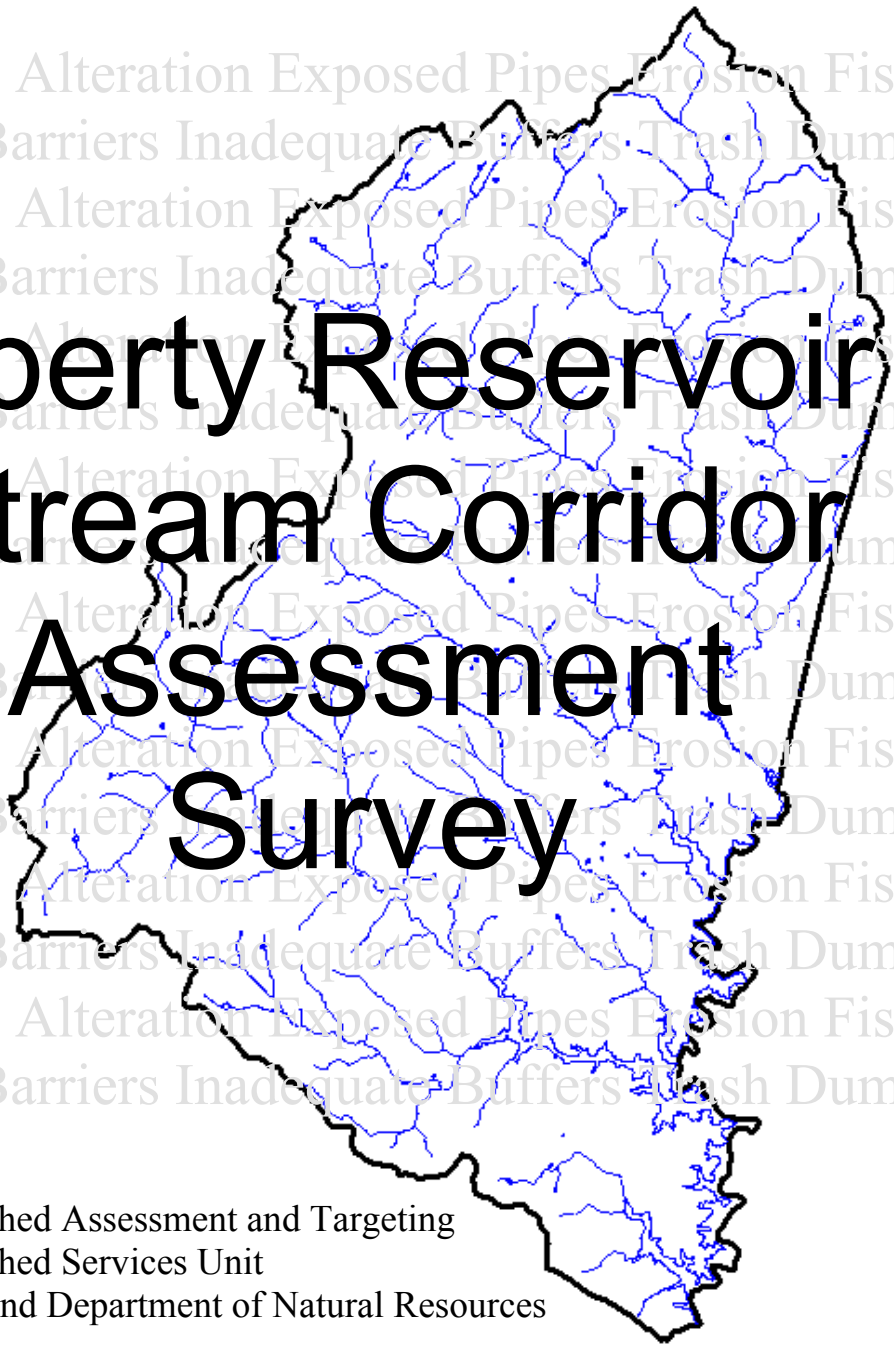
Liberty Reservoir Stream Corridor Assessment Survey



Watershed Assessment and Targeting
Watershed Services Unit
Maryland Department of Natural Resources

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Liberty Reservoir
STREAM CORRIDOR ASSESSMENT SURVEY

BY

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SUMMARY

The Liberty Reservoir watershed encompasses over 104,802 acres (164 mi^2). Approximately 83% of the land in the watershed is in Carroll County, Maryland, with the remaining 17% in Baltimore County, Maryland. This survey focuses only on the area lying within Carroll County. In 1998, the Maryland Clean Water Action Plan identified the Liberty Reservoir watershed as one of the State's water bodies that did not meet water quality requirements. In response to this finding, the Maryland Department of Natural Resources and Carroll County formed a partnership to develop a Watershed Restoration Action Strategy (WRAS) for the Liberty Reservoir Watershed. As part of the WRAS development process, a Stream Corridor Assessment (SCA) survey was performed on three sub-watersheds: Middle Run, Snowden's Run, and the West Branch of the Patapsco River. The survey began in April 2002 and was completed by October 2002.

The SCA survey was developed by the Watershed Assessment Division of the Maryland Department of Natural Resources to provide a rapid examination of the stream network in a watershed. The survey is done using specially trained field teams that walked the entire stream network and note the location of a variety of potential environmental problems. As part of the survey, field teams also collected some basic information about stream habitat conditions at regular intervals. This survey is not intended to be a detailed scientific evaluation, and the data collected about any specific problem is limited. Instead, the survey is designed to give an overview of the condition of the stream system so that future restoration efforts can be better targeted.

Approximately 121 miles of streams were surveyed, and 497 potential environmental problems were identified. The most common environmental concern seen during the SCA survey was erosion, which was reported at 150 sites. Other potential environmental problems identified during the survey include: 125 pipe outfalls, 114 inadequate buffers, 32 fish barriers, 22 trash dumping sites, 21 channel alterations, 18 unusual conditions, 12 exposed pipes, and 3 in/near stream construction sites.

At each site, data was collected about the problem, its location noted on field maps, and photographs taken to document existing conditions. To aid in prioritizing future restoration work, field crews rated all problem sites on a scale of 1 to 5 in three categories. They were: 1) the severity of the problem, 2) how correctable the specific problem was, and 3) how accessible the site was. Field teams also collected information on both in and near stream habitat conditions at 91 representative sites that were spaced at approximately ½ to ¾ mile intervals along the streams.

The SCA survey was specifically developed as a watershed management tool. One of the main goals of the SCA survey is to compile a list of observable environmental problems so that future restoration efforts can be better targeted. It is hoped that once a list of environmental problems has been compiled, a dialog can be initiated among resource managers on the goals and targets of future environmental restoration efforts in the Liberty Reservoir Watershed. It is important to note that all of the problems identified as part of the Liberty Reservoir Stream Corridor Assessment survey can be addressed through existing State or Local government programs. The value of the present survey is that it can help to place the problems in a watershed context and can be used by a variety of resource managers to plan future restoration work. Results of the present survey will be given to the Liberty Reservoir WRAS committee, which is developing a Watershed Restoration Action Strategy for the Liberty Reservoir. Information on the Liberty Reservoir Watershed Action Strategy can be found on DNR's website (www.dnr.state.md.us/watersjeds/surf/proj/wras.html).

ACKNOWLEDGMENTS

Without the hard work of the Echo Lake Crew of the Maryland Conservation Corps, this survey would not have been possible. The crew chief during the survey was Brian Parrill. The crewmembers were Paul & Stephanie Clute, Jen Grau, Kyle & Melissa Rickert, and Tina Saunders.

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INTRODUCTION

In 1998, Maryland's Clean Water Action Plan identified bodies of water that failed to meet water quality requirements or other natural resource goals. One of the areas identified in the report was the Liberty Reservoir watershed. The watershed encompasses approximately 104,802 acres in the upland section of the Piedmont Plateau Province of Maryland. A map showing the location of the Liberty Reservoir Watershed is presented in Figure 1. Approximately 83% (87,040 acres) of the watershed lies in Carroll County with the remaining 17,762 acres in Baltimore County, Maryland (Shanks, 2001). In response to the findings of the Maryland Clean Water Action Plan, the Maryland Department of Natural Resources has formed a partnership with Carroll County to work together to assess and improve environmental conditions in the Liberty watershed. The main goals of this partnership are to develop and implement a Watershed Restoration Action Strategy (WRAS) for the Liberty Reservoir watershed.

The first step in developing a Restoration Action Strategy for the Liberty Reservoir Watershed is to do an overall assessment of the condition of the watershed and the streams within it. This initial step is being accomplished using three approaches. First, a watershed characterization was done that compiles and analyzes existing water quality, land use, and living resources data about the Liberty Reservoir watershed (Shanks, 2002). Second, a synoptic water quality survey, as well as surveys of the fish and macro invertebrate communities at selected stations throughout the Liberty Reservoir Watershed were done to provide information on the present condition of aquatic resources in the watershed (Primrose, 2002). While both these approaches provide good overall information on environmental conditions within the Liberty Reservoir watershed, for the most part, information on the causes or location of specific environmental problems is limited. To provide specific information on the present location of environmental problems and restoration opportunities, a Stream Corridor Assessment (SCA) survey of the Liberty Reservoir Watershed was also done.

The Stream Corridor Assessment survey has been developed by DNR's Watershed Assessment Division as a watershed management tool to identify environmental problems and help prioritize restoration opportunities on a watershed basis. As part of the survey, members of the Watershed Assessment Division along with specially trained personnel walk the watershed's entire stream network and record information on a variety of environmental problems that can be easily observed within the stream corridor.

The Liberty Reservoir watershed in Carroll County contains 87,040 acres (136 mi^2) of land. Approximately 43% (37,758 acres) of the land in the watershed is categorized as agricultural land, 27% (8,750 acres) of land is forested and 23% (5,719 acres) is designated as urban (Shanks, 2001). Due to funding and time limitations, the SCA survey was done in three sub-watersheds. The sub-watersheds were chosen by the WRAS committee and included Middle Run, Snowden's Run and the West Branch of the Patapsco River in Carroll County Maryland. The targeted area encompasses 25,200 acres (39 mi^2) of land. Middle Run contains 5,400 acres, Snowden's Run contains 4,400 acres, and the West Branch contains 15,400 acres. There are approximately 121 miles of stream within the three sub-watersheds. Survey teams walked all 121 miles over a 7-month period from April 2002 to October 2002. A digital orthophoto map of the Middle and Snowden's Run and West Branch sub-watersheds is shown in Figure 2. Figure 3 shows the same watershed boundaries superimposed on a seven and ½ minute USGS topographic quadrangle maps.

As mentioned earlier, the Maryland Department of Natural Resources is working with Carroll County to develop a Watershed Restoration Action Strategy (WRAS) of the Liberty Reservoir Watershed. As part of this process, data collected during the SCA survey will be used to help define present environmental conditions, as well as possible restoration opportunities in the watershed. This information, combined with the watershed characterization, synoptic water quality surveys, recent biological surveys and other local knowledge of the watershed, will be used to develop a Watershed Restoration Action Strategy for the Liberty Reservoir. The Watershed Restoration Action Strategy, in turn, will help guide future restoration efforts with the ultimate goals of restoring the area's natural resources and meeting State water quality standards.

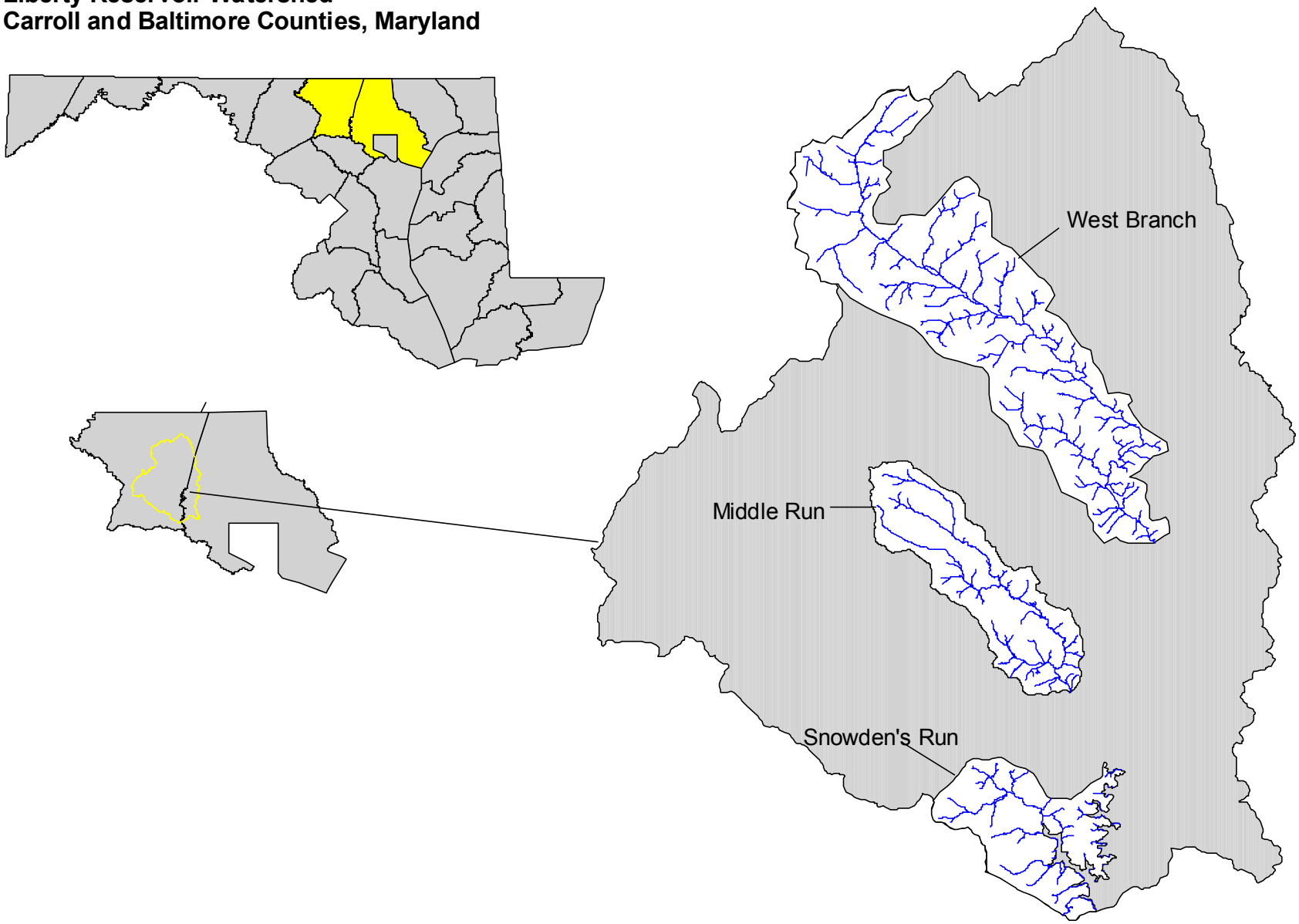

Figure 1: Liberty Reservoir Watershed, Maryland.

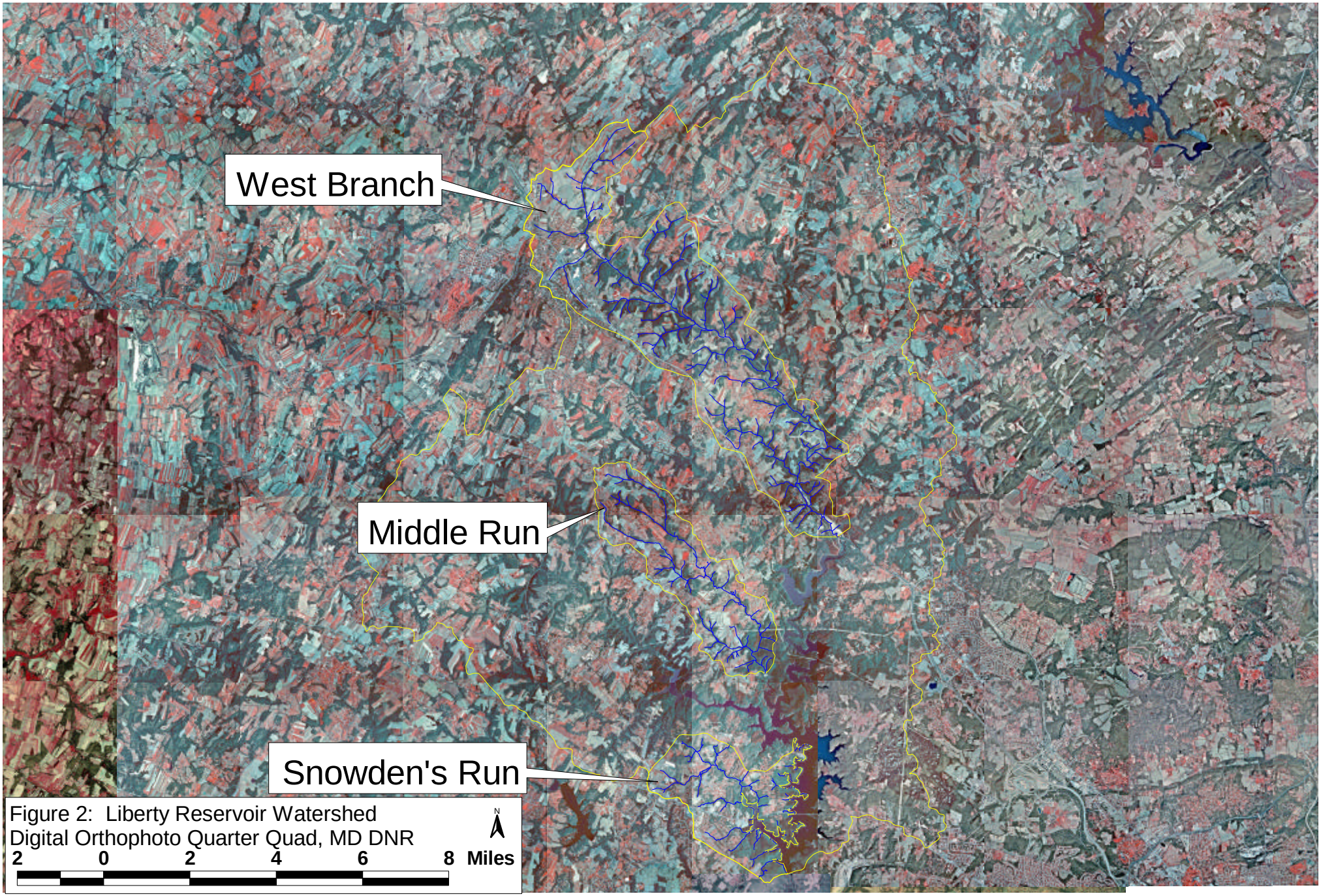

Figure 2: Liberty Reservoir Watershed
Digital Orthophoto Quarter Quad, MD DNR

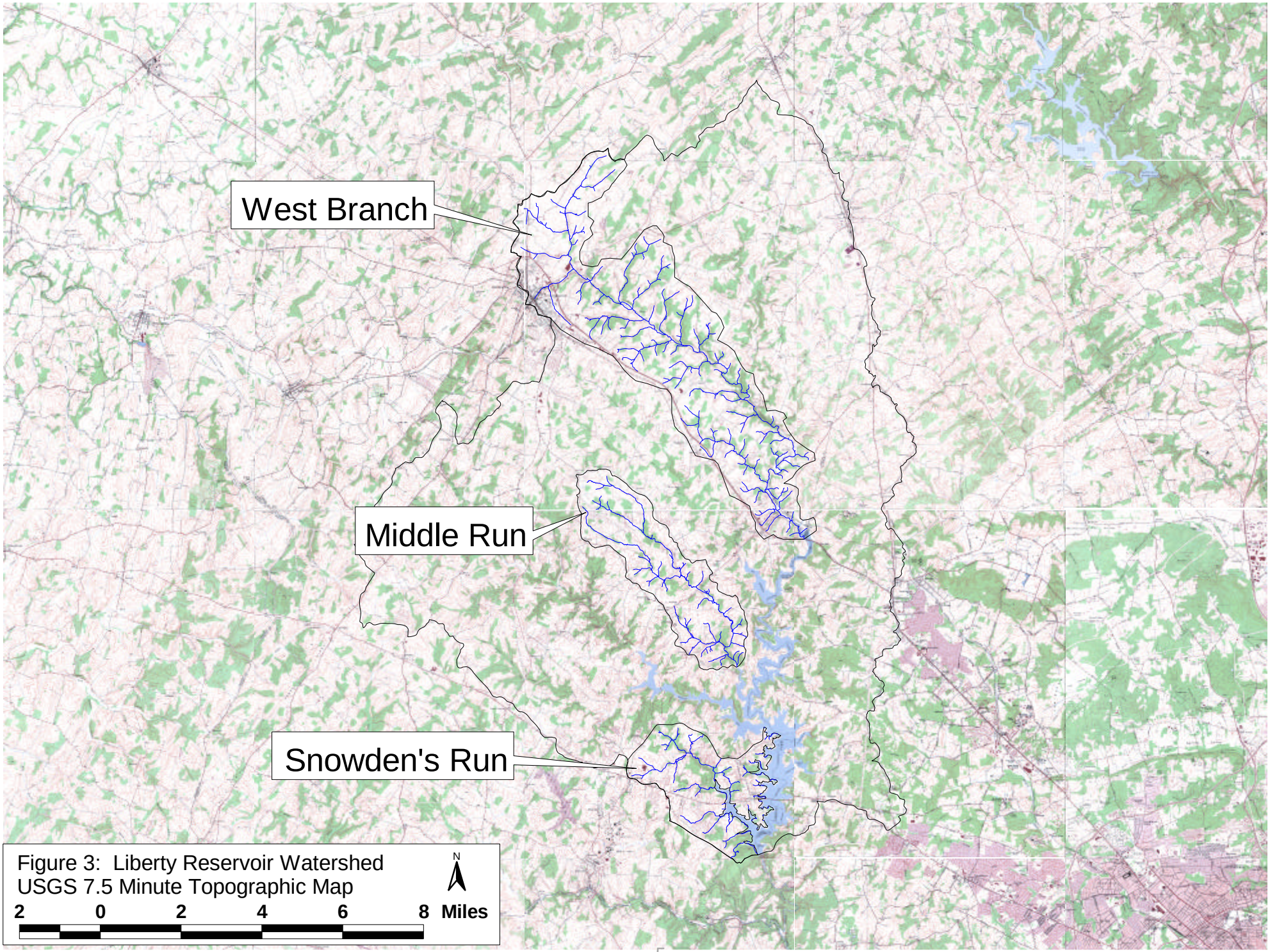

Figure 3: Liberty Reservoir Watershed
USGS 7.5 Minute Topographic Map

METHODS

To help identify some of the common problems that affect streams in a rapid and cost effective manner, the Watershed Assessment Division of the Maryland Department of Natural Resource has been working for the last several years to develop the Stream Corridor Assessment (SCA) survey. The four main objectives of the survey are to provide:

1. A list of observable environmental problems present within a stream system and along its riparian corridor.

2. Sufficient information on each problem so that a preliminary determination of both the severity and correctability of a problem can be made.

3. Sufficient information so that restoration efforts can be prioritized.

4. A quick assessment of both in- and near-stream habitat conditions so that comparative assessments can be made of the condition of different stream segments.

It is important to note that the SCA survey is not intended to be a detailed scientific survey, nor will it replace the more traditional chemical and biological surveys. Instead, the SCA survey provides a rapid method of examining an entire drainage network so that future monitoring, management and/or conservation efforts can be better targeted. One advantage of the SCA survey over chemical and biological surveys is that the SCA survey can be done on a watershed basis both quickly and at a relatively low cost. A copy of the survey protocols is available on DNR web site at http://dnrweb.dnr.state.md.us/download/bays/streams/surveyprotocols2.pdf .

Maryland's SCA survey is really not a new concept but a refinement of an old approach, which in its simplest form is often referred to as a stream walk survey. Many of the common environmental problems affecting streams, such as excessive stream bank erosion or blockages to fish migration, are fairly easy to identify by an individual walking along a stream. Furthermore, an advanced degree in forestry is not needed to identify a stream segment that does not have any trees along its banks, nor does one need a degree in sanitary engineering to see that a sewage pipeline has been exposed by stream bank erosion and is leaking sewage into the stream. With a limited amount of training, most people can correctly identify these common environmental problems.

As mentioned earlier, a walking survey of stream systems is not a new concept, and there have been several attempts to standardize this approach over the years. Many earlier approaches such as EPA's, "Streamwalk Manual" (EPA, 1992), Maryland Save our Stream's "Conducting a Stream Survey," (SOS, 1970) and Maryland Public Interest Research Foundation "Streamwalk Manual" (Hosmer, 1988) were designed to be done by citizen volunteers with little or no training. While these surveys can be a good guide for citizens that are interested in looking at their community streams, the data collected during these surveys can vary significantly based on the background of the surveyor. In the Maryland Save our Stream "Stream Survey," for example, citizen groups are given some guidance on how to organize a survey and are provided a slide show explaining how to do the survey. After approximately one hour of training, citizen volunteers are then sent out in groups to walk designated stream segments. During the survey, volunteers usually walk their assigned stream segment in a couple of hours and return their data sheets to the survey organizers to be analyzed. While these surveys can help make communities more

aware of the problems present in their local stream, citizen groups normally do not have the expertise or resources to properly analyze or fully interpret the information collected. In addition, the data collected is usually only enough to indicate that a potential environmental problem exists at a specific location but does not provide sufficient information to judge the severity of the problem.

Other visual stream surveys, such as the National Resources Conservation Service's "Stream Visual Assessment Protocols" (NRCS, 1998), are designed for trained professionals looking at a very specific stream reach, such as at a stream passing through an individual farmer's property. While this survey can provide useful information on a specific stream segment, it is usually not done on a watershed basis.

The Maryland SCA survey has been designed to bridge the gap between these two approaches. The survey is designed to be done by a small group of well-trained individuals that walk the entire stream network in a watershed. While the individuals doing the survey are usually not professional natural resource managers, they do receive several days of training in both stream ecology and SCA survey methods.

While almost any group of dedicated volunteers can be trained to do a SCA survey, the Maryland Conservation Corps (MCC) has proven to be an ideal group to do this work in Maryland. The Maryland Conservation Corps is part of the AmeriCorps Program, which was started to promote greater involvement of young volunteers in their communities and the environment. DNR's Forest and Park Service manage the MCC program. Volunteers with the MCC are 17-25 years old and can have educational backgrounds ranging from high school to graduate degrees. With the proper training and supervision, these young, intelligent and motivated volunteers are able to significantly contribute to the State's efforts to inventory and evaluate water quality and habitat problems from a watershed perspective. For more information on the Maryland Conservation Corps call their main office in Annapolis at (410) 260-8166 or visit their web site at: www.dnr.state.md.us/mcc.

Prior to the start of the Liberty Reservoir SCA Survey, the members of the MCC's Echo Lake Crew and members of Carroll County's Planning Department received several days of training. As part of this training, crewmembers learn how to identify common problems observable within the stream corridor, how to record problem locations on survey maps and how to fill out data sheets for specific problem. Procedures for documenting general stream conditions at reference sites were also reviewed during training. Reference sites are located at approximately 1/2-mile intervals along the stream. In addition to filling out a half page data sheet, field crews took photographs at all problem and reference sites to help document existing conditions. Detail information on the procedures used in the Maryland SCA survey can be found in, "Stream Corridor Assessment Survey – Survey Protocols" (Yetman, 2001). Copies of the survey protocols can be obtained by contacting the Watershed Assessment Division of the Maryland Department of Natural Resources in Annapolis, MD or can be downloaded from the Department's web site at www.dnr.state.md.us/streams/stream_corridor.html.

Several weeks prior to the beginning of the survey, letters were sent out to individuals who own land along the stream. The letter was used to inform property owners that the survey was being done and asked for their permission for survey crews to cross their properties. Landowners were asked to indicate on an enclosed postcard whether or not the survey crew had their permission to survey the stream on their land. The letter also gave property owners a phone number to call if they did not want more information about the survey. In cases where not return postcard was receive for a property owner, follow-up phone calls were made by Carroll County government personnel. In addition, as part of their training survey

crews were instructed not to cross fence lines or enter any areas that are marked "No Trespassing" unless they have specific permission from the property owner.

Field surveys of the Liberty Reservoir watershed began in April 2002, and over the next seven months the survey teams walked the stream's drainage network collecting information on potential environmental problems. Potential environmental problems commonly identified during the SCA Survey include: channelized stream sections, inadequate stream buffers, fish migration blockages, excessive bank erosion, near stream construction, trash dumping sites, unusual conditions, pipe outfalls. In addition, the survey records information on the location of potential wetlands creation sites and collects data on the general condition of in-stream and riparian habitats.

It is not unusual for an SCA survey to identify large number of problems in each problem category. For example, in an earlier survey of the Swan Creek Watershed in Harford County, a total of 453 potential environmental problems were identified along 96 miles of stream. The most frequently reported problem during the survey was stream bank erosion, which was reported at 179 different locations (Yetman et. al., 1996). Follow up surveys found that while stream bank erosion was a common problem throughout the watershed, the severity of the erosion problem varied substantially among the sites and that the erosion problems at many sites were fairly minor. Based on this experience the SCA survey has field crews evaluate and score all problems on a scale of 1 to 5 in three separate areas: problem severity, correctability, and accessibility. A major part of the crews training is devoted to how to properly rate the different problems identified during the survey.

While the ratings are subjective, they have proven to be very valuable in providing a starting point for more detailed follow-up evaluations. This is because in many cases, resource professionals such as fisheries biologists, foresters, hydrologists and engineers do not have the time to walk hundreds of miles of streams to determine where the problems are. What the SCA survey does is train the MCC and other groups to walk streams for them and collect some very basic information about commonly seen problems. Once the SCA survey has been completed, the data collected can then be used by different resource professionals to help target future restoration efforts. A regional forester for example can use data collected on inadequate stream buffers to help target future riparian buffer plantings, while the local fishery biologist can use the data on fish blockages to help target future fish passage projects to reestablish spawning runs. The inclusion of a rating system in the survey gives resource professional an idea of which sites the field crew believed were the most severe, easiest to correct and easiest to access. This information combined with photographs of the site can help resource managers focus their own follow up evaluations and fieldwork at the most important sites.

A general description of the rating system is given below. More specific information on the criteria used to rate each problem category is provided in the SCA – Survey Protocols (Yetman, 2000). It is important to note that the rating system is designed to contrast problems within a specific problem category. When assigning a severity rating to a site with an inadequate stream buffer for example, the rating is only intended to compare the site to other in the State with inadequate stream buffers. The rating is not intended to be applied across categories. A trash dumping site with a very severe rating may not necessarily be a more significant environmental problem than a stream bank erosion site that received a moderate severity rating.

The **severity rating** has generally been found to be the most useful rating and indicates how bad a specific problem is relative to others in the same problem category. The severity rating is used to answer questions such as, where are the worst stream bank erosion sites in the watershed, or where is

the largest section of stream with an inadequate buffer. The scoring is based on the overall impression of the survey team of the severity of the problem at the time of the survey.

* A very severe rating of 1 is used to identify problems that have a direct and wide reaching impact on the stream's aquatic resources. Within a specific problem category, a very severe rating indicates that the problem is among the worst that the field teams have seen or would expect to see. Examples would include a discharge from a pipe that was discoloring the water over a long stream reach (greater than 1000 ft.) or a long section of stream (greater than 1000 ft.) with high raw vertical banks that appear to be unstable and eroding at a fast rate.

* A moderate severity rating of 3 is used to identify problems that appear to be having some adverse environmental impacts but the severity and/or length of stream affected is fairly limited. While a moderate severity rating would indicate that field crews did believe it was a significant problem, it also indicates that they have seen or would expect to see much worse problems in that specific problem category. Examples would include: a small fish blockage that was passable by strong swimming fish like trout, but a barrier to resident species such as sculpins; or a site where several hundred ft. of stream had an inadequate forest buffer.

* A minor severity rating of 5 is given to problems that do not appear to be having a significant impact on stream and aquatic resources. A minor rating indicates that a problem was present but compared to other problems in the same category it would be considered minor. Examples would include: an outfall pipe from a storm water management structure that is not discharging during dry weather and does not have any erosion problem either at the outfall or immediately downstream, or a section of stream that has stable banks and some trees along both banks but the forest buffer is less than 50 ft..

The **correctability rating** provides a relative measure on how easily the field teams believe the problem can be corrected. The correctability rating can be helpful in determining which problems can be easily dealt with when developing a restoration plan for a drainage basin. One restoration strategy would initially target the severest problems that are the easiest to fix. The correctability rating can also be useful in identifying simple projects that can be done by volunteers, as opposed to projects that require more significant planning and engineering efforts.

* A minor correctability rating of 1 is assigned to problems that can be corrected quickly and easily using hand labor, with a minimum amount of planning. These types of projects would usually not need any Federal, State or local government permits. It is a job that small group of volunteers (10 people or less) could fix in a day or two without using heavy equipment. Examples would be removing debris from a blocked culvert pipe, removing less than two pickup truck loads of trash from an easily accessible area or planting trees along a short stretch of stream.

* A moderate correctability rating of 3 is given to sites that may require a small piece of equipment, such as a backhoe, and some planning to correct the problem. This would not be the type of project that volunteers would usually do by themselves, although volunteers could assist in some aspects of the project, such as final landscaping. This type of project would usually require a week or more to complete. The project may require some local, State or Federal government notification or permits, however, environmental disturbance would be small and approval should be easy to obtain.

* A very difficult correctability rating of 5 is given to problems that would require a large expensive effort to correct. These projects would usually require heavy equipment, significant amount of funding ($100,000.00 or more), and construction could take a month or more. The amount of disturbance would be large and the project would need to obtain a variety of Federal, State and/or local permits. Examples would include a potential restoration area where the stream has deeply incised several ft. over a long distance (i.e., several thousand ft.) or a fish blockage at a large dam.

The **accessibility rating** is used to provide a relative measure of how difficult it is to reach a specific problem site. The rating is made at the site by the field survey team, using their field map and field observations. While factors such as land ownership and surrounding land use can enter into the field judgments of accessibility, the rating assumes that access to the site could be obtained if requested from the property owner.

* A very easy accessibility rating of 1 is assigned to sites that are readily accessible both by car and on foot. Examples would include a problem in an open area inside a public park where there is sufficient room to park safely near the site.

* A moderate accessibility rating of 3 is assigned to sites that are easily accessible by foot but not easily accessible by a vehicle. Examples would include a stream section that could be reached by crossing a large field or a site that was accessible only by 4-wheel drive vehicles.

* A very difficult accessibility rating of 5 is assigned to sites that are difficult to reach both on foot and by a vehicle. Examples would include a site where there are no roads or trails nearby. To reach the site it would be necessary to hike at least a mile. If equipment were needed to do the restoration work, an access road would need to be built through rough terrain.

Following the completion of the survey, information from the field data sheets were entered into a Microsoft Access database and verified by the field teams. In addition, the 513 photographs were taken during the survey were labeled and organized by site number in a binder. The photographs were also digitized using a flat bed scanner and placed on a photo CD so they can be distributed to interested parties. Finally, all data collected during the survey was incorporated into an ArcView Geographic Information System (GIS). A final copy of the ArcView files was given to the Carroll County Planning Department for their use in developing a Watershed Action Strategy for the Liberty Reservoir.

RESULTS

The Stream Corridor Assessment survey of Middle and Snowden's Run, and West Branch sub-watershed started in April 2002, and field data collection was completed by October 2002. An overall summary of survey results is presented in Table 1. Tables 2, 3, and 4 summarize the data by sub-watershed. All data collected during the survey is presented in Appendices A and B. Appendix A provides a listing of information by problem number along with its location, using Maryland State Plane 83 meter coordinates. Information in this format is useful when working with maps showing the location of problem sites to determine what problems may be present along a specific stream reach. In Appendix B, the data is presented by problem type, with more detailed information about each problem. Presenting the data by problem type allows the reader to see which problems the field crews rated the most severe or easiest to fix within each category.

Table 1: Summary of results from the Liberty Reservoir SCA Survey.

Potential Problems Identified	Number	Estimated Length	Very Severe	Severe	Moderate	Low Severity	Minor
Channel Alterations	21	1,390ft. (0.26 Miles)	0	1	5	10	5
Erosion Sites	150	117,350ft. (22.23 Miles)	22	28	41	44	15
Exposed Pipes	12	144ft.	1	0	1	7	3
Fish Barriers	32	NA	3	1	13	6	9
In/Near Stream Construction	3	1,100ft. (0.21 Miles)	0	1	0	0	2
Inadequate Buffers	114	96,350ft. (18.25 Miles)	16	15	35	27	21
Pipe Outfalls	125	NA	1	6	32	52	34
Trash Dumping	22	NA	1	2	7	5	7
Unusual Conditions	18	NA	0	4	6	7	1
Total	497		44	58	140	158	97
Comments	26						
Representative Sites	91						

Table 2: Summary of the Middle Run sub-watershed.

Potential Problems Identified	Number	Estimated Length	Very Severe	Severe	Moderate	Low Severity	Minor
Channel Alterations	7	309ft. (0.06 Miles)	0	1	2	0	4
Erosion Sites	38	35,210ft. (6.67 Miles)	4	11	4	13	6
Fish Barriers	9	NA	0	0	4	2	3
Inadequate Buffers	38	23,700ft. (4.49 Miles)	6	1	11	8	12
Pipe Outfalls	18	NA	0	3	5	4	6
Trash Dumping	7	NA	0	1	0	1	5
Unusual Conditions	2	NA	0	1	1	0	0
Total	119		10	18	27	28	36
Comments	6						
Representative Sites	17						

Table 3: Summary of the Snowden's Run sub-watershed.

Potential Problems Identified	Number	Estimated Length	Very Severe	Severe	Moderate	Low Severity	Minor
Channel Alterations	12	231ft. (0.04 Miles)	0	0	2	9	1
Erosion Sites	27	10,310ft (1.95 Miles)	3	0	10	11	3
Exposed Pipes	5	14ft.	1	0	1	2	1
Fish Barriers	5	NA	0	1	1	2	1
Inadequate Buffers	16	11,600ft. (2.20 Miles)	0	3	6	4	3
Pipe Outfalls	21	NA	1		7	4	9
Trash Dumping	4	NA	0	0	4	0	0
Unusual Conditions	5	NA	0	2	1	2	0
Total	95		5	6	32	34	18
Comments	6						
Representative Sites	10						

Table 4: Summary of the West Branch sub-watershed.

Potential Problems Identified	Number	Estimated Length	Very Severe	Severe	Moderate	Low Severity	Minor
Channel Alterations	2	850ft. (0.26 Miles)	0	0	1	1	0
Erosion Sites	85	71,930ft (22.23 Miles)	15	17	27	20	6
Exposed Pipes	7	130ft.	0	0	0	5	2
Fish Barriers	18	NA	3	0	8	2	5
In/Near Stream Construction	3	1,100ft. (0.21 Miles)	0	1	0	0	2
Inadequate Buffers	60	96,350ft. (18.25 Miles)	10	11	18	15	6
Pipe Outfalls	86	NA	0	3	20	44	19
Trash Dumping	11	NA	1	1	3	4	2
Unusual Conditions	11	NA	0	1	4	5	1
Total	283		29	34	81	96	43
Comments	14						
Representative Sites	64						

Erosion Sites

Erosion is a natural process, and it is necessary to maintain good aquatic habitat in a stream. Too much erosion, however, can have the opposite effect, destabilizing stream banks, destroying in-stream habitat and causing significant sediment pollution problems downstream. Severe erosion problems occur when a stream's hydrology, geometry and/or sediment supply have been significantly altered. This often occurs when land use in a watershed changes. Increases in the amount of impervious surfaces, construction in the floodplain and alterations to channel alignments can all destabilize stream banks. These activities can set off a series of channel readjustments that can extend over decades. During this time excessive amounts of sediment from the unstable eroding stream banks can have very detrimental impacts on the stream's aquatic resources.

