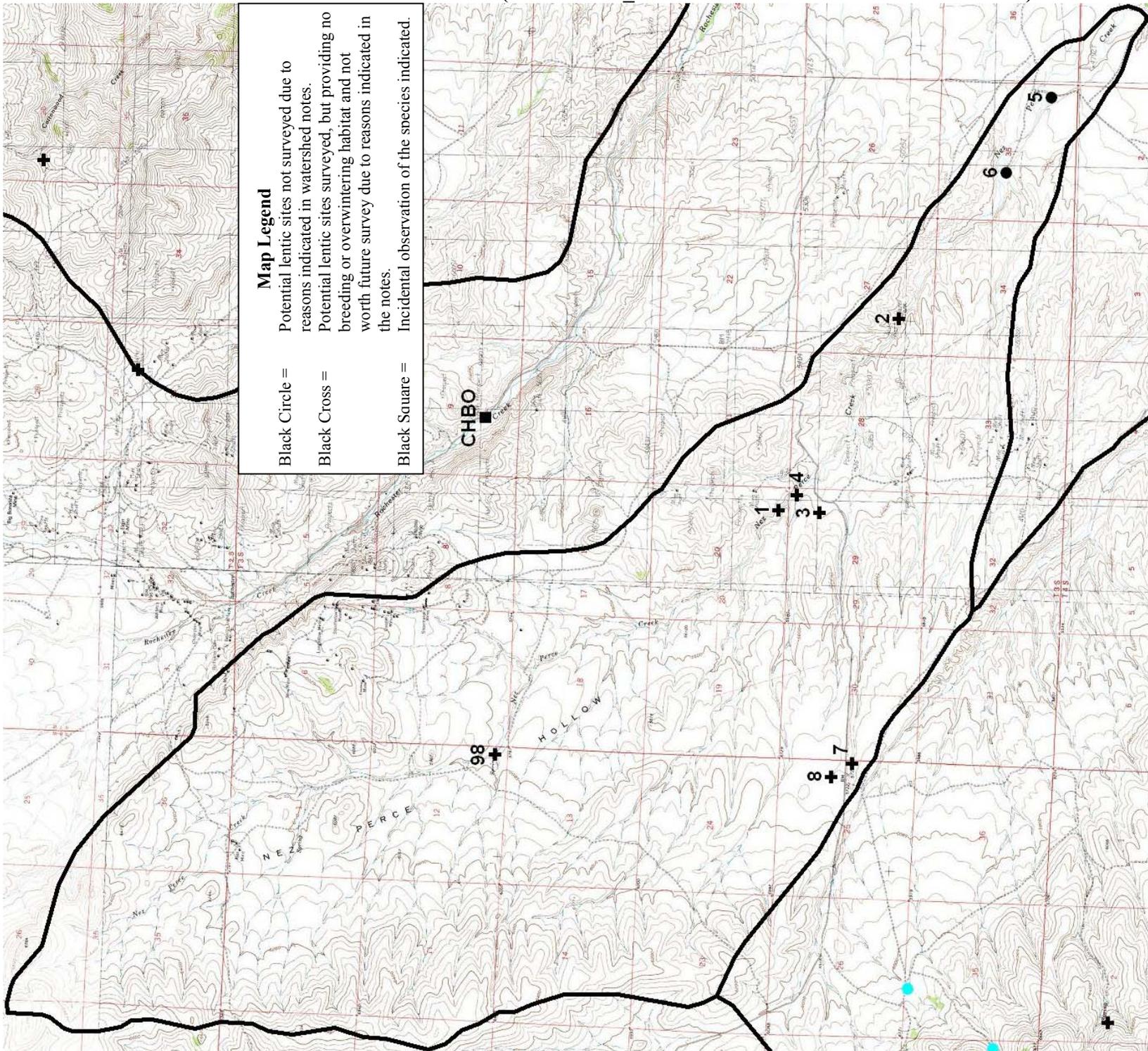
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No herpetofauna species were detected in this watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. No aerial photographs were found for this watershed so any potential lentic sites that might have been identified on aerial photographs were not surveyed in 2003. However, it is unlikely that many or any potential sites would have been found on aerial photos given how dry the watershed is.
2. Sites 005 and 006 are on private land and were not surveyed in 2003.
3. Sites 001, 003, and 004 are not lentic sites, are springs with only a little flowing water, and are not worth future survey.
4. Sites 002, 098, and 099 are only watering troughs without any lentic habitat and are not worth future survey.
5. Sites 007 and 008 were identified as potential lentic sites on the topographic map (stock ponds), but were no longer lentic sites, had not held standing water in decades and are not worth future survey.
6. Other potential aquatic overwintering areas in this watershed are areas along Nez Perce Creek below site 001, but even this may be questionable.
7. A rubber boa (CHBO) was observed along the road in the adjacent Rochester Creek drainage on 7/17/2003 by Jeff Marks and Caleb Putnam.
8. Site 098 was noted as having been heavily impacted by grazing.

# Nez Perce Creek - (HUC ID = 6\_011 & ICBEMP HUC ID =100200040103)



## Ruby River - (HUC ID = 6\_012 & ICBEMP HUC ID =100200031001)

### 2001 Water Body and Survey Summary

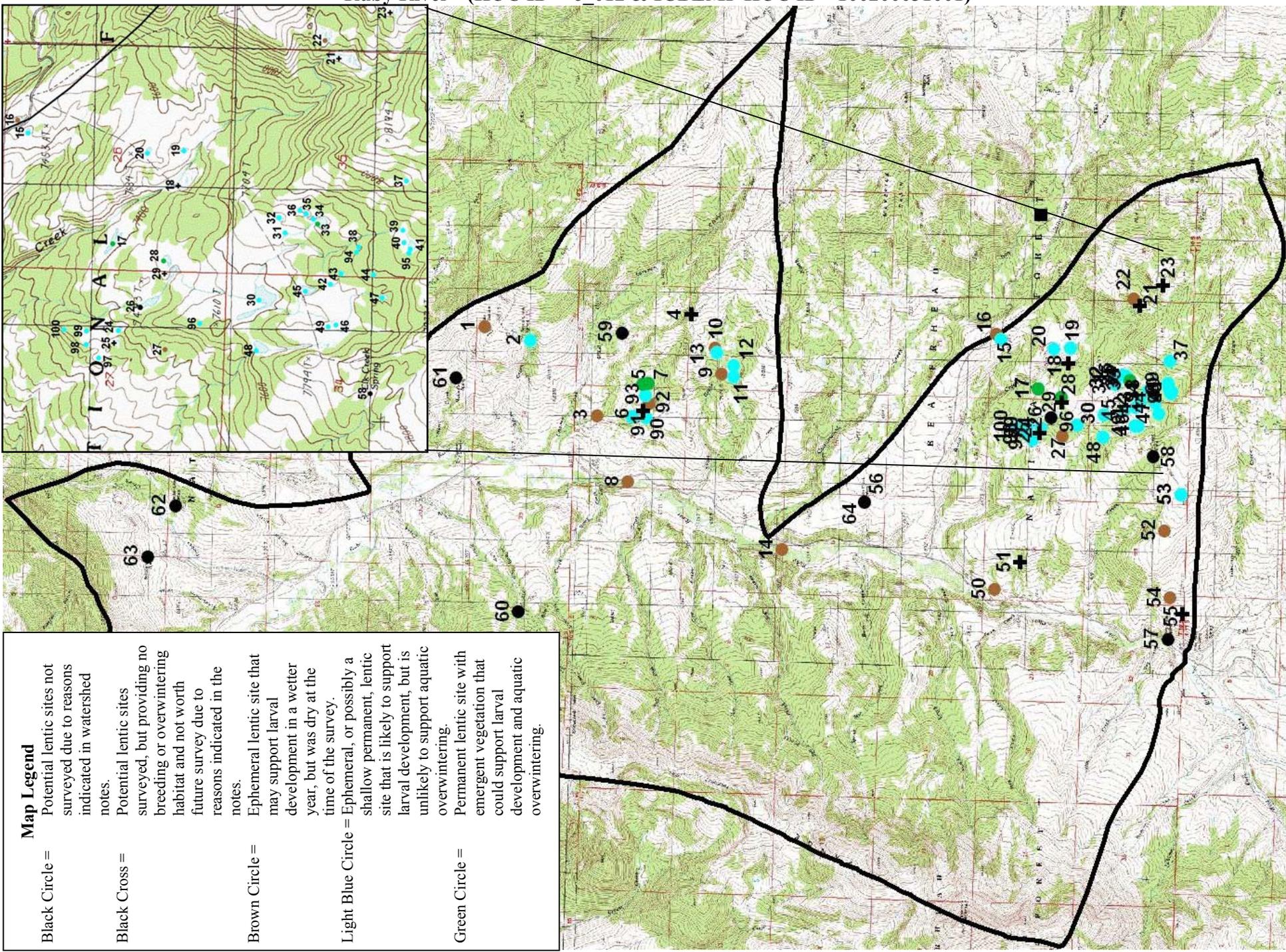
Number of Potential Lentic Sites Surveyed	65	Number of Fishless Potential Lentic Overwintering Sites	5
Number of Wet Lentic Sites	43	Potential Lentic Overwintering Sites	005, 007, 017, 028, 033
Number of Dry Lentic Sites	17	Permanent Lentic Sites with Emergent Vegetation	005, 007, 017, 028, 033
Number of Potential Lentic Overwintering Sites	5	Permanent Lentic Sites without Emergent Vegetation	None

### 2001 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>005, 006, 015, 017, 019, 020, 028, 030, 031, 032, 033, 035, 038, 041, 043, 044, 048, 053, 095, 096, 097, 098, 099, 100</u>	24 (56%)	24 (56%)	-
<b>Western Toad (BUBO)</b>	034	1 (2%)	0 (0%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>024, 032, 053</u>	3 (7%)	2 (5%)	-
<b>Columbia Spotted Frog (RALU)</b>	006, 007, 011, 012, 013, <u>017</u> , 019, 024, 028, 030, <u>032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 048, 049, 053, 090, 094, 095, 098, 099</u>	34 (79%) <sup>4</sup>	17 (39%)	-
<b>Terrestrial Gartersnake (THEL)</b>	005, 006, 007, 015, 017, 096, 099	7 (16%)	-	-
<b>Common Gartersnake (THSI)</b>	006	1 (2%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Columbia spotted frogs <sup>4</sup>	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

1. Site 026 was missed accidentally due to a communication error and was not surveyed in 2001. Site 056 was not surveyed in 2001 due to a misunderstanding regarding land ownership. Sites 057-064 were not surveyed in 2001 because it was not standard practice to survey springs prior to 2002
2. Sites 004, 025, 051, and 055 are lentic, but they would not hold enough water long enough to support amphibian reproduction and are not worth future survey.
3. Sites 018, 021, 023, 029, and 091 are not lentic sites, are meadows with streams (wet and dry) through the middle of them, and are not worth future survey.
4. RALU were detected at site 091, which was not a lentic site, so this site was not used in calculations of numbers and percentages of sites detected and where breeding was detected.
5. Other potential aquatic overwintering areas in this watershed are areas along the Ruby River within the watershed boundary, Burnt Creek below site 018, and all smaller tributaries to the Ruby River below 6800 feet.
6. A tiger salamander (AMTI) adult was observed at Martin Creek Springs Pond (site 061) in 1992 by Dave Browning.
7. The DFWP fish stocking database has the following records of stocking fish in Elk Creek: 2,700 brook trout on 8/15/1950; 8,500 brook trout on 7/22/1950; and 2,000 rainbow trout on 8/15/1950.
8. Sites 005, 019, 020, 021, 031, 034, 039, and 053 were noted as having been heavily impacted by grazing.

Ruby River - (HUC ID = 6\_012 & ICBEMP HUC ID =100200031001)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Warm Springs Creek - (HUC ID = 6\_013 & ICBEMP HUC ID =100200042602)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	41
Number of Wet Lentic Sites	30
Number of Dry Lentic Sites	8
Number of Potential Lentic Overwintering Sites	12

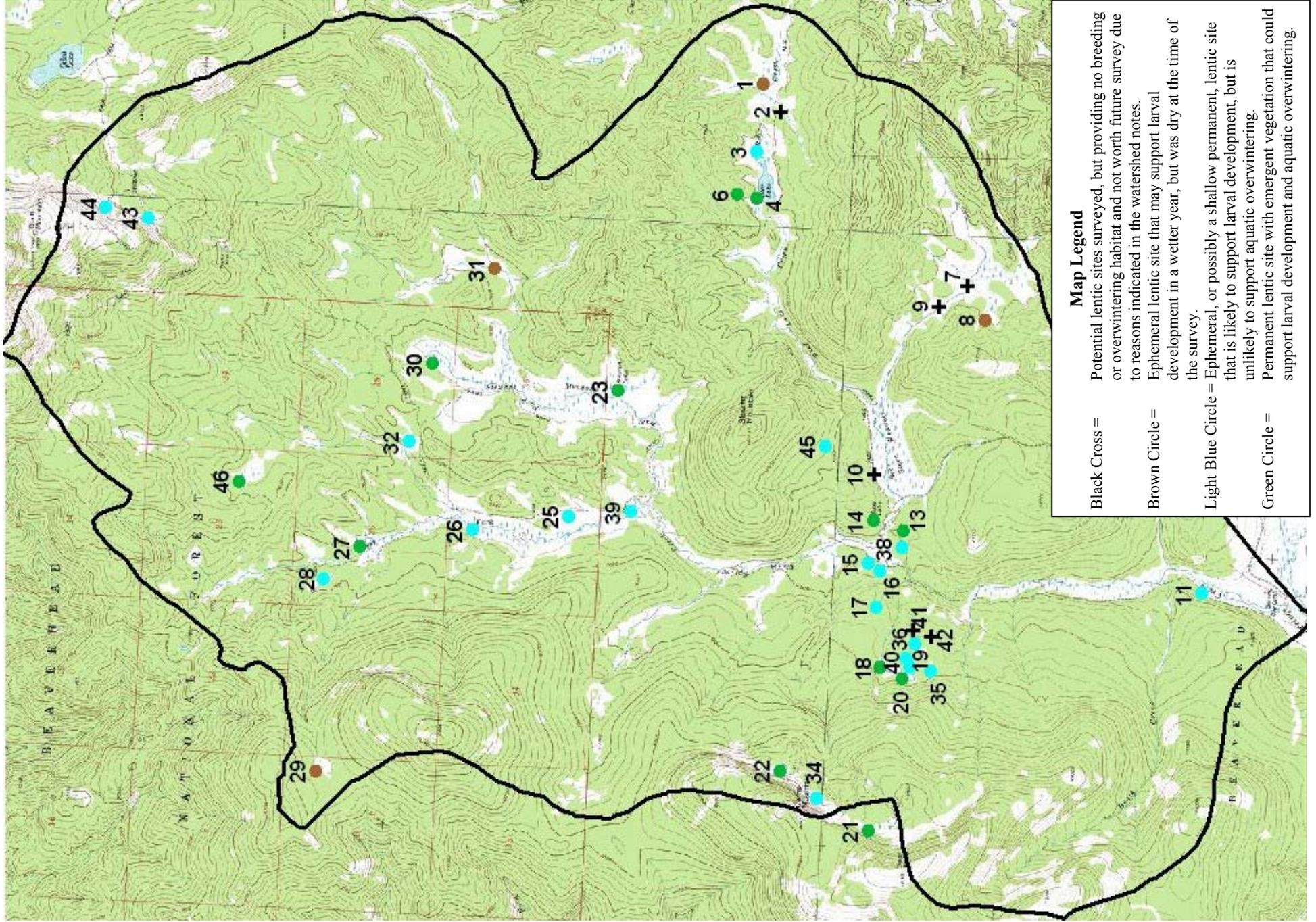
Number of Fishless Potential Lentic Overwintering Sites	8
Potential Lentic Overwintering Sites	004, 006, 013, 014, 018, 020, 021 (marginal), 022, 023, 027, 030, 046
Permanent Lentic Sites with Emergent Vegetation	004, 006, 013, 014, 018, 020, 021, 022, 023, 027, 030, 046
Permanent Lentic Sites without Emergent Vegetation	None

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>006, 019, 022, 025, 026, 027, 030, 035, 045</u>	9 (30%)	9 (30%)	-
<b>Western Toad (BUBO)</b>	018, <u>023</u> , 026, 030, 031, <u>046</u>	6 (19%) <sup>5</sup>	2 (7%)	-
<b>Columbia Spotted Frog (RALU)</b>	003, 004, <u>006</u> , 011, 013, <u>014, 015, 016, 017, 018, 019, 020, 021, 023, 025, 026, 027, 028, 030, 031, 032, 036, 038, 039, 040, 043, 044, 045, 046</u>	29 (91%) <sup>4</sup>	21 (68%) <sup>4</sup>	-
<b>Incidental Herpetofauna Observations</b>	2 x observations of Columbia Spotted Frogs (RALU) <sup>4</sup> 2 x observations of Western Toad (BUBO) <sup>5</sup>	-	-	-
<b>Fish Detected</b>	009 (unidentified trout), 010 (unidentified trout), 013 (unidentified trout), 027 (unidentified trout), 030 (Sculpin, Brook Trout), 046 (Brook Trout)	4 (33%) <sup>7</sup>	-	-

- Sites 004 and 005 were combined under site number 004. Sites 011 and 012 were combined under site number 011. Sites 022 and 033 were combined under site number 022. Sites 024, 030, and 037, were combined under site number 030.
- Sites 002, 041 and 042 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Sites 007, 009, and 010 are not lentic sites, are only meadows with a stream flowing through them, and are not worth future survey.
- RALU adults and juveniles were detected on the streams flowing through sites 007 and 010 which were not lentic sites so these were counted as incidental observations. Because dessicated RALU larvae were found at site 039, which was dry when it was surveyed, this site was included in number of lentic sites where they were detected and number of sites with reproduction. Similarly RALU adults were detected in the stream flowing through site 031 even though the pool at this site was dry at the time of the survey, so this site was included in the number of lentic sites detected, but not the number of lentic sites with reproduction. Thus, 32 was used as the denominator to calculate the percentage of sites detected and 31 was used as the denominator to calculate the percentage of sites with reproduction.
- BUBO adults were detected on the streams flowing through sites 007 and 009 which were not lentic sites so these were counted as incidental observations. BUBO juveniles were detected in the stream flowing through site 031 even though the pool at this site was dry at the time of the survey, so this site was included in the number of lentic sites detected, but not the number of lentic sites with reproduction. Thus, 31 was used as the denominator to calculate the percentage of sites detected and 30 was used as the denominator to calculate the percentage of sites with reproduction.
- Other potential aquatic overwintering areas in this watershed are the West fork of Warm Springs Creek below site 027, the East Fork of Warm Springs Creek below site 030, Bear Creek below sites 007 and 010, and the main stem of Warm Springs Creek within the watershed boundary.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish. Because sites 009 and 010 contained no lentic habitat they were not included in the number and percentage of lentic sites where fish were detected.
- Columbia spotted frog (RALU) adults were observed at Bear Lake (site 004) on 9/9/1997 by Bruce Roberts, in the East Fork of Warm Springs Creek (site 030) on 8/13/1996 by B. Murdock, and in the West Fork of Warm Springs Creek (site 026) on 8/12/1996 by B. Murdock. Adults, juveniles, and larvae were observed at the unnamed lake 10 miles southeast of Wisdom (site 044) on 7/8/1997 by Bruce Roberts.

Warm Springs Creek - (HUC ID = 6\_013 & ICBEMP HUC ID =100200042602)



**Map Legend**

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the watershed notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Beaverhead River (Clark Canyon) - (HUC ID = 6\_014 & ICBEMP HUC ID =100200020702)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	45	Number of Fishless Potential Lentic Overwintering Sites	12
Number of Wet Lentic Sites	26	Potential Lentic Overwintering Sites	009, 014 (marginal), 017, 019 (marginal), 020 (marginal), 022 (marginal), 023, 030, 033, 064, 065, 066, 067
Number of Dry Lentic Sites	17	Permanent Lentic Sites with Emergent Vegetation	009, 014, 017, 019, 020, 022, 023, 030, 033, 064, 065, 066, 067
Number of Potential Lentic Overwintering Sites	13	Permanent Lentic Sites without Emergent Vegetation	None

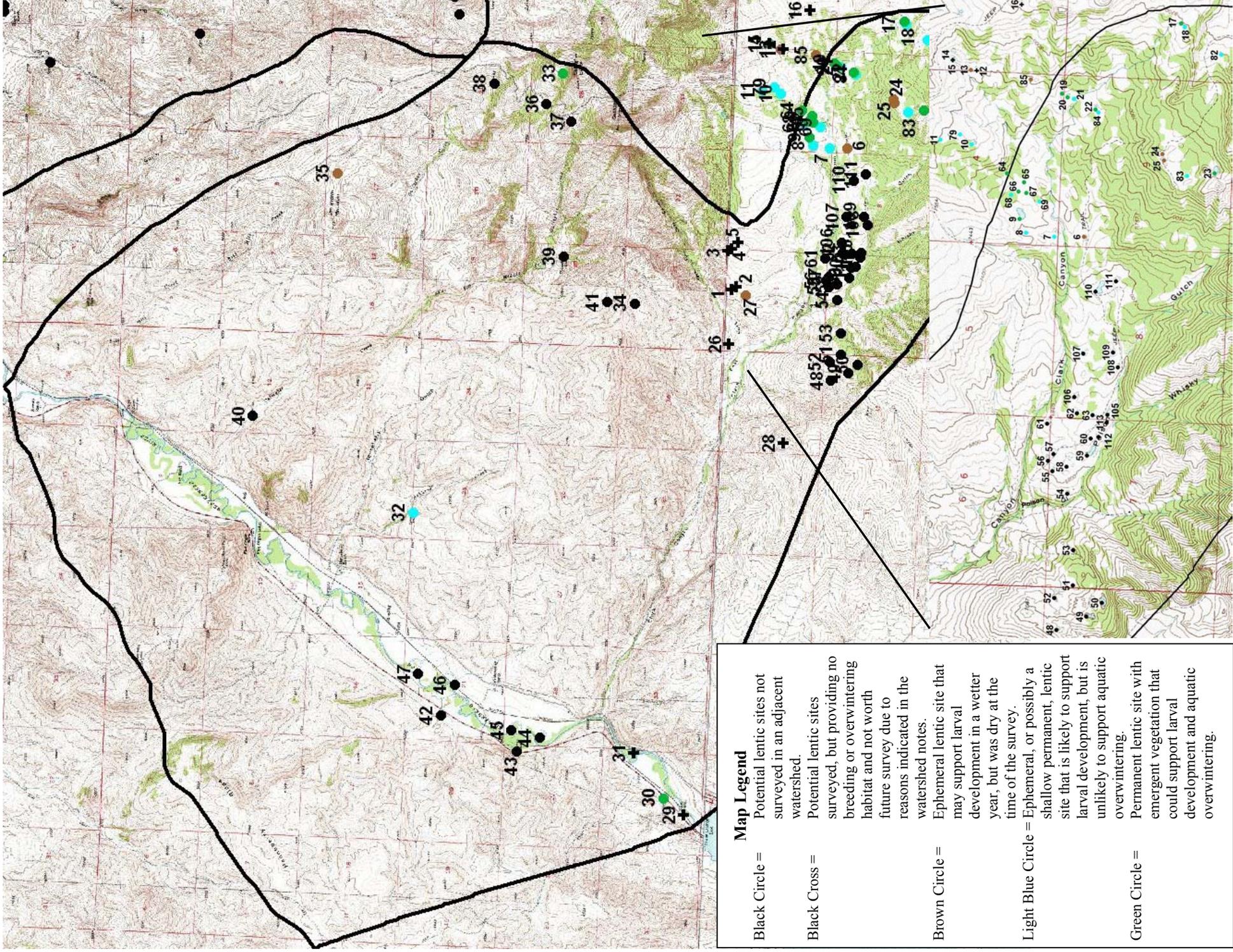
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	023, 024, 083	3 (12%)	0 (0%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>009, 014</u> , 024, 025, <u>066, 067</u> , 084	7 (27%)	5 (19%)	-
<b>Columbia Spotted Frog (RALU)</b>	008, <u>009</u> , 010, 014, 020, <u>022</u> , 030, <u>033</u> , 065, <u>069</u> , <u>079</u> , 083	12 (46%)	5 (19%)	-
<b>Terrestrial Gartersnake (THEL)</b>	039, 079	2 (8%)	-	-
<b>Fish Detected</b>	030 (unknown)	1 (8%) <sup>7</sup>	-	-

Notes:

1. Site 034 was not surveyed in 2002 due to a communication error.
2. Sites 036-063 and 105-113 are on private land and were not surveyed in 2002.
3. Site 016 was identified as a potential lentic site on the topographic map, but was only a dry open area on the side of a mountain that is not worth future survey.
4. Site 031 was identified as a backwater on the topographic map, but no longer exists because it was destroyed when Interstate 15 was constructed and is not worth future survey.
5. Sites 001, 002, 003, 004, 005, 012, 015, 026, 028, and 029 are lentic sites, but would not hold enough water long enough to support amphibian reproduction and are not worth future survey.
6. Other potential aquatic overwintering areas in this watershed are the Beaverhead River within the watershed boundary.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish. Because sites 009 and 010 contained no lentic habitat they were not included in the number and percentage of lentic sites where fish were detected.
8. Western rattlesnakes (CRVI) were observed by William Clark and Sacagawea on the Beaverhead River near the mouth of Grasshopper Creek on 8/15/1805.
9. Boreal chorus frogs (PSMA) were observed calling on the Beaverhead River floodplain on 5/26/1996 by Kirwin Werner and at an unknown reservoir on the Beaverhead River on 5/30/1997 by Jim Reichel.
10. The DFWP fish stocking database has the following records of stocking fish in the Beaverhead River: 14 different records of arctic grayling between 1999 and 2002; 10 different records of brown trout between 1940 and 1951; 5 different records of cutthroat trout between 1931 and 1937; and 58 different records of rainbow trout between 1933 and 1963.
11. Sites 0014 and 035 were noted as having been heavily impacted by grazing.

Beaverhead River (Clark Canyon) - (HUC ID = 6\_014 & ICBEMP HUC ID =100200020702)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed in an adjacent watershed.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the watershed notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Birch Creek - (HUC ID = 6\_015 & ICBEMP HUC ID =100200040402)

### 2003 Water Body and Survey Summary

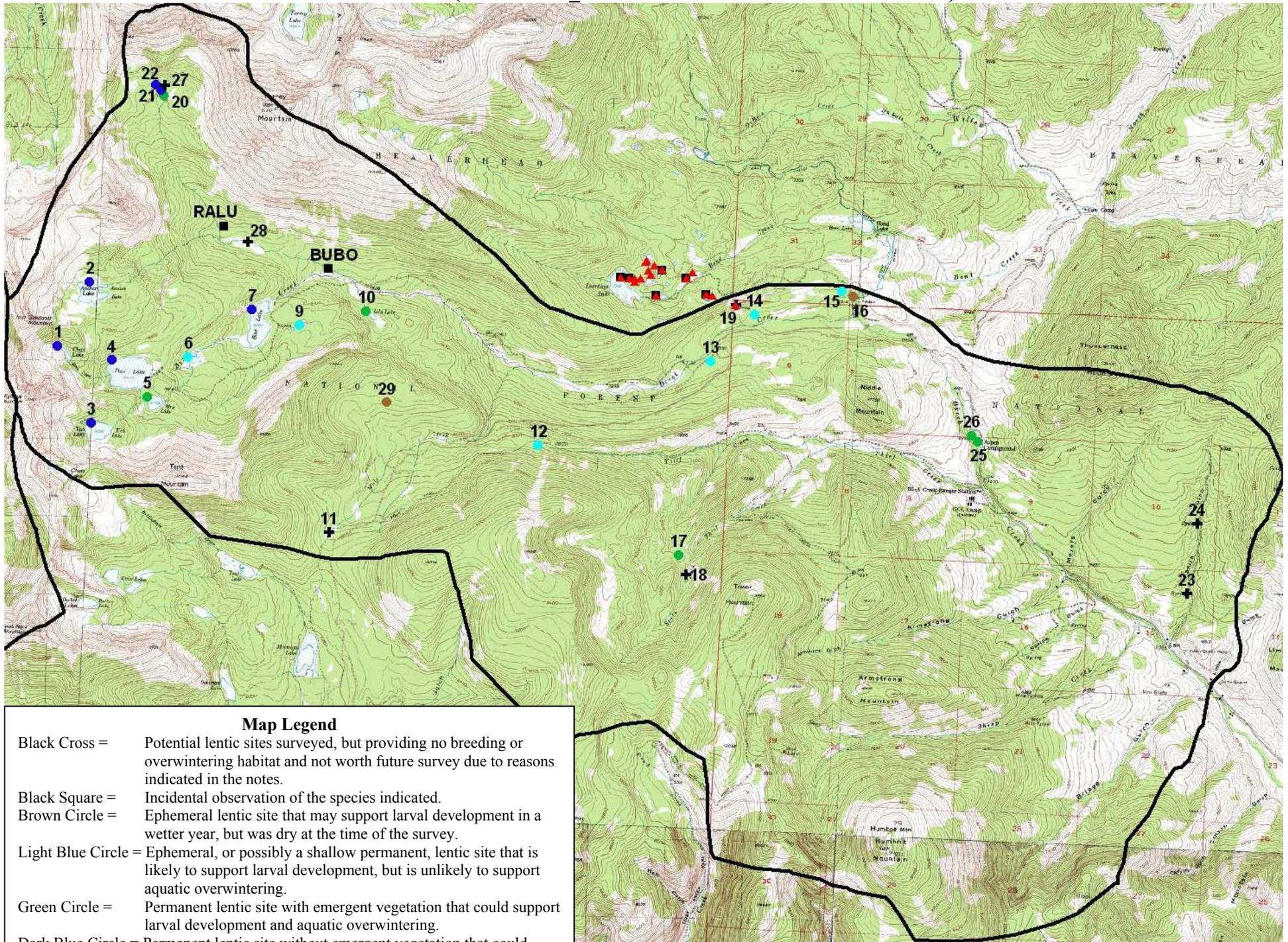
Number of Potential Lentic Sites Surveyed	28	Number of Fishless Potential Lentic Overwintering Sites	6
Number of Wet Lentic Sites	21	Potential Lentic Overwintering Sites	001, 002, 003, 004, 005, 007, 010 (marginal), 017 (marginal), 020 (marginal), 021 (marginal), 022 (marginal), 025 (marginal), 026 (marginal)
Number of Dry Lentic Sites	3	Permanent Lentic Sites with Emergent Vegetation	005 (marginal amount of emergent vegetation), 010, 020, 025, 026
Number of Potential Lentic Overwintering Sites	13	Permanent Lentic Sites without Emergent Vegetation	001, 002, 003, 004, 007, 021, 022

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>004, 012, 014</u>	3 (14%)	3 (14%)	-
<b>Western Toad (BUBO)</b>	<u>009, 010</u>	2 (10%)	2 (10%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>006, 010, 012, 013, 014, 015, 020</u>	7 (33%)	6 (29%)	-
<b>Terrestrial Gartersnake (THEL)</b>	012, 015	2 (10%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Western Toad (BUBO) 1 x observation of Columbia Spotted Frog (RALU)	-	-	-
<b>Fish Detected</b>	002 (Cutthroat Trout) <sup>13</sup> , 003 (unidentified trout), 004 (unidentified trout), 007 (unidentified trout), 010 (Rainbow Trout) <sup>13</sup> , 021 (unidentified trout), 022 (unidentified trout), 025 (unidentified trout), 026 (unidentified trout), 028 (Rainbow Trout)	9 (54%) <sup>8</sup>	-	-

1. Site 008 was combined with site 009 under site number 009.
2. Site 011 is not a lentic site, is just a braided creek on a hillside with nothing but flowing water, and is not worth future survey.
3. Site 018 is not a lentic site, is just a dry meadow with no real place for water to pool, and is not worth future survey.
4. Sites 019, 023, and 024 are not lentic sites, are only springs with no place for water to pool, and are not worth future survey.
5. Site 027 is lentic, but would never hold enough water long enough to support amphibian reproduction and is not worth future survey.
6. Site 028 is not a lentic site, is a meadow with a stream flowing through it, and is not worth future survey.
7. Other potential aquatic overwintering areas in this watershed are Birch Creek below site 004 and South Fork Thief Creek below site 018.
8. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish. Because site 028 contained no lentic habitat it was not included in the number and percentage of lentic sites where fish were detected.
9. Observation records in the Birch Creek drainage area in the 1990s have been reported for Columbia spotted frogs (RALU), long-toed salamanders (AMMA), and western toads (BUBO) by Miller (1995) and for Columbia spotted frogs (RALU), long-toed salamanders (AMMA), western toads (BUBO) and terrestrial gartersnakes (THEL) by Zisook et al. (1996).
10. Museum voucher records of western toads (BUBO) were collected on Birch Creek between 7/23/1947 and 7/29/1947 by Ward C. Russell, Harold C. Reynolds, and Keith L. Dixon (MVZ 44766-44772).
11. Museum voucher records of Columbia spotted frogs (RALU) were collected on Birch Creek between 7/22/1947 and 7/27/1947 by Ward C. Russell, and Harold C. Reynolds, and Keith L. Dixon (MVZ 44803-44820) and on 6/12/1969 by an unknown collector (UNSM 19800).
12. Museum voucher records of terrestrial gartersnakes (THEL) were collected on Birch Creek between 7/25/1947 and 7/26/1947 by Keith L. Dixon (MVZ 44829-44830).
13. The DFWP fish stocking database has 5 different records of stocking Yellowstone cutthroat trout in Tub Lake (site 003) between 1980 and 2000, 12 different records of stocking cutthroat trout and 2 different records of stocking rainbow trout in Pear Lake (site 004) between 1942 and 1979, 8 different records of stocking cutthroat trout in Anchor Lake (site 002) between 1962 and 1990, 4 different records of stocking rainbow trout and 3 different records of stocking cutthroat trout in Boot Lake (site 007) between 1940 and 1960, and 3 different records of stocking rainbow trout in Lily Lake (site 010) between 1959 and 1965.

Birch Creek - (HUC ID = 6\_015 & ICBEMP HUC ID =100200040402)



**Map Legend**

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.
- Red Triangle = Western toad (BUBO) breeding site being monitored.

## Grayling Creek - (HUC ID = 6\_016 & ICBEMP HUC ID =100200071901)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	4
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	001, 003
Permanent Lentic Sites with Emergent Vegetation	003 (marginal amount of emergent vegetation)
Permanent Lentic Sites without Emergent Vegetation	001

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Terrestrial Gartersnake (THEL)</b>	003	1 (50%)	-	-
<b>Fish Detected</b>	003 (unidentified trout)	1 (50%)	-	-

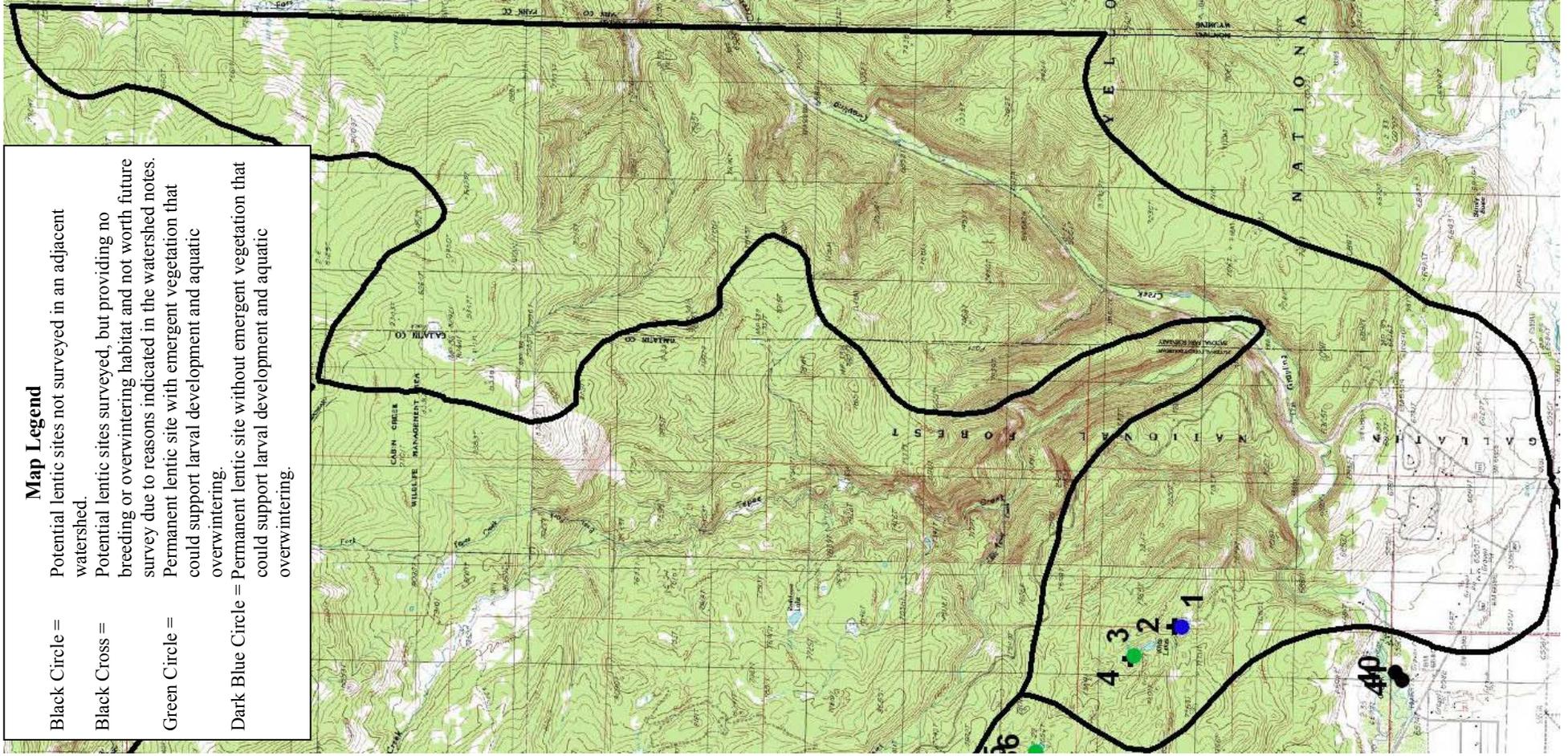
Notes:

1. Sites 005-020 are in Yellowstone National Park and were not mapped or surveyed in 2003 due to the time involved in getting permission from the National Park Service.
2. Sites 002 and 004 are not lentic sites, are only springs with no place for water to pool, and are not worth future survey.
3. Other potential aquatic overwintering areas in this watershed are areas along Grayling Creek below site 019.
4. The DFWP fish stocking base has records of stocking 10,000 cutthroat trout in Grayling Creek on 8/15/1932.

# Grayling Creek - (HUC ID = 6\_016 & ICBEMP HUC ID =100200071901)

## Map Legend

- Black Circle = Potential lentic sites not surveyed in an adjacent watershed.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the watershed notes.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



## Little Lake Creek - (HUC ID = 6\_017 & ICBEMP HUC ID =100200042505)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	21
Number of Wet Lentic Sites	17
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	8

Number of Fishless Potential Lentic Overwintering Sites	7
Potential Lentic Overwintering Sites	001, 002, 005, 006, 009, 010, 028 (marginal), 085
Permanent Lentic Sites with Emergent Vegetation	009, 028
Permanent Lentic Sites without Emergent Vegetation	001, 002, 005, 006, 010, 085

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>005, 028, 029</u>	3 (18%)	3 (18%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>007, 009, 011, 028, 029, 085</u>	6 (35%)	5 (29%)	-
<b>Fish Detected</b>	001 (unidentified trout)	1 (13%) <sup>5</sup>	-	

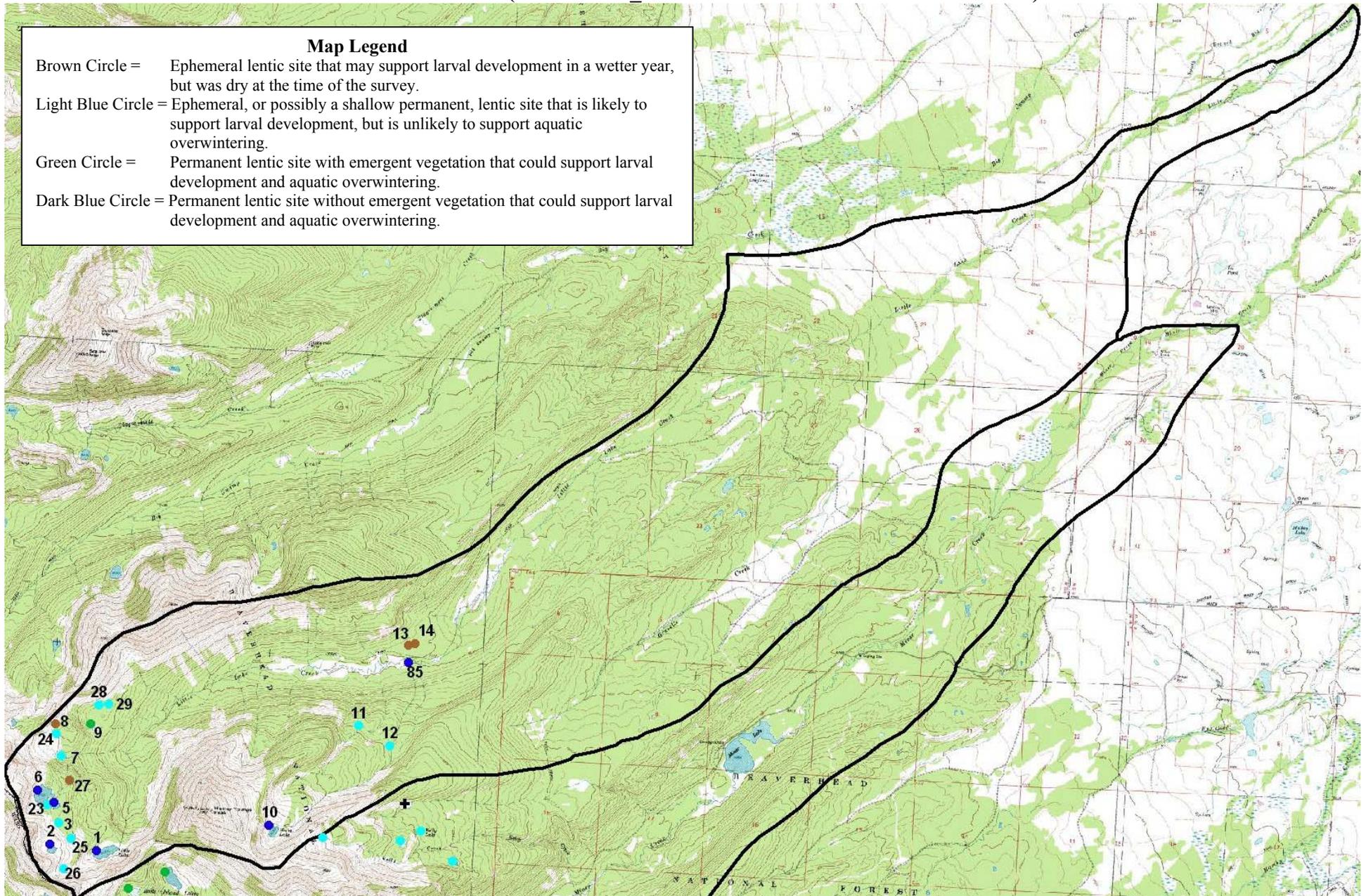
Notes:

1. Sites 015-022 and other unnumbered sites were not surveyed because of lack of time and because pond drying would make detection information unmeaningful. We plan to survey these sites in future years.
2. All sites on the Homer Youngs Peak quad map were surveyed in 2003.
3. Site 004 was combined with site 003 under site number 003.
4. Other potential aquatic overwintering areas in the watershed include areas along the entire length of Little Lake Creek below sites 001, 005, and 007.
5. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
6. A Columbia spotted frog adult (RALU) was observed at Lower Little Lake (site 001) on 8/9/1996 by B. Murdock, adults and juveniles were observed at an unnamed lake (site 003) on 8/23/2000 by Barbara Enriquez, and 3 adults were observed on the trail along Gravelle Creek on 9/16/1995 by J.E. Smith.
7. Long-toed salamander larvae (AMMA) were observed at an unnamed lake (site 003) on 8/23/2000 by Barbara Enriquez.
8. The DFWP fish stocking database has 12 different records of stocking Yellowstone cutthroat trout in Lower Little Lake (site 001) between 1979 and 2000 and 1 record of stocking golden trout in Lower Little Lake (site 001) on 7/12/1960.

# Little Lake Creek - (HUC ID = 6\_017 & ICBEMP HUC ID =100200042505)

## Map Legend

- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



**Browns Gulch - (HUC ID = 6\_018 & ICBEMP HUC ID = 100200060301)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	7
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

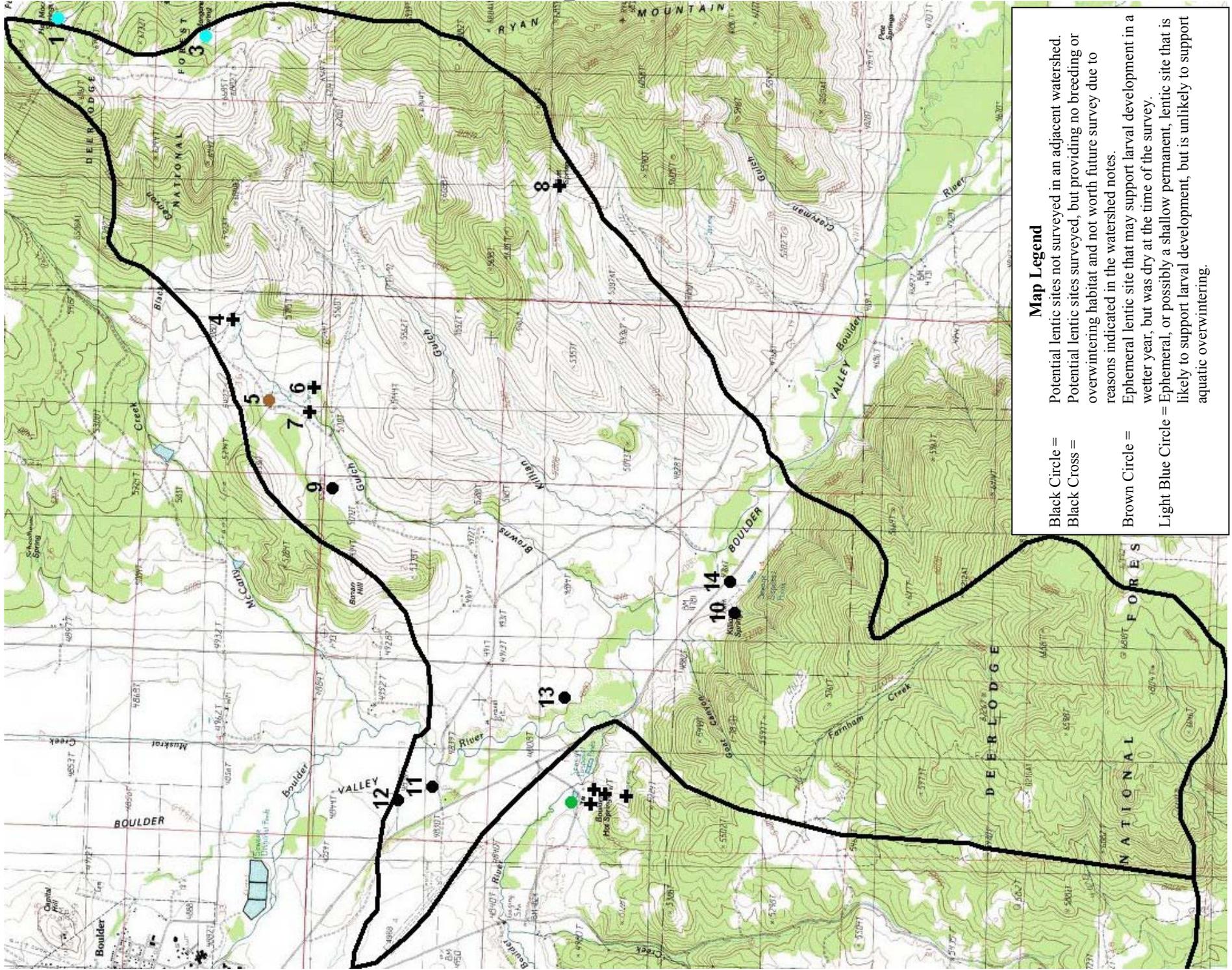
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

- Sites 009-014 are on private land and were not surveyed in 2003.
- Sites 001 and 002 were combined under site number 001.
- Sites 004 and 008 are not lentic sites, are only water tanks fed by springs without anywhere for water to pool naturally and are not worth future survey.
- Site 006 is not a lentic site, only has flowing water in a stream, and is not worth future survey.
- Site 007 was not a lentic site, was only a dry seep, and is not worth future survey.
- Other potential aquatic overwintering areas in this watershed are areas along the Boulder River within the watershed boundary and Browns and Killian Gulches below 5200 feet.
- The DFWP fish stocking database has a record of stocking 720 rainbow trout in Browns Gulch on 7/28/1954.
- Site 005 was noted as having been heavily impacted by grazing.

