



Channel Alteration Inadequate Buffer Erosion
 Fish Migration Barrier Pipe Outfall Exposed Pipes
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**Western Branch
 Stream Corridor
 Assessment Survey**
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Watershed Assessment and Targeting Division
 Watershed Services Unit
 Maryland Department of Natural Resources
 November 2003





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WESTERN BRANCH STREAM CORRIDOR ASSESSMENT

BY

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2003



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SUMMARY

The Western Branch watershed encompasses about 71,114 acres (111mi²) of land. In 1998, the Maryland Clean Water Action Plan identified the Western Branch 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 Prince George's County formed a partnership to develop a Watershed Restoration Action Strategy (WRAS) for the Western Branch Watershed. As part of the WRAS development process, a Stream Corridor Assessment (SCA) survey was performed on three sub-watersheds: Collington Branch, Lottsford Branch, and Northeast Branch. The survey began in April 2003 and was completed by June 2003.

The SCA survey was developed by the Watershed Assessment and Targeting 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 113 miles of streams were surveyed, and 448 potential environmental problems were identified. The most common environmental concern seen during the SCA survey was pipe outfalls, which was reported at 128 sites. Other potential environmental problems identified during the survey include: 117 fish barriers, 60 erosion sites, 51 inadequate buffers, 45 trash dumping sites, 20 unusual conditions, 14 in/near stream construction sites, 4 exposed pipes, and 9 channel alterations.

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 48 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 Western Branch Watershed. It is important to note that all of the problems identified as part of the Western Branch 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 Western Branch WRAS committee, which is developing a Watershed Restoration Action Strategy for the Western Branch. Information on the Western Branch Watershed Action Strategy can be found on DNR's website (www.dnr.state.md.us/watersheds/surf/proj/wras.html).

ACKNOWLEDGEMENTS

Without the hard work and dedication of the Crew of the Maryland Conservation Corps, this survey would not have been possible. The crew chief during the survey was Tina Stevens. The crewmembers were Frank Simmons, Zach Smith, Emma White, Jessica Hunicke, Abbey Tyrna, Lauren DeWitt, Manny Citron, Sarah Scott, and Sarah Stankorb.

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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 Western Branch watershed. The watershed encompasses approximately 71,114 acres in the Coastal Plain of Maryland. A map showing the location of the Western Branch Watershed is presented in Figure 1. In response to the findings of the Maryland Clean Water Action Plan, the Maryland Department of Natural Resources has formed a partnership with Prince George's County to work together to assess and improve environmental conditions in the Western Branch watershed. The main goals of this partnership are to develop and implement a Watershed Restoration Action Strategy (WRAS) for the Western Branch watershed.

The first step in developing a Restoration Action Strategy for the Western Branch 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 Western Branch watershed (Shanks, 2003). Second, a synoptic water quality survey, as well as surveys of the fish and macro invertebrate communities at selected stations throughout the Western Branch Watershed were done to provide information on the present condition of aquatic resources in the watershed (Primrose, 2003). While both these approaches provide good overall information on environmental conditions within the Western Branch 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 Western Branch Watershed was also done.

The Stream Corridor Assessment survey has been developed by DNR's Watershed Assessment and Targeting 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 and Targeting 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 Western Branch watershed in Prince George's County contains 71,114 acres (111 mi²) of land. Approximately 15% (10,731 acres) of the land in the watershed is categorized as agricultural land, 39% (28,071 acres) of land is forested and 43.8% (31,341 acres) is designated as urban (Shanks, 2003). 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 Collington Branch, Lottsford Branch, and Northeast Branch in Prince George's County Maryland. The targeted area encompasses 22,581 acres (39 mi²) of land. Collington Branch contains 14,851 acres, Northeast Branch contains 5,549 acres, and the Lottsford Branch contains 2,181 acres. There are approximately 113 miles of stream within the three sub-watersheds. Survey teams walked all 113 miles from April 2003 to June 2003. A digital orthophoto map of watershed is shown in Figure 2. Figure 3 shows the same watershed boundary superimposed on

a seven and ½ minute USGS topographic quadrangle maps. Figure 4 shows the watershed boundaries of the three sub-watersheds.

As mentioned earlier, the Maryland Department of Natural Resources is working with Prince George's County to develop a Watershed Restoration Action Strategy (WRAS) of the Western Branch 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 Western Branch. 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.