In this survey, unstable eroding streams are defined as areas where the stream banks are almost vertical and the roots from the vegetation along the stream's banks are unable to hold the soil onto banks. Unstable eroding stream banks were reported at 150 sites. The locations of bank erosion sites are shown in Figures 4b, 4c, and 4d, while severities can be seen in Figure 4a. It is important to note that the SCA survey is only a visual survey of the stream network. While survey teams are asked to comment whether they believed the stream was down-cutting, widening, or headcutting at a specific site, the only way to really know the full significance of the erosion processes at a specific site is to do more detailed monitoring over time.

Erosion sites were spread throughout the sub-watersheds that were surveyed with 85 reported erosion sites in West Branch, 38 being reported in the Middle Run, and 27 in Snowden's Run. The lengths of the erosion sites reported ranged from 10 ft. to 4,778 ft with heights ranging from 1ft to 18 ft. Widening was cited as the type of erosion in 91 of the sites reported. Downcutting was reported at 35 sites, headcutting at 8, and unknown at 17. The most frequently reported causes for erosion were: land use changes upstream (63), bend at steep slope (30), road crossing (15), presence of livestock in the stream (5), channelization upstream (6), pipe outfalls (4), road runoff (2), railroads (2) and stormwater (2). Other causes found include: disturbance from housing and housing disturbances, golf course, land use change downstream, old agricultural field, snag in the river, and causes unknown (14).

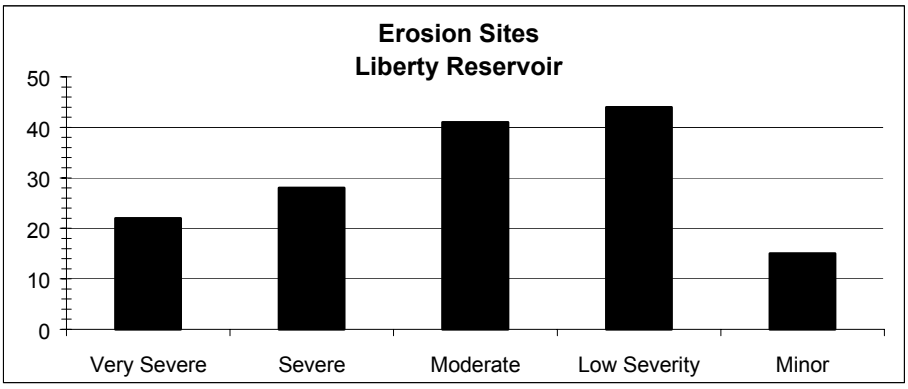

Figure 4a: Histograph showing the frequency of severity ratings given to stream bank erosion sites during the Liberty Reservoir SCA Survey.

Middle Run

Middle Run contains 38 erosion sites as identified by this survey. Four of these erosion sites were given very severe ratings. At site 122201, the survey crew reported that the stream appeared to be widening causing severe erosion, especially on the bends at steep slopes. The average height of the banks was 6 ft. and the erosion problems ran for approximately 3,000 ft. with forest on both sides of stream. At site 126103 average bank heights were reported to be 4 ft. and erosion problems could be seen over approximately 3,500 ft. long section of stream with a headcut at the upper end of the site. The erosion site was in a pasture, and livestock were present. At site 142103, the average heights of the stream bans were 4 ft. and the problem extended over a 1,300 ft. section of stream. Field crews reported lawn and pasture to be the dominant adjacent land use. Finally, at site 150103, the field crew found a 1000 ft. section of stream with 6 ft. high banks running through a forested area.

Snowden's Run

Snowden's Run contains 27 erosion sites as identified by this survey. Three of these erosion sites were given very severe ratings. At site 008101, the average height of the stream banks was 5 ft. and the problem extended for approximately 1,200 ft. with forest present on both sides of the stream. At site 014203, the stream banks were 4 ft. tall and the erosion problem extended along a 1,100 ft. long section of stream with crop fields present of both sides of the stream. At site 046201, the stream banks were 6.5 ft. tall and the erosion problem extended for approximately 1,400 ft. below a road crossing. Multiflora rose was reported to be the dominant vegetation on both sides of the stream.

West Branch

Eighty-five erosion sites were identified in the West Branch sub-watershed. Fifteen of these sites were given very severe ratings, and another 17 were given severe ratings. The very severe sites ranged in length from 1,000 ft. to 3,650 ft., and in height from 4 ft. to 10 ft. These sites were evenly spread out in the sub-watershed and were found mostly in forest areas (10). The location of these sites can be found on figure 5c. For the erosion sites that received a severe rating, most were based on height of the banks and the length of stream with unstable banks. Bank heights ranged from 2 to 18 ft. and stream lengths ranged from 45 to 4,778 ft. Most of these sites were in forested areas, and two of the sites, 341202 and 341203, appear to be on city owned land (Fallow site). At three sites, however, the severe rating was given in part because field crews believe that the erosion problem could eventually affect community infrastructure. The three sites were 328203, 332204, and 332208. All three sites had railroad tracks cited as the infrastructure at risk.

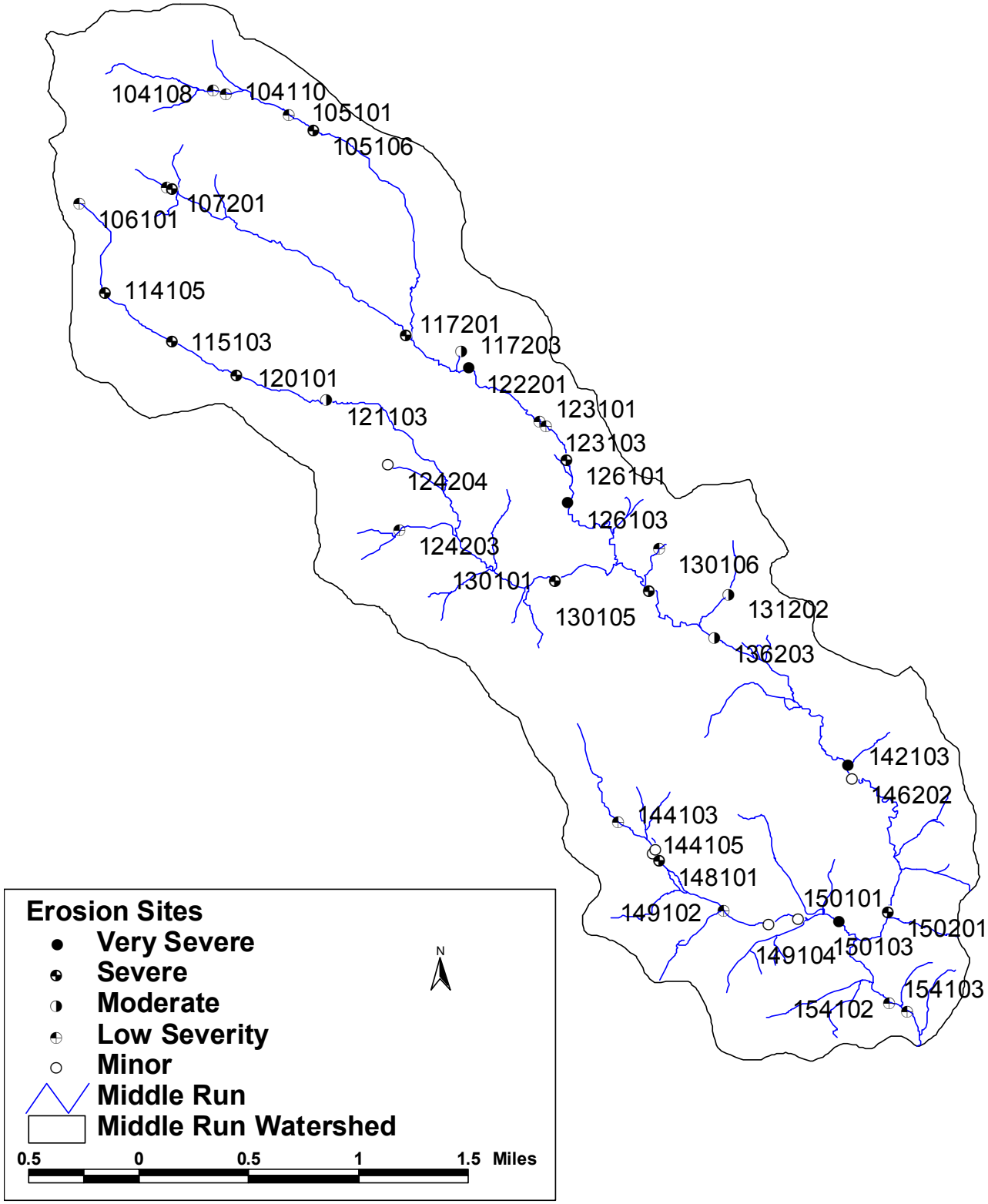

Figure 4b: Middle Run Erosion Site Locations.

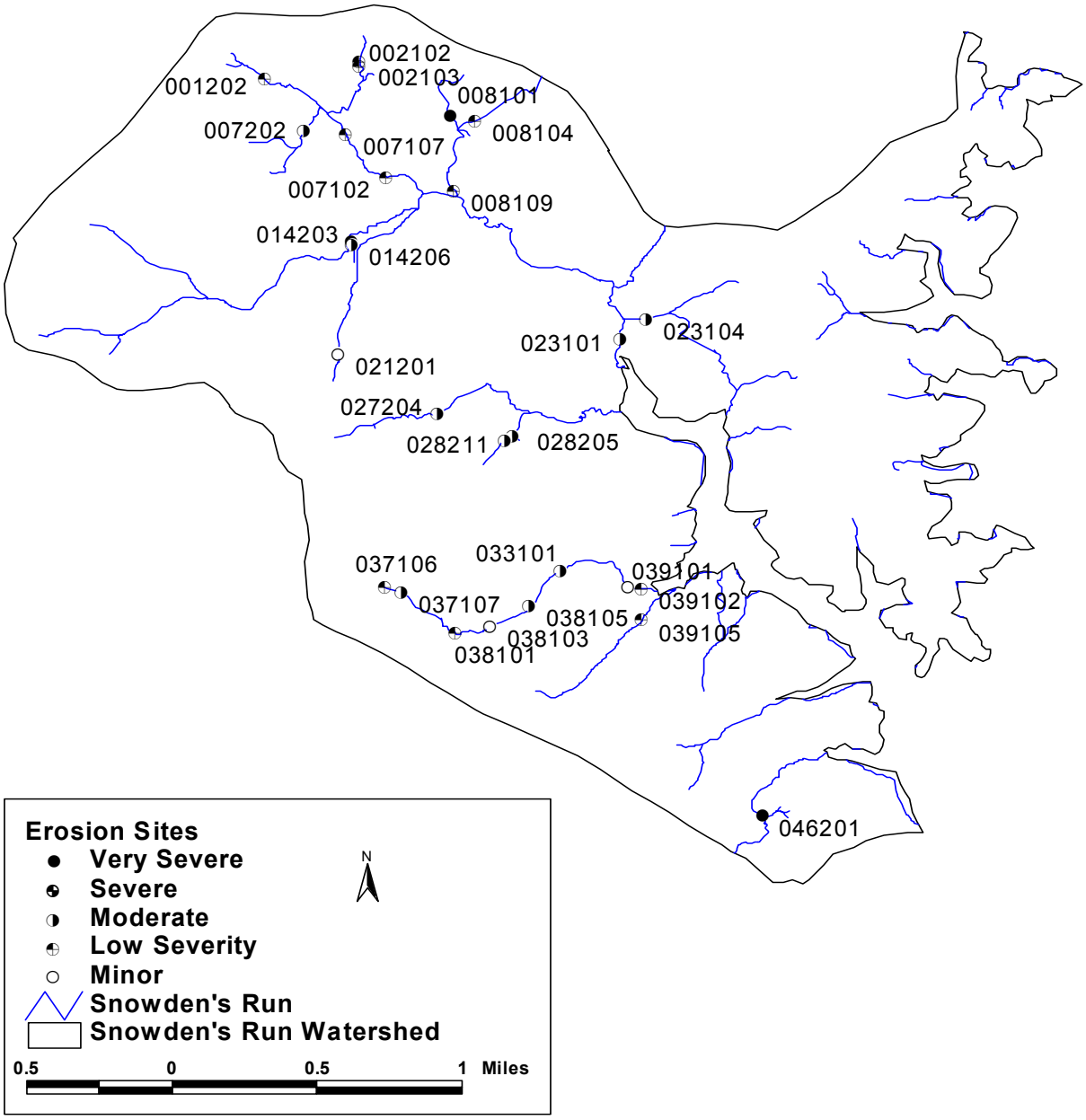

Figure 4c: Snowden's Run Erosion Site Locations.

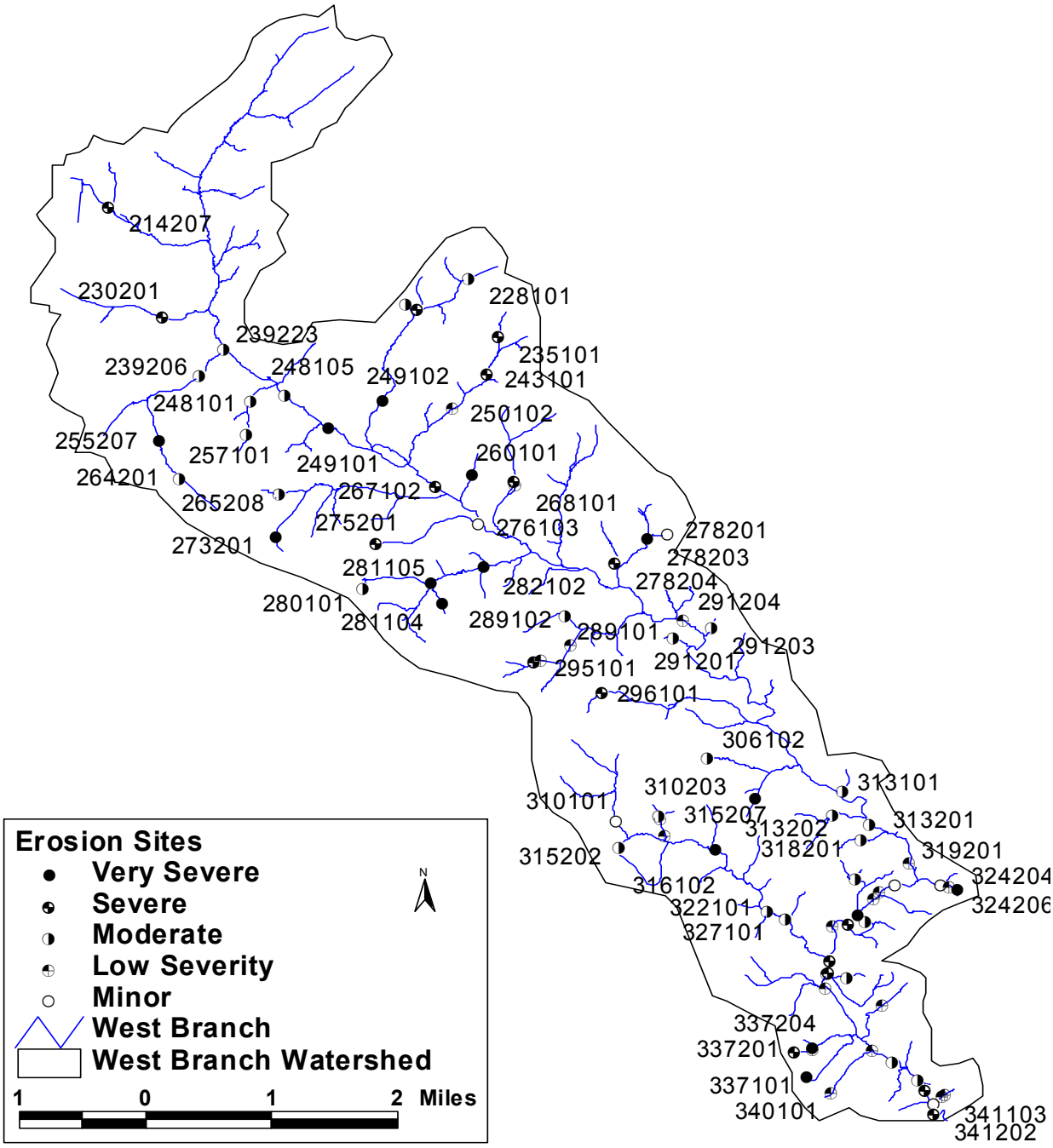

Figure 4d: West Branch Erosion Sites Locations.

Pipe Outfalls

Pipe outfalls include any pipes or small man made channels that discharge into the stream through the stream corridor. Pipe outfalls are considered a potential environmental problem in the survey because they can carry uncontrolled runoff and pollutants such as oil, heavy metals and nutrients to a stream system. One hundred and twenty five pipe outfalls were identified during the Liberty Reservoir survey. The location of these pipes can be seen in Figures 5b, 5c, and 5c.

Fifty percent (63) of the pipe outfalls observed in the survey had a discharge coming out of them. Of these, only 7 had an odor or coloration associated with the outfall (Appendix C). The remaining discharges were reported as having a clear discharge with no odor. Descriptions of the discharge found in the Middle and Snowden's Run sub-watersheds include medium brown, brown, foamy and algae. One pipe was found to contain musky and fishy odors. The most frequently reported type of outfall was stormwater at 73 sites. There were no estimates of the amount of fluid discharging from the pipes. No immediate follow up actions were taken as part of this study to determine the source of color or odor discharging from the pipes. In some cases, coloration or smell from a storm drainpipe may be a sporadic occurrence. This is especially true in areas where there is no stormwater management system present. (Yetman, Rice, Pellicano, 2002)

Severity ratings for pipe outfalls were given based on outfall type, discharge, type of discharge, and location in the watershed of the outfall. In the Liberty Reservoir SCA Survey, 1 pipe outfall was given a very severe rating, along with 6 severe, 32 moderate, 52 low severity, and 34 minor sites (Figure 5a).

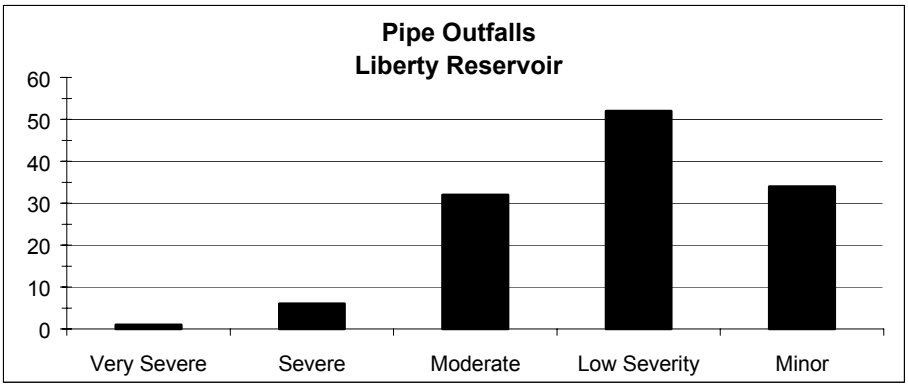

Figure 5a: Histograph showing the frequency of severity ratings given to Pipe outfall sites during the Liberty Reservoir SCA survey.

Middle Run

The SCA survey identified 19 pipe outfalls in the Middle Run sub-watershed. Three pipes were given severe ratings. No pipes in this sub-watershed were given a very severe rating. At site 136204, a 4 in. diameter metal pipe was reported to have a medium brown discharge. At site 140103 and 140104, field crew found a 12 in. diameter corrugated metal pipe and a 4 in. smooth metal pipe discharging algae and foam.

Snowden's Run

Twenty-one pipe outfalls were found in the Snowden's Run sub-watershed. One of these (020203) was given a very severe rating. At site 020203, a 36 in. diameter concrete pipe at the head of a tributary was reported to have a discharge with a fishy and musky odor. All other pipes found in Snowden's Run were given moderate to minor severity ratings.

West Branch

A total of 86 pipes outfalls were identified in the West Branch sub-watershed. Sixty percent of these pipes (52) can be found on the two tributaries flowing into the northeastern part of the town of Westminster. The remaining 34 pipes can be found spread out evenly over the whole sub-watershed. Three pipes in the West Branch were given severe ratings. No pipes in this sub-watershed were given a very severe rating. At site 246218, a concrete channel was reported to have a medium brown discharge with no odor associated with it. At site 255205, field crew found a 36-in. diameter concrete pipe with a medium brown discharge and a musky odor. Finally, at site 335210 multiple smooth metal 6 in. diameter pipes observed with a medium brown discharge coming out of them.

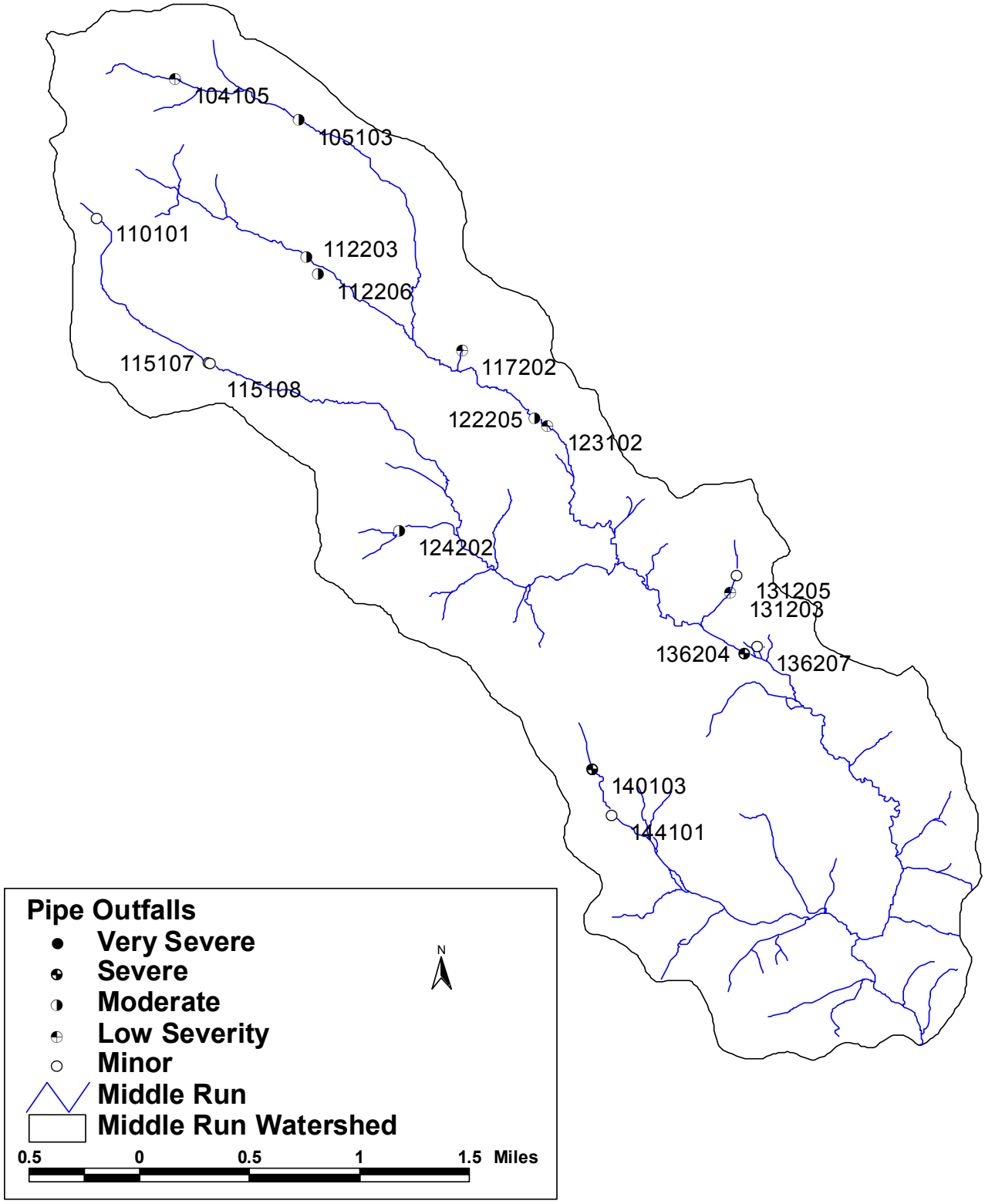

Figure 5b: Middle Run Pipe Outfall Locations.

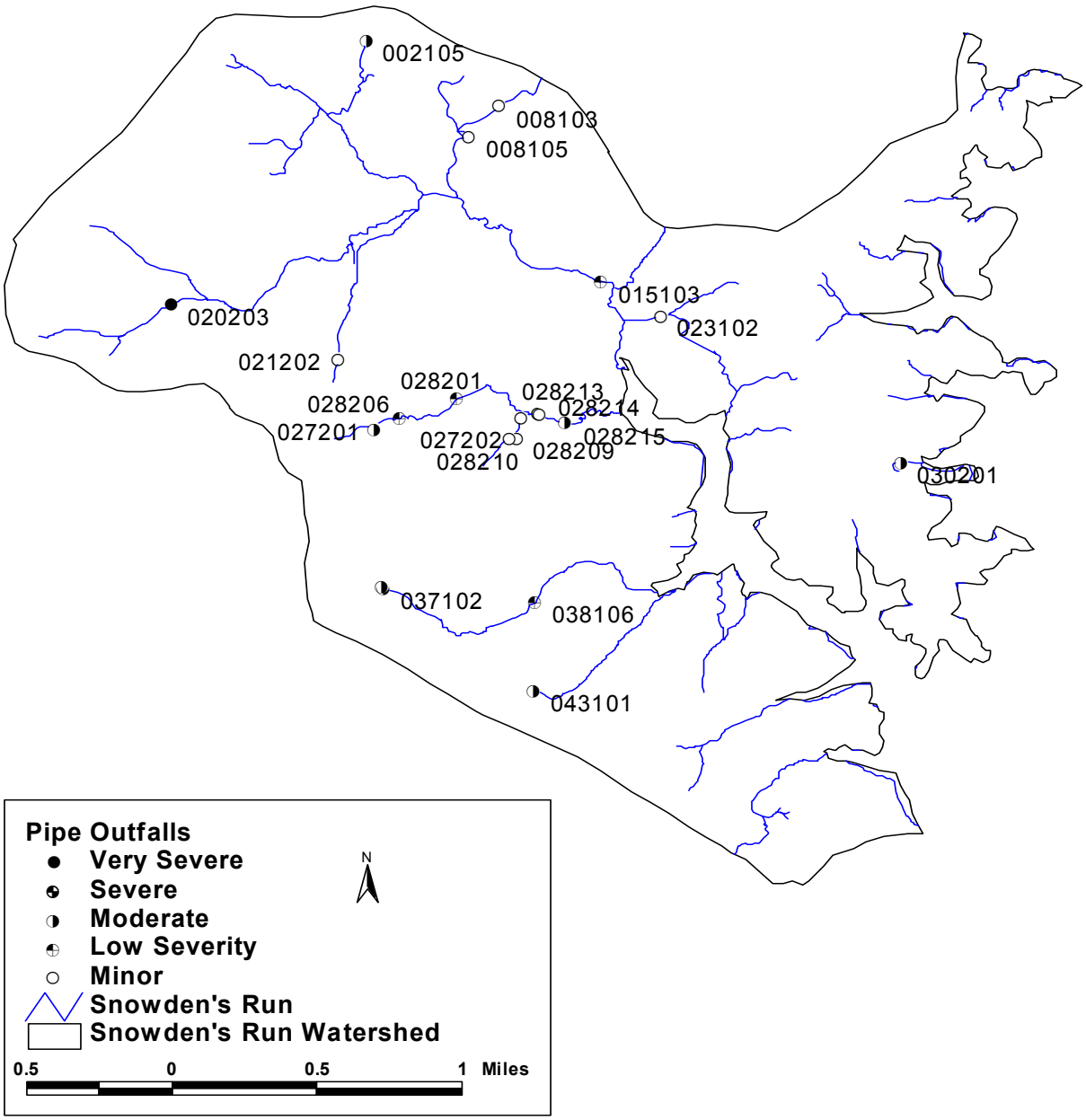

Figure 5c: Snowden's Run Pipe Outfall Locations.

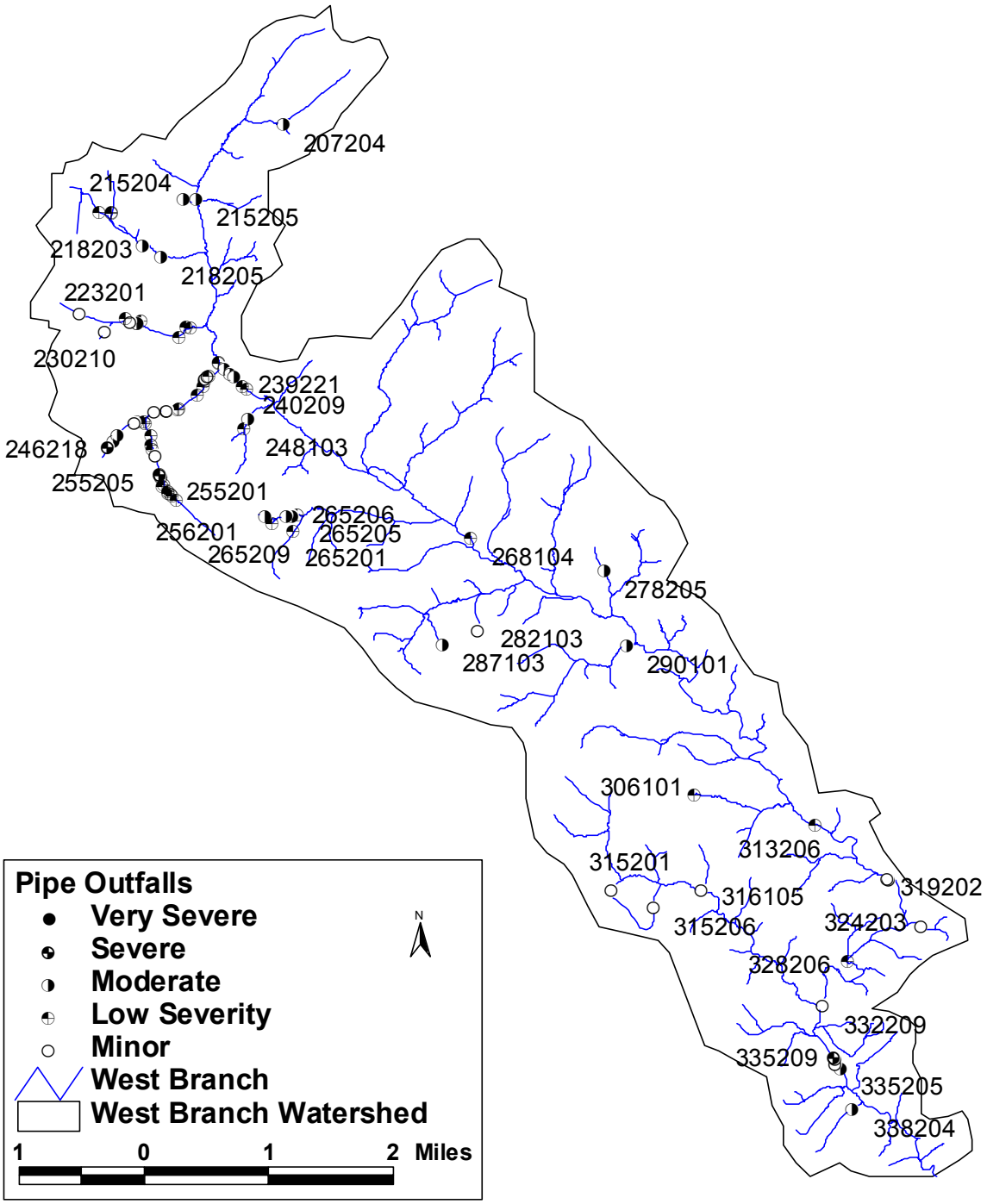

Figure 5d: West Branch Pipe Outfall Locations.

Inadequate Buffers

Forested stream buffers are very important for maintaining healthy Maryland streams. They help shade the stream to prevent excessive solar heating and their roots stabilize the streams banks. Forest buffers also help remove nutrients, sediment and other pollutants from runoff, and the leaves from trees are a major component of the stream's food web. Because of the importance of stream buffers, the state of Maryland has set a goal of recreating 1,200 miles of forest stream buffers by the year 2010.

While there is no single minimum standard for how wide a forested stream buffer should be in Maryland, for the purposes of this study a forest buffer is generally considered inadequate if it is less than 50 ft. wide, measured from the edge of the stream's banks. Inadequate buffers were the third most frequently reported problem. Survey crews reported inadequate stream buffers at 114 sites in the Liberty Reservoir watershed survey. The locations of the inadequate buffer sites are shown in Figure 6b, 6c, and 6d.

As part of the data collected by the field crews, a rough estimate of the length of the inadequate stream buffer at each site was made. Based on this data, there is an estimated 96,350 ft. (18.25 miles) of inadequately buffered stream banks in the Middle and Snowden's Run, and West Branch sub-watersheds. This accounts for 15.08% of the total stream miles that were surveyed by the field crews. The length of inadequate buffers ranged from 50 ft. to 3,840 ft. At 62 sites, the field crew reported that there were no trees on both sides of the stream, while at an additional 32 sites trees were present on only one side of the stream. The most commonly reported land uses along these inadequately buffered banks were pasture (26 sites) and lawn (26 sites). Nineteen sites had livestock present, and 8 sites were found to have recently established buffers. Most sites received severity ratings of moderate to minor (Figure 6a). The very severe sites involve areas were the inadequately buffered area totaled over 1000 ft. of stream with no buffer on either stream bank. The severe sites were sites in which there were no buffer on either side for 500 ft. – 1000 ft. long, or sites where there was a buffer on one side and inadequate buffer on the other for over 1000 ft.

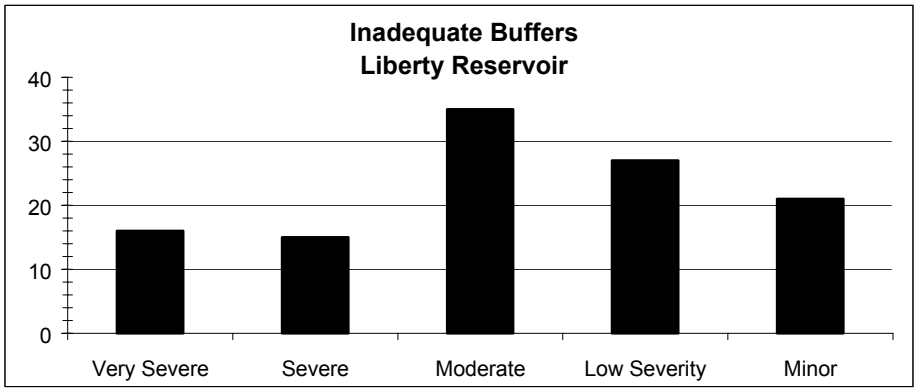

Figure 6a: Histograph showing the frequency of severity ratings given to inadequate buffers during the Liberty Reservoir SCA Survey.

Middle Run

The Middle Run sub-watershed has the most reported inadequate buffers with 38. Of these 38, 6 were rated as very severe. At site 103103, a 1,800 ft. steam segment ran through a pasture with livestock present. At site 110102, the stream ran through a crop field for approximately 1,300 ft. A small 5 ft. buffer was present along both of the streams banks at this site. At site 112202, there was a 1,800 ft. section of stream with lawns on both side of the stream. At site 122203, field crews reported no trees for 1,200 ft. on the left side of the stream and 1,500 ft. on the right side. Land use in this area was pasture with livestock present. At sites 126102 and 130102, the stream ran through pastures with no trees present on either side of the stream for 3,800 ft. and 1,800 ft. respectively.

Snowden's Run

The Snowden's Run sub-watershed has 16 reported inadequate buffer sites. Of these, survey crews rated 3 sites as severe. At site 007103 there was a 2,200 ft. long section of stream with a narrow 10 buffer on each bank and lawns present beyond that. At site 019201 there was a small 5 ft. buffer on both sides of the stream for 2,200 ft. The land use is paved, and the site has a recently established buffer. At site 037105, the crew reports that the existing buffer was only 7 ft. wide on both sides of the stream for a distance of 2,700 ft., with lawn cited as its main land use beyond the narrow buffer.

West Branch

Sixty inadequately buffered stream sites were found on the West Branch. Ten of these sites were identified as very severe, and 11 were identified as severe. The lengths of these very severe and severe sites were between 1,047 ft. and 3,840 ft. Inadequate buffer sites were spread out over the whole watershed with a little concentration in the northern headwaters. The northern headwater area has a heavy agricultural influence, which can account for long stretches of unbuffered streams. At site 207202, field crew reported that a new buffer that was recently planted. Four sites (211201, 268105, 270201, and 302101) were reported to have livestock present.

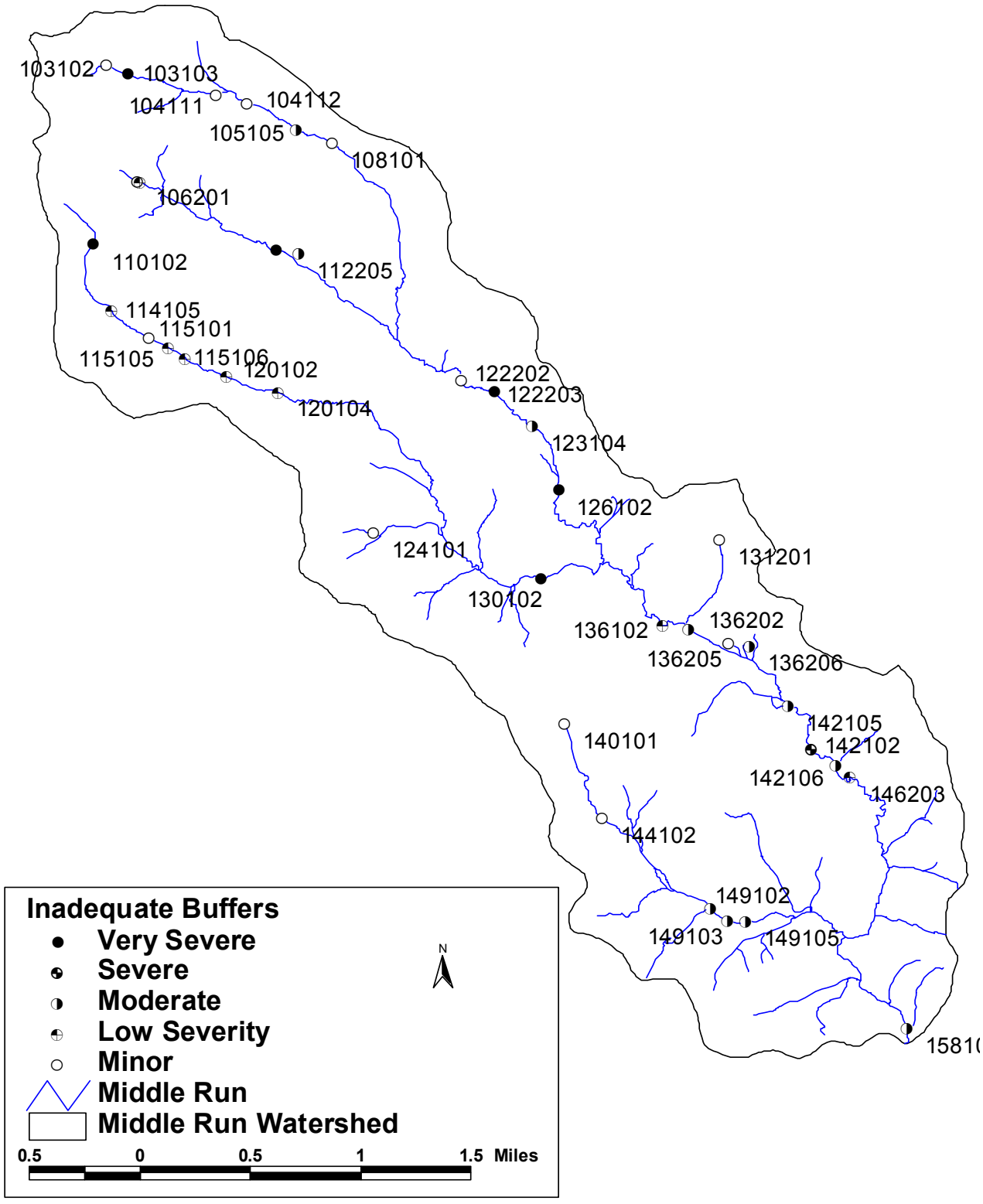

Figure 6b: Middle Run Inadequate Buffer Locations.