**Browns Gulch - (HUC ID = 6\_018 & ICBEMP HUC ID = 100200060301)**



**Map Legend**

- Black Circle = Potential lentic sites not surveyed in an adjacent watershed.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the watershed notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.

## Upper Horse Prairie Creek - (HUC ID = 6\_019 & ICBEMP HUC ID = 100200011704)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	31
Number of Wet Lentic Sites	20
Number of Dry Lentic Sites	6
Number of Potential Lentic Overwintering Sites	9

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	010, 011, 012, 013, 077 (marginal), 078 (marginal), 079, 110
Permanent Lentic Sites with Emergent Vegetation	010, 011, 012, 013, 077, 078, 079, 110
Permanent Lentic Sites without Emergent Vegetation	None

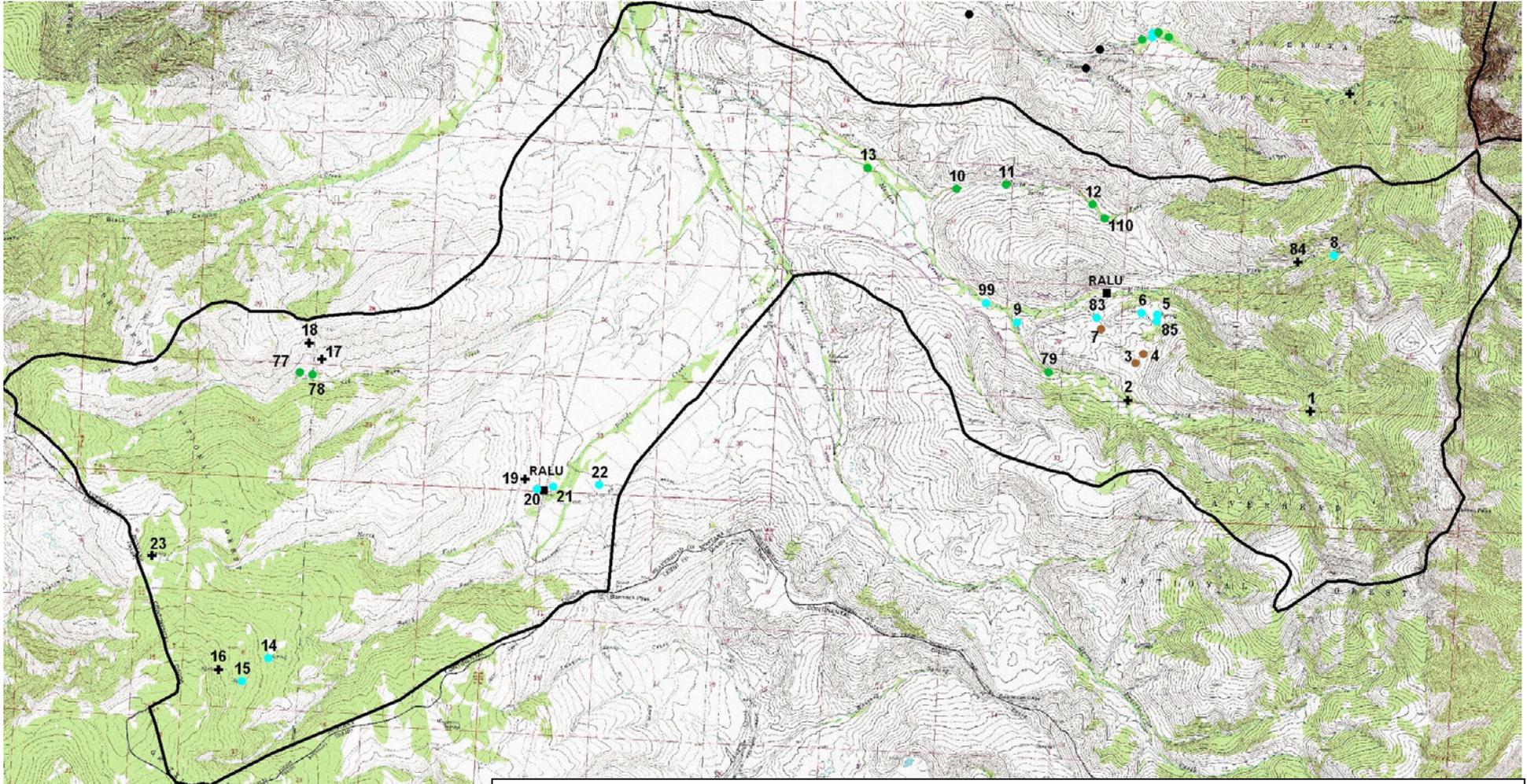
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	005, <u>006</u> , 008, <u>009</u> , 010, <u>011</u> , 012, 013, 022, 077, 078, 083, 084, <u>085</u> , 099, 110	16 (80%) <sup>3 &amp; 6</sup>	4 (20%)	-
<b>Terrestrial Gartersnake (THEL)</b>	011, 110	2 (10%)	-	-
<b>Incidental Herpetofauna Observations</b>	3 x observations of Columbia Spotted Frogs (RALU) at 2 different localities <sup>6</sup>	-	-	-
<b>Fish Detected</b>	011 (Westslope Cutthroat Trout), 012 (Unidentified Species), 077 (Brook Trout), 078 (Brook Trout), 079 (Brook Trout), 110 (Unidentified Species)	6 (67%) <sup>8</sup>	-	-

Notes:

1. Sites 001-013, 079, 083, 084, 085, 099, and 110 are in both watershed 6\_019 and 6\_403 because these two watersheds overlap.
2. Sites 001, 017, and 018 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
3. Sites 002, 016, and 023 are not lentic sites, are only cold water slowly flowing from a spring, and are not worth future survey.
4. Site 019 was identified as a potential lentic site on an aerial photograph, but is only a dry grassy slope that is not worth future survey.
5. Site 084 is a lentic site, but is a spring/seep with very shallow cold water that would never support amphibian reproduction and is not worth future survey.
6. Although 2 x adult Columbia spotted frogs (RALU) were detected at site 002 this was not a lentic site so was treated as an incidental observation.
7. Other potential aquatic overwintering areas in the watershed include areas along Horse Prairie Creek within the watershed boundary, Maiden Creek below site 099, and North Fork of Maiden Creek below site 110.
8. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
9. Columbia spotted frog (RALU) adults and tadpoles were observed on the North Fork of Divide Creek 1 mile below Bannock Pass (probably site 020 or 021) on 7/14/1998 by Kirwin Werner.
10. The Beaverhead-Deerlodge National Forest has records of adult Columbia spotted frogs (RALU) on the North Fork of Divide Creek and the South Fork of Divide Creek in 2002 and 2003 and Nip and Tuck Creek in 2002.
11. Site 022 was noted as having been heavily impacted by grazing.

Upper Horse Prairie Creek - (HUC ID = 6\_019 & ICBEMP HUC ID = 100200011704)



**Map Legend**

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Cedar Creek - (HUC ID = 6\_020 & ICBEMP HUC ID = 100200070802)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	13
Number of Wet Lentic Sites	5
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	002
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	002

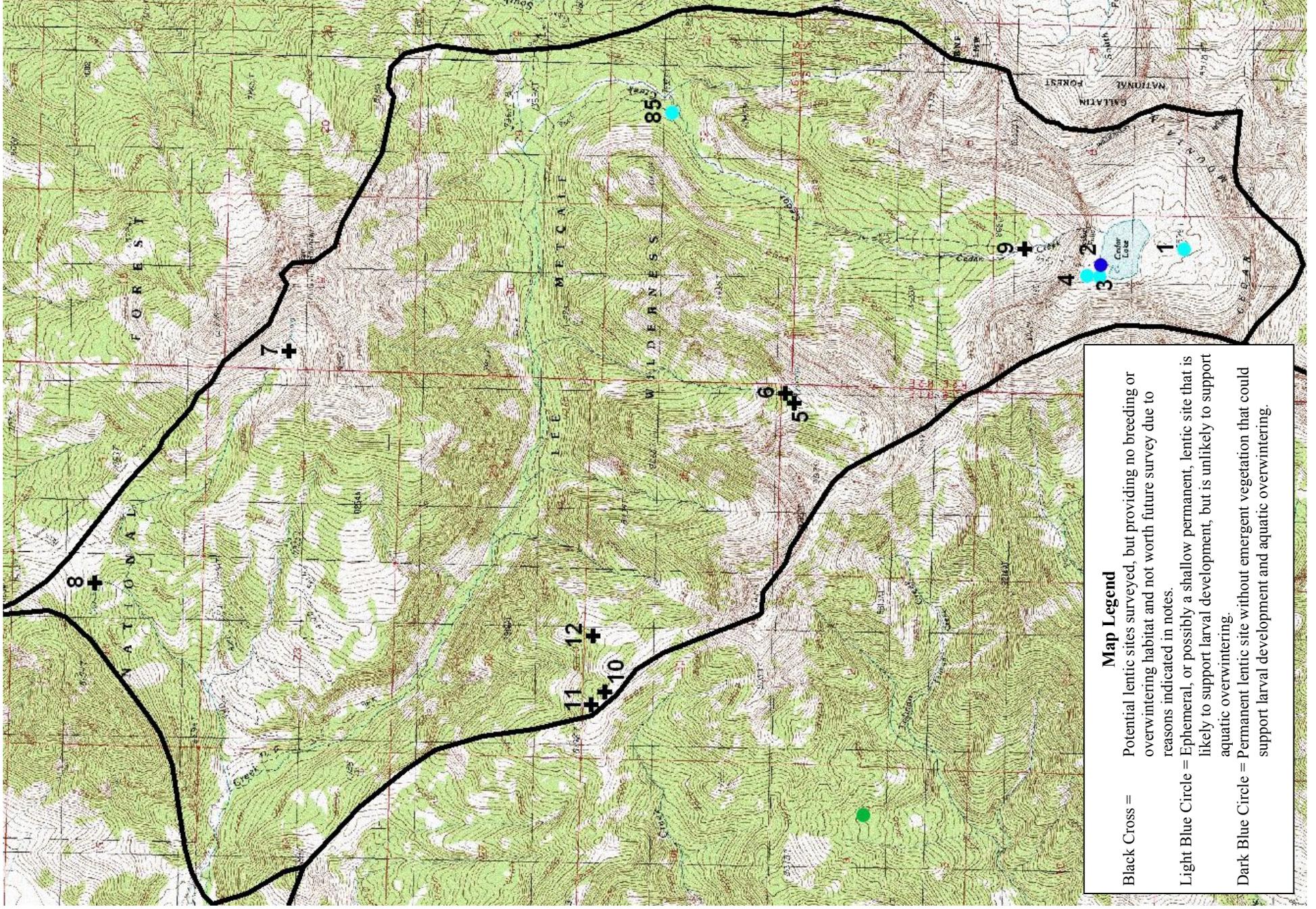
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	085	1 (20%)	0 (0%)	-
<b>Fish Detected</b>	002 (unidentified trout)	1 (100%) <sup>4</sup>	-	-

Notes:

1. Sites 005, 006, 007, and 008 are not lentic sites, are only springs on the side of a mountain, and are not worth future survey.
2. Sites 009, 010, 011, and 012 were identified as potential lentic sites on aerial photographs, but were not lentic sites and are not worth future survey.
3. Other potential aquatic overwintering areas in the watershed are Cedar Creek below Cedar Falls and areas below about 8200 feet in the 3 unnamed drainages in quad map section 36.
4. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
5. The DFWP fish stocking database has 6 different records of stocking Yellowstone cutthroat trout in Cedar Lake (site 002) between 1976 and 1997.

Cedar Creek - (HUC ID = 6 020 & ICBEMP HUC ID = 100200070802)



**Map Legend**

Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.

Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.

Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## Grasshopper Creek - (HUC ID = 6\_021 & ICBEMP HUC ID = 100200021001)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	19
Number of Wet Lentic Sites	18
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	13

Number of Fishless Potential Lentic Overwintering Sites	8
Potential Lentic Overwintering Sites	001, 002, 003, 004, 005, 006, 007, 008, 009, 012, 013, 014, 018
Permanent Lentic Sites with Emergent Vegetation	001, 002, 003, 004, 005, 006, 007, 008, 009, 012, 013, 014, 018
Permanent Lentic Sites without Emergent Vegetation	None

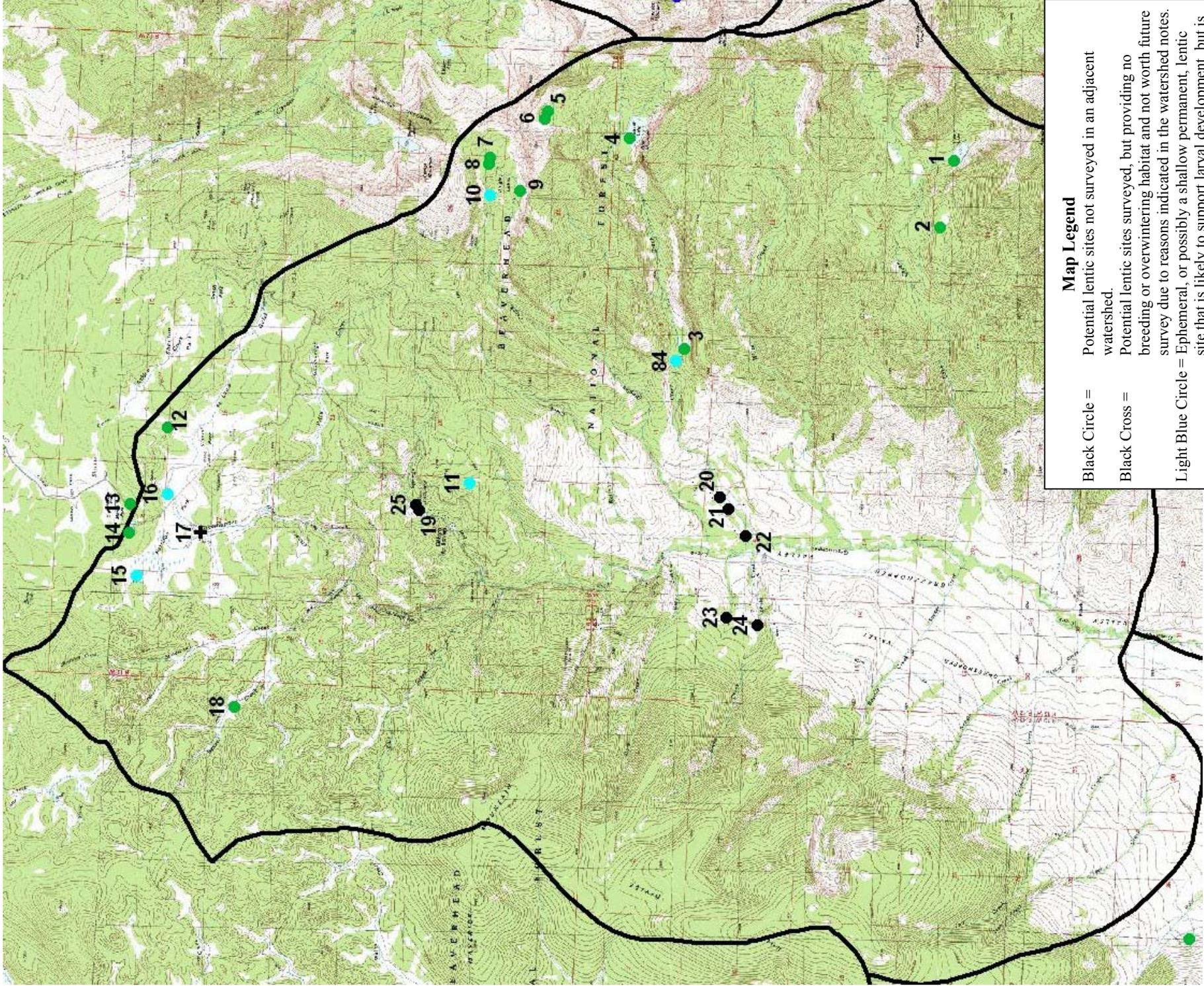
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>002</u> , <u>010</u>	2 (11%)	2 (11%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u> , <u>002</u> , <u>006</u> , <u>008</u> , <u>012</u> , <u>014</u> , <u>015</u> , <u>016</u>	8 (44%)	6 (33%)	-
<b>Fish Detected</b>	001 (Rainbow Trout), 003 (unidentified species), 004 (Golden Trout), 009 (Brook Trout), 018 (Brook Trout)	5 (38%) <sup>4</sup>	-	-

Notes:

1. Sites 019-025 are on private land and were not surveyed in 2002.
2. Site 017 is not a lentic site, is only pools of flowing water along a creek, and is not worth future survey.
3. Other potential aquatic overwintering areas in the watershed include areas along Grasshopper Creek below 7800 feet, Price Creek below 7800 feet, Dingley Creek below site 009, Clark Creek below site 004, Lake Creek below site 001, Beaver Creek below site 018, and Shoestring Creek below 7600 feet.
4. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
5. The DFWP fish stocking database has records of stocking 30,000 cutthroat trout in Polaris Lake (site 001) on 8/27/1934, 2,560 golden trout in Sawtooth Lake (site 004) on 7/27/1959, 9,500 cutthroat trout in Sawtooth Lake (site 004) on 9/25/1937, and 3,450 cutthroat trout in Shoestring Creek on 9/25/1937.

Grasshopper Creek - (HUC ID = 6\_021 & ICBEMP HUC ID = 100200021001)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed in an adjacent watershed.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the watershed notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Little Boulder River - (Sample HUC ID = 6\_022 & ICBEMP HUC ID = 100200060302)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	6
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	003, 004
Permanent Lentic Sites with Emergent Vegetation	003, 004
Permanent Lentic Sites without Emergent Vegetation	None

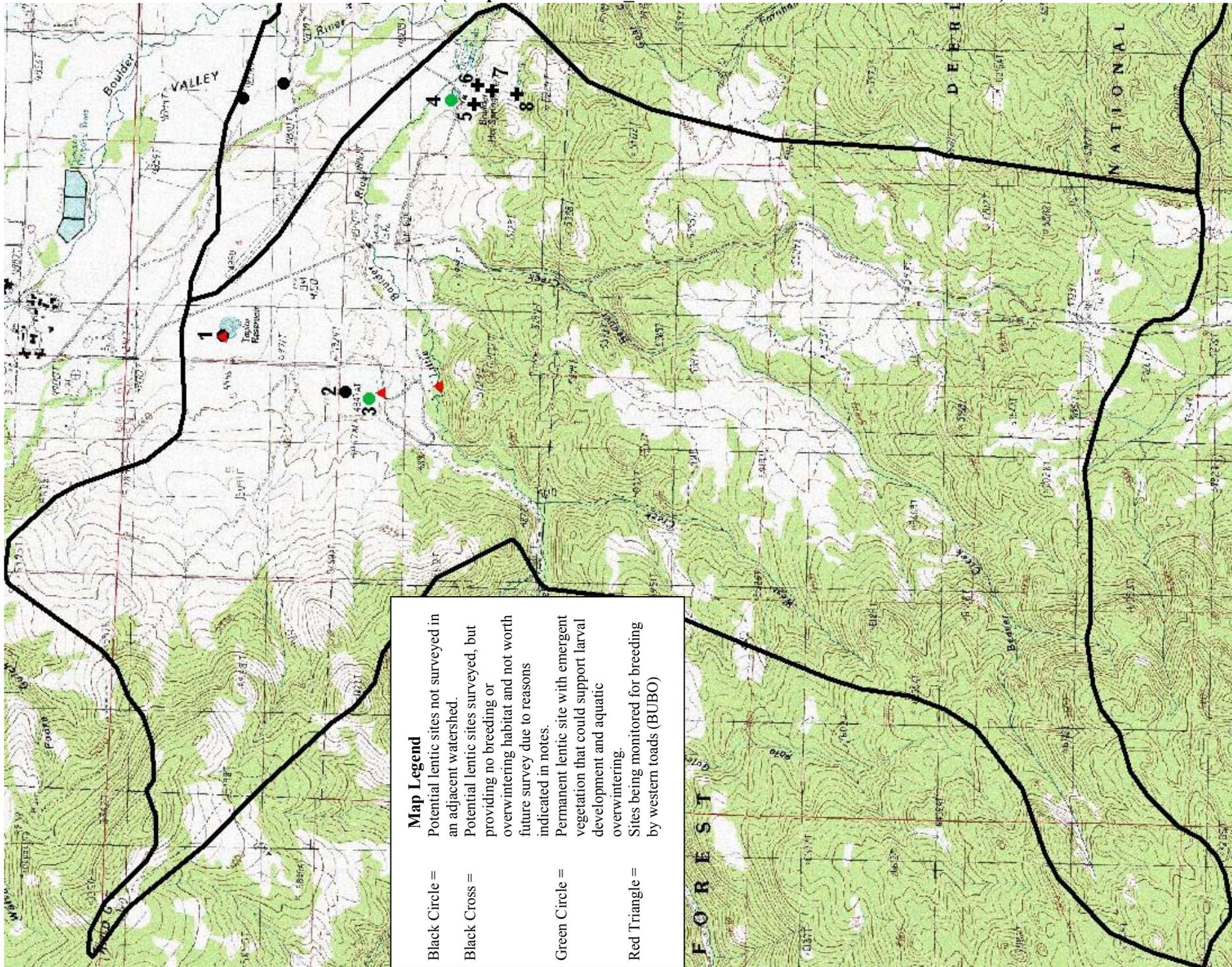
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	003, 004	2 (100%)	0 (0%)	-
<b>Fish Detected</b>	004 (unidentified species)	1 (50%) <sup>5</sup>	-	-

Notes:

1. Sites 001 and 002 are on private land and were not surveyed in 2003.
2. Sites 005, 006, 007, and 008 are hot springs that only have flowing water and are not worth future survey.
3. Sewage disposal ponds near site 006 should be surveyed in the future.
4. Other potential aquatic overwintering areas in the watershed are areas along the Little Boulder River, Beaver and West Creeks below approximately 5400 feet, and areas around Boulder Hot Springs.
5. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
6. Columbia spotted frogs (RALU) adults and western toad (BUBO) adults were observed at the Chinese Diggins south of Boulder on the Little Boulder River in August of 1996 by B. Follman.
7. The DFWP fish stocking database has 5 different records of stocking brook trout in Beaver Creek between 1946 and 1953, 3 different records of stocking rainbow trout, 6 different records of stocking cutthroat trout, and 9 different records of stocking brook trout in the Little Boulder River between 1928 and 1950.

# Little Boulder River - (Sample HUC ID = 6 022 & ICBEMP HUC ID = 100200060302)



**Madison River (Dry Hollow) - (HUC ID = 6\_023 & ICBEMP HUC ID = 100200071101)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	2
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	None

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

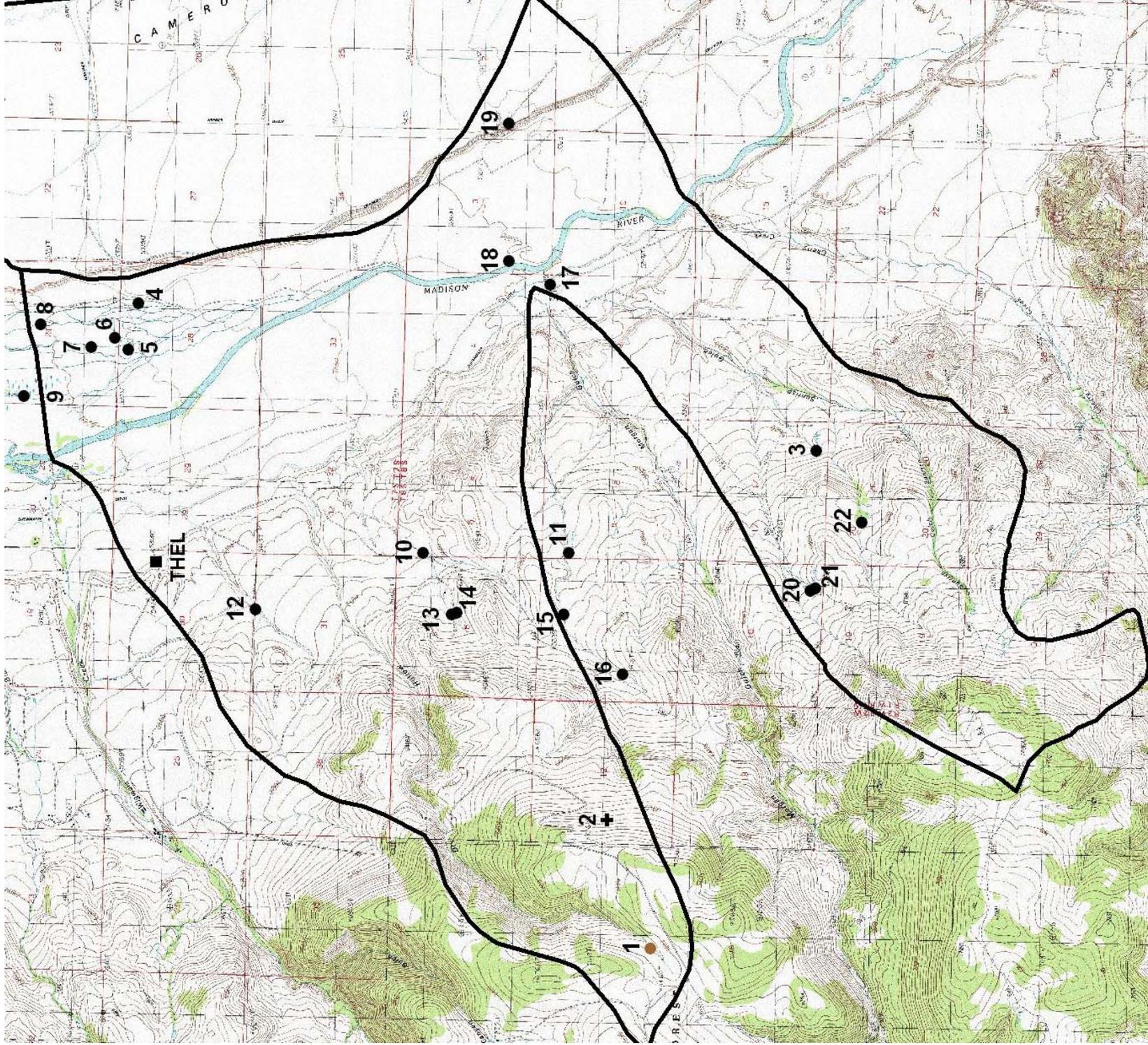
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Incidental Herpetofauna Observations</b>	1 x observation of Terrestrial Gartersnake (THEL)	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

1. Sites 003-022 are on private land and were not surveyed in 2003.
2. Watershed is very dry and a large percentage is on private land.
3. Potential aquatic overwintering areas in the watershed are probably limited to the Madison River within the watershed boundary.
4. The DFWP fish stocking database has 2 different records of stocking fish in Dry Hollow Creek: 5,000 rainbow trout on 9/8/1948; and 1,125 brook trout on 7/28/1950.

# Madison River (Dry Hollow) - (HUC ID = 6\_023 & ICBEMP HUC ID = 100200071101)



## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in the notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.

## Alder Creek - (HUC ID = 6\_024 & ICBEMP HUC ID = 100200041302)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	16
Number of Wet Lentic Sites	16
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	6

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	004, 009, 010, 011, 012, 013
Permanent Lentic Sites with Emergent Vegetation	004, 009, 010 (little emergent veg), 011, 012, 013
Permanent Lentic Sites without Emergent Vegetation	None

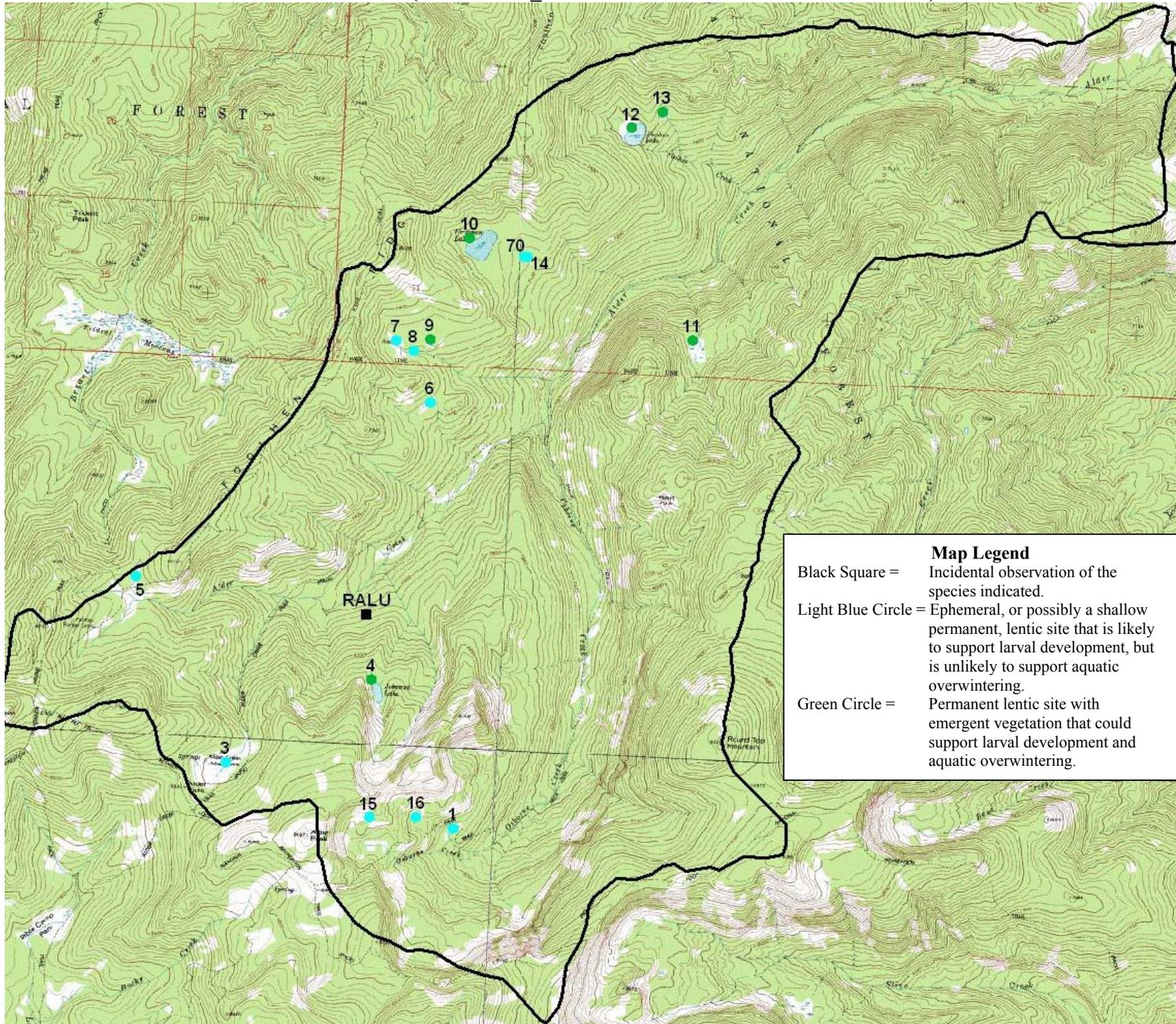
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>005</u>	1 (6%)	1 (6%)	-
<b>Western Toad (BUBO)</b>	<u>010</u> , <sup>2</sup> 013, 070	3 (19%)	1 (6%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u> , <u>003</u> , <u>005</u> , 006, <u>007</u> , <u>009</u> , 010, 011, 012, 013, 014, 070	12 (75%)	5 (31%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Columbia spotted frog (RALU)	-	-	-
<b>Fish Detected</b>	004 (unidentified species), 010 (unidentified trout species), 012 (unidentified trout species)	3 (50%) <sup>3</sup>	-	-

Notes:

1. Sites 002 and 003 were combined under site number 003.
2. Western toad larvae were detected at site 010 on 8/16/03 by Steve Amish.
3. Other potential aquatic overwintering areas in the watershed are Osborne Creek below site 001 and Upper Alder Creek tributaries below approximately 8200 feet.
4. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
5. Rocky Mountain tailed frogs (ASMO) were reported in Alder Creek on 7/5/1988 by Brad Shepard.
6. Long-toed salamanders (AMMA) were observed at Ferguson Lake (site 010) on 9/4/1995 by E. Brann.
7. Numerous Columbia spotted frog (RALU) adults, larvae and eggs, 2 western toad (BUBO) adults, and a long-toed salamander (AMMA) adult were reported at 7 different sites in the Alder Creek drainage on between 6/25/2000 and 7/10/2000 by Barbara Enriquez.
8. The DFWP fish stocking database has 3 different records of stocking rainbow trout, 4 different records of stocking Yellowstone cutthroat trout, and 4 different records of stocking cutthroat trout in Johanna Lake (site 004) between 1940 and 2002, 7 different records of stocking rainbow trout, 7 different records of stocking Yellowstone cutthroat trout, and 7 different records of stocking cutthroat trout in Ferguson Lake (site 010) between 1938 and 2000, 6 different records of stocking rainbow trout, 6 different records of stocking Yellowstone cutthroat trout, and 2 different records of stocking cutthroat trout in Foolhen Lake (site 012) between 1938 and 1996, and 1 record of stocking 5,120 rainbow trout in Osborne Creek on 8/26/1949.

Alder Creek - (HUC ID = 6\_024 & ICBEMP HUC ID = 100200041302)



**Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002)**

**2001 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	11
Number of Wet Lentic Sites	7
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	5

Number of Fishless Potential Lentic Overwintering Sites	5
Potential Lentic Overwintering Sites	003, 004 (marginal), 005, 007 (marginal), 011 (marginal)
Permanent Lentic Sites with Emergent Vegetation	004, 005, 007, 011
Permanent Lentic Sites without Emergent Vegetation	003

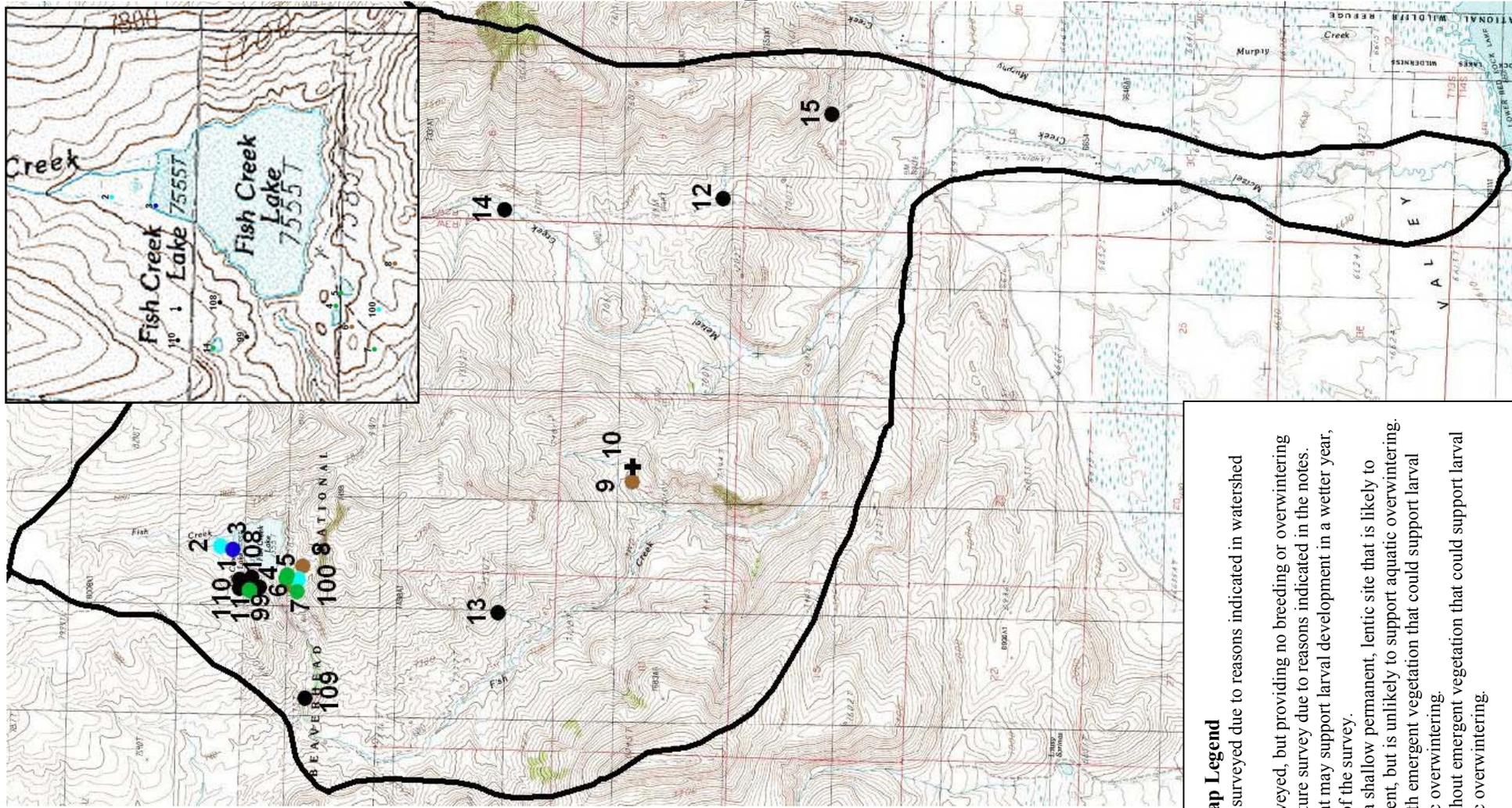
**2001 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Boreal Chorus Frog (PSMA)</b>	<u>004</u>	1 (13%)	1 (13%)	-
<b>Columbia Spotted Frog (RALU)</b>	002, <u>004</u> , <u>005</u> , 007, 011, 100	6 (86%)	2 (29%)	-
<b>Terrestrial Gartersnake (THEL)</b>	003	1 (13%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of 2 adult Columbia Spotted Frogs (RALU) just north of Fish Creek Lake	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

1. Sites 001, 099, 108, 109, and 110 were not surveyed in 2001 because they were not found incidentally until 2002 and 2003.
2. Site 010 is lentic, but does not hold enough water long enough to support amphibian reproduction, and is not worth future survey.
3. Site 013 was not surveyed in 2001 because it was not standard practice to survey springs in 2001.
4. Sites 012 and 015 are on private land, and were not surveyed.
5. Site 014 was incorrectly denoted as being on private land so was not surveyed.
6. Aerial photo work had not been completed before surveys in 2001. Surveys were undertaken anyway because it was logistically feasible to do them.
7. Other potential aquatic overwintering areas in this watershed are Fish Creek below site 003, and Metzel Creek below 7,200 feet.

Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002) - 2001



Map Legend	
Black Circle =	Potential lentic sites not surveyed due to reasons indicated in watershed notes.
Black Cross =	Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
Brown Circle =	Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
Light Blue Circle =	Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
Green Circle =	Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
Dark Blue Circle =	Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	16
Number of Wet Lentic Sites	10
Number of Dry Lentic Sites	5
Number of Potential Lentic Overwintering Sites	6

Number of Fishless Potential Lentic Overwintering Sites	6
Potential Lentic Overwintering Sites	003, 004 (marginal), 005, 007(marginal), 011(marginal), 109
Permanent Lentic Sites with Emergent Vegetation	003, 004, 005, 007, 011, 109
Permanent Lentic Sites without Emergent Vegetation	None

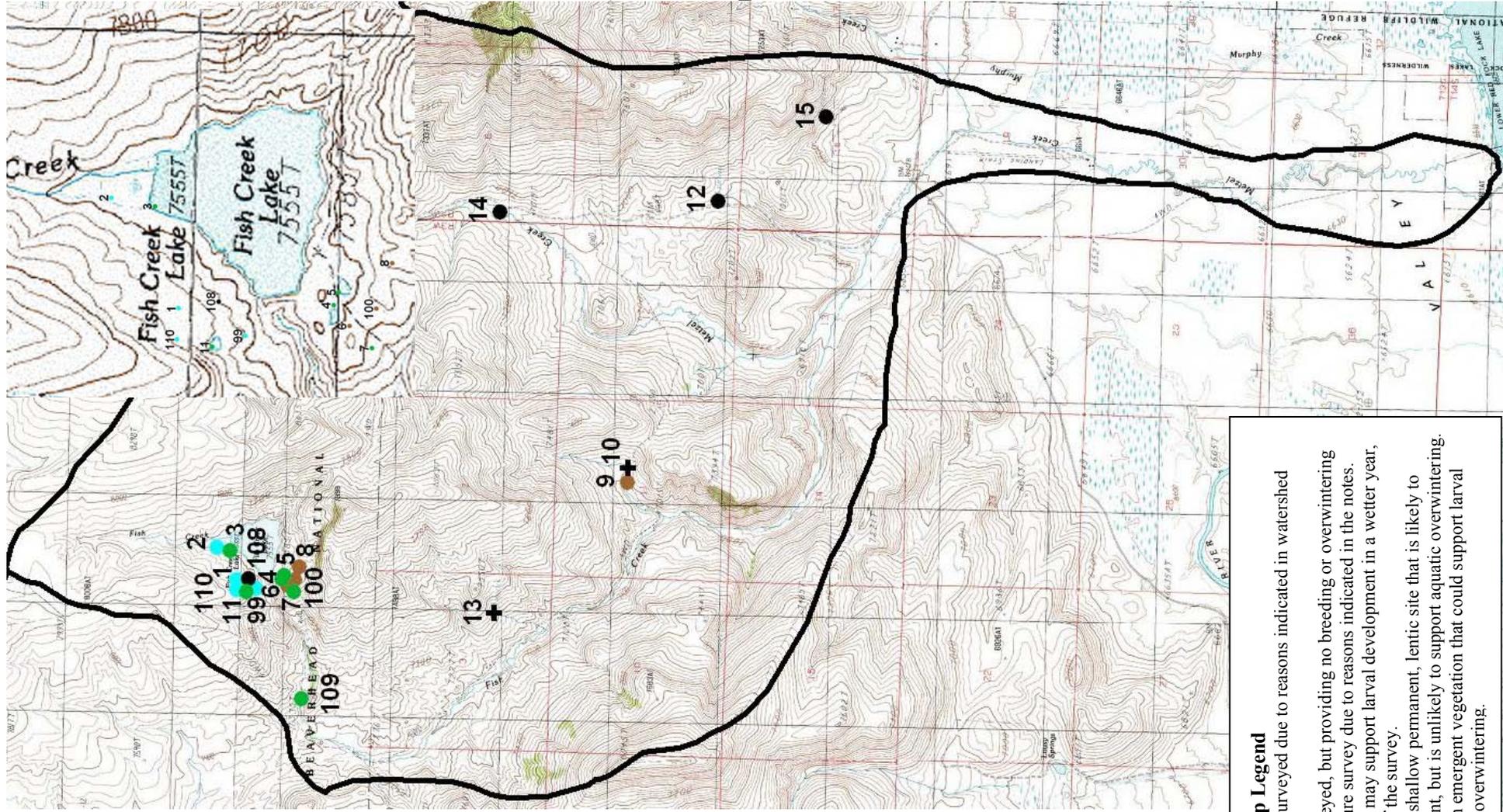
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>004</u> , <u>007</u> , <u>011</u> , <u>099</u>	4 (40%)	4 (40%)	-
<b>Western Toad (BUBO)</b>	<u>109</u>	1 (10%)	1 (10%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>005</u> , <u>110</u>	2 (20%)	2 (20%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u> , 002, 003, <u>005</u> , <u>007</u> , 011, <u>109</u> , 100	8 (80%)	8 (80%)	-
<b>Terrestrial Gartersnake (THEL)</b>	001, 004, 005, 007, 011	5 (50%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of an adult Western Toad (BUBO) and 12 x juvenile Columbia Spotted Frogs (RALU) 0.3 and 0.5 miles west of Fish Creek Lake, respectively	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

1. Site 013 is not a lentic site, is a spring on a hillside that has no place for water to pool enough to support amphibian reproduction, and is not worth future survey.
2. Sites 012 and 015 are on private land and were not surveyed.
3. Site 014 was incorrectly denoted as being on private land so was not surveyed.
4. Site 108 was not surveyed in 2002 because it was not found incidentally until 2003.
5. Other potential aquatic overwintering areas in this watershed are Fish Creek below site 003 and Metzel Creek below 7,200 feet.

Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002) - 2002



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	14
Number of Wet Lentic Sites	10
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	6

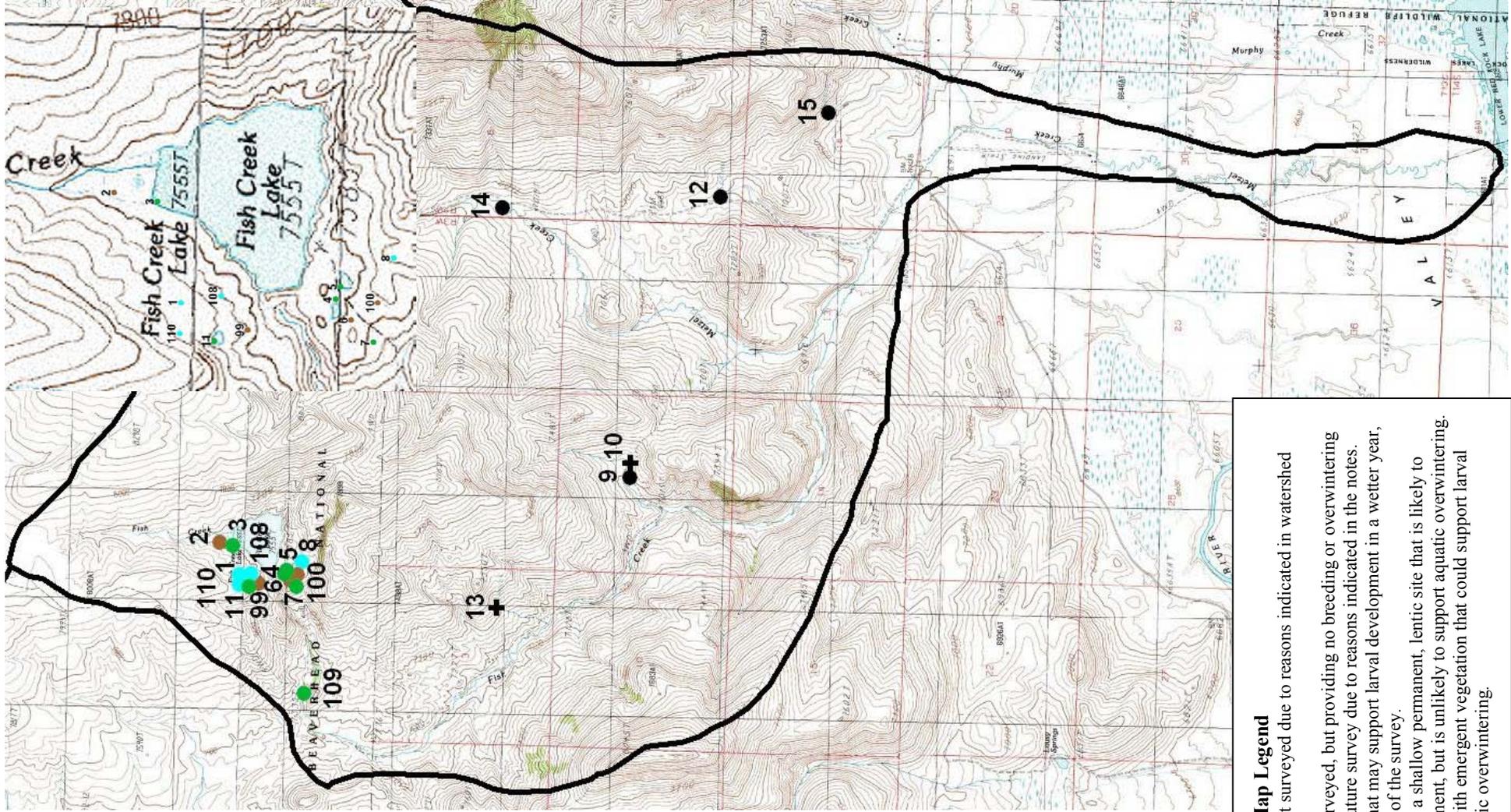
Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	003, 004 (marginal), 005 (marginal), 007 (marginal), 011, 109
Permanent Lentic Sites with Emergent Vegetation	003, 004, 005, 007, 011, 109
Permanent Lentic Sites without Emergent Vegetation	None

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>003, 004, 005, 007, 008, 011, 108</u>	7 (70%)	7 (70%)	-
<b>Western Toad (BUBO)</b>	<u>003, 109</u>	2 (20%)	2 (20%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>001, 004, 005, 007, 008, 011, 107, 108, 110</u>	9 (90%)	9 (90%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 003, 004, 005, 011, 108, 109, 110</u>	8 (80%) <sup>3</sup>	5 (50%)	-
<b>Terrestrial Gartersnake (THEL)</b>	001, 003, 004, 005, 007, 008, 011, 108, 109, 110	10 (100%) <sup>4</sup>	10 (100%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of a Columbia Spotted Frog (RALU) <sup>3</sup> 1 x observation of a Terrestrial Gartersnake (THEL) <sup>4</sup>	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

1. Sites 012 and 015 are on private land and were not surveyed in 2003.
2. Site 009 was not surveyed in 2003 due to the logistics of having multiple individuals surveying in the watershed.
3. Sites 010 and 013 were not surveyed in 2003 because they had been previously identified as not worth future survey.
4. Site 014 was not surveyed in 2001-2003 because it was incorrectly denoted as being on private land when it is actually on BLM land.
5. Adult RALU were observed at site 002, but this site was dry with the exception of the stream flowing through it so was not included in the number and percentage of lentic sites occupied and was only considered an incidental observation.
6. A THEL was observed at site 100, but this site was dry so was not included in the number and percentage of lentic sites occupied and was only considered an incidental observation.
7. Other potential aquatic overwintering areas in this watershed are Fish Creek below site 003, and Metzel Creek below 7,000 feet.
8. The Beaverhead-Deerlodge National Forest has records of Columbia spotted frogs (RALU) along Fish Creek and a western toad (BUBO) along Metzel Creek in June of 2003.

Metzel Creek and Fish Creek - (HUC ID = 6\_025 & ICBEMP HUC ID = 100200012002) - 2003



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Boulder River (Unnamed Tributary to Upper Boulder River) - (HUC ID = 6\_026 & ICBEMP HUC ID = 100200060205)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

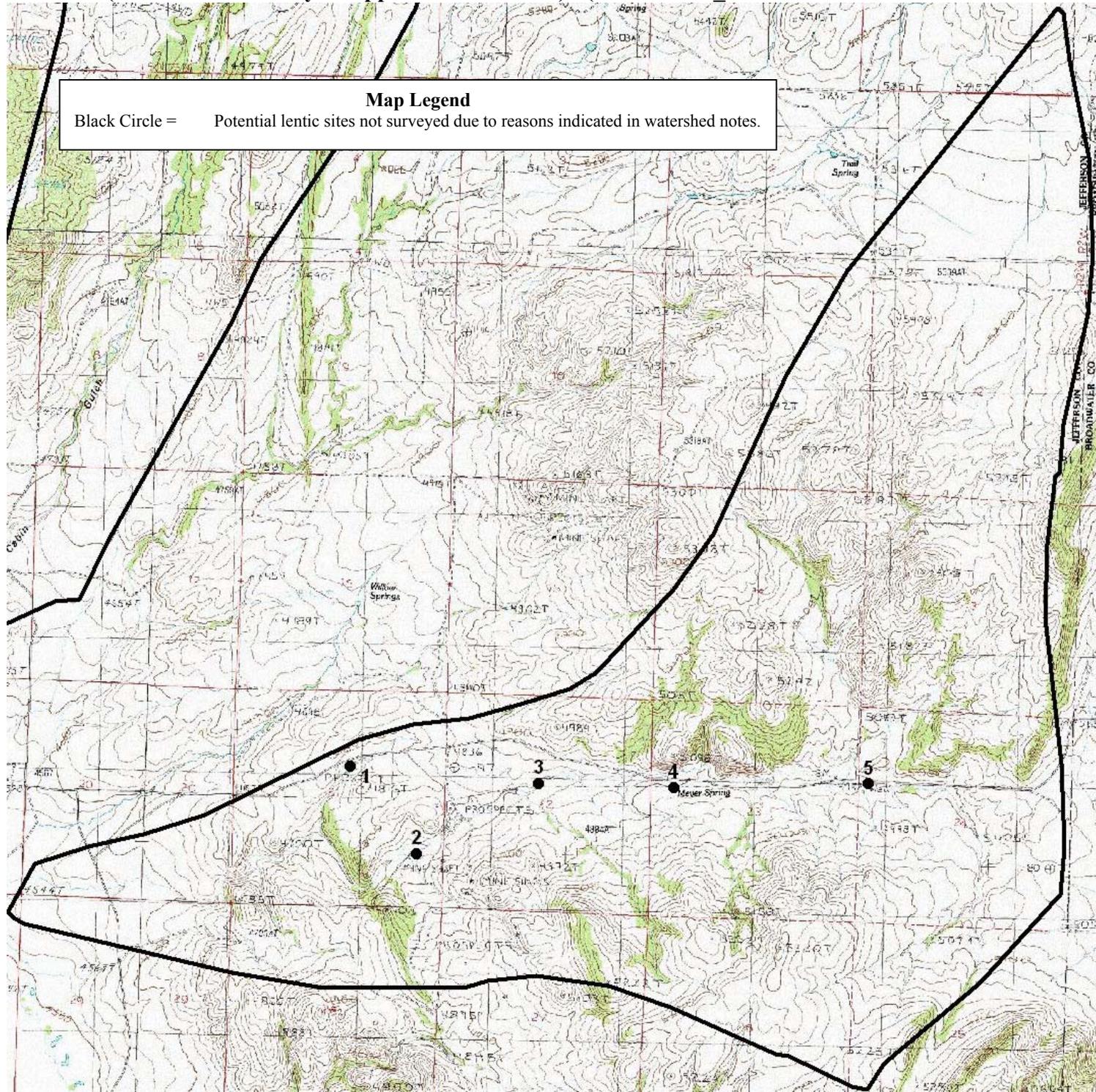
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species Were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. No sites (sites 001-005) in this watershed were surveyed in 2003 because all potential lentic sites are on private land.
2. Watershed is very dry with almost all potential lentic sites being springs. There does not appear to be any potential aquatic overwintering areas in this watershed.

**Boulder River (Unnamed Tributary to Upper Boulder River) - (HUC ID = 6\_026 & ICBEMP HUC ID = 100200060205)**



**West Fork of Madison River (Tepee Creek) - (HUC ID = 6\_027 & ICBEMP HUC ID = 100200072602)**

**2001 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	14
Number of Wet Lentic Sites	5
Number of Dry Lentic Sites	6
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	2
Potential Lentic Overwintering Sites	001 (marginal), 006
Permanent Lentic Sites with Emergent Vegetation	001, 006
Permanent Lentic Sites without Emergent Vegetation	None

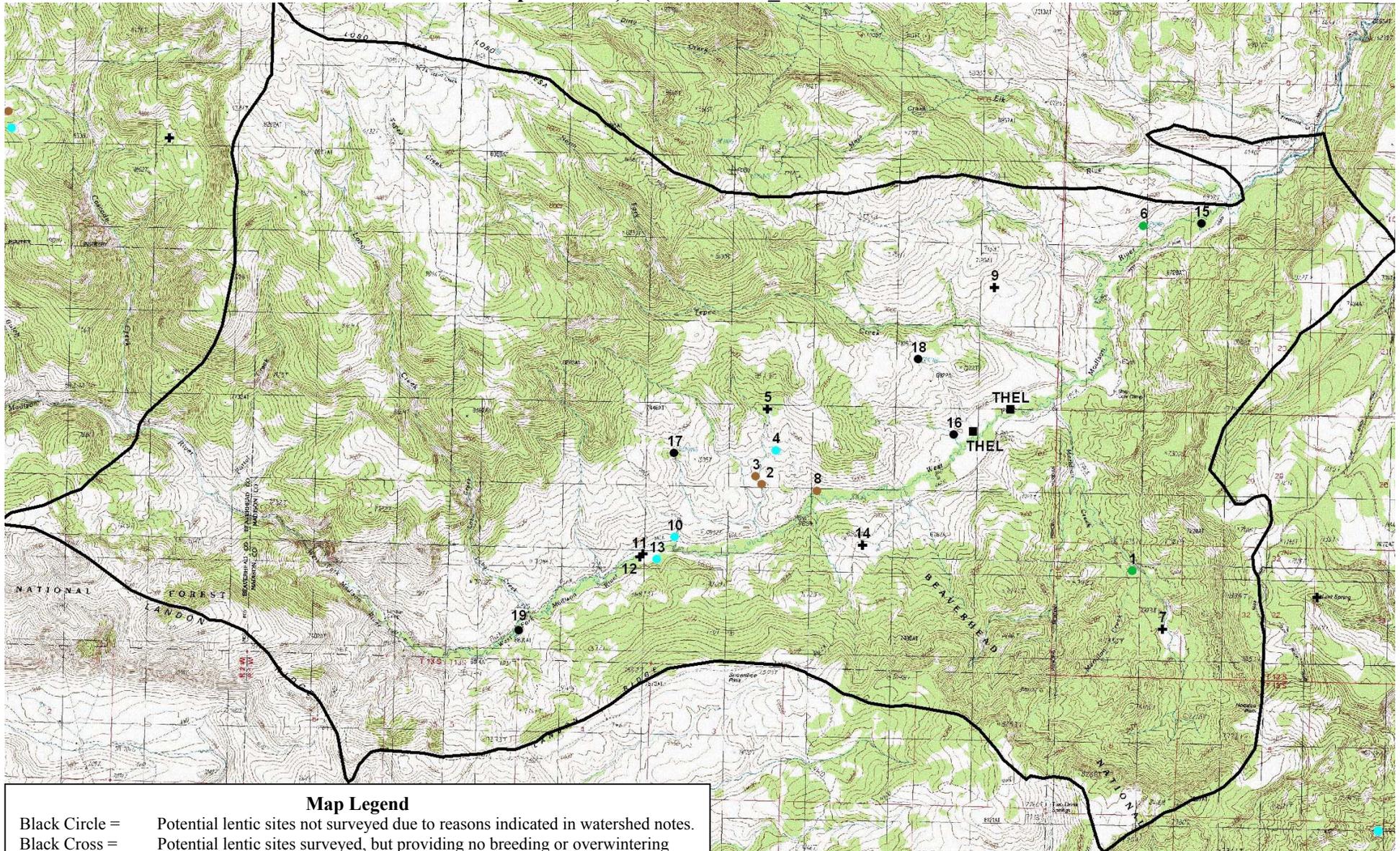
**2001 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	001, 004, 006, 007	4 (80%)	0 (0%)	-
<b>Terrestrial Gartersnake (THEL)</b>	001	1 (20%)	-	-
<b>Incidental Herpetofauna Observations</b>	2 x observations of Terrestrial Gartersnake (THEL)	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

- Sites 015 and 016 are on private land and were not surveyed in 2001.
- Sites 017 and 018 were not surveyed in 2001 because it was not standard practice to survey springs until 2002.
- Site 019 was not surveyed in 2001 due to a communication error.
- Sites 005 and 007 do not provide any lentic habitat only have flowing water when water is present, and are not worth future survey.
- Sites 009 and 014 were identified as potential lentic sites on the aerial photographs, but were only dry open areas with no place for water to pool and are not worth future survey.
- Sites 011 and 012 are lentic, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Other potential aquatic overwintering areas in this watershed are the West Fork of the Madison River within the watershed boundary and Tepee Creek below 7,000 feet.
- A museum voucher record of a western toad (BUBO) was collected north of the West Fork of the Madison River on 8/20/1961 by "Rumely and Peek" (MSBU 5933).
- Sites 003, 004, and 008 were noted as having been heavily impacted by grazing structurally and site 004 from the standpoint of water quality as well.

## West Fork of Madison River (Tepee Creek) - (HUC ID = 6 027 & ICBEMP HUC ID = 100200072602)



### Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Cataract Creek - (HUC ID = 6\_028 & ICBEMP HUC ID =100200060504)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	12
Number of Wet Lentic Sites	11
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	7

Number of Fishless Potential Lentic Overwintering Sites	5
Potential Lentic Overwintering Sites	002, 005, 008, 010, 011, 074, 075
Permanent Lentic Sites with Emergent Vegetation	002, 005, 008, 010, 011, 074, 075
Permanent Lentic Sites without Emergent Vegetation	None

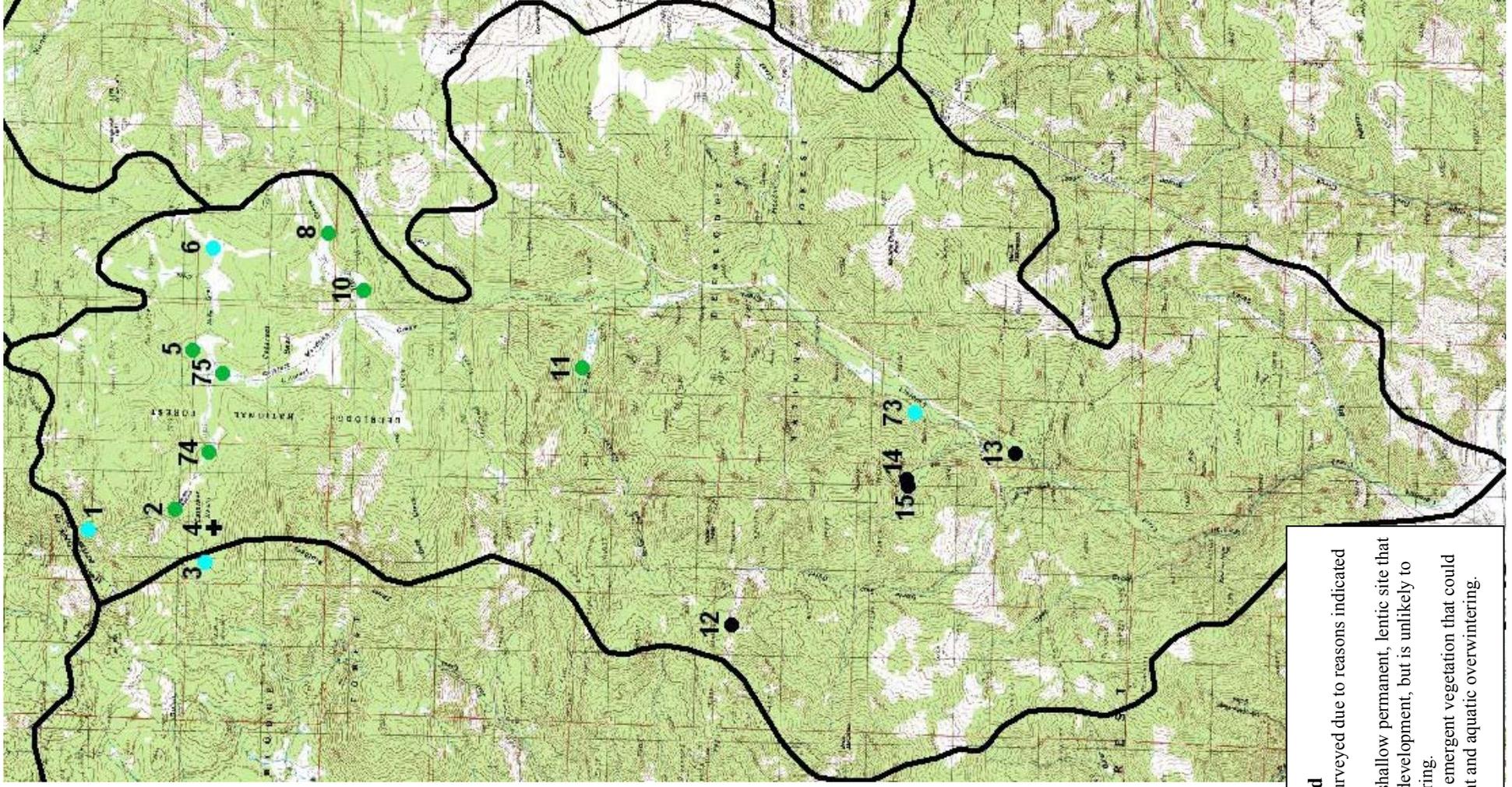
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>002, 008, 074</u>	3 (27%)	3 (27%)	-
<b>Western Toad (BUBO)</b>	<u>073</u>	1 (9%)	1 (9%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 005, 008, 011, 074, 075</u>	6 (55%)	6 (55%)	-
<b>Fish Detected</b>	010 (Westslope Cutthroat Trout), 075 (Westslope Cutthroat Trout)	2 (29%) <sup>5</sup>	-	-

Notes:

1. Sites 012, 013, 014, 015 are on private land and were not surveyed in 2003.
2. Sites 007, 008, and 009 were combined under site number 008.
3. Site 004 is not a lentic site, is only a boggy seep on the side of a hill, and is not worth future survey.
4. Other potential aquatic overwintering areas in the watershed are Cataract Creek below site 002, Trail Creek, Deep Creek, Overland Creek, Rocker Creek, and Uncle Sam Gulch below approximately 7200 feet, and Deer Creek below approximately 6400 feet.
5. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
6. A western toad (BUBO) adult was observed on High Ore Creek on 7/18/1996 by A. Harper.
7. The DFWP fish stocking database has 7 different records of stocking cutthroat trout and 2 different records of stocking rainbow trout in Cataract Creek between 1932 and 1951.

Cataract Creek - (HUC ID = 6\_028 & ICBEMP HUC ID =100200060504)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Lower Wise River - (HUC ID = 6\_029 & ICBEMP HUC ID = 100200041101)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	17
Number of Wet Lentic Sites	5
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

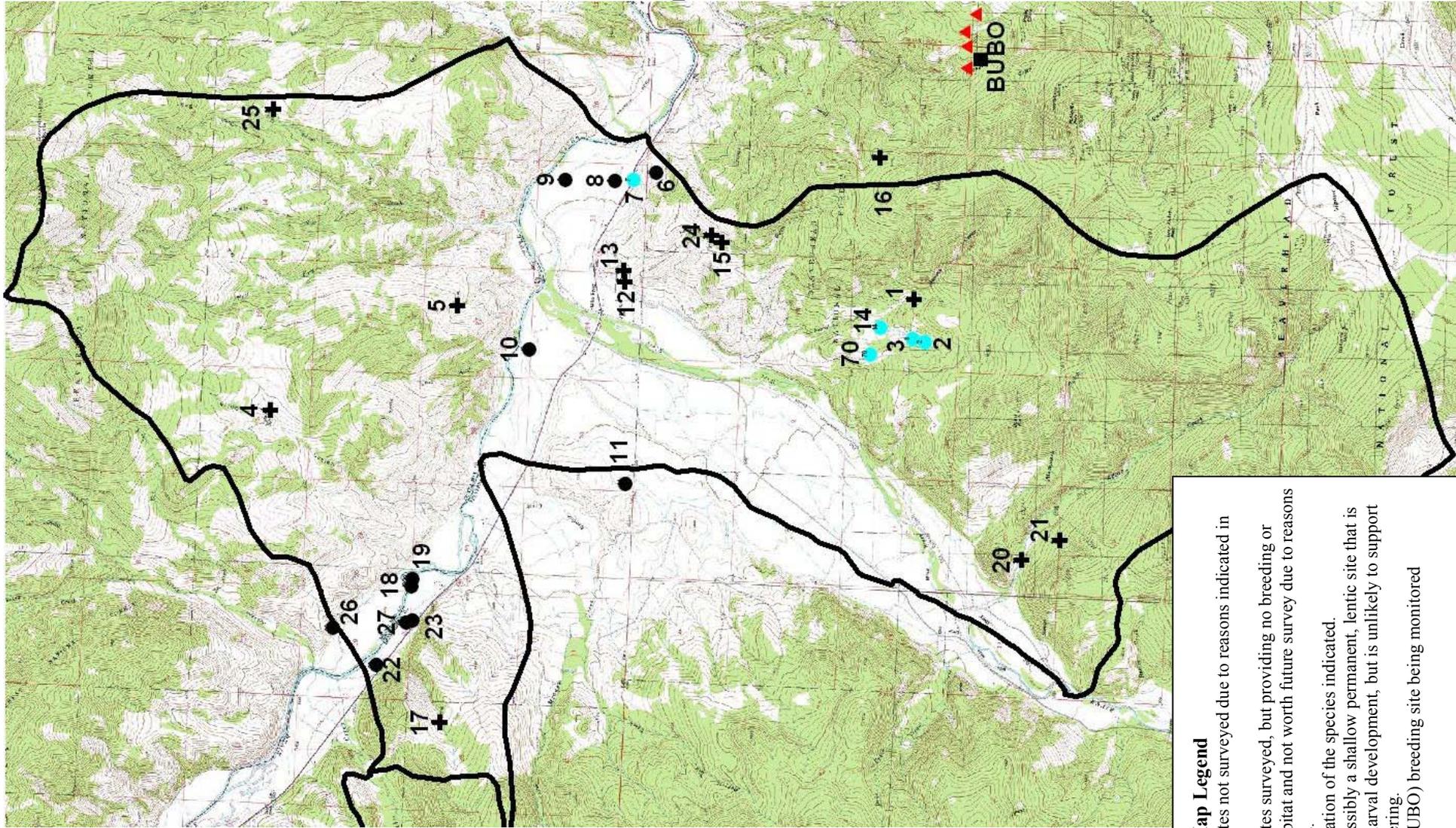
Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	002, 003, 014, <u>070</u>	4 (80%)	1 (20%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 006, 008, 009, 010, 011, 018, 019, 022, 023, 026, and 027 are on private land and were not surveyed in 2003.
2. Site 001 was identified as a potential lentic site on the topographic map, but is not a lentic site, is covered with drier vegetation, and is not worth future survey.
3. Sites 004, 005, and 021 are not lentic sites, are springs (wet and dry) with no place for water to pool, and are not worth future survey.
4. Sites 012, 013, and 016 were identified as potential lentic sites by aerial photographs, but are not lentic sites, are only open areas on the sides of hills, and are not worth future survey.
5. Sites 015 and 024 are springs feeding metal watering troughs with no place for water to pool and form a natural lentic site.
6. Sites 017 and 025 are lentic, but are only damp areas that would never support amphibian reproduction and are not worth future survey.
7. Other potential aquatic overwintering areas in the watershed are the Big Hole River within the watershed boundary, Wise River within the watershed boundary, Adson Creek below 7000 feet, and Swamp Creek below sites 001 and 003.
8. A Columbia spotted frog (RALU) adult was observed at Adson Creek on 9/16/1997 by Bruce Roberts.
9. A rubber boa (CHBO) was observed 6 miles south of Wise River on 8/1/1981 by Jim Reichel.
10. Western toad (BUBO) breeding is being monitored in the ponds at the head of Triangle Gulch adjacent to this watershed.
11. The DFWP fish stocking database has 4 different records of stocking arctic grayling, 18 different records of stocking cutthroat trout, and 65 different records of stocking rainbow trout in the Wise River between 1931 and 1988.



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Red Triangle = Western Toad (BUBO) breeding site being monitored

## Upper Medicine Lodge Creeks - (HUC ID = 6\_030 & ICBEMP HUC ID = 100200011202)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	20
Number of Wet Lentic Sites	9
Number of Dry Lentic Sites	2
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	010 (marginal)
Permanent Lentic Sites with Emergent Vegetation	010
Permanent Lentic Sites without Emergent Vegetation	None

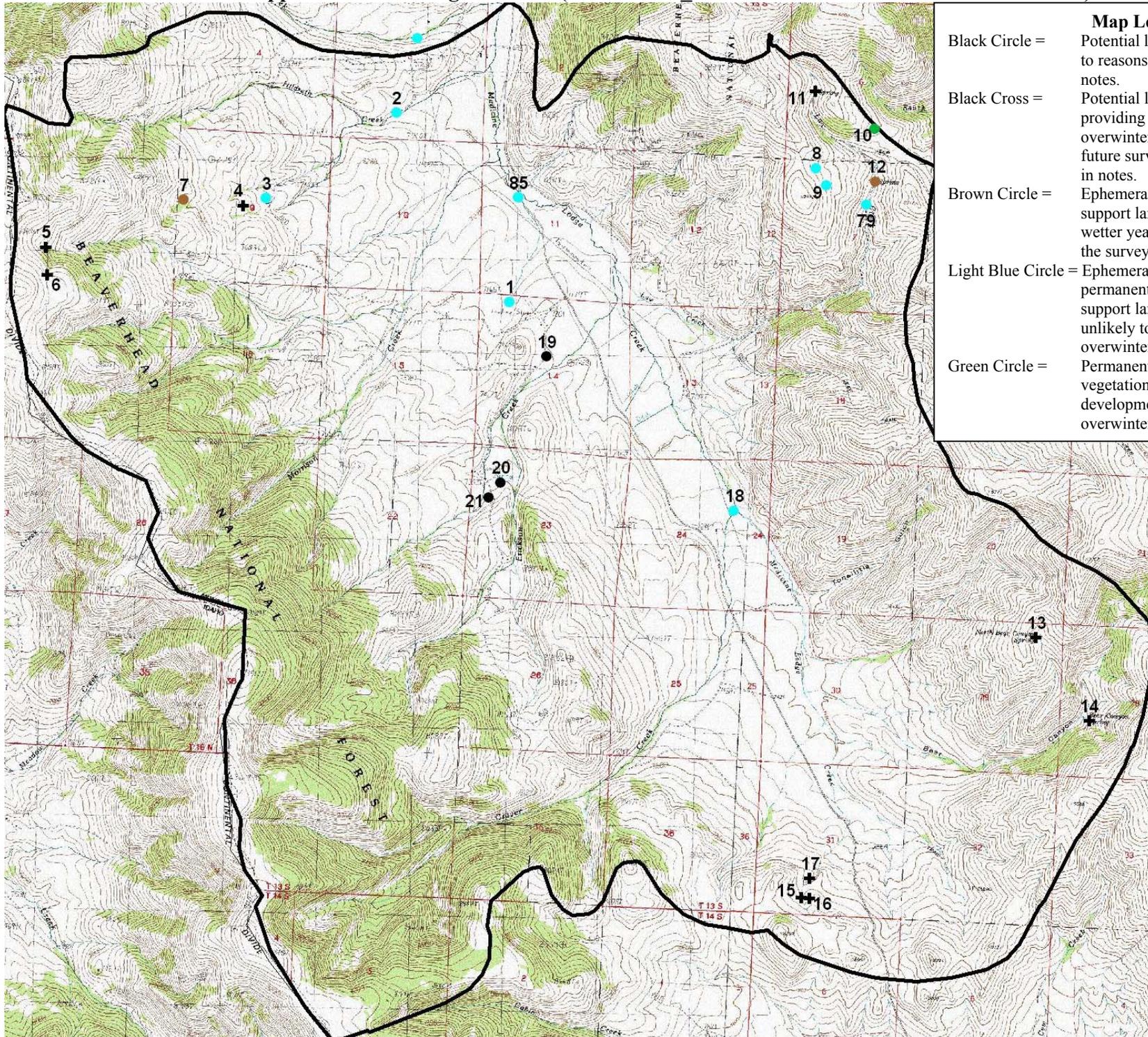
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>003</u> , 010	2 (22%)	1 (11%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 019-021 are on private land and were not surveyed in 2002.
2. Sites 005, 006, 011, 013, 014, 015, 016, and 017 are not lentic sites, are springs (wet and dry) with no place for water to pool, and are not worth future survey.
3. Site 004 is a spring that forms lentic habitat, but it would never hold enough water long enough to support amphibian reproduction and is not worth future survey.
4. Other potential aquatic overwintering areas in this watershed are Medicine Lodge Creek below 7,100 feet.
5. Limited overwintering habitat in this watershed is probably the primary reason for low occupancy rates.
6. Two adult Columbia spotted frogs (RALU) and 1 juvenile terrestrial gartersnake (THEL) were observed on Medicine Lodge Creek near Hildreth on 7/15/1998 by Kirwin Werner.
7. The Beaverhead-Deerlodge National Forest has records of a Columbia spotted frog (RALU) near some beaver ponds on Craver Creek on 8/26/2003.
8. Sites 008, 009, 011, 012, and 079 were noted as having been heavily impacted by grazing structurally and site 008 from the standpoint of water quality as well.

Upper Medicine Lodge Creeks - (HUC ID = 6 030 & ICBEMP HUC ID = 100200011202)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Bloody Dick Creek - (HUC ID = 6\_031 & ICBEMP HUC ID = 100200011503)

### 2001 Water Body and Survey Summary

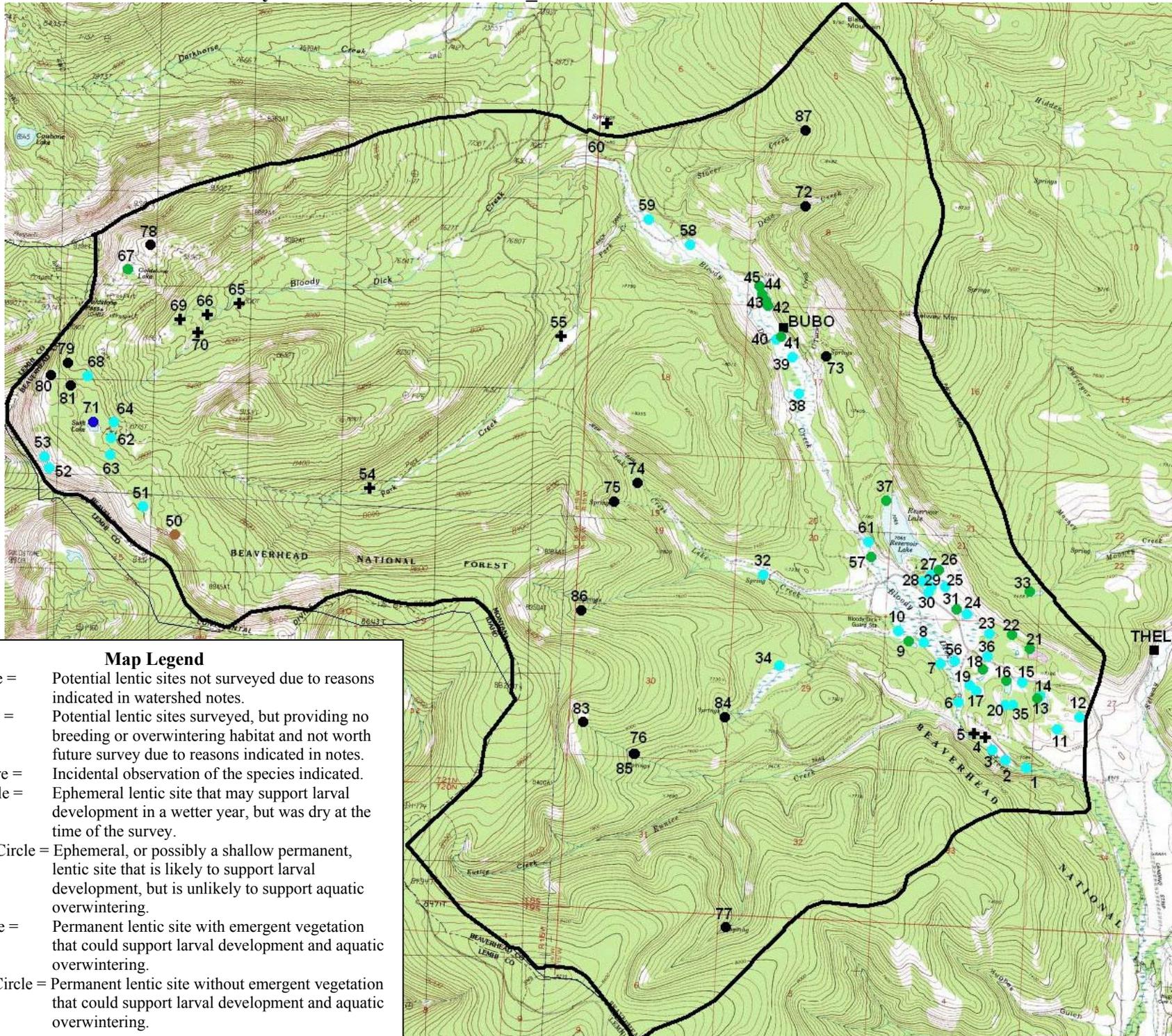
Number of Potential Lentic Sites Surveyed	67	Number of Fishless Potential Lentic Overwintering Sites	12
Number of Wet Lentic Sites	57	Potential Lentic Overwintering Sites	009 (marginal), 013, 016, 018 (marginal), 021, 022, 026, 031, 033, 037, 040, 042, 043, 044, 045, 057, 067, 071
Number of Dry Lentic Sites	6	Permanent Lentic Sites with Emergent Vegetation	009, 013, 016, 018, 021, 022, 026, 031, 033, 037, 040, 042, 043, 044, 045, 057, 067
Number of Potential Lentic Overwintering Sites	18	Permanent Lentic Sites without Emergent Vegetation	071

### 2001 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>067</u>	1 (2%)	1 (2%)	-
<b>Western Toad (BUBO)</b>	<u>051</u>	1 (2%)	1 (2%)	-
<b>Columbia Spotted Frog (RALU)</b>	002, 006, 008, <u>009</u> , 010, <u>011</u> , <u>013</u> , <u>016</u> , <u>017</u> , <u>018</u> , <u>019</u> , <u>020</u> , <u>021</u> , <u>022</u> , <u>023</u> , <u>024</u> , 025, <u>026</u> , <u>028</u> , 030, <u>031</u> , 032, <u>033</u> , 034, <u>035</u> , 036, <u>037</u> , <u>038</u> , <u>039</u> , <u>040</u> , <u>041</u> , <u>042</u> , <u>044</u> , 045, <u>051</u> , <u>056</u> , <u>057</u> , 059, <u>071</u>	39 (68%) <sup>6</sup>	27 (47%)	-
<b>Terrestrial Gartersnake (THEL)</b>	024, 028, 031, 039, 057	5 (9%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of adult Western Toad (BUBO) 1 x observation of Terrestrial Gartersnake (THEL) 1 x observation of Columbia spotted frog (RALU) <sup>6</sup>	-	-	-
<b>Fish Detected</b>	003 (unidentified trout), 004 (unidentified trout), 006 (unknown), 026 (unknown), 032 (Brown Trout), 037 (Westslope Cutthroat Trout), 040 (unknown), 044 (unknown), 056 (unknown), 057 (unknown), 058 (unknown), 059 (Brook Trout), 061 (unknown)	6 (33%) <sup>8</sup>	-	-

1. Sites 072-081 and 083-087 were not surveyed in 2001 because it was not standard practice to survey springs until 2002.
2. Numbers 046-049 were not used to number potential lentic sites in this watershed.
3. Sites 004, 005, 054, 055, 060, 069, 070 were not lentic sites, had no place for water to pool without flowing, and are not worth future survey.
4. Sites 065, 066 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
5. Site 033 is just outside the watershed boundary, but was surveyed due to its proximity.
6. A Columbia spotted frog (RALU) adult was detected at site 060, but this site was not a lentic site so this observation was counted as an incidental observation.
7. Other potential aquatic overwintering areas in this watershed are Bloody Dick Creek below 7600 feet.
8. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish. Although fish were detected at sites 003, 004, 006, 032, 056, 058, and 061, fish were only likely to have been occupying these areas seasonally and these sites are not likely to support overwintering. Thus they were not used in calculating percentage of lentic overwintering sites occupied by fish.
9. The Beaverhead-Deerlodge National Forest has records of Columbia spotted frog (RALU) adults along Bloody Dick Creek, Eunice Creek, and Lake Creek in 2002 and Park Creek in 2003.

**Bloody Dick Creek - (HUC ID = 6\_031 & ICBEMP HUC ID = 100200011503)**



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## Wisconsin Creek - (HUC ID = 6\_032 & ICBEMP HUC ID = 100200030102)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	31
Number of Wet Lentic Sites	10
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	8

Number of Fishless Potential Lentic Overwintering Sites	4
Potential Lentic Overwintering Sites	001 (marginal), 008, 014, 016, 017, 018, 020, 022
Permanent Lentic Sites with Emergent Vegetation	001, 022
Permanent Lentic Sites without Emergent Vegetation	008, 014, 016, 017, 018, 020

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 022</u>	2 (20%)	2 (20%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Western Rattlesnake (CRVI)	-	-	-
<b>Fish Detected</b>	016 (unidentified trout), 017 (Cutthroat Trout) <sup>8</sup> , 018 (Rainbow Trout) <sup>8</sup> , 022 (Rainbow Trout)	4 (50%) <sup>7</sup>	2 (25%)	-

Notes:

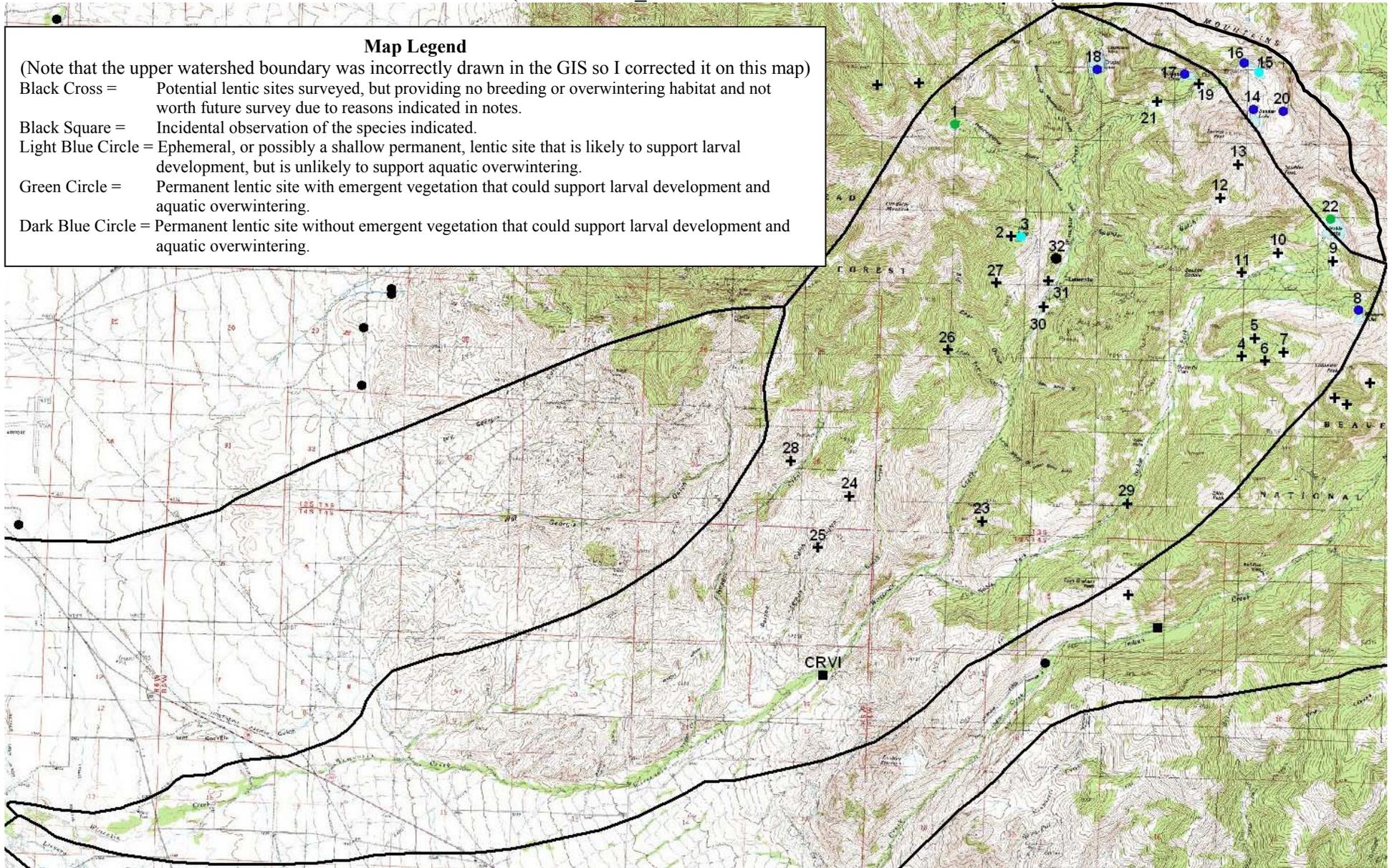
1. Site 032 is on private land and was not surveyed in 2003.
2. Sites 002, 004, 005, 006, 007, 009, 010, 011, 012, 013, 021, and 030 are not lentic sites, are only meadows with streams flowing through them, and are not worth future survey.
3. Sites 023, 024, 025, 026, 027, 028, 029, 031, and 032 are springs on the side of a mountain that do not form any lentic habitat and are not worth future survey.
4. Site 019 is lentic, but would never hold enough water long enough to support amphibian reproduction and is not worth future survey.
5. There is a lot of mining and recreational activity in this watershed.
6. Other potential aquatic overwintering areas in this watershed are Wisconsin Creek below sites 016 and 018, Noble Fork below sites 008 and 022, Little Bear Gulch below site 026, Nugget Creek below site 028, and Spuhler Gulch below site 013.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. The DFWP fish stocking database has 11 different records of stocking Yellowstone cutthroat trout in Noble Lake (site 022) between 1967 and 2002, 10 different records of stocking Yellowstone cutthroat trout and 1 record of stocking westslope cutthroat trout in Jackson Lake (site 017) between 1967 and 2002, 2 records of stocking rainbow trout in Crystal Lake (site 018) in 1946 and 1970, a record of stocking 4,750 rainbow trout in the Noble Fork of Wisconsin Creek on 9/12/1946, and 6 different records of stocking cutthroat trout and 3 different records of stocking rainbow trout in Wisconsin Creek between 1931 and 1951.

# Wisconsin Creek - (HUC ID = 6\_032 & ICBEMP HUC ID = 100200030102)

## Map Legend

(Note that the upper watershed boundary was incorrectly drawn in the GIS so I corrected it on this map)

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



**Nicholia Creek - (HUC ID = 6\_033 & ICBEMP HUC ID = 100200011006)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	35
Number of Wet Lentic Sites	13
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	002, 008
Permanent Lentic Sites with Emergent Vegetation	002, 008
Permanent Lentic Sites without Emergent Vegetation	None

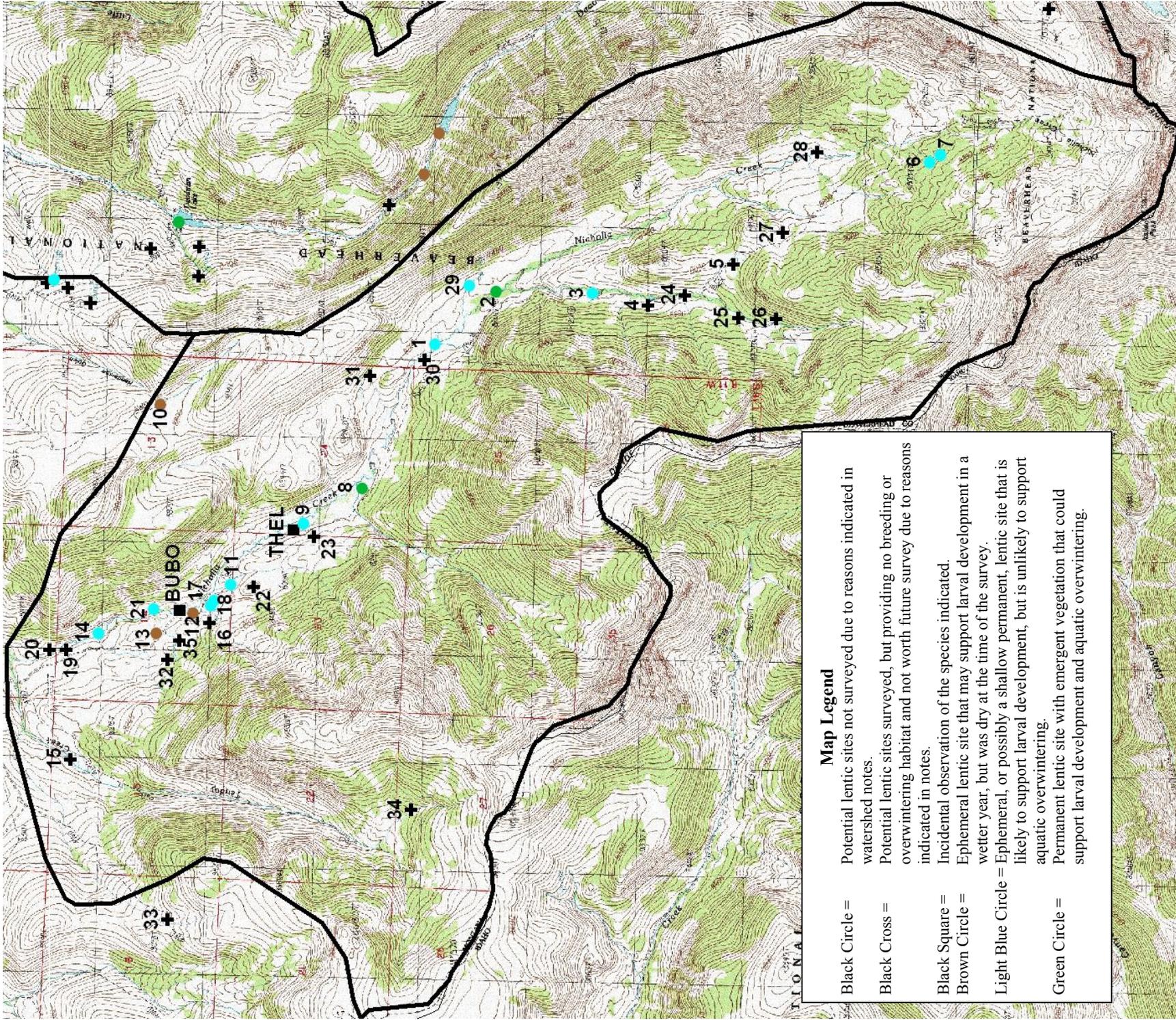
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	031	1 (8%)	0 (0%)	-
<b>Columbia Spotted Frog (RALU)</b>	009, 013, 021	3 (23%)	0 (0%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Terrestrial Gartersnake (THEL) 1 x observation of Western Toad (BUBO)	-	-	-
<b>Fish Detected</b>	002 (unknown), 008 (Unidentified Sculpin)	2 (100%) <sup>6</sup>	-	-

Notes:

- Sites 004, 015, 019, and 020 are not lentic sites, have only flowing water present, and are not worth future survey.
- Site 005 is a lentic site, but would never hold enough water long enough to support amphibian reproduction and is not worth future survey.
- Sites 016, 023, and 030-35 are not lentic sites, are springs (wet and dry) with no place for water to pool, and are not worth future survey.
- Sites 027 and 028 were identified as potential lentic sites on aerial photographs, but are not lentic sites and are not worth future survey.
- Other potential aquatic overwintering areas in this watershed are along Nicholia Creek below 8500 feet.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- The Beaverhead-Deerlodge National Forest has records of western toad (BUBO) adults and tadpoles and Columbia spotted frog (RALU) adults along Nicholia Creek in 2002 and 2003.
- Site 001 was noted as having been heavily impacted by grazing both structurally and from the standpoint of water quality.