**Western Branch Watershed
Prince George's County, Maryland**

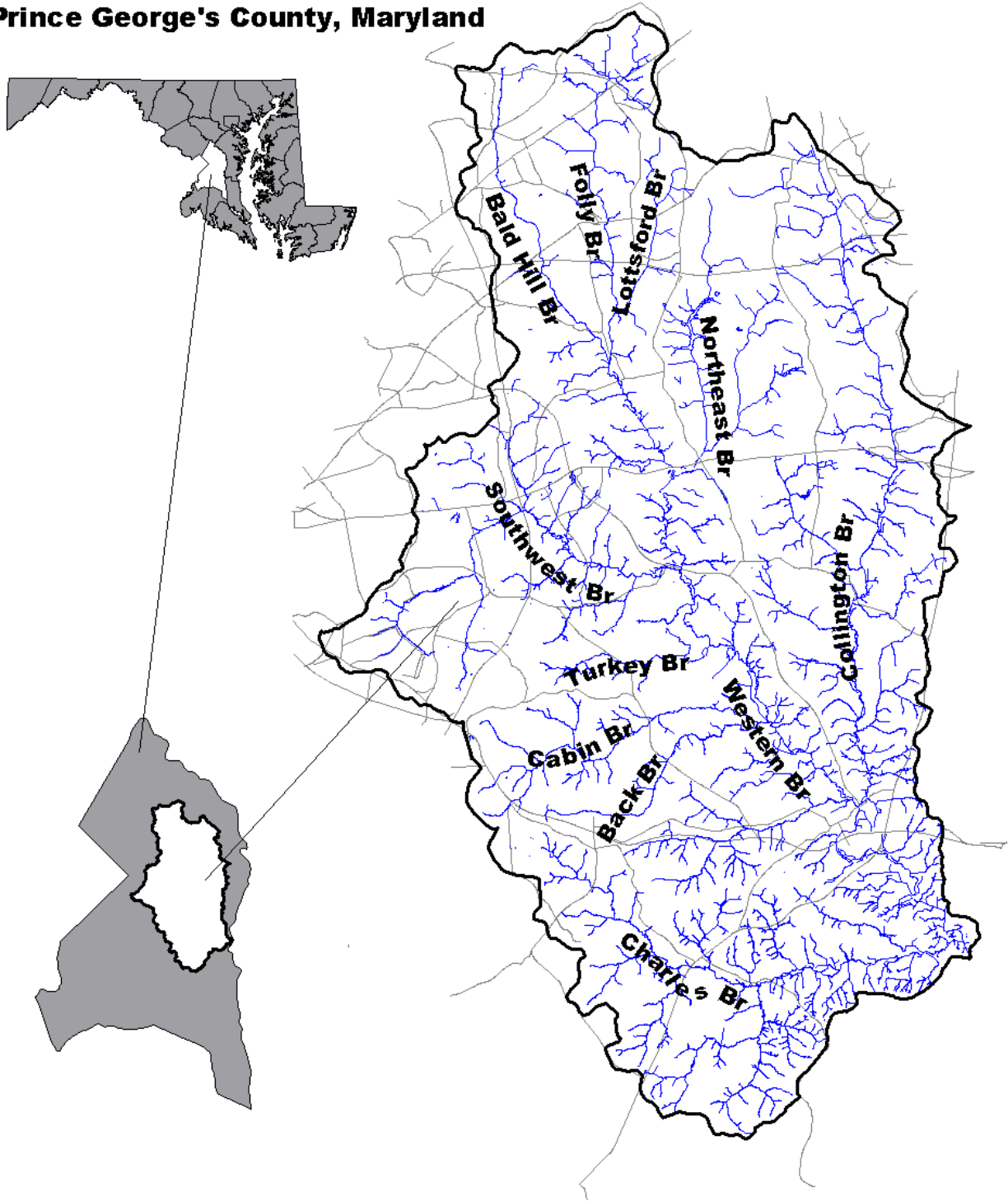


Figure 1: Map showing the location of Western Branch



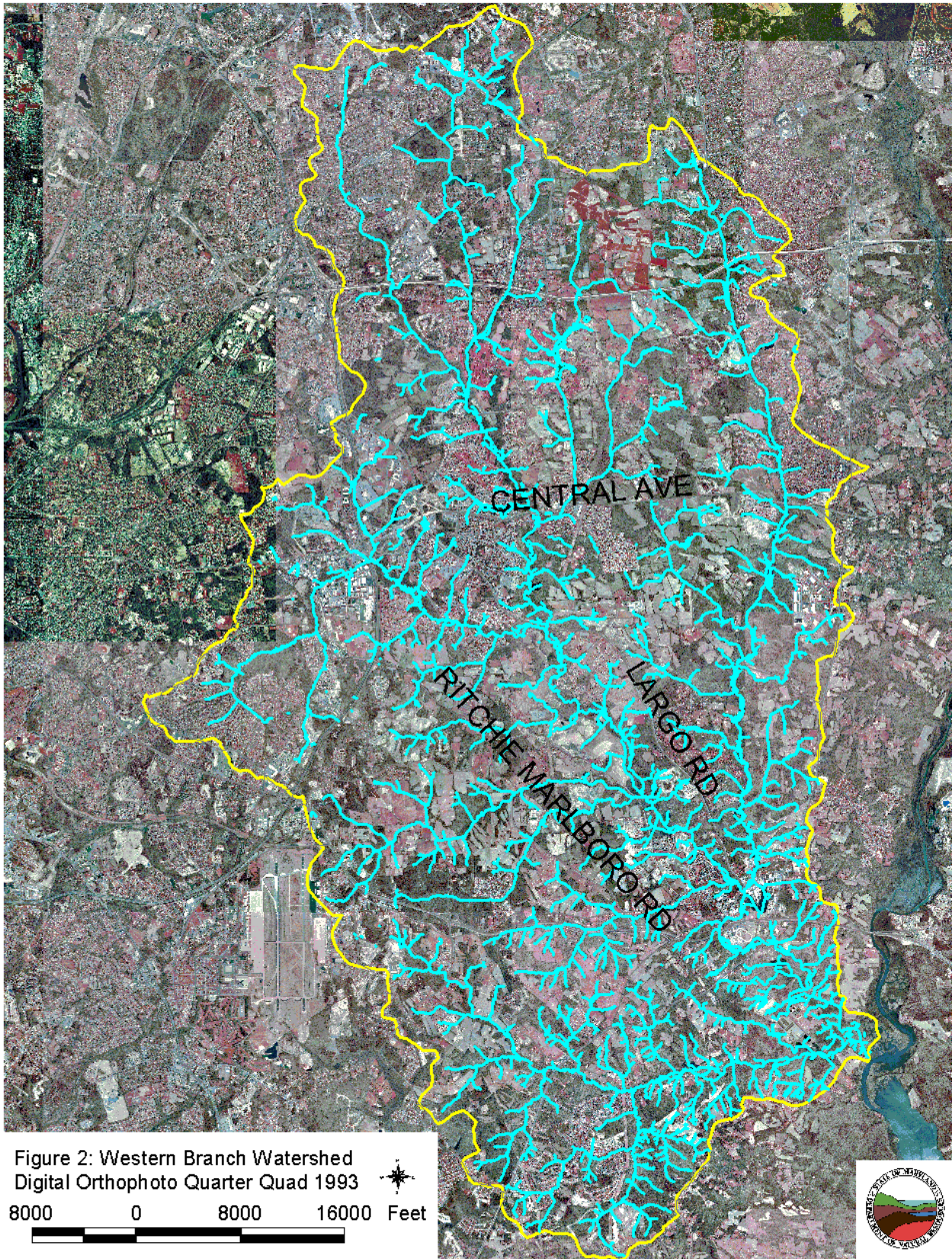
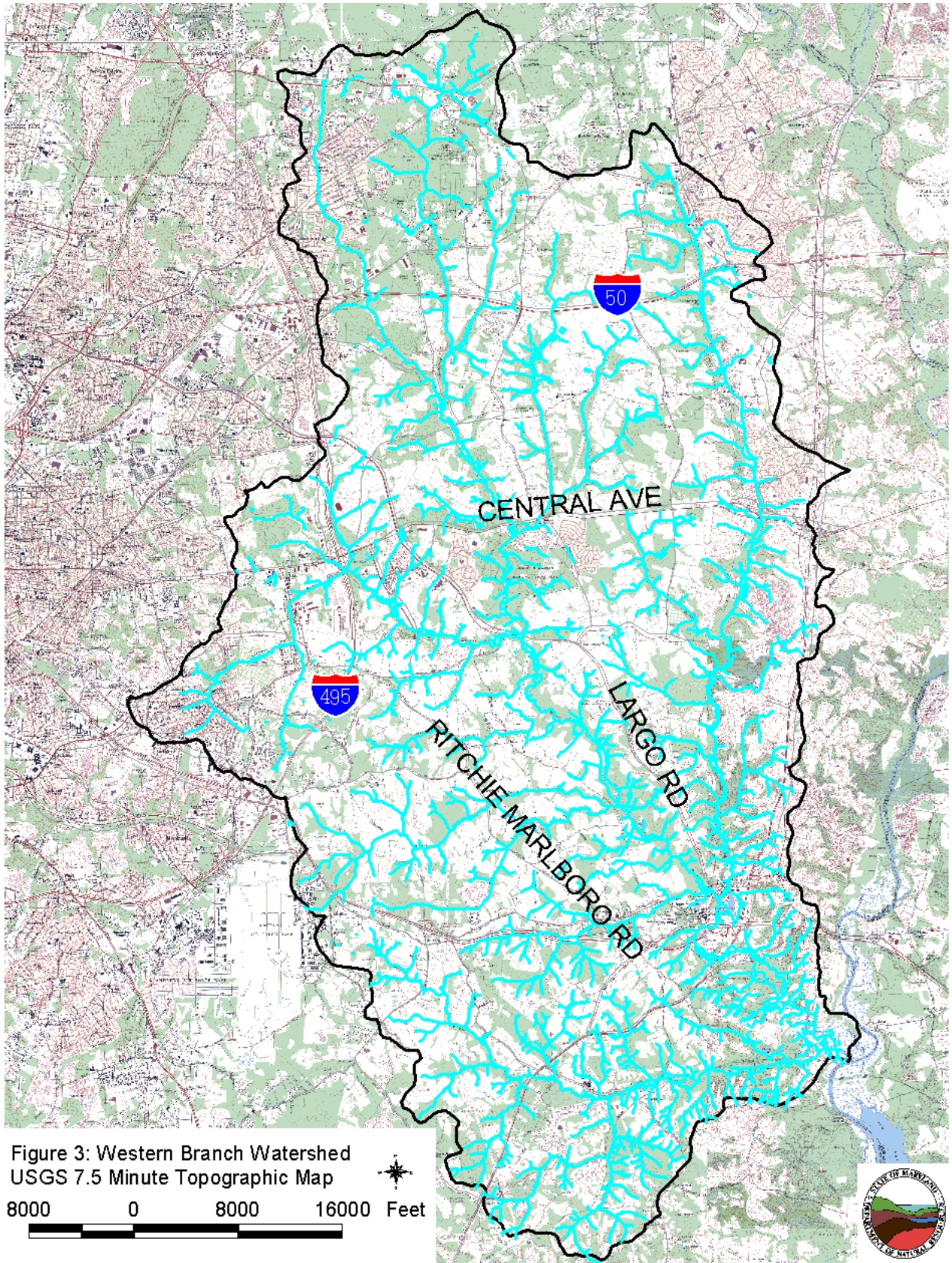


Figure 2: Western Branch Watershed
Digital Orthophoto Quarter Quad 1993



SCA Watersheds

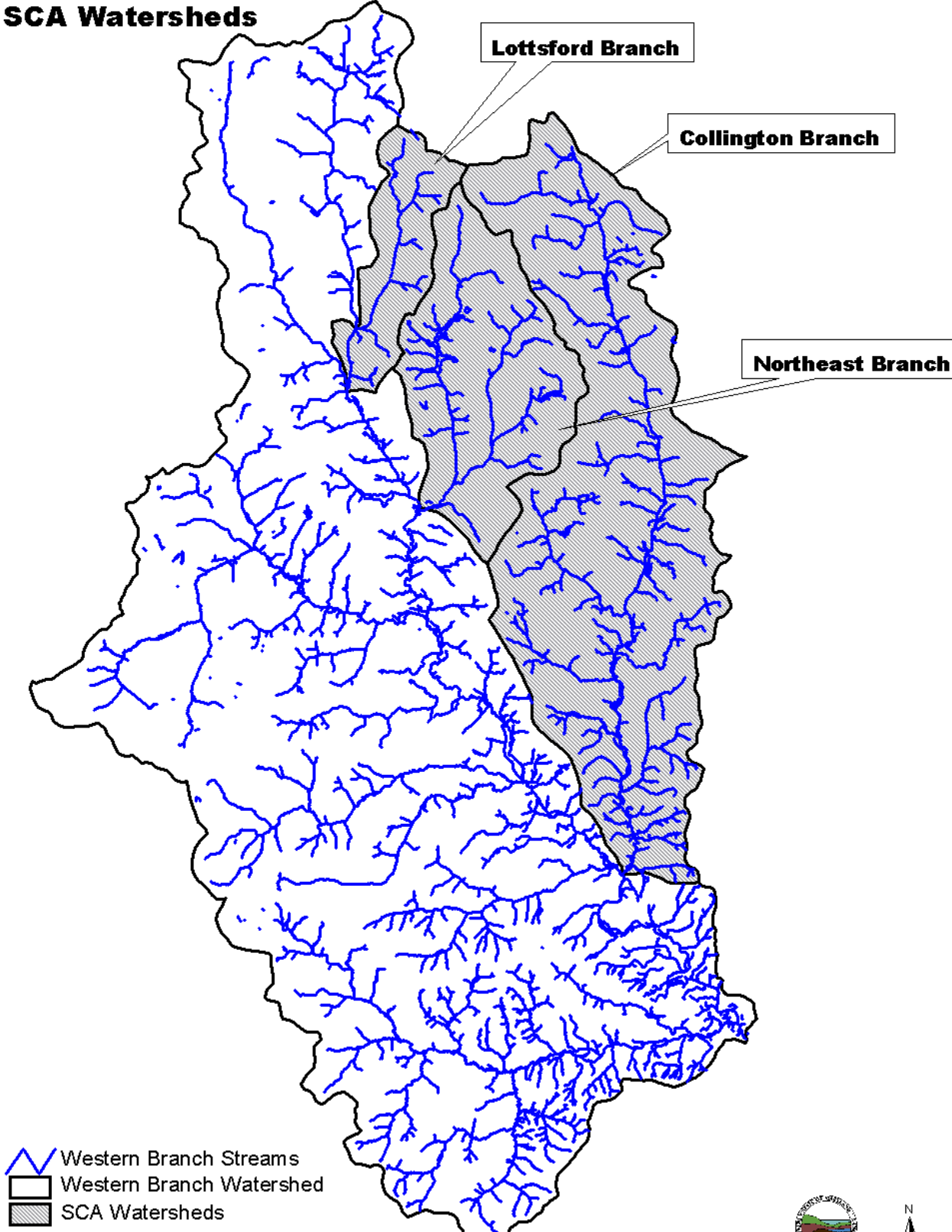


Figure 4: Map showing the stream surveyed during the Stream Corridor Assessment

METHODS

To help identify some of the common problems that affect streams in a rapid and cost effective manner, the Watershed Assessment and Targeting 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 Department of Natural Resources' 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 Western Branch SCA Survey, the members of the MCC's Chesapeake Bay Crew 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 and Targeting 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. The letter also gave property owners a phone number to call if they did want more information about the survey. 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 Western Branch watershed began in April 2003, and over the next several 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 feet) or a long section of stream (greater than 1000 feet) 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 feet 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 feet.

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 feet over a long distance (i.e., several thousand feet) 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 538 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 Prince George's County Planning Department for their use in developing a Watershed Action Strategy for the Western Branch.

RESULTS

The Stream Corridor Assessment survey of the Western Branch sub-watersheds started in April 2003, and field data collection was completed by June 2003. An overall summary of survey results is presented in Table 1, while Table 2 summarizes the data by major stream segments. 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 northing and easting coordinates. The coordinates are meters. 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 Western Branch SCA Survey.

Potential Problems Identified	Number	Estimated Length	Very Severe	Severe	Moderate	Low Severity	Minor
Pipe Outfalls	128	N/A	-	-	90	-	38
Fish Barriers	117	N/A	-	-	13	24	80
Erosion Site	60	110,300 feet (20.9miles)	8	6	36	8	2
Inadequate Buffers	51	52,000 feet (9.85miles)	5	7	15	11	13
Trash Dumping	45	N/A	1	4	12	12	16
Unusual Conditions	20	N/A	1	1	8	4	6
In/Near Stream Construction	14	N/A	2	2	6	4	-
Channel Alterations	9	5,840 (1.1miles)	2	-	4	1	2
Exposed Pipes	4	168 feet (0.03miles)	-	-	-	2	2
TOTAL	448		19	20	184	66	159
Comments	6						
Representative Sites	48						

Table 2 Summary of results by major stream segments .

Stream Segment	Channel Alteration	Construction	Erosion	Exposed Pipes	Fish Barrier	Inadequate Buffer	Pipe Outfall	Representative Sites	Trash Dumping	Unusual Conditions	Comments	Total
Collington Branch	6	10	52	4	103	33	93	34	41	13	5	394
Lottsford Branch		3	4		5	10	11	7	2	3	1	46
Northeast Branch	3	1	4		9	8	24	7	2	4		62

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 eight pipe outfalls were identified during the Western Branch survey. The location of these pipes can be seen in Figures 5b, 5c, and 5d.

Seventy percent (90) of the pipe outfalls observed in the survey had a discharge coming out of them. Of these, only 9 had an odor or coloration associated with the outfall (Appendix B). The remaining discharges were reported as having a clear discharge with no odor. Descriptions of the discharge found include medium brown, brown, green and white. Several pipes were found to contain rotten egg and fishy odors. The most frequently reported type of outfall was stormwater at 121 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.