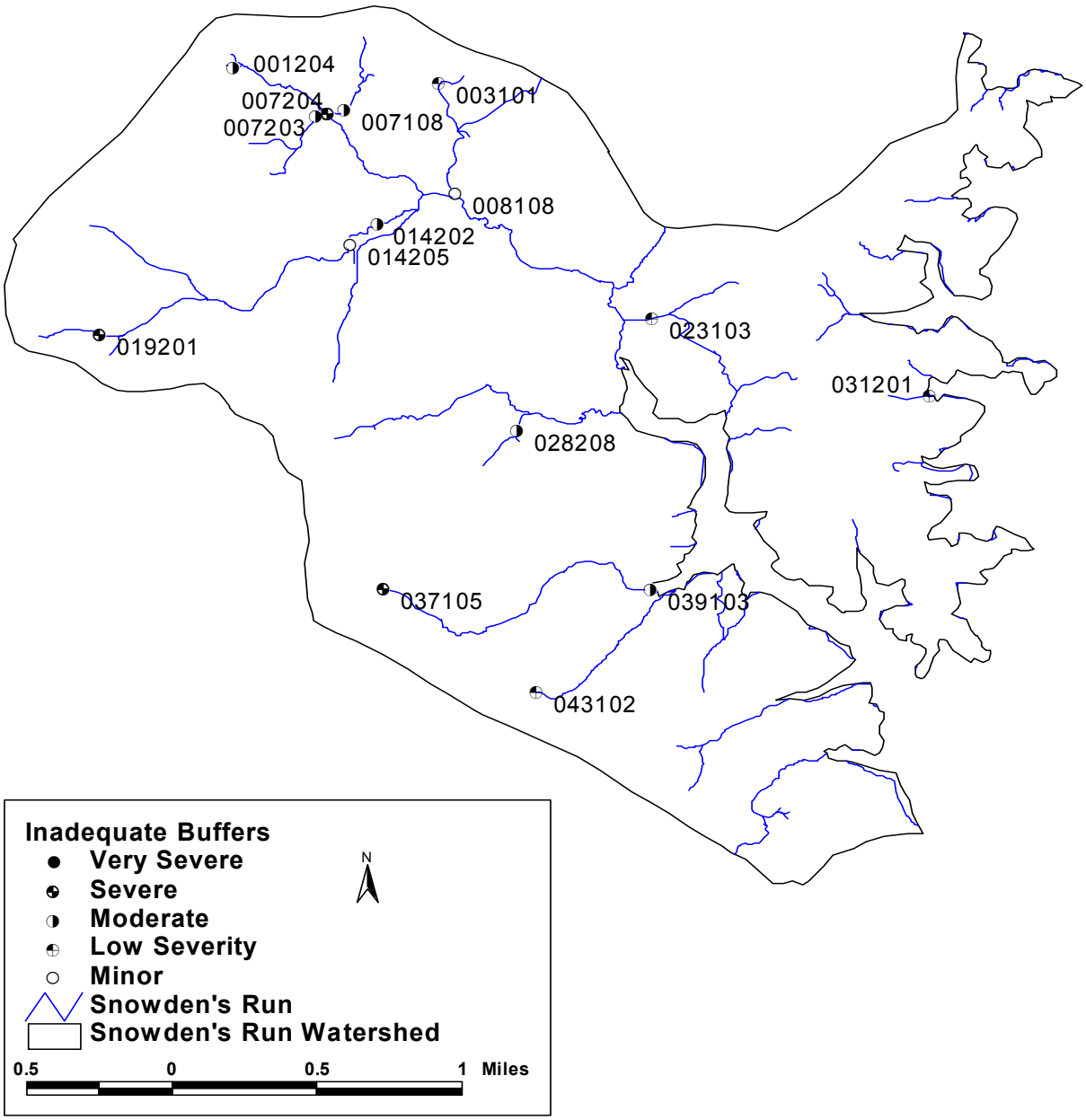

Figure 6c: Snowden's Run Inadequate Buffer Locations.

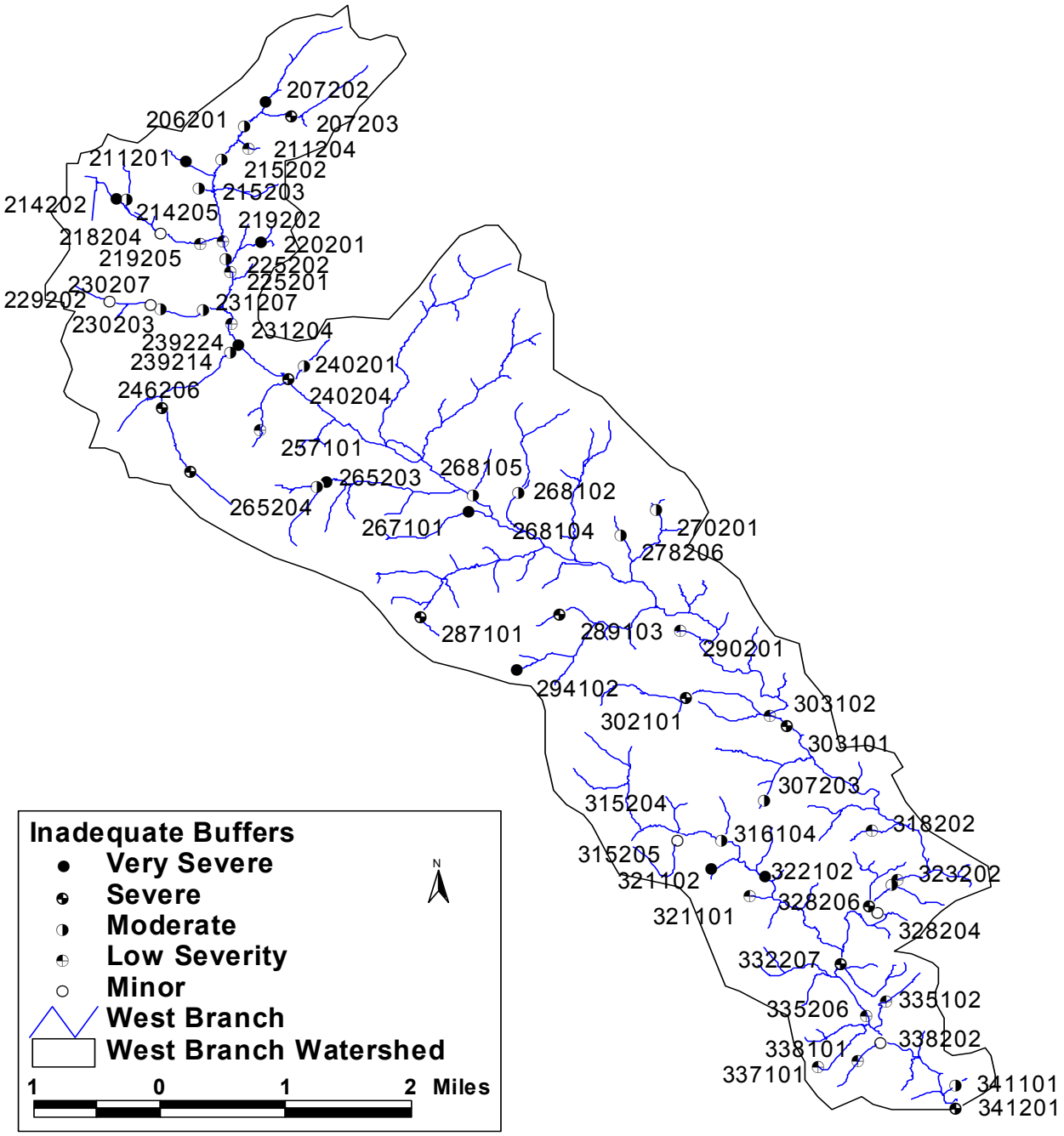

Figure 6d: West Branch Inadequate Buffer Sites.

Fish Migration Barriers

Fish migration barriers are anything in the stream that significantly interferes with the free movement of fish upstream. Unimpeded fish passage is especially important for anadromous fish that live much of their lives in tidal waters but must move into non-tidal rivers and streams to spawn. Unimpeded upstream movement is also important for resident fish species, many of which also move both up and down stream during different parts of their life cycle. Without free fish passage, some of the sections in a stream network can become isolated. If a disturbance occurs in an isolated stretch of stream, such as a sewage line break that discharges a large amount of raw sewage into a small tributary, some or all fish species may be eliminated from that section of stream. With a fish blockage present and no natural way for a fish to repopulate the isolated stream section, the diversity of the fish community in an area will be reduced and the remaining biological community may be out of natural balance.

Fish blockages can be caused by man-made structures such as dams or road culverts and by natural features such as waterfalls or beaver dams. Fish blockages occur for three main reasons. First, a vertical water drop such as a dam can be too high for fish to jump or swim over the obstacle. A vertical drop of 6 inches may cause a fish passage problem for some resident fish species, while anadromous fish can usually move through water drops of up to 1 foot, providing there is sufficient flow and water depth. The second reason a structure may be a fish passage problem is because the water is too shallow. This can often occur in channelized stream sections or at road crossing where the water from a small stream has been spread over a large flat area and the water is not deep enough for fish to swim through. Finally, a structure may be a fish blockage if the water is moving too fast through it for fish to swim through. This can occur at road crossings where the culvert pipe has been placed at a steep angle and the water moving through the pipe has a velocity that is higher than a fish's swimming ability.

Survey crews identified 32 fish migration barriers during the survey. Eighteen fish barriers were found in the West Branch, 9 in Middle Run, and 5 in Snowden's Run. The locations of fish migration blockages are shown in Figure 7b, 7c, and 7d. At all but one site, the survey crews reported that there was a water drop that was too high for some fish to move upstream, while at 1 additional site they reported that the water was too shallow for fish migration. Dams were cited as the main type of fish barrier and were reported at 9 sites. Other causes of fish barriers in the watershed were pipe crossings (5), road crossings (5), beaver dams (3), concrete debris (3), natural falls (2), channelized streams (1), debris dams (1), gauging station (1), in-stream pond (1), and rock (1). The majority (22 of 32 sites) of the fish migration blockages were characterized as being total fish migration barriers, blocking the whole width of the stream with a permanent structure. Partial barriers allowing some flow through unimpeded were found in 5 cases. Temporary structures blocking full movement of fish were cited at 5 sites.

Most of the fish migration barriers were given moderate to minor ratings (Figure 7a). Severity ratings were based on position in the watershed, as well as the type and height/depth of the barrier. Three fish barriers in the West Branch were given very severe ratings. At site 231203 and 335110, there are dams present with a water drop of 72 and 18 in., respectively. At site 335207, there is a gauging station with a water drop of 24 in. Both sites 335207 and 335110 are at the bottom of the West Branch sub-watershed just before the waters of the reservoir. On Snowden's Run at site 007104, there is a dam with a water drop of 18 inches that was given a severe rating.

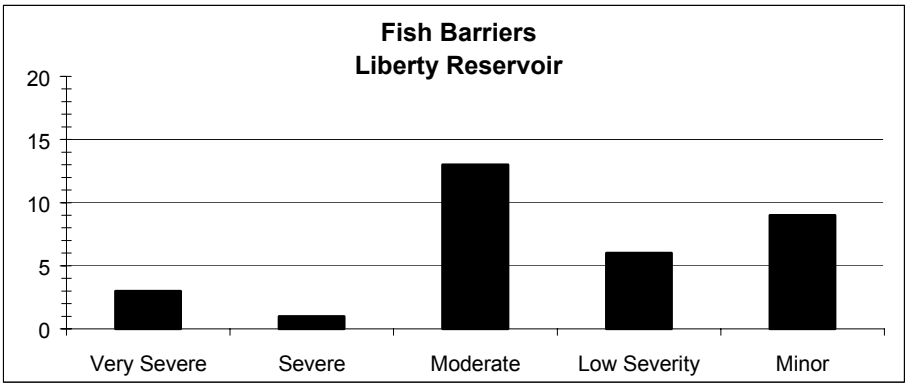

Figure 7a: Histograph showing the frequency of severity ratings given to fish barriers seen during the Liberty Reservoir SCA Survey.

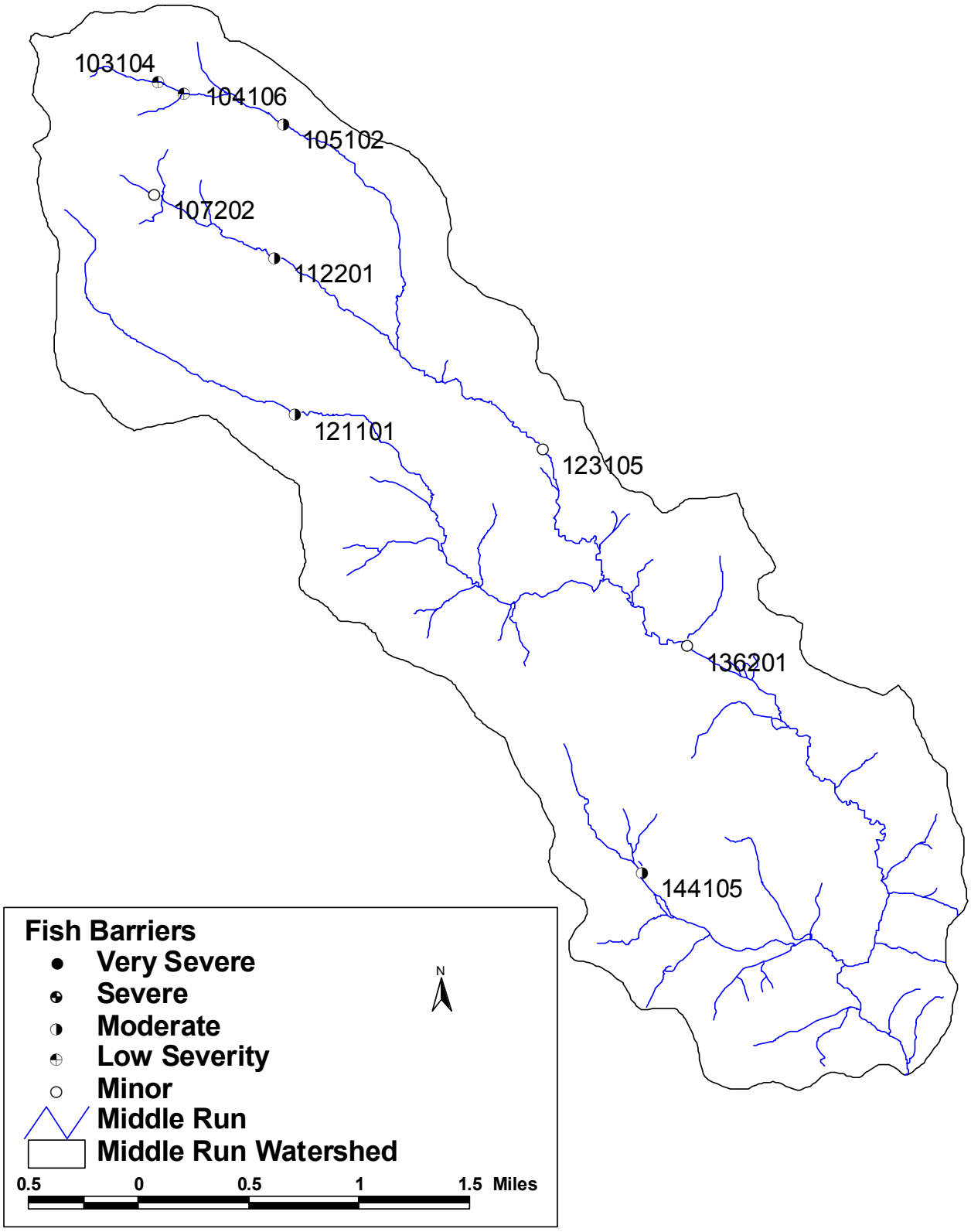

Figure 7b: Middle Run Fish Barrier Locations.

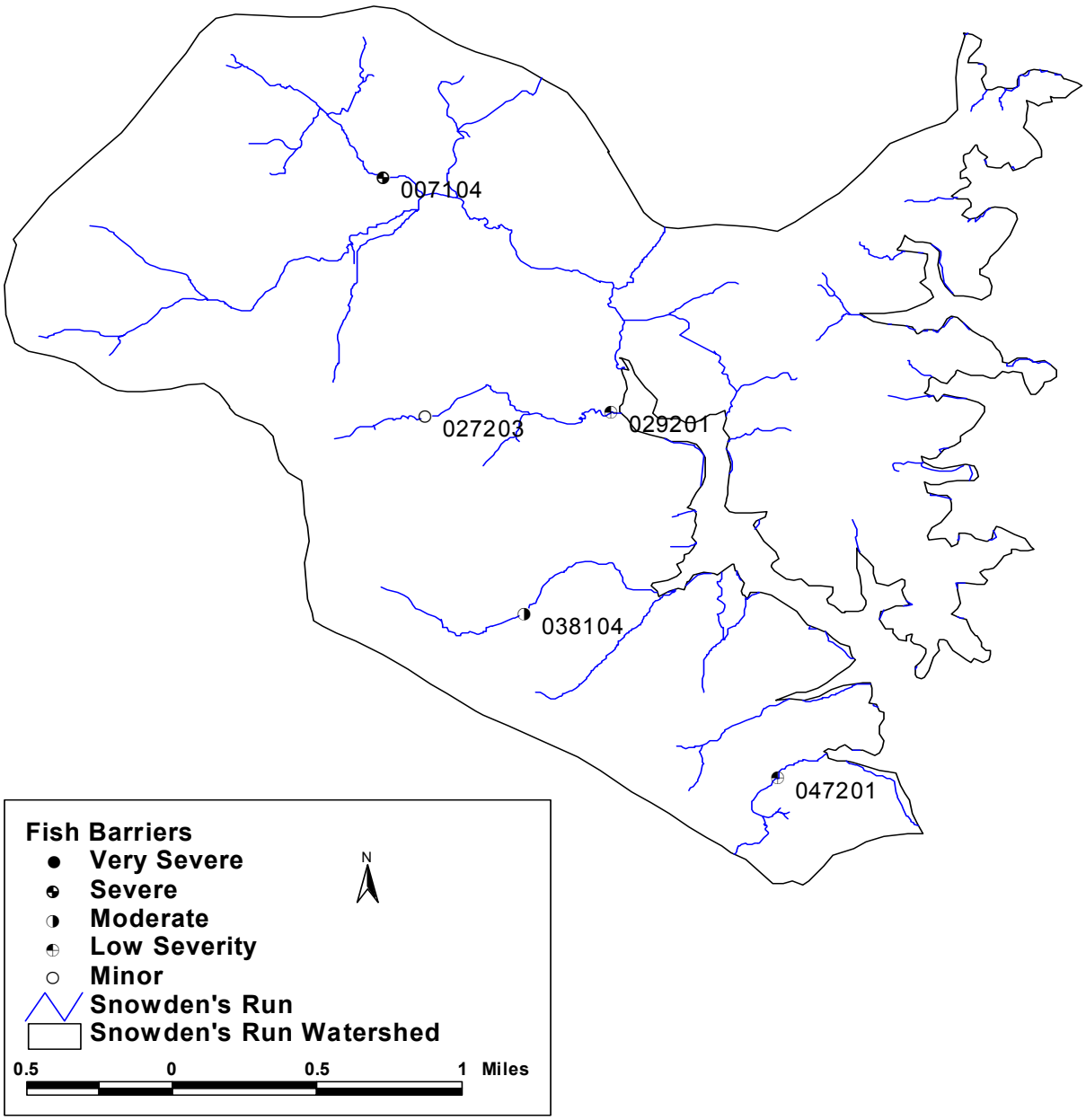

Figure 7c: Snowden's Run Fish Barrier Locations.

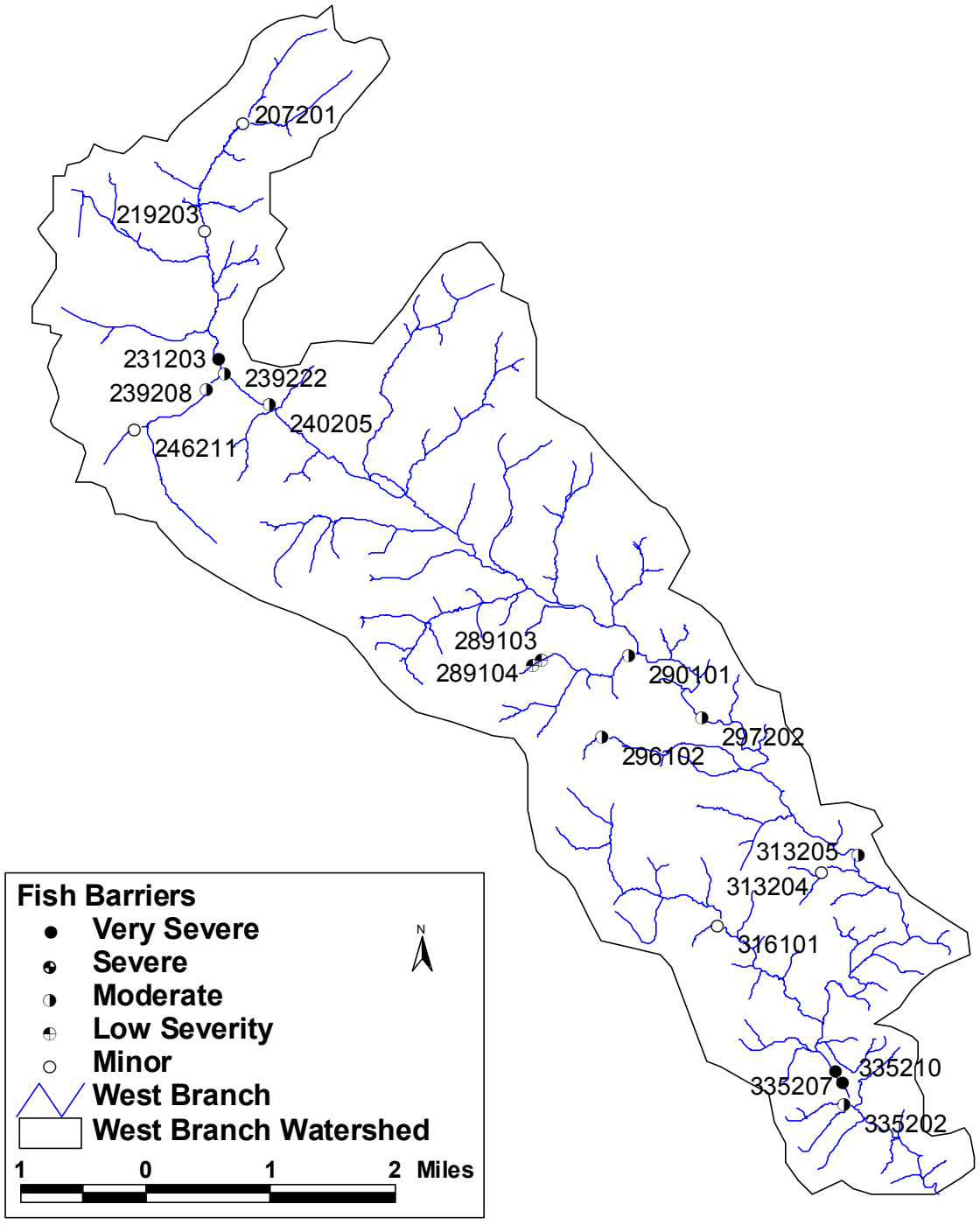

Figure 7d: West Branch Fish Barrier Locations.

Trash Dumping

Trash dumping data sheets record information on places where large amounts of trash have been dumped inside the stream corridor, or to note places where trash tends to accumulate. The field survey crew found 22 sites where there was excessive trash, and these locations are shown in Figures 8b, 8c, and 8c. The sites were given severity ratings based on size, contents of trash, and potential impact on the stream. Severity ratings for trash dumping sites throughout the surveyed Liberty Reservoir sub-watersheds can be found in Figure 8a. Most sites found were ranked as moderate to minor trash dumping sites. Field crews indicated that 15 of the sites might be good volunteer clean up opportunities.

Trash dumping sites in the Middle and Snowden's Run, and the West Branch sub-watersheds range in size from 0.5 to 45 pickup truckloads. Single site trash dumping sites were recorded at 18 sites, while large area dumping sites were recorded at 4 locations. Types of trash sites found include: residential (13), tires (5), industrial (4), yard waste (4), floatables (4), auto mobiles and parts (2), construction materials (2), oil drums (1), and glass (1). Twenty-one trash dumping sites were found on private land. One site (023101) was found on public land, with 1 pickup truckload of industrial trash within the limits of the Baltimore City Reservoir land. Site 303104 was the only site to be given a very severe rating. An estimated 6 pickup truckloads of tires, floatables, residential trash and a 55 gallon drum were found next to the stream. This site can be found in the West Branch and was given a very severe rating because it was unknown if the drums contained any hazardous substances. At site 131204, there were approximately 15 pickup truckloads of building materials. This site was identified as a possible volunteer project on Middle Run. Site 296102 is a large area with an estimated 45 pickup truckloads of floatable, residential, and industrial trash in the West Branch sub-watershed.

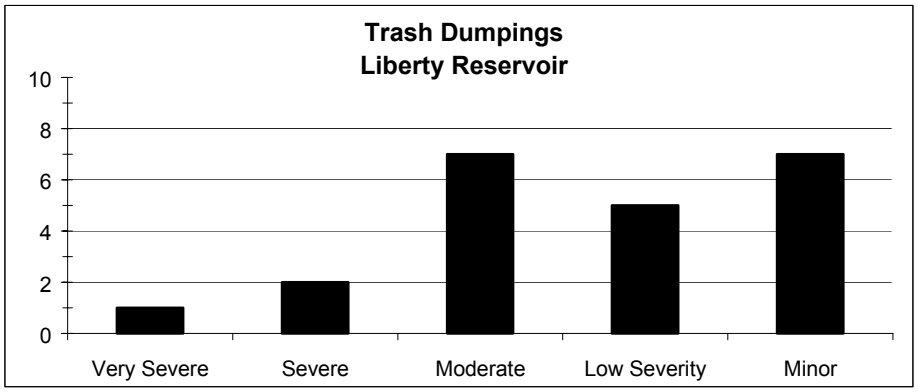

Figure 8a: Histograph showing the frequency of severity ratings given to trash dumping sites seen During the Liberty Reservoir SCA survey.

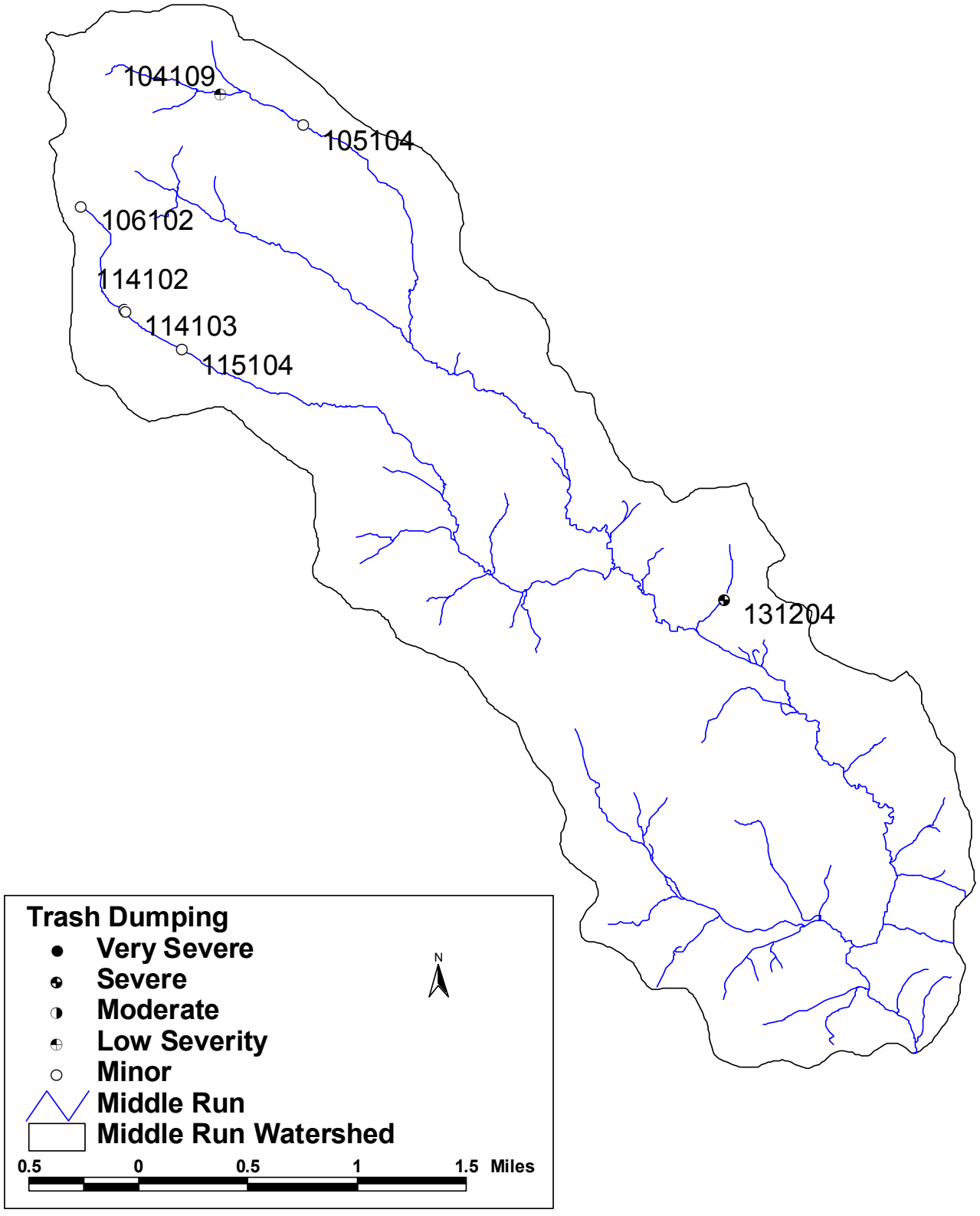

Figure 8b: Middle Run Trash Dumping Locations.

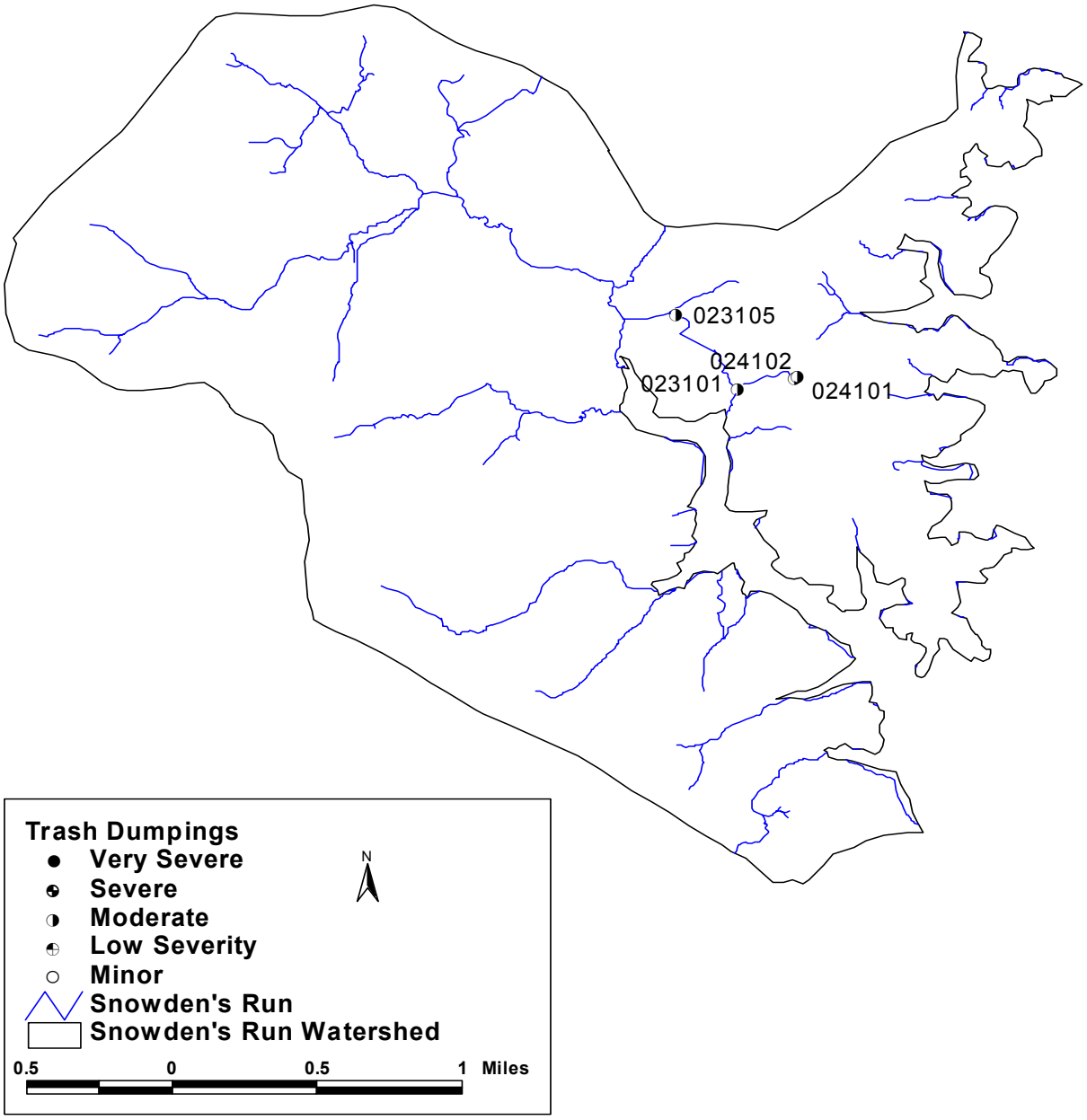

Figure 8c: Snowden's Run Trash Dumping Locations.

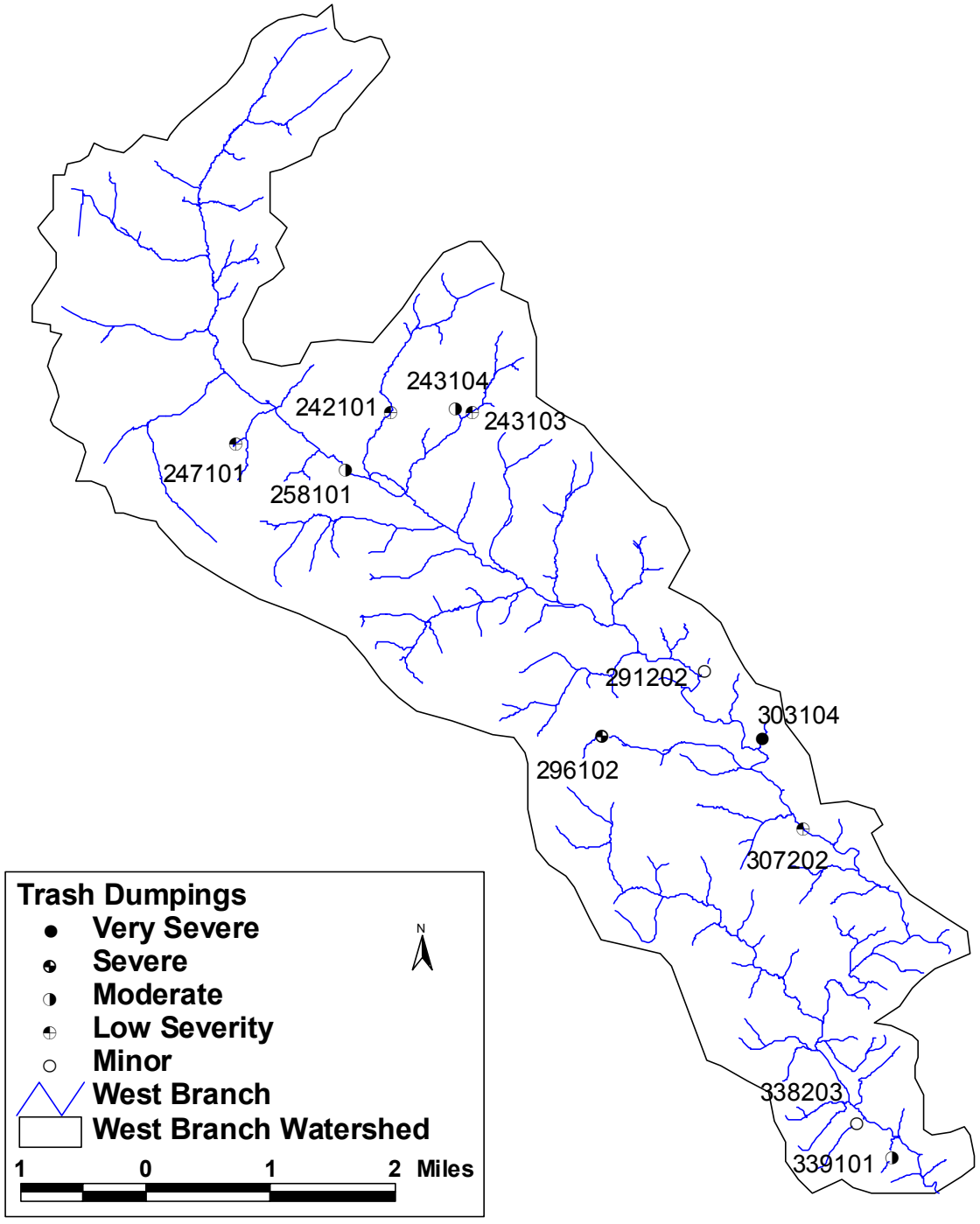

Figure 8d: West Branch Trash Dumping Locations.

Channel Alterations

Channel alteration sites are stream sections where the stream's banks and channel have been significantly altered from a natural condition. This includes areas where the stream may have been straightened and/or where the stream banks have been hardened using rock, gabion baskets or concrete over a significant length. It does not include road crossings unless a significant portion of the stream above or below the road has also been channelized. In addition, places where a small section of only one side of the stream's banks may have been stabilized to reduce erosion were not reported as channel alterations. For the purposes of this survey, channel alteration also does not include tributaries where storm drains were placed in the stream channel, and the entire tributary is now piped underground. While these stream sections have been significantly altered, it is not possible to tell by walking the stream corridor precisely where this was done.