Nicholia Creek - (HUC ID = 6 033 & ICBEMP HUC ID = 100200011006)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Jourdain Creek - (HUC ID = 6\_034 & ICBEMP HUC ID = 100200070602)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	7
Number of Wet Lentic Sites	4
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	4

Number of Fishless Potential Lentic Overwintering Sites	2
Potential Lentic Overwintering Sites	001, 002, 004, 008
Permanent Lentic Sites with Emergent Vegetation	001, 002, 004
Permanent Lentic Sites without Emergent Vegetation	008

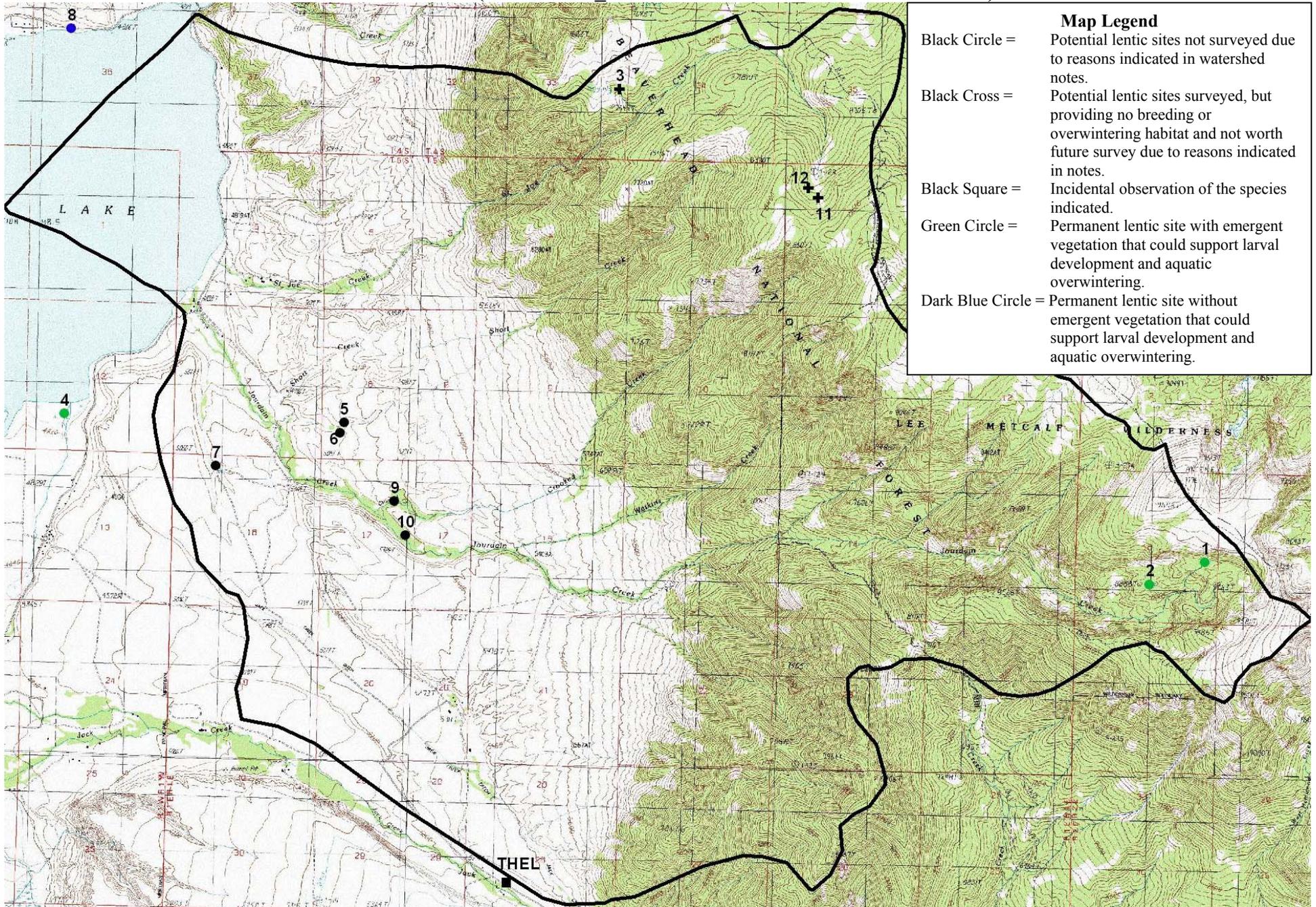
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 002</u>	2 (50%)	2 (50%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Terrestrial Gartersnake (THEL)	-	-	-
<b>Fish Detected</b>	004 (unidentified trout), 008 (unidentified trout)	2 (50%)	2 (50%)	-

Notes:

1. Sites 005, 006, 007, 009, and 010 are on private land and were not surveyed in 2003.
2. Sites 011 and 012 are not lentic sites, are only open areas with water flowing through them, and are not worth future survey. Site 003 is not a lentic site, is only a spring on the side of a mountain, and is not worth future survey.
3. Although site 008 is mapped outside the GIS watershed boundary, only the shoreline within the GIS boundary was surveyed in 2003.
4. Although site 004 is outside the GIS watershed boundary, it was surveyed due to its proximity to the watershed.
5. Other potential overwintering areas in the watershed are Jourdain Creek below site 001, and Saint Joe, Crooked, Short, and Watkins Creeks below approximately 5500 feet.
6. A gophersnake (PICA) was observed on the east shore of Ennis Lake on 7/28/1962 by P.D. Skaar.
7. The DFWP fish stocking database has records of stocking 9,900 rainbow trout in Jourdain Creek on 9/1/1948, and 11 different records of stocking arctic grayling, 2 different records of stocking cutthroat trout, and 338 different records of stocking rainbow trout in Ennis Lake (sites 004 and 008) between 1928 and 1994.

# Jourdain Creek - (HUC ID = 6\_034 & ICBEMP HUC ID = 100200070602)



## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

**Pintler Creek - (HUC ID = 6\_035 & ICBEMP HUC ID = 100200041705)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	30	Number of Fishless Potential Lentic Overwintering Sites	6
Number of Wet Lentic Sites	23	Potential Lentic Overwintering Sites	019, 025, 026, 028, 033, 034, 039, 043, 045
Number of Dry Lentic Sites	6	Permanent Lentic Sites with Emergent Vegetation	019, 025, 026, 028, 033, 034, 039, 043, 045
Number of Potential Lentic Overwintering Sites	9	Permanent Lentic Sites without Emergent Vegetation	None

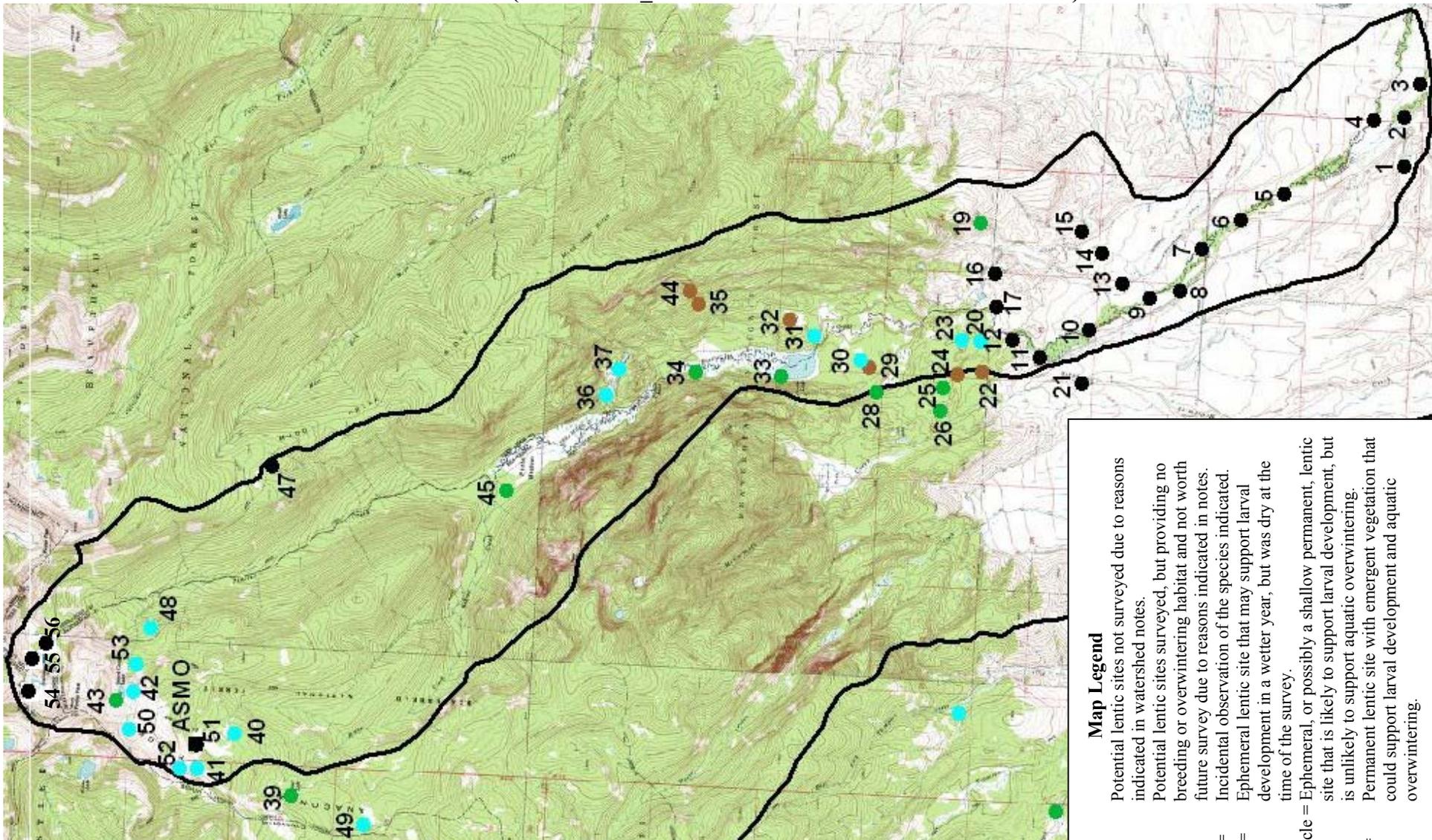
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>040, 053</u>	2 (9%)	2 (9%)	-
<b>Columbia Spotted Frog (RALU)</b>	019, 020, <u>025, 026</u> , 028, <u>031</u> , 033, 034, <u>039, 040</u> , 041, 045, 049, 052, <u>053</u>	15 (65%)	5 (22%)	-
<b>Terrestrial Gartersnake (THEL)</b>	031, 036, 037	3 (13%)	-	-
<b>Common Gartersnake (THSI)</b>	028	1 (4%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of 100 Rocky Mountain Tailed Frog (ASMO) larvae	-	-	-
<b>Fish Detected</b>	028 (unidentified trout), 033 (unknown species), 043 (unknown species)	3 (33%) <sup>6</sup>	-	-

Notes:

- Sites 001-017 and 021 are on private land and were not surveyed in 2003.
- Site 047 was not surveyed in 2003 due to logistical constraints and sites 054, 055, and 056 were not surveyed in 2003 due to confusion over the watershed boundary.
- Sites 018 and 019 were combined under site number 019. Sites 027 and 028 were combined under site number 028. Sites 038, 045, and 046 were combined under site number 045.
- Site 051 is not a lentic site, is only an open area with flowing water, and is not worth future survey.
- Other potential aquatic overwintering areas in the watershed are Pintler Creek below site 043 and Beaver Creek below site 039.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- Rocky Mountain tailed frog (ASMO) larvae were observed in Beaver Creek on 10/6/1998 by Bruce Roberts
- Columbia spotted frogs (RALU) were observed at the south end of Pintlar Lake (site 033) on 7/8/1995 by D. Dover.
- The DFWP fish stocking database has 4 different records of stocking cutthroat trout, 5 different records of stocking rainbow trout, and 17 different records of stocking arctic grayling in Pintlar Lake (site 033) between 1928 and 1966; 7 different records of stocking rainbow trout and 1 record of stocking cutthroat trout in Oreamnos Lake (site 055) between 1934 and 2002; and 1 record of stocking arctic grayling, 2 different records of stocking cutthroat trout, and 6 different records of stocking rainbow trout in Pintlar Creek between 1937 and 1951.

Pintler Creek - (HUC ID = 6\_035 & ICBEMP HUC ID = 100200041705)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observation of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Deadman Creek - (HUC ID 6\_036 ICBEMP HUC ID = 100200011002 and HUC ID = 6\_301 & New USFS HUC ID = 100200011301)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	81
Number of Wet Lentic Sites	34
Number of Dry Lentic Sites	12
Number of Potential Lentic Overwintering Sites	8

Number of Fishless Potential Lentic Overwintering Sites	6
Potential Lentic Overwintering Sites	010, 025, 026, 027, 028, 035 (marginal), 064, 099
Permanent Lentic Sites with Emergent Vegetation	010, 025, 026, 027, 028, 035, 064, 099
Permanent Lentic Sites without Emergent Vegetation	None

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>004</u> , 005, <u>010</u> , <u>015</u> , <u>019</u> , <u>020</u> , <u>025</u> , 027, 064	9 (26%)	6 (18%)	-
<b>Terrestrial Gartersnake (THEL)</b>	010, 034, 061	3 (9%) <sup>5</sup>	-	-
<b>Incidental Herpetofauna Observations</b>	2 x observations of Terrestrial Gartersnakes (THEL)	-	-	-
<b>Fish Detected</b>	010 (unidentified trout), 076 (unidentified species)	2 (25%) <sup>7</sup>	-	-

Notes:

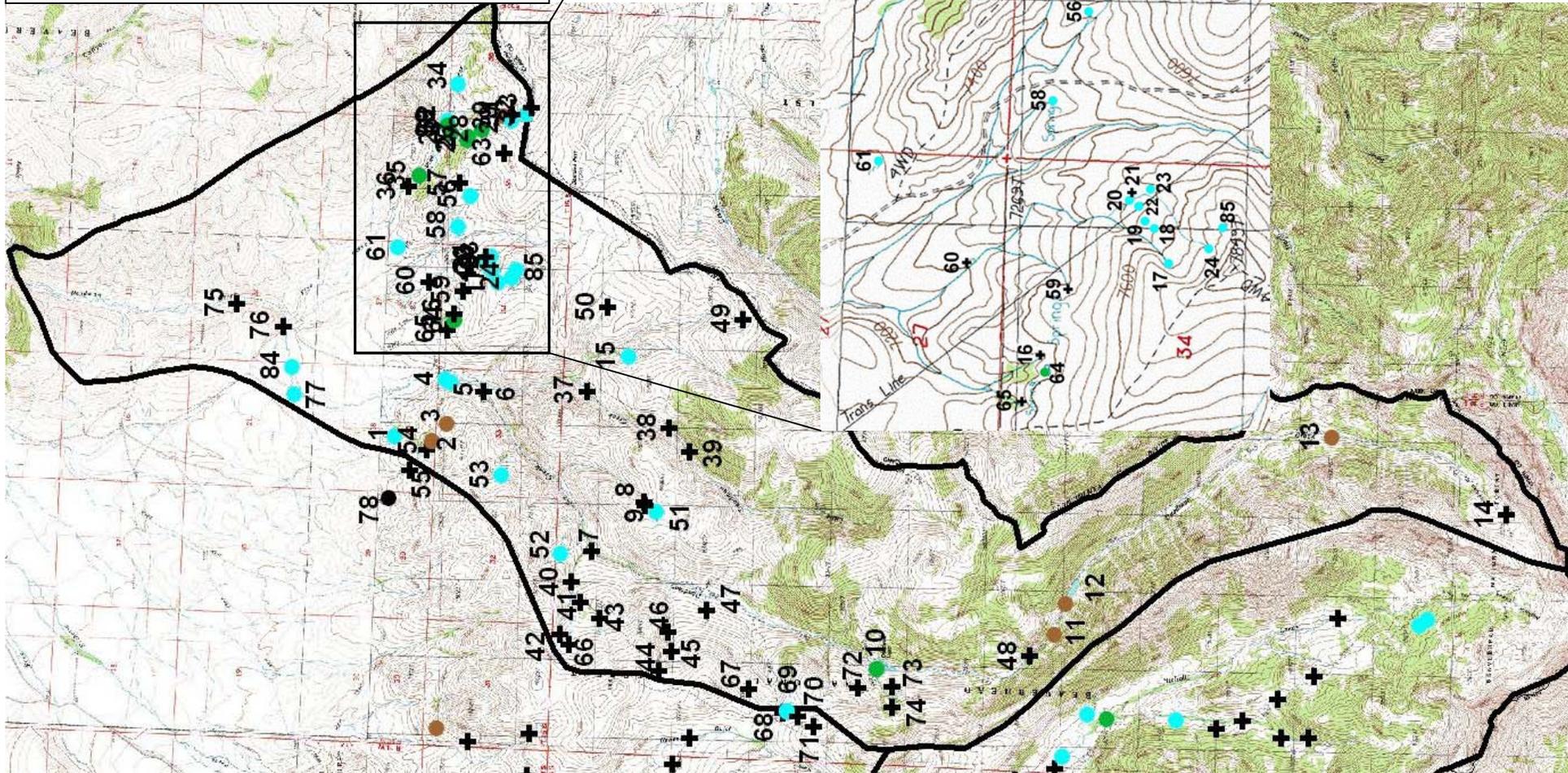
1. Site 078 was not surveyed in 2002 because it was accidentally missed due to communication error.
2. Sites 014, 016, 021, 031, 033, 046, 048, and 070 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
3. Sites 006, 007, 008, 009, 038, 039, 040, 075, and 076 are not lentic sites are only areas of flowing water along a stream, and are not worth future survey.
4. Sites 036, 037, 041, 042, 043, 044, 045, 047, 049, 050, 054, 055, 057, 059, 060, 063, 065, 066, 067, 068, 071, 072, 073, and 074 are springs (wet and dry) with no place for water to pool to support amphibian reproduction, and are not worth future survey.
5. Terrestrial gartersnakes (THEL) were detected at sites 036 and 076 which were not lentic sites so these observations were treated as incidental observations.
6. Other potential aquatic overwintering sites in this watershed are along Deadman Creek below site 010.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. The DFWP fish stocking database has the following records of stocking fish in Deadman Creek: 40,000 cutthroat trout on 9/16/1928; 19,800 cutthroat trout on 8/6/1936; and 6,120 cutthroat trout on 10/11/1950.
9. Sites 004, 029, 041, 054, 055, 063, and 075 were noted as having been heavily impacted by grazing.

**Deadman Creek - (HUC ID 6\_036 ICBEMP HUC ID = 100200011002 and HUC ID = 6\_301 & New USFS HUC ID = 100200011301)**

**Map Legend**

- Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

- Black Circle =
- Black Cross =
- Brown Circle =
- Light Blue Circle =
- Green Circle =



**Pole Creek & Divide Creek - (HUC ID = 6\_037 & ICBEMP HUC ID = 100200021002)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	1
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	001
Permanent Lentic Sites with Emergent Vegetation	001
Permanent Lentic Sites without Emergent Vegetation	None

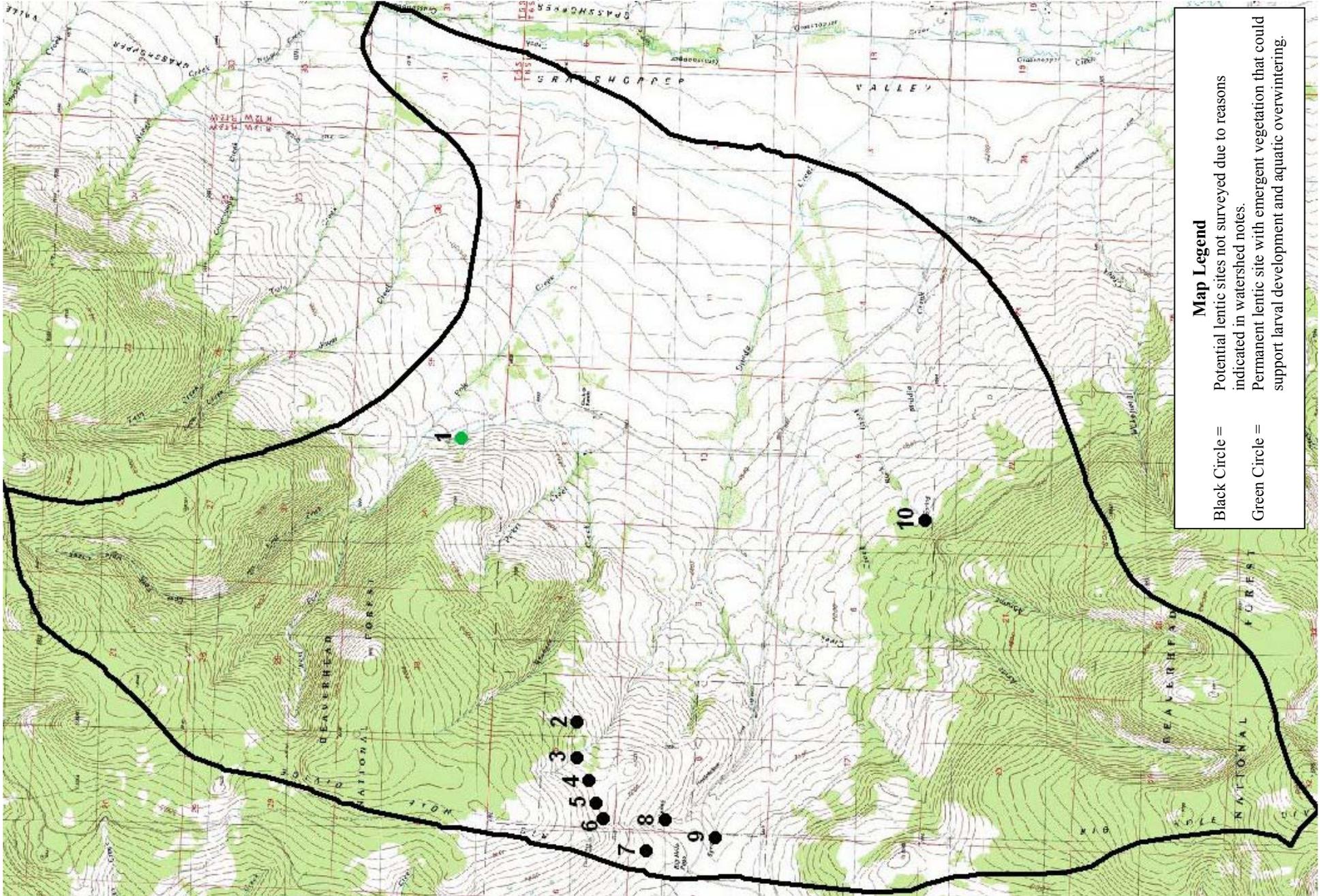
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Terrestrial Gartersnake (THEL)</b>	001	1 (100%)	-	-
<b>Fish Detected</b>	001 (unidentified trout species)	1 (100%)	-	-

Notes:

1. Sites 002-010 are on private land and were not surveyed in 2002.
2. With the exception of site 001, a handful of small ephemeral ponds on private land just north of Bighole Pass and some springs that are unlikely to have any lentic habitat this watershed is very dry. Thus, the most likely habitat to support amphibian breeding in the watershed, site 001, was surveyed.
3. There did not appear to be any other potential aquatic overwintering areas in this watershed.

Pole Creek & Divide Creek - (HUC ID = 6\_037 & ICBEMP HUC ID = 100200021002)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Sheep Creek - (HUC ID = 6\_038 & ICBEMP HUC ID = 100200071601)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	15
Number of Wet Lentic Sites	7
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	3

Number of Fishless Potential Lentic Overwintering Sites	2
Potential Lentic Overwintering Sites	004, 007, 008
Permanent Lentic Sites with Emergent Vegetation	008
Permanent Lentic Sites without Emergent Vegetation	004, 007

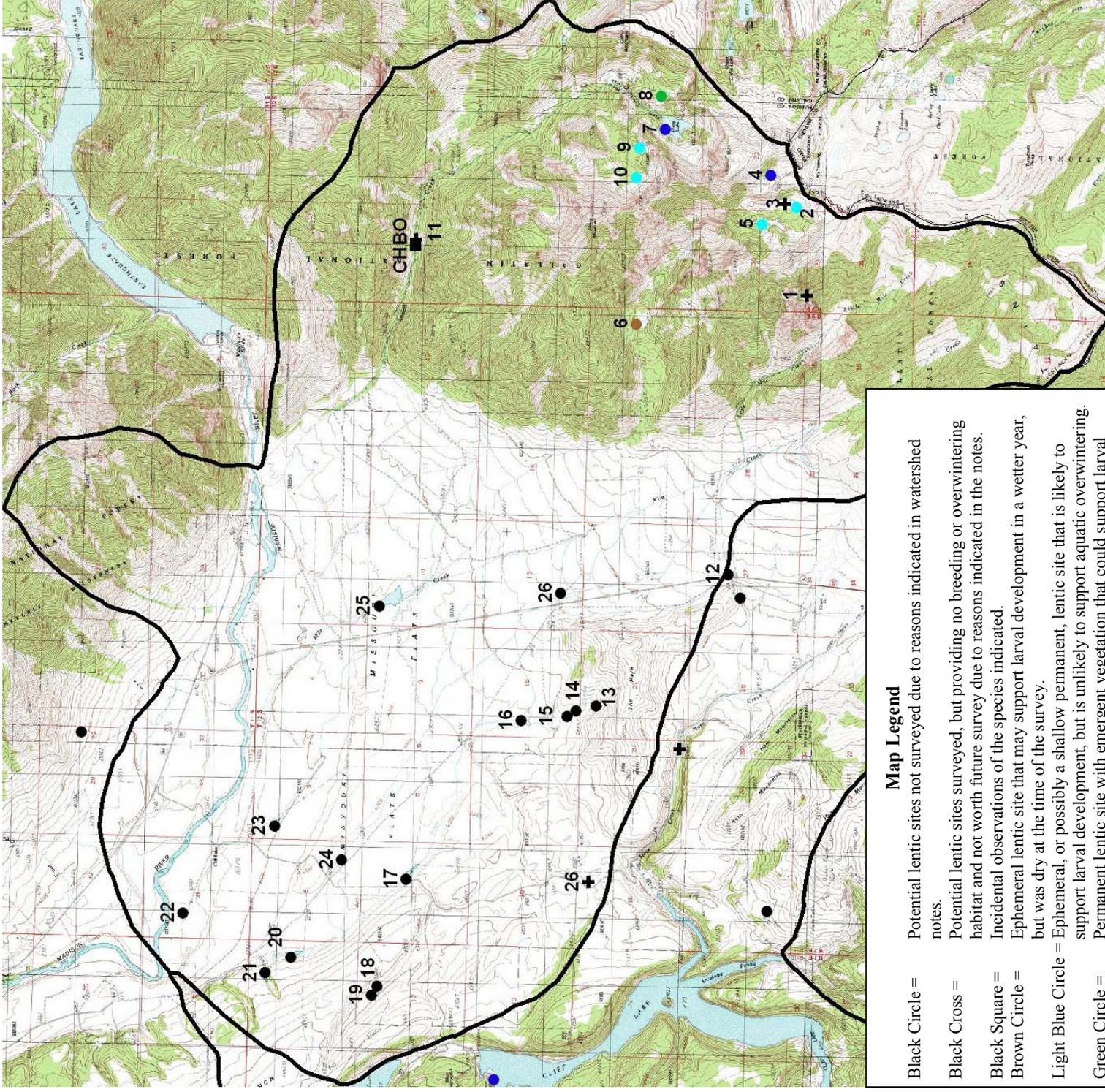
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Incidental Herpetofauna Observations</b>	1 x observation of Rubber Boa (CHBO)	-	-	-
<b>Fish Detected</b>	007 (Rainbow Trout)	1 (33%) <sup>5</sup>	-	-

Notes:

1. No amphibians or aquatic reptiles were detected at the lentic water bodies surveyed in this watershed.
2. Sites 012 – 026 were on private land and were not surveyed in 2003.
3. Sites 001, 003, and 011 are not lentic sites, are open areas with only water flowing through them, and are not worth future survey.
4. Other potential aquatic overwintering areas in the watershed are the Madison River, Mile Creek below 7200 feet; Sheep Creek below site 008, Little Mile Creek below 7800 feet and some lentic sites on private land.
5. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
6. A terrestrial gartersnake (THEL) museum voucher specimen was collected on 7/9/1977 by Stephen Busack on U.S. Highway 287 in this watershed (USNM 205148).
7. The DFWP fish stocking database has records of stocking 11,403 rainbow trout in Horn Creek on 7/21/1948.

Sheep Creek - (HUC ID = 6\_038 & ICBEMP HUC ID = 100200071601)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Black Square = Incidental observations of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## Odell Creek & Nye Creek - (HUC ID = 6\_039 & ICBEMP HUC ID = 100200012102)

### 2002 Water Body and Survey Summary

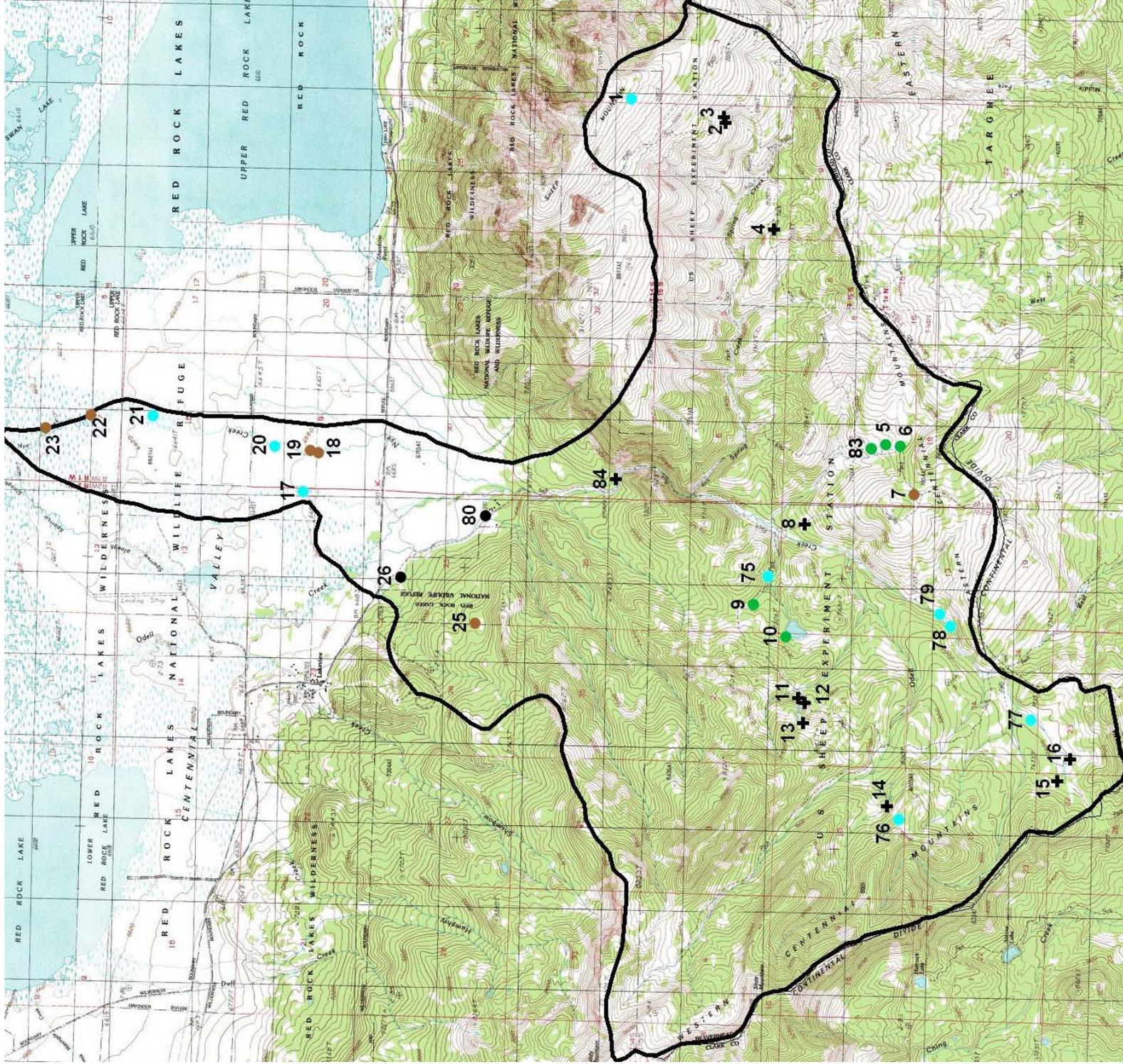
Number of Potential Lentic Sites Surveyed	31	Number of Fishless Potential Lentic Overwintering Sites	4
Number of Wet Lentic Sites	14	Potential Lentic Overwintering Sites	005 (marginal), 006 (marginal), 009, 010, 083 (marginal)
Number of Dry Lentic Sites	6	Permanent Lentic Sites with Emergent Vegetation	005, 006, 009, 010, 083
Number of Potential Lentic Overwintering Sites	5	Permanent Lentic Sites without Emergent Vegetation	None

### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	083	1 (7%)	0 (0%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>025</u>	1 (7%) <sup>4</sup>	1 (7%)	-
<b>Columbia Spotted Frog (RALU)</b>	005, 006, 009, 010, 020, <u>021</u> , 075, <u>076</u> , <u>077</u> , <u>078</u> , 079, 083	12 (86%) <sup>5</sup>	4 (29%)	-
<b>Terrestrial Gartersnake (THEL)</b>	009, 083	2 (14%)	2 (14%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of adult Western Toad (BUBO) near site 080 3 x observations of adult Columbia spotted frogs (RALU) at 2 different localities <sup>5</sup>	-	-	-
<b>Fish Detected</b>	010 (unidentified species)	1 (20%) <sup>7</sup>	-	-

1. Number 024 was accidentally skipped when numbering potential lentic sites in this watershed.
2. Sites 026 and 080 are on private land and were not surveyed in 2002.
3. Sites 002, 003, 004, 008, 011, 012, 013, 014, 015, 016, and 084 are springs without any place for water to pool and are not worth future survey.
4. Although site 025 was dry at the time it was surveyed, juvenile boreal chorus frogs (PSMA) were found in the cracks in the mud and are believed to have been the products of reproduction at this site.
5. Although Columbia spotted frog (RALU) adults were detected at sites 016 and 084, these were not lentic sites, so these observations were counted as incidental observations.
6. Other potential aquatic overwintering areas in the watershed are Odell Creek below sites 010 and 078.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. The Beaverhead-Deerlodge National Forest has records of western toad (BUBO) adults along Odell Creek on 7/25/2002.
9. Boreal chorus frogs (PSMA) were observed breeding in an overflow pond on Odell Creek 1.5 miles east of Lakeview on 7/18/1998 by Kirwin Werner.
10. Museum voucher specimens of western toads (BUBO) (USNM 220096, 311230-311244, 312717) and Columbia spotted frogs (RALU) (220170, 312374-312412, 312824) were collected on Odell Creek 2.0 miles S of Upper Red Rock Lake by Charles Sperry on 10/1/1922.
11. The DFWP fish stocking database has 6 different records of stocking Yellowstone cutthroat trout and 2 different records of stocking arctic grayling in the unnamed lake on Odell Creek (site 010) between 1970 and 2002.
12. Sites 017, 018, 020, and 021 were noted as having been heavily impacted by grazing.

Odell Creek & Nye Creek - (HUC ID = 6 039 & ICBEMP HUC ID = 100200012102)



**Map Legend**

- Black Circle =** Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross =** Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in the notes.
- Brown Circle =** Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle =** Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle =** Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Deer Canyon Creek - (HUC ID = 6\_040 & ICBEMP HUC ID = 100200011103)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	17
Number of Wet Lentic Sites	4
Number of Dry Lentic Sites	9
Number of Potential Lentic Overwintering Sites	3

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	006, 007 (marginal), 017
Permanent Lentic Sites with Emergent Vegetation	006, 007, 017
Permanent Lentic Sites without Emergent Vegetation	None

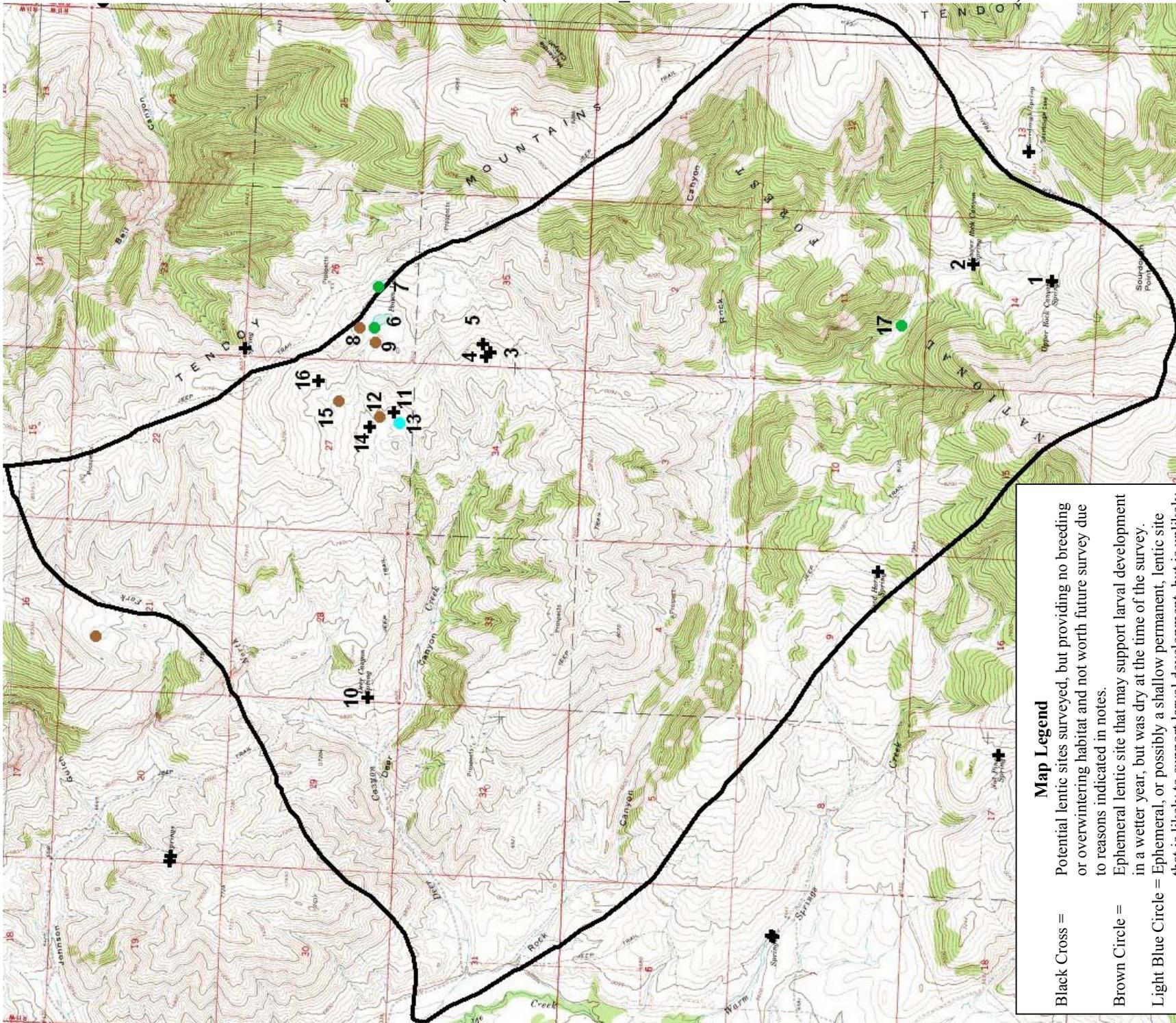
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	006, <u>013</u> , 017	3 (75%)	1 (25%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 001, 003, 004, 005, and 016 are lentic site, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
2. Sites 002, 010, and 011 are not lentic sites, are springs with no place for water to pool, and are not worth future survey.
3. Site 014 was identified as a potential lentic site, but was only an open area with no place for water to pool and is not worth future survey.
4. We did not detect any other potential aquatic overwintering areas in this watershed.
5. Site 015 was noted as having been heavily impacted by grazing.

Deer Canyon Creek - (HUC ID = 6\_040 & ICBEMP HUC ID = 100200011103)



Map Legend	
Black Cross =	Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
Brown Circle =	Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
Light Blue Circle =	Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
Green Circle =	Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Red Rock River (Lima Reservoir) - (HUC ID = 6\_041 & ICBEMP HUC ID = 100200011801)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	42
Number of Wet Lentic Sites	11
Number of Dry Lentic Sites	29
Number of Potential Lentic Overwintering Sites	4

Number of Fishless Potential Lentic Overwintering Sites	4
Potential Lentic Overwintering Sites	005, 006, 039, 084
Permanent Lentic Sites with Emergent Vegetation	005, 006, 039, 084
Permanent Lentic Sites without Emergent Vegetation	None

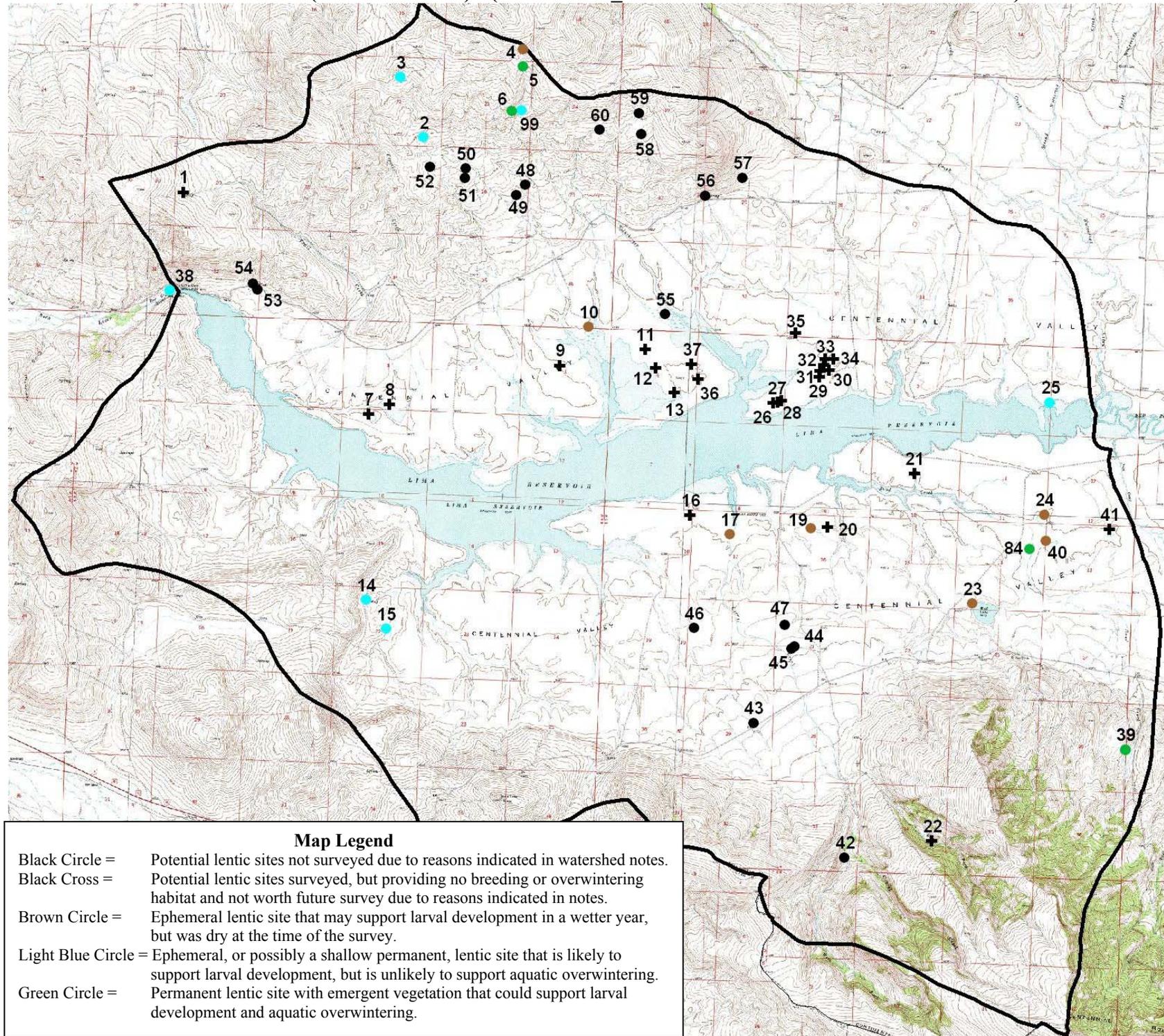
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>039</u>	1 (9%)	1 (9%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>003, 039, 084</u>	3 (27%)	3 (27%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>099</u>	1 (9%)	1 (9%)	-
<b>Terrestrial Gartersnake (THEL)</b>	003, 006, 014, 039	4 (36%)	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

1. Sites 042-060 are on private land and were not surveyed in 2002.
2. Number 018 was not used to number potential lentic sites in this watershed.
3. Site 001 is not a lentic site, is a dry spring with no place for water to pool during wetter times and is not worth future survey.
4. Sites 007, 008, 009, 011, 012, 013, 016, 020, 021, 022, 026, 027, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, and 041 are lentic sites, but would not hold enough water long enough to support amphibian reproduction and are not worth future survey.
5. The only other potential aquatic overwintering area in this watershed is Lima Reservoir.
6. Boreal chorus frogs (PSMA) were observed calling and/or breeding in the gravel pit pond just below Lima Reservoir on 5/30/1997 by Jim Reichel, just south of Lima Reservoir on 5/26/1996 by Kirwin Werner, just south of Lima Reservoir on 5/24/1999 by Paul Hendricks, at the Mud Lake outlet (site 023) on 5/26/1996 by Kirwin Werner, the blown out reservoir on Sand Creek (site 039) on 7/22/1998 by Kirwin Werner, and at the east end of Lima Reservoir on 5/24/1999 by Paul Hendricks.
7. A Columbia spotted frog (RALU) adult was observed at the blown out reservoir on Sand Creek (site 039) on 7/22/1998 by Kirwin Werner.
8. Sites 001, 014, 015, and 039 were noted as having been heavily impacted by grazing.