Severity ratings for pipe outfalls were given based on outfall type, discharge, and type of discharge. In the Western Branch SCA Survey there were 90 moderate and 38 minor sites (Figure 5a). The severity rating of moderate is for pipes with a discharge and the discharge is clear with no odor or if the discharge has a color and/or odor, the amount of discharge is very small compared to the stream's base flow and any impact appears to be minor and localized. (Yetman, 2001)

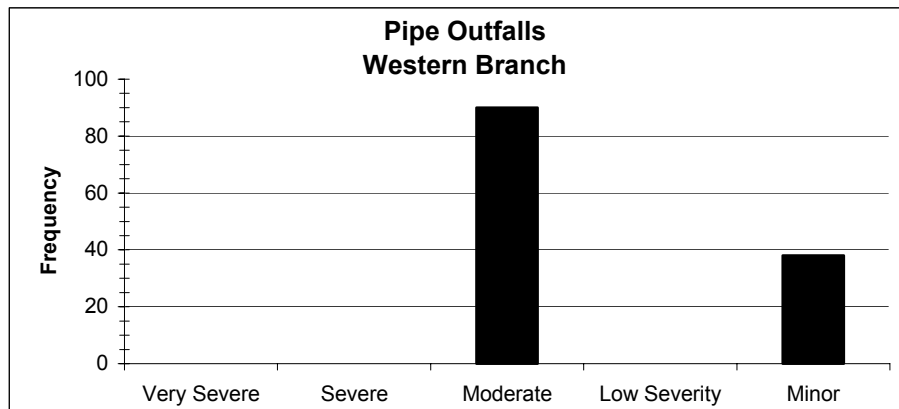
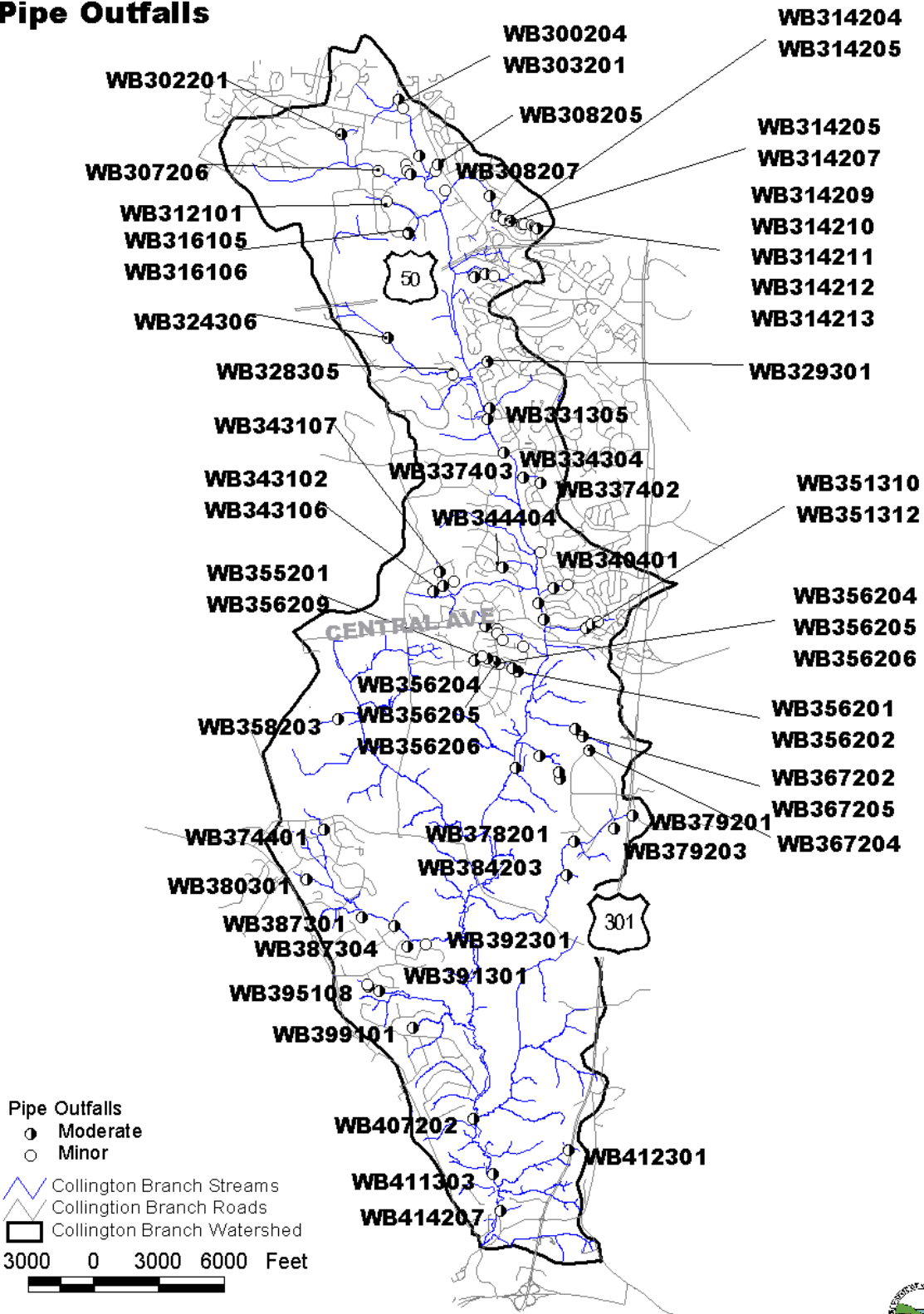
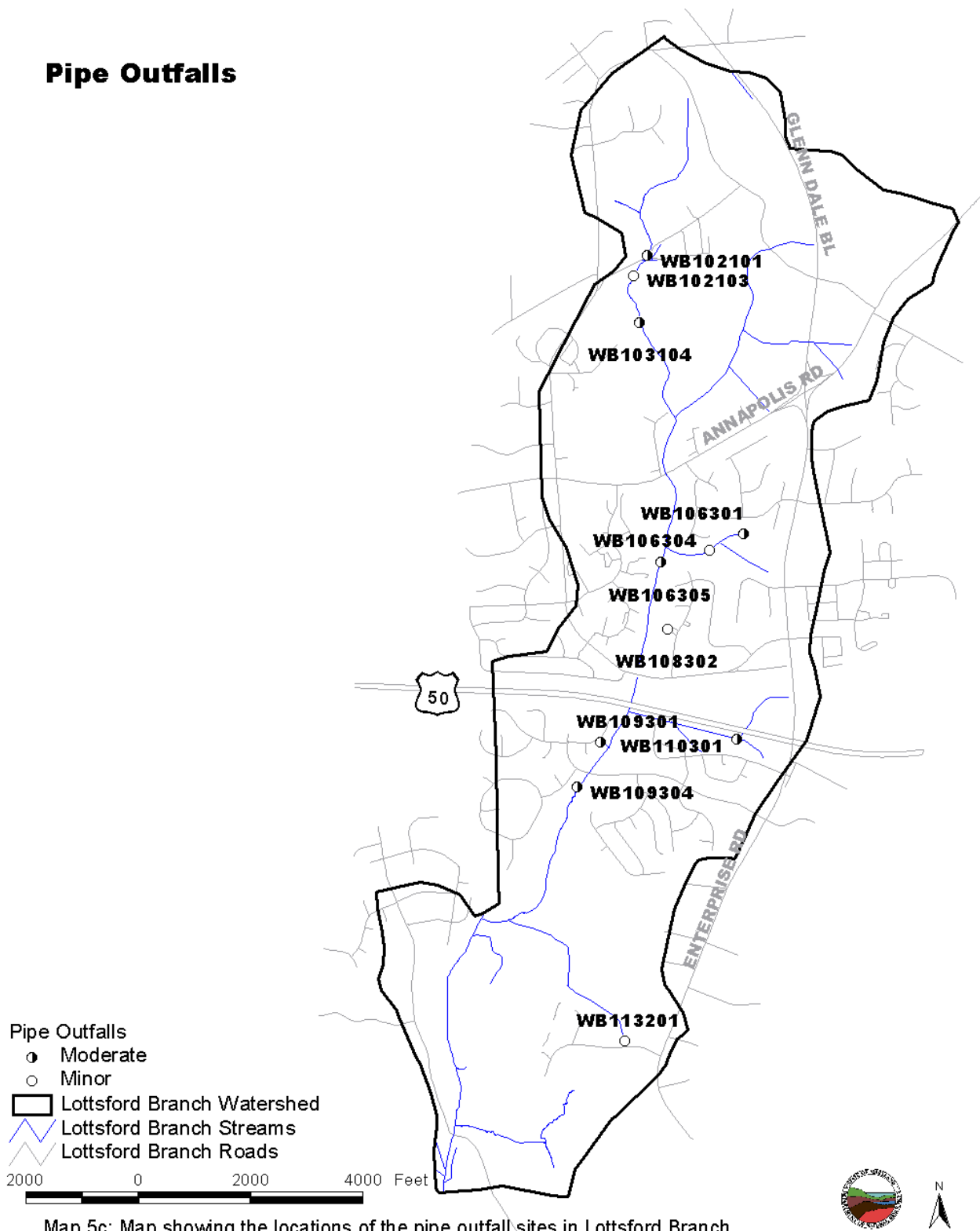


Figure 5a: Histogram showing the frequency of severity ratings given to pipe outfall sites during the Western Branch SCA survey.

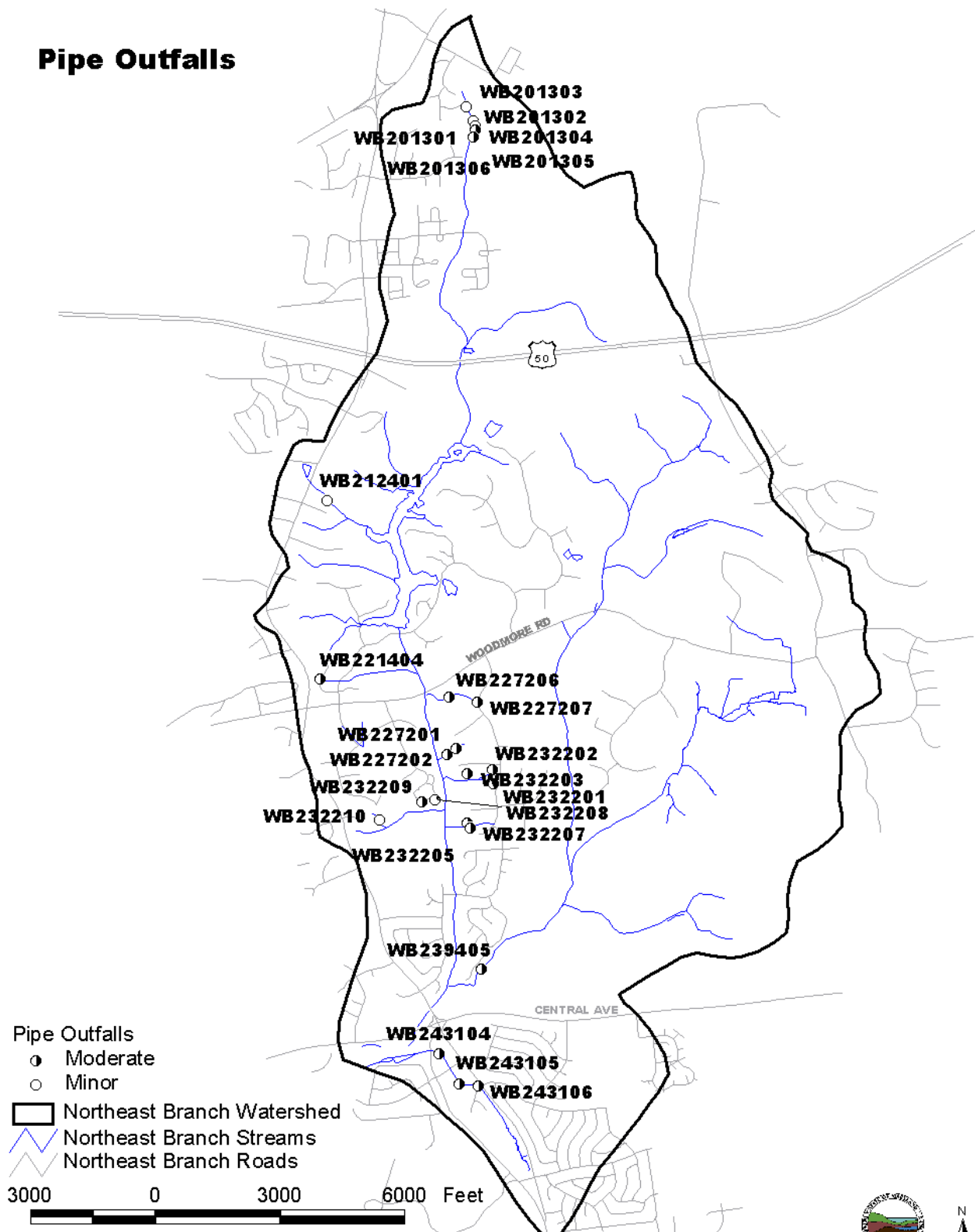
Pipe Outfalls



Pipe Outfalls



Pipe Outfalls



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 117 fish migration barriers during the survey. One hundred and three fish barriers were found in Collington Branch, 5 in Lottsford Branch, and 9 in Northeast Branch. The locations of fish migration blockages are shown in Figure 6b, 6c, and 6d. Debris dams were cited as the main type of fish barrier and were reported at 42 sites. Other causes of fish barriers in the watershed were road crossings (18), beaver dams (15), in-stream ponds (10), natural falls (10), dams (8), pipe crossings (5), channelized streams (6), and railroad crossings (3). The majority (59 of 117 sites) of the fish migration blockages were characterized as being temporary fish migration barriers, blocking the whole width of the stream with a temporary structure. Total structures blocking full movement of fish were cited at 49 sites. Partial barriers allowing some flow through unimpeded were found in 10 cases.