In the 3 surveyed sub-watersheds of the Liberty Reservoir watershed, survey crews found 21 areas where the stream channel had been recognizably altered. Locations of channel alteration sites are shown in Figure 9b, 9c, and 9d. The total length of stream affected by channelization was estimated to be 1,390 ft, or about 0.26 miles. The majority of the sites were concrete channels (8) and gabion baskets (8). Other sites were found to have boulders (2), rip-rap (2), rocks (2), corrugated metal (1), and a vinyl sheet (1). Most of the sites in the Liberty Reservoir watershed were given low severity ratings (Figure 9a). The lengths of stream present at channel alteration sites varied from 10 ft. to 700 ft. Perennial flow was reported at 16 sites, and sediment deposition was reported at 12 sites. Vegetation was found in the channel at 11 sites. Road crossings are attributed to 11 channel alteration sites in the surveyed areas of the Liberty Reservoir watershed. Site 140101 was the only site given a severe rating. At this site there is a 200 ft. long concrete channel with sediment and vegetation present in the channel, but with no perennial flow. All 200 ft. of this site was above a road crossing in Middle Run.

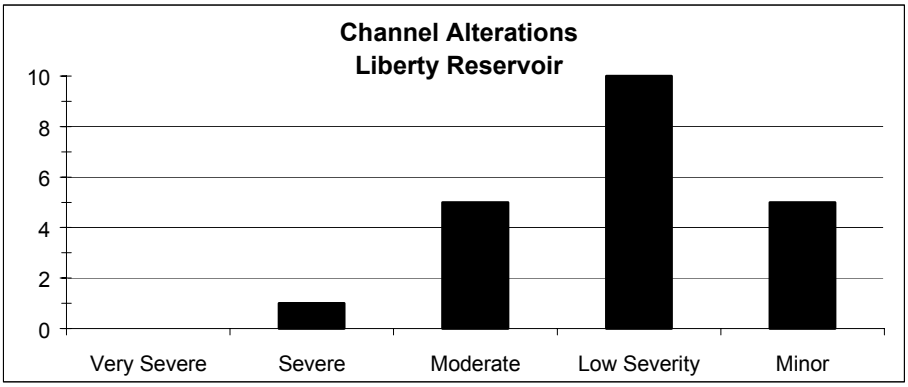

Figure 9a: Histograph showing the frequency of severity ratings given to channel alteration sites during the Liberty Reservoir SCA Survey.

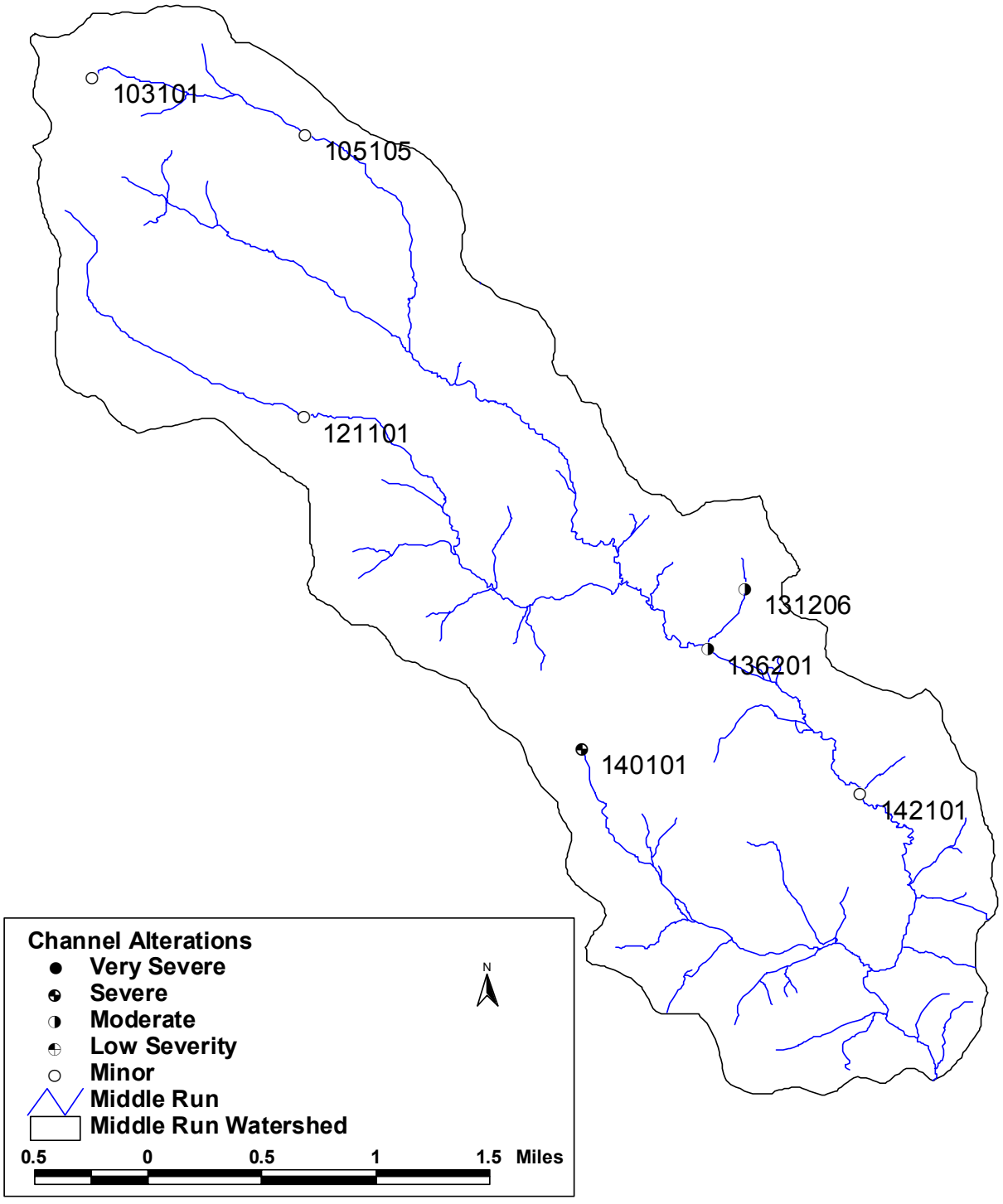

Figure 9b: Middle Run Channel Alteration Locations.

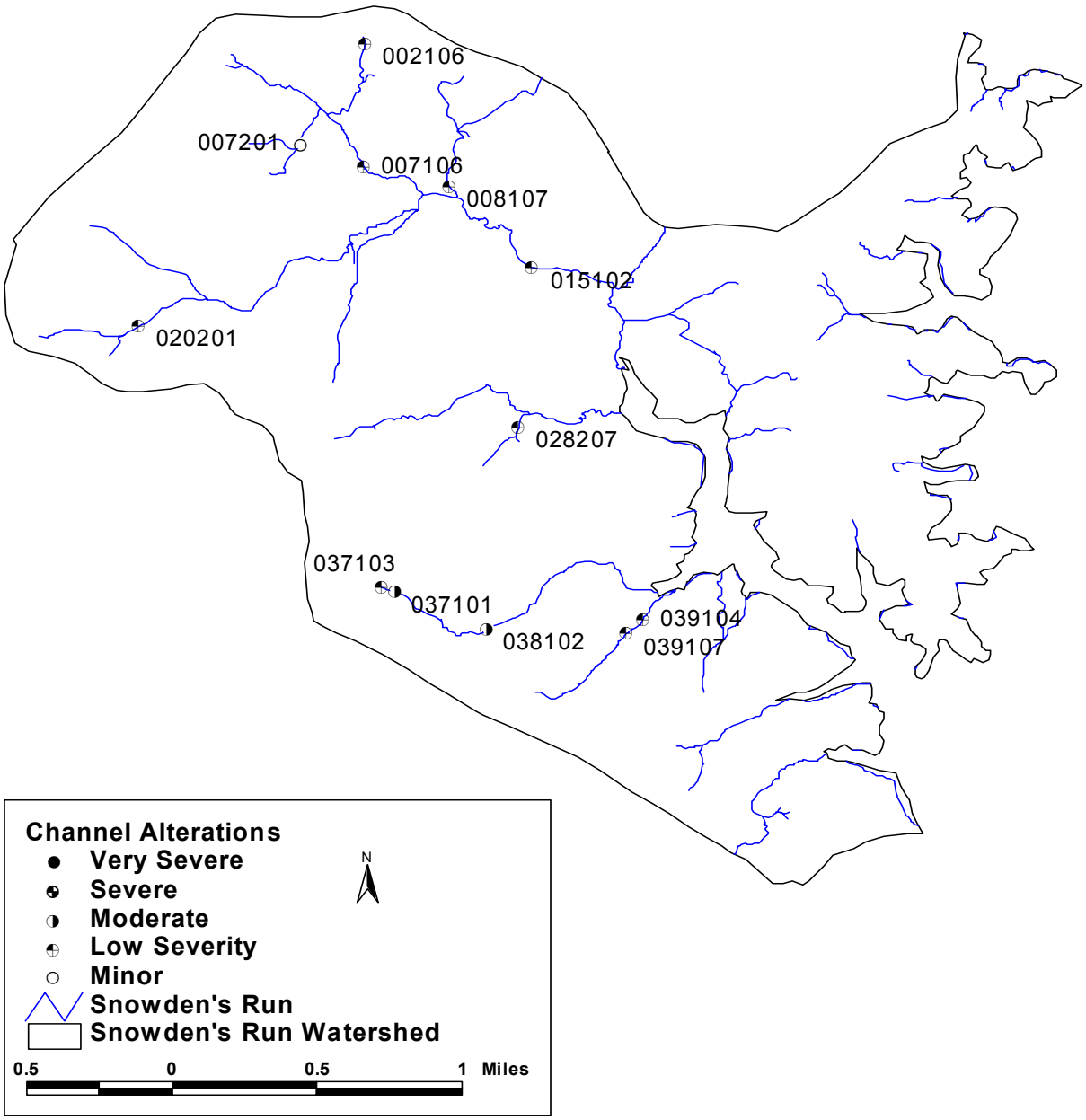

Figure 9c: Snowden's Run Channel Alteration Locations.

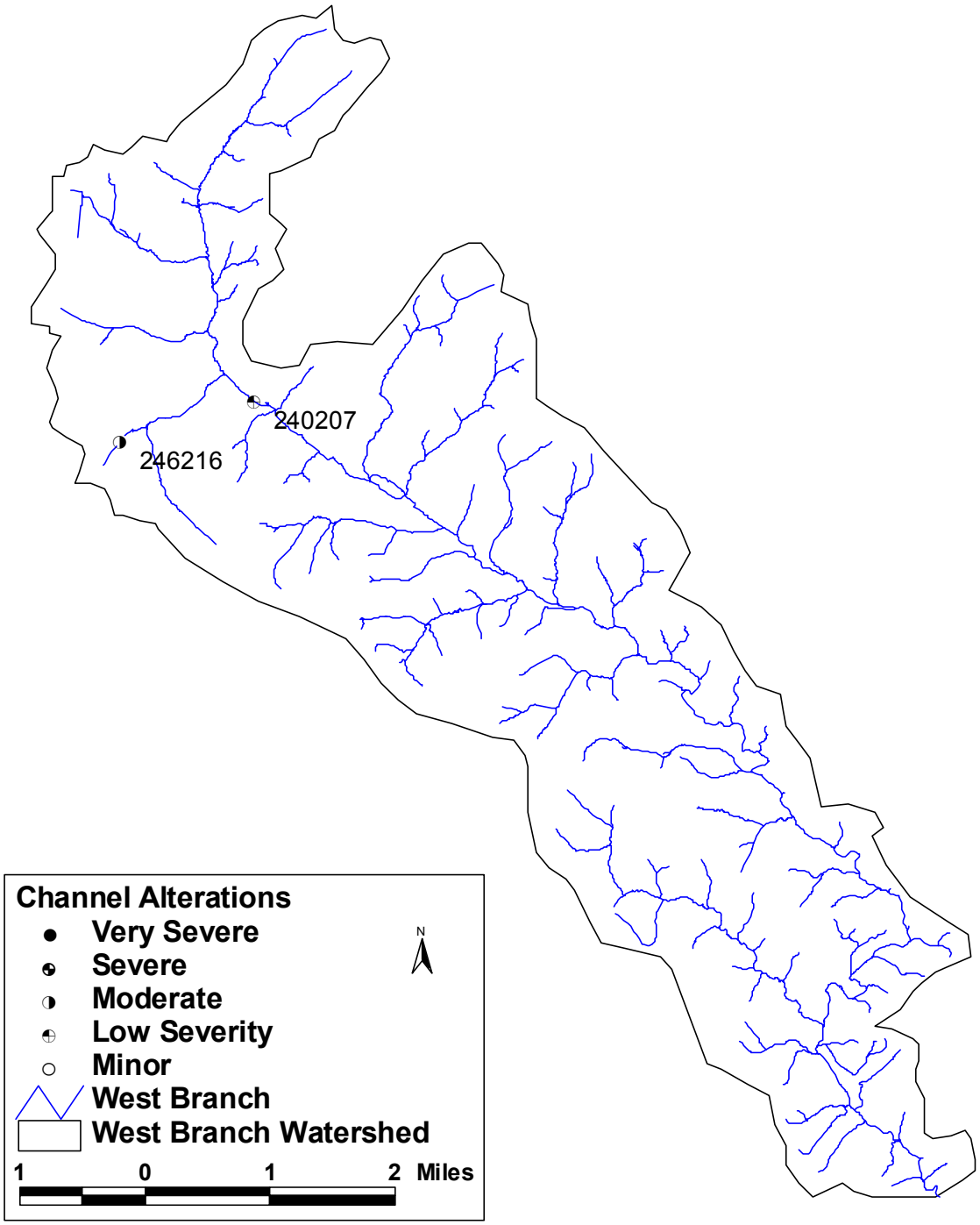

Figure 9d: West Branch Channel Alterations.

Unusual Conditions

The unusual condition/comment data sheets are used to record the location of anything out of the ordinary seen during the survey or to provide some additional written comments on a specific problem. Eighteen unusual conditions were reported during the Liberty Reservoir survey, and twenty-six additional comments were recorded. The locations of the unusual conditions and comments can be found in Figures 10b, 10c, and 10c. Severities of the unusual conditions found during the Liberty Reservoir survey can be seen in Figure 10a.

Middle Run

Two unusual conditions were recorded in the Middle Run sub-watershed. Site 130102 was given a severe rating. At this site, there is an exposed utility line above the streambed. It was noted by field crews that this is probably due to erosion of pastureland adjacent to the line and stream.

Snowden's Run

Six unusual condition sheets were recorded in the Snowden's Run sub-watershed. Two of the unusual conditions were recorded as severe sites. At site 002104, the crew reported a sewage smell and a rusty red color in the stream reported as coming from a nearby construction site. At site 021203, there was a concrete fish barrier seemingly built by the landowner of the adjacent property.

West Branch

Eleven unusual condition sheets were recorded in the West Branch. One of these sites was identified as a severe site. At site 239204 there was what appears to be a springhead with heavy iron deposits and bacteria bubbling to the surface. It was noted that the site is near Monumental Wood Mill Works.

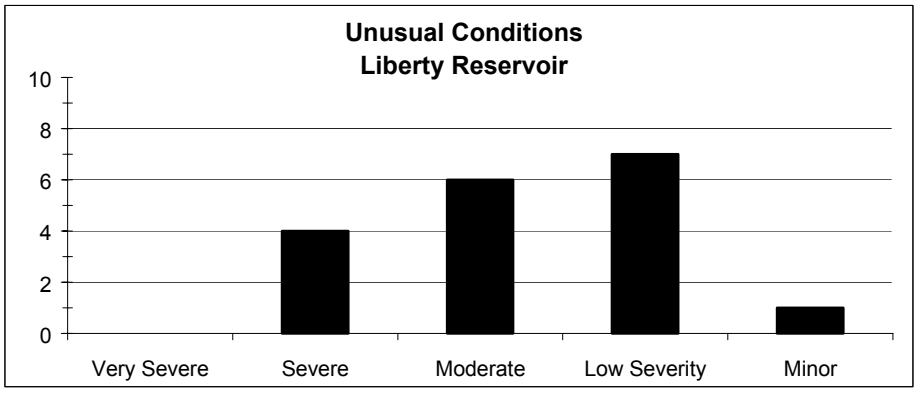

Figure 10a: Histograph showing the frequency of severity ratings given to unusual conditions seen During the Liberty Reservoir SCA survey.

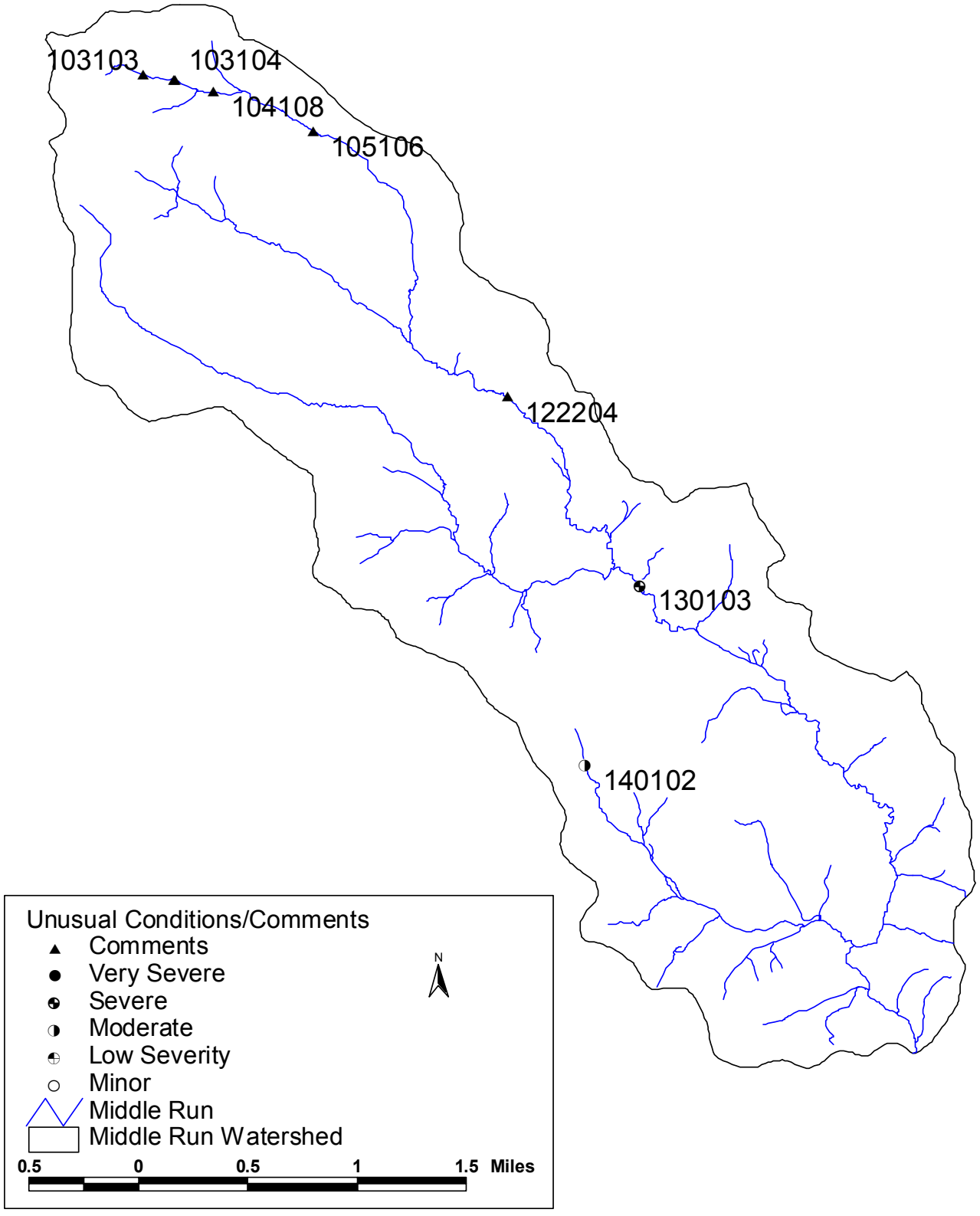

Figure 10b: Middle Run Unusual Condition/Comment Locations.

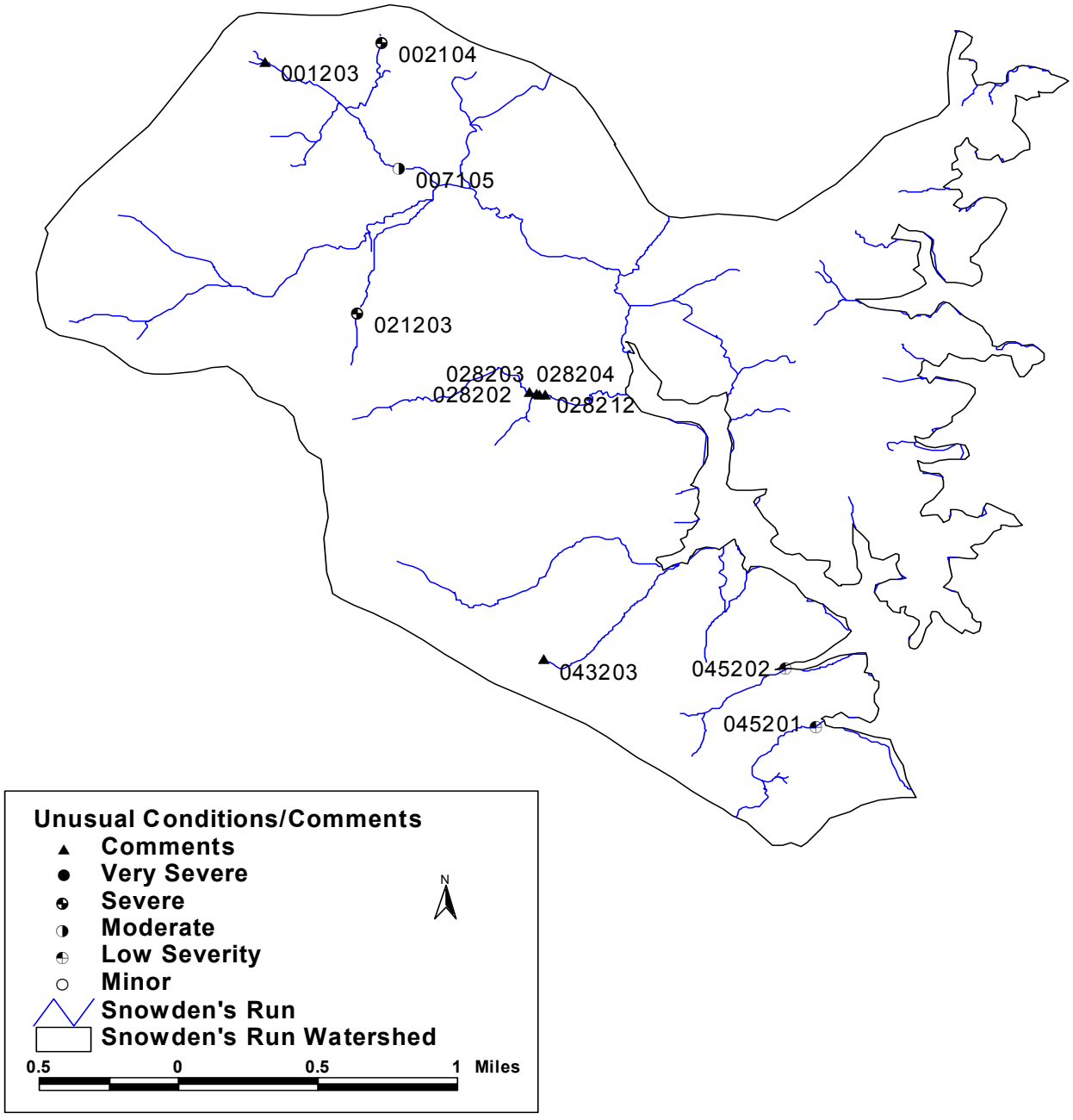

Figure 10c: Snowden's Run Unusual Conditions/Comment Locations

Figure 10d: West Branch Unusual Condition/Comments Locations.

Exposed Pipes

Exposed pipes are any pipes that are in the stream or along the stream's immediate banks that could be damaged by a high flow event. It does not include pipe outfalls where only the open end of the pipe is exposed. Exposed pipes do include: 1) manhole stacks in or along the edge of the stream channel, 2) pipes that are exposed along the stream banks, 3) pipes that run under the stream's bed and have been exposed by stream down-cutting, and 4) pipes that are built over a stream but are low enough that they could be affected by frequent high storm flows.

In urban areas, it is very common for pipelines and other utilities to be located in the stream corridor. This is especially true for gravity sewage lines that depend on the continuous downward slope of the pipeline to move sewage to a pumping station or treatment plant. Since streams are located at the lowest points of the local landscape, engineers often build sewage lines paralleling streams to collect sewage from adjacent neighborhoods. While the pipelines are stationary, streams can migrate and over time can expose previously buried pipelines. When this occurs, the pipeline becomes vulnerable to being punctured by debris in the stream. Fluids in the pipelines can be discharged into the stream, causing a serious water quality problem. Severity ratings were given based on how exposed the pipe is, location of the pipe, and contents inside the pipe.

Exposed pipes were reported at 12 sites during the Liberty Reservoir survey. All exposed pipes were found in Snowden's Run and the West Branch. Locations of these sites are shown in Figures 11b, and 11c. The types of pipes found include: 3 terra cotta, 2 concrete and plastic, 2 plastic, 2 smooth metal, 2 unknown, and 1 cast iron. Exposed pipes were found across the stream bottom (6), and along the stream bank (4), and above the stream (1). One manhole inside the stream channel was also reported. Lengths of the pipes exposed ranged from 1ft. to 100ft., while diameters of pipes ranged from 4in. to 60in. Six of the pipes were identified as sewage pipes, and the remaining six could not be identified. Public works officials should review the exposed pipes reported, and follow-up visits should be done based on their evaluations. Most exposed pipes were given moderate to minor severity ratings. One site however, was given a very severe rating. At site 014204, there was a 36 in. concrete pipe and a 10 in. plastic pipe exposed along the stream bank for approximately 5 ft.. Survey crews reported evidence of a sewage discharge with a rotten egg odor.

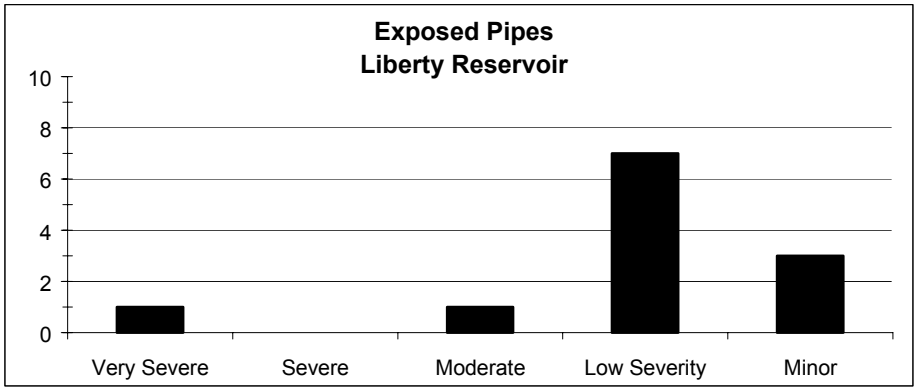

Figure 11a: Histograph showing the frequency of severity ratings of exposed pipes seen during the Liberty Reservoir SCA survey.

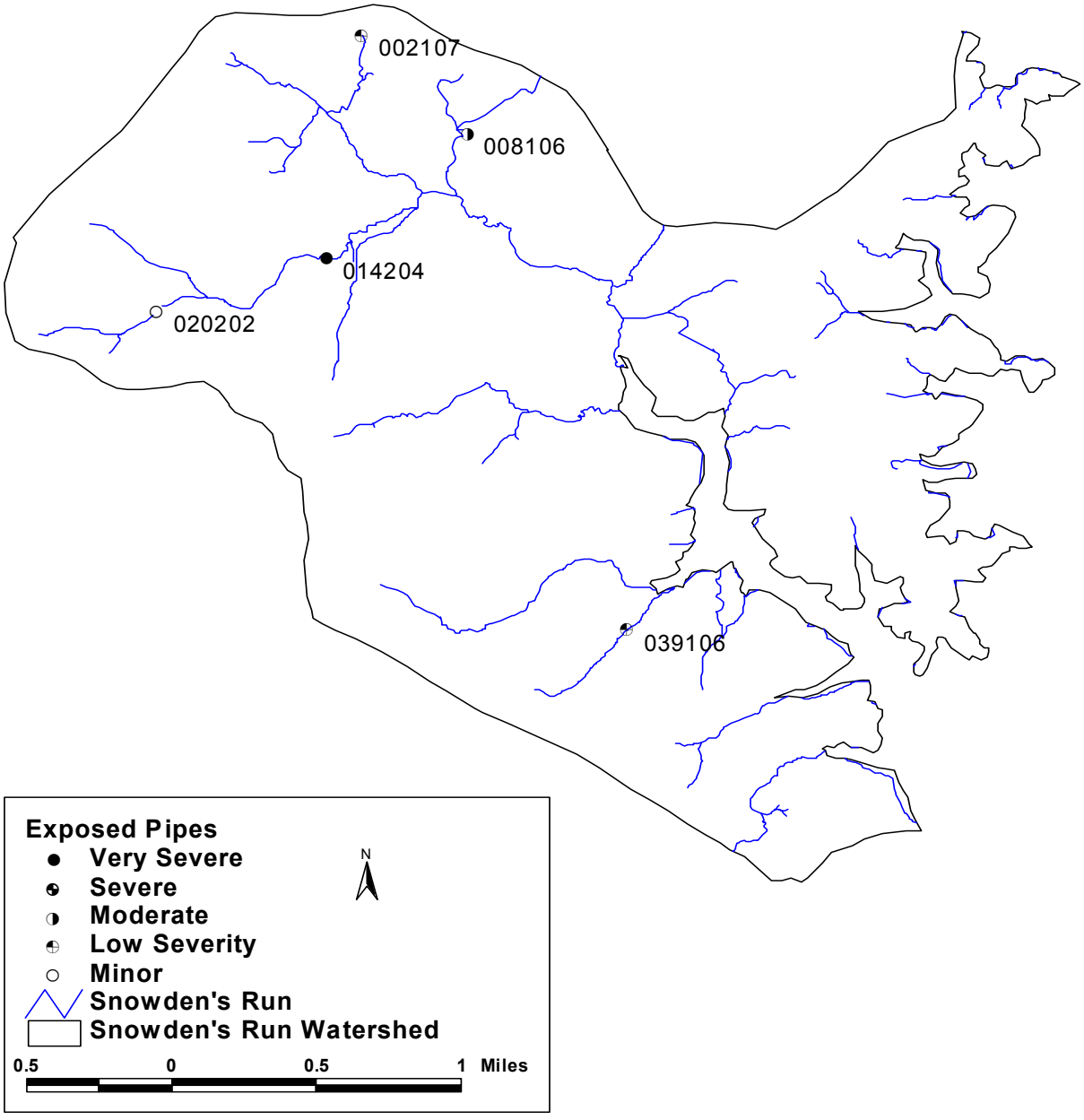

Figure 11b: Snowden's Run Exposed Pipe Locations.

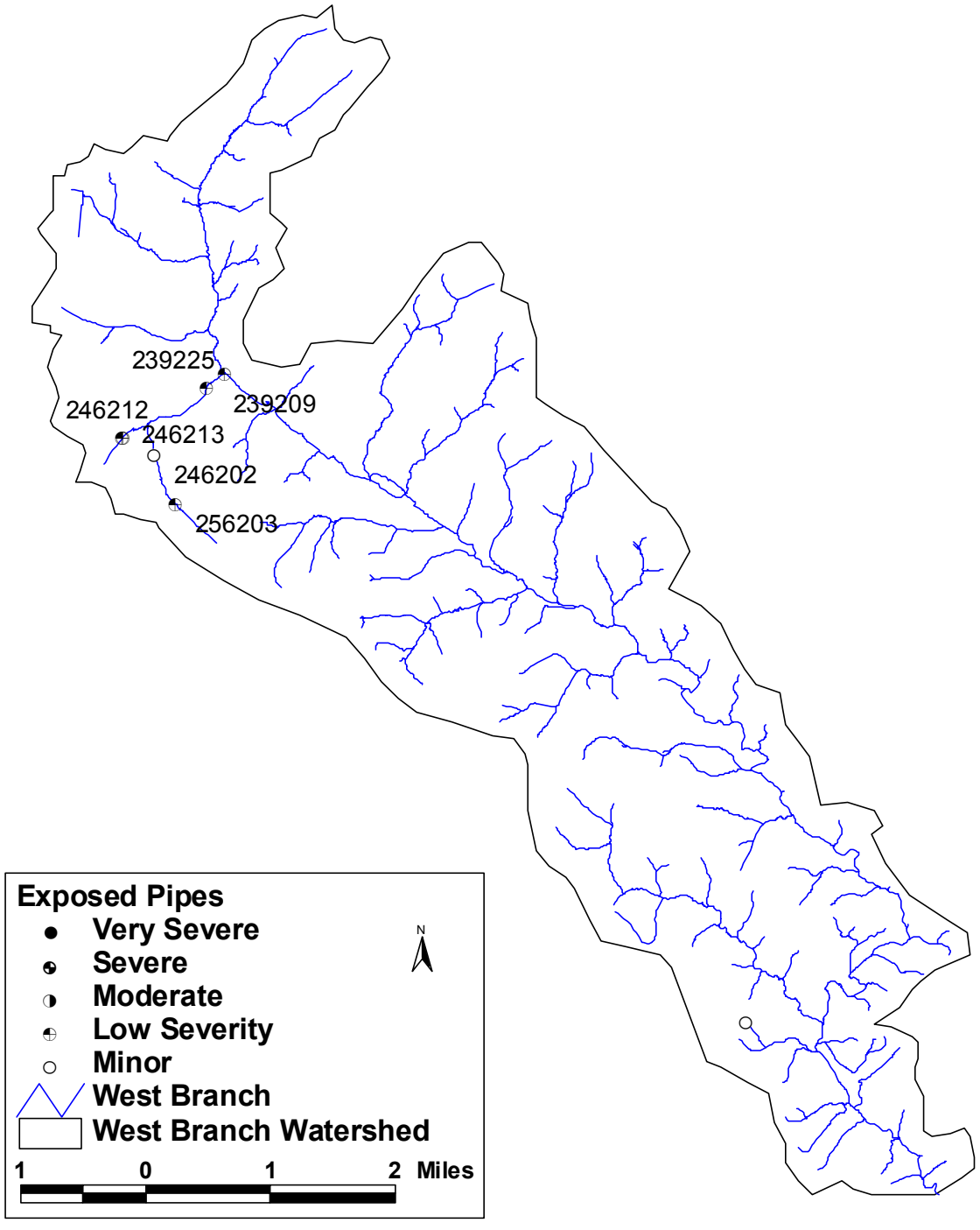

Figure 11c: West Branch Exposed Pipe Locations.

In/Near Stream Construction

In or near stream construction data sheets are used to document any construction disturbances seen by the survey teams inside or near the stream corridor. Survey team members are not trained sediment inspectors, but as part of their training they do receive a quick review of the different type of sediment control measures they may see while doing a SCA survey. Survey teams report evidence of inadequate sediment control measures or if sediment pollution from the site has affected the stream. In or near stream construction was reported at 3 sites during the Liberty Reservoir survey. All sites were found in the lower West Branch. The locations of in/near stream construction sites are shown in Figure 12b.

One site was given a severe rating, and the other two sites were given minor ratings (Figure 12a). The severe rating was given to site 324205, where a residential development was being constructed and survey crews believed that the sediment control measures were inadequate.

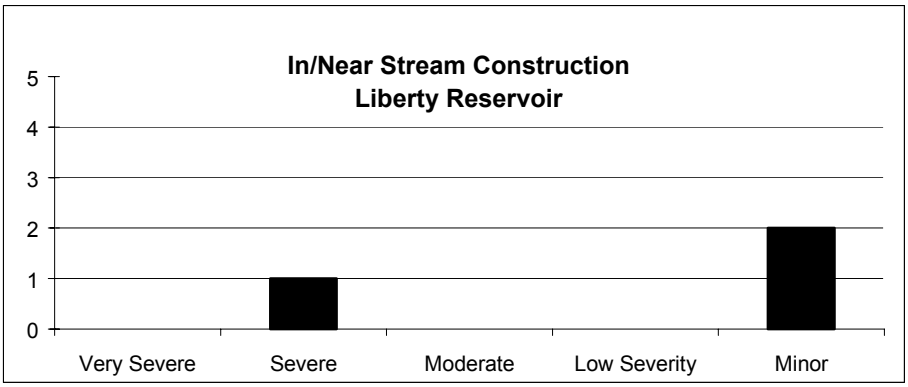

Figure 12a: Histograph showing the frequency of severity ratings of In/Near Stream Construction sites seen during the Liberty Reservoir SCA survey.

Figure 12a: West Branch In/Near Stream Construction Sites.

Representative Sites

Representative sites are used to document the general condition of both in-stream habitat and the adjacent riparian (stream bank) corridor. The representative site evaluations procedures used during the survey are very similar to the habitat evaluations done as part of the Maryland Save-Our-Stream's Heartbeat Program and are based on the habitat assessment procedures outlined in EPA's rapid bioassessment protocols (Plafkin, et. al., 1989). At each representative site, data was collected on 10 separate parameters. These habitat parameters are:

* Attachment Sites for Macroinvertebrates
* Shelter for Fish
* Sediment Deposition
* Channel Flow Status
* Condition of Banks
* Embeddedness
* Channel Alteration
* Stream Velocity and Depth
* Bank Vegetation Protection
* Riparian Vegetative Zone Width

For each of the above categories, a rating of optimal, sub-optimal, marginal or poor was assigned based on the grading criteria developed for each parameter. In addition to the habitat ratings, data was collected on the stream's wetted width and thalweg depths at pools, runs, and riffles at each representative site. At representative sites, field crews also indicated whether the bottom sediments in the area were primarily silts, sands, gravel, cobble, boulders, or bedrock.

Representative site evaluations were done at approximately ½ mile intervals along the stream. Twenty-seven representative data sheets were filled out during this survey. Locations of representative sites are shown in Figures 13a, 13b, and 13c, and the data is presented in Appendix B.