# Red Rock River (Lima Reservoir) - (HUC ID = 6 041 & ICBEMP HUC ID = 100200011801)



**Miner Creek - (HUC ID = 6\_042 & ICBEMP HUC ID = 100200042504)**

**2003 Water Body and Survey Summary**

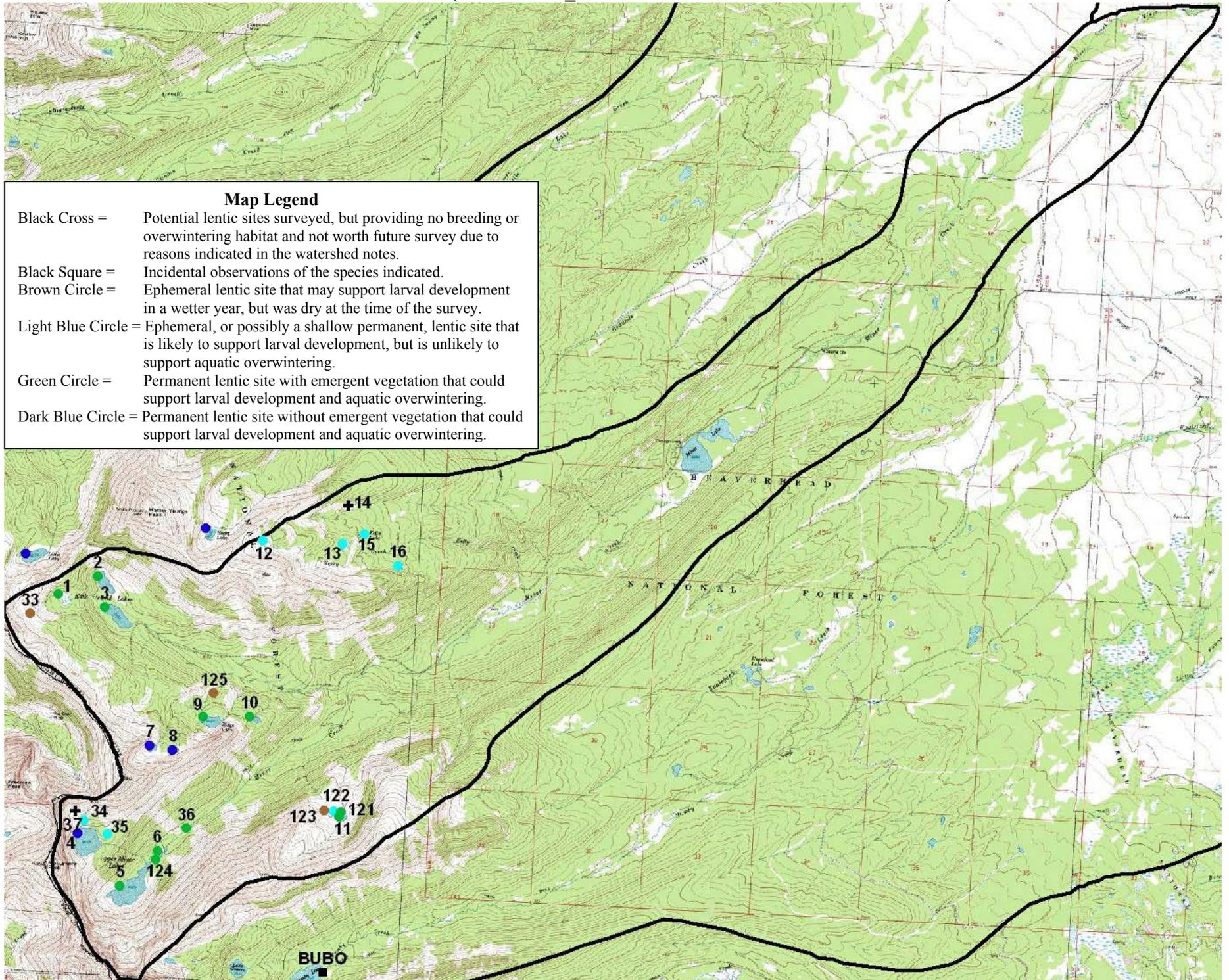
Number of Potential Lentic Sites Surveyed	26	Number of Fishless Potential Lentic Overwintering Sites	7
Number of Wet Lentic Sites	20	Potential Lentic Overwintering Sites	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 036, 121, 124
Number of Dry Lentic Sites	4	Permanent Lentic Sites with Emergent Vegetation	001, 002, 003, 005, 006, 009, 010, 011 (little eveg), 036, 121, 124
Number of Potential Lentic Overwintering Sites	14	Permanent Lentic Sites without Emergent Vegetation	004, 007, 008

**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>011, 015, 121, 124</u>	4 (20%)	4 (20%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 002, 003, 005, 006, 009, 010, 011, 013, 015, 016, 035, 036, 122, 124</u>	15 (75%)	10 (50%)	-
<b>Common Gartersnake (THIS)</b>	124	1 (5%)	-	-
<b>Fish Detected</b>	002 (Rainbow Trout, Yellowstone Cutthroat Trout) <sup>8</sup> , 003 (Rainbow Trout), 004 (Westslope Cutthroat Trout), 005 (unidentified trout and unidentified sculpin), 006 (unidentified trout), 009 (Yellowstone Cutthroat Trout) <sup>8</sup> , 036 (Brook Trout and unidentified sculpin)	7 (50%) <sup>5</sup>	-	-

- Sites 017-032, 038-044 and other unnumbered sites were not surveyed because of lack of time and because pond drying would make detection information unmeaningful. We plan to survey these sites in future years. All sites on the Homer Youngs Peak quad map were surveyed in 2003.
- Site 014 is only a dry meadow with a stream flowing through it and is not worth future survey. Site 037 is a lentic site, but dries almost immediately after snow melt, is extremely unlikely to ever support amphibian reproduction, and is not worth future survey.
- Other potential aquatic overwintering areas in this watershed include areas along Miner Creek below sites 001 and 005.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- Columbia spotted frogs (RALU) of all age and life history classes, long-toed salamander (AMMA) larvae, and a terrestrial gartersnake were observed in the ponds centered around a point 1.0 mile northeast of the stream gaging station on Miner Creek by Kirwin Werner on 7/19/1996, and by Barbara Enriquez on 8/14/2000.
- The following observations of Columbia spotted frogs (RALU) had previously been made in this watershed: larvae and adults 0.1 west of Miner Lakes Campground on 8/14/2000 by Barbara Enriquez, adults in the pond 0.6 miles southwest of Homer Youngs Peak (site 001) on 8/23/2000 by Barbara Enriquez, adults at upper Rock Island Lake (site 002) on 8/28/1995 by a Beaverhead-Deerlodge fisheries crew, adults in the lake 1.5 miles northeast of Freeman Peak (site 009) on 8/10/2000 by Barbara Enriquez, adults 1.2 miles east of Monument Peak (site 006) on 8/11/2000 by Barbara Enriquez, and adults and larvae 1.1 miles east of Monument Peak (site 006) on 8/10/2000 by Barbara Enriquez.
- A common gartersnake (THIS) was observed just downstream of Lower Rock Island Lake (site 003) on 8/27/1995 by a Beaverhead-Deerlodge fisheries crew.
- The DFWP fish stocking database has 11 different records of stocking arctic grayling, 3 different records of stocking Yellowstone cutthroat trout, and 7 different records of stocking rainbow trout in Miner Lake between 1933 and 2000, 10 different records of stocking Yellowstone cutthroat trout in Ridge Lake (site 009) between 1960 and 2000, 3 different records of stocking rainbow trout and 1 record of stocking Yellowstone cutthroat trout in Upper Rock Island Lake (site 002) between 1938 and 1990, and 2 records of stocking cutthroat trout in the southern Upper Miner Lake (site 005) in 1959 and 1960.

# Miner Creek - (HUC ID = 6\_042 & ICBEMP HUC ID = 100200042504)



**Boulder River - (HUC ID = 6\_043 & ICBEMP HUC ID = 100200060501)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	3
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	001, 002
Permanent Lentic Sites with Emergent Vegetation	001, 002
Permanent Lentic Sites without Emergent Vegetation	None

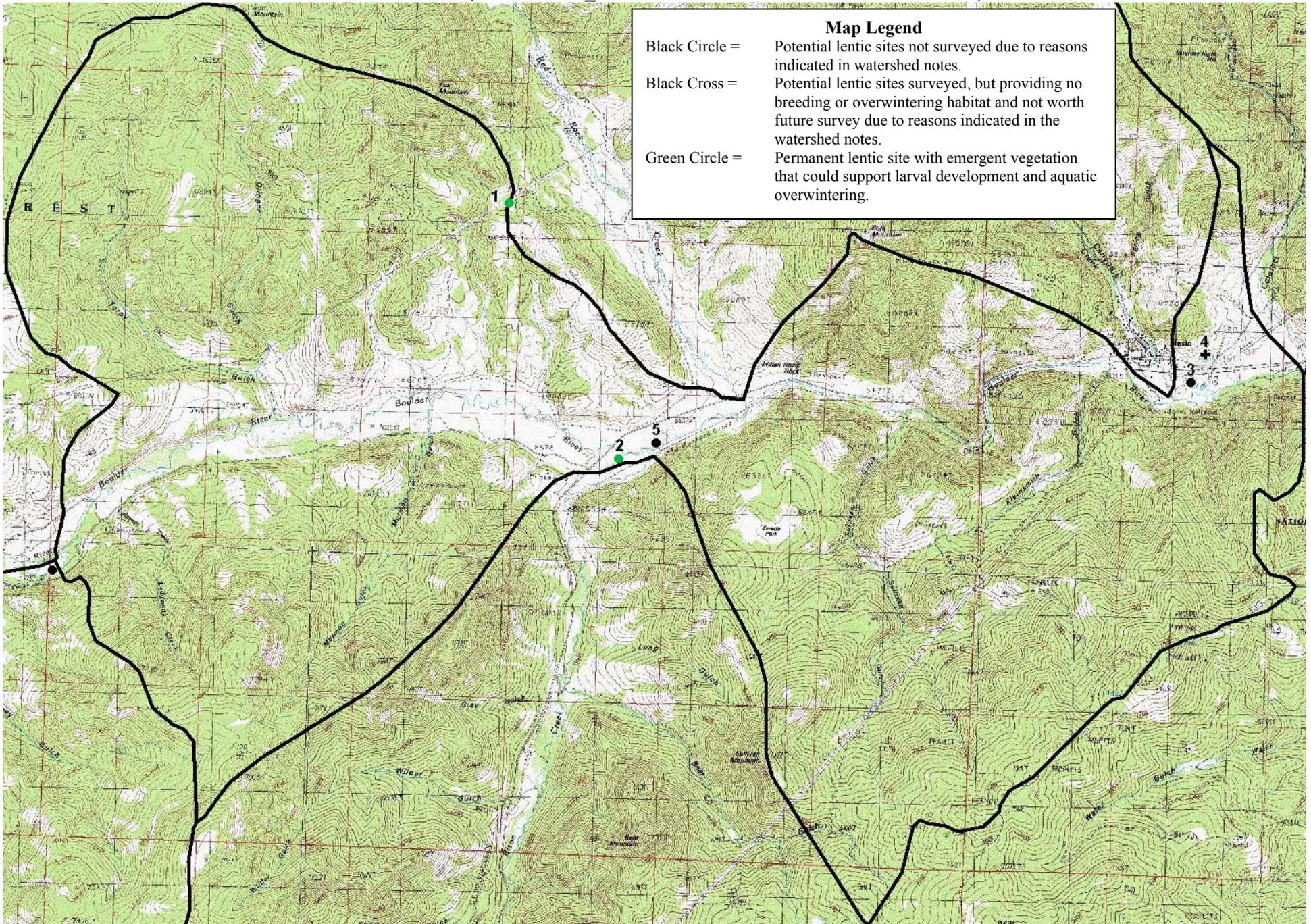
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>001</u>	1 (50%)	1 (50%)	-
<b>Western Toad (BUBO)</b>	<u>001, 002</u>	2 (100%)	2 (100%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001, 002</u>	2 (100%)	2 (100%)	-
<b>Terrestrial Gartersnake (THEL)</b>	002	1 (50%)	-	-
<b>Fish Detected</b>	002 (unidentified trout)	1 (50%)	-	-

Notes:

1. Sites 004 and 005 are on private land and were not surveyed in 2003.
2. Site 003 is a dry tailings pond on private land that is not capable of supporting amphibian reproduction and is not worth future survey.
3. Other potential aquatic overwintering areas in this watershed include areas along the Boulder River and Bison Creek.

# Boulder River - (HUC ID = 6\_043 & ICBEMP HUC ID = 100200060501)



## Hebgen Lake (Red Canyon Creek) - (HUC ID = 6\_044 & ICBEMP HUC ID =100200071701)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	38	Number of Fishless Potential Lentic Overwintering Sites	15
Number of Wet Lentic Sites	30	Potential Lentic Overwintering Sites	005, 006 (marginal), 007 (marginal), 008 (marginal), 009, 010, 011 (marginal), 012 (marginal), 013 (marginal), 014 (marginal), 016, 017 (marginal), 025, 026, 027, 028 (marginal), 031, 036, 045
Number of Dry Lentic Sites	5	Permanent Lentic Sites with Emergent Vegetation	005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 016, 017, 025, 026, 027, 028, 031, 036, 045
Number of Potential Lentic Overwintering Sites	19	Permanent Lentic Sites without Emergent Vegetation	None

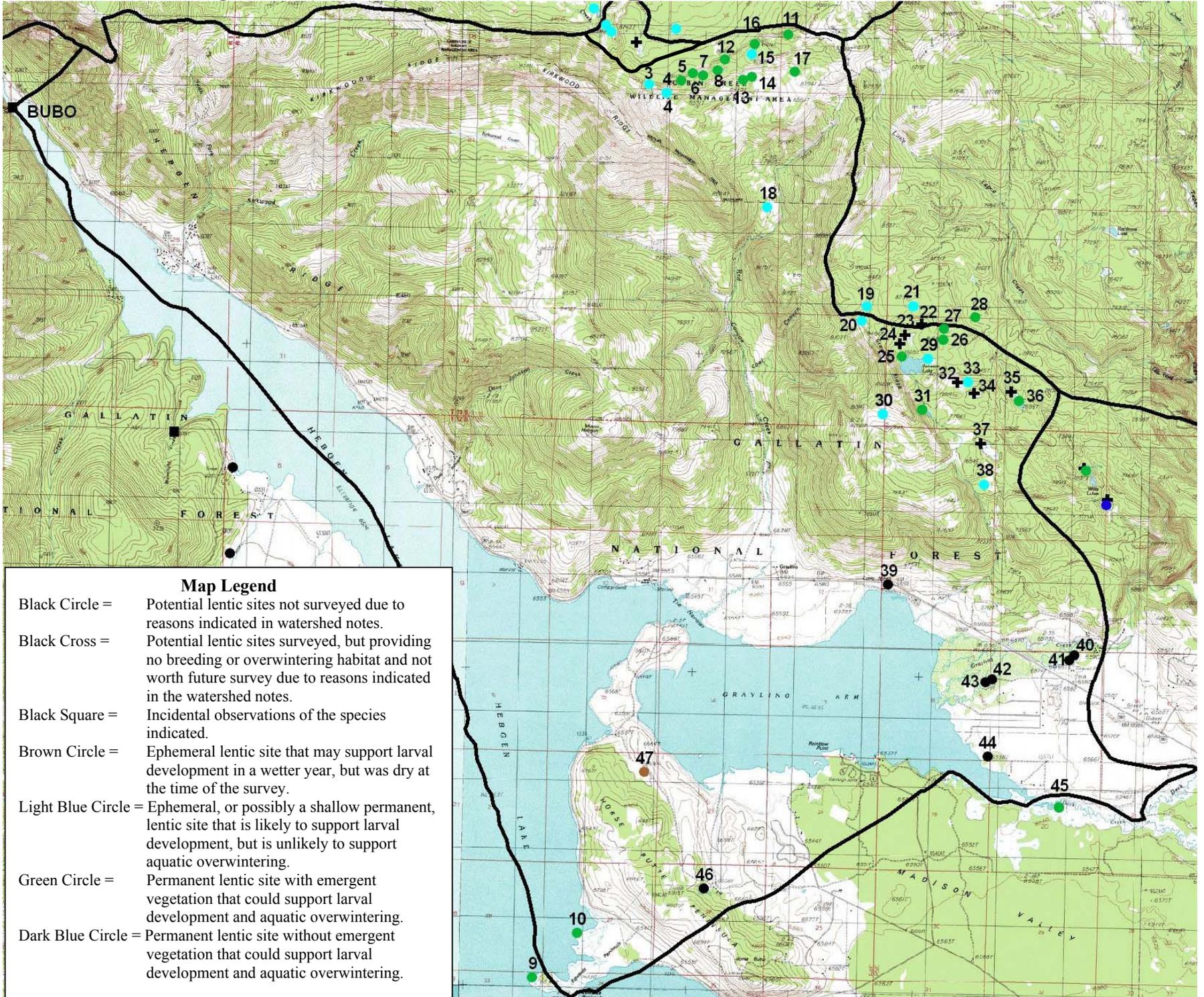
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>021, 025, 026, 027, 029, 030, 031, 033, 036</u>	9 (30%)	9 (30%)	-
<b>Western Toad (BUBO)</b>	<u>004, 014, 030, 045</u>	4 (13%)	3 (10%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>010, 019, 021, 026, 029, 030, 045</u>	7 (23%)	7 (23%)	-
<b>Columbia Spotted Frog (RALU)</b>	004, <u>005</u> , 006, <u>007</u> , 008, <u>010</u> , 013, <u>017, 018, 020, 021, 029, 030, 031, 033, 036, 038, 045</u>	18 (60%)	18 (60%)	-
<b>Terrestrial Gartersnake (THEL)</b>	031	1 (3%)	-	-
<b>Fish Detected</b>	009 (unknown species), 010 (unidentified trout), 025 (rainbow trout) <sup>11</sup> , 045 (unidentified trout)	4 (21%) <sup>6 &amp; 11</sup>	-	-

Notes:

1. Site numbers 001 and 002 were not used to number sites in this watershed because of confusion over the location of the watershed boundary. The watershed boundary was incorrectly delineated in the GIS, but has been redrawn in the accompanying map image.
2. Sites 039-044 and 046 are on private land and were not surveyed in 2003.
3. Sites 022 and 023 are not lentic sites, are only meadows that are drained by a stream, and are not worth future survey.
4. Sites 024, 032, 034, and 037 are lentic, but would never hold enough water long enough to ever support amphibian reproduction and are not worth future survey.
5. Other potential aquatic overwintering areas in this watershed include areas along Red Canyon Creek below 8400 feet, the unnamed tributary below site 025, and Duck Creek and Grayling Creek.
6. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
7. Western toad (BUBO) museum voucher specimens were collected on 9/8/1948 by R. Hays at Madison Dam on Hebgen Lake (MSBU 1474) and on 8/20/1949 by C.A. Parkett at Hebgen Lake (MSBU 1480). We attempted to survey the area around the dam in 2003 because reproduction was reported with the 1948 record. However, the area was closed due to "National Security Concerns".
8. A Columbia spotted frog (RALU) museum voucher specimen was collected by C.A. Parkett on the north shore of Hebgen Lake at an unknown date (MSBU 1535).
9. Terrestrial gartersnake (THEL) museum voucher specimens were collected on 8/20/1949 by C.A. Parkett on Hebgen Lake (MSBU 1640), on 7/5/1974 by an unknown collector on U.S. Highway 287 3 miles west of U.S. Highway 191 (UGAMNH 7160).
10. Boreal chorus frogs were observed at the Horse Butte Ponds (site 047) by Eric Atkinson on 8/12/1999, and the at spring system head on Horse Butte by Eric Atkinson on 8/12/1999.
11. The DFWP fish stocking database has 2 different records of stocking cutthroat trout in Trapper Creek in 1932 and 1986, 2 different records of stocking cutthroat trout in Watkins Creek in 1932 and 1986, 8 different records of stocking rainbow trout, 9 different records of stocking brown trout, and 1 record of stocking Yellowstone cutthroat trout in Duck Creek between 1934 and 1986, 7 different records of stocking cutthroat trout and 1 record of stocking rainbow trout in Grayling Creek between 1932 and 1986, 3 different records of stocking rainbow trout, 2 different records of stocking cutthroat trout, 4 different records of stocking brown trout, and 1 record of stocking arctic grayling in Cougar Creek between 1932 and 1993, and a record of stocking 2,030 rainbow trout in Johnson Lake (site 025) on 8/28/1978 (given the number of AMTI detected in 2003 it seems likely that fish have been extirpated from this lake).

# Hebgen Lake (Red Canyon Creek) - (HUC ID = 6 044 & ICBEMP HUC ID =100200071701)



**Jefferson River (Cottonwood, Currant, and Spring Creeks) - (HUC ID = 6\_045 & ICBEMP HUC ID = 100200051601)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	10
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

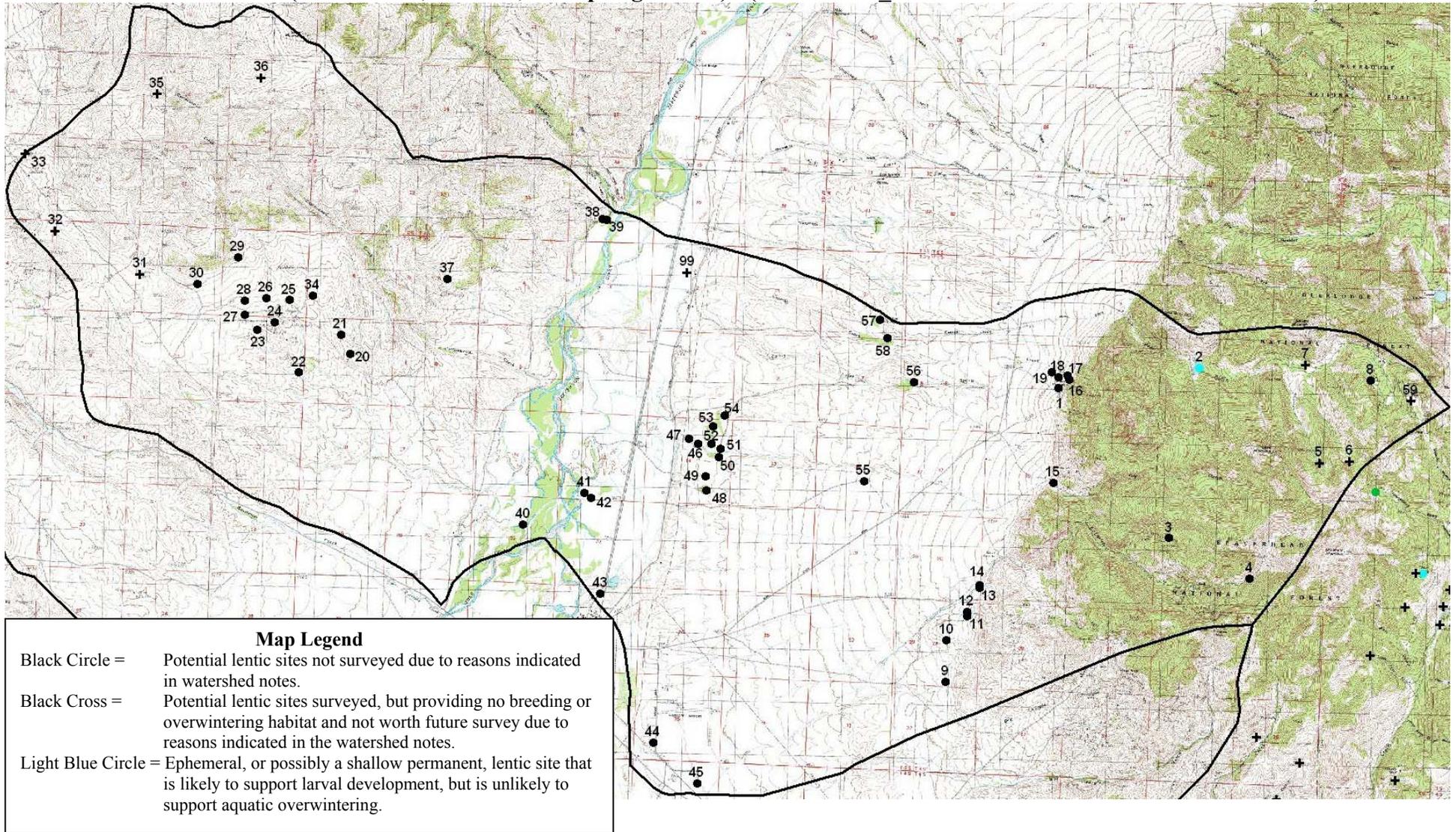
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No herpetofauna species were detected in this watershed</b>	None	-	-	-
<b>Fish Detected</b>	None <sup>6</sup>	0 (0%)	-	-

Notes:

1. No herpetofauna species were found in this watershed, but very few sites were on public land so only a small percentage of sites in this watershed were surveyed.
2. Sites 001, 003, 004, 008-030, 034, and 037-058 are on private land and were not surveyed in 2003.
3. Sites 005, 006, 007, 035, 036, and 059 are not lentic sites, are only springs on the side of a mountain without any place for water to pool, and are not worth future survey.
4. Sites 031, 032, and 033 are dry watering troughs without any lentic habitat and are not worth future survey.
5. Other potential aquatic overwintering areas in this watershed are the Jefferson River, and Cottonwood, Currant, and Spring Creeks below approximately 5,000 feet.
6. The DFWP fish stocking database has 10 different records of stocking rainbow trout in upper Bayers Pond (site 046) between 1989 and 2000, 10 different records of stocking rainbow trout in lower Bayers Pond (site 047) between 1991 and 2001, and 9 different records of stocking arctic grayling, 8 different records of stocking brown trout, 4 different records of stocking cutthroat trout, and 395 different records of stocking rainbow trout in this portion of the Bighole River between 1928 and 2002.
7. Site 035 was noted as having been heavily impacted by grazing.

# Jefferson River (Cottonwood, Carrant, and Spring Creeks) - (HUC ID = 6\_045 & ICBEMP HUC ID = 100200051601)



## Upper West Fork of Madison River - (HUC ID = 6\_046 & ICBEMP HUC ID = 100200072603)

### 2001 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	40
Number of Wet Lentic Sites	19
Number of Dry Lentic Sites	20
Number of Potential Lentic Overwintering Sites	4

Number of Fishless Potential Lentic Overwintering Sites	4
Potential Lentic Overwintering Sites	004, 013 (marginal), 019, 030 (marginal)
Permanent Lentic Sites with Emergent Vegetation	013, 030
Permanent Lentic Sites without Emergent Vegetation	004, 019

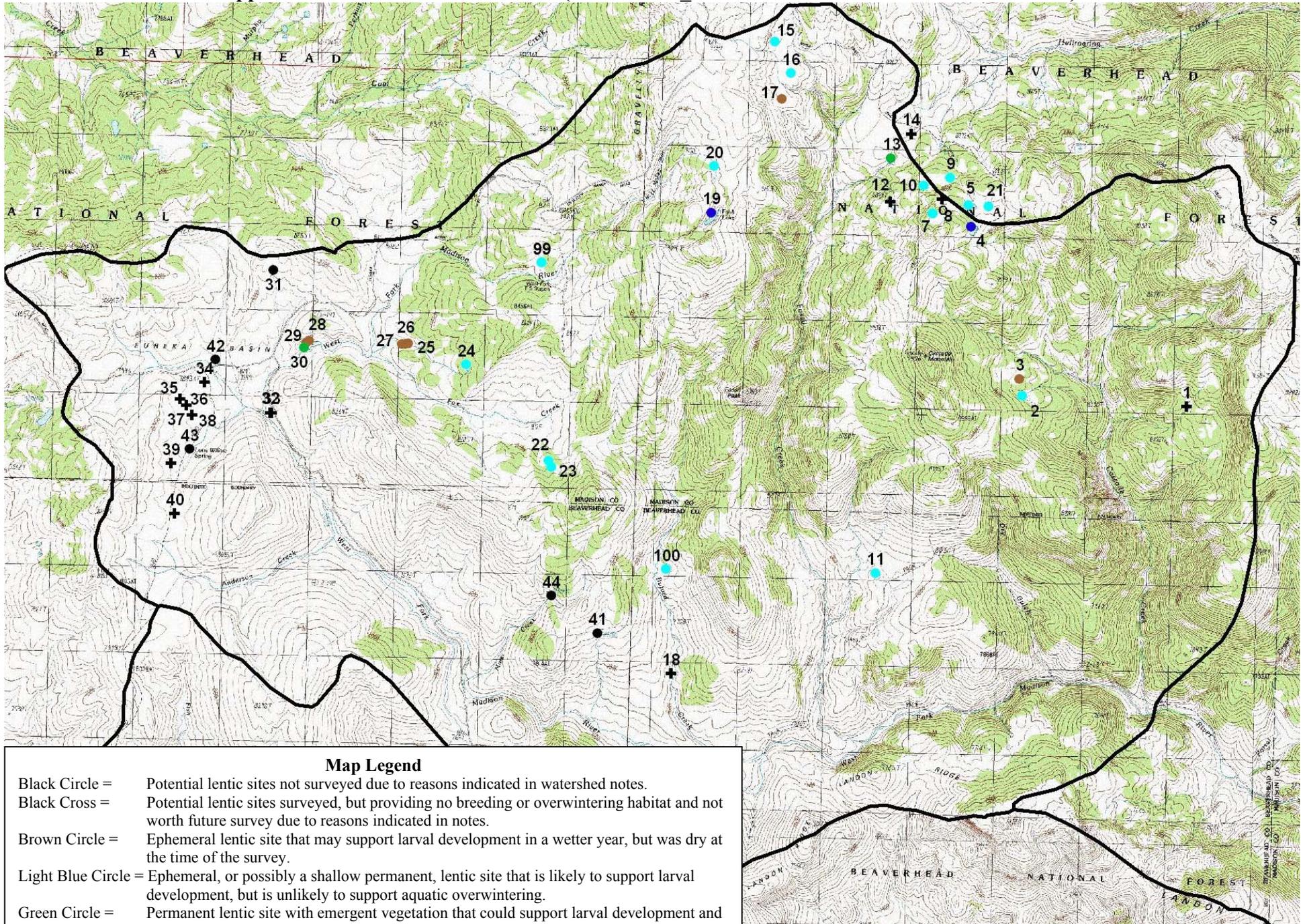
### 2001 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	<u>007</u> , <u>021</u>	3 (7.5%)	3 (7.5%)	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>007</u> , 009, <u>015</u> , <u>016</u> , <u>020</u> , <u>099</u>	6 (15%)	5 (13%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>010</u> , 013, <u>022</u> , <u>030</u> , <u>099</u> , 100	6 (15%)	4 (10%)	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

1. Sites 031 and 042 were not surveyed in 2001 due to a communication error.
2. Sites 041, 043, and 044 were not surveyed in 2001 because it was not standard practice to survey springs until 2002.
3. Sites 005 and 006 were combined under site number 005.
4. Site 099 was not encountered incidentally until 2003.
5. Sites 018, 032, and 033 only have flowing water when water is present and are not worth future survey.
6. Sites 001, 008, 012, 014, 018, 032, 033, 034, 035, 036, 037, 038, and 039 are lentic, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
7. Site 040 was identified as a potential lentic site on the aerial photograph, but was only a dry open area that is not worth future survey.
8. Other potential aquatic overwintering areas in this watershed are the West Fork of the Madison River below 7,900 feet, Buford Creek below site 018, Fossil Creek below 7,500 feet, and Cascade Creek below 7,600 feet.
9. The DFWP fish stocking database has records of stocking 4,175 cutthroat trout in Anderson Creek on 9/3/1946.
10. Sites 011, 036, and 039 were noted as having been heavily impacted by grazing.

Upper West Fork of Madison River - (HUC ID = 6\_046 & ICBEMP HUC ID = 100200072603)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## North Meadow Creek - (HUC ID = 6\_047 & ICBEMP HUC ID =100200072801)

### 2003 Water Body and Survey Summary

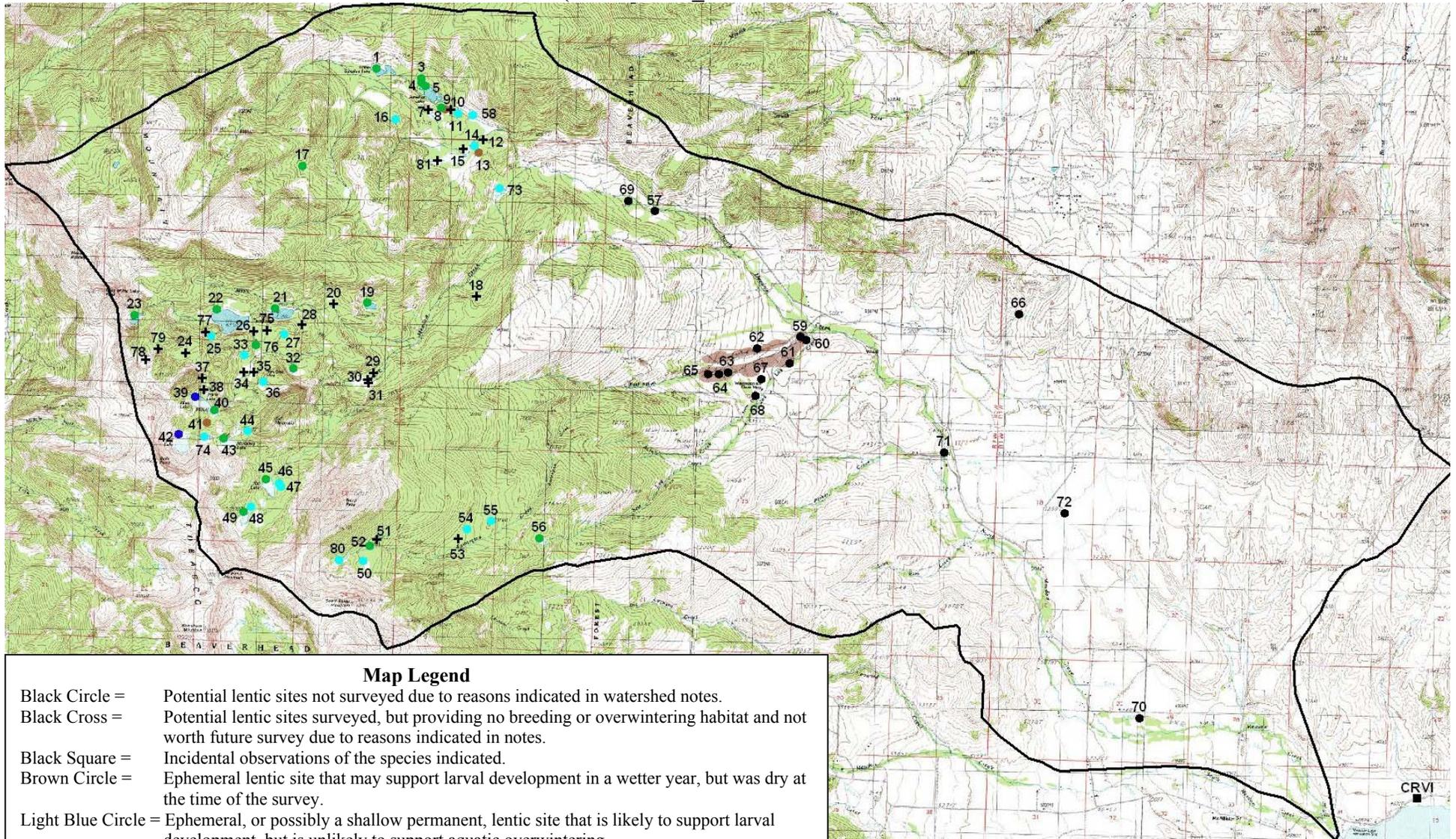
Number of Potential Lentic Sites Surveyed	64	Number of Fishless Potential Lentic Overwintering Sites	12 (Site 074 would not support overwintering)
Number of Wet Lentic Sites	41	Potential Lentic Overwintering Sites	001, 003, 004, 005, 008, 011 (marginal), 016 (marginal), 017, 019, 021, 022, 023, 032, 039, 040, 042, 043, 045, 049, 052, 056, 076
Number of Dry Lentic Sites	9	Permanent Lentic Sites with Emergent Vegetation	001, 003, 004, 005, 008, 011, 016, 017, 019, 021, 022, 023 (little emergent vegetation), 032, 043, 049, 052, 056, 076
Number of Potential Lentic Overwintering Sites	22	Permanent Lentic Sites without Emergent Vegetation	042, 045

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	<u>001</u> , 003, 005, 017	4 (10%)	1 (2%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u> , <u>003</u> , <u>004</u> , <u>005</u> , <u>008</u> , <u>011</u> , 014, 016, <u>019</u> , 025, <u>027</u> , <u>032</u> , <u>033</u> , <u>045</u> , <u>049</u> , <u>052</u> , 055, 058, 073, 076	20 (49%)	12 (29%)	-
<b>Fish Detected</b>	001, 019, 021, 022, 023, 032, 042, 043, 045, 056, 074 (all Unidentified Trout Species)	11 (45%) <sup>9 &amp; 12</sup>	-	-

1. Sites 057 and 059-072 are on private land and were not surveyed in 2003.
2. Sites 012, 015, 018, 028, 034, 053, 078, and 079 were identified as potential lentic sites on aerial photographs or topographic maps, but are not lentic sites, and are not worth future survey.
3. Sites 001 and 002 were combined under site number 001. Sites 005 and 006 were combined under site number 005.
4. Sites 024, 029, 030, 031 035, are not lentic sites, only have flowing water present, and are not worth future survey.
5. Sites 020 and 051 are not lentic sites, are only springs/seeps with nothing but a little flowing water, and are not worth future survey.
6. Sites 010, 026, 037, 038, 075, and 077 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
7. Sites 007 and 081 appear have been created by historic beaver activity, no longer have any lentic habitat that would support amphibian reproduction, and are not worth future survey.
8. Other potential aquatic overwintering areas in this watershed are the upper tributaries of North Meadow Creek below approximately 9000 feet, Saw Log Creek below site 056 and Washington Creek below site 052.
9. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish. Although site 074 had fish it was not evaluated as being able to support overwintering so only 10 sites were used to calculate the percentage of sites occupied by fish.
10. We observed and collected a western rattlesnake (CRVI) that had been killed on the road just southeast of the watershed on 7/14/2003.
11. The DFWP fish stocking database has 14 different records of stocking cutthroat trout in Cliff Lake (site 042) between 1931 and 2000, 3 different records of stocking rainbow trout and 5 different records of stocking cutthroat trout in Twin Lakes (sites 021 and 022) between 1948 and 1985, 6 different records of stocking Yellowstone cutthroat trout in the lake just southeast of Lady of the Lake Peak (site 023) between 1979 and 2002, 1 record of stocking rainbow trout and 15 different records of stocking cutthroat trout in Sure Shot Lakes (sites 001 and 005) between 1963 and 2000, 6 different records of stocking Yellowstone cutthroat trout and 1 record of stocking rainbow trout in the lake at the head of Sawlog Creek (site 056) between 1975 and 2000, 2 different records of stocking cutthroat trout in Washington Creek in 1931 and 1932, a record of stocking 2,250 cutthroat trout in Parker Creek on 9/22/1948, and 4 different records of stocking cutthroat trout and 4 different records of stocking rainbow trout in North Meadow Creek between 1931 and 1951.
12. The DFWP fish stocking database has stocking records geographically associated with Kid Lake (site 045), McKelvey Lake (site 043), and an unnamed lake (site 049), but they are listed in the fish stocking database as Lily Lake, Alpine Lake, and Lupine Lake, respectively. This issue has been reported to the DFWP fish stocking database manager and this watershed summary will be updated accordingly once the issue has been investigated. In the mean time the fish stocking record associated with site 049 was not included in the percentage of permanent sites with fish because we did not detect fish at this site during our surveys.

# North Meadow Creek - (HUC ID = 6\_047 & ICBEMP HUC ID =100200072801)



## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observations of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

## Indian Creek - (HUC ID = 6\_048 & ICBEMP HUC ID =100200030103)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	32
Number of Wet Lentic Sites	15
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	9

Number of Fishless Potential Lentic Overwintering Sites	7
Potential Lentic Overwintering Sites	001, 002, 005, 007, 009, 013, 014, 029, 031
Permanent Lentic Sites with Emergent Vegetation	013, 014, 029
Permanent Lentic Sites without Emergent Vegetation	001, 002, 005, 007, 009, 031

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>011</u> , 01, 013, 014, <u>029</u> , <u>030</u>	6 (40%)	3 (20%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of a Western Toad (BUBO) adult	-	-	-
<b>Fish Detected</b>	001 (Unidentified Trout), 002 (Unidentified Trout)	2 (22%) <sup>7</sup>	-	-

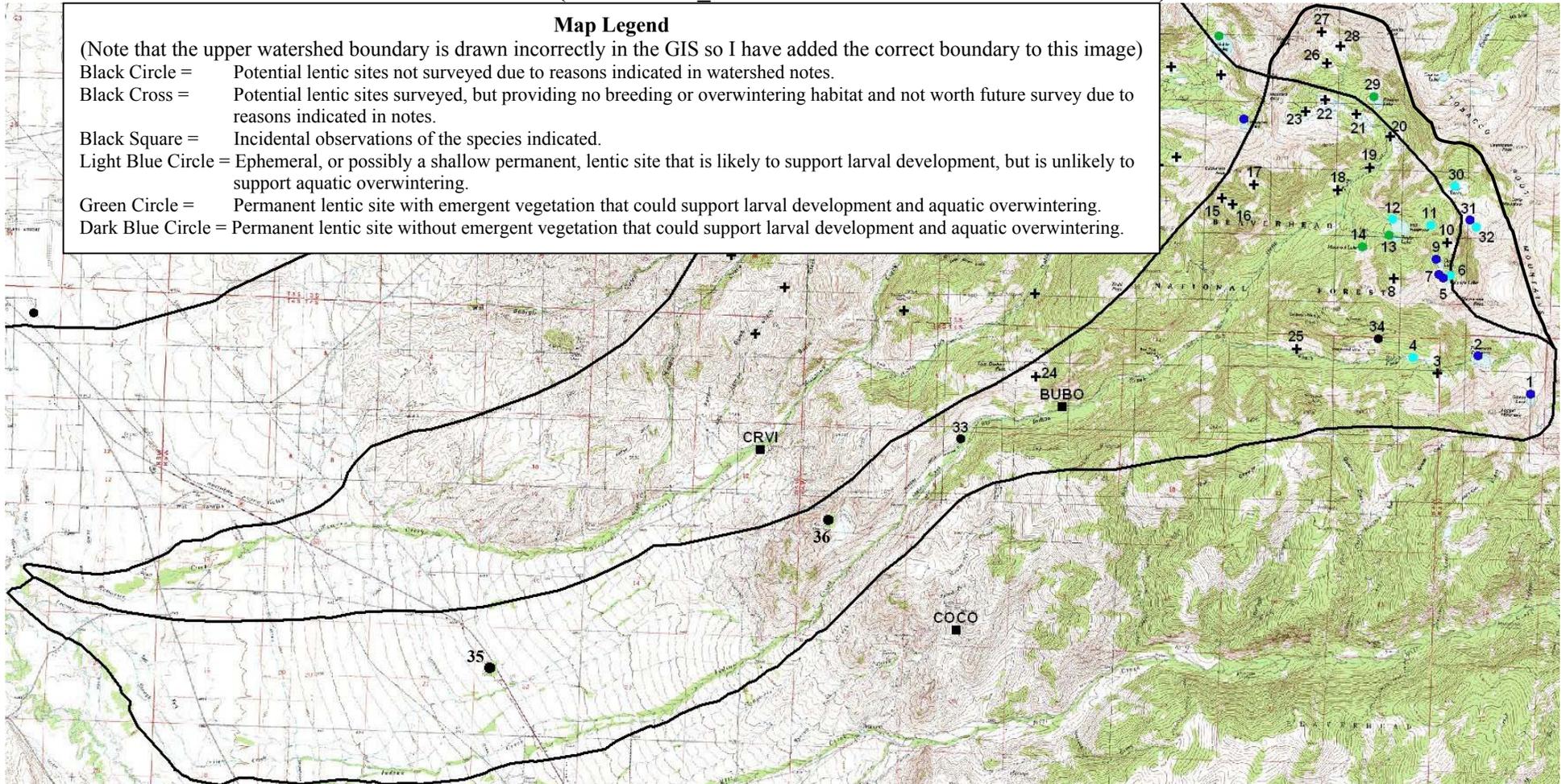
Notes:

1. The watershed boundary is drawn incorrectly in the GIS in the upper portions of the watershed.
2. Sites 033, 034, 035, and 036 are on private land and were not surveyed in 2003.
3. Sites 003, 008, 010, 015, 016, 018, 019, 020, 021, 022, 023, 026, 027, and 028 are not lentic sites, are only open areas with a stream flowing through them, and are not worth future survey.
4. Site 017 was identified as a potential lentic site on the topographic map, but was only an open dry area and is not worth future survey.
5. Sites 024 and 025 were not lentic sites, were only springs on the side of the mountain without anywhere for water to pool, and are not worth future survey.
6. Other potential aquatic overwintering areas in this watershed are the Indian Creek, the North Fork of Indian Creek below sites 013 and 022, and the South Fork of Indian Creek below site 001.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. An eastern racer (COCO) was observed 2.2 kilometers southeast of Durham Reservoir on 9/19/2001 by Emma Cayer.
9. The DFWP fish stocking database has a record of stocking 315 Yellowstone cutthroat trout in Gneiss Lake (site 001) on 8/4/1988, and 1 record of stocking cutthroat trout and 3 different records of stocking rainbow trout in Indian Creek between 1946 and 1947.