All of the fish migration barriers were given moderate to minor ratings (Figure 6a). Severity ratings were based on position in the watershed, as well as the type and height/depth of the barrier. The main stems of the three sub-watersheds are relatively barrier free except for a few minor sites. Migratory fish such as white perch and herring have been found to spawn in some areas of the Western Branch. White perch in particular was found in Collington Branch. (Mower J. and M. McGinty. 2002)

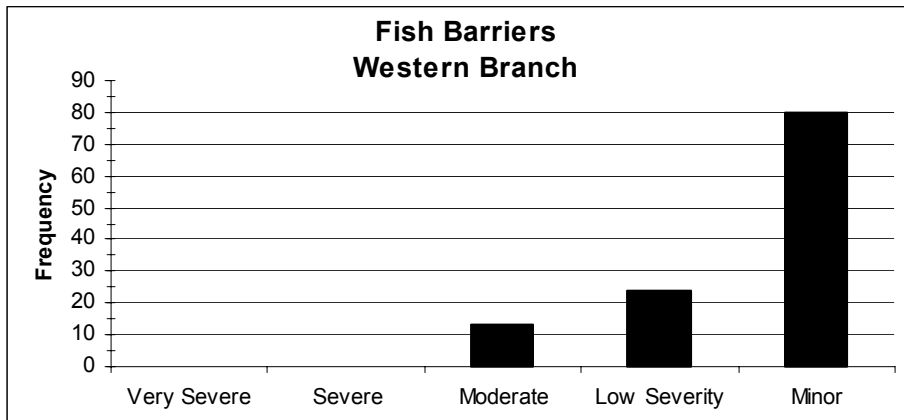
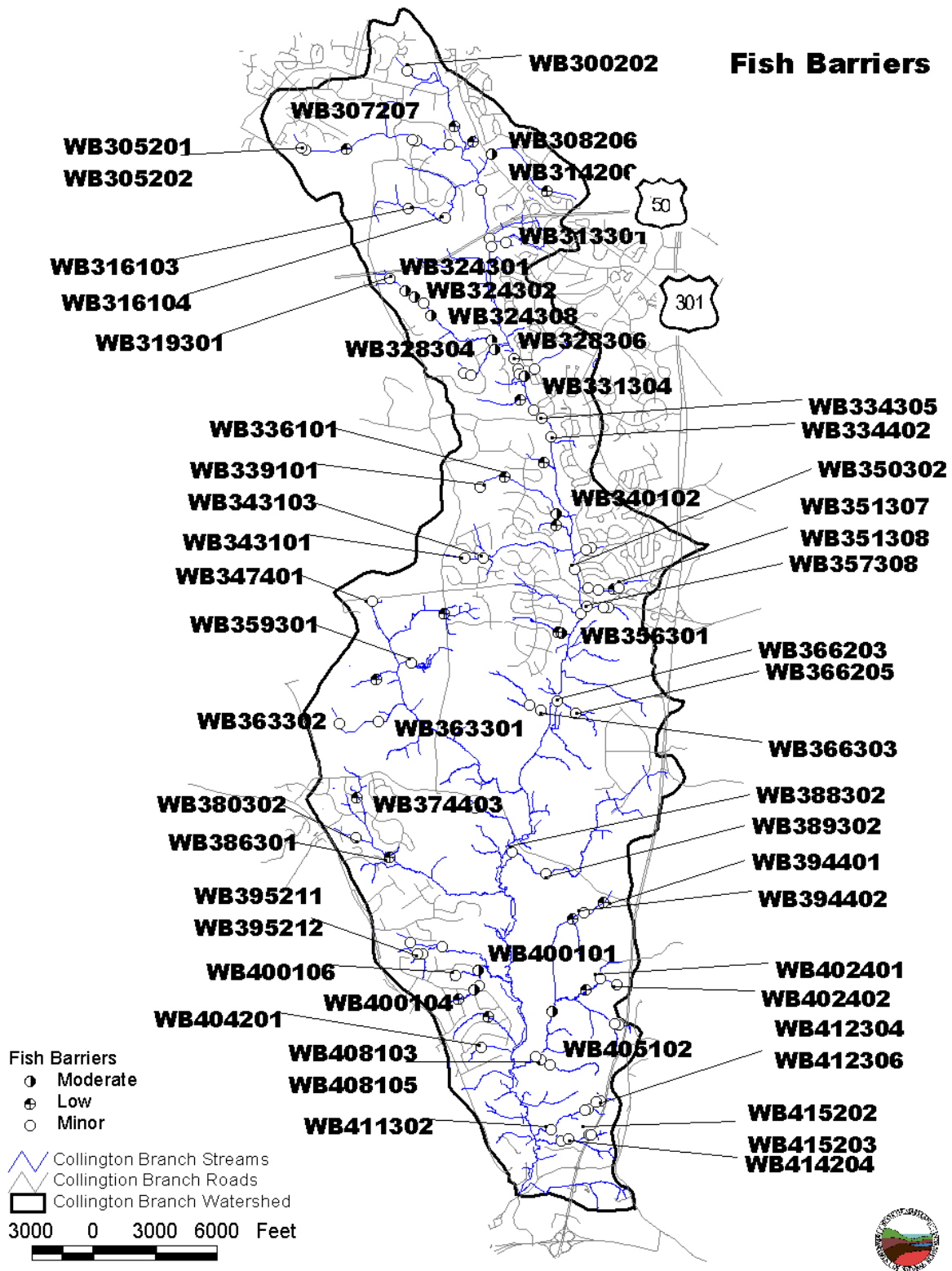
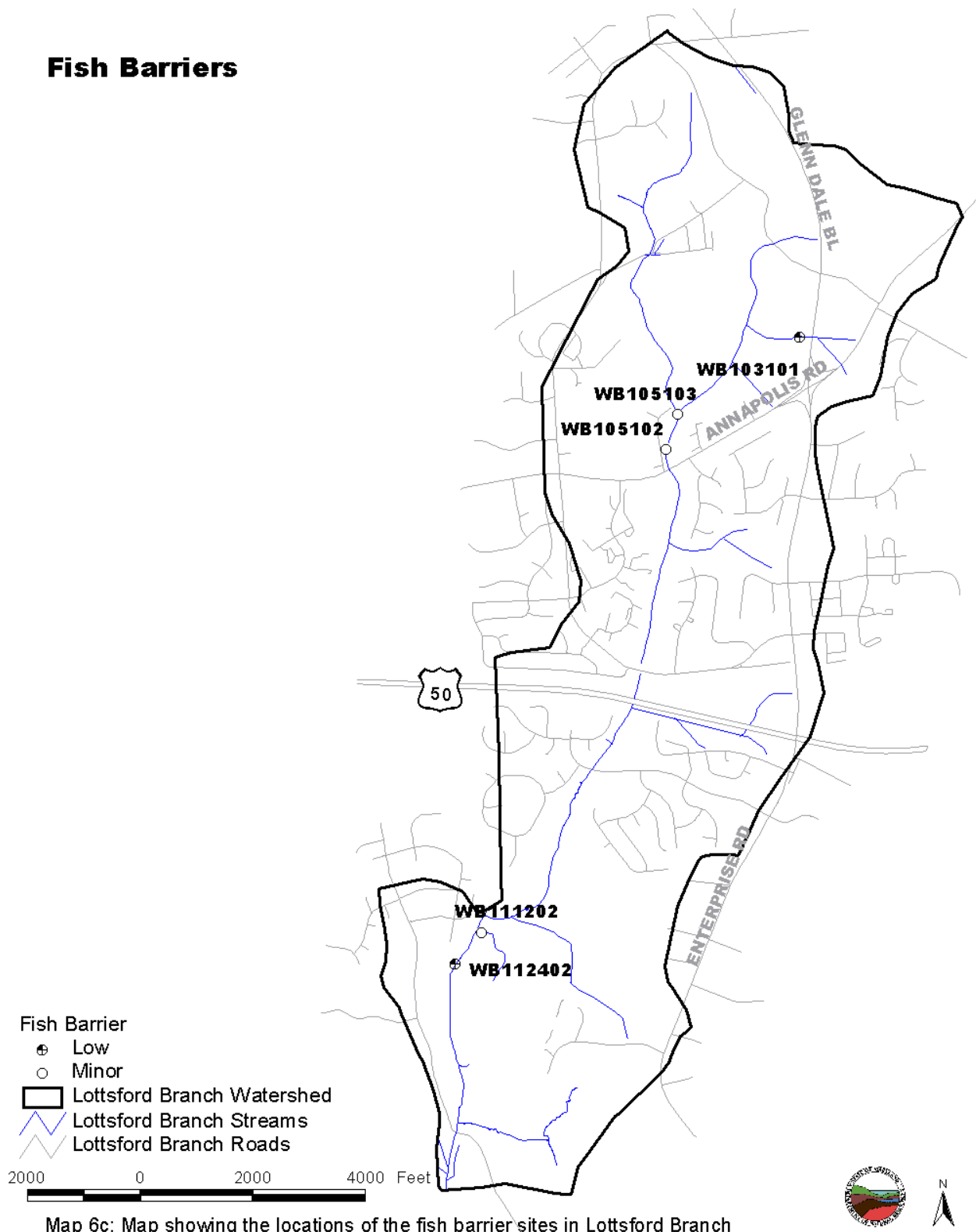


Figure 6a: Histogram showing the frequency of severity ratings given to fish barriers seen during the Western Branch SCA Survey.