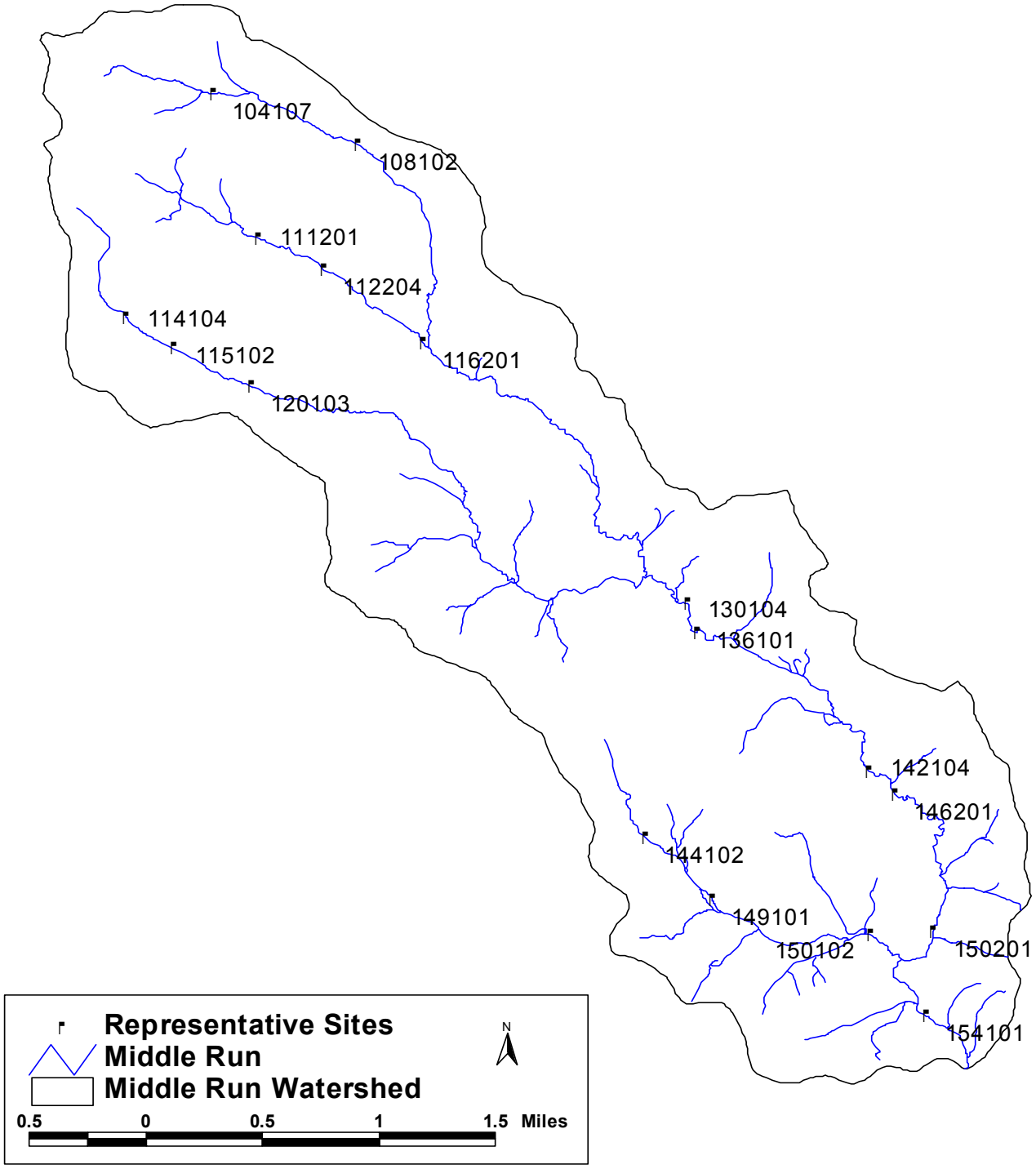

Figure 13a: Middle Run Representative Site Locations.

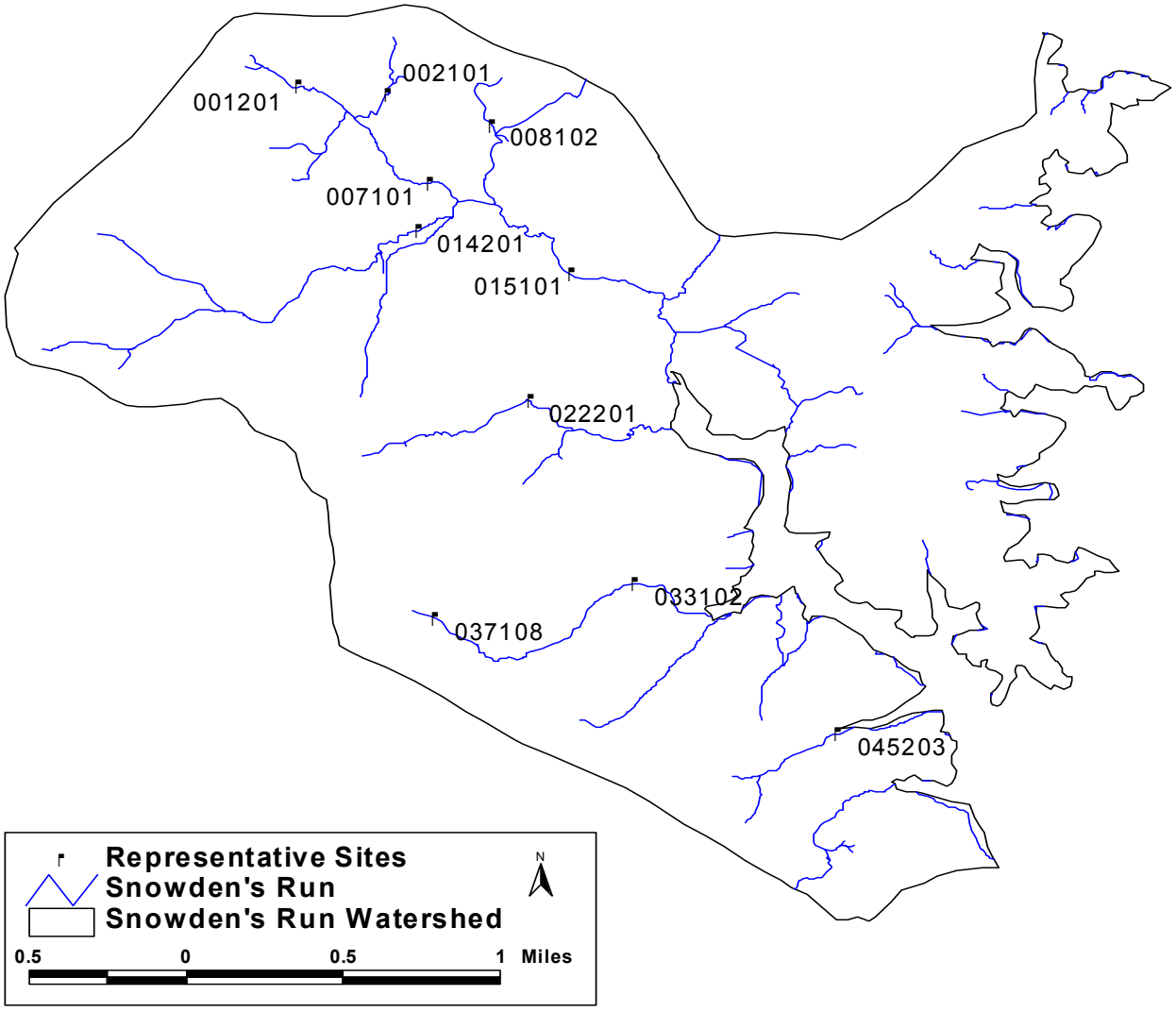

Figure 13b: Snowden's Run Representative Site Locations.

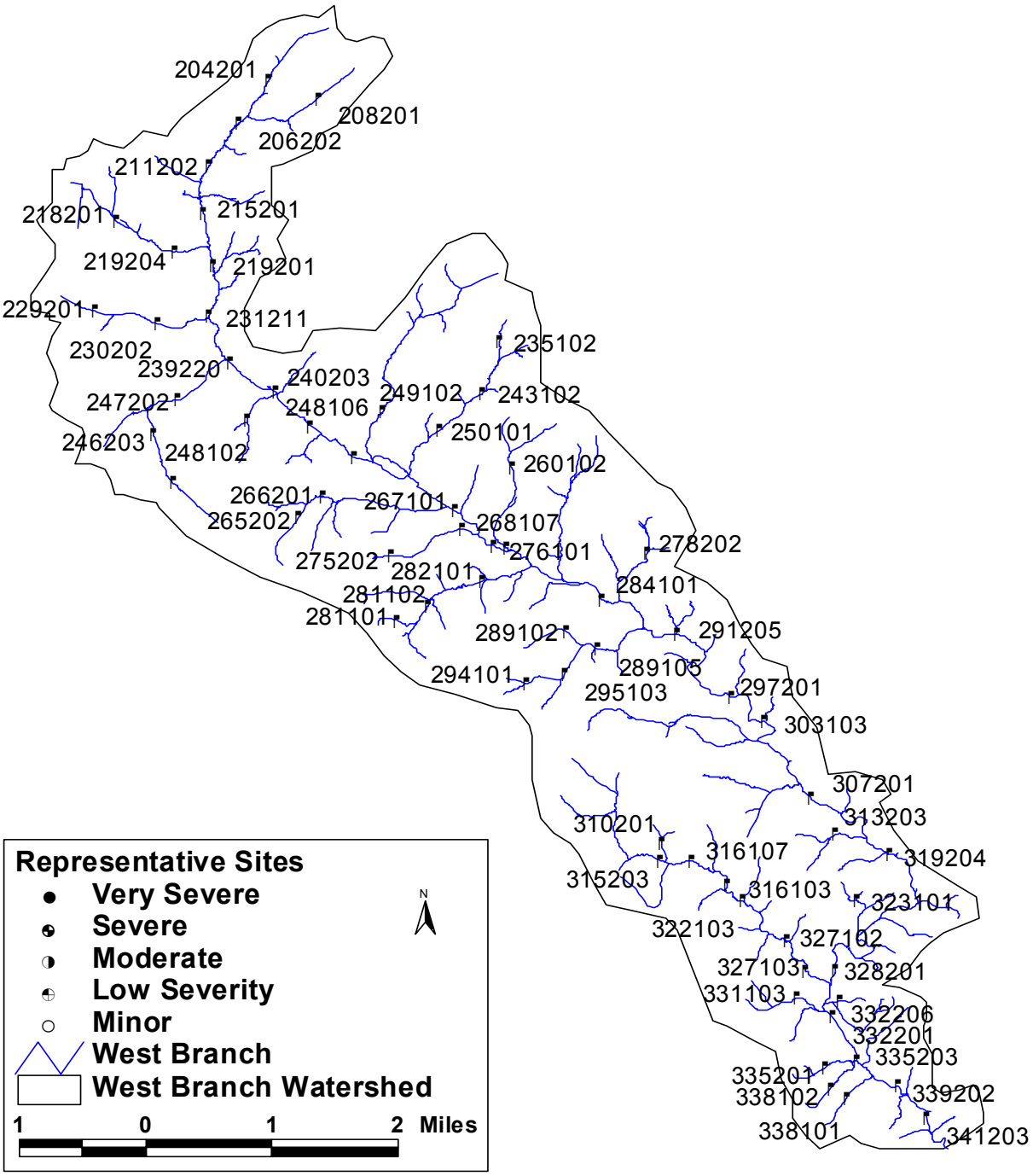

Figure 13c: West Branch Representative Site Locations.

DISCUSSION

One of the main objectives of the Liberty Reservoir Stream Corridor Assessment survey was to walk the stream network quickly and identify potential environmental problems in or along the edge of the streams. The survey was completed in the spring of 2002, and over 121 miles of stream were walked. During the SCA survey, 497 potential environmental problem sites were identified. These include: 150 erosion sites, 125 pipe outfalls, 114 inadequate buffers, 32 fish migration barriers, 22 trash dumping sites, 21 channel alterations, 18 unusual conditions, 12 exposed pipes, and 3 in/near stream construction sites. Twenty-six comments and 91 representative sites also were recorded.

Erosion sites were the most common problems observed in the three surveyed sub-watersheds. These sites typically ran through both forested and agricultural areas. In the agricultural areas, inadequate buffers (the third most commonly reported problem) and/or livestock also were present at a number of the sites. Some of the more minor erosion problems, especially in areas that also had inadequate buffers or livestock present, may be cured with buffer plantings and using fencing to limit livestock access. Some of the more severe erosion problems, however, will probably require more costly engineering solutions both to stabilize the stream's banks and to control upstream runoff, which ultimately is causing the stream to become unstable.

Pipe outfalls were also identified by survey crews to be a numerous problem throughout the surveyed sub-watersheds. Pipe outfalls can discharge harmful pollutants to the stream, especially in areas with older communities that were built before stormwater management requirements were in affect. Several pipe outfalls were identified with discharges that had a color or odor associated with it. Follow up investigations should be done to determine if the discharges are a significant environmental problem.

As mentioned earlier, the Maryland Department of Natural Resources has formed a partnership with Carroll County to develop a Watershed Restoration Action Strategy (WRAS) for the Liberty Reservoir watershed. Results from this survey will be combined with other information about the area to help establish priorities for the types and location of restoration projects that will be pursued in the watershed in the future. Information on the Liberty Reservoir Watershed Action Strategy can be found on DNR's website (www.dnr.state.md.us/watersheds/surf/proj/wras.html) or by contacting the Carroll County Water Resources Planning Division in Westminster, Maryland.

REFERENCES

Department of Natural Resources (DNR), 2000. Maryland fish passage database – Version 4. Maryland Department of Natural Resources - Fish Passage Program, Annapolis, MD.

EPA, 1992. Streamwalk Manual. Water Division Region 10, Seattle WA. EPA 910/9-92-004.

Hosmer, A.W. 1988. MaryPIRG'S Streamwalk manual. Univ. of Maryland, College Park.

Kazyak, P. F. 1996. Maryland biological stream survey sampling manual. Maryland Department of Natural Resources, Annapolis, MD.

Maryland Clean Water Action Plan. 1998. Maryland Department of Natural Resources, Annapolis. MD. Web address is http://misdata/cwap/index.html

Maryland Save Our Streams (SOS). 1970. Conducting a stream survey. Maryland Department of Natural Resource's Adopt-A-Stream Program. Annapolis, MD.

National Resources Conservation Service (NRCS). 1998. Stream visual assessment protocols. National Water and Climate Center Technical Note 99-1.

Plafken, J., M. T. Barbour, K. D. Porter, S. K. Gross and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers. U.S. Environmental Protection Agency (EPA), Office of Water, EPA/444/4-89-001.

Primrose, N.L., 2002. Report on the Nutrient and Biological Synoptic Surveys in portions of the Carroll County Drainage to Liberty Reservoir. April, 2002. Maryland Department of Natural Resources, Annapolis, MD.

Riley, A. L., 1998. *Restoring Streams in Cities*. Island Press. Washington, DC.

Roth, N. E., M. T. Southerland, G. Mercurio, J. C. Chaillou, P.F. Kazyak, S. S. Stranko, A. P. Prochaska, D. G. Heimbuch, and J. C. Seibel. 1999. *State of the Streams: 1995-1997 Maryland Biological Stream Survey Results*. Maryland Department of Natural Resources, Annapolis. MD.

Shanks, K. 2002. *Liberty Reservoir watershed characterization*. Maryland Department of Natural Resources, Annapolis. MD.

Yetman, K.T. *Stream corridor assessment survey – survey protocols*. Maryland Department of Natural Resources, Annapolis. MD.

Yetman, K. T., D. Bailey, C. Buckley, P. Sneeringer, M. Colosimo, L. Morrison and J. Bailey. 1996. *Swan Creek watershed assessment and restoration*. Proceedings Watershed '96. June 8 - 12, 1996 Baltimore, MD. Prepared by Tetra Tech Inc. under contract to EPA.

Yetman, K.T., P. Rice, R. Pellicano, 2002. *Stream Corridor Assessment Survey of the Little Patuxent River in Howard County*. Maryland Department of Natural Resources, Annapolis, MD.

Appendix A

Listing of sites by site number

Appendix A

Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Channel Alteration	103101	5	3	1	204650.52242	402526.46524	Mill Run
Inadequate Buffer	103102	5	2	3	204722.90519	402642.77684	Mill Run
Comment	103103				204645.73694	402798.17898	Mill Run
Inadequate Buffer	103103	1	3	3	204645.74902	402798.18099	Mill Run
Comment	103104				204611.89723	403016.59892	Mill Run
Fish Barrier	103104	4	5	3	204611.94580	403016.62321	Mill Run
Comment	104105				204607.28272	403029.67335	Mill Run
Pipe Outfall	104105	4	5	3	204607.28275	403029.66553	Mill Run
Fish Barrier	104106	4	4	3	204525.37973	403209.70824	Mill Run
Representative Site	104107				204514.36204	403275.78822	Mill Run
Comment	104108				204519.60711	403314.23455	Mill Run
Erosion Site	104108	4	3	3	204519.58642	403314.68330	Mill Run
Trash Dumping	104109	4	3	3	204507.22958	403368.49491	Mill Run
Erosion Site	104110	4	2	3	204498.51725	403409.49460	Mill Run
Inadequate Buffer	104111	5	1	2	204494.45195	403445.66431	Mill Run
Inadequate Buffer	104112	5			204427.54233	403669.25396	Mill Run
Erosion Site	105101	4	3	2	204333.86530	403872.47592	Mill Run
Fish Barrier	105102	3	3	1	204300.88661	403929.55647	Mill Run
Pipe Outfall	105103	3	3	2	204297.12559	403934.20367	Mill Run
Trash Dumping	105104	5	5	3	204264.96802	403982.22418	Mill Run
Channel Alteration	105105	5	2	2	204233.96564	404031.03781	Mill Run
Inadequate Buffer	105105	3	2	2	204234.01085	404031.05985	Mill Run
Comment	105106				204221.20240	404049.47914	Mill Run
Erosion Site	105106	2	3	3	204221.24593	404049.41952	Mill Run
Erosion Site	106101	4	1	2	203665.86022	402333.61599	Mill Run
Trash Dumping	106102	5	1	1	203661.42501	402347.29177	Mill Run
Inadequate Buffer	106201	5	1	2	203840.18189	402873.39820	Mill Run
Inadequate Buffer	106202	4	1	2	203827.91512	402894.02867	Mill Run
Erosion Site	107201	4	2	2	203784.08676	402977.25095	Mill Run
Fish Barrier	107202	5	2	1	203781.32657	402989.18228	Mill Run
Erosion Site	107203	2	3	3	203784.08676	403011.36866	Mill Run
Inadequate Buffer	108101	5	2	3	204126.90279	404291.53503	Mill Run
Representative Site	108102				204135.01121	404278.13579	Mill Run
Pipe Outfall	110101	5	1	2	203555.59501	402456.41952	Mill Run
Inadequate Buffer	110102	1	2	3	203354.70435	402545.06625	Mill Run
Representative Site	111201				203443.60442	403585.19083	Mill Run
Fish Barrier	112201	3	3	2	203312.85306	403870.47160	Mill Run
Inadequate Buffer	112202	1	3	2	203312.28759	403878.10550	Mill Run
Pipe Outfall	112203	3	1	3	203265.44913	403989.75137	Mill Run
Representative Site	112204				203214.41730	404033.56698	Mill Run
Inadequate Buffer	112205	3	3	3	203290.68135	404047.47047	Mill Run
Pipe Outfall	112206	3	3	2	203127.79653	404071.64596	Mill Run
Trash Dumping	114102	5	1	3	202884.82821	402667.02093	Mill Run
Trash Dumping	114103	5	1	1	202869.44653	402670.09727	Mill Run
Representative Site	114104				202856.02401	402675.36410	Mill Run
Erosion Site	114105	2	4	3	202986.67896	402523.96621	Mill Run
Inadequate Buffer	114105	4	2	3	202851.49985	402680.94167	Mill Run
Inadequate Buffer	115101	5	1	1	202650.94523	402951.38983	Mill Run
Representative Site	115102				202626.83689	402999.91768	Mill Run
Erosion Site	115103	2	2	2	202623.84411	403007.39963	Mill Run
Trash Dumping	115104	5	1	2	202581.80900	403087.71004	Mill Run
Inadequate Buffer	115105	4	1	2	202574.97494	403099.84555	Mill Run
Inadequate Buffer	115106	4	3	2	202492.73186	403217.63436	Mill Run
Pipe Outfall	115107	5	5	2	202458.52404	403274.54726	Mill Run
Pipe Outfall	115108	5	5	2	202453.64521	403287.78979	Mill Run

Appendix A

Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Representative Site	116201				202669.90561	404724.97377	Mill Run
Erosion Site	117201	2	3	4	202669.92317	404724.99691	Mill Run
Pipe Outfall	117202	4	3	1	202550.83242	405128.00990	Mill Run
Erosion Site	117203	3	3	1	202550.85532	405127.76393	Mill Run
Erosion Site	120101	2	3	3	202367.28578	403483.47477	Mill Run
Inadequate Buffer	120102	4	2	3	202354.03379	403516.63673	Mill Run
Representative Site	120103				202343.50623	403539.43032	Mill Run
Inadequate Buffer	120104	4	4	3	202238.33591	403899.27612	Mill Run
Channel Alteration	121101	5	2	2	202157.27378	404018.60232	Mill Run
Fish Barrier	121101	3	3	2	202157.31221	404018.52567	Mill Run
Erosion Site	121103	3	4	4	202175.56075	404145.15994	Mill Run
Erosion Site	122201	1	4	3	202417.46306	405180.28502	Mill Run
Inadequate Buffer	122202	5	3	3	202330.67241	405234.52918	Mill Run
Inadequate Buffer	122203	1	3	3	202230.86556	405472.61591	Mill Run
Comment	122204				202227.65947	405477.07655	Mill Run
Pipe Outfall	122205	3	3	3	202038.66794	405657.52320	Mill Run
Erosion Site	123101	4	1	1	202014.55524	405701.29313	Mill Run
Pipe Outfall	123102	4	1	1	201976.63715	405755.79671	Mill Run
Erosion Site	123103	4	2	1	201980.36316	405751.44461	Mill Run
Inadequate Buffer	123104	3	1	1	201980.51206	405751.40600	Mill Run
Fish Barrier	123105	5	1	1	201902.41322	405825.66970	Mill Run
Inadequate Buffer	124101	5	-1	-1	201172.43938	404591.53283	Mill Run
Pipe Outfall	124202	3	1	1	201189.16678	404671.54559	Mill Run
Erosion Site	124203	4	3	2	201196.61201	404677.79384	Mill Run
Erosion Site	124204	5	2	2	201685.63242	404589.80608	Mill Run
Erosion Site	126101	2	3	1	201723.62145	405903.91752	Mill Run
Inadequate Buffer	126102	1	2	1	201492.94084	405940.90928	Mill Run
Erosion Site	126103	1	3	2	201396.21121	405906.91030	Mill Run
Erosion Site	130101	2	3	3	200812.72311	405811.57528	Mill Run
Inadequate Buffer	130102	1	2	2	200812.69304	405811.55068	Mill Run
Unusual Condition	130103	2	5	4	200808.85515	406459.87016	Mill Run
Representative Site	130104				200737.51056	406556.01480	Mill Run
Erosion Site	130105	2	3	3	200738.38560	406503.38306	Mill Run
Erosion Site	130106	4	3	4	201053.82472	406577.60403	Mill Run
Inadequate Buffer	131201	5	2	2	201111.17839	407118.64002	Mill Run
Erosion Site	131202	3	3	2	200714.79973	407089.73331	Mill Run
Pipe Outfall	131203	4	1	1	200714.82002	407089.77800	Mill Run
Trash Dumping	131204	2	2	2	200703.56224	407080.12463	Mill Run
Pipe Outfall	131205	5	1	1	200854.21506	407130.89953	Mill Run
Channel Alteration	131206	3	1	1	200898.33160	407137.25701	Mill Run
Representative Site	136101				200518.56225	406615.15057	Mill Run
Inadequate Buffer	136102	4	2	4	200462.70411	406698.74792	Mill Run
Channel Alteration	136201	3	2	2	200457.64629	406876.53743	Mill Run
Fish Barrier	136201	5	3	1	200457.63751	406876.49772	Mill Run
Inadequate Buffer	136202	3	3	3	200438.72816	406893.90097	Mill Run
Erosion Site	136203	3	1	2	200381.01812	406980.60657	Mill Run
Pipe Outfall	136204	2	3	3	200262.48311	407191.53638	Mill Run
Inadequate Buffer	136205	5	3	3	200338.48637	407182.78817	Mill Run
Inadequate Buffer	136206	3	2	3	200308.76847	407332.68397	Mill Run
Pipe Outfall	136207	5	4	3	200314.75625	407285.62803	Mill Run
Channel Alteration	140101	2	5	1	199723.00790	405983.32694	Mill Run
Inadequate Buffer	140101	5	1	2	199722.76473	405983.16309	Mill Run
Unusual Condition	140102	3	5	3	199456.02801	406049.00117	Mill Run
Pipe Outfall	140103	2	4	3	199384.29434	406079.16394	Mill Run
Pipe Outfall	140104	2	5	3	199379.41552	406079.86092	Mill Run

Appendix A

Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Channel Alteration	142101	5	3	1	199393.46420	407953.87812	Mill Run
Inadequate Buffer	142102	2	2	2	199527.26012	407787.97676	Mill Run
Erosion Site	142103	1	3	2	199406.56863	407952.06329	Mill Run
Representative Site	142104				199494.26511	407802.95680	Mill Run
Inadequate Buffer	142105	3	3	3	199855.11726	407616.24207	Mill Run
Inadequate Buffer	142106	3	2	2	199400.68942	407958.03871	Mill Run
Pipe Outfall	144101	5	3	3	199036.50371	406223.43781	Mill Run
Inadequate Buffer	144102	5	1	2	199008.29150	406259.77353	Mill Run
Representative Site	144102				199008.17247	406259.76246	Mill Run
Erosion Site	144103	4	3	3	198986.31904	406276.98038	Mill Run
Erosion Site	144104	5	3	4	198757.86770	406534.71570	Mill Run
Erosion Site	144105	5	3	4	198783.60562	406547.28538	Mill Run
Fish Barrier	144105	3	3	4	198783.51075	406547.14308	Mill Run
Representative Site	146201				199325.47231	407982.34832	Mill Run
Erosion Site	146202	5	2	4	199316.21776	407991.62020	Mill Run
Inadequate Buffer	146203	4	2	2	199311.07651	408073.24556	Mill Run
Erosion Site	148101	2	3	4	198697.98391	406578.47671	Mill Run
Representative Site	149101				198547.26192	406723.56175	Mill Run
Erosion Site	149102	4	2	2	198320.82284	407047.16459	Mill Run
Inadequate Buffer	149102	3	2	2	198320.82284	407047.15920	Mill Run
Inadequate Buffer	149103	3	2	2	198229.93727	407167.03893	Mill Run
Erosion Site	149104	5	2	2	198217.87117	407382.05139	Mill Run
Inadequate Buffer	149105	3	3	3	198219.90083	407306.43398	Mill Run
Erosion Site	150101	5	2	3	198255.51329	407593.79313	Mill Run
Representative Site	150102				198282.16002	407816.63520	Mill Run
Erosion Site	150103	1	4	4	198222.59269	407887.68423	Mill Run
Erosion Site	150201	2	3	5	198309.82856	408249.61653	Mill Run
Representative Site	150201				198309.84705	408249.62966	Mill Run
Representative Site	154101				197685.30253	408196.70705	Mill Run
Erosion Site	154102	4	4	4	197620.09151	408270.18840	Mill Run
Erosion Site	154103	4	4	4	197553.65177	408403.06787	Mill Run
Inadequate Buffer	158101	3	1	2	197405.66553	408480.73920	Mill Run
Representative Site	204201				216960.35458	402536.52380	West Branch
Comment	204202				217347.03685	402774.00021	West Branch
Inadequate Buffer	206201	3	2	2	216266.50063	402055.29330	West Branch
Representative Site	206202				216362.51084	402152.99248	West Branch
Fish Barrier	207201	5	1	2	216433.91421	402228.24282	West Branch
Inadequate Buffer	207202	1	1	1	216593.63467	402312.78203	West Branch
Inadequate Buffer	207203	2	2	2	216409.24665	402661.34472	West Branch
Pipe Outfall	207204	3	3	2	216394.35990	402770.44568	West Branch
Representative Site	208201				216707.54074	403160.59788	West Branch
Inadequate Buffer	211201	1	2	1	215747.01585	401291.54437	West Branch
Representative Site	211202				215785.23082	401773.73364	West Branch
Unusual Condition	211203	4	1	1	216023.45567	402026.68010	West Branch
Inadequate Buffer	211204	4	2	1	215950.90343	402118.95501	West Branch
Pipe Outfall	214201	4	3	1	215227.12619	400385.23922	West Branch
Inadequate Buffer	214202	1	2	2	215219.16443	400397.27131	West Branch
Unusual Condition	214203	3	2	1	215163.79877	400491.31667	West Branch
Pipe Outfall	214204	4	4	1	215233.55933	400553.31042	West Branch
Inadequate Buffer	214205	3	2	1	215233.55765	400553.35923	West Branch
Pipe Outfall	214206	4	4	1	215201.27494	400548.54403	West Branch
Erosion Site	214207	2	2	3	215164.81428	400490.09419	West Branch
Representative Site	215201				215134.79835	401700.79162	West Branch
Inadequate Buffer	215202	3	1	1	215785.38814	401773.93135	West Branch
Inadequate Buffer	215203	3	1	1	215396.15969	401470.84721	West Branch

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Pipe Outfall	215204	3	3	1	215396.04033	401470.95242	West Branch
Pipe Outfall	215205	3	3	3	215401.04056	401639.49127	West Branch
Comment	215207				215334.98995	402019.17823	West Branch
Representative Site	218201				215021.76239	400588.78459	West Branch
Unusual Condition	218202	4	5	2	214991.01873	400723.59592	West Branch
Pipe Outfall	218203	3	3	1	214772.28553	400952.40074	West Branch
Inadequate Buffer	218204	5	2	1	214765.40149	400985.91789	West Branch
Pipe Outfall	218205	3	3	4	214620.76868	401187.01036	West Branch
Representative Site	219201				214432.66981	401820.76185	West Branch
Inadequate Buffer	219202	4	1	1	214638.28819	401780.70362	West Branch
Fish Barrier	219203	5	2	2	215010.50380	401723.77458	West Branch
Representative Site	219204				214616.35352	401335.36098	West Branch
Inadequate Buffer	219205	4	2	2	214604.45859	401500.66332	West Branch
Inadequate Buffer	220201	1	1	1	214617.82846	402251.71757	West Branch
Pipe Outfall	223201	5	1	1	213867.18389	400133.23865	West Branch
Inadequate Buffer	225201	4	2	2	214201.47679	401882.97185	West Branch
Inadequate Buffer	225202	3	1	1	214395.33155	401822.11065	West Branch
Erosion Site	228101	3	4	4	214156.62349	405094.09245	West Branch
Representative Site	229201				213804.54828	400305.97399	West Branch
Inadequate Buffer	229202	5	1	2	213793.45998	400326.49212	West Branch
Erosion Site	230201	2	2	2	213613.53790	401187.38005	West Branch
Representative Site	230202				213631.17446	401112.16293	West Branch
Inadequate Buffer	230203	3	2	2	213677.49122	400992.53058	West Branch
Pipe Outfall	230204	4	3	1	213779.49357	400937.37636	West Branch
Pipe Outfall	230205	3	3	2	213740.86433	400880.75541	West Branch
Pipe Outfall	230206	4	3	1	213743.51017	400873.34706	West Branch
Inadequate Buffer	230207	5	2	1	213743.01905	400855.79965	West Branch
Pipe Outfall	230208	5	1	4	213763.35396	400784.05001	West Branch
Pipe Outfall	230209	4	3	4	213817.05725	400730.54981	West Branch
Pipe Outfall	230210	5	1	3	213629.70396	400463.95004	West Branch
Pipe Outfall	231201	4	3	1	213219.46978	401925.13330	West Branch
Pipe Outfall	231202	4	3	3	213228.04035	401926.93409	West Branch
Fish Barrier	231203	1	5	1	213313.08135	401887.41497	West Branch
Inadequate Buffer	231204	4	1	2	213486.02011	401898.67945	West Branch
Comment	231205				213534.62586	401881.20191	West Branch
Pipe Outfall	231206	4	3	3	213689.03622	401575.83050	West Branch
Inadequate Buffer	231207	3	4	1	213673.60560	401539.19745	West Branch
Pipe Outfall	231208	4	3	3	213693.49294	401505.53160	West Branch
Pipe Outfall	231210	4	3	1	213563.94422	401419.92073	West Branch
Representative Site	231211				213729.51069	401769.30218	West Branch
Erosion Site	234102	2	3	3	213721.34809	404443.97691	West Branch
Erosion Site	234103	3	3	3	213798.98259	404291.87943	West Branch
Erosion Site	235101	2	3	2	213340.95560	405475.46772	West Branch
Representative Site	235102				213383.06770	405474.67782	West Branch
Pipe Outfall	239201	4	3	3	212599.40769	401398.07748	West Branch
Pipe Outfall	239202	4	3	3	212615.40404	401414.99802	West Branch
Comment	239203				212599.38711	401398.08732	West Branch
Unusual Condition	239204	2	4	2	212664.36263	401500.81267	West Branch
Pipe Outfall	239205	4	2	1	212794.59094	401658.05745	West Branch
Erosion Site	239206	3	2	1	212794.59094	401658.06523	West Branch
Pipe Outfall	239207	4	3	1	212896.98490	401737.09806	West Branch
Unusual Condition	239207	4	5	2	212896.99411	401737.13072	West Branch
Fish Barrier	239208	3	1	1	212942.30402	401745.67137	West Branch
Exposed Pipe	239209	4	2	2	212961.32783	401751.16154	West Branch
Pipe Outfall	239210	4	3	1	212978.52558	401754.89461	West Branch

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Pipe Outfall	239211	5	1	1	212996.36795	401754.16137	West Branch
Pipe Outfall	239212	5	1	3	213037.52700	401790.12126	West Branch
Pipe Outfall	239213	4	3	1	213048.71547	401806.15808	West Branch
Inadequate Buffer	239214	3	1	1	213069.59349	401873.98876	West Branch
Pipe Outfall	239218	3	3	1	213024.03279	402121.84903	West Branch
Pipe Outfall	239219	3	1	1	213073.88400	402067.60486	West Branch
Representative Site	239220				213110.46179	402032.54031	West Branch
Pipe Outfall	239221	3	3	1	213137.47741	401993.75157	West Branch
Fish Barrier	239222	3	4	1	213140.52540	401990.14063	West Branch
Erosion Site	239223	3	4	1	213159.86600	401973.67738	West Branch
Inadequate Buffer	239224	1	2	1	213162.53644	401972.79367	West Branch
Exposed Pipe	239225	4	4	1	213140.52540	401990.14298	West Branch
Inadequate Buffer	240201	3	1	1	212887.13956	402814.22048	West Branch
Comment	240202				212745.56431	402702.86923	West Branch
Representative Site	240203				212701.18025	402620.63126	West Branch
Inadequate Buffer	240204	2	2	1	212701.16482	402620.63585	West Branch
Fish Barrier	240205	3	4	1	212733.66983	402566.64022	West Branch
Comment	240206				212763.51567	402416.95305	West Branch
Channel Alteration	240207	4	5	2	212797.37547	402364.53378	West Branch
Pipe Outfall	240208	4	1	1	212869.19326	402301.78331	West Branch
Pipe Outfall	240209	4	2	2	212893.59481	402235.93256	West Branch
Trash Dumping	242101	4	4	2	212635.66541	404132.85977	West Branch
Erosion Site	243101	2	4	3	212807.18430	405327.23828	West Branch
Representative Site	243102				212681.96389	405264.57157	West Branch
Trash Dumping	243103	4	2	3	212632.97783	405174.87877	West Branch
Trash Dumping	243104	3	3	3	212664.48944	404956.94618	West Branch
Pipe Outfall	246117	3	1	1	212184.27416	400576.49324	West Branch
Unusual Condition	246119	4	5	3	212125.79707	400534.09291	West Branch
Pipe Outfall	246201	4	3	2	212072.33743	401075.86262	West Branch
Exposed Pipe	246202	5	2	2	212072.33743	401075.84826	West Branch
Representative Site	246203				212111.52225	401063.38575	West Branch
Pipe Outfall	246204	4	3	2	212128.03916	401060.79625	West Branch
Pipe Outfall	246205	4	3	1	212246.14588	401062.85505	West Branch
Inadequate Buffer	246206	2	2	1	212288.18311	401008.59984	West Branch
Pipe Outfall	246207	4	3	1	212405.61411	400978.59569	West Branch
Pipe Outfall	246208	4	3	1	212436.94084	400971.57850	West Branch
Pipe Outfall	246209	4	1	1	212431.20694	400881.74213	West Branch
Pipe Outfall	246210	5	1	2	212410.05418	400838.40588	West Branch
Fish Barrier	246211	5	5	2	212417.34148	400817.74342	West Branch
Exposed Pipe	246212	4	3	2	212310.27001	400672.16240	West Branch
Unusual Condition	246212	5	4	2	212310.27505	400672.16492	West Branch
Exposed Pipe	246213	4	3	2	212294.89701	400658.19067	West Branch
Pipe Outfall	246213	5	1	1	212564.92876	401091.75010	West Branch
Pipe Outfall	246214	4	2	1	212571.04726	401251.97837	West Branch
Pipe Outfall	246214	5	1	2	212570.66486	401249.30152	West Branch
Pipe Outfall	246215	3	3	3	212247.06252	400621.97049	West Branch
Channel Alteration	246216	3	3	1	212260.06433	400632.10426	West Branch
Pipe Outfall	246218	2	5	1	212080.14534	400501.61382	West Branch
Trash Dumping	247101	4	2	2	212218.02301	402127.46904	West Branch
Unusual Condition	247201	3	5	1	212587.41437	401330.56273	West Branch
Representative Site	247202				212587.04345	401371.13937	West Branch
Erosion Site	248101	3	4	3	212433.88785	402303.27374	West Branch
Representative Site	248102				212317.95158	402260.54265	West Branch
Pipe Outfall	248103	4	1	1	212347.03556	402266.34525	West Branch
Pipe Outfall	248104	3	3	3	212473.26371	402319.67923	West Branch

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Erosion Site	248105	3	3	3	212515.04510	402738.28450	West Branch
Representative Site	248106				212237.69330	403061.59911	West Branch
Erosion Site	249101	1	4	4	212046.85401	403292.25518	West Branch
Erosion Site	249102	1	4	4	212434.87199	403988.73360	West Branch
Representative Site	249102				212434.88480	403988.74000	West Branch
Representative Site	250101				212172.68669	404704.90155	West Branch
Erosion Site	250102	4	3	4	212333.86772	404894.85204	West Branch
Pipe Outfall	255201	4	2	1	211568.70007	401213.41493	West Branch
Pipe Outfall	255202	4	3	1	211599.88908	401216.12702	West Branch
Pipe Outfall	255203	4	2	1	211682.35459	401194.64047	West Branch
Pipe Outfall	255204	4	2	3	211702.95557	401178.99411	West Branch
Pipe Outfall	255205	2	5	1	211722.38456	401168.52340	West Branch
Pipe Outfall	255206	4	3	1	211738.18698	401161.03758	West Branch
Erosion Site	255207	1	3	1	211866.89121	401138.37568	West Branch
Comment	255208				211876.33281	401142.26470	West Branch
Pipe Outfall	255209	5	1	2	211984.97770	401106.20174	West Branch
Pipe Outfall	256201	4	3	2	211397.00388	401390.63320	West Branch
Inadequate Buffer	256202	2	1	1	211402.59005	401364.89675	West Branch
Exposed Pipe	256203	4	2	2	211432.81444	401350.83301	West Branch
Pipe Outfall	256204	4	2	1	211439.18594	401328.43253	West Branch
Representative Site	256205				211457.72726	401312.99498	West Branch
Pipe Outfall	256206	4	3	3	211471.35870	401308.41392	West Branch
Pipe Outfall	256207	4	3	2	211493.40947	401279.67102	West Branch
Pipe Outfall	256208	4	3	2	211508.45718	401274.69115	West Branch
Erosion Site	257101	3	3	3	211976.58237	402260.93102	West Branch
Inadequate Buffer	257101	4	2	3	211976.58237	402260.92723	West Branch
Trash Dumping	258101	3	3	3	211863.53869	403551.07214	West Branch
Representative Site	258102				211809.18330	403628.94669	West Branch
Erosion Site	260101	1	4	3	211391.21931	405121.31531	West Branch
Representative Site	260102				211662.74927	405638.77297	West Branch
Erosion Site	264201	3	5	2	211368.26493	401400.19707	West Branch
Pipe Outfall	265201	4	3	4	210976.88008	402900.09234	West Branch
Representative Site	265202				210995.24200	402912.16226	West Branch
Inadequate Buffer	265203	1	2	1	211226.28399	403085.64015	West Branch
Inadequate Buffer	265204	3	2	2	211178.21615	402988.56651	West Branch
Pipe Outfall	265205	4	3	1	211191.65311	402953.53336	West Branch
Pipe Outfall	265206	3	4	1	211180.78415	402872.91448	West Branch
Pipe Outfall	265207	3	4	4	211172.41801	402804.86986	West Branch
Erosion Site	265208	3	2	2	211147.25455	402675.61020	West Branch
Pipe Outfall	265209	3	3	3	211185.11271	402534.37614	West Branch
Pipe Outfall	265210	4	3	1	211086.00397	402616.73745	West Branch
Representative Site	266201				211271.36151	403214.52917	West Branch
Comment	266202				211245.02876	403323.08563	West Branch
Inadequate Buffer	267101	1	2	1	210808.59850	404912.06990	West Branch
Representative Site	267101				211077.36755	404909.50067	West Branch
Erosion Site	267102	2	3	3	211244.90717	404667.35467	West Branch
Erosion Site	268101	4	3	2	211266.10297	405685.92383	West Branch
Inadequate Buffer	268102	3	2	1	211092.36673	405555.11703	West Branch
Pipe Outfall	268104	4	1	1	210891.27843	405187.56469	West Branch
Inadequate Buffer	268105	3	2	1	211048.53503	404977.27741	West Branch
Erosion Site	268106	2	3	4	211327.12240	405673.16407	West Branch
Representative Site	268107				210832.91781	404997.83065	West Branch
Inadequate Buffer	270201	3	1	2	210854.79075	407316.64531	West Branch
Erosion Site	273201	1	3	2	210519.83345	402623.50870	West Branch
Erosion Site	275201	2	3	4	210447.75912	403911.86543	West Branch