## Indian Creek - (HUC ID = 6\_048 & ICBEMP HUC ID =100200030103)

### Map Legend

- (Note that the upper watershed boundary is drawn incorrectly in the GIS so I have added the correct boundary to this image)
- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
  - Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
  - Black Square = Incidental observations of the species indicated.
  - Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
  - Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
  - Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



**East Fork of Blacktail Deer Creek - (HUC ID = 6\_049 & ICBEMP HUC ID =100200021701)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	40
Number of Wet Lentic Sites	20 <sup>4, 5, 6, &amp; 7</sup>
Number of Dry Lentic Sites	20 <sup>4, 5, 6, &amp; 7</sup>
Number of Potential Lentic Overwintering Sites	6

Number of Fishless Potential Lentic Overwintering Sites	6
Potential Lentic Overwintering Sites	018 (marginal), 025 (marginal), 029 (marginal), 031, 035, 036
Permanent Lentic Sites with Emergent Vegetation	018, 025, 029, 031, 035, 036
Permanent Lentic Sites without Emergent Vegetation	None

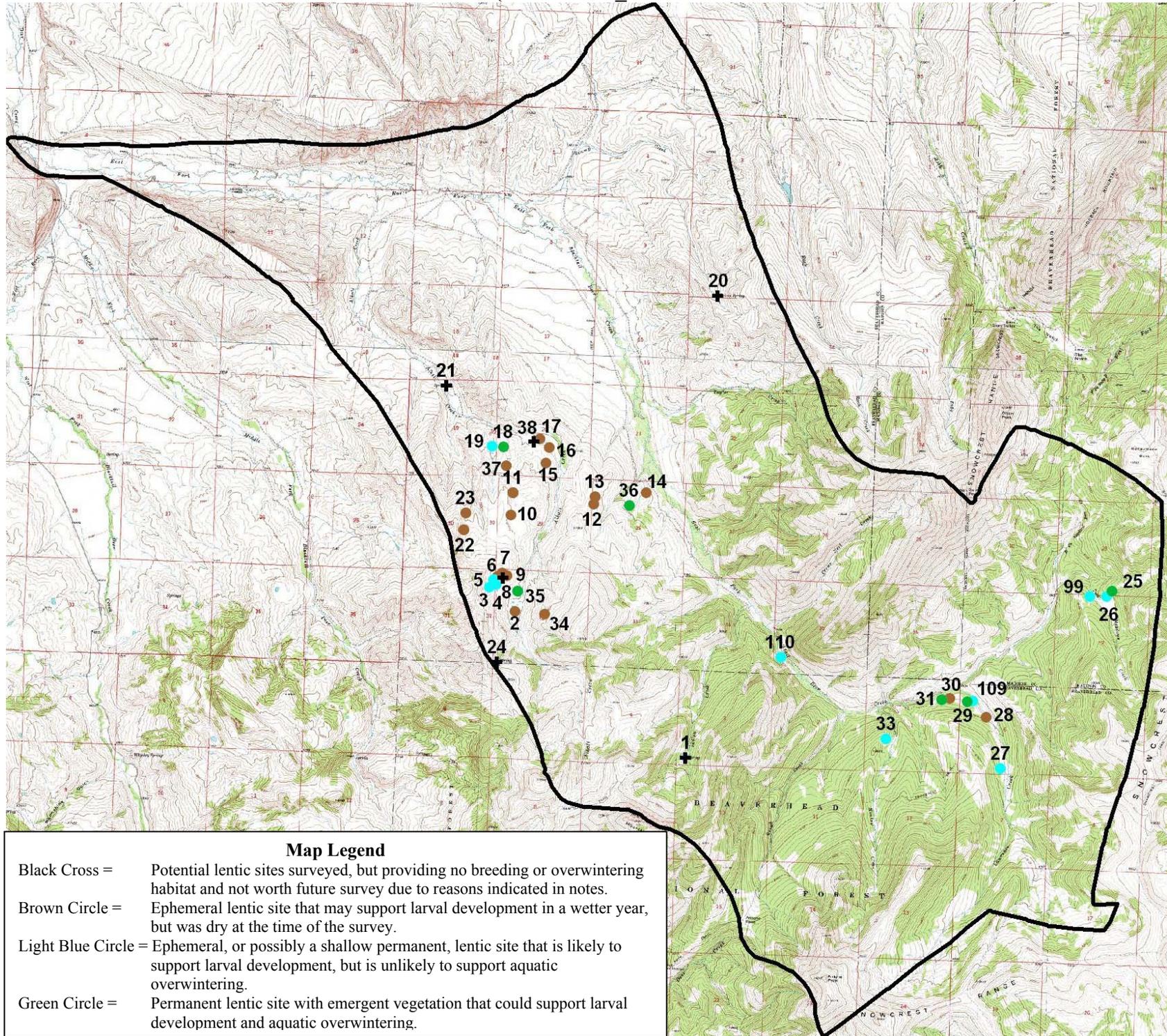
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>011</u> , <u>013</u> , <u>035</u>	3 (15%) <sup>4 &amp; 5</sup>	3 (15%) <sup>4 &amp; 5</sup>	-
<b>Boreal Chorus Frog (PSMA)</b>	<u>011</u>	1 (5%) <sup>4</sup>	1 (5%) <sup>4</sup>	-
<b>Columbia Spotted Frog (RALU)</b>	<u>013</u> , <u>014</u> , <u>018</u> , <u>025</u> , <u>026</u> , <u>027</u> , <u>029</u> , <u>030</u> , <u>031</u> , <u>033</u> , <u>035</u> , <u>036</u> , <u>099</u> , <u>109</u>	14 (70%) <sup>5, 6, &amp; 7</sup>	9 (45%) <sup>5 &amp; 6</sup>	-
<b>Terrestrial Gartersnake (THEL)</b>	011	1 (5%)	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

- Sites 031 and 032 were combined under site number 031.
- Sites 001, 020, 021, 024 are not lentic sites, are only springs with no place for water to pool, and are not worth future survey.
- Sites 007 and 038 are lentic, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Although site 011 was dry when it was surveyed, it had only recently dried out and it was clear that both tiger salamanders (AMTI) (dessicated larvae detected) and boreal chorus frogs (PSMA) (live metamorphs detected) had bred at this site. Thus, this site was counted as a wet lentic site.
- Although site 013 was dry when it was surveyed, it had only recently dried out and it was clear that both tiger salamanders (AMTI) (dessicated and dessicating larvae detected) and Columbia spotted frogs (RALU) (live metamorphs detected) had bred at this site. Thus, this site was counted as a wet lentic site.
- Although site 014 was dry when it was surveyed, it had only recently dried out and it was clear that Columbia spotted frogs (RALU) (live metamorphs detected) had bred at this site. Thus, this site was counted as a wet lentic site.
- Although site 030 was dry when it was surveyed, it had only recently dried out and this is why the adult Columbia spotted frog (RALU) was probably detected at the site. Thus, this site was counted as a wet lentic site.
- Other potential aquatic overwintering areas in this watershed are the East Fork of Blacktail Deer Creek below 7,000 feet.
- The Beaverhead-Deerlodge National Forest has records of Columbia spotted frog (RALU) adults along the East Fork of Blacktail Deer Creek on 8/5/2003.
- A number of fossils were found around site 019.
- The DFWP fish stocking database has records of stocking 5,000 rainbow trout in the East Fork of Blacktail Deer Creek on 8/5/1948.

East Fork of Blacktail Deer Creek - (HUC ID = 6\_049 & ICBEMP HUC ID =100200021701)



**Map Legend**

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**North Willow Creek - (HUC ID = 6\_050 & ICBEMP HUC ID =100200050601)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	19
Number of Wet Lentic Sites	15
Number of Dry Lentic Sites	3
Number of Potential Lentic Overwintering Sites	10

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	001, 002, 003, 004, 006, 007, 008, 009, 017, 021
Permanent Lentic Sites with Emergent Vegetation	017, 021
Permanent Lentic Sites without Emergent Vegetation	001, 002, 003, 004, 006, 007, 008, 009

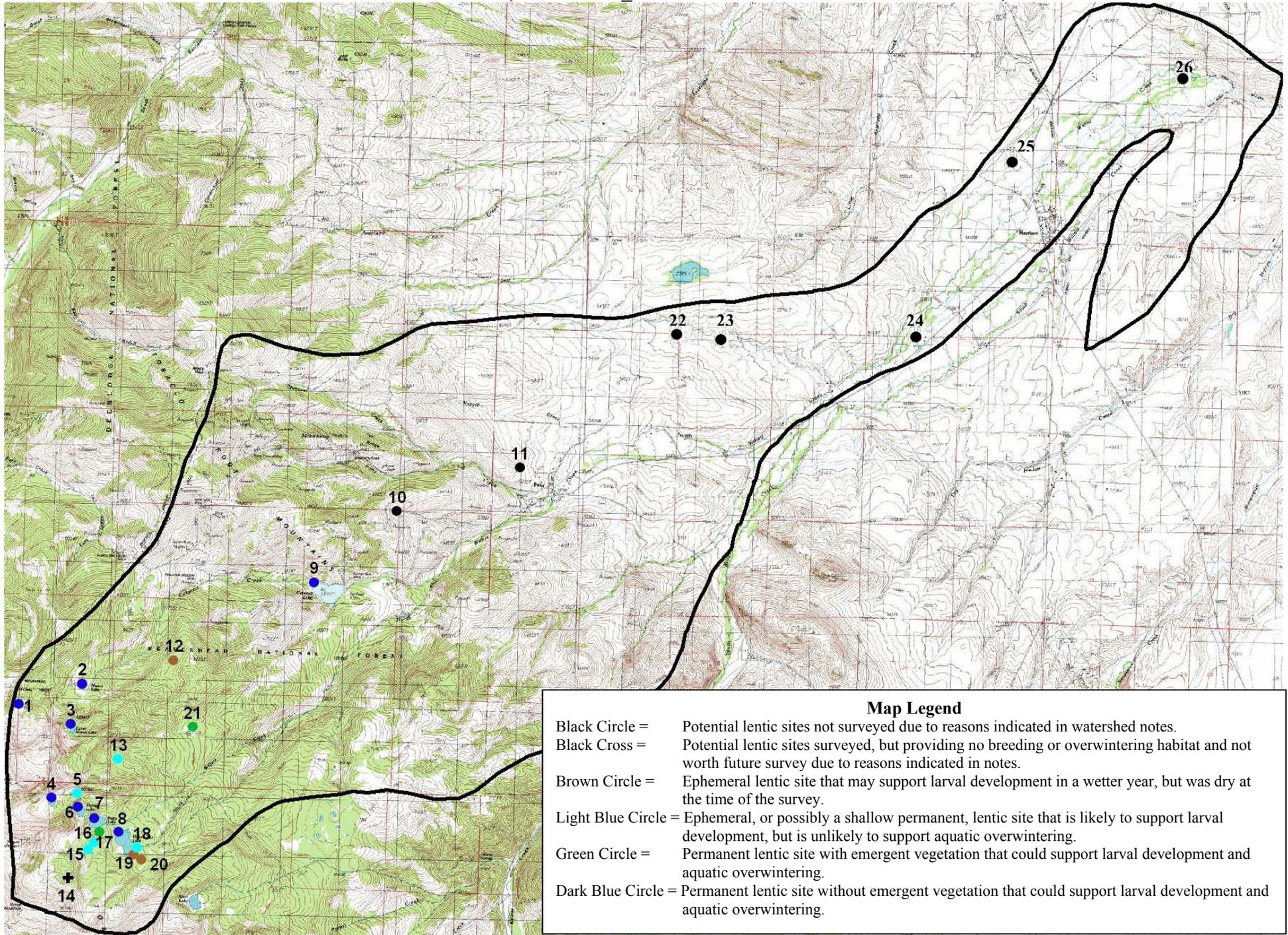
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>002, 009, 017, 021</u>	4 (27%)	4 (27%)	-
<b>Terrestrial Gartersnake (THEL)</b>	002	1 (7%)	-	-
<b>Fish Detected</b>	002 (unidentified sculpin), 003 (Yellowstone Cutthroat Trout) <sup>7</sup> , 006 (unknown species), 007(unknown species), 008 (Rainbow Trout), 009 (unknown species), 018 (unknown species)	7 (70%) <sup>5</sup>	-	-

Notes:

- Sites 010 and 011 are on private land and were not surveyed in 2003.
- Site 014 was identified as a potential lentic site on the aerial photograph, but was just rock and is not worth future survey.
- Sites 008 and 018 should be combined for future surveys under site number 008.
- Other potential aquatic overwintering areas in this watershed are North Willow Creek below sites 007 and 008 and Cataract Creek below site 002.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- A museum voucher record of a western rattlesnake (CRVI) was collected 3.2 kilometers west of Harrison on 7/9/1974 by an unknown collector (KU 180946).
- The DFWP fish stocking database has 3 different records of stocking rainbow trout, 3 different records of stocking cutthroat trout, and 2 different records of stocking brook trout in North Willow Creek between 1931 and 1951, a record of stocking 1,350 brook trout in Pony Creek on 7/28/1950, a record of stocking 16,000 cutthroat trout in Hollowtop Lake (site 008) on 8/29/1936, a record of stocking 1,000 Yellowstone cutthroat trout in Deep Lake (site 007) on 8/6/1984, 3 different records of stocking Yellowstone cutthroat trout in Skytop Lake (site 006) between 1985 and 1996, and 5 different records of stocking Yellowstone cutthroat trout in Mason Lakes (either site 002 or 003) between 1984 and 2000.

# North Willow Creek - (HUC ID = 6\_050 & ICBEMP HUC ID =100200050601)



## Lower Red Rock River - (HUC ID = 6\_051 & ICBEMP HUC ID =100200010102)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	6
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	003, 085 (marginal)
Permanent Lentic Sites with Emergent Vegetation	003, 085
Permanent Lentic Sites without Emergent Vegetation	None

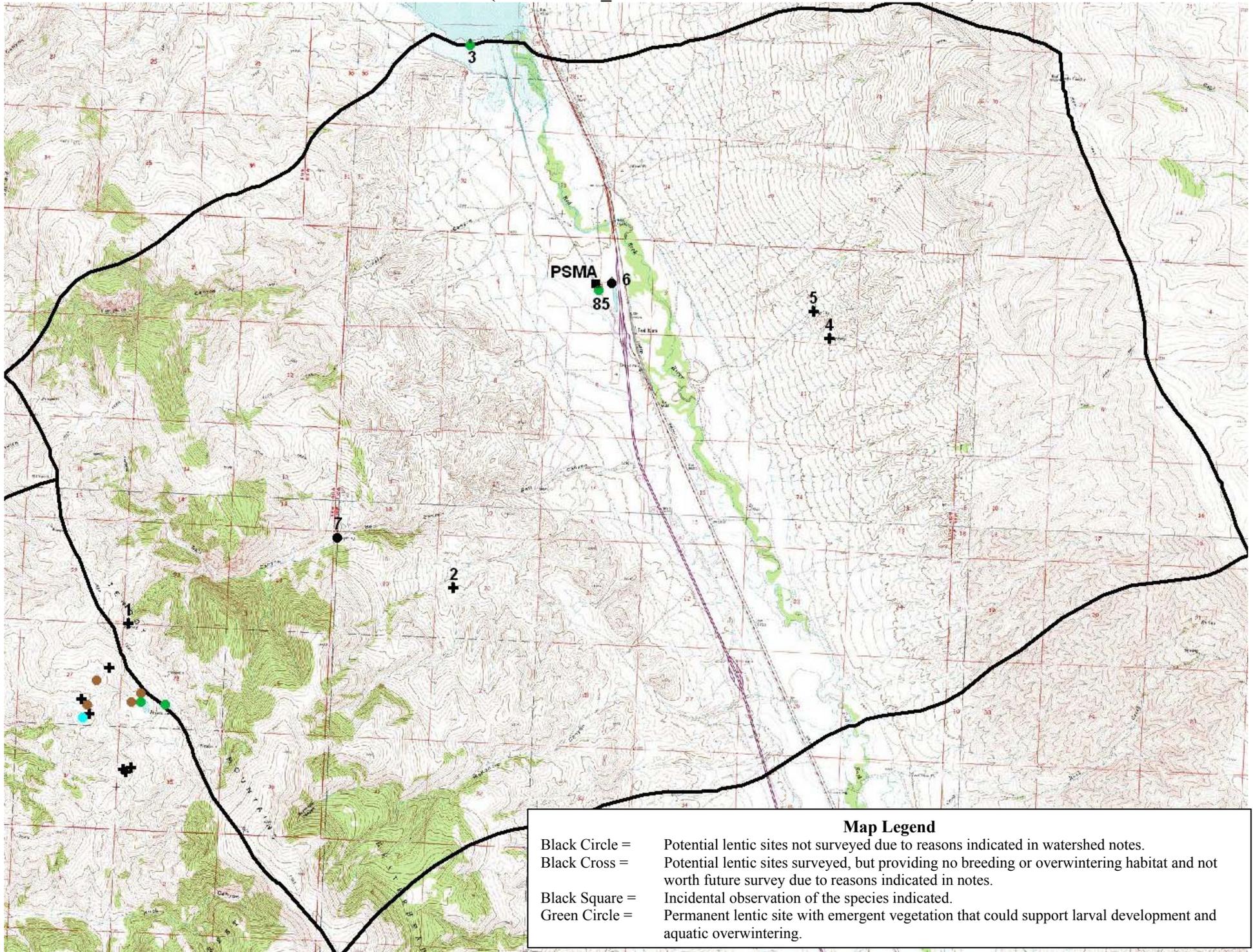
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Boreal Chorus Frog (PSMA)</b>	<u>085</u>	1 (50%)	1 (50%)	-
<b>Columbia Spotted Frog (RALU)</b>	003	1 (50%)	0 (0%)	-
<b>Terrestrial Gartersnake (THEL)</b>	003	1 (50%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Boreal Chorus Frog (PSMA)	-	-	-
<b>Fish Detected</b>	003 (unknown)	1 (50%)	-	-

Notes:

1. Sites 006 and 007 are on private land and were not surveyed in 2002.
2. Sites 004 and 005 are not lentic sites, are springs with no place for water to pool, and are not worth future survey.
3. Sites 001 and 002 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
4. The only other potential aquatic overwintering areas in this watershed are along the Red Rock River within the watershed boundary.
5. Boreal chorus frogs (PSMA) were observed calling on the Red Rock River floodplain on 5/26/1996 by Kirwin Werner and at the ponds 13 miles north of Dell (site 085) on 5/30/1997 by Jim Reichel.
6. A western rattlesnake (CRVI) was observed at the Lonesome Tree Campground at Clark Canyon Reservoir in July of 1995 by John Wendt.
7. The DFWP fish stocking database has 2 different records of stocking arctic grayling in the Lower Red Rock River Ranch Reservoir in 1999 and 2001 and 21 different records of stocking rainbow trout and 2 different records of stocking cutthroat trout in Clark Canyon Reservoir (site 003) between 1932 and 1958.

Lower Red Rock River - (HUC ID = 6\_051 & ICBEMP HUC ID =100200010102)



## Nez Perce Creek - (HUC ID = 6\_052 & ICBEMP HUC ID =100200060602)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	3
Number of Wet Lentic Sites	3
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	3

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	001, 002, 004
Permanent Lentic Sites with Emergent Vegetation	001, 002, 004
Permanent Lentic Sites without Emergent Vegetation	None

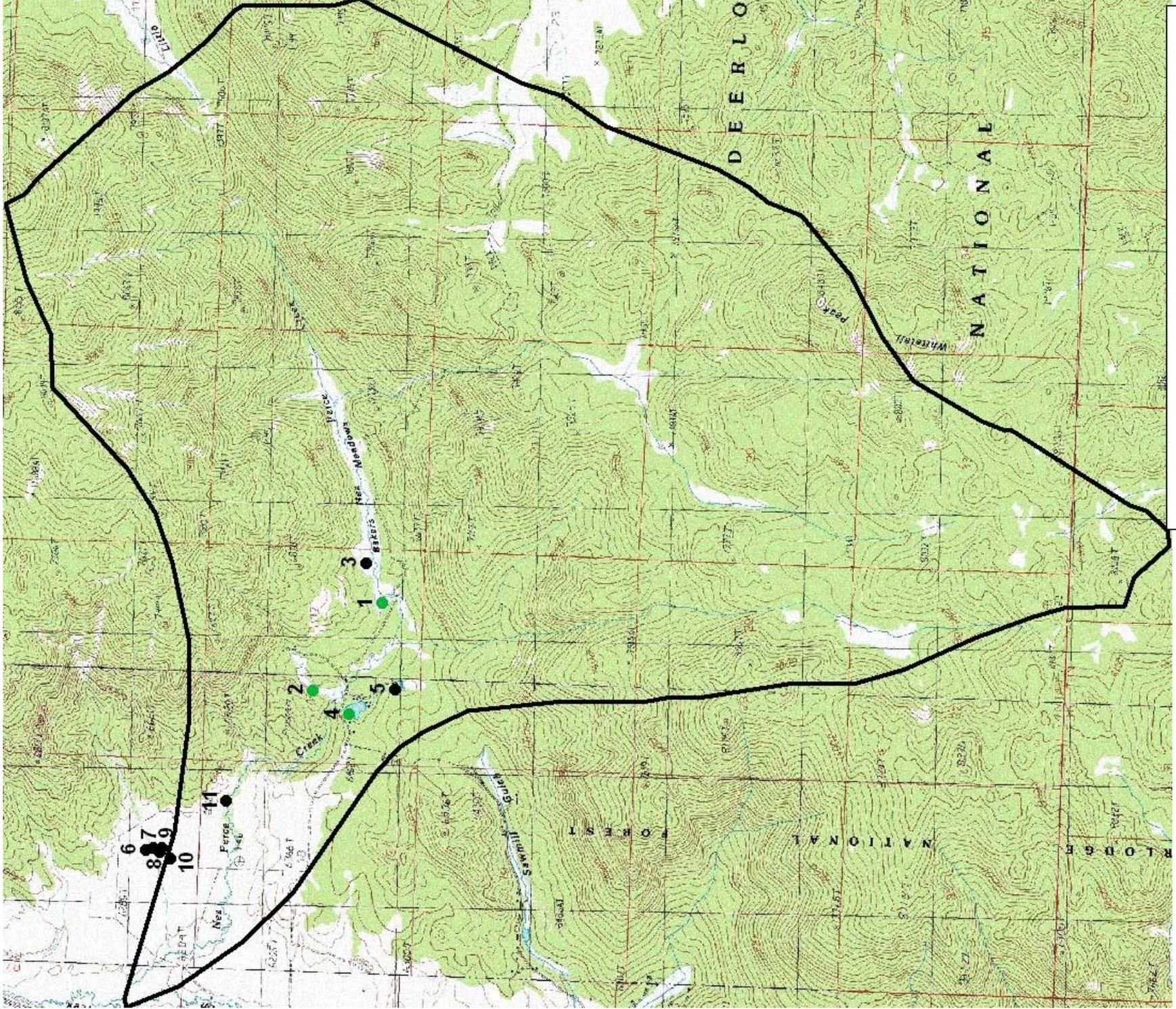
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Western Toad (BUBO)</b>	001, <u>002</u> , <u>004</u>	3 (100%)	2 (67%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>001</u> , 004	2 (67%)	1 (33%)	-
<b>Fish Detected</b>	001(Unknown), 002 (Westslope Cutthroat Trout), 004 (Unidentified Trout Species)	3 (100%)	-	-

Notes:

1. Sites 003 and 005-011 are on private land and were not surveyed in 2003.
2. This watershed may have been surveyed too early to detect BUBO breeding. For future monitoring surveys should be conducted at the end of June and early July.
3. Ray Fitzwilliams, the maintenance man, reported seeing "fishlike creatures with 4 arms" in a swimming pool at one of the homes 100 meters west of site 004. So, it seems likely that AMMA are also in this watershed.
4. Contact Ray Fitzwilliams at (406) 494-8276 for permission to survey site 004 in the future.
5. Other potential aquatic overwintering areas in this watershed are areas along Nez Perce Creek below approximately 6000 feet.
6. The DFWP fish stocking database has the following records of stocking fish in Nez Perce Creek: 4,600 brook trout on 9/12/1947; 10,000 cutthroat trout on 7/13/1932; and 7,000 rainbow trout on 4/22/1934.

Nez Perce Creek - (HUC ID = 6\_052 & ICBEMP HUC ID =100200060602)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

**Cabin Gulch - (HUC ID = 6\_053 & ICBEMP HUC ID =100200060203)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

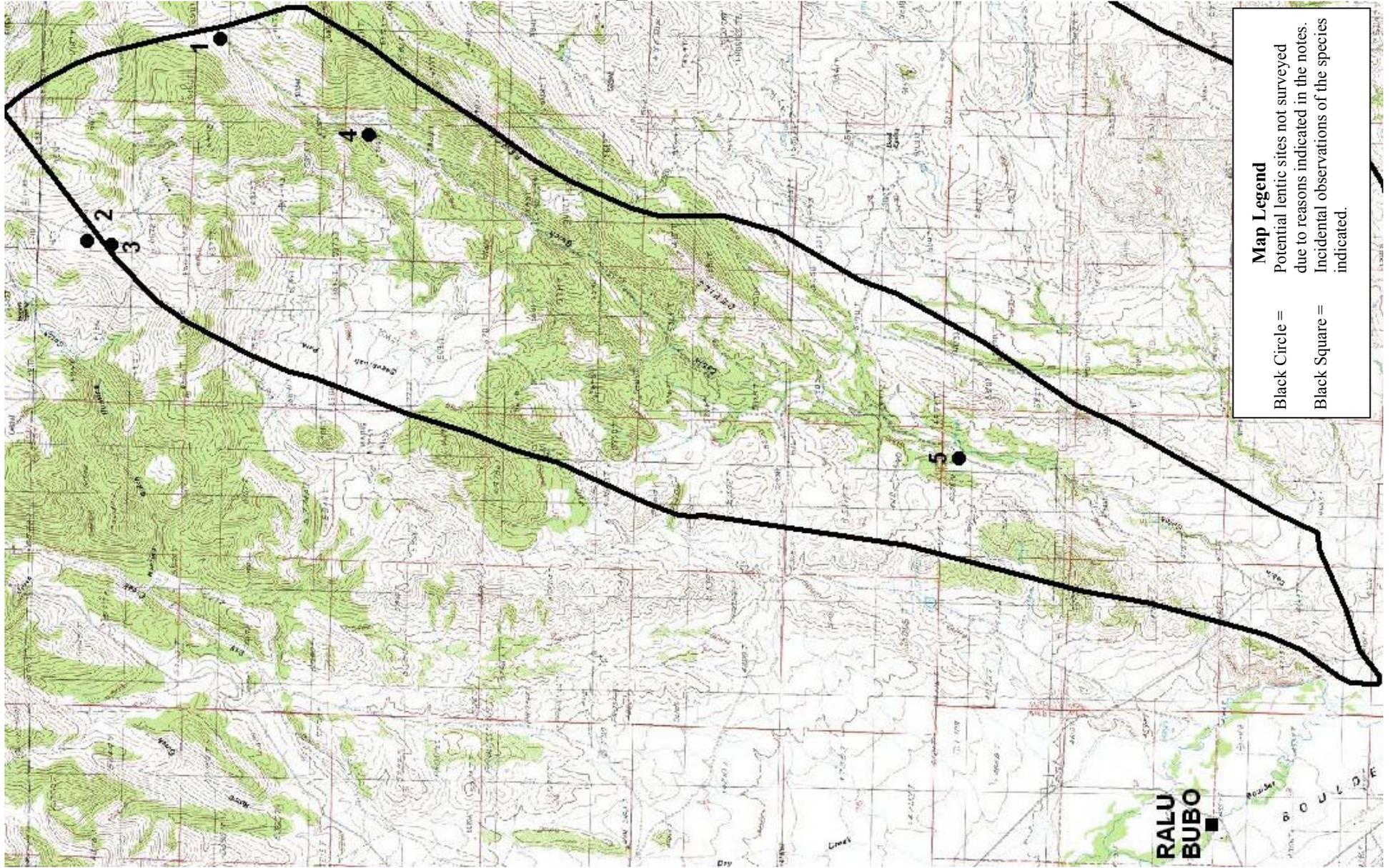
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species Were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. All potential lentic sites (001-005) are on private land and were not surveyed in 2003.
2. This is mostly a dry watershed with most surface water being limited to springs with flowing water. So, even though all potential lentic sites were on private land and were not surveyed in 2003, it may be that the watershed does not have many or any herpetofauna present anyway.
3. Other potential aquatic overwintering areas in this watershed are areas along the creek in Cabin Gulch below approximately 5,000 feet.
4. Columbia spotted frog (RALU) juveniles and a western toad (BUBO) adult were observed on the Boulder River 4.4 miles east-northeast of Long Park Spring on 9/15/2002 by Gary Maag.

Cabin Gulch - (HUC ID = 6\_053 & ICBEMP HUC ID =100200060203)



**Map Legend**

- Potential lentic sites not surveyed due to reasons indicated in the notes.
  - Incidental observations of the species indicated.
- Black Circle =  
Black Square =

**Corral Creek - (HUC ID = 6\_054 & ICBEMP HUC ID =100200071302)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	Unknown

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	Unknown
Permanent Lentic Sites with Emergent Vegetation	Unknown
Permanent Lentic Sites without Emergent Vegetation	Unknown

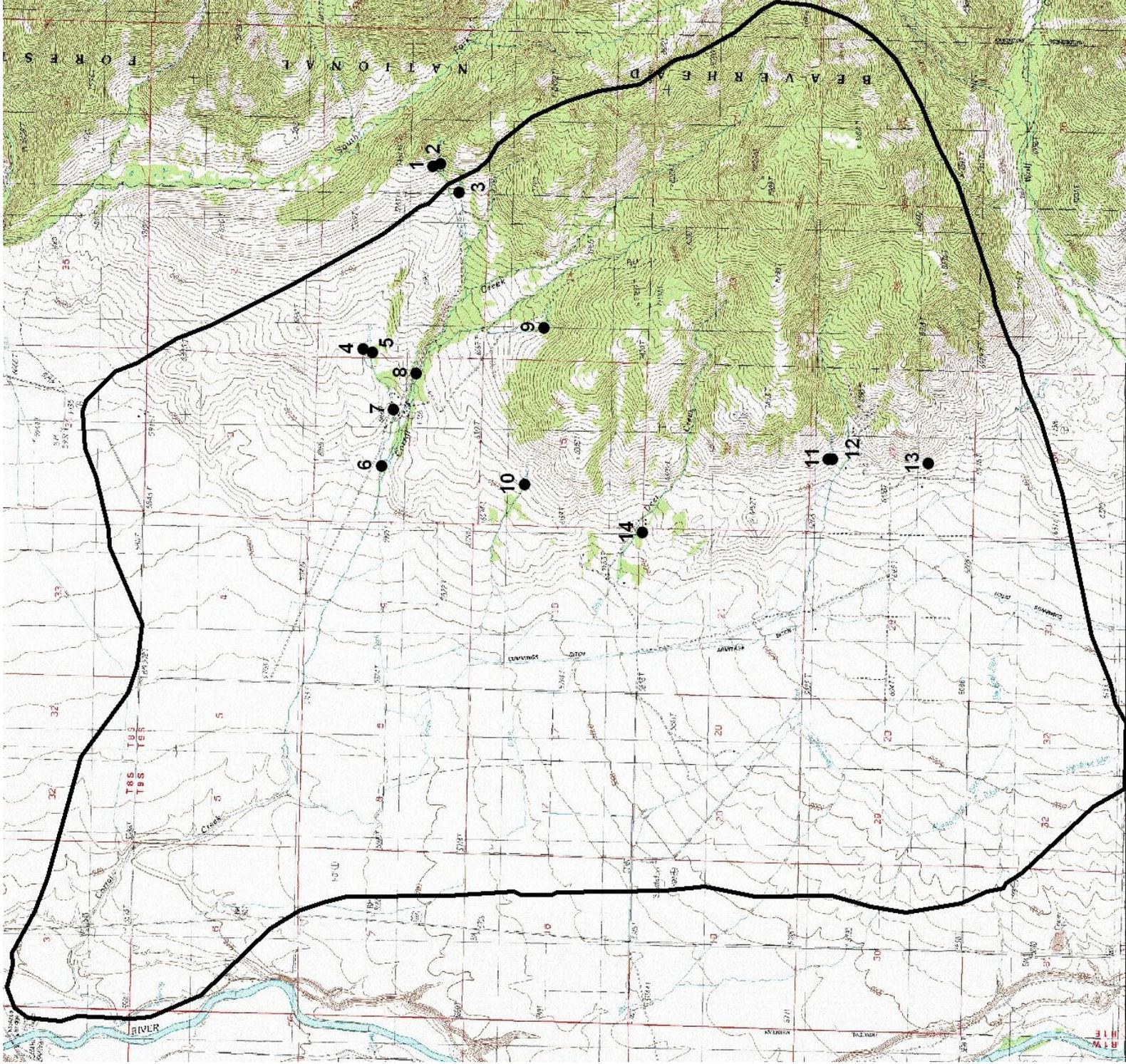
**2003 Species Detection Summary**

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No species Detected in this HUC</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 001-014 are on private land and were not surveyed in 2003. Land owners refused to allow us access to sites on private land and the road in this watershed so that we could survey sites 001, 002, and 003. We hiked 3 miles to get to these 3 sites only to find that they were also on private land (the map shows differently so maybe there was a recent land exchange).
2. It seems likely that the only lentic sites in this watershed that would support amphibian populations are at sites 006 and 007.
3. Other potential aquatic overwintering areas in this watershed are areas along Corral Creek below site 006.

Corral Creek - (HUC ID = 6\_054 & ICBEMP HUC ID =100200071302)



**Map Legend**

Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.

## Spring Canyon - (HUC ID = 6\_055 & ICBEMP HUC ID =100200020104)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	Unknown

Number of Fishless Potential Lentic Overwintering Sites	Unknown
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

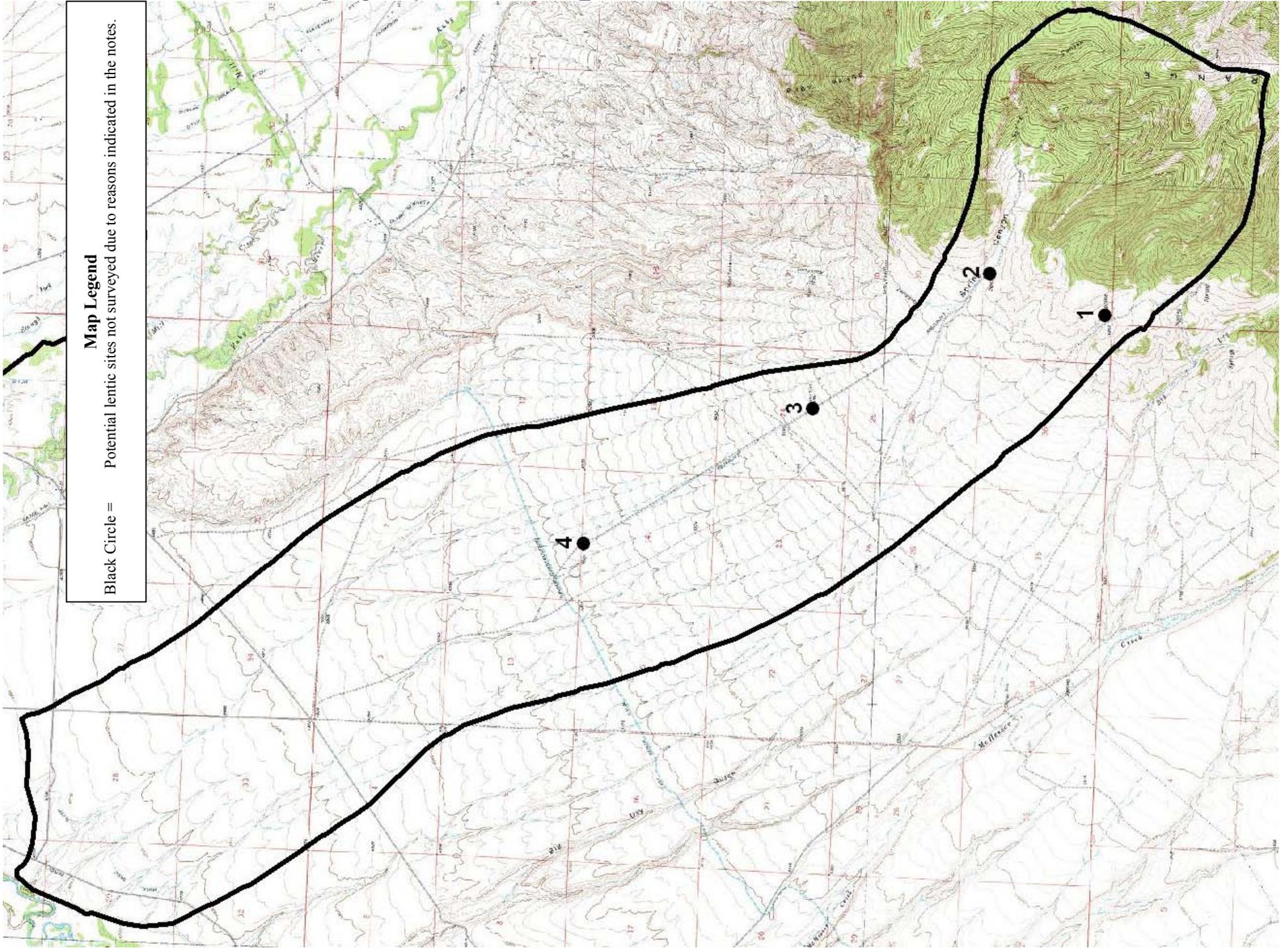
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No herpetofauna species were detected in this watershed</b>	-	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

1. Sites 001, 002, and 004 are on private land and were not surveyed in 2002.
2. Although site 003 is on state land, it was not surveyed in 2002 because it could not be accessed across private land. However, it was denoted as a water tank on the topographic map so is very unlikely to have any natural lentic habitat that would support amphibian reproduction.
3. This watershed was examined visually from the bottom of the watershed in 2002 and is very dry. Since only 2 springs and 2 water tanks were identified as potential lentic sites on the topographic maps and aerial photos it is very unlikely that there are any lentic sites that would support amphibian reproduction in this watershed.

# Spring Canyon - (HUC ID = 6\_055 & ICBEMP HUC ID =100200020104)



## Map Legend

Black Circle = Potential lentic sites not surveyed due to reasons indicated in the notes.

**Sweetwater Creek - (HUC ID = 6\_056 & ICBEMP HUC ID =100200031402)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	3
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

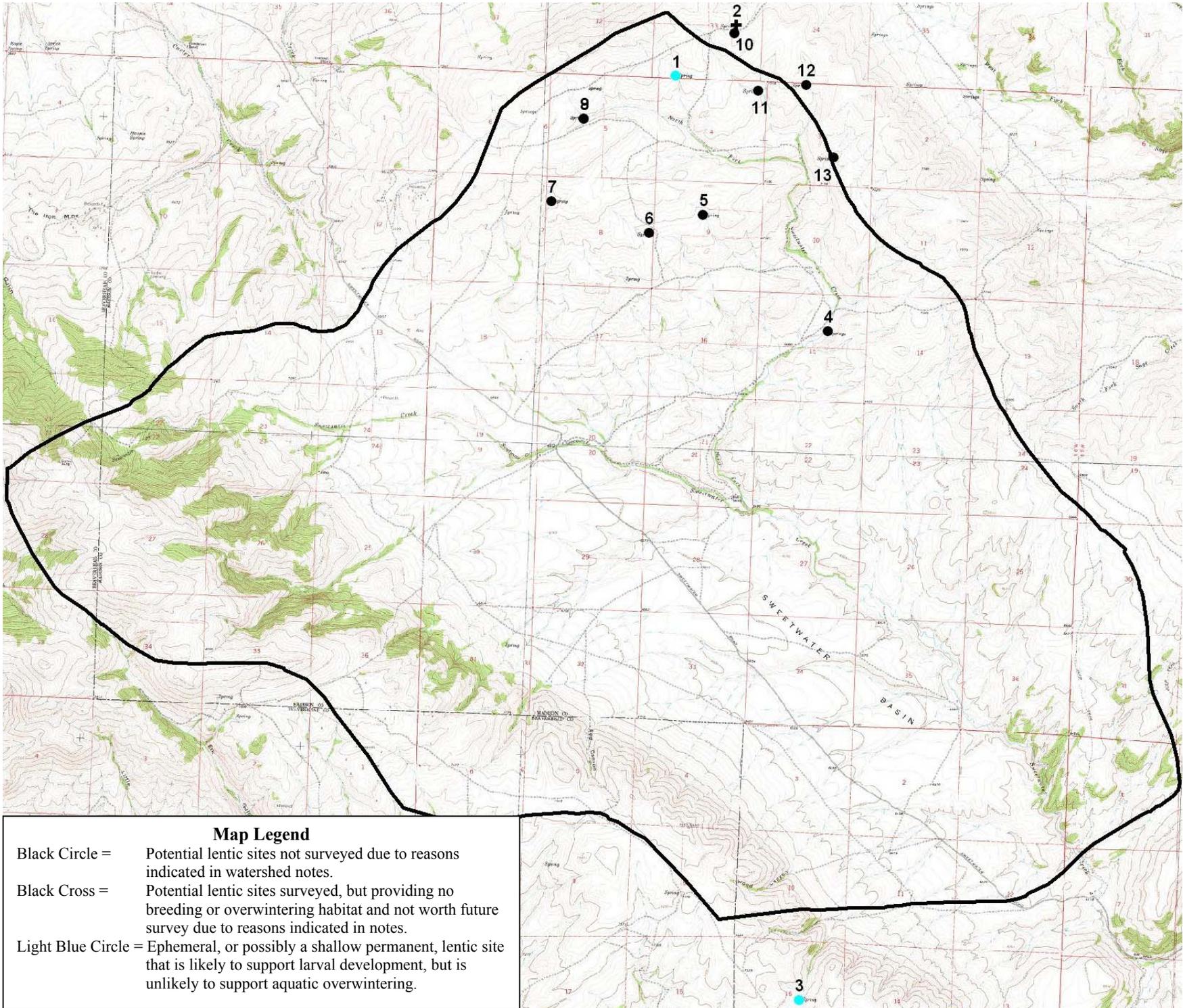
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna were detected in this watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	0 (0%)	-	-

Notes:

- Sites 004-013 are on private land and were not surveyed in 2002.
- This watershed is extremely dry.
- Sites 001, 002, and 003 were heavily impacted by cattle. Amphibian breeding habitat at sites 001 and 003 is very marginal.
- The only other potential aquatic overwintering areas in this watershed are limited areas along Sweetwater Creek, but this would be marginal and would probably vary year to year.
- Sites 001, 002, and 003 were noted as having been heavily impacted by grazing.

Sweetwater Creek - (HUC ID = 6\_056 & ICBEMP HUC ID =100200031402)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.

**Squaw Creek - (HUC ID = 6\_057 & ICBEMP HUC ID =100200041703)**

**2003 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	14
Number of Wet Lentic Sites	11
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	6

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	002, 003, 005, 006, 007, 009
Permanent Lentic Sites with Emergent Vegetation	002, 003, 005, 006, 007, 009
Permanent Lentic Sites without Emergent Vegetation	None

**2003 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>006</u>	1 (9%)	1 (9%)	-
<b>Western Toad (BUBO)</b>	009	1 (9%)	-	-
<b>Columbia Spotted Frog (RALU)</b>	002, <u>003</u> , 004, 005, <u>006</u> , 007, <u>009</u>	7 (64%)	3 (27%)	-
<b>Terrestrial Gartersnake (THEL)</b>	009	1 (9%)	-	-
<b>Fish Detected</b>	005 (unidentified trout), 007 (unidentified species), 009 (Brook Trout and Rainbow Trout)	3 (50%) <sup>5</sup>	-	-

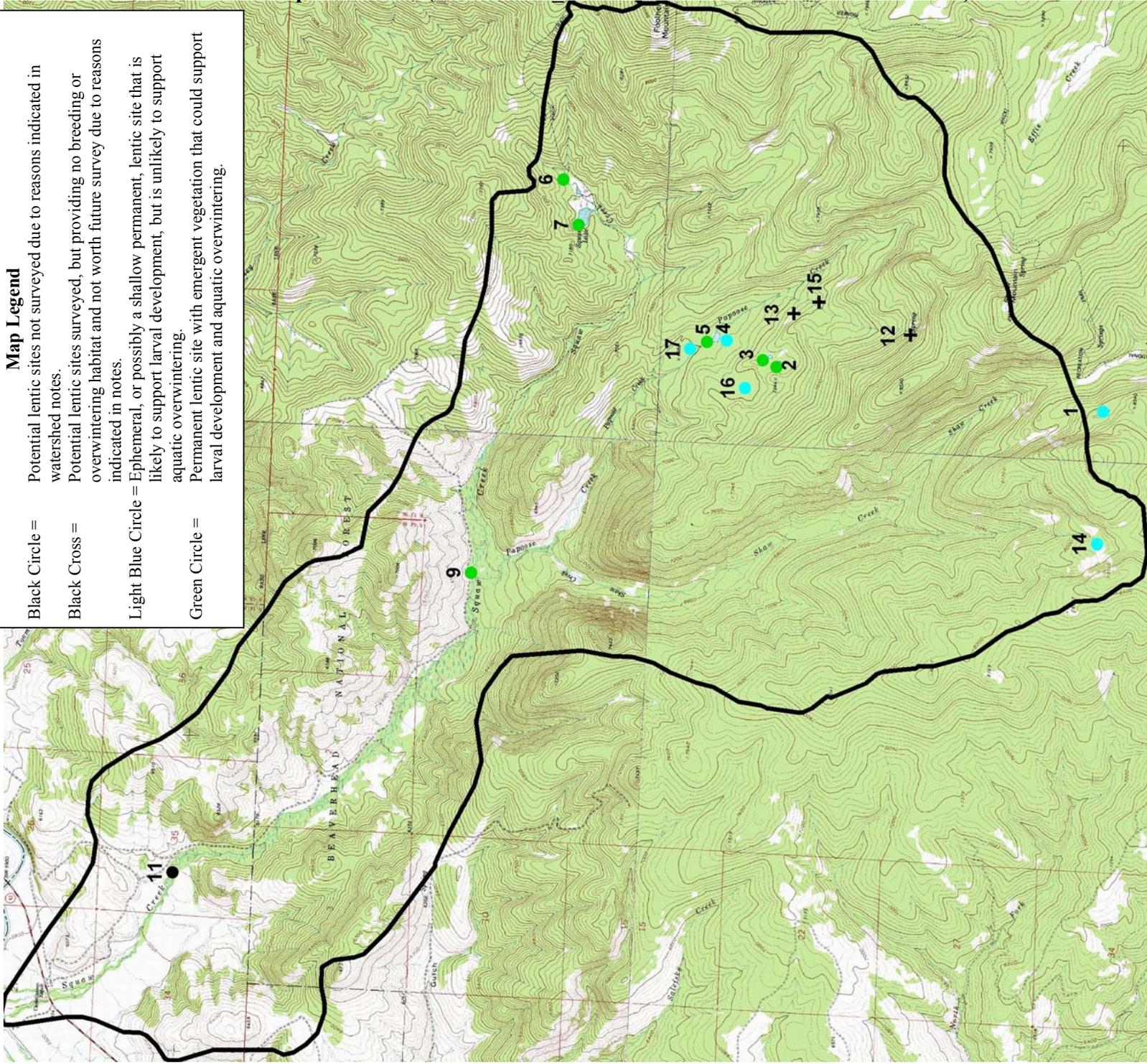
Notes:

1. Site 011 is on private land and was not surveyed in 2003.
2. Sites 008, 009, and 010 were combined under site number 009.
3. Sites 013 and 015 were misidentified as potential lentic sites by aerial photos, were just a pile of rocks without any lentic habitat, and are not worth future survey. Site Site 012 was only a spring that drains immediately down slope without forming any lentic habitat and is not worth future survey.
4. Other potential aquatic overwintering areas in the watershed are Squaw Creek below site 006, Papoose Creek below site 005, and Shaw Creek below site 014.
5. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
6. 2 common gartersnakes (THSI), 2 records of Rocky Mountain tailed frog (ASMO) larvae, and 1 record of a Rocky Mountain tailed frog (ASMO) adult were reported along the Squaw Creek drainage on 8/15/1995 and 8/16/1995 by a Beaverhead-Deerlodge Forest Service fisheries crew.
7. Columbia spotted frog (RALU) adults were observed at 3 different localities in the Squaw Creek drainage on 7/16/2000 and 8/17/2000 by Barbara Enriquez.
8. The DFWP fish stocking database has 6 different records of stocking cutthroat trout in Squaw Creek between 1934 and 1949.

# Squaw Creek - (HUC ID = 6 057 & ICBEMP HUC ID =100200041703)

**Map Legend**

Black Circle =	Potential lentic sites not surveyed due to reasons indicated in watershed notes.
Black Cross =	Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
Light Blue Circle =	Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
Green Circle =	Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.