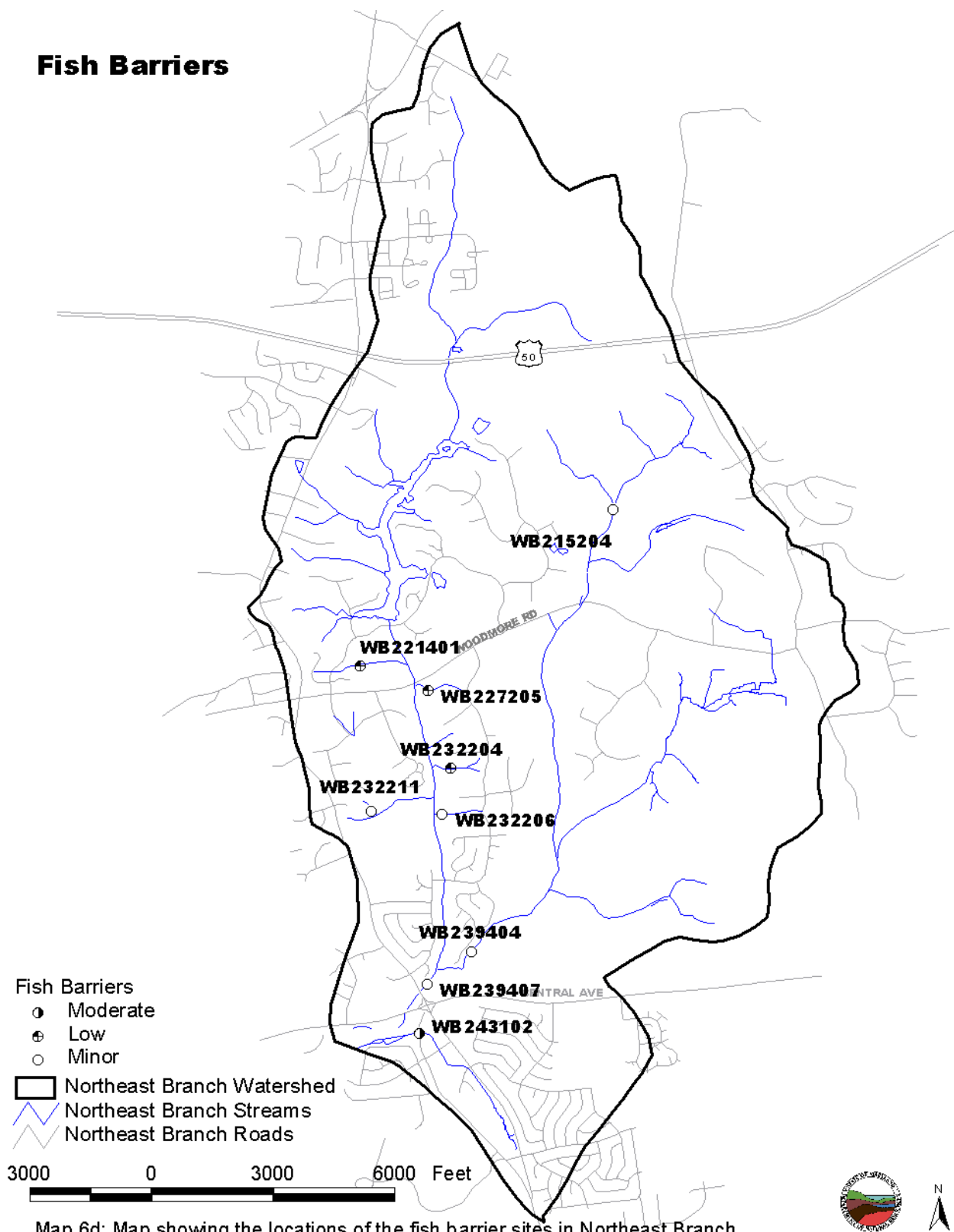


Map 6b: Map showing the locations of the fish barrier sites in Collington Branch

Fish Barriers



Fish Barriers



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 60 sites. The locations of erosion sites are shown in Figures 7b, 7c, and 7d, while severities can be seen in Figure 7a. 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 mainly in Collington Branch with a few in Lottsford and Northeast Branch. There were 52 reported erosion sites in Collington Branch, 4 being reported in Lottsford Branch, and 4 in Northeast Branch. The lengths of the erosion sites reported ranged from 30 feet to 9,000 feet with heights ranging from 4 feet to 8 feet. The most frequently reported causes for erosion were: land use changes upstream (7), road crossing (14), crop field runoff (1), and unknown (31).

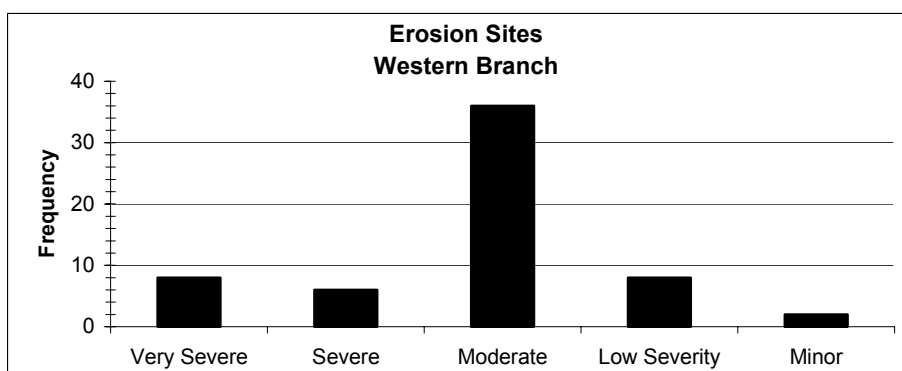


Figure 7a: Histogram showing the frequency of severity ratings given to stream bank erosion sites during the Western Branch SCA Survey.

Collington Branch

Collington Branch contains 52 erosion sites as identified by this survey. Seven of these erosion sites were given very severe ratings. At site WB384201, the survey crew reported that the stream appeared to be widening causing severe erosion. The average height of the banks was 12 feet and the erosion problems ran for approximately 9,000 feet with forest on both sides of stream. At site WB388103 average bank heights were reported to be 6 feet and erosion problems could be seen over approximately 6,400 feet long section of stream with forest on both sides. At site WB414201, the average heights of the stream banks were 10 feet and the problem extended over a 5,000 feet section of stream. Field crews reported forest to be the dominant adjacent land use. At site WB412303 average bank heights were reported to be 13 feet and erosion problems could be seen over approximately 1,800 feet long section of stream with paved and each side of the stream. Field crews also noted that a gas station was near the erosion site and could be threatened. At site WB3395210 average bank heights were reported to be 12 feet and erosion problems could be seen over approximately 1,700 feet long section of stream with forest on both sides. Finally, at site WB343104, the field crew found a 1,200 feet section of stream with 8 feet high banks running through an area with lawn on both sides.

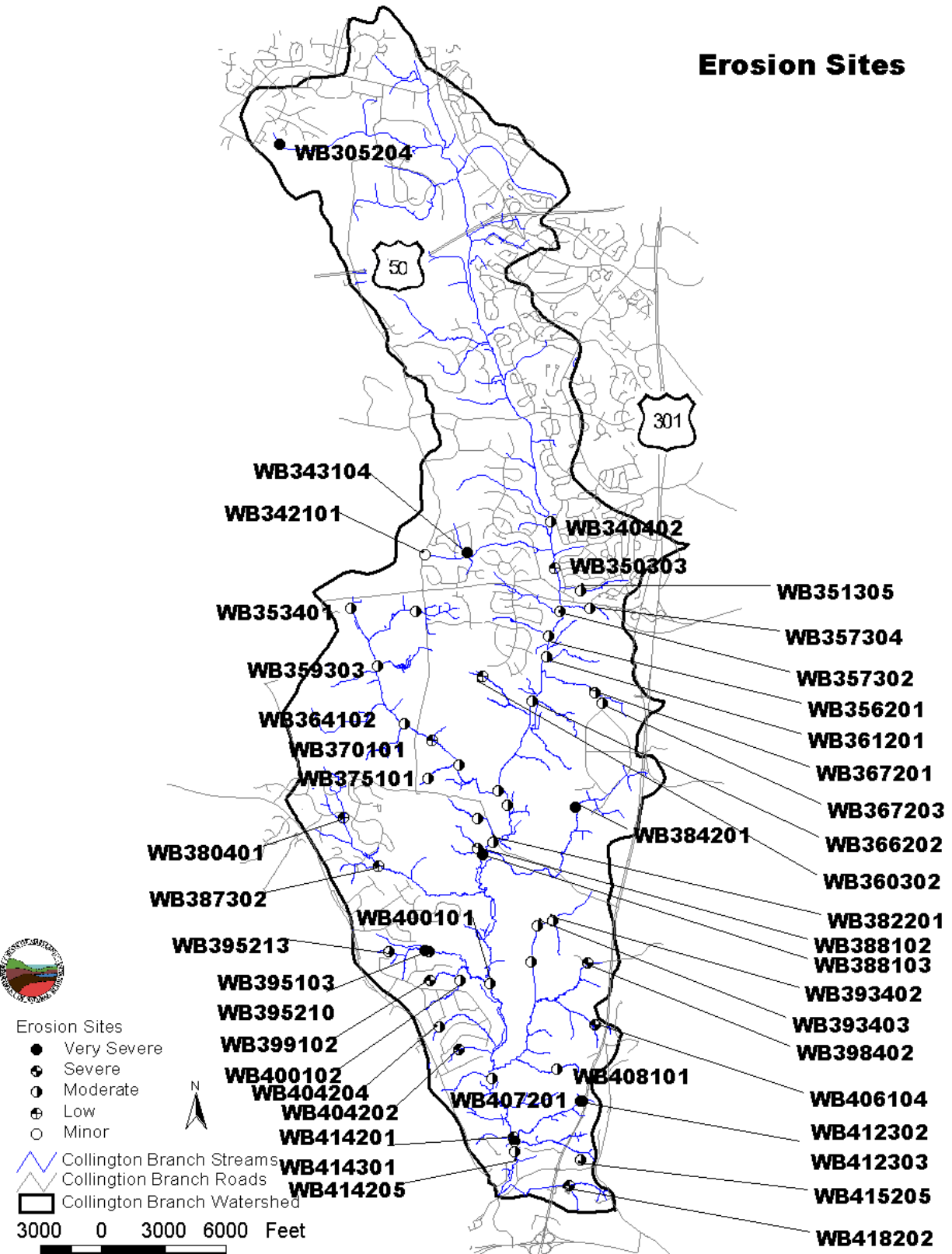
Lottsford Branch

Lottsford Branch contains 4 erosion sites as identified by this survey. None of these sites were given a very severe or severe rating. Only one site was given a moderate rating. At site WB112401, the average height of the stream banks was 3 feet and the problem extended for approximately 1,400 feet with forest present on both sides of the stream.