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Representative Site	275202				210464.42981	404091.00705	West Branch
Representative Site	276101				210579.11052	405563.52570	West Branch
Representative Site	276102				210597.54113	405408.95326	West Branch
Erosion Site	276103	5	3	4	210725.82736	405215.76347	West Branch
Erosion Site	278201	5	3	3	210582.12589	407637.10326	West Branch
Representative Site	278202				210506.85845	407359.97599	West Branch
Erosion Site	278203	1	5	3	210506.86030	407359.97379	West Branch
Erosion Site	278204	2	2	1	210176.03817	406963.01718	West Branch
Pipe Outfall	278205	3	1	1	210457.49671	406900.71426	West Branch
Inadequate Buffer	278206	3	1	1	210496.21055	406872.53024	West Branch
Erosion Site	280101	3	4	3	209822.77421	403741.76959	West Branch
Representative Site	281101				209580.06233	404172.53493	West Branch
Representative Site	281102				209778.65576	404565.21642	West Branch
Unusual Condition	281103	3	4	3	209752.34843	404668.72621	West Branch
Erosion Site	281104	1	5	3	209590.90596	404738.77106	West Branch
Erosion Site	281105	1	4	3	209891.02327	404609.18691	West Branch
Representative Site	282101				210122.44709	405262.17898	West Branch
Comment	282102				210098.52625	405275.45102	West Branch
Erosion Site	282102	1	5	3	210098.49364	405275.45275	West Branch
Pipe Outfall	282103	5	5	5	209651.08319	405265.63836	West Branch
Representative Site	284101				209861.84644	406780.33753	West Branch
Comment	285101				209823.80530	407918.84550	West Branch
Inadequate Buffer	287101	2	3	2	209350.21581	404314.34453	West Branch
Comment	287102				209516.70467	404814.62840	West Branch
Pipe Outfall	287103	3	4	3	209466.45070	404818.10751	West Branch
Erosion Site	289101	4	3	3	209036.78063	406409.24113	West Branch
Erosion Site	289102	3	4	3	209434.47722	406331.08711	West Branch
Representative Site	289102				209434.47528	406331.08417	West Branch
Fish Barrier	289103	4	3	2	209386.45562	406082.58755	West Branch
Inadequate Buffer	289103	2	3	2	209386.45562	406082.58097	West Branch
Fish Barrier	289104	4	4	1	209317.23986	405963.11498	West Branch
Representative Site	289105				209203.06867	406734.40500	West Branch
Fish Barrier	290101	3	3	2	209450.58615	407193.39113	West Branch
Pipe Outfall	290101	3	2	1	209450.58615	407193.41436	West Branch
Inadequate Buffer	290201	4	3	2	209138.45084	407639.94208	West Branch
Erosion Site	291201	3	3	2	209130.38320	407702.72714	West Branch
Trash Dumping	291202	5	2	5	209240.82390	408181.76408	West Branch
Erosion Site	291203	3	2	4	209266.32633	408193.28856	West Branch
Erosion Site	291204	4	3	4	209377.54928	407829.12100	West Branch
Representative Site	291205				209401.80571	407748.61534	West Branch
Representative Site	294101				208716.94023	405816.75680	West Branch
Inadequate Buffer	294102	1	1	1	208575.24469	405519.60713	West Branch
Erosion Site	295101	2	3	3	208801.02138	405915.74960	West Branch
Erosion Site	295102	4	2	2	208815.88766	406014.65369	West Branch
Representative Site	295103				208843.58884	406305.30638	West Branch
Comment	296101				208367.59865	406803.80895	West Branch
Erosion Site	296101	2	4	2	208367.59578	406803.81039	West Branch
Fish Barrier	296102	3	3	2	208375.59631	406852.22314	West Branch
Trash Dumping	296102	2	4	2	208375.59631	406852.22700	West Branch
Representative Site	297201				208540.36322	408440.33056	West Branch
Fish Barrier	297202	3	3	5	208641.35472	408144.23636	West Branch
Inadequate Buffer	302101	2	4	2	208192.66653	407695.75285	West Branch
Inadequate Buffer	303101	2	5	2	207805.82133	408995.03286	West Branch
Inadequate Buffer	303102	4	3	2	207938.88419	408772.34926	West Branch
Representative Site	303103				208215.40864	408849.96864	West Branch

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Trash Dumping	303104	1	4	4	208332.33339	408905.84731	West Branch
Pipe Outfall	306101	4	2	3	207473.16210	408067.93153	West Branch
Erosion Site	306102	3	3	2	207461.02988	408145.75315	West Branch
Representative Site	307201				207151.73319	409457.44841	West Branch
Trash Dumping	307202	4	3	4	207155.56426	409454.70075	West Branch
Inadequate Buffer	307203	3	3	3	206752.99650	408694.52564	West Branch
Erosion Site	307204	1	3	4	206865.01204	408747.04802	West Branch
Erosion Site	310101	5	4	3	206561.76689	406982.28482	West Branch
Representative Site	310201				206535.57524	407540.39863	West Branch
Erosion Site	310202	4	3	3	206590.82662	407549.32856	West Branch
Erosion Site	310203	3	4	4	206643.87233	407531.70266	West Branch
Comment	312101				206973.42144	408599.57658	West Branch
Erosion Site	313101	3	4	3	206984.77481	409871.32377	West Branch
Erosion Site	313201	3	3	4	206529.69424	410207.93851	West Branch
Erosion Site	313202	3	2	3	206656.24786	409741.88574	West Branch
Representative Site	313203				206670.48496	409768.32679	West Branch
Fish Barrier	313204	5	3	1	206605.00763	409688.21136	West Branch
Fish Barrier	313205	3	1	2	206848.40543	410160.51813	West Branch
Pipe Outfall	313206	4	1	1	207069.24558	409643.42367	West Branch
Pipe Outfall	315201	5	1	1	206199.99142	406995.72422	West Branch
Erosion Site	315202	3	3	4	206205.90632	407017.31307	West Branch
Representative Site	315203				206309.77955	407527.96377	West Branch
Inadequate Buffer	315205	5	3	1	206192.43336	407591.38059	West Branch
Pipe Outfall	315206	5	1	3	205963.58620	407535.65134	West Branch
Erosion Site	315207	4	2	4	206361.58690	407606.02769	West Branch
Fish Barrier	316101	5	2	2	205907.90071	408344.25549	West Branch
Erosion Site	316102	1	3	3	206162.42154	408237.29404	West Branch
Representative Site	316103				205979.60128	408385.25356	West Branch
Inadequate Buffer	316104	3	2	2	206181.58143	408154.82306	West Branch
Pipe Outfall	316105	5	5	3	206211.89099	408163.47843	West Branch
Unusual Condition	316106	4	2	2	206298.53135	407947.70319	West Branch
Representative Site	316107				206303.49887	407919.60978	West Branch
Erosion Site	318201	3	3	1	206319.28226	410105.42577	West Branch
Inadequate Buffer	318202	4	2	1	206323.18829	410087.66740	West Branch
Erosion Site	319201	4	2	2	205988.07635	410721.64739	West Branch
Pipe Outfall	319202	5	1	3	206336.94898	410578.43980	West Branch
Pipe Outfall	319203	5	1	3	206356.07808	410547.08933	West Branch
Representative Site	319204				206400.99568	410453.16210	West Branch
Inadequate Buffer	321101	4	2	2	205400.69741	408520.13880	West Branch
Inadequate Buffer	321102	1	2	2	205761.57534	408024.50169	West Branch
Erosion Site	322101	3	4	3	205319.37196	408897.46157	West Branch
Inadequate Buffer	322102	1	5	2	205651.97919	408714.37124	West Branch
Representative Site	322103				205757.31943	408578.85479	West Branch
Erosion Site	323101	3	4	3	205770.04927	410033.94519	West Branch
Representative Site	323101				205770.05147	410033.94629	West Branch
Erosion Site	323201	4	2	2	205484.86106	410271.32681	West Branch
Erosion Site	323202	4	2	2	205571.21901	410335.08440	West Branch
Inadequate Buffer	323202	3	1	3	205571.21901	410335.08758	West Branch
In/Near Stream Construction	324101	5			205594.58212	410591.67269	West Branch
Inadequate Buffer	324201	4	1	1	205627.32233	410424.31376	West Branch
Erosion Site	324202	5	2	2	205679.89499	410538.59724	West Branch
Pipe Outfall	324203	5	1	2	205713.33601	410991.61361	West Branch
Erosion Site	324204	5	2	3	205669.36145	411123.72958	West Branch
In/Near Stream Construction	324205	2			205670.10363	411129.49931	West Branch
Erosion Site	324206	4	2	3	205660.97089	411237.15736	West Branch

Appendix A

Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Erosion Site	325201	1	2	3	205602.12912	411331.24573	West Branch
Erosion Site	327101	3	4	4	205205.50112	409130.78139	West Branch
Representative Site	327102				205211.32025	409152.75472	West Branch
Representative Site	327103				204801.52506	409385.13365	West Branch
Representative Site	328201				204820.36393	409769.01253	West Branch
Erosion Site	328202	4	4	5	205099.45314	409736.20996	West Branch
Erosion Site	328203	2	4	2	205131.94276	409934.14870	West Branch
Erosion Site	328204	3	2	1	205172.59095	410161.22333	West Branch
Inadequate Buffer	328204	5	1	1	205172.59351	410161.22022	West Branch
Erosion Site	328205	1	3	2	205235.69169	410043.32706	West Branch
Inadequate Buffer	328206	2	4	1	205260.09097	410043.62418	West Branch
Pipe Outfall	328206	4	3	2	205260.09601	410043.62307	West Branch
Exposed Pipe	331101	5	3	3	204637.11557	408709.98475	West Branch
In/Near Stream Construction	331102	5			204655.17270	408629.47507	West Branch
Representative Site	331103				204433.40558	409268.08844	West Branch
Representative Site	332201				204182.62386	409720.55435	West Branch
Erosion Site	332202	4	4	3	204243.96940	409657.06402	West Branch
Erosion Site	332203	4	3	2	204433.64963	409676.26862	West Branch
Erosion Site	332204	2	4	2	204466.54030	409684.91432	West Branch
Erosion Site	332205	3	2	2	204385.43529	409921.38419	West Branch
Representative Site	332206				204398.81998	409818.75815	West Branch
Inadequate Buffer	332207	2	4	2	204440.49138	409681.50062	West Branch
Erosion Site	332208	2	3	2	204618.76074	409703.95896	West Branch
Pipe Outfall	332209	5	1	3	204664.00904	409728.28890	West Branch
Erosion Site	335101	4	4	3	203993.64237	410373.89749	West Branch
Inadequate Buffer	335102	4	2	2	203906.67917	410273.05184	West Branch
Representative Site	335201				203492.89574	409633.13328	West Branch
Fish Barrier	335202	3	3	3	203568.28844	409965.90252	West Branch
Representative Site	335203				203587.59281	410037.21907	West Branch
Unusual Condition	335204	3	3	2	203772.43244	409982.02839	West Branch
Pipe Outfall	335205	3	4	1	203832.96542	409948.19643	West Branch
Inadequate Buffer	335206	4	5	2	203717.60560	410008.37140	West Branch
Fish Barrier	335207	1	3	2	203827.98239	409936.06166	West Branch
Pipe Outfall	335208	5	4	3	203886.47750	409891.33984	West Branch
Pipe Outfall	335209	5	4	2	203943.33409	409877.96181	West Branch
Fish Barrier	335210	1	3	2	203978.45115	409854.04095	West Branch
Pipe Outfall	335210	2	4	3	203976.97982	409860.40316	West Branch
Erosion Site	337101	1	4	3	202985.39107	409397.73218	West Branch
Inadequate Buffer	337101	4	3	3	202985.38464	409397.74808	West Branch
Erosion Site	337201	2	4	1	203361.62948	409249.57362	West Branch
Comment	337202				203357.30695	409433.86803	West Branch
Erosion Site	337203	1	4	4	203385.71611	409478.37632	West Branch
Erosion Site	337204	4	5	5	203389.94264	409481.47920	West Branch
Inadequate Buffer	338101	4	3	3	203074.93029	409903.93141	West Branch
Representative Site	338101				203074.93029	409903.92928	West Branch
Representative Site	338102				203201.89087	409698.34606	West Branch
Erosion Site	338201	4	4	3	203363.96436	410244.86640	West Branch
Inadequate Buffer	338202	5	1	1	203335.19526	410184.09293	West Branch
Trash Dumping	338203	5	1	1	203307.35961	410132.12383	West Branch
Pipe Outfall	338204	3	4	4	203276.11731	410108.49315	West Branch
Trash Dumping	339101	3	4	3	202868.67092	410588.01016	West Branch
Erosion Site	339201	3	4	3	202949.73669	410819.85631	West Branch
Representative Site	339202				203231.32066	410557.39356	West Branch
Erosion Site	339203	3	4	2	203212.90115	410493.49676	West Branch
Erosion Site	340101	4	4	3	202771.05995	409729.66173	West Branch

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Inadequate Buffer	341101	3	2	2	202739.81807	411158.01173	West Branch
Erosion Site	341102	5	2	2	202622.99321	411020.59564	West Branch
Erosion Site	341103	4	3	2	202733.90056	411149.26549	West Branch
Erosion Site	341104	4	3	3	202746.31987	411173.81530	West Branch
Inadequate Buffer	341201	2	2	2	202400.55297	411162.42919	West Branch
Erosion Site	341202	2	4	3	202480.34933	411022.66264	West Branch
Erosion Site	341203	2	4	2	202808.46901	410923.49996	West Branch
Representative Site	341203				202808.47085	410923.49934	West Branch
Representative Site	001201				194564.15791	405637.88686	Snowden's Run
Erosion Site	001202	4	4	4	194589.76464	405576.01333	Snowden's Run
Comment	001203				194685.79871	405452.48714	Snowden's Run
Inadequate Buffer	001204	3	3	3	194672.69108	405399.10669	Snowden's Run
Representative Site	002101				194520.41224	406106.93763	Snowden's Run
Erosion Site	002102	4	2	3	194707.02734	406117.97355	Snowden's Run
Erosion Site	002103	4	2	2	194677.86356	406120.40386	Snowden's Run
Unusual Condition	002104	2	3	2	194815.21298	406146.94962	Snowden's Run
Pipe Outfall	002105	3	5	2	194844.18435	406153.85410	Snowden's Run
Channel Alteration	002106	4	3	2	194822.96563	406147.90962	Snowden's Run
Exposed Pipe	002107	4	3	2	194865.63271	406136.89363	Snowden's Run
Inadequate Buffer	003101	4	2	2	194574.83041	406573.31846	Snowden's Run
Representative Site	007101				193977.23686	406328.09628	Snowden's Run
Erosion Site	007102	4	2	2	193972.03341	406273.83140	Snowden's Run
Inadequate Buffer	007103	2	3	2	194375.46568	405931.46079	Snowden's Run
Fish Barrier	007104	2	3	2	193979.05301	406251.92194	Snowden's Run
Unusual Condition	007105	3	4	2	193979.07074	406251.94681	Snowden's Run
Channel Alteration	007106	4	4	2	194045.87245	406140.01109	Snowden's Run
Erosion Site	007107	4	2	2	194246.05141	406036.87570	Snowden's Run
Inadequate Buffer	007108	3	3	2	194406.45219	406029.28097	Snowden's Run
Channel Alteration	007201	5	1	1	194183.79282	405779.10933	Snowden's Run
Erosion Site	007202	3	2	2	194264.27877	405796.27453	Snowden's Run
Inadequate Buffer	007203	3	2	2	194357.84590	405862.80440	Snowden's Run
Inadequate Buffer	007204	5	3	2	194378.50357	405924.77743	Snowden's Run
Erosion Site	008101	1	2	2	194357.84590	406629.87253	Snowden's Run
Representative Site	008102				194332.67041	406654.97364	Snowden's Run
Pipe Outfall	008103	5	3	2	194425.48192	406911.63292	Snowden's Run
Erosion Site	008104	4	3	3	194325.64422	406773.26111	Snowden's Run
Pipe Outfall	008105	5	3	2	194236.52494	406740.90330	Snowden's Run
Exposed Pipe	008106	3	3	2	194238.06783	406735.24330	Snowden's Run
Channel Alteration	008107	4	3	1	193913.58683	406633.02069	Snowden's Run
Inadequate Buffer	008108	5	3	2	193872.39050	406662.98557	Snowden's Run
Erosion Site	008109	4	3	2	193884.54207	406657.82115	Snowden's Run
Representative Site	014201				193686.81423	406270.98389	Snowden's Run
Inadequate Buffer	014202	3	3	2	193677.96531	406213.37732	Snowden's Run
Erosion Site	014203	1	3	3	193561.32577	406069.34883	Snowden's Run
Exposed Pipe	014204	1	4	3	193450.71474	405927.75832	Snowden's Run
Inadequate Buffer	014205	5	2	2	193553.41167	406061.48264	Snowden's Run
Erosion Site	014206	3	3	3	193538.85411	406071.46466	Snowden's Run
Representative Site	015101				193420.08718	407074.20295	Snowden's Run
Channel Alteration	015102	4	2	3	193402.30934	407104.57773	Snowden's Run
Pipe Outfall	015103	4	3	1	193314.69914	407491.85994	Snowden's Run
Inadequate Buffer	019201	2	1	1	192979.24978	404636.71054	Snowden's Run
Channel Alteration	020201	4	1	1	193037.75818	404861.67819	Snowden's Run
Exposed Pipe	020202	5	1	1	193116.37438	404963.56412	Snowden's Run
Pipe Outfall	020203	1	3	2	193163.40017	405041.80350	Snowden's Run
Erosion Site	021201	5	2	2	192845.94509	405996.82185	Snowden's Run

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Pipe Outfall	021202	5	1	1	192823.76367	405996.91724	Snowden's Run
Unusual Condition	021203	2	1	1	193016.56489	406001.72525	Snowden's Run
Representative Site	022201				192648.86330	406857.82423	Snowden's Run
Erosion Site	023101	3	3	3	192942.59811	407600.63293	Snowden's Run
Trash Dumping	023101	3	2	1	192629.78284	408270.72028	Snowden's Run
Pipe Outfall	023102	5	4	2	193093.28209	407829.68142	Snowden's Run
Inadequate Buffer	023103	4	3	2	193079.79924	407782.78389	Snowden's Run
Erosion Site	023104	3	3	3	193072.61996	407744.62909	Snowden's Run
Trash Dumping	023105	3	2	2	193092.90364	407920.75494	Snowden's Run
Trash Dumping	024101	3	3	2	192698.10506	408595.08226	Snowden's Run
Trash Dumping	024102	3	3	2	192707.21874	408613.30962	Snowden's Run
Pipe Outfall	027201	3	1	1	192381.83826	406202.13230	Snowden's Run
Pipe Outfall	027202	4	2	2	192446.24160	406349.16635	Snowden's Run
Fish Barrier	027203	5	1	1	192465.81907	406492.88842	Snowden's Run
Erosion Site	027204	3	4	2	192468.10227	406561.92727	Snowden's Run
Pipe Outfall	028201	4	2	2	192570.18766	406673.00580	Snowden's Run
Comment	028202				192498.50197	407022.47649	Snowden's Run
Comment	028203				192486.95798	407063.18426	Snowden's Run
Comment	028204				192479.05945	407080.19646	Snowden's Run
Erosion Site	028205	3	2	2	192325.32127	406986.01722	Snowden's Run
Pipe Outfall	028206	5	1	1	192443.20371	407033.90756	Snowden's Run
Channel Alteration	028207	4	5	1	192394.07013	407023.43400	Snowden's Run
Inadequate Buffer	028208	3	1	1	192368.02641	407013.23868	Snowden's Run
Pipe Outfall	028209	5	1	1	192318.57230	407008.39169	Snowden's Run
Pipe Outfall	028210	5	1	1	192322.46081	406970.96484	Snowden's Run
Erosion Site	028211	3	3	1	192301.01812	406939.23366	Snowden's Run
Comment	028212				192479.05945	407114.22087	Snowden's Run
Pipe Outfall	028213	5	1	2	192477.51489	407130.87956	Snowden's Run
Pipe Outfall	028214	5	2	1	192472.65426	407144.00326	Snowden's Run
Pipe Outfall	028215	3	1	1	192417.24309	407282.53120	Snowden's Run
Fish Barrier	029201	4	2	1	192485.86916	407551.29055	Snowden's Run
Pipe Outfall	030201	3	3	5	192166.71749	409195.75102	Snowden's Run
Inadequate Buffer	031201	4	1	1	192588.13055	409369.25444	Snowden's Run
Erosion Site	033101	3	3	3	191471.66427	407262.34672	Snowden's Run
Representative Site	033102				191540.61123	407411.51832	Snowden's Run
Channel Alteration	037101	3	3	1	191348.79977	406316.79147	Snowden's Run
Pipe Outfall	037102	3	3	2	191369.77981	406255.19741	Snowden's Run
Channel Alteration	037103	4	4	2	191373.10292	406243.88202	Snowden's Run
Pipe Outfall	037104	3	3	2	191374.64044	406240.00794	Snowden's Run
Inadequate Buffer	037105	2	3	3	191371.28921	406249.63023	Snowden's Run
Erosion Site	037106	4	3	2	191368.37589	406258.62668	Snowden's Run
Erosion Site	037107	3	3	3	191333.13632	406351.58622	Snowden's Run
Representative Site	037108				191328.39152	406359.76855	Snowden's Run
Erosion Site	038101	4	2	2	191074.91537	406660.84379	Snowden's Run
Channel Alteration	038102	3	4	1	191111.84407	406836.87885	Snowden's Run
Erosion Site	038103	5	3	2	191124.12924	406855.87656	Snowden's Run
Fish Barrier	038104	3	5	2	191209.17966	407052.62549	Snowden's Run
Erosion Site	038105	3	2	3	191252.93593	407083.11100	Snowden's Run
Pipe Outfall	038106	4	3	3	191283.91184	407119.15536	Snowden's Run
Erosion Site	039101	5	3	3	191367.45384	407641.13660	Snowden's Run
Erosion Site	039102	4	3	4	191360.61858	407721.64078	Snowden's Run
Inadequate Buffer	039103	3	2	3	191357.67091	407776.38774	Snowden's Run
Channel Alteration	039104	4	3	2	191172.60194	407730.62715	Snowden's Run
Erosion Site	039105	4	3	2	191158.59865	407725.43815	Snowden's Run
Exposed Pipe	039106	4	4	2	191090.28329	407645.99561	Snowden's Run

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Problem	Site #	Severity	Correctability	Access	Northing	Easting	Sub-watershed
Channel Alteration	039107	4	3	1	191083.28787	407638.88276	Snowden's Run
Pipe Outfall	043101	3	4	2	190722.40342	407106.89692	Snowden's Run
Inadequate Buffer	043102	4	2	2	190708.37692	407125.49946	Snowden's Run
Comment	043203				190722.36718	407106.92697	Snowden's Run
Unusual Condition	045201	4	2	5	190284.64932	408731.45503	Snowden's Run
Unusual Condition	045202	4	1	1	190662.87657	408558.92285	Snowden's Run
Representative Site	045203				190625.91779	408482.09620	Snowden's Run
Erosion Site	046201	1	2	3	189915.05472	408410.86636	Snowden's Run
Fish Barrier	047201	4	1	1	190166.30739	408502.30190	Snowden's Run

Appendix B

Listing of sites by problem category

Appendix B - Erosion Sites

Problem	Site #	Sub-watershed	Date	Type	Possible Cause	Length (ft)	Height (ft)	Land Use Right	Land Use Left	Infrastructure Threatened?	Describe	Severity	Correctability	Access
Erosion Site	122201	MR	04/23/2002	Widening	Bend at steep slope	3000	6	Forest	Forest	No		1	4	3
Erosion Site	126103	MR	05/06/2002	Headcutting	Livestock	3500	4	Pasture	Pasture	No		1	3	2
Erosion Site	142103	MR	05/14/2002	Widening	Land use change upstream	1300	4	Lawn	Pasture	No		1	3	2
Erosion Site	150103	MR	05/07/2002	Widening	Bend at steep slope	1000	6	Forest	Forest	No		1	4	4
Erosion Site	249101	WB	10/17/2002	Widening	Land use change upstream	1343	4.5	Forest	Forest	No		1	4	4
Erosion Site	249102	WB	10/24/2002	Downcutting	Unknown	2547	4	Pasture	Forest	No		1	4	4
Erosion Site	255207	WB	10/17/2002	Downcutting	Land use change upstream	3650	8	Forest	Lawn	No		1	3	1
Erosion Site	260101	WB	10/18/2002	Widening	Land use change upstream	1016	8	Forest	Shrubs & small trees	No		1	4	3
Erosion Site	273201	WB	10/22/2002	Downcutting	Below road crossing	2573	5	Forest	Forest	No		1	3	2
Erosion Site	278203	WB	10/17/2002	Widening	Land use change upstream	1017	4	Forest	Forest	No		1	5	3
Erosion Site	281104	WB	10/09/2002	Headcutting	Land use change upstream	1882	8	Forest	Forest	No		1	5	3
Erosion Site	281105	WB	10/09/2002	Widening	Land use change upstream	2312	5	Multiflora Rose	Multiflora Rose	No		1	4	3
Erosion Site	282102	WB	10/09/2002	Widening	Land use change upstream	1361	10	Forest	Forest	No		1	5	3
Erosion Site	307204	WB	10/08/2002	Downcutting	Land use change upstream	1200	7	Crop field	Lawn	No		1	3	4
Erosion Site	316102	WB	10/04/2002	Widening	Land use change upstream	2731	6	Forest	Forest	No		1	3	3
Erosion Site	325201	WB	10/07/2002	Downcutting	Land use change upstream	1000	8	Forest	Forest	No		1	2	3
Erosion Site	328205	WB	10/03/2002	Unknown	Bend at steep slope	1510	7	Shrubs & small trees	Forest	No		1	3	2
Erosion Site	337101	WB	10/02/2002	Unknown	Below road crossing	1000	8	Multiflora Rose	Lawn	No		1	4	3
Erosion Site	337203	WB	10/02/2002	Downcutting	Below road crossing	1660	5	Forest	Forest	No		1	4	4
Erosion Site	008101	SR	06/19/2002	Downcutting	Bend at steep slope	1200	5	Forest	Forest	No		1	2	2
Erosion Site	014203	SR	06/18/2002	Widening	Land use change upstream	1100	4	Crop field	Crop field	No		1	3	3
Erosion Site	046201	SR	06/18/2002	Widening	Below road crossing	1400	6.5	Multiflora rose	Multiflora rose	No		1	2	3
Erosion Site	105106	MR	04/22/2002	Widening	Land use change upstream	1000	3	Pasture	Pasture	No		2	3	3
Erosion Site	107203	MR	04/23/2002	Widening	Unknown	1600	3	Forest	Forest	No		2	3	3
Erosion Site	114105	MR	04/23/2002	Widening	Land use change upstream	1300	3	Forest	Shrubs & small trees	No		2	4	3
Erosion Site	115103	MR	04/23/2002	Widening	Bend at steep slope	1200	2	Shrubs & small trees	Forest	No		2	2	2
Erosion Site	117201	MR	04/23/2002	Widening	Bend at steep slope	1500	3	Forest	Forest	No		2	3	4
Erosion Site	120101	MR	04/23/2002	Widening	Below road crossing	2500	1.5	Shrubs & small trees	Shrubs & small trees	No		2	3	3
Erosion Site	126101	MR	05/06/2002	Widening	Bend at steep slope	1600	5	Lawn	Paved	No		2	3	1
Erosion Site	130101	MR	05/06/2002	Headcutting	Bend at steep slope	1800	3	Pasture	Pasture	No		2	3	3
Erosion Site	130105	MR	05/06/2002	Downcutting	Bend at steep slope	1700	3	Forest	Forest	No		2	3	3
Erosion Site	148101	MR	05/06/2002	Widening	Land use change upstream	1700	3.5	Forest	Forest	No		2	3	4

Appendix B - Erosion Sites

Problem	Site #	Sub-watershed	Date	Type	Possible Cause	Length (ft)	Height (ft)	Land Use Right	Land Use Left	Infrastructure Threatened?	Describe	Severity	Correctability	Access
Erosion Site	150201	MR	05/14/2002	Widening	Bend at steep slope	1500	3	Forest	Forest	No		2	3	5
Erosion Site	214207	WB	10/31/2002	Downcutting	Below road crossing	2167	3	Lawn	Lawn	No		2	2	3
Erosion Site	230201	WB	10/21/2002	Downcutting	Below road crossing	1300	2	Forest	Forest	No		2	2	2
Erosion Site	234102	WB	10/24/2002	Unknown	Unknown	1554	2.5	Forest	Forest	No		2	3	3
Erosion Site	235101	WB	10/28/2002	Widening	Land use change upstream	2004	3	Forest	Forest	No		2	3	2
Erosion Site	243101	WB	10/22/2002	Widening	Below road crossing	1739	3.5	Forest	Forest	No		2	4	3
Erosion Site	267102	WB	10/21/2002	Widening	Land use change upstream	1696	3.5	Shrubs & small trees	Shrubs & small trees	No		2	3	3
Erosion Site	268106	WB	10/22/2002	Downcutting	Land use change upstream	4296	3	Forest	Forest	No		2	3	4
Erosion Site	275201	WB	10/22/2002	Downcutting	Unknown	1585	2	Forest	Forest	No		2	3	4
Erosion Site	278204	WB	10/17/2002	Downcutting	Road Runoff	933	3	Forest	Road	No		2	2	1
Erosion Site	295101	WB	10/15/2002	Widening	Below road crossing	4778	3.5	Forest	Forest	No		2	3	3
Erosion Site	296101	WB	10/29/2002	Downcutting	Land use change upstream	4657	3.5	Forest	Forest	No		2	4	2
Erosion Site	328203	WB	10/03/2002	Unknown	Bend at steep slope	100	7	Shrubs & small trees	Forest	Yes	RR	2	4	2
Erosion Site	332204	WB	10/02/2002	Unknown	Unknown	75	7	Forest	RR	Yes	RR	2	4	2
Erosion Site	332208	WB	10/03/2002	Unknown	Bend at steep slope	100	3	Forest	RR	Yes	RR	2	3	2
Erosion Site	337201	WB	10/02/2002	Headcutting	Land use change downstream	400	12	Industrial	Industrial	No		2	4	1
Erosion Site	341202	WB	10/01/2002	Widening	Bend at steep slope	200	18	Fallow, City Owned	Fallow, City Owned	No		2	4	3
Erosion Site	341203	WB	10/01/2002	Widening	Bend at steep slope	300	10	Fallow, City Owned	Fallow, City Owned	No		2	4	2
Erosion Site	117203	MR	04/23/2002	Unknown	Pipeoutfall	600	4	Forest	Shrubs & small trees	No		3	3	1
Erosion Site	121103	MR	04/23/2002	Widening	Bend at steep slope	700	5	Crop field	Shrubs & small trees	No		3	4	4
Erosion Site	131202	MR	05/07/2002	Widening	Below road crossing	400	4	Crop field	Paved	No		3	3	2
Erosion Site	136203	MR	05/07/2002	Widening	Livestock	700	4	Crop field	Pasture	No		3	1	2
Erosion Site	228101	WB	10/28/2002	Widening	Land use change upstream	300	4	Forest	Forest	No		3	4	4
Erosion Site	234103	WB	10/24/2002	Headcutting	Pipe outfall	450	5	Forest	Forest	No		3	3	3
Erosion Site	239206	WB	10/17/2002	Downcutting	Land use change upstream	463	5	Lawn	Lawn	No		3	2	1
Erosion Site	239223	WB	10/21/2002	Downcutting		742	6	House	Park	No		3	4	1
Erosion Site	248101	WB	10/17/2002	Widening	Land use change upstream	824	6	Forest	Forest	No		3	4	3
Erosion Site	248105	WB	10/17/2002	Widening	Land use change upstream	437	4.5	Forest	Forest	No		3	3	3
Erosion Site	257101	WB	10/17/2002	Widening	Land use change upstream	600	4	Forest	Crop field	No		3	3	3
Erosion Site	264201	WB	10/17/2002	Downcutting	Land use change upstream	860	6	Commercial	Commercial	No		3	5	2
Erosion Site	265208	WB	10/31/2002	Downcutting	Road Runoff	345	5	Forest	Road	No		3	2	2
Erosion Site	280101	WB	11/05/2002	Downcutting	Land use change upstream	586	6.5	Forest	Forest	No		3	4	3

Appendix B - Erosion Sites

Problem	Site #	Sub-watershed	Date	Type	Possible Cause	Length (ft)	Height (ft)	Land Use Right	Land Use Left	Infrastructure Threatened?	Describe	Severity	Correctability	Access
Erosion Site	289102	WB	10/18/2002	Widening	Land use change upstream	307	5	Forest	Forest	No		3	4	3
Erosion Site	291201	WB	10/09/2002	Downcutting	Below road crossing	720	5	Forest	Forest	No		3	3	2
Erosion Site	291203	Wb	10/09/2002	Downcutting	Unknown	714	7	Forest	Forest	No		3	2	4
Erosion Site	306102	WB	10/15/2002	Downcutting	Land use change upstream	300	7	Forest	Forest	No		3	3	2
Erosion Site	310203	WB	10/04/2002	Downcutting	Land use change upstream	780	6	Forest	Forest	No		3	4	4
Erosion Site	313101	WB	10/15/2002	Widening	Land use change upstream	150	10	Forest	Forest	No		3	4	3
Erosion Site	313201	WB	10/08/2002	Widening	Unknown	250	10	Forest	Forest	No		3	3	4
Erosion Site	313202	WB	10/08/2002	Downcutting	Land use change upstream	460	7	Forest	Forest	No		3	2	3
Erosion Site	315202	WB	10/04/2002	Downcutting	Below road crossing	700	5	Forest	Forest	No		3	3	4
Erosion Site	318201	WB	10/08/2002	Downcutting	Unknown	600	6	Golf Course	Golf Course	No		3	3	1
Erosion Site	322101	WB	10/02/2002	Widening	Bend at steep slope	500	7	Forest	Lawn	No		3	4	3
Erosion Site	323101	WB	10/08/2002	Widening	Land use change upstream	484	5	Forest	Forest	No		3	4	3
Erosion Site	327101	WB	10/02/2002	Unknown	Bend at steep slope	350	8	Forest	Forest	No		3	4	4
Erosion Site	328204	WB	10/03/2002	Unknown	Land use change upstream	300	6	Golf Course	Golf Course	No		3	2	1
Erosion Site	332205	WB	10/03/2002	Headcutting	Unknown	100	10	Fallow, City Owned	Forest	No		3	2	2
Erosion Site	339201	WB	10/01/2002	Widening	Land use change upstream	250	10	Fallow, City Owned	Fallow, City Owned	No		3	4	3
Erosion Site	339203	WB	10/01/2002	Widening	Land use change upstream	175	10	Fallow, City Owned	Fallow, City Owned	No		3	4	2
Erosion Site	007202	SR	06/14/2002	Widening	Land use change upstream	300	4.5	Housing	Housing	No		3	2	2
Erosion Site	014206	SR	06/19/2002	Widening	Livestock	300	6	Crop field	Crop field	No		3	3	3
Erosion Site	023101	SR	06/19/2002	Widening	Bend at steep slope	300	4	Forest	Forest	No		3	3	3
Erosion Site	023104	SR	06/20/2002	Widening	Bend at steep slope	500	4	Forest	Forest	No		3	3	3
Erosion Site	027204	SR	06/20/2002	Downcutting	Channelization	450	4	Paved	Paved	No		3	4	2
Erosion Site	028205	SR	06/20/2002	Widening	Land use change upstream	500	4.5	Paved	Paved	Yes	House	3	2	2
Erosion Site	028211	SR	06/20/2002	Widening	Channelization	600	4.5	Lawn	Lawn	No		3	3	1
Erosion Site	033101	SR	06/18/2002	Widening	Land use change upstream	300	4	Forest	Forest	No		3	3	3
Erosion Site	037107	SR	06/18/2002	Widening	Channelization	400	4	Lawn	Lawn, Shrubs & small trees	No		3	3	3
Erosion Site	038105	SR	06/18/2002	Widening	Land use change upstream	400	3.5	Forest	Lawn	No		3	2	3
Erosion Site	104108	MR	04/22/2002	Widening	Land use change upstream	400	3	Pasture	Forest	No		4	3	3
Erosion Site	104110	MR	04/22/2002	Widening	Land use change upstream	900	3	Shrubs & small trees	Forest	No		4	2	3
Erosion Site	105101	MR	04/22/2002	Widening		500	3	Lawn	Lawn	No		4	3	2
Erosion Site	106101	MR	04/23/2002	Downcutting	Below road crossing	200	4	Shrubs & small trees	Paved	No		4	1	2
Erosion Site	107201	MR	04/23/2002	Widening	Unknown	100	4	Forest	Forest	No		4	2	2