## Coyote Creek - (HUC ID = 6\_058 & ICBEMP HUC ID =100200011501)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	58
Number of Wet Lentic Sites	8
Number of Dry Lentic Sites	5
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

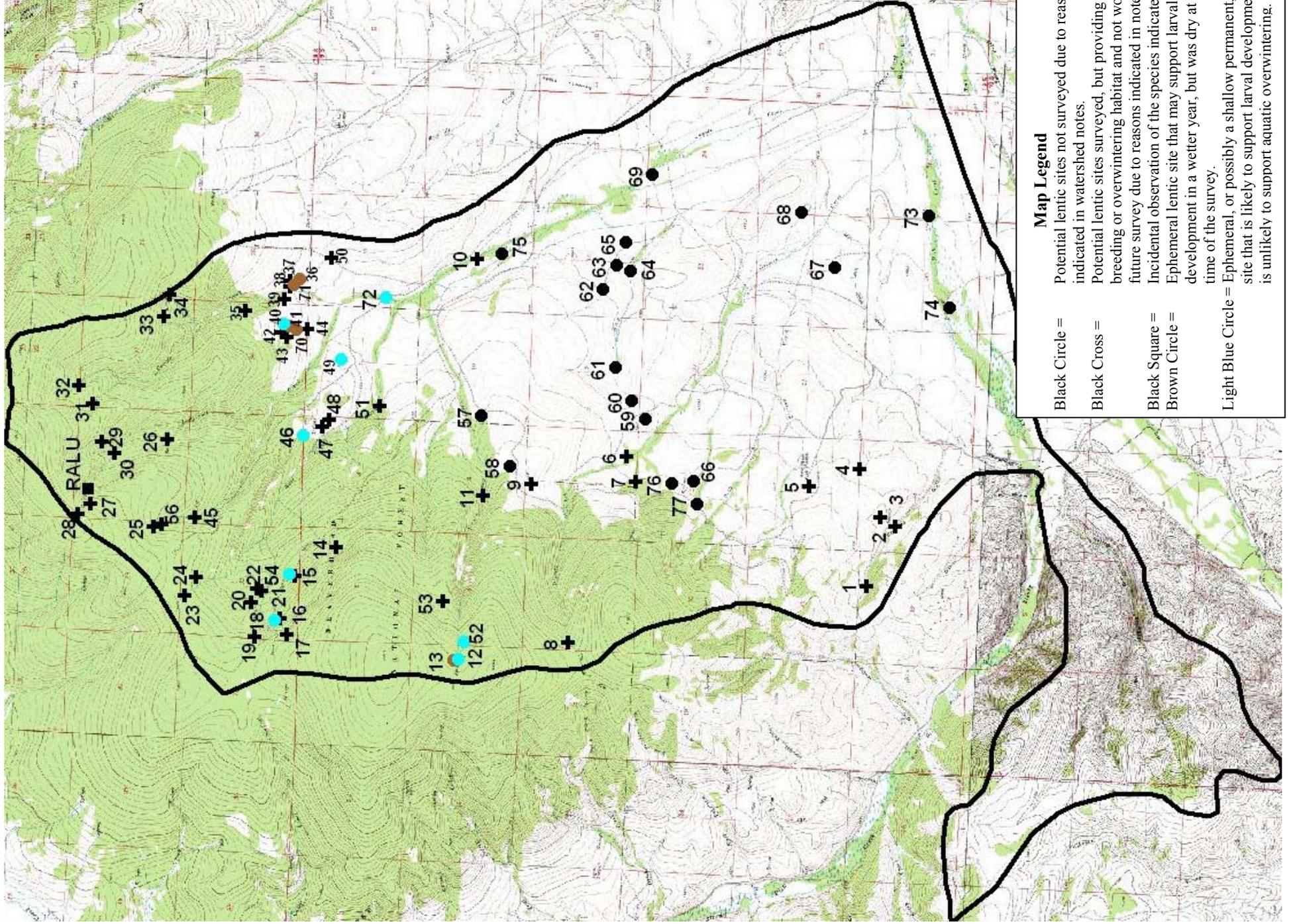
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Long-toed Salamander (AMMA)</b>	<u>054</u>	1 (13%)	1 (13%)	-
<b>Columbia Spotted Frog (RALU)</b>	<u>040, 046, 049, 054, 072</u>	5 (63%)	4 (50%)	-
<b>Terrestrial Gartersnake (THEL)</b>	040, 046	2 (25%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Columbia Spotted Frog (RALU)	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 057-069 and 073-077 are on private land and were not surveyed in 2003.
2. Sites 001-009, 011, 014-017, 019-035, 037-039, 042-045, 047, 048, 050, 051 are springs (some dry, some wet, some capped be a well head) without anywhere for water to pool and are not worth future survey.
3. Site 010 is on both private and BLM land and only the BLM land was surveyed in 2003. No lentic sites were found on the BLM owned section and this area is not worth future survey. However, areas on adjacent private land are worth future survey.
4. Sites 053 and 056 were identified as a potential lentic sites by aerial photo interpretation, but are only open dry areas without anywhere for water to pool and are not worth future survey.
5. Site 054 was combined with site 055 under site number 054.
6. Other potential aquatic overwintering areas in the watershed are portions of Coyote Creek, Longpole Creek, Jensen Creek, Grimes Creek, and West Coyote Creek below 7600 feet, Frog Creek and Station Creek below 7000 feet, and Bloody Dick Creek within the watershed boundary.
7. The Beaverhead-Deerlodge National Forest has records of adult Columbia spotted frogs (RALU) on Lodgepole Creek and Coyote Creek on 9/18/2002 and 9/19/2002, respectively.
8. The DFWP fish stocking database has the following records of stocking fish in Bloody Dick Creek: 3,816 rainbow trout on 9/14/1948; 8,850 Yellowstone cutthroat trout on 9/25/1951; 600,000 arctic grayling on 6/17/1937; and 6 different records of cutthroat trout between 1931 and 1950.
9. Sites 040 and 071 were noted as having been heavily impacted by grazing.

Coyote Creek - (HUC ID = 6\_058 & ICBEMP HUC ID =100200011501)



## Dry Creek - (HUC ID = 6\_059 & ICBEMP HUC ID =100200051402)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

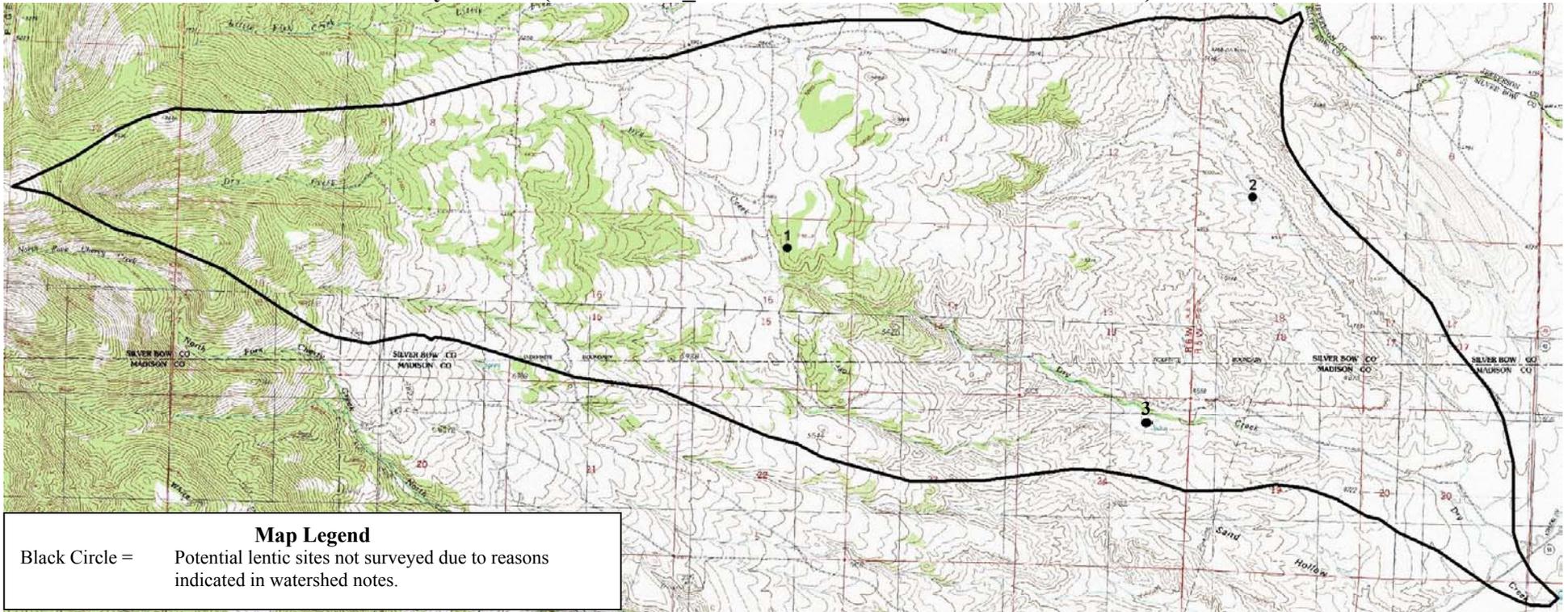
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No herpetofauna species were detected in this watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. This is a very dry watershed and only 1 potential lentic site was identified on the topographic map and 2 potential lentic sites were identified on aerial photographs. These sites (001, 002, and 003) are all on private land and were not surveyed in 2003.
2. This watershed is mostly private land with a small amount of federal land at the head of the watershed and blocks of federal land surrounded by private land within the watershed. The watershed is gated at the bottom and we only saw the very lowest portion of the watershed. Therefore, the watershed was not ground truthed and we do not really know about other potential aquatic overwintering sites. It seems possible that aquatic overwintering may occur along the lower sections of Dry Creek based on the topographic map and the lowest portion of Dry Creek that we were able to see.

# Dry Creek - (HUC ID = 6\_059 & ICBEMP HUC ID =100200051402)



## Trail Creek - (HUC ID = 6\_060 & ICBEMP HUC ID =100200041901)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	4
Number of Wet Lentic Sites	4
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	4

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	096, 097, 098, 099
Permanent Lentic Sites with Emergent Vegetation	096, 097, 098, 099
Permanent Lentic Sites without Emergent Vegetation	None

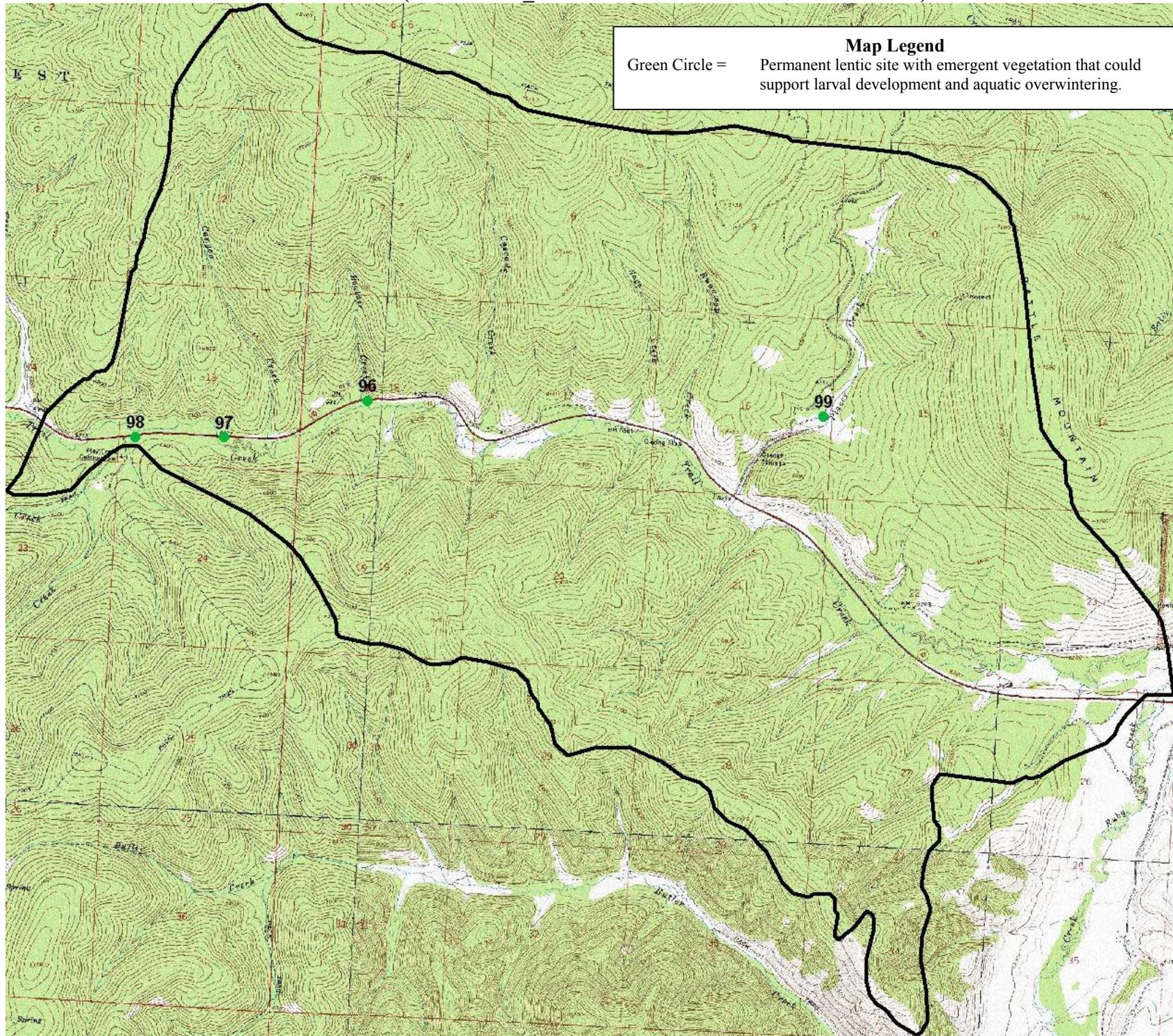
### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>097, 098, 099</u>	3 (75%)	2 (50%)	-
<b>Fish Detected</b>	096 (unidentified trout), 097 (unidentified species), 098 (unknown)	3 (75%)	-	-

Notes:

1. No potential lentic sites were identified on topographic maps or aerial photos, so the watershed was ground truthed. Four sites were found incidentally and surveyed.
2. Other potential aquatic overwintering areas in the watershed are the entire length of Trail Creek within the watershed, Cascade, Sage, and Runaway Creeks below 7,000 feet, and Placer Creek below 6,600 feet.
3. Rocky Mountain tailed frog (ASMO) larvae were observed on Cascade Creek 0.75 miles from Trail Creek on 8/25/1997 by Bruce Roberts, and on Runaway Creek 1.75 miles west of Battle Mountain on 7/28/1997 by Bruce Roberts.
4. Columbia spotted frog (RALU) adults and larvae were observed on Placer Creek (site 099) on 6/18/1998 by Bruce Roberts.
5. The DFWP fish stocking database has 22 different records of stocking cutthroat trout in Trail Creek between 1928 and 1954, 1 record of stocking 4,160 cutthroat trout in Placer Creek on 8/12/1948, and 1 record of stocking 22,736 cutthroat trout in Canyon Creek on 8/9/1949.

# Trail Creek - (HUC ID = 6\_060 & ICBEMP HUC ID =100200041901)



**Map Legend**  
Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

## Thompson Creek - (HUC ID = 6\_061 & ICBEMP HUC ID =100200041806)

### 2003 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	22
Number of Wet Lentic Sites	13
Number of Dry Lentic Sites	3
Number of Potential Lentic Overwintering Sites	6

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	002, 003, 004, 005 (marginal), 007, 009 (marginal)
Permanent Lentic Sites with Emergent Vegetation	002, 004, 005, 007, 009
Permanent Lentic Sites without Emergent Vegetation	003

### 2003 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	001, <u>002</u> , <u>005</u> , <u>007</u> , 028, <u>032</u> , <u>037</u>	9 (69%)	7 (54%)	-
<b>Incidental Herpetofauna Observations</b>	2 x observations of Columbia spotted frogs (RALU) <sup>6</sup>	-	-	-
<b>Fish Detected</b>	002 (Rainbow Trout) <sup>11</sup> , 003 (Rainbow Trout) <sup>11</sup> , 007 (Rainbow Trout) <sup>11</sup>	3 (50%)	-	-

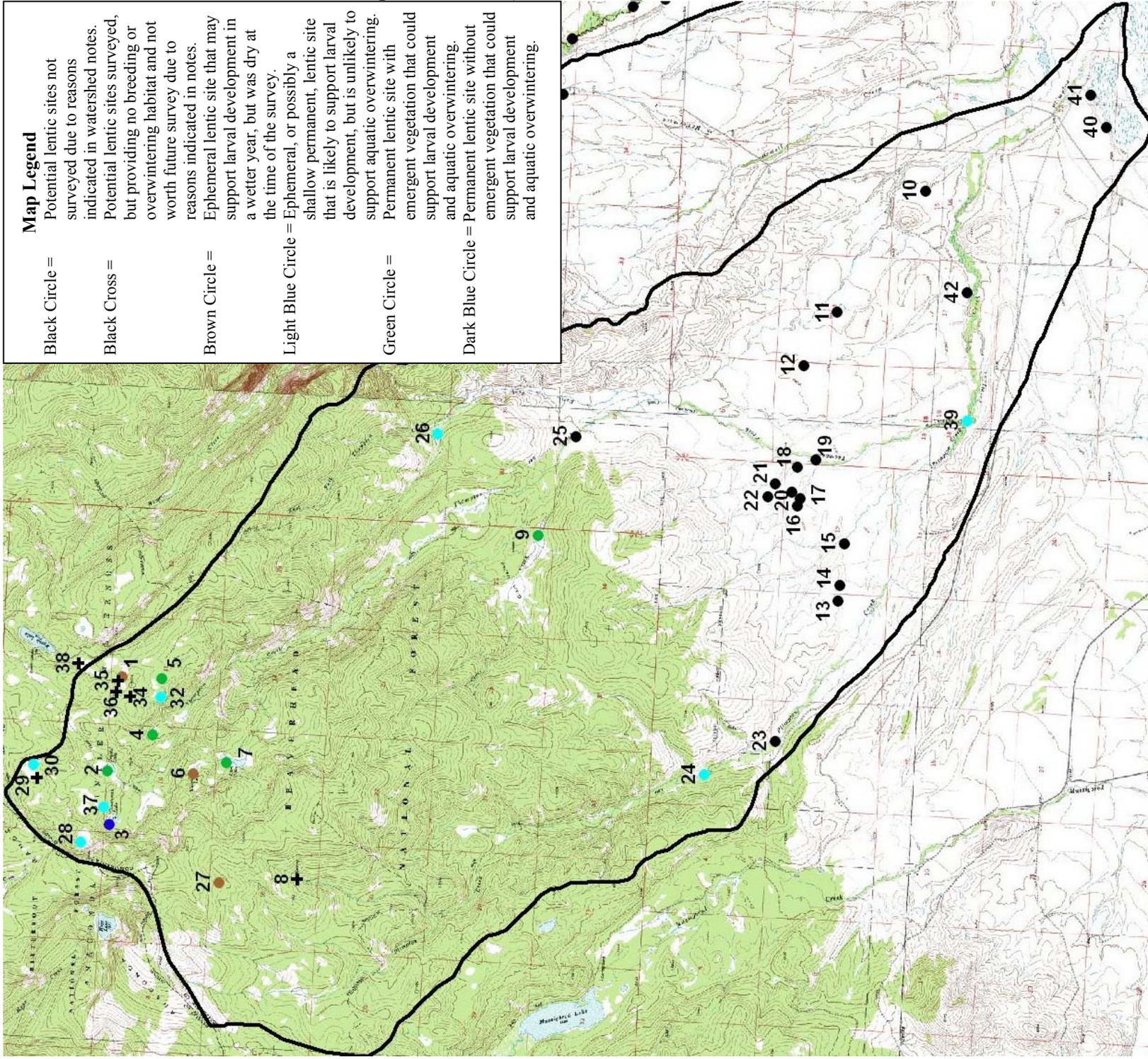
Notes:

1. Sites 010-023, 025, and 040-042 are on private land and were not surveyed in 2003.
2. Sites 005 and 033 were combined under site number 005. Sites 031 and 032 combined were combined under site number 032.
3. Site 008 is only a spring on the side of a mountain with no place for water to pool and is not worth future survey.
4. Sites 029, 034, and 036 were identified as potential lentic sites on aerial photographs, but were only open dry areas that would never support amphibian reproduction and are not worth future survey.
5. Sites 035 and 038 were not lentic sites, were only meadows with streams flowing through them, and are not worth future survey.
6. Columbia spotted frogs (RALU) were found at sites 035 and 038. However, these were incidental observations because they were not lentic sites and were only meadows with streams flowing through them.
7. Other potential aquatic overwintering areas in this watershed are the East Fork of Thompson Creek below 6600 feet, Thompson Creek below site 002, and Plimpton Creek below site 024.
8. A Rocky Mountain tailed frog (ASMO) adult was reported by an unknown observer in Thompson Creek on 9/2/1988.
9. A Columbia spotted frog (RALU) adult was observed on Plimpton Creek on 7/13/1996 by B. Murdock.
10. Columbia spotted frog (RALU) adults and larvae were observed at 4 unidentified lentic sites and adults were detected at 1 additional unidentified lentic site on 7/18/2000 and 7/19/2000 by Barbara Enriquez.
11. The DFWP fish stocking database has 3 different records of stocking rainbow trout in Thompson Creek between 1945 and 1951, 1 record of stocking 1,440 rainbow trout in Lion Lake (site 007) on 9/16/1946, 1 record of stocking 1,440 rainbow trout in Continental Lake (site 003) on 9/16/1946, and 2 records of stocking rainbow trout in Crystal Lake (site 002) on 7/21/1938 (8,000) and 9/16/1946 (1,440).

# Thompson Creek - (HUC ID = 6 061 & ICBEMP HUC ID =100200041806)

## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemerl lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



**Harkness Creek & Noble Creek - (HUC ID = 6\_062 & ICBEMP HUC ID = 100200011102)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species Were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

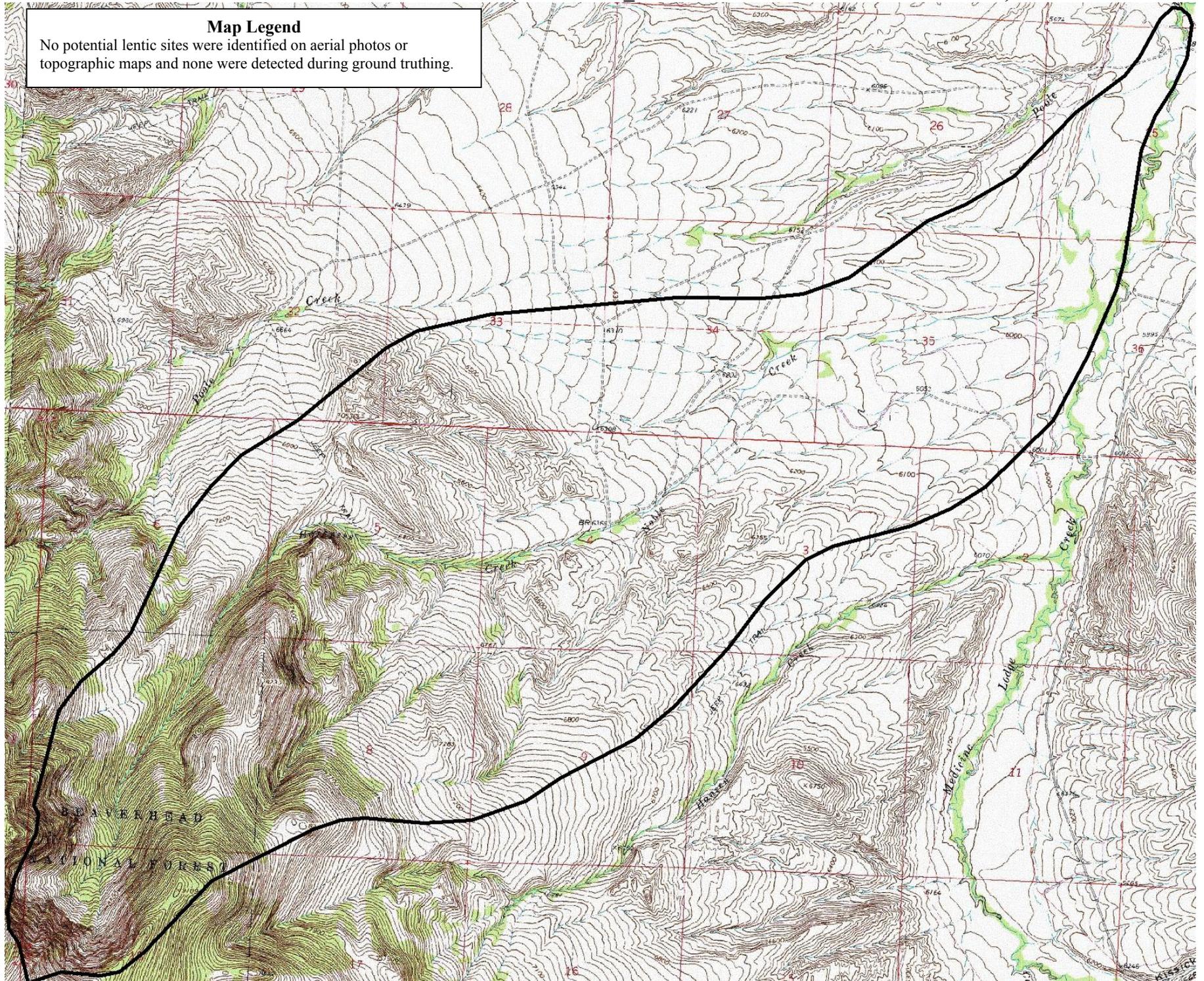
Notes:

1. No potential lentic sites were detected on topographic maps or aerial photos so the watershed was ground truthed. All areas of lower topographic relief that might ever support the formation of lentic sites are in the vicinity of Medicine Lodge Creek. Paul Hansen allowed us to drive through the watershed. No lentic sites or herpetofauna were detected during ground truthing.

# Harkness Creek & Noble Creek - (HUC ID = 6\_062 & ICBEMP HUC ID = 100200011102)

## Map Legend

No potential lentic sites were identified on aerial photos or topographic maps and none were detected during ground truthing.



## Beaverhead River and Small Horn Canyon - (HUC ID = 6\_063 & ICBEMP HUC ID =100200020701)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	0
Number of Wet Lentic Sites	0
Number of Dry Lentic Sites	0
Number of Potential Lentic Overwintering Sites	Unknown

Number of Fishless Potential Lentic Overwintering Sites	Unknown
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

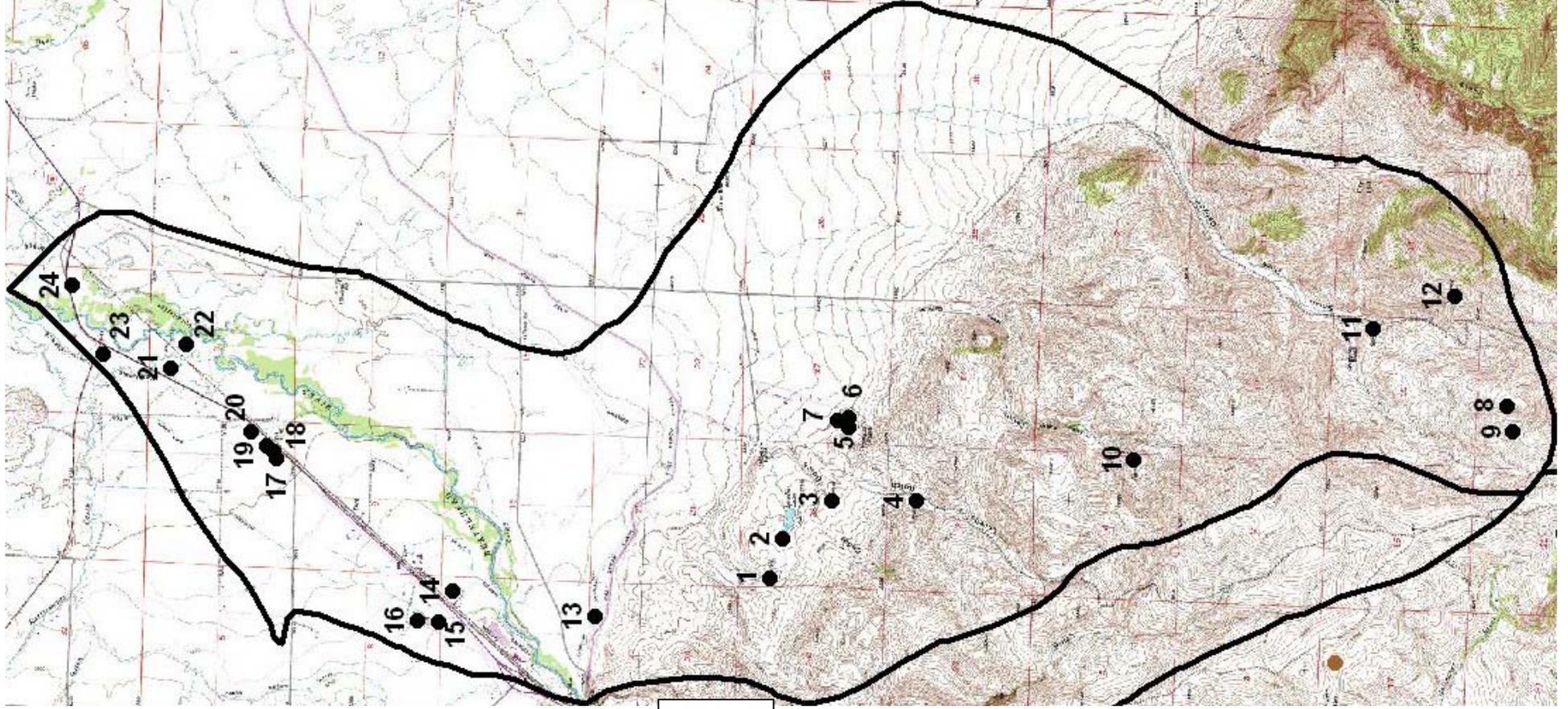
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species Detected in this watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. All potential lentic sites identified on topographic maps and aerial photographs of this watershed are on private land and none were surveyed in 2002. Nothing can be said about the status of amphibians or lentic habitats in this watershed unless all sites on private land are surveyed.
2. Other potential aquatic overwintering areas in this watershed are areas along the Beaverhead River within the watershed boundary.

Beaverhead River and Small Horn Canyon - (HUC ID = 6\_063 & ICBEMP HUC ID =100200020701)



**Map Legend**  
Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.

**Meadow Creek, Rock Creek, & Nicholia Creek - (HUC ID = 6\_206 & New USFS HUC ID = 100200010503)**

**200 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	26
Number of Wet Lentic Sites	5
Number of Dry Lentic Sites	9
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	2
Potential Lentic Overwintering Sites	020, 021
Permanent Lentic Sites with Emergent Vegetation	020, 021
Permanent Lentic Sites without Emergent Vegetation	None

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>020, 021</u>	2 (40%)	2 (40%)	-
<b>Terrestrial Gartersnake (THEL)</b>	021	1 (20%)	-	-
<b>Fish Detected</b>	None	-	-	-

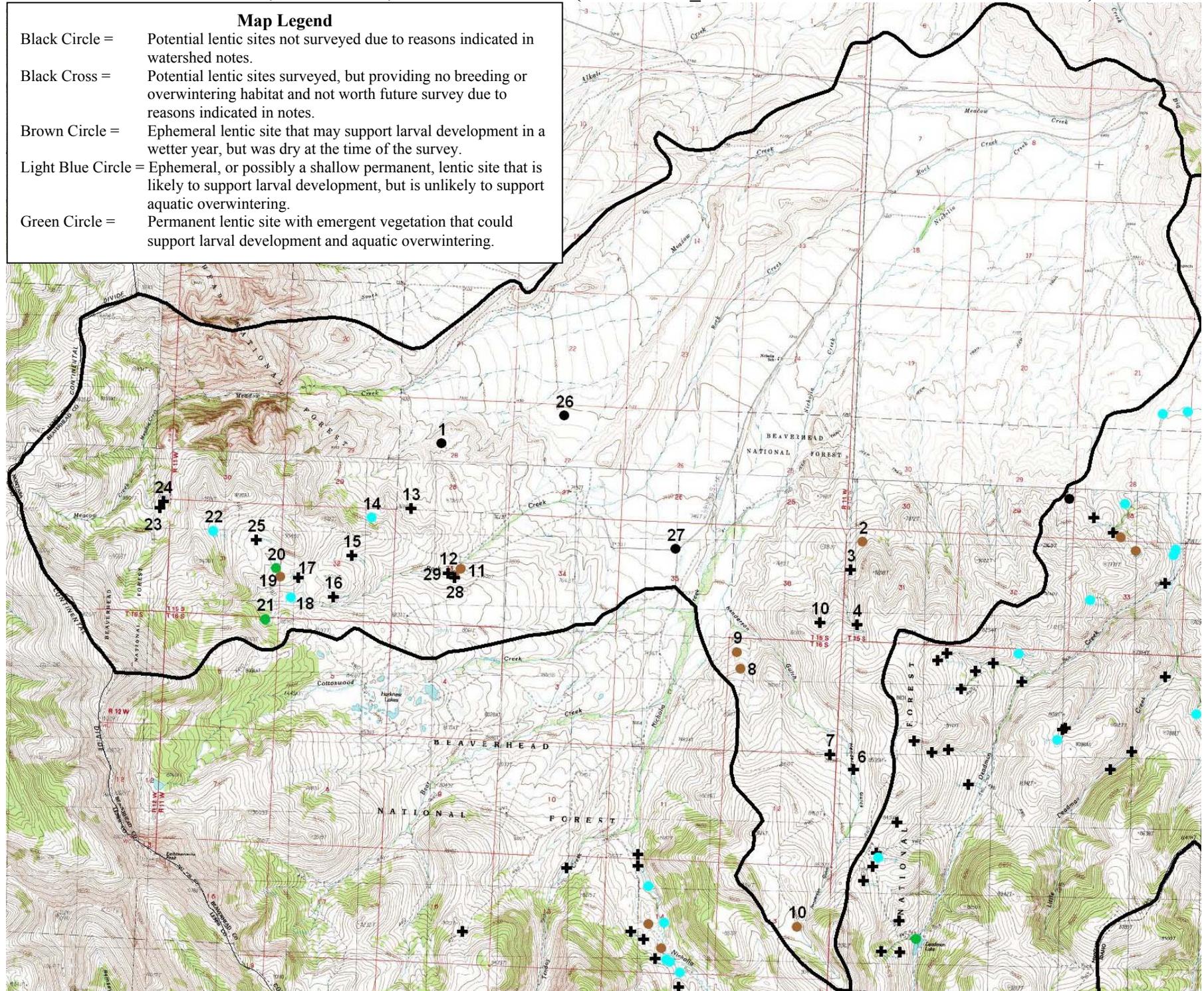
Notes:

- Sites 001, 026, and 027 are on private land and were not surveyed in 2002.
- Sites 004, 006, 010, 015, 016, 017, 023, and 025 are springs (wet and dry) with no place for water to pool and are not worth future survey.
- Sites 003, 005, 007, 013, and 024 are lentic sites (wet and dry), but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Sites 028 and 029 were identified as potential lentic sites on aerial photographs, but were only open areas with dry vegetation and are not worth future survey.
- Other potential aquatic overwintering areas in this watershed are areas along Nicholia Creek within the watershed boundary, Rock Creek below 7000 feet, and Meadow Creek below 7000 feet.
- The DFWP fish stocking database has the following records of stocking fish in Nicholia Creek: 19,800 cutthroat trout on 8/6/1936; and 3,060 cutthroat trout on 10/11/1950.
- Sites 013 and 014 were noted as having been heavily impacted by grazing.

# Meadow Creek, Rock Creek, & Nicholia Creek - (HUC ID = 6\_206 & New USFS HUC ID = 100200010503)

## Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.



**Deadman Creek - (HUC ID = 6\_301 & New USFS HUC ID = 100200010502 and HUC ID 6\_036 ICBEMP HUC ID = 100200011002)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	81
Number of Wet Lentic Sites	34
Number of Dry Lentic Sites	12
Number of Potential Lentic Overwintering Sites	8

Number of Fishless Potential Lentic Overwintering Sites	6
Potential Lentic Overwintering Sites	010, 025, 026, 027, 028, 035 (marginal), 064, 099
Permanent Lentic Sites with Emergent Vegetation	010, 025, 026, 027, 028, 035, 064, 099
Permanent Lentic Sites without Emergent Vegetation	None

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>004</u> , 005, <u>010</u> , <u>015</u> , <u>019</u> , <u>020</u> , <u>025</u> , 027, 064	9 (26%)	6 (18%)	-
<b>Terrestrial Gartersnake (THEL)</b>	010, 034, 061	3 (9%) <sup>5</sup>	-	-
<b>Incidental Herpetofauna Observations</b>	2 x observations of Terrestrial Gartersnakes (THEL)	-	-	-
<b>Fish Detected</b>	010 (unidentified trout), 076 (unidentified species)	2 (25%) <sup>7</sup>	-	-

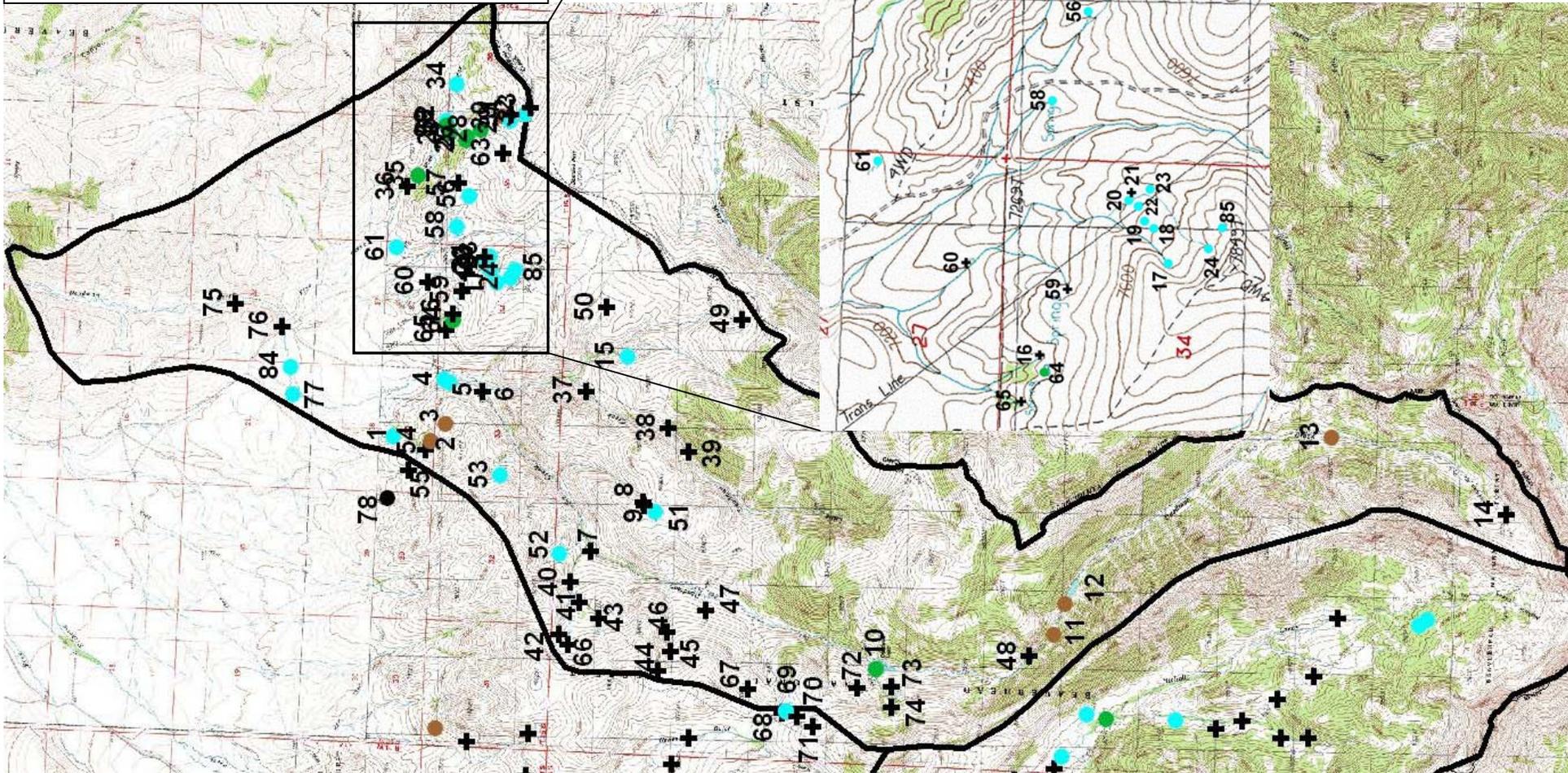
Notes:

1. Site 078 was not surveyed in 2002 because it was accidentally missed due to communication error.
2. Sites 014, 016, 021, 031, 033, 046, 048, and 070 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
3. Sites 006, 007, 008, 009, 038, 039, 040, 075, and 076 are not lentic sites are only areas of flowing water along a stream, and are not worth future survey.
4. Sites 036, 037, 041, 042, 043, 044, 045, 047, 049, 050, 054, 055, 057, 059, 060, 063, 065, 066, 067, 068, 071, 072, 073, and 074 are springs (wet and dry) with no place for water to pool to support amphibian reproduction, and are not worth future survey.
5. Terrestrial gartersnakes (THEL) were detected at sites 036 and 076 which were not lentic sites so these observations were treated as incidental observations.
6. Other potential aquatic overwintering sites in this watershed are along Deadman Creek below site 010.
7. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
8. The DFWP fish stocking database has the following records of stocking fish in Deadman Creek: 40,000 cutthroat trout on 9/16/1928; 19,800 cutthroat trout on 8/6/1936; and 6,120 cutthroat trout on 10/11/1950.
9. Sites 004, 029, 041, 054, 055, 063, and 075 were noted as having been heavily impacted by grazing.

**Deadman Creek - (HUC ID = 6\_301 & New USFS HUC ID = 100200010502 and HUC ID 6\_036 ICBEMP HUC ID = 100200011002)**

**Map Legend**

- Potential lentic sites not surveyed due to reasons indicated in watershed notes.
  - Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
  - Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
  - Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
  - Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Black Circle =
  - Black Cross =
  - Brown Circle =
  - Light Blue Circle =
  - Green Circle =



**Long Creek - (HUC ID = 6\_302 & New USFS HUC ID = 100200010702)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	2
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	1
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

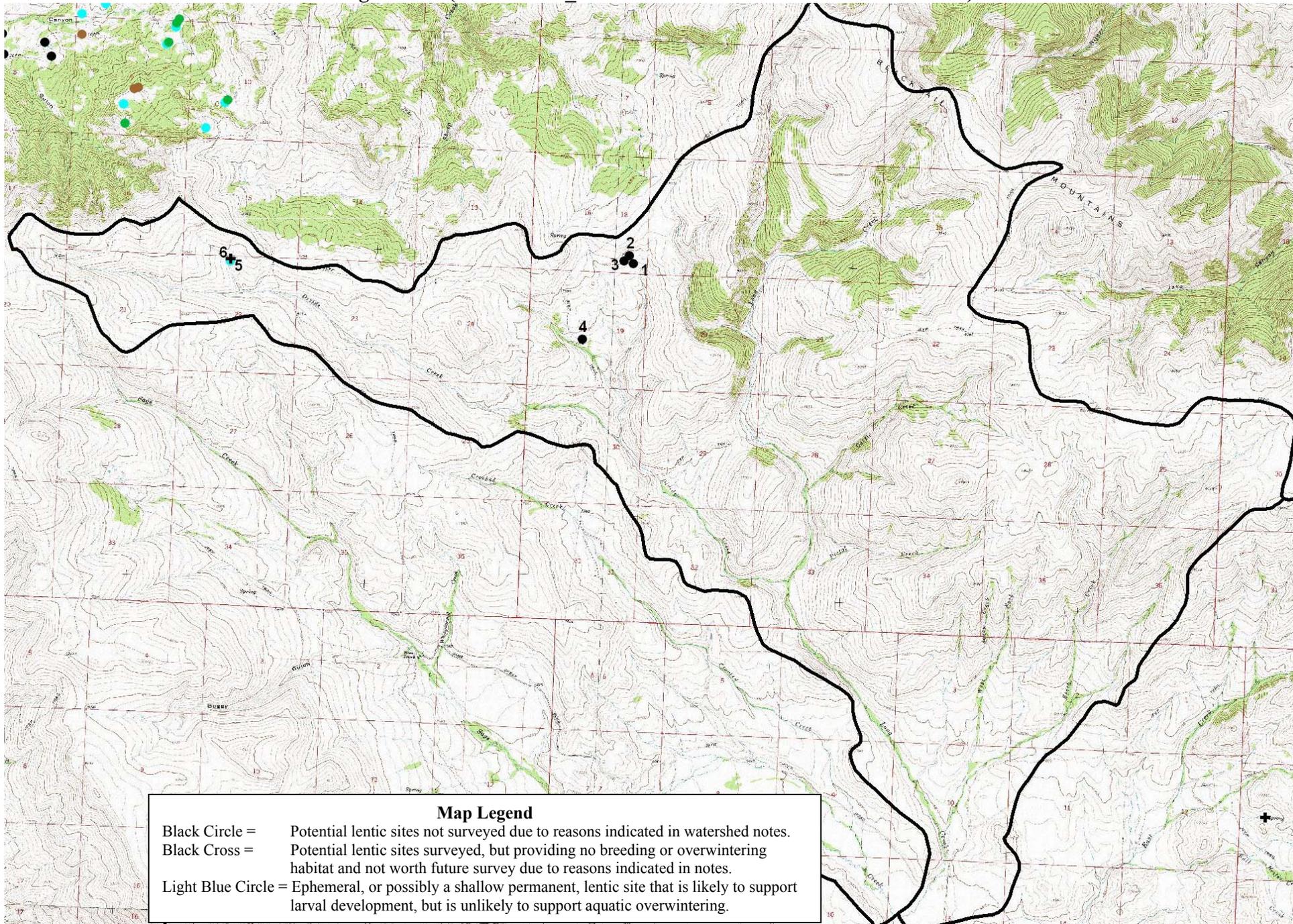
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected ( <u>Underlined</u> = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>005</u>	1 (50%)	1 (50%)	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 001-004 are on private land, the land owner denied us access, and they were not surveyed in 2002.
2. Site 006 is lentic, but would never hold enough water long enough to support amphibian reproduction and is not worth future survey.
3. Columbia spotted frog (RALU) adults that bred at site 001 would apparently have to have migrated 5 + miles up Divide Creek, because site 005 does not appear to be capable of supporting aquatic overwintering. However, there may be an outside chance that site 005 does actually support aquatic overwintering, or at least in some years. This would be a good site to study limits of overwintering and/or migration in RALU.
4. Other potential aquatic overwintering areas in this watershed are Long Creek below 7,000 feet.
5. An adult Columbia spotted frog (RALU) was observed on Long Creek along Sage Creek Road on 7/16/1998 by Kirwin Werner.