Northeast Branch

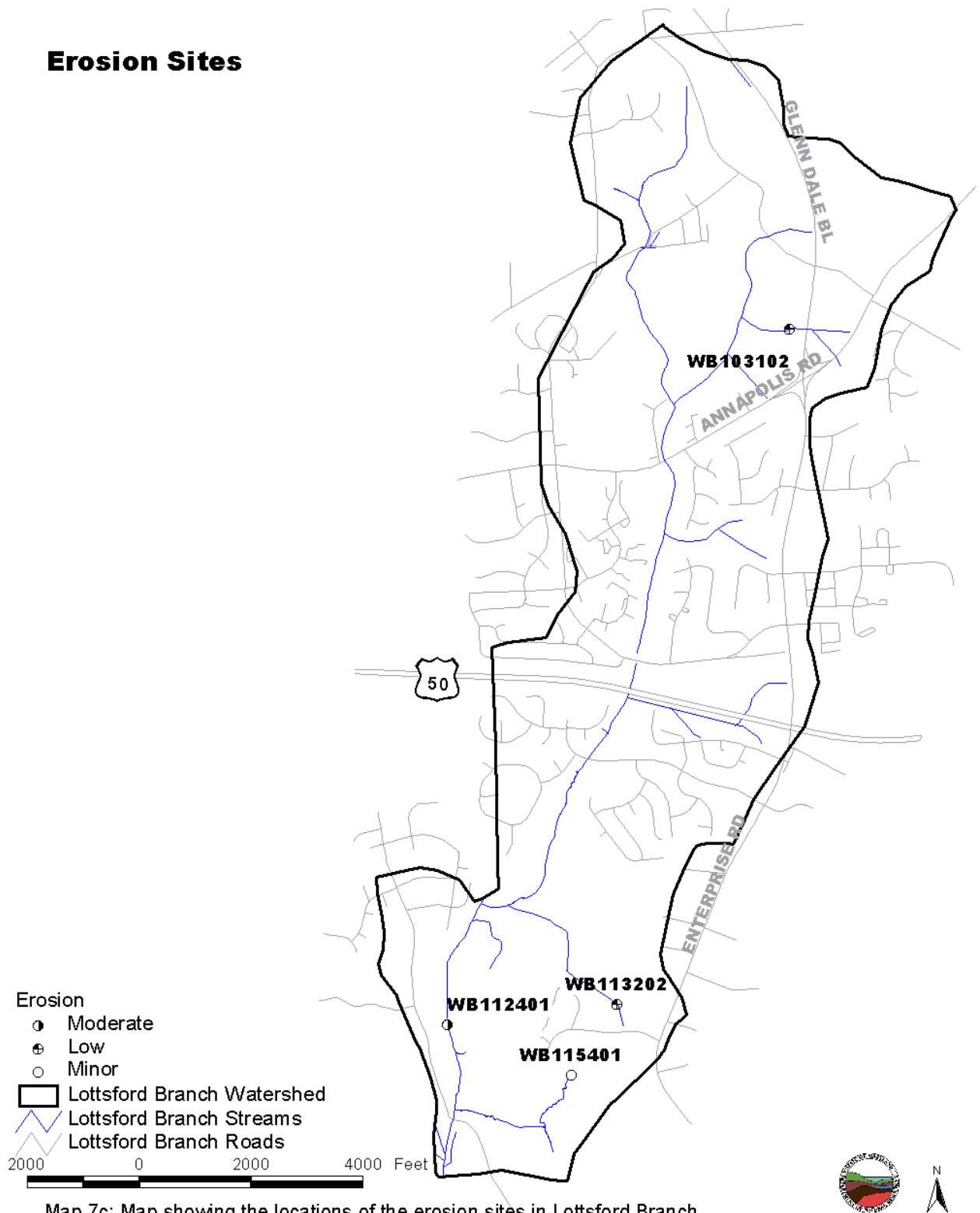
Four erosion sites were identified in the Northeast Branch sub-watershed. Only one of these sites received a very severe rating. At site WB236403, average bank height was 6 feet and extended over 2,800 feet long with forest on both sides. One site received a severe rating. Site 227204 had an average bank height of 6 feet and was over 1,200 feet long with forest on both sides.

Erosion Sites

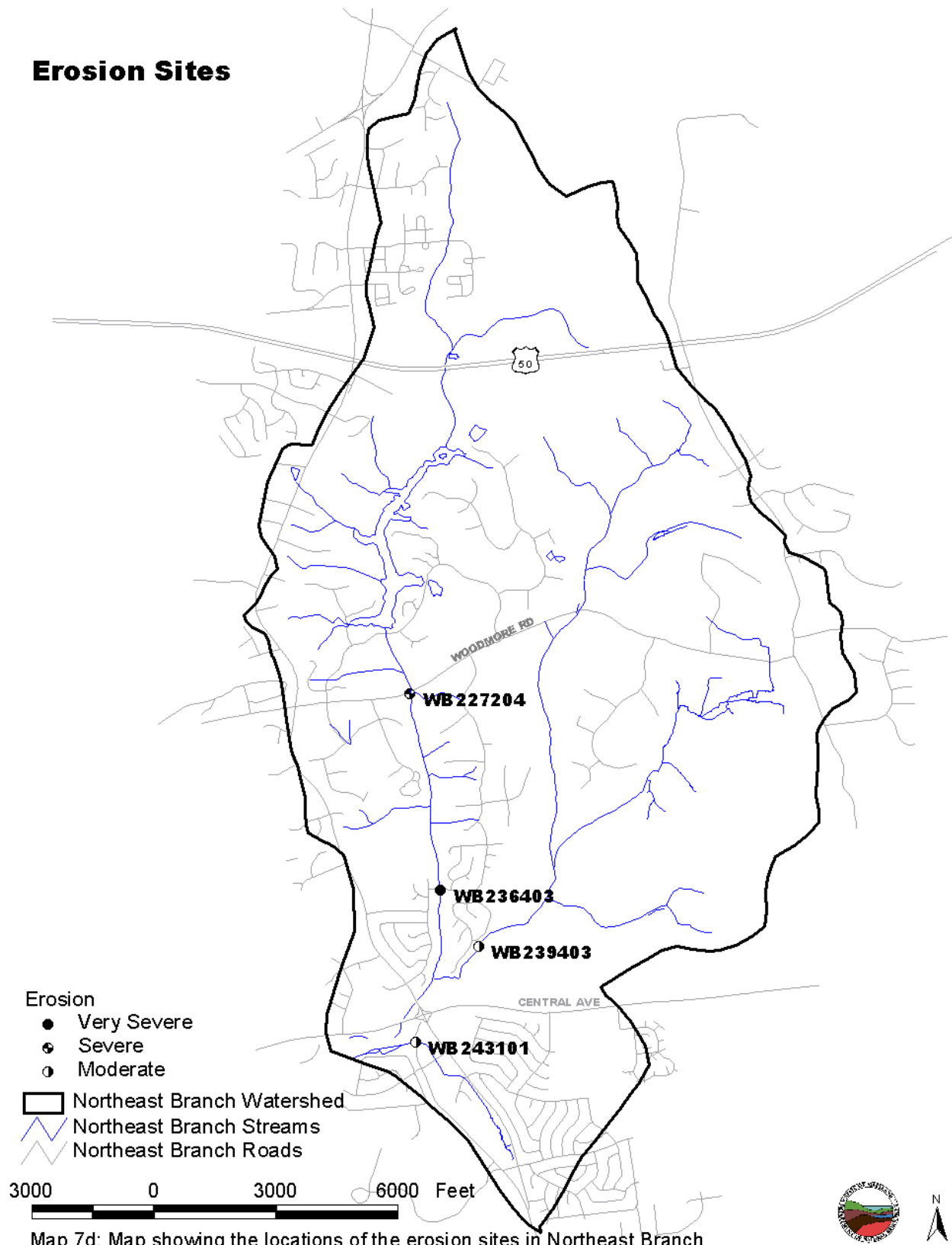


Map 7b: Map showing the locations of the erosion sites in Collington Branch

Erosion Sites



Erosion Sites



Map 7d: Map showing the locations of the erosion sites in Northeast Branch

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 feet 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 54 sites in the Western Branch watershed survey. The locations of the inadequate buffer sites are shown in Figure 8b, 8c, and 8d.

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 52,000 feet (9.85 miles) of inadequately buffered stream banks in the Collington Branch, Lottsford Branch, and Northeast Branch sub-watersheds. This accounts for 8.7% of the total stream miles that were surveyed by the field crews. The length of inadequate buffers ranged from 100 feet to 5,000 feet. At 30 sites, the field crew reported that there were no trees on both sides of the stream, while at an additional 21 sites trees were present on only one side of the stream. The most commonly reported land use along these inadequately buffered banks was lawn at 19 sites. Four sites were reported to have livestock present. The very severe sites involve areas where the inadequately buffered area totaled over 1000 feet 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 feet – 1000 feet long, or sites where there was a buffer on one side and inadequate buffer on the other for over 1000 feet.

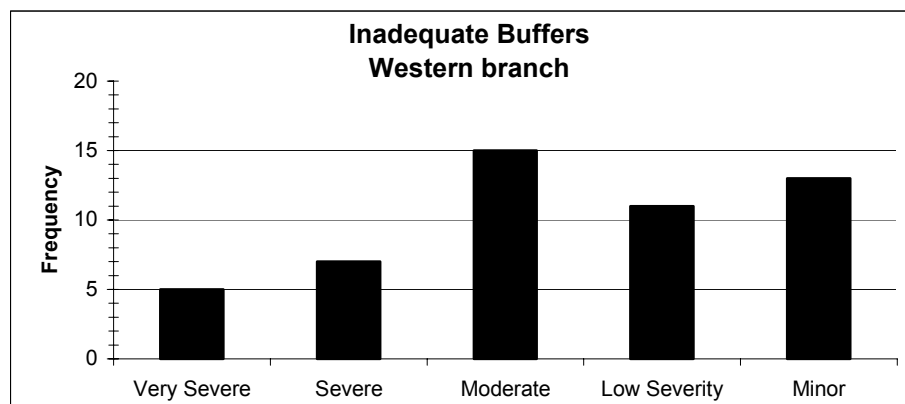
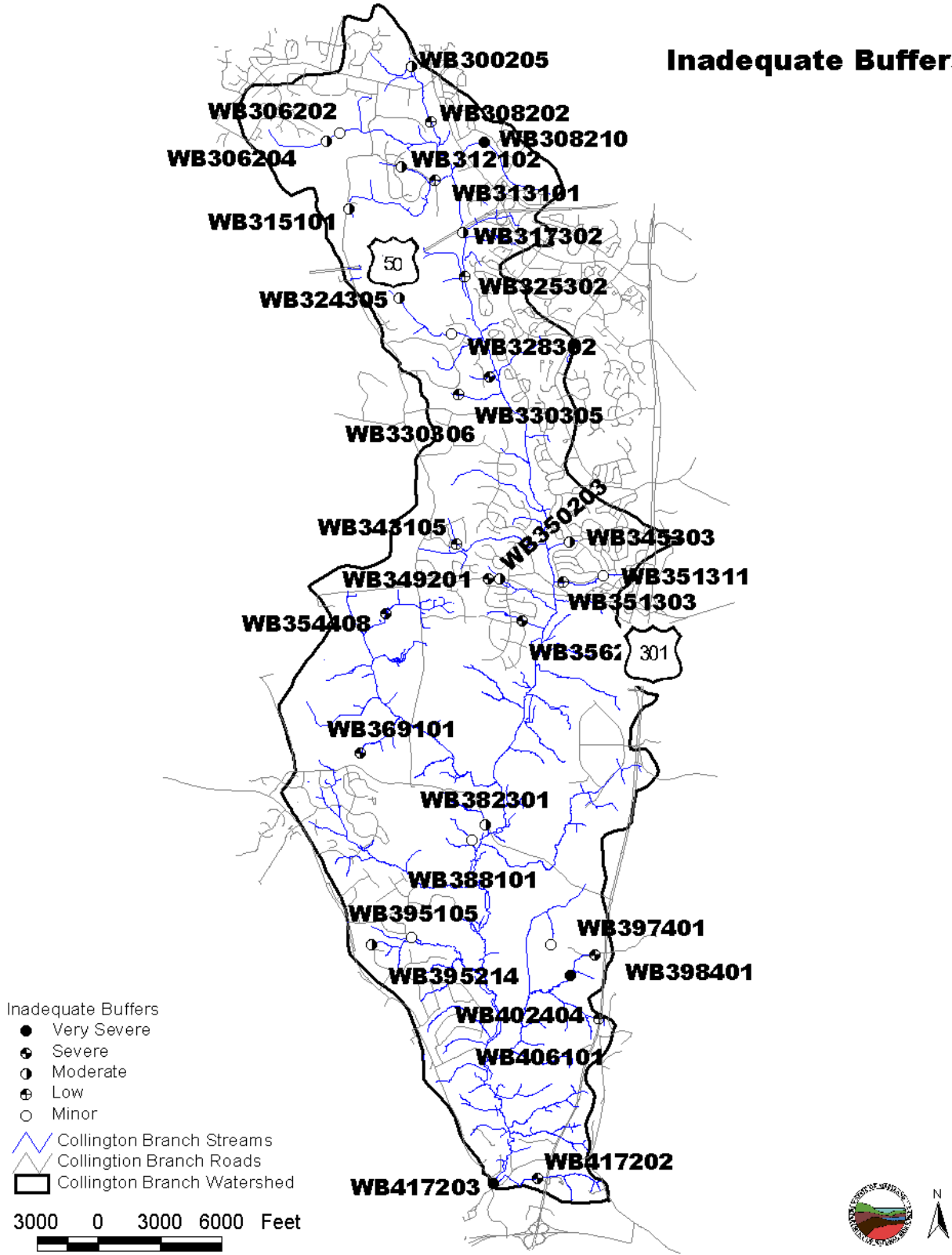