Appendix B - Erosion Sites

Problem	Site #	Sub-watershed	Date	Type	Possible Cause	Length (ft)	Height (ft)	Land Use Right	Land Use Left	Infrastructure Threatened?	Describe	Severity	Correctability	Access
Erosion Site	123101	MR	05/06/2002	Widening	Land use change upstream	50	4	Forest	Shrubs & small trees	No		4	1	1
Erosion Site	123103	MR	05/06/2002	Headcutting	Land use change upstream	500	3	Lawn	Forest	No		4	2	1
Erosion Site	124203	MR	05/07/2002	Widening	Unknown	200	5	Forest	Forest	No		4	3	2
Erosion Site	130106	MR	05/06/2002	Widening	Land use change upstream	800	3	Forest	Forest	No		4	3	4
Erosion Site	144103	MR	05/06/2002	Widening	Land use change upstream	800	3	Pasture	Forest	No		4	3	3
Erosion Site	149102	MR	05/06/2002	Widening	Livestock	400	3.5	Pasture	Pasture	No		4	2	2
Erosion Site	154102	MR	05/07/2002	Widening	Bend at steep slope	200	4.5	Forest	Forest	No		4	4	4
Erosion Site	154103	MR	05/07/2002	Widening	Bend at steep slope	750	3	Forest	Forest	No		4	4	4
Erosion Site	250102	WB	10/21/2002	Widening	Land use change upstream	588	3	Forest	Forest	No		4	3	4
Erosion Site	268101	WB	10/18/2002	Widening	Land use change upstream	400	2	Forest	Forest	No		4	3	2
Erosion Site	289101	WB	10/18/2002	Widening	Land use change upstream	150	3.5	Forest	Shrubs & small trees	No		4	3	3
Erosion Site	291204	WB	10/09/2002	Widening	Bend at steep slope	50	7	Shrubs & small trees	Forest	No		4	3	4
Erosion Site	295102	WB	10/18/2002	Widening	Below road crossing	700	3	Forest	Pasture	No		4	2	2
Erosion Site	310202	WB	10/04/2002	Widening	Stormwater	50	5	Forest	Forest	No		4	3	3
Erosion Site	315207	WB	10/14/2002	Widening	Unknown	175	4	Forest	Forest	No		4	2	4
Erosion Site	319201	WB	10/07/2002	Widening	Bend at steep slope	100	7	Golf Course	Shrubs & small trees	No		4	2	2
Erosion Site	323201	WB	10/03/2002	Unknown	Golf Course	20	8	RR	Golf Course	No		4	2	2
Erosion Site	323202	WB	10/03/2002	Unknown	RR	150	5	RR	Forest	No		4	2	2
Erosion Site	324206	WB	10/07/2002	Downcutting	Land use change upstream	100	6	Forest	Shrubs & small trees	No		4	2	3
Erosion Site	328202	WB	10/03/2002	Unknown	Bend at steep slope	220	7	Forest	Shrubs & small trees	No		4	4	5
Erosion Site	332202	WB	10/02/2002	Unknown	Old debris/ fill eroding	60	5	Industrial	Industrial	No		4	4	3
Erosion Site	332203	WB	10/02/2002	Unknown		150	6	Forest	Shrubs & small trees	No		4	3	2
Erosion Site	335101	WB	10/03/2002	Downcutting	Land use change upstream	140	1	Forest	Forest	No		4	4	3
Erosion Site	337204	WB	10/02/2002	Downcutting	Stormwater	80	5	Forest	Forest	No		4	5	5
Erosion Site	338201	WB	10/01/2002	Unknown	Snag, Mid-channel bar	75	8	Shrubs & small trees	Shrubs & small trees	No		4	4	3
Erosion Site	340101	WB	10/02/2002	Widening	Land use change upstream	400	3	Multiflora Rose	Forest	No		4	4	3
Erosion Site	341103	WB	10/01/2002	Widening	Bend at steep slope	40	4	Shrubs & small trees	Shrubs & small trees	No		4	3	2
Erosion Site	341104	WB	10/01/2002	Widening	Land use change upstream	300	3	Forest	Forest	No		4	3	3
Erosion Site	001202	SR	06/14/2002	Widening	Livestock	100	4.5	Crop field	Crop field	No		4	4	4
Erosion Site	002102	SR	06/17/2002	Downcutting	Land use change upstream	150	5	Forest	Forest	No		4	2	3
Erosion Site	002103	SR	06/17/2002	Downcutting	Land use change upstream	200	5	Forest	Forest	No		4	2	2
Erosion Site	007102	SR	06/17/2002	Widening	Disturbance from housing	150	4	Forest	Forest	No		4	2	2

Appendix B - Erosion Sites

Problem	Site #	Sub-watershed	Date	Type	Possible Cause	Length (ft)	Height (ft)	Land Use Right	Land Use Left	Infrastructure Threatened?	Describe	Severity	Correctability	Access
Erosion Site	007107	SR	06/17/2002	Widening	Land use change upstream	60	5	Lawn	Multiflora Rose	No		4	2	2
Erosion Site	008104	SR	06/19/2002	Widening	Bend at steep slope	400	3	Forest	Forest	No		4	3	3
Erosion Site	008109	SR	06/19/2002	Widening	Below road crossing	100	5	Forest	Lawn	No		4	3	2
Erosion Site	037106	SR	06/18/2002	Widening	Pipe outfall	100	5	Lawn	Lawn	No		4	3	2
Erosion Site	038101	SR	06/18/2002	Unknown	Land use change upstream	650	3	Forest	Lawn	No		4	2	2
Erosion Site	039102	SR	06/18/2002	Widening	Bend at steep slope	100	6	Forest	Forest	No		4	3	4
Erosion Site	039105	SR	06/18/2002	Downcutting	Pipe outfall	200	4	Forest	Forest	No		4	3	2
Erosion Site	124204	MR	05/14/2002	Headcutting	Land use change upstream	200	3	Shrubs & small trees	Forest	No		5	2	2
Erosion Site	144104	MR	05/06/2002	Widening	Unknown	100	2.5	Forest	Forest	No		5	3	4
Erosion Site	144105	MR	05/06/2002	Widening	Land use change upstream	200	1	Forest	Forest	No		5	3	4
Erosion Site	146202	MR	05/07/2002	Widening	Land use change upstream	100	1.5	Forest	Forest	No		5	2	4
Erosion Site	149104	MR	05/06/2002	Widening	Bend at steep slope	10	6	Shrubs & small trees	Shrubs & small trees	No		5	2	2
Erosion Site	150101	MR	05/07/2002	Widening	Land use change upstream	200	3	Shrubs & small trees	Shrubs & small trees	No		5	2	3
Erosion Site	276103	WB	10/18/2002	Widening	Land use change upstream	267	3.5	Forest	Forest	No		5	3	4
Erosion Site	278201	WB	10/17/2002	Downcutting	Old Ag field	25	6	Forest	Forest	No		5	3	3
Erosion Site	310101	WB	10/07/2002	Widening	Unknown	100	3.5	Forest	Forest	No		5	4	3
Erosion Site	324202	WB	10/03/2002	Unknown	RR	75	6	RR	Forest	No		5	2	2
Erosion Site	324204	WB	10/07/2002	Widening	Bend at steep slope	50	5	Forest	Forest	No		5	2	3
Erosion Site	341102	WB	10/01/2002	Widening	Land use change upstream	30	2	Shrubs & small trees	Shrubs & small trees	No		5	2	2
Erosion Site	021201	SR	06/20/2002	Widening	Land use change upstream	100	2	Lawn	Lawn	No		5	2	2
Erosion Site	038103	SR	06/18/2002	Widening	Channelization	200	3	Lawn	Forest	No		5	3	2
Erosion Site	039101	SR	06/18/2002	Widening	Bend at steep slope	50	7	Forest	Forest	No		5	3	3

Appendix B - Pipe Outfalls

Problem	Site #	Sub-watershed	Date	Outfall Type	Pipe Type	Location of Pipe	Diameter (in)	Channel Width (ft.)	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	020203	SR	06/19/2002	Industrial	Concrete channel	Head of stream	36	2	Yes	Brown	Musky, Fishy	1	3	2
Pipe Outfall	136204	MR	05/07/2002	Stormwater	Cast iron	Left bank	4	1	Yes	Medium brown	None	2	3	3
Pipe Outfall	140103	MR	05/06/2002	Agricultural	Corrugated metal	Left bank	12	10	Yes	Algae and foam	None	2	4	3
Pipe Outfall	140104	MR	05/06/2002	Unknown	Smooth metal	Left bank	4	10	Yes	Algae and foam	None	2	5	3
Pipe Outfall	246218	WB	11/05/2002	Stormwater	Concrete channel	Left bank	36	2	Yes	Medium brown	None	2	5	1
Pipe Outfall	255205	WB	10/17/2002	Stormwater	Concrete pipe	Right bank	36	8	Yes	Medium brown	Musky	2	5	1
Pipe Outfall	335210	WB	10/02/2002	Industrial- multiple PO	Smooth metal	Left bank	6		Yes	Medium brown	None	2	4	3
Pipe Outfall	105103	MR	04/22/2002	Unknown	Plastic	Head of stream	3	5	Yes	Clear	None	3	3	2
Pipe Outfall	112203	MR	04/23/2002	Agricultural	Plastic	Right bank	4	2	Yes	Clear	None	3	1	3
Pipe Outfall	112206	MR	04/23/2002	Unknown	Smooth metal	Right bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	122205	MR	04/23/2002	Agricultural	Plastic		4	4	Yes	Clear	None	3	3	3
Pipe Outfall	124202	MR	05/07/2002	Sewage overflow	Plastic	Left bank	6	3	Yes	Clear	None	3	1	1
Pipe Outfall	207204	WB	10/28/2002	Watering through overflow	Plastic	Unknown	4		Yes	Clear	None	3	3	2
Pipe Outfall	215204	WB	10/24/2002	Drain tile	Smooth metal	Left bank	4		Yes	Clear	None	3	3	1
Pipe Outfall	215205	WB	10/24/2002	Drain tile for Gardel Field	Smooth metal	Right bank	6		Yes	Clear	None	3	3	3
Pipe Outfall	218203	WB	10/31/2002	Agricultural - draintile	Plastic	Right bank	4		Yes	Clear	None	3	3	1
Pipe Outfall	218205	WB	10/31/2002	Unknown	Plastic	Right bank	4		No			3	3	4
Pipe Outfall	230205	WB	10/21/2002	Pool Discharges	Plastic	Right bank	4		No			3	3	2
Pipe Outfall	239218	WB	10/21/2002	Unknown	Smooth metal	Left bank	18		No			3	3	1
Pipe Outfall	239219	WB	10/21/2002	Unknown	Iron	Left bank	12		No			3	1	1
Pipe Outfall	239221	WB	10/21/2002	Unknown	Plastic	Left bank	12		No			3	3	1
Pipe Outfall	246117	WB	11/05/2002	Industrial	Corrugated metal	Left bank	10		No			3	1	1
Pipe Outfall	246215	WB	11/05/2002	Industrial	Plastic	Left bank	4		Yes	Clear	None	3	3	3
Pipe Outfall	248104	WB	10/17/2002	Unknown	Smooth metal	Unknown	6	3.5	Yes	Clear	None	3	3	3
Pipe Outfall	265206	WB	10/31/2002	Cross culvert pipe.	Concrete pipe	Left bank	48	4	Yes	Clear	None	3	4	1
Pipe Outfall	265207	WB	10/31/2002	Unknown	Concrete pipe	Left bank	36		Yes	Clear	None	3	4	4
Pipe Outfall	265209	WB	10/31/2002	Springhead	Corrugated metal	Head of stream	24		Yes	Clear	None	3	3	3
Pipe Outfall	278205	WB	10/17/2002	Spring box	Plastic	Right bank	3		Yes	Clear	None	3	1	1
Pipe Outfall	287103	WB	10/09/2002	Landfill Pond	Concrete pipe	Head of stream	2		No			3	4	3
Pipe Outfall	290101	WB	10/15/2002	Residential	Plastic	Left bank	4		Yes	Clear	None	3	2	1
Pipe Outfall	335205	WB	10/02/2002	Industrial	Smooth metal	Left bank	12		Yes	Clear	None	3	4	1
Pipe Outfall	338204	WB	10/01/2002	Unknown	Corrugated metal	Right bank	18	3	Yes	Clear	None	3	4	4

Appendix B - Pipe Outfalls

Problem	Site #	Sub-watershed	Date	Outfall Type	Pipe Type	Location of Pipe	Diameter (in)	Channel Width (ft.)	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	002105	SR	06/17/2002	Stormwater	Plastic	Left bank	60	3	Yes	Clear	None	3	5	2
Pipe Outfall	027201	SR	06/20/2002	Stormwater	Corrugated metal	Right bank	48	2	Yes	Clear	None	3	1	1
Pipe Outfall	028215	SR	06/20/2002	Stormwater	Plastic	Right bank	4	6	Yes	Clear	None	3	1	1
Pipe Outfall	030201	SR	07/08/2002	Stormwater	Concrete channel	Head of stream	24	4	Yes	Clear	None	3	3	5
Pipe Outfall	037102	SR	06/18/2002	Stormwater	Plastic	Right bank	4	5	Yes	Clear	None	3	3	2
Pipe Outfall	037104	SR	06/18/2002	Stormwater	Corrugated metal	Head of stream	36	2	Yes	Clear	None	3	3	2
Pipe Outfall	043101	SR	07/08/2002	Stormwater	Corrugated metal	Head of stream	48	2	Yes	Clear	None	3	4	2
Pipe Outfall	104105	MR	04/22/2002	Agricultural	Plastic		12	2	No			4	5	3
Pipe Outfall	117202	MR	04/23/2002	Stormwater	Corrugated metal		24		Yes	Clear	None	4	3	1
Pipe Outfall	123102	MR	05/06/2002	Stormwater	Corrugated metal	Small tributary	16	2	Yes	Clear	None	4	1	1
Pipe Outfall	131203	MR	05/07/2002	Stormwater	Plastic	Right bank	8	2	Yes	Clear	None	4	1	1
Pipe Outfall	214201	WB	10/31/2002	Stormwater	Corrugated metal	Head of stream	48	7	Yes	Clear	None	4	3	1
Pipe Outfall	214204	WB	10/31/2002	Stormwater	Plastic	Right bank	12	3	Yes	Clear	None	4	4	1
Pipe Outfall	214206	WB	10/31/2002	Stormwater	Corrugated metal	Right bank	48		Yes	Clear	None	4	4	1
Pipe Outfall	230204	WB	10/21/2002	Stormwater	Unknown	Left bank	36		No			4	3	1
Pipe Outfall	230206	WB	10/21/2002	Stormwater	Unknown	Right bank	18		No			4	3	1
Pipe Outfall	230209	WB	10/21/2002	Stormwater	Corrugated metal	Left bank			Yes	Clear	None	4	3	4
Pipe Outfall	231201	WB	10/21/2002	Stormwater	Smooth metal	Unknown	6		Yes	Clear	None	4	3	1
Pipe Outfall	231202	WB	10/21/2002	Stormwater	Corrugated metal	Unknown	24		Yes	Clear	None	4	3	3
Pipe Outfall	231206	WB	10/21/2002	Stormwater	Corrugated metal	Left bank	18		Yes	Clear	None	4	3	3
Pipe Outfall	231208	WB	10/21/2002	Stormwater	Corrugated metal	Unknown	48		No			4	3	3
Pipe Outfall	231210	WB	10/21/2002	Stormwater	Unknown	Right bank		15	No			4	3	1
Pipe Outfall	239201	WB	10/17/2002	Stormwater	Earth channel	Right bank		3	Yes	Clear	None	4	3	3
Pipe Outfall	239202	WB	10/17/2002	Stormwater	Corrugated metal	Unknown	12		Yes	Clear	None	4	3	3
Pipe Outfall	239205	WB	10/17/2002	Stormwater	Concrete pipe	Right bank	36	5	Yes	Clear	None	4	2	1
Pipe Outfall	239207	WB	10/17/2002	Stormwater	Concrete pipe	Right bank	24		Yes			4	3	1
Pipe Outfall	239210	WB	10/17/2002	Stormwater	Unknown	Left bank	36		Yes	Clear	None	4	3	1
Pipe Outfall	239213	WB	10/17/2002	Stormwater	Unknown	Left bank			No			4	3	1
Pipe Outfall	240208	WB	10/21/2002	Stormwater	Concrete pipe	Left bank	30		No			4	1	1
Pipe Outfall	240209	WB	10/21/2002	Stormwater	Corrugated metal	Right bank	24	2	Yes	Clear	None	4	2	2
Pipe Outfall	246201	WB	10/17/2002	Stormwater	Corrugated metal	Left bank	18		Yes	Clear	None	4	3	2
Pipe Outfall	246204	WB	10/17/2002	Stormwater	Corrugated metal	Left bank	12		Yes	Clear	None	4	3	2

Appendix B - Pipe Outfalls

Problem	Site #	Sub-watershed	Date	Outfall Type	Pipe Type	Location of Pipe	Diameter (in)	Channel Width (ft.)	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	246205	WB	10/17/2002	Stormwater	Earth channel	Right bank		3	No			4	3	1
Pipe Outfall	246207	WB	10/17/2002	Stormwater	Concrete channel	Both			No			4	3	1
Pipe Outfall	246208	WB	10/17/2002	Stormwater	Concrete pipe	Right bank	24		No			4	3	1
Pipe Outfall	246209	WB	10/17/2002	Stormwater	Unknown	Right bank	18		Yes	Clear	None	4	1	1
Pipe Outfall	246214	WB	10/17/2002	Stormwater	Earth channel	Right bank		2	No			4	2	1
Pipe Outfall	248103	WB	10/17/2002	Unknown	Smooth metal	Unknown	6		No			4	1	1
Pipe Outfall	255201	WB	10/17/2002	Stormwater	Concrete pipe	Left bank	2		Yes	Clear	None	4	2	1
Pipe Outfall	255202	WB	10/17/2002	Stormwater	Concrete pipe	Left bank	24		Yes	Clear	None	4	3	1
Pipe Outfall	255203	WB	10/17/2002	Stormwater	Concrete pipe	Left bank	18		Yes	Clear	None	4	2	1
Pipe Outfall	255204	WB	10/17/2002	Stormwater	Concrete pipe	Left bank	24	7	Yes	Clear	None	4	2	3
Pipe Outfall	255206	WB	10/17/2002	Stormwater	Concrete pipe	Left bank	36		Yes	Clear	None	4	3	1
Pipe Outfall	256201	WB	10/17/2002	Stormwater	Concrete pipe	Right bank	12	10	Yes	Clear	None	4	3	2
Pipe Outfall	256204	WB	10/17/2002	Stormwater	Plastic	Left bank	4		Yes	Clear	None	4	2	1
Pipe Outfall	256206	WB	10/17/2002	Stormwater	Concrete pipe	Right bank	24		Yes	Clear	None	4	3	3
Pipe Outfall	256207	WB	10/17/2002	Stormwater	Concrete pipe	Left bank	36		Yes	Clear	None	4	3	2
Pipe Outfall	256208	WB	10/17/2002	Stormwater	Corrugated metal	Unknown	12		Yes	Clear	None	4	3	2
Pipe Outfall	265201	WB	10/22/2002	Stormwater	Concrete pipe	Right bank	36		No			4	3	4
Pipe Outfall	265205	WB	10/31/2002	Stormwater	Concrete pipe	Left bank	18		Yes	Clear	None	4	3	1
Pipe Outfall	265210	WB	10/31/2002	Stormwater	Concrete pipe	Head of stream	60		Yes	Clear	None	4	3	1
Pipe Outfall	268104	WB	10/18/2002	Drain tile	Plastic	Unknown	6		No			4	1	1
Pipe Outfall	306101	WB	10/15/2002	Unknown	Plastic	Right bank	8		No			4	2	3
Pipe Outfall	313206	WB	10/08/2002	Stormwater	Corrugated metal	Left bank	24		No			4	1	1
Pipe Outfall	328206	WB	10/03/2002	Unknown	Corrugated metal	Right bank	72		No			4	3	2
Pipe Outfall	015103	SR	06/19/2002	Unknown	Smooth metal	Right bank	5	8	No			4	3	1
Pipe Outfall	027202	SR	06/20/2002	Agricultural	Steel	Over stream	2	4	No			4	2	2
Pipe Outfall	028201	SR	06/20/2002	Agricultural	Steel	Left bank	2	5	No			4	2	2
Pipe Outfall	038106	SR	06/18/2002	Unknown	Smooth metal	Right bank	12	5	No			4	3	3
Pipe Outfall	110101	MR	04/23/2002	Stormwater	Corrugated metal	Left bank	8		No			5	1	2
Pipe Outfall	115107	MR	04/23/2002	Pond in flow	Plastic	Right bank	6		No			5	5	2
Pipe Outfall	115108	MR	05/06/2002	Overflow	Smooth metal	Right bank	8	3	No			5	5	2
Pipe Outfall	131205	MR	05/07/2002	Unknown	Plastic	Head of stream	2	1	No			5	1	1
Pipe Outfall	136207	MR	05/07/2002	Stormwater	Smooth metal	Out of lake	12	8	No			5	4	3

Appendix B - Pipe Outfalls

Problem	Site #	Sub-watershed	Date	Outfall Type	Pipe Type	Location of Pipe	Diameter (in)	Channel Width (ft.)	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	144101	MR	05/06/2002	Unknown	Concrete channel	Left bank	12	1.5	No			5	3	3
Pipe Outfall	223201	WB	10/29/2002	Stormwater	Unknown	Unknown	18		No			5	1	1
Pipe Outfall	230208	WB	10/21/2002	Stormwater	Plastic	Right bank	4		No			5	1	4
Pipe Outfall	230210	WB	10/29/2002	Unknown	Plastic	Unknown	4		No			5	1	3
Pipe Outfall	239211	WB	10/17/2002	Stormwater	Low spot in lot drain	Left bank			No			5	1	1
Pipe Outfall	239212	WB	10/17/2002	Stormwater	Unknown	Unknown	24		No			5	1	3
Pipe Outfall	246210	WB	10/17/2002	Commercial	Concrete pipe	Right bank	18		No			5	1	2
Pipe Outfall	246213	WB	11/05/2002	Stormwater	Corrugated metal	Left bank	18		No			5	1	1
Pipe Outfall	246214	WB	11/05/2002	Stormwater	Corrugated metal	Left bank	18		No			5	1	2
Pipe Outfall	255209	WB	10/17/2002	Athletic Field Drainage	Corrugated metal	Left bank	18		No			5	1	2
Pipe Outfall	282103	WB	10/09/2002	Stormwater	Corrugated metal	Head of stream	36		No			5	5	5
Pipe Outfall	315201	WB	10/04/2002	Stormwater	Concrete channel	Head of stream	36		No			5	1	1
Pipe Outfall	315206	WB	10/04/2002	Stormwater	Plastic	Right bank	18		No			5	1	3
Pipe Outfall	316105	WB	10/04/2002	Pond	Concrete pipe	Left bank	24	2	No			5	5	3
Pipe Outfall	319202	WB	10/07/2002	Unknown	Plastic	Right bank	6	25	No			5	1	3
Pipe Outfall	319203	WB	10/07/2002	Golf course green	Plastic	Right bank	6	25	No			5	1	3
Pipe Outfall	324203	WB	10/07/2002	Unknown	Iron	Left bank	2	6	No			5	1	2
Pipe Outfall	332209	WB	10/03/2002	Stormwater	Concrete pipe	Left bank	24		No			5	1	3
Pipe Outfall	335208	WB	10/02/2002	Industrial	Smooth metal	Right bank	12		No			5	4	3
Pipe Outfall	335209	WB	10/02/2002	Industrial	Smooth metal	Left bank	18		No			5	4	2
Pipe Outfall	008103	SR	06/19/2002	Stormwater	Corrugated metal	Left bank	10	3	No			5	3	2
Pipe Outfall	008105	SR	06/19/2002	Stormwater	Corrugated metal	Head of stream	24	3	No			5	3	2
Pipe Outfall	021202	SR	06/20/2002	Stormwater	Plastic	Left bank	4	1	No			5	1	1
Pipe Outfall	023102	SR	06/20/2002	Stormwater	Concrete channel	Right bank	24	3	No			5	4	2
Pipe Outfall	028206	SR	06/20/2002	House drainage	Plastic	Left bank	4	6	No			5	1	1
Pipe Outfall	028209	SR	06/20/2002	House drainage	Plastic	Left bank	4	1	No			5	1	1
Pipe Outfall	028210	SR	06/20/2002	Stormwater	Plastic	Right bank	4	1	No			5	1	1
Pipe Outfall	028213	SR	06/20/2002	Stormwater	Plastic	Left bank	3	4	No			5	1	2
Pipe Outfall	028214	SR	06/20/2002	Stormwater	Smooth metal	Left bank	4	6	No			5	2	1

Appendix B - Inadequate Buffers

Problem	Site #	Sub-watershed	Date	Sides	Unshaded	Width Left(ft)	Width Right(ft)	Length Left(ft)	Length Right(ft)	Land Use Right	Land Use Left	Recently established	Livestock	Severity	Correctability	Access	Wetland
Inadequate Buffer	103103	MR	04/22/2002	Both	Both	0	0	1800	1800	Pasture	Pasture	No	Yes	1	3	3	1
Inadequate Buffer	110102	MR	04/23/2002	Both	Neither	5	5	1300	1300	Crop field	Crop field	No	No	1	2	3	1
Inadequate Buffer	112202	MR	04/23/2002	Both	Both	0	5	1800	1800	Lawn	Lawn	No	No	1	3	2	1
Inadequate Buffer	122203	MR	04/23/2002	Both	Both	0	0	1200	1500	Pasture	Pasture	No	Yes	1	3	3	2
Inadequate Buffer	126102	MR	05/06/2002	Both	Both	0	0	3800	3800	Pasture	Pasture	No	Yes	1	2	1	2
Inadequate Buffer	130102	MR	05/06/2002	Both	Both	0	0	1800	1800	Pasture	Pasture	No		1	2	2	1
Inadequate Buffer	207202	WB	10/28/2002	Both	Both	0	0	3000	3000	Crep recent planting	Crep recent planting	Yes	No	1	1	1	2
Inadequate Buffer	211201	WB	10/28/2002	Both	Both	0	0	1407	1407	Crop field	Crop field	No	Yes	1	2	1	3
Inadequate Buffer	214202	WB	10/31/2002	Both	Left	0	10	1960	1960	Shrubs & small trees	Lawn	No	No	1	2	2	3
Inadequate Buffer	220201	WB	10/24/2002	Both	Both	0	0	1550	1550	Crop field	Crop field	No	No	1	1	1	1
Inadequate Buffer	239224	WB	10/21/2002	Both	Neither	5	5	1296	1296	Lawn	Park, Bennet Conf	No	No	1	2	1	4
Inadequate Buffer	265203	WB	10/22/2002	Both	Both	0	0	1047	1047	Pasture	Pasture	No	No	1	2	1	2
Inadequate Buffer	267101	WB	11/05/2002	Both	Right	10	0	1103	1103	Crop field	Multiflora rose	No	No	1	2	1	2
Inadequate Buffer	294102	WB	10/15/2002	Both	Both	0	0	1123	1123	Crop field	Shrubs & small trees	No	No	1	1	1	2
Inadequate Buffer	321102	WB	10/04/2002	Both	Neither	5	5	1272	1272	Lawn	Lawn	No	No	1	2	2	2
Inadequate Buffer	322102	WB	10/04/2002	Both	Both	0	0	1004	1004	Forest	Lawn	No	No	1	5	2	3
Inadequate Buffer	142102	MR	05/14/2002	Both	Both	5	5	1000	1000	Lawn	Pasture	No	Yes	2	2	2	4
Inadequate Buffer	207203	WB	10/28/2002	Both	Neither	10	10	2306	2306	Pasture	Pasture	No	No	2	2	2	4
Inadequate Buffer	240204	WB	10/21/2002	Both	Neither	20	10	1822	1822	Lawn	Shrubs & small trees	No	No	2	2	1	3
Inadequate Buffer	246206	WB	10/17/2002	Left	Neither	5		3840		Shrubs & small trees	Lawn	No	No	2	2	1	5
Inadequate Buffer	256202	WB	10/17/2002	Both	Neither	10	30	2587	2587	Commercial	Commercial	No	No	2	1	1	5
Inadequate Buffer	287101	WB	10/09/2002	Both	Neither	15	20	1720	1720	Shrubs & small trees	Shrubs & small trees	No	No	2	3	2	3
Inadequate Buffer	289103	WB	10/18/2002	Both	Neither	15	15	2188	2188	Shrubs & small trees	Forest	No	No	2	3	2	2
Inadequate Buffer	302101	WB	10/07/2002	Left	Left	0		3000		Forest	Pasture	No	Yes	2	4	2	3
Inadequate Buffer	303101	WB	10/08/2002	Both	Neither	25	10	1450	1450	Shrubs & small trees	Shrubs & small trees	No	No	2	5	2	5
Inadequate Buffer	328206	WB	10/03/2002	Right	Right		0		1097	RR	Forest	No		2	4	1	5
Inadequate Buffer	332207	WB	10/03/2002	Left	Left	0		1371		Forest	RR			2	4	2	5
Inadequate Buffer	341201	WB	10/01/2002	Left	Left	0		3477		Fallow, city owned	Fallow, city owned	No	No	2	2	2	3
Inadequate Buffer	007103	SR	06/17/2002	Both	Both	10	10	2200	2200	Lawn	Lawn, Forest	No	No	2	3	2	4
Inadequate Buffer	019201	SR	06/19/2002	Both	Both	5	5	1000	1000	Paved	Paved	Yes	No	2	1	1	5
Inadequate Buffer	037105	SR	06/18/2002	Both	Neither	7	7	2700	2700	Lawn	Lawn	No	No	2	3	3	3
Inadequate Buffer	105105	MR	04/22/2002	Both	Both	0	0	500	500	Pasture	Pasture	No	Yes	3	2	2	1

Appendix B - Inadequate Buffers

Problem	Site #	Sub-watershed	Date	Sides	Unshaded	Width Left(ft)	Width Right(ft)	Length Left(ft)	Length Right(ft)	Land Use Right	Land Use Left	Recently established	Livestock	Severity	Correctability	Access	Wetland
Inadequate Buffer	112205	MR	04/23/2002	Both	Both	0	0	300	300	Pasture	Pasture	No	Yes	3	3	3	1
Inadequate Buffer	123104	MR	05/06/2002	Both	Neither	10	0	500	400	Lawn	Paved	No	No	3	1	1	5
Inadequate Buffer	136202	MR	05/07/2002	Both	Both	5	0	780	780	Pasture	Pasture	No	Yes	3	3	3	1
Inadequate Buffer	136206	MR	05/07/2002	Both	Both	0	0	300	300	Pasture	Pasture	No	Yes	3	2	3	1
Inadequate Buffer	142105	MR	05/14/2002	Both	Both	0	0	600	600	Pasture	Pasture	No	Yes	3	3	3	4
Inadequate Buffer	142106	MR	05/14/2002	Both	Both			500	500	Pasture	Pasture	No	Yes	3	2	2	1
Inadequate Buffer	149102	MR	05/06/2002	Both	Both	0	0	400	200	Pasture	Pasture	No	Yes	3	2	2	4
Inadequate Buffer	149103	MR	05/06/2002	Both	Both	0	0	450	450	Pasture	Pasture	No	No	3	2	2	4
Inadequate Buffer	149105	MR	05/07/2002	Both	Both	10	10	700	900	Pasture	Shrubs & small trees	Yes	No	3	3	3	3
Inadequate Buffer	158101	MR	05/07/2002	Both	Neither	0	0	350	350	Grass field	Grass field	No	No	3	1	2	4
Inadequate Buffer	206201	WB	10/28/2002	Left	Neither	20		1570		Forest	Crop field	No		3	2	2	2
Inadequate Buffer	214205	WB	10/31/2002	Both	Both	0	0	625	625	Lawn	Lawn	No	No	3	2	1	4
Inadequate Buffer	215202	WB	10/24/2002	Both	Both	0	0	937	937	Crop field	Crop field	No	No	3	1	1	3
Inadequate Buffer	215203	WB	10/24/2002	Both	Both	0	0	800	800	Fallow, city owned	Fallow, city owned	No	No	3	1	1	2
Inadequate Buffer	225202	WB	10/24/2002	Left	Neither	10		1800		Fallow, city owned	Forest	No	No	3	1	1	3
Inadequate Buffer	230203	WB	10/04/2002	Right	Right		0		400	Lawn	Forest	No	No	3	2	2	3
Inadequate Buffer	231207	WB	10/21/2002	Left	Neither	20		1600		Shrubs & small trees	Swm Pond	No	No	3	4	1	4
Inadequate Buffer	239214	WB	10/17/2002	Both	Both	0	0	500	500	Forest	Park- Bennett Cerf	No	No	3	1	1	4
Inadequate Buffer	240201	WB	10/21/2002	Both	Both	0	0	715	715	Lawn	Lawn	No	No	3	1	1	4
Inadequate Buffer	265204	WB	10/31/2002	Both	Both	0	0	969	969	Pasture	Road	No	No	3	2	2	3
Inadequate Buffer	268102	WB	10/18/2002	Left	Both	10		1966		Forest	Pasture	No	No	3	2	1	2
Inadequate Buffer	268105	WB	10/21/2002	Both	Both	0	0	834	834	Pasture	Pasture	No	Yes	3	2	1	3
Inadequate Buffer	270201	WB	10/18/2002	Both	Both	0	0	692	692	Pasture	Pasture	Yes	Yes	3	1	2	1
Inadequate Buffer	278206	WB	10/17/2002	Both	Both	0	0	850	850	Lawn	Lawn	No	No	3	1	1	4
Inadequate Buffer	307203	WB	10/08/2002	Right	Neither		20		1517	Crop field	Shrubs & small trees	No	No	3	3	3	4
Inadequate Buffer	316104	WB	10/04/2002	Left	Neither	10		1363		Multiflora rose	Multiflora rose	No	No	3	2	2	3
Inadequate Buffer	323202	WB	10/03/2002	Right	Neither		30		1009	RR	Forest	Yes	No	3	1	3	3
Inadequate Buffer	341101	WB	10/01/2002	Both	Both	0	0	800	800	Shrubs & small trees	Shrubs & small trees	Yes	No	3	2	2	3
Inadequate Buffer	001204	SR	06/14/2002	Both	Neither	2	2	400	400	Crop Field	Crop Field	No	No	3	3	3	4
Inadequate Buffer	007108	SR	06/17/2002	Both	Both	5	5	650	650	Pasture	Pasture	No	Horses	3	3	2	3
Inadequate Buffer	007203	SR	06/14/2002	Both	Neither	0	0	400	400	Lawn	Lawn, House	Yes	No	3	2	2	4
Inadequate Buffer	014202	SR	06/19/2002	Both	Both	2	0	600	600	Crop Field	Crop Field	No	No	3	3	2	1

Appendix B - Inadequate Buffers

Problem	Site #	Sub-watershed	Date	Sides	Unshaded	Width Left(ft)	Width Right(ft)	Length Left(ft)	Length Right(ft)	Land Use Right	Land Use Left	Recently established	Livestock	Severity	Correctability	Access	Wetland
Inadequate Buffer	028208	SR	06/20/2002	Right	Right	16	0	900	650	Lawn	Lawn	Yes	No	3	1	1	5
Inadequate Buffer	039103	SR	06/18/2002	Both	Both	0	0	600	600	Shrubs & Small Trees	Shrubs & Small Trees	No	No	3	2	3	3
Inadequate Buffer	106202	MR	04/23/2002	Both	Both	10	5	200	200	Lawn	Pond	No	No	4	1	2	1
Inadequate Buffer	114105	MR	04/23/2002	Right	Neither		25		600	Lawn	Shrubs & small trees	No	No	4	2	3	4
Inadequate Buffer	115105	MR	04/23/2002	Both	Neither	25	25	600	800	Lawn	Shrubs & small trees	No	No	4	1	2	4
Inadequate Buffer	115106	MR	04/23/2002	Both	Both	0	0	200	200	Lawn	Lawn	No	No	4	3	2	1
Inadequate Buffer	120102	MR	04/23/2002	Both	Neither	10	10	200	450	Lawn	Lawn	No	No	4	2	3	1
Inadequate Buffer	120104	MR	04/23/2002	Left	Neither	0	0	400	600	Forest	Pasture	No	Yes	4	4	3	3
Inadequate Buffer	136102	MR	05/06/2002	Right	Neither		0		600	Shrubs & small trees	Forest	No	No	4	2	4	5
Inadequate Buffer	146203	MR	05/07/2002	Left	Left	0		400		Forest	Lawn	No	No	4	2	2	4
Inadequate Buffer	211204	WB	10/28/2002	Left	Neither	10		580		Forest	Crop field	No	No	4	2	1	4
Inadequate Buffer	219202	WB	10/24/2002	Right	Neither		20		300	Fallow, city owned	Forest	No	No	4	1	1	2
Inadequate Buffer	219205	WB	10/31/2002	Right	Neither		25		400	Crop field	Forest	No	No	4	2	2	2
Inadequate Buffer	225201	WB	10/24/2002	Right	Neither		20		380	Lawn	Forest	No	No	4	2	2	4
Inadequate Buffer	231204	WB	10/21/2002	Left	Neither	20		650		Forest	Fallow, city owned	No	No	4	1	2	4
Inadequate Buffer	257101	WB	10/17/2002	Left	Neither	15		622		Forest	Crop field	No	No	4	2	3	4
Inadequate Buffer	290201	WB	10/09/2002	Both	Neither	20	20	300	300	Pasture	Pasture	No	No	4	3	2	4
Inadequate Buffer	303102	WB	10/08/2002	Both	Right	20	0	617	617	Shrubs & small trees	Forest	No	No	4	3	2	4
Inadequate Buffer	318202	WB	10/08/2002	Both	Neither	15	20	600	600	Golf course	Golf course	No	No	4	2	1	4
Inadequate Buffer	321101	WB	10/03/2002	Both	Neither	20	15	702	702	Lawn	Lawn	No	No	4	2	2	4
Inadequate Buffer	324201	WB	10/03/2002	Both	Left	0	30	316	316	Shrubs & small trees	Multiflora rose	No	No	4	1	1	4
Inadequate Buffer	335102	WB	10/03/2002	Right	Right		0		428	Lawn	Forest	No	No	4	2	2	4
Inadequate Buffer	335206	WB	10/02/2002	Both	Neither	25	25	393	393	Forest	Industrial	No	No	4	5	2	4
Inadequate Buffer	337101	WB	10/02/2002	Left	Left	0		436		Forest	Lawn	No	No	4	3	3	4
Inadequate Buffer	338101	WB	10/02/2002	Both	Neither	15	10	500	500	Multiflora rose	Multiflora rose	No	No	4	3	3	5
Inadequate Buffer	003101	SR	06/19/2002	Both	Neither	20	0	400	500	Lawn Pond	Lawn	No	No	4	2	2	3
Inadequate Buffer	023103	SR	06/20/2002	Both	Neither	17	15	350	350	Pasture	Pasture	No	No	4	3	2	3
Inadequate Buffer	031201	SR	07/08/2002	Left	Left	2		700		Crop Field	Lawn, Paved	No	No	4	1	1	2
Inadequate Buffer	043102	SR	07/08/2002	Left	Neither	5		300		Forest	Lawn	No	No	4	2	2	4
Inadequate Buffer	103102	MR	04/22/2002	Both	Both	0	0	100	100	Pasture	Pasture	No	No	5	2	3	2
Inadequate Buffer	104111	MR	04/22/2002	Left	Left	5		100		Multifloral Rose	Lawn	No	No	5	1	2	2
Inadequate Buffer	104112	MR	04/22/2002	Left	Left	15		250		Lawn	Lawn	No	No	5			