Long Creek - (HUC ID = 6\_302 & New USFS HUC ID = 100200010702)



## Shenon Creek - (HUC ID = 6\_303 & New USFS HUC ID = 100200011005)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	4
Number of Wet Lentic Sites	2
Number of Dry Lentic Sites	2
Number of Potential Lentic Overwintering Sites	1

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	005 (marginal)
Permanent Lentic Sites with Emergent Vegetation	005
Permanent Lentic Sites without Emergent Vegetation	None

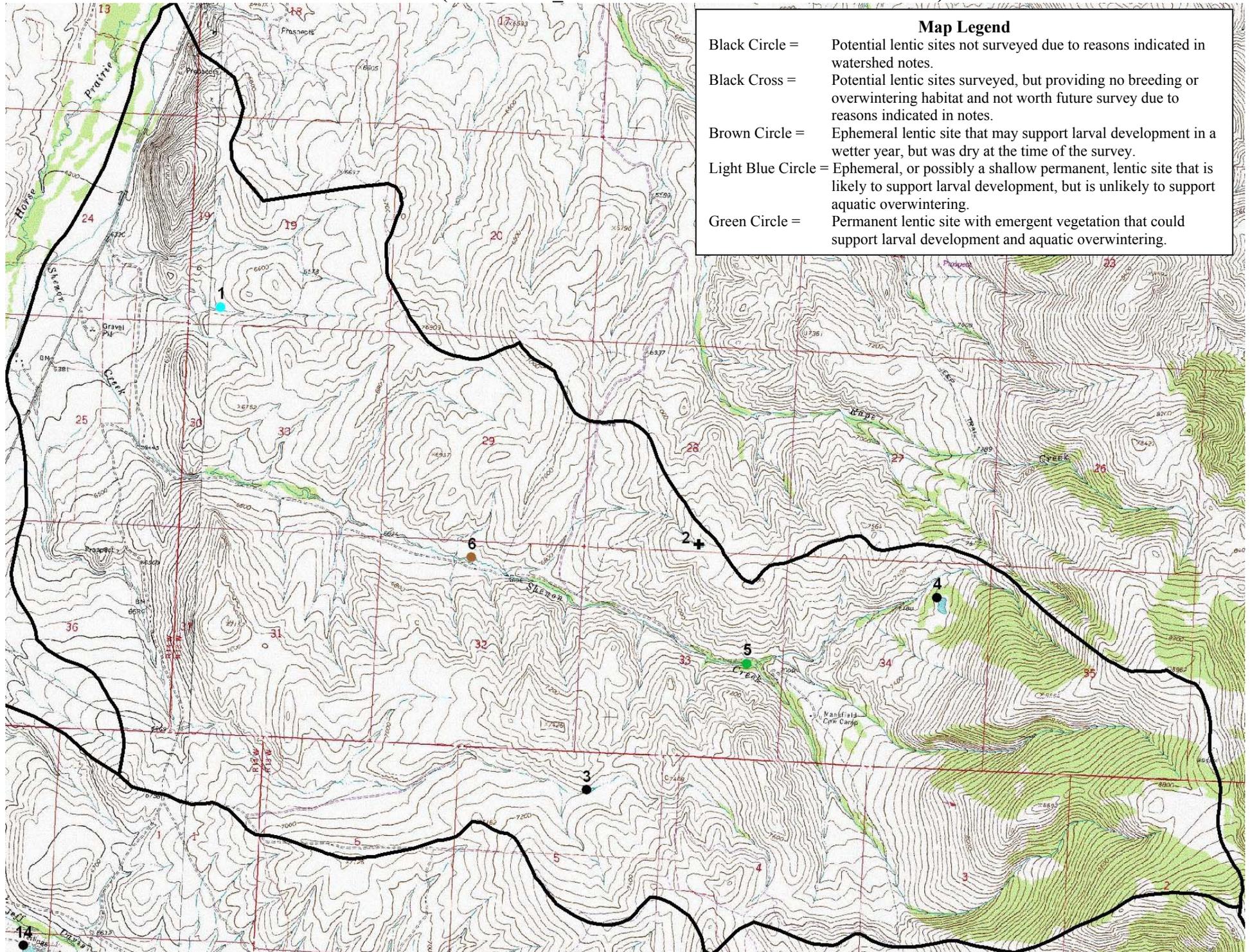
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>005</u>	1 (50%)	1 (50%)	-
<b>Terrestrial Gartersnake (THEL)</b>	005	1 (50%)	-	-
<b>Fish Detected</b>	005 (Brook Trout)	1 (100%) <sup>5</sup>	-	-

Notes:

1. Sites 003 and 004 are on private land and were not surveyed in 2002.
2. Site 002 is a lentic site, but has not held water in many years, will never hold enough water long enough to support amphibian reproduction, and is not worth future survey.
3. Other potential aquatic overwintering sites in this watershed are a few areas along Shenon Creek below site 005.
4. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
5. Columbia spotted frog (RALU) adults and tadpoles were observed at Shenon Creek headwaters (site 005) on 7/14/1998 by Kirwin Werner.
6. Three terrestrial gartersnakes (THEL) were observed on Red Butte Road 15 miles west of Clark Canyon Reservoir on 7/10/1996 by Kirwin Werner.
7. Sites 001 and 006 were noted as having been heavily impacted by grazing.

# Shenon Creek - (HUC ID = 6\_303 & New USFS HUC ID = 100200011005)



**Maiden Creek and Jeff Davis Creek - (HUC ID = 6\_403 & New USFS HUC ID = 100200011002)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	26
Number of Wet Lentic Sites	19
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	9

Number of Fishless Potential Lentic Overwintering Sites	2
Potential Lentic Overwintering Sites	010, 011, 012, 013, 015, 079, 095, 098, 110
Permanent Lentic Sites with Emergent Vegetation	010, 011, 012, 013, 015, 079, 095, 098, 110
Permanent Lentic Sites without Emergent Vegetation	None

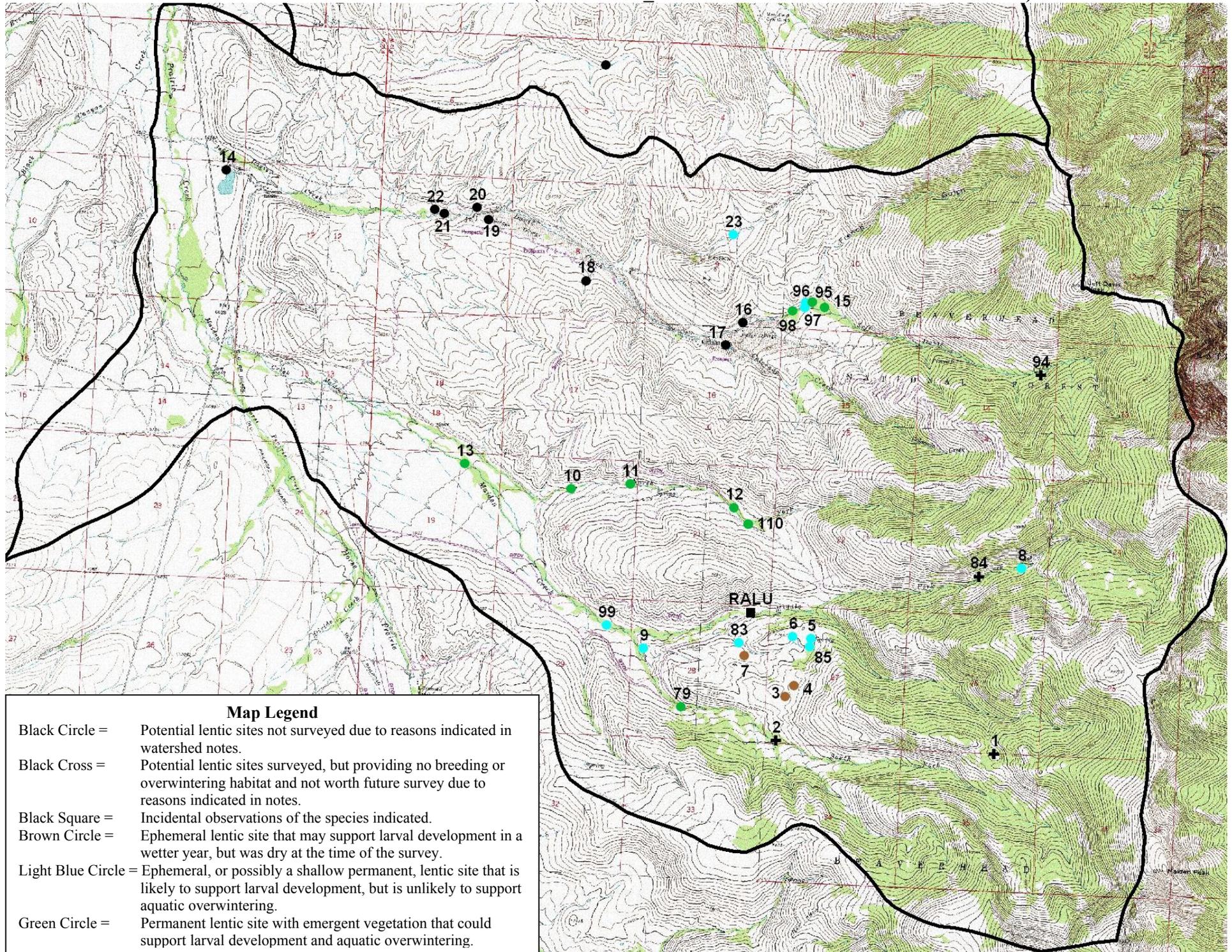
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	002, 005, <u>006</u> , 008, <u>009</u> , 010, <u>011</u> , 012, 013, 015, 083, 084, <u>085</u> , 095, 099, 110	16 (84%)	4 (21%)	-
<b>Terrestrial Gartersnake (THEL)</b>	011, 095, 110	3 (16%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Columbia Spotted Frog (RALU)	-	-	-
<b>Fish Detected</b>	011 (Westslope Cutthroat Trout), 012 (unknown), 015 (Brook Trout), 079 (Brook Trout), 095 (Brook Trout), 098 (unknown), 110 (unknown)	7 (78%) <sup>9</sup>	-	-

Notes:

- Sites 001-013, 079, 083-085, 099 and 110 are in both watershed 6\_0403 and watershed 6\_019 which overlap.
- Sites 014 and 016-022 are on private land, landowners could not be contacted, and sites were not surveyed in 2002.
- Site 001 is a lentic site, but would never hold enough water long enough to support amphibian reproduction and is not worth future survey.
- Site 002 is not a lentic site, is only cold water slowly flowing from a spring through an area of emergent vegetation, and is not worth future survey.
- Site 084 is a lentic site, but is a spring/seep with very shallow cold water that would never support amphibian reproduction and is not worth future survey.
- Site 094 was identified as a potential lentic site on the aerial photograph, but was apparently only a shadow and the area is not worth future survey.
- May want to combine sites 015 and 095 in the future depending on amount of beaver activity in the area.
- Other potential aquatic overwintering areas in this watershed are Horse Prairie Creek within the watershed boundary, Maiden Creek below site 099, North Fork of Maiden Creek below site 110, and Jeff Davis Creek below site 095.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- Sites 004, 005, 006, 009, 010, 011, 023, 085, 097, and 099 were noted as having been heavily impacted by grazing.

Maiden Creek and Jeff Davis Creek - (HUC ID = 6\_403 & New USFS HUC ID = 100200011002)



**Sage Creek - (HUC ID = 6\_501 & New USFS HUC ID = 100200010703)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	8
Number of Wet Lentic Sites	1
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

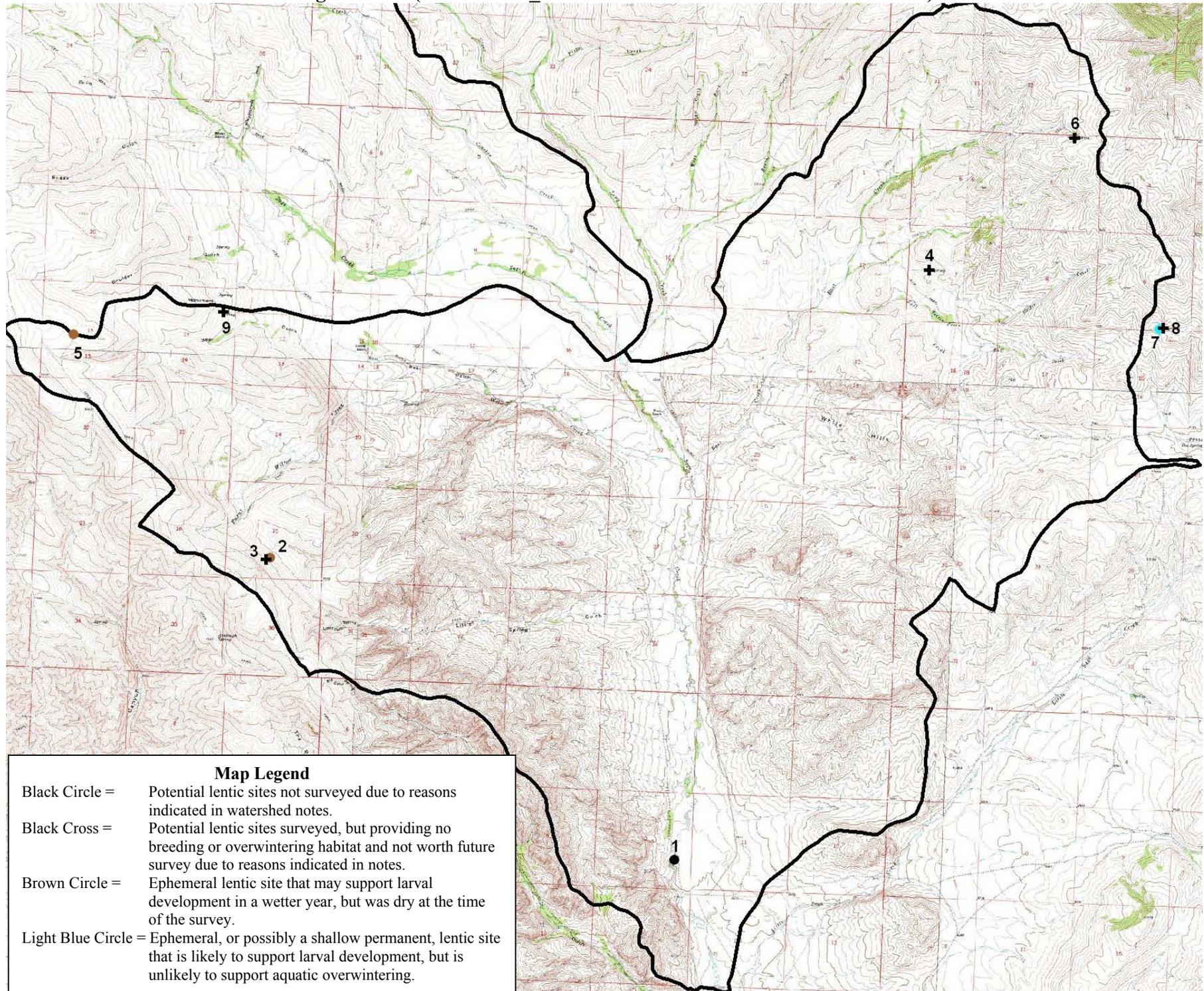
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 004, 006, and 009 are springs (dry and wet) with no place for water to pool and they are not worth future survey.
2. Sites 003 and 008 are lentic sites, but they would never hold enough water long enough to support amphibian reproduction.
3. This watershed is very dry.
4. Other potential aquatic overwintering areas in this watershed are areas along Sage Creek within the watershed boundary.
5. An adult Columbia spotted frog (RALU) was observed at the junction of East Creek and Sage Creek on 7/15/1998 by Kirwin Werner.
6. Sites 002, 004, and 007 were noted as having been heavily impacted by grazing.

# Sage Creek - (HUC ID = 6\_501 & New USFS HUC ID = 100200010703)



## Medicine Lodge Creek & Kate Creek - (HUC ID = 6\_502 & New USFS HUC ID = 100200011205)

### 2002 Water Body and Survey Summary

Number of Potential Lentic Sites Surveyed	56
Number of Wet Lentic Sites	13
Number of Dry Lentic Sites	18
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

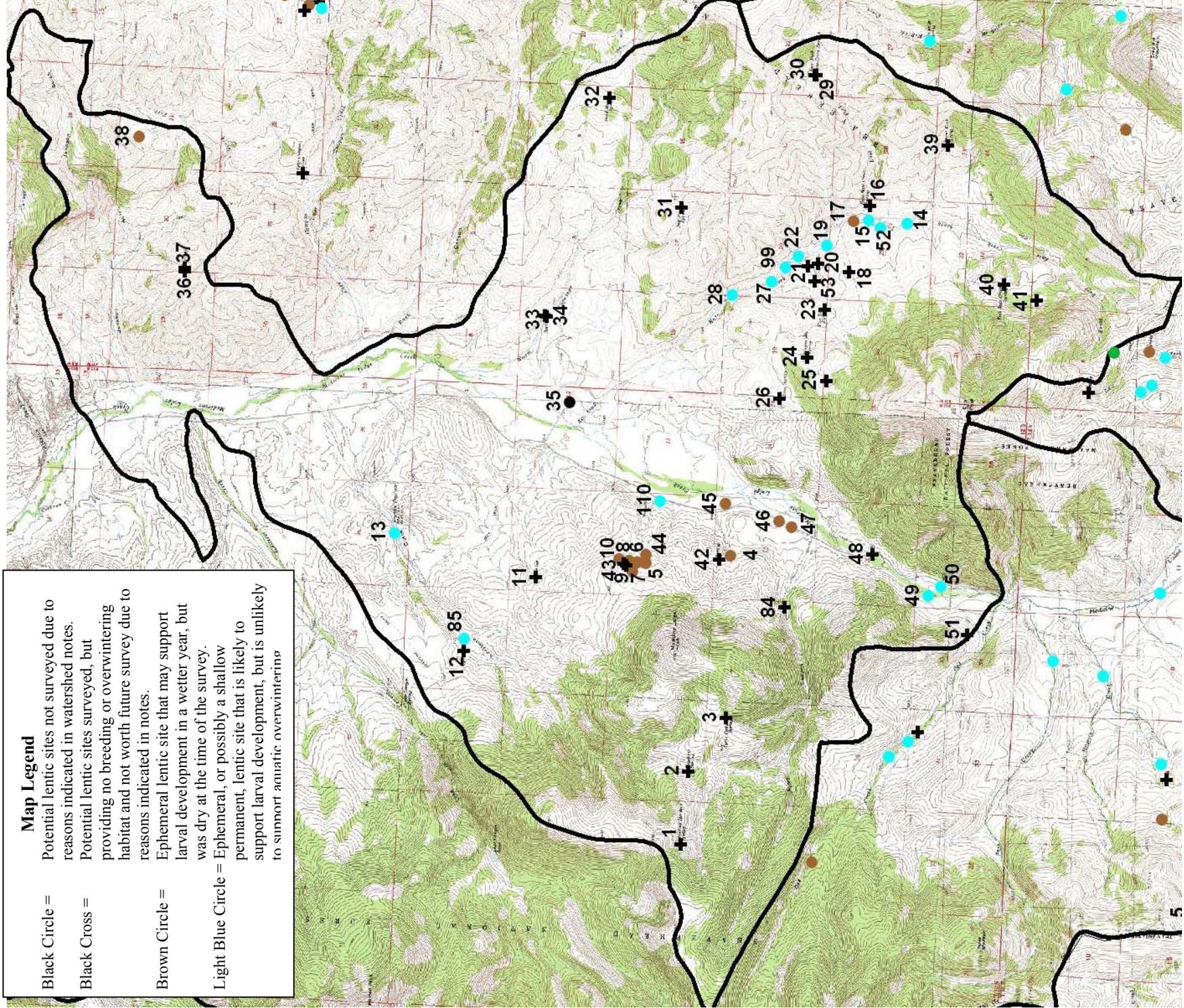
### 2002 Species Detection Summary

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>015, 022</u> , 027, 028, 052, 099	6 <sup>6</sup>	2 <sup>6</sup>	-
<b>Terrestrial Gartersnake (THEL)</b>	099	1 (8%)	-	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of Columbia Spotted Frog (RALU) <sup>6</sup>	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Site 035 is on private land and was not surveyed in 2002.
2. Sites 001-003, 011, 012, 016, 023-026, 029-034, 036, 037, 039, 040, 042, and 084 are not lentic sites, are only springs (wet and dry) with no place for water to pool, and are not worth future survey.
3. Sites 009, 018, 020, 021, 041, and 043 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
4. Sites 048, 051, and 053 were misidentified as potential lentic sites on aerial photographs, contained no lentic habitat, and are not worth future survey.
5. All beaver activity in this watershed seems to have been in the past and it is possible that they have been extirpated from this watershed for the time being. Beaver have created basically all of the suitable habitat for amphibians in this watershed.
6. A single adult female Columbia Spotted Frog (RALU) was found trapped in a well at site 042 and she had deposited a few eggs apparently in her efforts to escape. Because this was not a lentic site and the eggs do not represent viable reproduction this was treated as an incidental observation of RALU and was not used to calculate number and percent of lentic sites detected or with breeding.
7. Other potential aquatic overwintering areas in this watershed are a few areas along Medicine Lodge Creek within the watershed boundary.
8. A terrestrial gartersnake (THEL) was observed on Medicine Lodge Road on 5/21/1997 by Ryan Rauscher.
9. Columbia spotted frog (RALU) adults and juveniles were observed on Medicine Lodge Creek near Medicine Lodge Peak on 7/15/1998 by Kirwin Werner.
10. The DFWP fish stocking database has the following records of stocking cutthroat trout in Warm Springs Creek: 33,800 on 8/28/1941; 23,200 on 10/13/1948; 20,880 on 8/30/1939; and 11,667 on 8/31/1940.
11. Sites 003, 012, 013, 040, and 084 were noted as having been heavily impacted by grazing.

Medicine Lodge Creek & Kate Creek - (HUC ID = 6\_502 & New USFS HUC ID = 100200011205)



**Muddy Creek - (HUC ID = 6\_602 & New USFS HUC ID = 100200010504)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	14
Number of Wet Lentic Sites	3
Number of Dry Lentic Sites	8
Number of Potential Lentic Overwintering Sites	0

Number of Fishless Potential Lentic Overwintering Sites	0
Potential Lentic Overwintering Sites	None
Permanent Lentic Sites with Emergent Vegetation	None
Permanent Lentic Sites without Emergent Vegetation	None

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>No Herpetofauna Species were Detected in this Watershed</b>	None	-	-	-
<b>Fish Detected</b>	None	-	-	-

Notes:

1. Sites 001, 002, 003, and 004 are lentic, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
2. Sites 007, 012, and 013 are springs with no place for water to pool and are not worth future survey.
3. Watershed is very dry and there does not appear to be any reliable aquatic overwintering habitat in the watershed either at the potential lentic sites or in the ephemeral drainages.
4. A Columbia spotted frog (RALU) and 2 terrestrial gartersnakes (THEL) were observed on Sourdough Creek NW of Lima on 7/15/1996 by B. Murdock.
5. Site 012 was noted as having been heavily impacted by grazing.



**Medicine Lodge Creek (Dad & Pass Creeks) - (HUC ID = 6\_604 & New USFS HUC ID = 100200011202)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	15
Number of Wet Lentic Sites	9
Number of Dry Lentic Sites	3
Number of Potential Lentic Overwintering Sites	2

Number of Fishless Potential Lentic Overwintering Sites	1
Potential Lentic Overwintering Sites	009, 010
Permanent Lentic Sites with Emergent Vegetation	010
Permanent Lentic Sites without Emergent Vegetation	009

**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	<u>003, 012</u>	2 (22%)	2 (22%)	-
<b>Terrestrial Gartersnake (THEL)</b>	012	1 (11%)	-	-
<b>Fish Detected</b>	010 (Rainbow Trout)	1 (50%) <sup>2</sup>	-	-

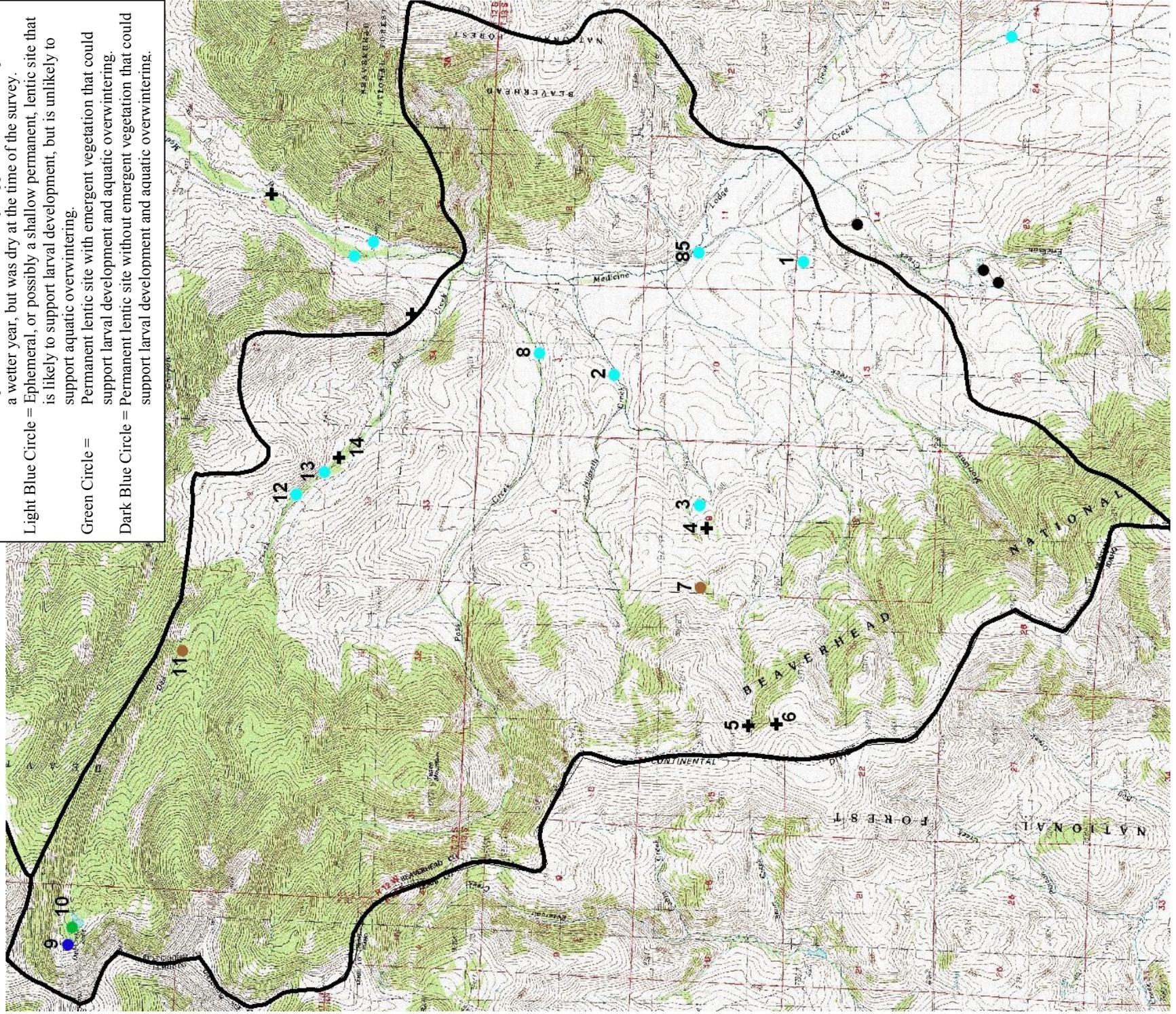
Notes:

- Other potential aquatic overwintering areas in this watershed are Medicine Lodge Creek within the watershed boundary, Pass Creek below 7200 feet, and Dad Creek below site 012.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- Two adult Columbia spotted frogs (RALU) and 1 juvenile terrestrial gartersnake (THEL) were observed on Medicine Lodge Creek near Hildreth on 7/15/1998 by Kirwin Werner.
- The DFWP fish stocking database has records of stocking 8,850 rainbow trout in Dad Creek on 9/25/1951 and the following records of stocking Yellowstone cutthroat trout in lower Dad Creek Lake (site 010): 1,007 on 8/4/1981; 500 on 8/10/1994; 500 on 8/15/2002; 500 on 8/11/1998; 500 on 8/15/1980; 490 on 7/31/1986.

# Medicine Lodge Creek (Dad & Pass Creeks) - (HUC ID = 6\_604 & New USFS HUC ID = 100200011202)

## Map Legend

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.



**Papoose Creek - (HUC ID = 6\_997 & ICBEMP HUC ID = 100200071501)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	34
Number of Wet Lentic Sites	21
Number of Dry Lentic Sites	13
Number of Potential Lentic Overwintering Sites	13

Number of Fishless Potential Lentic Overwintering Sites	8
Potential Lentic Overwintering Sites	001, 003, 008, 014, 015, 016, 018, 019, 020, 021, 094, 099, 100
Permanent Lentic Sites with Emergent Vegetation	014, 020, 094, 099, 100
Permanent Lentic Sites without Emergent Vegetation	001, 003, 008, 015, 016, 018, 019, 021

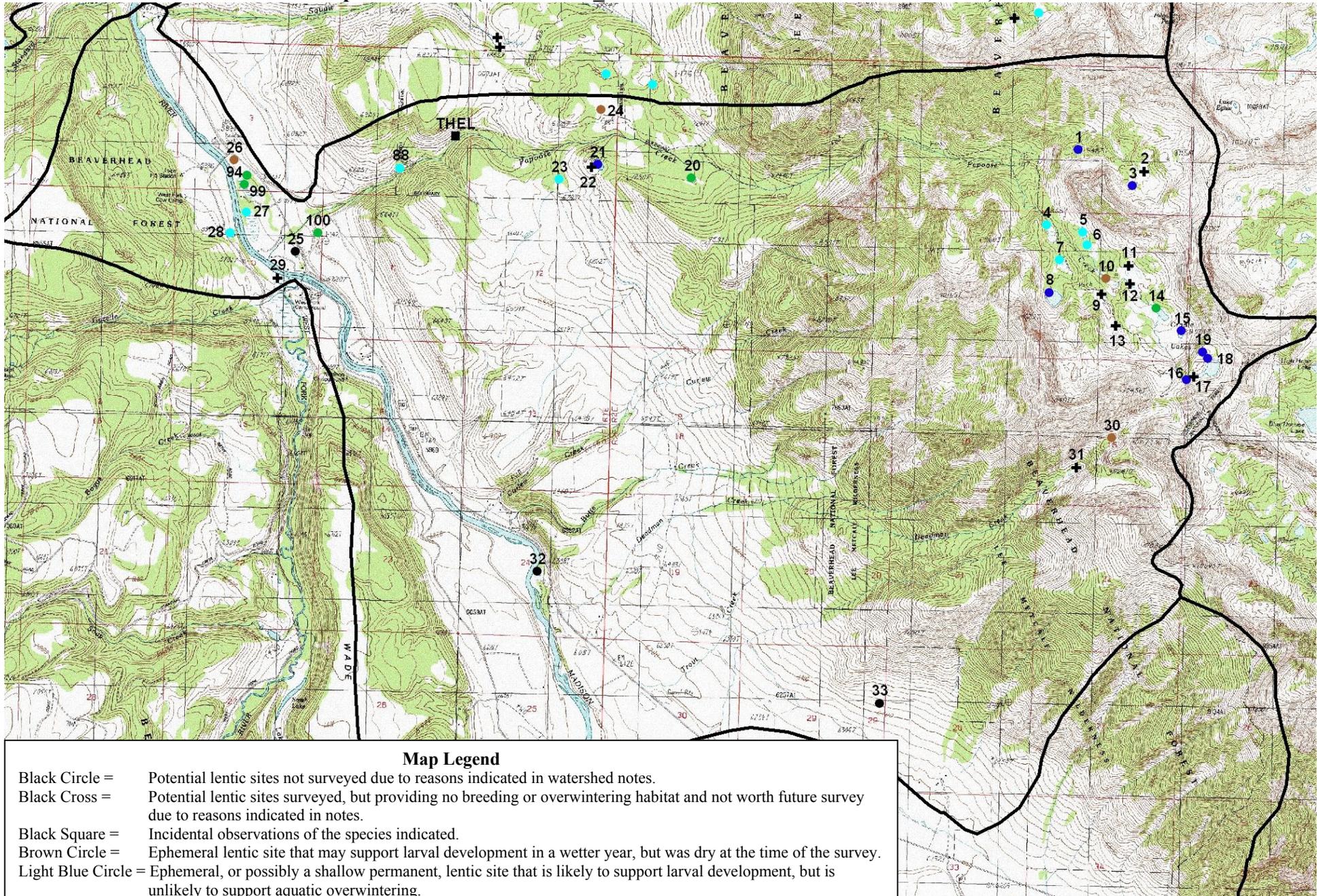
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Tiger Salamander (AMTI)</b>	<u>021</u>	1 (5%)	1 (5%)	-
<b>Columbia Spotted Frog (RALU)</b>	020, <u>021</u> , <u>027</u> , 028, <u>094</u> , 099	6 (29%)	3 (14%)	-
<b>Terrestrial Gartersnake (THEL)</b>	094, 100	2 (10%)	-	-
<b>Incidental Herpetofauna Observations</b>	2 x observation of Columbia Spotted Frog (RALU) 1 x observation of Terrestrial Gartersnake (THEL)	-	-	-
<b>Fish Detected</b>	008 (Yellowstone Cutthroat Trout) <sup>6</sup> , 018 (Yellowstone Cutthroat Trout), 020 (unknown), 099 (Rainbow Trout), 100 (Westslope Cutthroat Trout)	5 (38%) <sup>5</sup>	-	-

Notes:

- Sites 025, 032, and 033 are on private land and were not surveyed in 2002.
- Sites 002, 011, 012, 013, 017, 022, and 031 were lentic sites, but would not hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Site 029 was not a lentic site, only had flowing water through old beaver channels, and is not worth future survey.
- Other potential aquatic overwintering areas in this watershed are the Madison River within the watershed boundary and Papoose Creek below site 004.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- The DFWP fish stocking database has a record of stocking 13,064 brown trout in Squaw Creek on 7/22/1947, a record of stocking 8,800 cutthroat trout in Papoose Creek on 8/28/1931, 9 different records of stocking rainbow trout and 3 different records of stocking cutthroat trout in the West Fork of the Madison River between 1931 and 1960, a record of stocking rainbow trout and a record of stocking cutthroat trout in Trout Creek in 1948, 5 different records of stocking Yellowstone cutthroat trout in the unnamed lake on upper Papoose Creek (site 008) between 1977 and 1993, and 5 different records of stocking Yellowstone cutthroat trout in the uppermost Cradle Lake (site 018) between 1977 and 1991.
- Site 088 was noted as having been heavily impacted by grazing.

## Papoose Creek - (HUC ID = 6 997 & ICBEMP HUC ID = 100200071501)



### Map Legend

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Black Square = Incidental observations of the species indicated.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

**Squaw Creek - (HUC ID = 6\_998 & ICBEMP HUC ID = 100200071502)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	41
Number of Wet Lentic Sites	24
Number of Dry Lentic Sites	4
Number of Potential Lentic Overwintering Sites	13

Number of Fishless Potential Lentic Overwintering Sites	9
Potential Lentic Overwintering Sites	003, 007, 008, 009, 010, 011, 012, 014, 015, 016, 027, 030, 033
Permanent Lentic Sites with Emergent Vegetation	003, 030, 033
Permanent Lentic Sites without Emergent Vegetation	007, 008, 009, 010, 011, 012, 014, 015, 016, 027

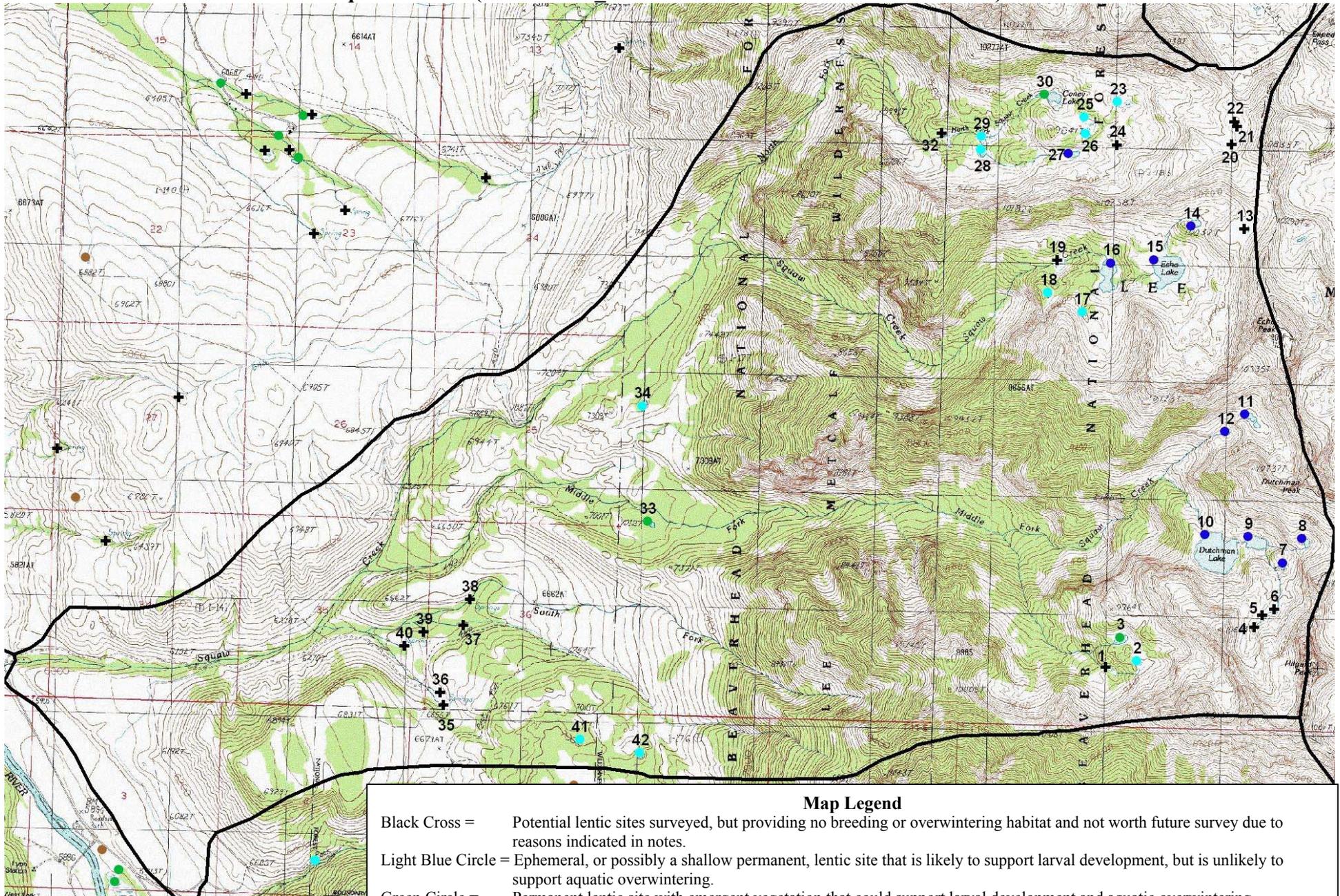
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	028, 029, <u>033</u> , <u>034</u> , <u>042</u>	5 (21%)	3 (13%)	-
<b>Incidental Herpetofauna Observations</b>	1 x observation of terrestrial gartersnake (THEL)	-	-	-
<b>Fish Detected</b>	009 (unknown), 010 (unknown), 015 (Yellowstone Cutthroat Trout) <sup>7</sup> , 016 (Yellowstone Cutthroat Trout)	4 (31%) <sup>5</sup>	-	-

Notes:

- Sites 030 and 031 were combined under site number 030.
- Sites 001, 004, 005, 006, 019, 032, 035, 036, 038, and 039 are not lentic sites, have no place for water to pool, and are not worth future survey.
- Sites 013, 020, 021, 022, 024, 037, and 040 are lentic, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
- Other potential aquatic overwintering areas in this watershed are Squaw Creek below sites 010, 019, and 032.
- Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
- Columbia spotted frog (RALU) juveniles and adults were observed at the North Fork of Squaw Creek near Coney Lake (site 030) by Dave Browning on 9/10/1996; and an adult was observed on the Middle Fork of Squaw Creek by Dave Browning on 8/30/1998.
- The DFWP fish stocking database has 5 different records of stocking Yellowstone cutthroat trout and 1 record of stocking rainbow trout in Echo Lake (site 015) between 1977 and 1997, 6 different records of stocking Yellowstone cutthroat trout in Upper Dutchman Lake (site 009) between 1977 and 1995, and 6 different records of stocking Yellowstone cutthroat trout in Lower Dutchman Lake (site 010) between 1977 and 1997.
- Sites 034, 036, and 040 were noted as having been heavily impacted by grazing.

# Squaw Creek - (HUC ID = 6 998 & ICBEMP HUC ID = 100200071502)



## Map Legend

- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.

**Moose Creek - (HUC ID = 6\_999 & ICBEMP HUC ID = 100200071401)**

**2002 Water Body and Survey Summary**

Number of Potential Lentic Sites Surveyed	31
Number of Wet Lentic Sites	15
Number of Dry Lentic Sites	6
Number of Potential Lentic Overwintering Sites	8

Number of Fishless Potential Lentic Overwintering Sites	3
Potential Lentic Overwintering Sites	009, 010 (marginal), 011, 015, 018, 019, 083, 089
Permanent Lentic Sites with Emergent Vegetation	009, 011, 015, 018, 019, 083, 089
Permanent Lentic Sites without Emergent Vegetation	010

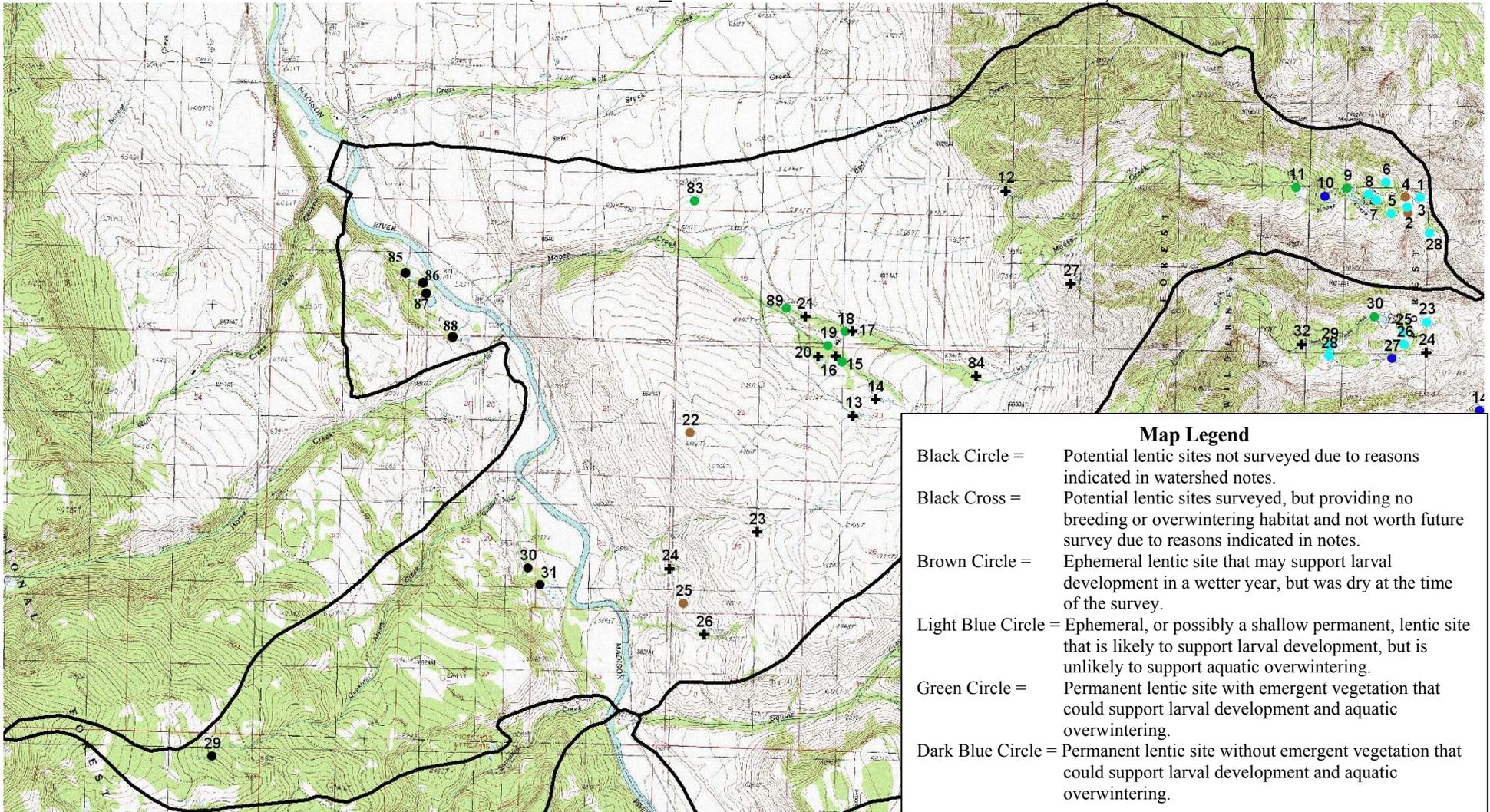
**2002 Species Detection Summary**

Species	Lentic Sites Where Detected (Underlined = breeding)	Number and % of Lentic Sites Where Detected	Number and % of Lentic Sites with Breeding Detected	Comments
<b>Columbia Spotted Frog (RALU)</b>	009, <u>011</u> , <u>015</u> , <u>018</u> , 019, 083, 089	7 (47%) <sup>6</sup>	3 (20%)	-
<b>Terrestrial Gartersnake (THEL)</b>	015	1 (7%)	-	-
<b>Incidental Herpetofauna Observations</b>	5 x observations of Columbia Spotted Frogs (RALU) <sup>6</sup>	-	-	-
<b>Fish Detected</b>	009 (Yellowstone Cutthroat Trout), 010 (Yellowstone Cutthroat Trout), 011 (Yellowstone Cutthroat Trout), 015 (unknown), 089 (Yellowstone Cutthroat Trout)	5 (63%) <sup>8</sup>	-	-

Notes:

1. Site 029 was not surveyed in 2002 because of logistics of accessing this isolated spring.
2. Sites 030, 031, 085, 086, 087, and 088 are on private land and were not surveyed in 2002.
3. Sites 012, 024, 026, and 027 are not lentic sites, are springs (wet and dry) with no place for water to pool, and are not worth future survey.
4. Sites 013, 014, and 023 are lentic sites, but would never hold enough water long enough to support amphibian reproduction and are not worth future survey.
5. Sites 016, 017, 020, 021, and 084 are not lentic sites, are old breached beaver dams with nothing but flowing water, and are not worth future survey.
6. Although Columbia spotted frog (RALU) adults and juveniles were found at sites 016, 020, and 084, these sites were old breached beaver dams with no lentic habitat so were treated as incidental observations.
7. Other potential aquatic overwintering areas in this watershed are the Madison River within the watershed boundary and Moose Creek below site 011.
8. Number of potential lentic overwintering sites (i.e. those capable of supporting fish) was used to calculate percentage of sites occupied by fish.
9. The DFWP fish stocking database has 6 different records of stocking in Finger Lake (site 009) between 1976 and 1997, single records of stocking rainbow trout, cutthroat trout and brown trout in Moose Creek between 1932 and 1950, and 2 different records of stocking rainbow trout and 1 record of stocking cutthroat trout in Horse Creek between 1931 and 1951.

Moose Creek - (HUC ID = 6\_999 & ICBEMP HUC ID = 100200071401)



**Map Legend**

- Black Circle = Potential lentic sites not surveyed due to reasons indicated in watershed notes.
- Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.
- Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.
- Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.
- Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.
- Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.