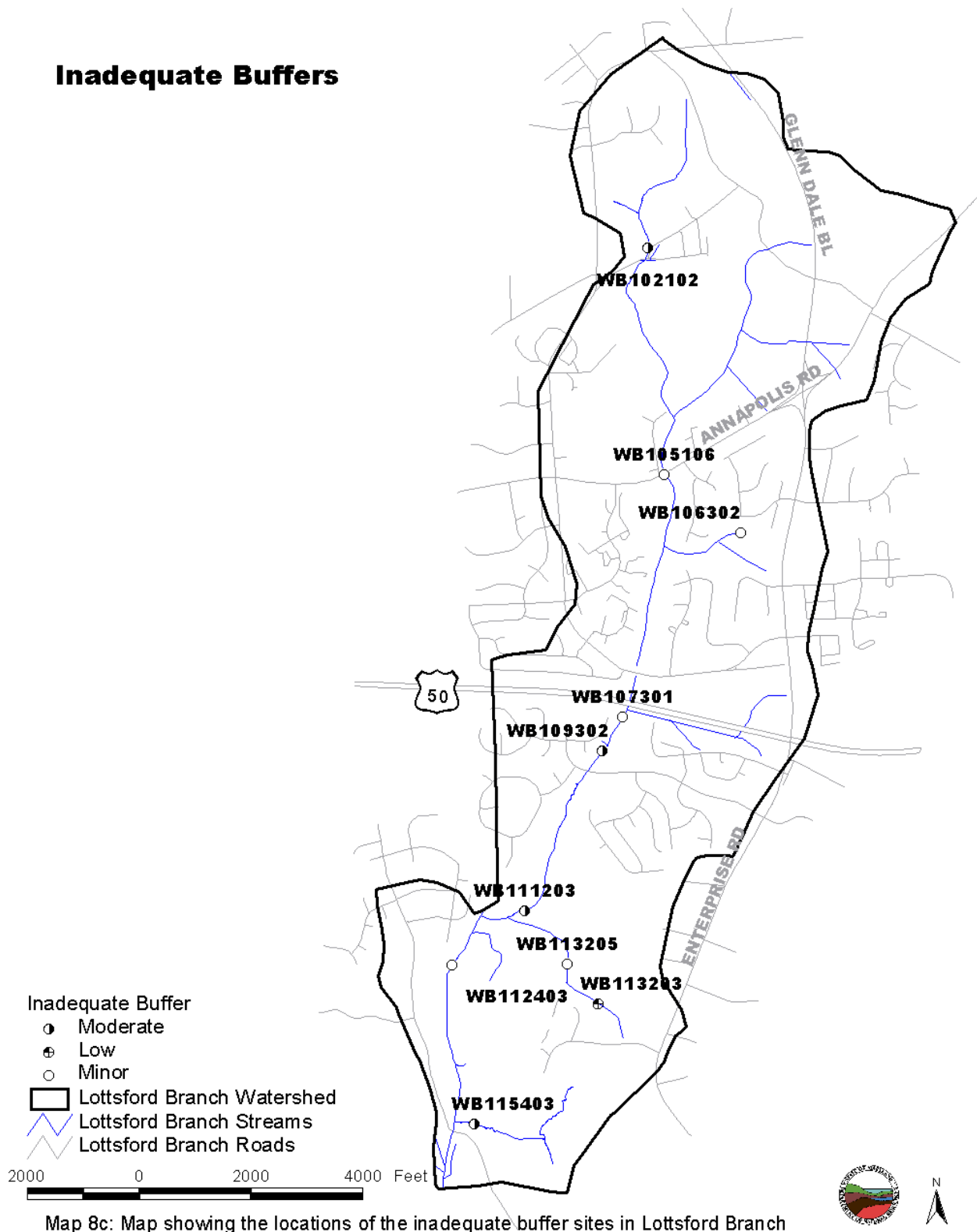
Figure 8a: Histogram showing the frequency of severity ratings given to inadequate buffers during the Western Branch SCA Survey.

Inadequate Buffers

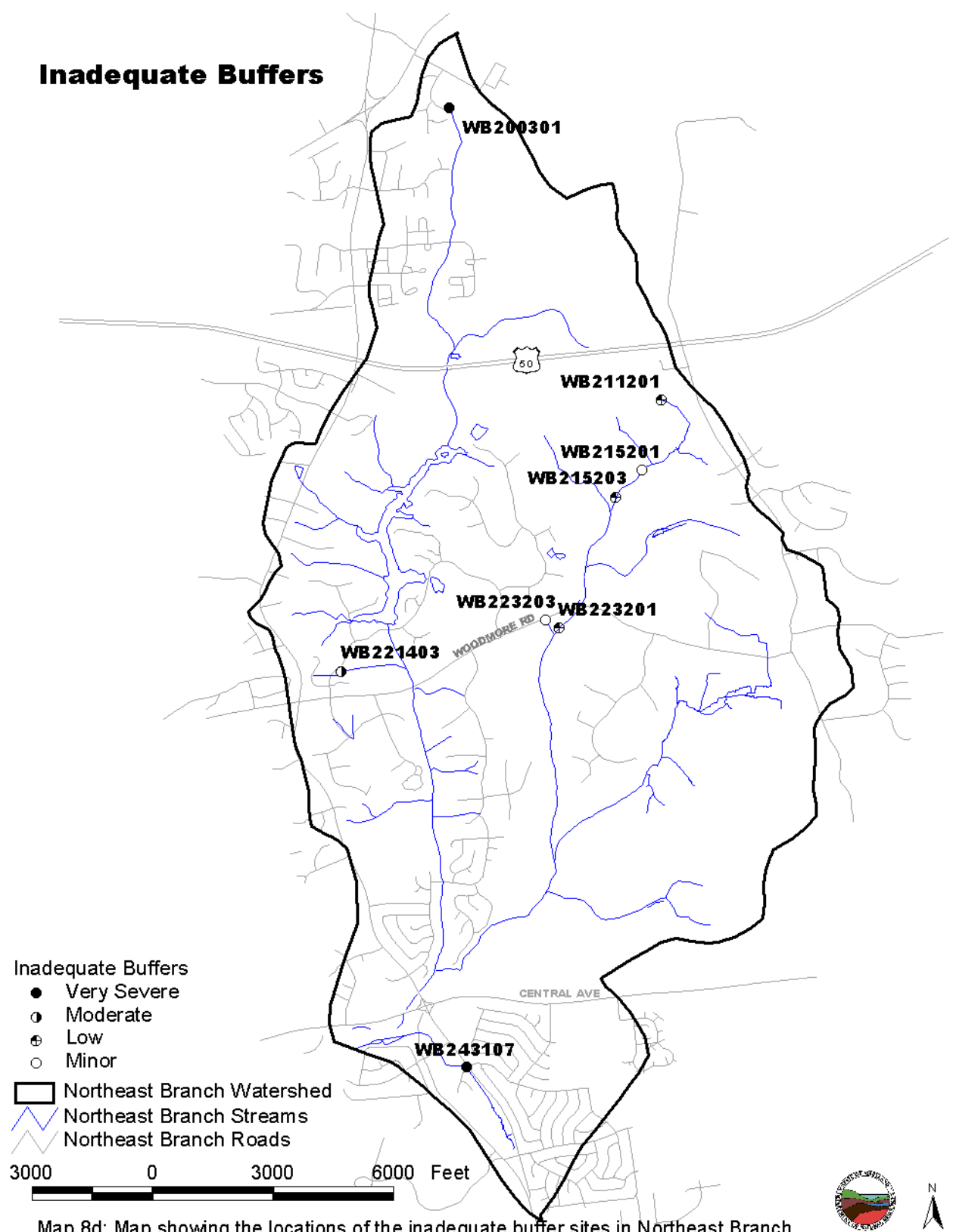


Map 8b: Map showing the locations of the inadequate buffer sites in Collington Branch

Inadequate Buffers



Inadequate Buffers



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 45 sites where there was excessive trash, and these locations are shown in Figures 9b, 9c, and 9c. 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 Western Branch sub-watersheds can be found in Figure 9a. Most sites found were ranked as moderate to minor trash dumping sites. Field crews indicated that 28 of the sites might be good volunteer clean up opportunities.

Trash dumping sites in the Collington Branch, Lottsford Branch, and Northeast Branch sub-watersheds range in size from 1 to 14 pickup truckloads and for sites with other measures, 3 to 12 dump truck loads. Single site trash dumping sites were recorded at 25 sites, while large area dumping sites were recorded at 20 locations. Types of trash sites found include: residential (23), tires (3), yard waste (5), floatables (3), construction materials (3), and mixed (7). Site 409102 was the only site to be given a very severe rating. An estimated 8 dump truck loads of mixed types of trash. This included appliances, tires, and auto parts.