Appendix B - Inadequate Buffers

Problem	Site #	Sub-watershed	Date	Sides	Unshaded	Width Left(ft)	Width Right(ft)	Length Left(ft)	Length Right(ft)	Land Use Right	Land Use Left	Recently established	Livestock	Severity	Correctability	Access	Wetland
Inadequate Buffer	106201	MR	04/23/2002	Right	Right		0		100	Lawn	Forest	No	No	5	1	2	1
Inadequate Buffer	108101	MR	04/22/2002	Left		10		300		Shrubs & small trees	Lawn	No	No	5	2	3	1
Inadequate Buffer	115101	MR	04/23/2002	Right	Neither		15		200	Lawn	Shrubs & small trees	No	No	5	1	1	1
Inadequate Buffer	122202	MR	04/23/2002	Right	Neither		10		200	Shrubs & small trees	Forest	No	No	5	3	3	2
Inadequate Buffer	124101	MR	05/07/2002	Left	Left	15		200		Shrubs & small trees	Pasture	No	Yes	5	-1	-1	-1
Inadequate Buffer	131201	MR	05/07/2002	Right	Right		6		300	Crop field	Paved	No	No	5	2	2	3
Inadequate Buffer	136205	MR	05/07/2002	Both	Both	0	0	70	70	Crop field	Crop field	No	No	5	3	3	1
Inadequate Buffer	140101	MR	05/06/2002	Both	Neither	25	20	600	600	Crop field	Lawn	No	No	5	1	2	5
Inadequate Buffer	144102	MR	05/06/2002	Right	Neither		25		400	Pasture	Forest	No	Yes	5	1	2	4
Inadequate Buffer	218204	WB	10/31/2002	Both	Neither	10	10	150	150	Shrubs & small trees	Crop field	No	No	5	2	1	1
Inadequate Buffer	229202	WB	10/29/2002	Both	Neither	10	10	230	230	Shrubs & small trees	Shrubs & small trees	No	No	5	1	2	1
Inadequate Buffer	230207	WB	10/21/2002	Right	Neither		5		50	Lawn	Forest	No	No	5	2	1	3
Inadequate Buffer	315205	WB	10/04/2002	Both	Neither	10	20	70	70	Lawn	Lawn	No	No	5	3	1	3
Inadequate Buffer	328204	WB	10/03/2002	Both	Both	0	0	150	150	Golf course	Golf course	No	No	5	1	1	4
Inadequate Buffer	338202	WB	10/01/2002	Left	Left	0		188		Forest	Fallow, city owned	No	No	5	1	1	3
Inadequate Buffer	007204	SR	06/14/2002	Both	Both	5	5	100	100	Pasture	Pasture	No	No	5	3	2	2
Inadequate Buffer	008108	SR	06/19/2002	Left	Neither	7		200		Forest	Lawn	No	No	5	3	2	4
Inadequate Buffer	014205	SR	06/19/2002	Left	Right	10		100		Crop Field	Crop Field	No	No	5	2	2	1

Appendix B - Fish Barriers

Problem	Site #	Sub-watershed	Date	Blockage	Type	Reason	Drop (ft)	Depth (ft)	Severity	Correctability	Access
Fish Barrier	231203	WB	10/21/2002	Total	Dam	Too high	72		1	5	1
Fish Barrier	335207	WB	10/02/2002	Total	Gauging Station	Too high	24		1	3	2
Fish Barrier	335210	WB	10/02/2002	Total	Dam	Too high	48		1	3	2
Fish Barrier	007104	SR	06/17/2002	Total	Dam	Too High	18		2	3	2
Fish Barrier	105102	MR	04/22/2002	Total	Dam	Too high	24		3	3	1
Fish Barrier	112201	MR	04/23/2002	Total	Dam	Too high	12		3	3	2
Fish Barrier	121101	MR	04/23/2002	Total	Road crossing	Too high	12		3	3	2
Fish Barrier	144105	MR	05/06/2002	Total	Natural falls	Too high	12		3	3	4
Fish Barrier	239208	WB	10/17/2002	Total	Dam- Gabion Basket Dam	Too high	30		3	1	1
Fish Barrier	239222	WB	10/21/2002	Partial	Pipe crossing	Too high	18		3	4	1
Fish Barrier	240205	WB	10/21/2002	Partial	Dam	Too high	12		3	4	1
Fish Barrier	290101	WB	10/15/2002	Total	Dam	Too high	12		3	3	2
Fish Barrier	296102	WB	10/29/2002	Total	Pipe crossing	Too high	7.5		3	3	2
Fish Barrier	297202	WB	10/09/2002	Temporary	Beaver dam	Too high	4.5		3	3	5
Fish Barrier	313205	WB	10/08/2002	Temporary	Natural falls	Too high	12		3	1	2
Fish Barrier	335202	WB	10/02/2002	Total	Road crossing	Too high	8		3	3	3
Fish Barrier	038104	SR	06/18/2002	Total	Pipe Crossing	Too High	12		3	5	2
Fish Barrier	103104	MR	04/22/2002	Total	Instream pond	Too high	12		4	5	3
Fish Barrier	104106	MR	04/22/2002	Total	Road crossing	Too high	12		4	4	3
Fish Barrier	289103	WB	10/18/2002	Total	Rock built up with road over top	Too high	8		4	3	2
Fish Barrier	289104	WB	10/18/2002	Total	Road crossing	Too high	16		4	4	1
Fish Barrier	029201	SR	06/20/2002	Partial	Concrete debris	Too High	5		4	2	1
Fish Barrier	047201	SR	06/18/2002	Total	Pipe Crossing	Too High	6		4	1	1
Fish Barrier	107202	MR	04/23/2002	Total	Road crossing	Too high	4		5	2	1
Fish Barrier	123105	MR	05/06/2002	Temporary	Debris dam	Too shallow		6	5	1	1
Fish Barrier	136201	MR	05/07/2002	Partial	Concrete debris	Too high	10	0.2	5	3	1
Fish Barrier	207201	WB	10/28/2002	Temporary	Beaver dam	Too high	12		5	1	2
Fish Barrier	219203	WB	10/24/2002	Temporary	Beaver dam	Too high	6		5	2	2
Fish Barrier	246211	WB	10/17/2002	Total	Dam	Too high	30		5	5	2
Fish Barrier	313204	WB	10/08/2002	Total	Pipe crossing	Too high	12		5	3	1
Fish Barrier	316101	WB	10/04/2002	Total	Concrete debris	Too high	24		5	2	2
Fish Barrier	027203	SR	06/20/2002	Partial	Channelized	Too High	4		5	1	1

Appendix B - Trash Dumping Sites

Problem	Site #	Sub-watershed	Date	Type	Truckloads	Other measure	Extent	Volunteer Project?	Owner Type	Owner Name	Severity	Correctability	Access
Trash Dumping	303104	WB	10/08/2002	Residential, flotables, tires. Old oil drum	6		Single site	No	Private		1	4	4
Trash Dumping	131204	MR	05/07/2002	Residential Construction	15		Single site	Yes	Private		2	2	2
Trash Dumping	296102	WB	10/29/2002	Residential, industrial, flotables	45		Large Area	No	Private		2	4	2
Trash Dumping	243104	WB	10/22/2002	Residential, yard waste,glass bottles	11		Large Area	No	Private		3	3	3
Trash Dumping	258101	WB	10/17/2002	Industrial, rr ties	12		Single site	No	Private	Md Midland	3	3	3
Trash Dumping	339101	WB	10/01/2002	Old vehicle/ trailor		1 trailor, 2-3 cars	Single site	No	Private		3	4	3
Trash Dumping	023101	SR	06/20/2002	Industrial	1		Single Site	Yes	Public	BC Reservoir	3	2	1
Trash Dumping	023105	SR	06/20/2002	Residential	2		Single Site	Yes	Private		3	2	2
Trash Dumping	024101	SR	06/20/2002	Residential	2		Single Site	Yes	Private		3	3	2
Trash Dumping	024102	SR	06/20/2002	Residential	2		Large Area	Yes	Private		3	3	2
Trash Dumping	104109	MR	04/22/2002	Yard waste & tires	8		Large area	Yes	Private		4	3	3
Trash Dumping	242101	WB	10/24/2002	Residential Construction	5		Single site	No	Private		4	4	2
Trash Dumping	243103	WB	10/22/2002	Residential, floatables	3		Single site	Yes	Private		4	2	3
Trash Dumping	247101	WB	10/17/2002	Residential, yard waste, flotables, tires	4		Single site	Yes	Private		4	2	2
Trash Dumping	307202	WB	10/08/2002	Auto mobile and Parts	3		Single site	Yes	Private		4	3	4
Trash Dumping	105104	MR	04/22/2002	Tires	0.5		Single site	Yes	Private		5	5	3
Trash Dumping	106102	MR	04/23/2002	Industrial	1	One large pipe	Single site	Yes	Private		5	1	1
Trash Dumping	114102	MR	04/23/2002	Residential & tires	2		Single site	Yes	Private		5	1	3
Trash Dumping	114103	MR	04/23/2002	Yard waste	3		Single site	Yes	Private		5	1	1
Trash Dumping	115104	MR	04/23/2002	Residential	1		Single site	Yes	Private		5	1	2
Trash Dumping	291202	WB	10/09/2002	Residential	3		Single site	No	Private		5	2	5
Trash Dumping	338203	WB	10/01/2002	Residential	1		Single site	Yes	Private		5	1	1

Appendix B - Channel Alterations

Problem	Site #	Sub-watershed	Date	Type	Bottom Width (in)	Length (ft)	Perennial Flow	Sedimentation	Veg in Channel	Road Crossing	Length Above (ft)	Length Below (ft)	Severity	Correctability	Access
Channel Alteration	140101	MR	05/06/2002	Concrete		200	No	No	No	Above			2	5	1
Channel Alteration	131206	MR	05/07/2002	Vinyl sheet	2	12	Yes	No	No	No			3	1	1
Channel Alteration	136201	MR	05/07/2002	Concrete	20	20	Yes	No	Yes	Below		36	3	2	2
Channel Alteration	246216	WB	11/05/2002	Concrete	24	100	Yes	Yes	No	No			3	3	1
Channel Alteration	037101	SR	06/18/2002	Concrete, Gabion Baskets	4	20	Yes	Yes	Yes	Above	20		3	3	1
Channel Alteration	038102	SR	06/18/2002	Concrete Gabion Baskets	96	20	Yes	Yes	Yes	Below		20	3	4	1
Channel Alteration	240207	WB	10/21/2002	Gabion Baskets		750	Yes	Yes	Yes	No			4	5	2
Channel Alteration	002106	SR	06/17/2002	Rocks, Boulders	36	30	Yes	Yes	Yes	No			4	3	2
Channel Alteration	007106	SR	06/17/2002	Concrete	12	10	Yes	No	No	No			4	4	2
Channel Alteration	008107	SR	06/19/2002	Gabion Baskets	15	15	Yes	Yes	Yes	Below		15	4	3	1
Channel Alteration	015102	SR	06/19/2002	Boulders	48	12	Yes	Yes	No	No			4	2	3
Channel Alteration	020201	SR	06/19/2002	Concrete	12	12	No	Yes	Yes	Below		12	4	1	1
Channel Alteration	028207	SR	06/20/2002	Corrugated Metal	4	25	Yes	Yes	No	No			4	5	1
Channel Alteration	037103	SR	09/18/2002	Gabion Baskets	24	12	Yes	Yes	Yes	No			4	4	2
Channel Alteration	039104	SR	06/18/2002	Gabion Baskets	36	20	Yes	Yes	Yes	Below		20	4	3	2
Channel Alteration	039107	SR	06/18/2002	Rock	12	20	Yes	Yes	Yes	No			4	3	1
Channel Alteration	103101	MR	04/22/2002	Gabion Baskets		11.5	No	No	No	Both	23	23	5	3	1
Channel Alteration	105105	MR	04/22/2002	Rip-rap	48	20	Yes	No	No	Both	10	10	5	2	2
Channel Alteration	121101	MR	04/23/2002	Rip-rap	36	20	No	No	No	Both	10	10	5	2	2
Channel Alteration	142101	MR	05/14/2002	Concrete	30	25	No	No	No	No			5	3	1
Channel Alteration	007201	SR	06/14/2002	Gabion Baskets	14	35	Yes	No	Yes	Below	3	3	5	1	1

Appendix B - Unusual Conditions/Comments

Problem	Site #	Sub-watershed	Date	Description	Potential Cause	Severity	Correctability	Access
Unusual Condition	130103	MR	05/06/2002	Utility line is exposed above stream bed.	Erosion of pasture land	2	5	4
Unusual Condition	239204	WB	10/17/2002	Iron deposits/ bacteria bubbling up from beneath surface. Has springhead appearance.	Unknown, Near Monumental Wood Mill works	2	4	2
Unusual Condition	002104	SR	06/17/2002	Odor, water color/clarity. Sewage smell, red rusty color, sewage smell	Construction nearby	2	3	2
Unusual Condition	021203	SR	06/20/2002	Fish barrier, concrete slab	Owner	2	1	1
Unusual Condition	140102	MR	05/06/2002	Pond is drying out all the stream(upstream). Excessive algae	Pond	3	5	3
Unusual Condition	214203	WB	10/31/2002	Headwall scour, starting to undermine the roadway & working its way behind the headwall.		3	2	1
Unusual Condition	247201	WB	10/17/2002	Bridge Scour on both sides od road crossing into 84 Lumber Access	Two small structures prevent sufficient discharge or stream flow	3	5	1
Unusual Condition	281103	WB	10/09/2002	Sediment built up in stream channel. Stream goes underground beneath it, resurfaces and braids out. Overland flow missing for ~200ft.	Sediment build up	3	4	3
Unusual Condition	335204	WB	10/02/2002	Drainage culvert channel was 3' deep and 1' wide coming from industrial site	Uncontrolled stormwater	3	3	2
Unusual Condition	007105	SR	06/17/2002	Excess algae	Stagnation, lawn nutrients	3	4	2
Unusual Condition	211203	WB	10/28/2002	Field crossing- pipe seperated	Inadequate construction, age.	4	1	1
Unusual Condition	218202	WB	10/31/2002	Landscaping ponds and plantings and dams along trib		4	5	2
Unusual Condition	239207	WB	10/17/2002	The gabion baskets along entire stream bed between hahn rd. beyond rr. Crossing		4	5	2
Unusual Condition	246119	WB	11/05/2002	Channel from under building/ parking lot has discharge, reddish & silt from it. Held up with beams- mineshaft like.	Parking lot drainage?	4	5	3
Unusual Condition	316106	WB	10/04/2002	Road Crossing/ driveway through the stream. Gravel track runs right across stream.		4	2	2
Unusual Condition	045201	SR	06/18/2002	Scum, Ferrous sulfide	Farming	4	2	5

Appendix B - Unusual Conditions/Comments

Problem	Site #	Sub-watershed	Date	Description	Potential Cause	Severity	Correctability	Access
Unusual Condition	045202	SR	06/18/2002	Scum	Farming	4	1	1
Unusual Condition	246212	WB	10/17/2002	Telephonbe Pole in center of stream. Creosote Q + Undermining Pole.	Stable channel movement	5	4	2
Comment	103103	MR	04/22/2002	Animals accessing streams	Land owners			
Comment	103104	MR	04/22/2002	Flow has been diverted to a pond. Pond was dry on map	Land owners, pond			
Comment	104105	MR	04/22/2002	Animals accessing stream	Land owner			
Comment	104108	MR	04/22/2002	Construction company tore out the multiflora rose on the bank.	Construction			
Comment	105106	MR	04/22/2002	Cattle newly fenced out from stream	Previous cattle tracks			
Comment	122204	MR	04/22/2002	Three different areas of cattle crossing in stream	Land owner			
Comment	204202	WB	10/28/2002	Headwters for WB. Lippy Bros. Property @ beggs rd.				
Comment	215207	WB	10/24/2002	Old Broken Concrete Damw/ square notch cutout. Leaning downstream allowing water movement. Unsure if it is a full barrier.				
Comment	231205	WB	10/21/2002	Infiltration Gallery for city's North- most intake along west branch				
Comment	239203	WB	10/17/2002	Rip Rap bank protection along both sides of channelized stream. Begins at 239201 PO				
Comment	240202	WB	10/21/2002	S.W. Inlet Draining to stream channel that piped under Manchester. No Swm				
Comment	240206	WB	10/21/2002	Emergency intake for city of westminster water supply Southwest	No Cause			
Comment	255208	WB	10/17/2002	Erosion on right bank. Wash out of bank	Stormwater runoff for car dealership			
Comment	266202	WB	10/22/2002	Stream cutting around head wall	Head wall extends too far into stream channel			

Appendix B - Unusual Conditions/Comments

Problem	Site #	Sub-watershed	Date	Description	Potential Cause	Severity	Correctability	Access
Comment	282102	WB	10/09/2002	Sediment filling in channel. (almost completely filled, tree fallen and backing up sediment for ~200 ft.	Lots of erosion from landfill			
Comment	285101	WB	11/05/2002	Spring feed is being collected into a PVC pipe. Then feed is split into two pipes, one into the pond and one into the stream.	Installed by homeowner			
Comment	287102	WB	10/09/2002	Springhead from well M-13 (monitoring well)				
Comment	296101	WB	10/29/2002	Small "pond" area has been dug out beside stream	Man-made			
Comment	312101	WB	10/31/2002	Dry, incised channel, has been filled with rock.	Runoff from road above.			
Comment	337202	WB	10/02/2002	Blocked road crossing culvert. Unsure how stream flow, when flowing, makes it through the crossing. Squashed Pipe.				
Comment	001203	SR	06/14/2002	Owner has used stream to build pond	Pipe used to fill pond			
Comment	028202	SR	06/20/2002	Guy wire in stream, Pole 1 ft. off bank				
Comment	028203	SR	06/20/2002	Powerline on ground 6 ft. above water	Tree on line			
Comment	028204	SR	06/20/2002	Guy wire in stream	Widening			
Comment	028212	SR	06/20/2002	Guy wire in stream, widening	Widening			
Comment	043203	SR	07/08/2002	Large corrugated metal pipe	Holding tank for pond water			

Appendix B - Exposed Pipes

Problem	Site #	Sub-watershed	Date	Location of Pipe	Type	Diameter (in)	Length (ft)	Purpose	Discharge	Color	Odor	Severity	Correctability	Access
Exposed Pipe	014204	SR	06/19/2002	Exposed along stream bank	Concrete, Plastic 10 "	36	5	Sewage	Yes	NAY	Rotten eggs	1	4	3
Exposed Pipe	008106	SR	06/19/2002	Exposed along stream bank	Smooth metal	12	3	Unknown	No			3	3	2
Exposed Pipe	239209	WB	10/17/2002	Exposed across bottom of stream	Unknown	18	15	Sewage	No			4	2	2
Exposed Pipe	239225	WB	10/21/2002	Exposed across bottom of stream	Unknown			Sewage	No			4	4	1
Exposed Pipe	246212	WB	11/05/2002	Exposed across bottom of stream	smooth metal	4	3	Unknown	No			4	3	2
Exposed Pipe	246213	WB	10/17/2002	Exposed along stream bank	-Cast Iron	60	100	Unknown	No			4	3	2
Exposed Pipe	256203	WB	10/17/2002	Exposed across bottom of stream	Terra cotta	12	4	Sewage	No			4	2	2
Exposed Pipe	002107	SR	06/17/2002	Exposed across bottom of stream	Plastic 6"	4	3	Unknown	No			4	3	2
Exposed Pipe	039106	SR	06/18/2002	Exposed across bottom of stream	Plastic 6"	6	2	Unknown	No			4	4	2
Exposed Pipe	246202	WB	10/17/2002	Exposed along stream bank	Terra cotta	12	1	Sewage	No			5	2	2
Exposed Pipe	331101	WB		Above stream	Terra cotta	12	5	Unknown	No			5	3	3
Exposed Pipe	020202	SR	06/19/2002	Exposed manhole	Concrete, Plastic 10 "	36	1	Sewage	No			5	1	1

Appendix B - In/Near Stream Construction

Problem	Site #	Sub-watershed	Date	Type of Activity	Sediment Control	Why, if inadequate	Excess Sediment?	Length	Company	Location	Severity
In/Near Stream Construction	324205	WB	10/07/2002	Residential development	Inadequate	Silt fence running over with soil	Yes	100	River Down Homes near Redding Property		2
In/Near Stream Construction	324101	WB	10/07/2002	Residential development	Unknown		Yes			River Downs Homes	5
In/Near Stream Construction	331102	WB	10/31/2002	Other- Gerstell Academy	Unknown		Yes	1000		Gerstell Academy on Rt. 140	5

Appendix B - Representative Sites A

Problem	Site #	Sub-watershed	Date	Substrate	Embeddedness	Shelter for Fish	Channel Alteration	Sediment Deposition	Velocity/Depth	Flow	Vegetation	Bank Condition	Riparian Vegetation
Representative Site	104107	MR	4/22/2002	Poor	Marginal	Marginal	Optimal	Optimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Poor
Representative Site	108102	MR	4/22/2002	Suboptimal	Poor	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Marginal
Representative Site	111201	MR	4/23/2002	Marginal	Poor	Optimal	Optimal	Marginal	Marginal	Suboptimal	Optimal	Marginal	Optimal
Representative Site	112204	MR	4/23/2002	Optimal	Marginal	Optimal	Optimal	Optimal	Poor	Optimal	Optimal	Optimal	Marginal
Representative Site	114104	MR	4/23/2002	Optimal	Optimal	Optimal	Optimal	Suboptimal	Marginal	Suboptimal	Optimal	Suboptimal	Optimal
Representative Site	115102	MR	4/23/2002	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Marginal	Optimal	Optimal	Optimal	Optimal
Representative Site	116201	MR	4/23/2002	Optimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Optimal	Optimal
Representative Site	120103	MR	4/23/2002	Optimal	Marginal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	130104	MR	5/6/2002	Suboptimal	Suboptimal	Optimal	Marginal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Suboptimal
Representative Site	136101	MR	5/6/2002	Marginal	Poor	Marginal	Marginal	Marginal	Marginal	Marginal	Optimal	Suboptimal	Marginal
Representative Site	142104	MR	5/14/2002	Optimal	Marginal	Suboptimal	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Marginal
Representative Site	144102	MR	5/6/2002	Optimal	Optimal	Suboptimal	Optimal	Optimal	Marginal	Optimal	Optimal	Suboptimal	Marginal
Representative Site	146201	MR	5/7/2002	Optimal	Optimal	Optimal	Optimal	Marginal	Optimal	Suboptimal	Optimal	Suboptimal	Optimal
Representative Site	149101	MR	5/6/2002	Optimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Marginal	Optimal
Representative Site	150102	MR	5/7/2002	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Marginal	Optimal	Suboptimal	Suboptimal	Optimal
Representative Site	150201	MR	5/14/2002	Optimal	Suboptimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	154101	MR	5/7/2002	Optimal	Optimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	204201	WB	10/28/2002	Poor		Marginal	Optimal	Optimal	Marginal	Optimal	Optimal	Optimal	Poor
Representative Site	206202	WB	10/28/2002	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Poor
Representative Site	208201	WB	10/28/2002				Optimal	Suboptimal	Marginal	Optimal	Optimal	Optimal	Marginal
Representative Site	211202	WB	10/28/2002	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	215201	WB	10/24/2002	Marginal	Marginal	Marginal	Optimal	Marginal	Marginal	Optimal	Optimal	Suboptimal	Suboptimal
Representative Site	218201	WB	10/31/2002	Suboptimal	Marginal	Marginal	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Marginal	Marginal
Representative Site	219201	WB	10/24/2002	Optimal	Marginal	Suboptimal	Optimal	Marginal	Suboptimal	Optimal	Suboptimal	Marginal	Suboptimal
Representative Site	219204	WB	10/31/2002	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	229201	WB	10/29/2002				Optimal		Marginal	Optimal		Optimal	Poor
Representative Site	230202	WB	10/21/2002	Marginal	Poor	Optimal	Marginal	Poor	Poor	Optimal	Suboptimal	Suboptimal	Marginal
Representative Site	231211	WB	10/24/2002	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Marginal	Optimal
Representative Site	235102	WB	10/28/2002	Marginal	Marginal	Poor	Optimal	Suboptimal	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	239220	WB	10/21/2002	Suboptimal	Marginal	Marginal	Optimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	240203	WB	10/21/2002	Suboptimal	Poor	Suboptimal	Suboptimal	Marginal	Marginal	Suboptimal	Suboptimal	Optimal	Marginal
Representative Site	243102	WB	10/22/2002	Suboptimal	Marginal	Suboptimal	Optimal	Suboptimal	Marginal	Suboptimal	Marginal	Marginal	Optimal

Appendix B - Representative Sites A

Problem	Site #	Sub-watershed	Date	Substrate	Embeddedness	Shelter for Fish	Channel Alteration	Sediment Deposition	Velocity/Depth	Flow	Vegetation	Bank Condition	Riparian Vegetation
Representative Site	246203	WB	10/17/2002	Poor	Poor	Poor	Suboptimal	Poor	Poor	Suboptimal	Marginal	Poor	Marginal
Representative Site	247202	WB	10/17/2002	Poor	Poor	Marginal	Suboptimal	Poor	Suboptimal	Optimal	Suboptimal	Marginal	Poor
Representative Site	248102	WB	10/17/2002	Marginal	Marginal	Marginal	Optimal	Marginal	Suboptimal	Poor	Poor	Poor	Optimal
Representative Site	248106	WB	10/17/2002	Poor	Marginal	Marginal	Optimal	Optimal	Marginal	Suboptimal	Marginal	Suboptimal	Suboptimal
Representative Site	249102	WB	10/24/2002	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Marginal	Marginal	Optimal
Representative Site	250101	WB	10/21/2002	Suboptimal	Suboptimal	Marginal	Optimal	Marginal	Marginal	Suboptimal	Suboptimal	Suboptimal	Optimal
Representative Site	256205	WB	10/17/2002	Marginal	Poor	Poor	Optimal	Poor	Marginal	Suboptimal	Suboptimal	Poor	Marginal
Representative Site	258102	WB	10/17/2002	Optimal	Optimal	Suboptimal	Optimal	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	260102	WB	10/22/2002	Marginal	Suboptimal	Marginal	Optimal	Suboptimal	Poor	Suboptimal	Poor	Poor	Optimal
Representative Site	265202	WB	10/22/2002	Suboptimal	Marginal	Suboptimal	Optimal	Poor	Marginal	Marginal	Poor	Poor	Optimal
Representative Site	266201	WB	10/22/2002	Suboptimal	Marginal	Suboptimal	Optimal	Poor	Marginal	Suboptimal	Suboptimal	Suboptimal	Poor
Representative Site	267101	WB	10/21/2002	Marginal	Suboptimal	Marginal	Optimal	Marginal	Optimal	Suboptimal	Marginal	Suboptimal	Poor
Representative Site	268107	WB	11/5/2002	Poor	Poor	Poor	Optimal	Optimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Poor
Representative Site	275202	WB	10/22/2002	Marginal	Marginal	Suboptimal	Optimal	Poor	Marginal	Marginal	Poor	Poor	Optimal
Representative Site	276101	WB	10/18/2002	Poor	Poor	Poor	Optimal	Optimal	Poor	Suboptimal	Optimal	Optimal	Suboptimal
Representative Site	276102	WB	10/18/2002	Optimal	Suboptimal	Suboptimal	Optimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Optimal
Representative Site	278202	WB	10/17/2002	Suboptimal	Marginal	Suboptimal	Optimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Marginal	Optimal
Representative Site	281101	WB	10/9/2002	Poor	Poor	Poor	Optimal	Optimal	Poor	Poor	Optimal	Optimal	Poor
Representative Site	281102	WB	10/9/2002	Marginal	Suboptimal	Marginal	Optimal	Suboptimal	Marginal	Marginal	Marginal	Marginal	Poor
Representative Site	282101	WB	10/9/2002	Suboptimal	Marginal	Suboptimal	Optimal	Suboptimal	Marginal	Marginal	Suboptimal	Marginal	Optimal
Representative Site	284101	WB	10/21/2002	Optimal	Suboptimal	Marginal	Optimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	289102	WB	10/18/2002	Marginal		Marginal	Optimal	Suboptimal	Marginal	Suboptimal	Marginal	Marginal	Optimal
Representative Site	289105	WB	10/29/2002	Poor	Poor	Marginal	Optimal	Suboptimal	Marginal	Marginal	Suboptimal	Marginal	Optimal
Representative Site	291205	WB	10/9/2002	Marginal	Marginal	Marginal	Optimal	Marginal	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	294101	WB	10/15/2002	Suboptimal	Marginal	Marginal	Optimal	Suboptimal	Marginal	Marginal	Suboptimal	Suboptimal	Optimal
Representative Site	295103	WB	10/18/2002	Marginal	Suboptimal	Marginal	Optimal	Suboptimal	Marginal	Suboptimal	Marginal	Suboptimal	Suboptimal
Representative Site	297201	WB	10/9/2002	Optimal	Marginal	Optimal	Optimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	303103	WB	10/8/2002	Suboptimal	Suboptimal	Marginal	Optimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	307201	WB	10/8/2002	Optimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Optimal	Optimal
Representative Site	310201	WB	10/4/2002	Marginal	Marginal	Suboptimal	Optimal	Poor	Poor	Marginal	Suboptimal	Marginal	Optimal
Representative Site	313203	WB	10/8/2002							Poor	Marginal	Marginal	Optimal
Representative Site	315203	WB	10/4/2002	Suboptimal	Optimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Poor

Appendix B - Representative Sites A

Problem	Site #	Sub-watershed	Date	Substrate	Embeddedness	Shelter for Fish	Channel Alteration	Sediment Deposition	Velocity/Depth	Flow	Vegetation	Bank Condition	Riparian Vegetation
Representative Site	316103	WB	10/14/2002	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	316107	WB	10/4/2002	Suboptimal	Suboptimal	Marginal	Optimal	Optimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Poor
Representative Site	319204	WB	10/7/2002	Marginal	Poor	Poor	Optimal	Marginal	Marginal	Optimal	Optimal	Suboptimal	Marginal
Representative Site	322103	WB	10/4/2002	Optimal	Suboptimal	Optimal	Optimal	Marginal	Suboptimal	Suboptimal	Poor	Poor	Poor
Representative Site	323101	WB	10/7/2002	Suboptimal	Marginal	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal	Marginal	Marginal	Poor
Representative Site	327102	WB	10/2/2002	Suboptimal	Marginal	Optimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Optimal
Representative Site	327103	WB	10/31/2002	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Marginal	Suboptimal	Poor	Poor	Optimal
Representative Site	328201	WB	10/3/2002	Poor	Suboptimal	Marginal	Optimal	Suboptimal	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal
Representative Site	331103	WB	10/31/2002	Poor	Poor	Marginal	Optimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Marginal	Optimal
Representative Site	332201	WB	10/2/2002	Poor	Poor	Marginal	Optimal	Poor	Marginal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	332206	WB	10/3/2002	Suboptimal	Optimal	Suboptimal	Optimal	Optimal	Marginal	Suboptimal	Optimal	Suboptimal	Suboptimal
Representative Site	335201	WB	10/2/2002	Poor	Poor	Poor	Optimal	Poor		Poor	Poor	Poor	Optimal
Representative Site	335203	WB	10/2/2002	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal
Representative Site	338101	WB	10/2/2002	Marginal	Suboptimal	Marginal	Optimal	Marginal	Marginal	Marginal	Suboptimal	Suboptimal	Poor
Representative Site	338102	WB	10/2/2002	Poor	Marginal	Marginal	Optimal	Marginal	Poor	Marginal	Marginal	Poor	Optimal
Representative Site	339202	WB	10/1/2002	Optimal	Suboptimal	Suboptimal	Optimal	Poor	Suboptimal	Marginal	Marginal	Marginal	Marginal
Representative Site	341203	WB	10/1/2002	Suboptimal	Optimal	Poor	Optimal	Marginal	Optimal	Optimal	Marginal	Poor	Marginal
Representative Site	001201	SR	6/14/2002	Optimal	Marginal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	002101	SR	6/17/2002	Suboptimal	Suboptimal	Marginal	Suboptimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Marginal
Representative Site	007101	SR	6/17/2002	Suboptimal	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Optimal
Representative Site	008102	SR	6/19/2002	Optimal	Suboptimal	Marginal	Marginal	Suboptimal	Marginal	Marginal	Suboptimal	Marginal	Optimal
Representative Site	014201	SR	6/19/2002	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal
Representative Site	015101	SR	6/19/2002	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Optimal
Representative Site	022201	SR	6/20/2002	Optimal	Suboptimal	Suboptimal	Suboptimal	Poor	Optimal	Optimal	Optimal	Poor	Suboptimal
Representative Site	033102	SR	6/18/2002	Optimal	Suboptimal	Marginal	Suboptimal	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	037108	SR	6/18/2002	Marginal	Suboptimal	Marginal	Marginal	Suboptimal	Marginal	Marginal	Optimal	Marginal	Marginal
Representative Site	045203	SR	6/18/2002	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Marginal	Marginal	Optimal	Optimal	Optimal

Appendix B - Representative Sites B

Problem	Site #	Sub-watershed	Date	Width Riffle	Width Run	Width Pool	Depth Riffle	Depth Run	Depth Pool	Bottom Type
Representative Site	104107	MR	4/22/2002	18	48	36	2	18	6	silt
Representative Site	108102	MR	4/22/2002	12	24	24	1	2	4	silt
Representative Site	111201	MR	4/23/2002	40	36		1	4		silt
Representative Site	112204	MR	4/23/2002	30	40		2	6		silt
Representative Site	114104	MR	4/23/2002	36	16		1	1		cobble
Representative Site	115102	MR	4/23/2002	60	36	60	7	2	4	cobble
Representative Site	116201	MR	4/23/2002	60	60	62	2	4	12	cobble
Representative Site	120103	MR	4/23/2002	36	24	94	1	2	18	cobble
Representative Site	130104	MR	5/6/2002	80	70	120	2	4	30	sand
Representative Site	136101	MR	5/6/2002	144	144	144	12	12	15	sand
Representative Site	142104	MR	5/14/2002	120	48	72	5	8	10	cobble
Representative Site	144102	MR	5/6/2002	48	24		2	3		cobble
Representative Site	146201	MR	5/7/2002	480	240	96	7	3.5	12	sand
Representative Site	149101	MR	5/6/2002	24	36	48	2	4	18	gravel
Representative Site	150102	MR	5/7/2002	96	60		2	3		gravel
Representative Site	150201	MR	5/14/2002	72	24	48	5	10	12	cobble
Representative Site	154101	MR	5/7/2002	240	180	96	10	14	18	gravel
Representative Site	204201	WB	10/28/2002	36	48					Vegetation
Representative Site	206202	WB	10/28/2002	36	48	6.5				Gravel
Representative Site	208201	WB	10/28/2002							Gravel
Representative Site	211202	WB	10/28/2002	36	60	7				Silt
Representative Site	215201	WB	10/24/2002	12	15		2			
Representative Site	218201	WB	10/31/2002	6	6	6				Silt
Representative Site	219201	WB	10/24/2002	10	10	10	2	6	12	Silt
Representative Site	219204	WB	10/31/2002	5	7	7		12		Gravel
Representative Site	229201	WB	10/29/2002					2		Silt
Representative Site	230202	WB	10/21/2002							Silt
Representative Site	231211	WB	10/24/2002	15	15	15	3	4	12	Silt
Representative Site	235102	WB	10/28/2002	12	16	0	2	2	0	Silt
Representative Site	239220	WB	10/21/2002	25	21		2	3		Sand
Representative Site	240203	WB	10/21/2002	15	18	18	3	6		Gravel
Representative Site	243102	WB	10/22/2002	4	3.5	2	3	5	7	Silt
Representative Site	246203	WB	10/17/2002		15		2	2		Gravel

Appendix B - Representative Sites B

Problem	Site #	Sub-watershed	Date	Width Riffle	Width Run	Width Pool	Depth Riffle	Depth Run	Depth Pool	Bottom Type
Representative Site	247202	WB	10/17/2002	9	9		4	6	12	Sand
Representative Site	248102	WB	10/17/2002	4	3	0	2	3	0	Sand
Representative Site	248106	WB	10/17/2002	0	12	10	0	3.5	5	Silt
Representative Site	249102	WB	10/24/2002	6	5		4	6		Gravel
Representative Site	250101	WB	10/21/2002	5	4	0	3	5	0	Gravel
Representative Site	256205	WB	10/17/2002	24	36	36	2	6	12	Sand
Representative Site	258102	WB	10/17/2002	3	6	3	5	8	18	Gravel
Representative Site	260102	WB	10/22/2002	2	2	0	2	4	0	Sand
Representative Site	265202	WB	10/22/2002	4	4	4	2	2	8	Sand
Representative Site	266201	WB	10/22/2002	6	6	6	2	6		Sand
Representative Site	267101	WB	10/21/2002	6	6	6	5	14	14	Sand
Representative Site	268107	WB	11/5/2002	12	24	30	2	4	3	Silt
Representative Site	275202	WB	10/22/2002	6	6		2	2	2	
Representative Site	276101	WB	10/18/2002	0	12	0	0	3	0	Silt
Representative Site	276102	WB	10/18/2002	11	12	0	5	14	0	Gravel
Representative Site	278202	WB	10/17/2002	6	6	7	2	2	8	Sand
Representative Site	281101	WB	10/9/2002	0	0	12	0	0	2	Silt
Representative Site	281102	WB	10/9/2002	3	4	4	1	5	10	Silt
Representative Site	282101	WB	10/9/2002	3	3	3	2	4	6	Silt
Representative Site	284101	WB	10/21/2002	12	10	7	6	8	30	Gravel
Representative Site	289102	WB	10/18/2002	2.5	3	3	2	3	4	Sand
Representative Site	289105	WB	10/29/2002	12	18	18	1	4	2	Silt
Representative Site	291205	WB	10/9/2002	30	30		2	12		Sand
Representative Site	294101	WB	10/15/2002	4	2	3	2	4	6	Gravel
Representative Site	295103	WB	10/18/2002	5	4	0	2	4	0	
Representative Site	297201	WB	10/9/2002	17	25		2	6		Sand
Representative Site	303103	WB	10/8/2002	10	15	5	5	7	14	Sand
Representative Site	307201	WB	10/8/2002	23	30	33	4	6	12	Sand
Representative Site	310201	WB	10/4/2002							Silt
Representative Site	313203	WB	10/8/2002							Sand
Representative Site	315203	WB	10/4/2002	4	5	5	2	5	12	Sand
Representative Site	316103	WB	10/14/2002	3	4	4	4	8	24	Silt
Representative Site	316107	WB	10/4/2002							Sand

Appendix B - Representative Sites B

Problem	Site #	Sub-watershed	Date	Width Riffle	Width Run	Width Pool	Depth Riffle	Depth Run	Depth Pool	Bottom Type
Representative Site	319204	WB	10/7/2002		44			12		Sand
Representative Site	322103	WB	10/4/2002	6	4	4	4	6	18	Sand
Representative Site	323101	WB	10/7/2002	8	15		10	12		Sand
Representative Site	327102	WB	10/2/2002	12	8	5	4	6	24	Silt
Representative Site	327103	WB	10/31/2002	4	10	0	6	8	0	Cobble
Representative Site	328201	WB	10/3/2002		67					Silt
Representative Site	331103	WB	10/31/2002	2	3.5	0	3	6	0	Silt
Representative Site	332201	WB	10/2/2002			77			16	Silt
Representative Site	332206	WB	10/3/2002	18	24					Silt
Representative Site	335201	WB	10/2/2002	12						Silt
Representative Site	335203	WB	10/2/2002	32	38	38	4	24	30	Sand
Representative Site	338101	WB	10/2/2002	14	24	18	2	4	4	Sand
Representative Site	338102	WB	10/2/2002	12	12	0	1	1	0	Sand
Representative Site	339202	WB	10/1/2002	20	61		4	24		Silt
Representative Site	341203	WB	10/1/2002	25	25	25	2	26	26	Silt
Representative Site	001201	SR	6/14/2002	3	1	1	3	1	1	Cobble
Representative Site	002101	SR	6/17/2002	42	32	24	2	3	2	Cobble
Representative Site	007101	SR	6/17/2002	12	60	48	4	7	10	Cobble
Representative Site	008102	SR	6/19/2002	26	12	26	2	3	5	Cobble
Representative Site	014201	SR	6/19/2002	14	30	60	2	2	6	Cobble
Representative Site	015101	SR	6/19/2002	144	60	72	3	6	18	Cobble
Representative Site	022201	SR	6/20/2002	40	12	5	0.5	1.5	5	Gravel
Representative Site	033102	SR	6/18/2002	120	56	60	3	4	6	Cobble
Representative Site	037108	SR	6/18/2002	14	10	6	3	2	1	Sands
Representative Site	045203	SR	6/18/2002	20	38	0	1.5	2	0	Silts