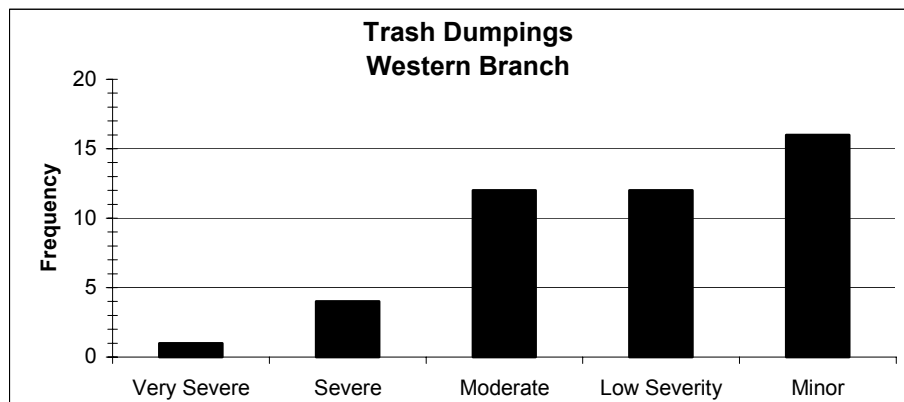
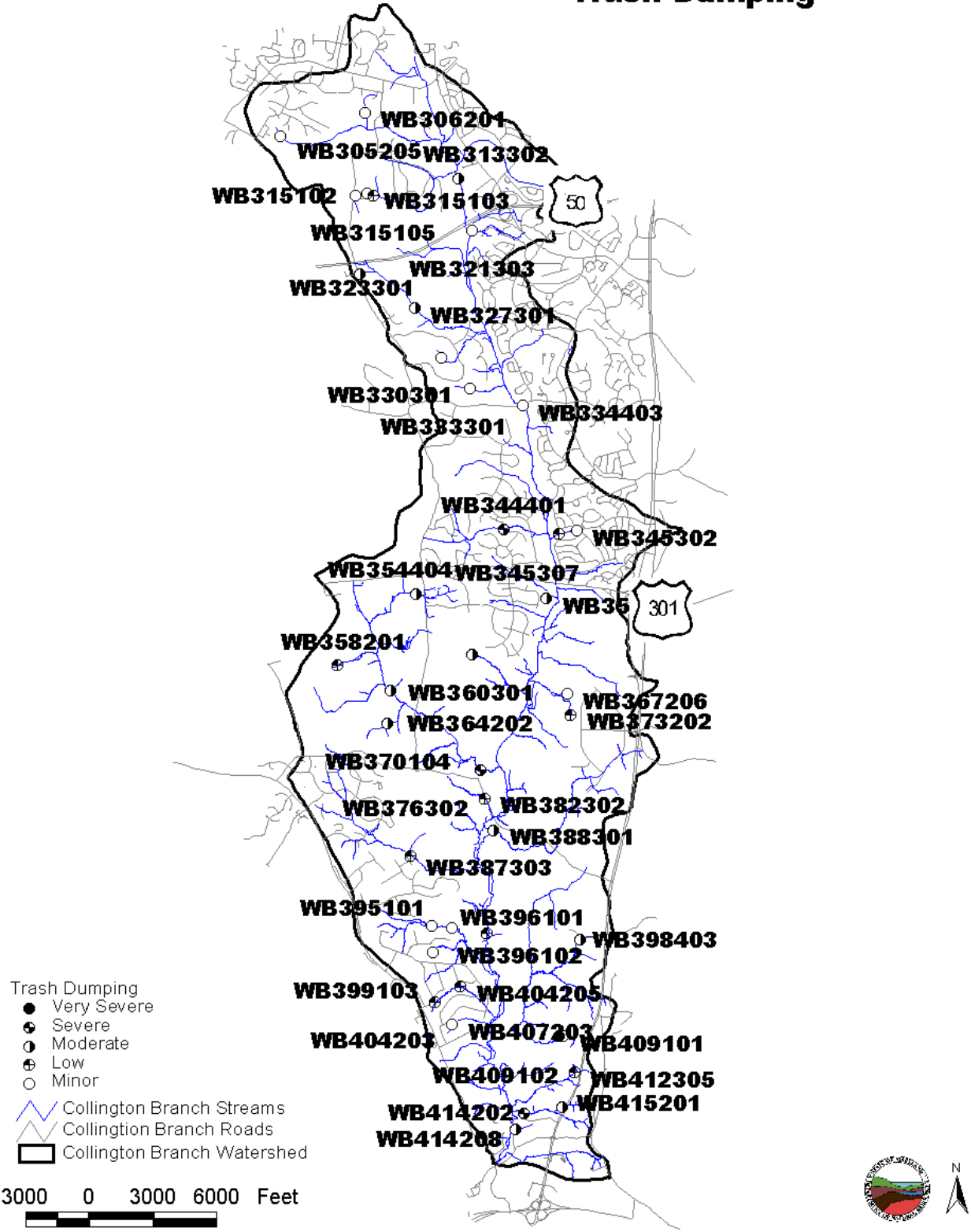


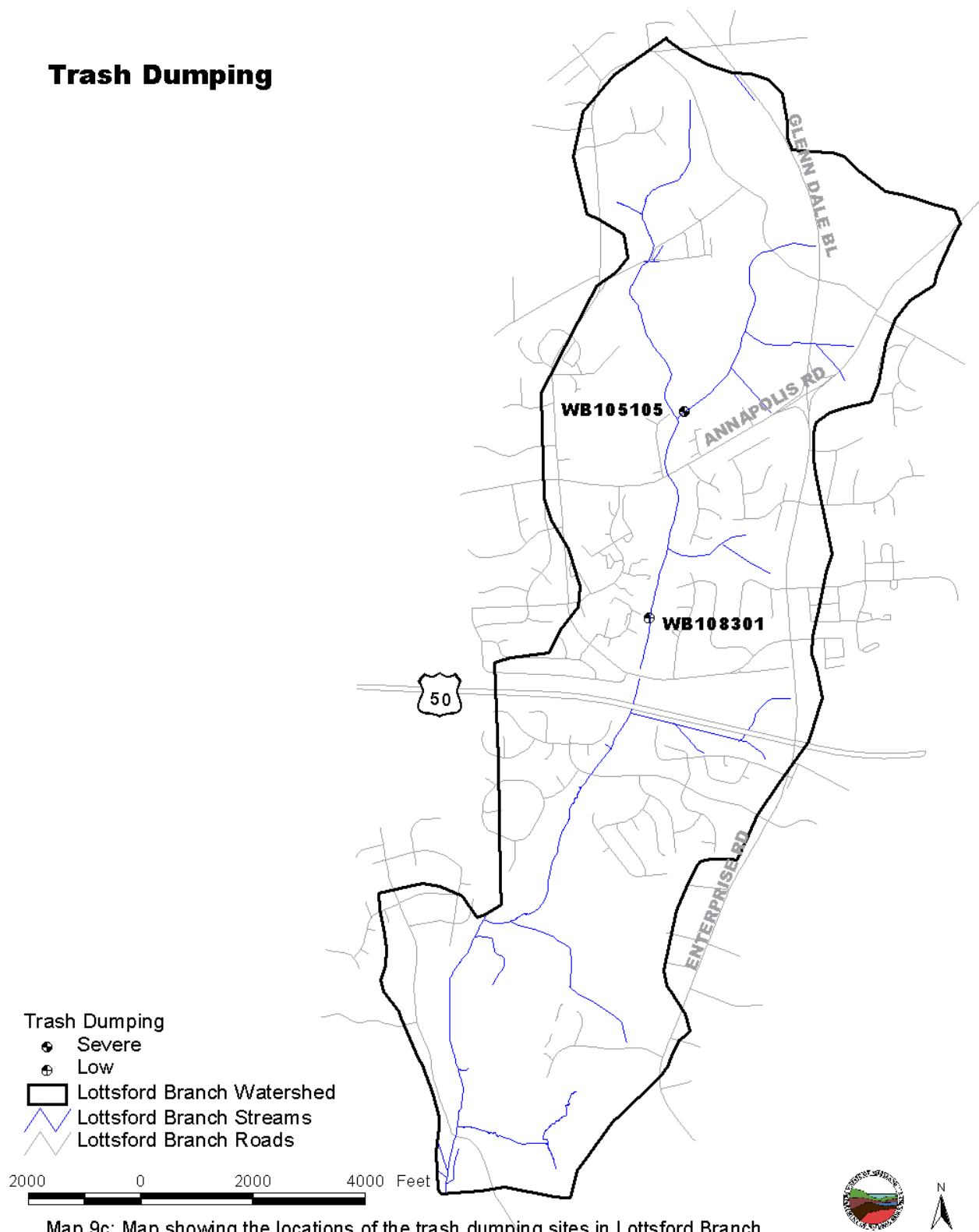
Figure 9a: Histogram showing the frequency of severity ratings given to trash dumping sites seen during the Western Branch SCA survey

Trash Dumping



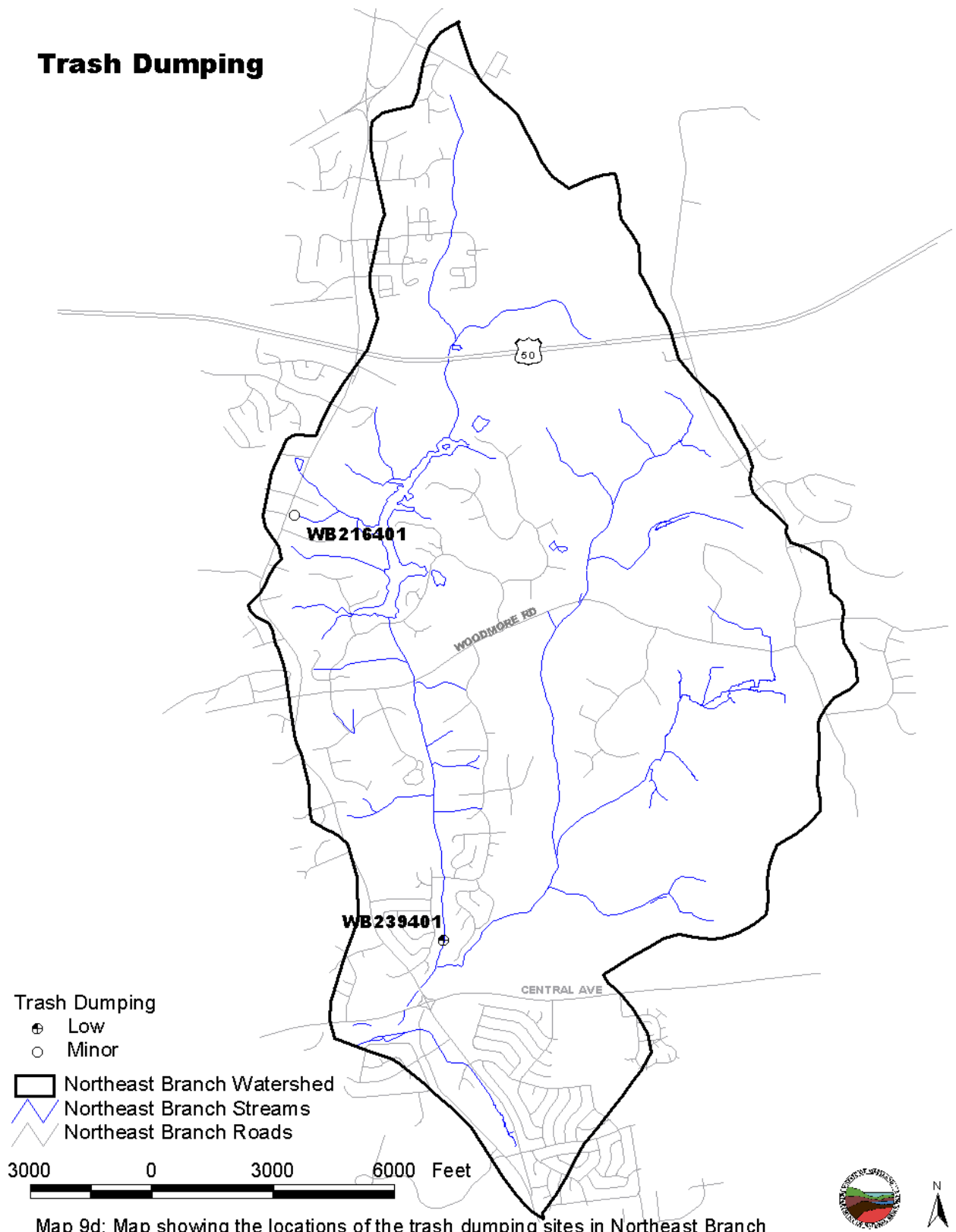
Map 9b: Map showing the locations of the trashing dumping sites in Collington Branch

Trash Dumping



Map 9c: Map showing the locations of the trash dumping sites in Lottsford Branch

Trash Dumping



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. Twenty unusual conditions were reported during the Western Branch survey, and 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 Western Branch survey can be seen in Figure 10a.

Collington Branch

Thirteen unusual conditions were recorded in the Collington Branch sub-watershed. Site WB397402 was given a very severe rating. At this site, the field crews noted an oil puddle near a construction area. It was noted by field crews that this is probably due to construction equipment near the stream.

Lottsford Branch

Three unusual condition sheets were recorded in the Lottsford Branch sub-watershed. Two of the unusual conditions were recorded as moderate sites. At site WB105107, the crew reported a small oil puddle near a construction site. At site WB115402, there is a stream piped for 150 feet.

Northeast Branch

Four unusual condition sheets were recorded in the Northeast Branch. One of these sites was identified as a moderate site. At site WB247101, a stream is pipe for approximately 2,200 feet.

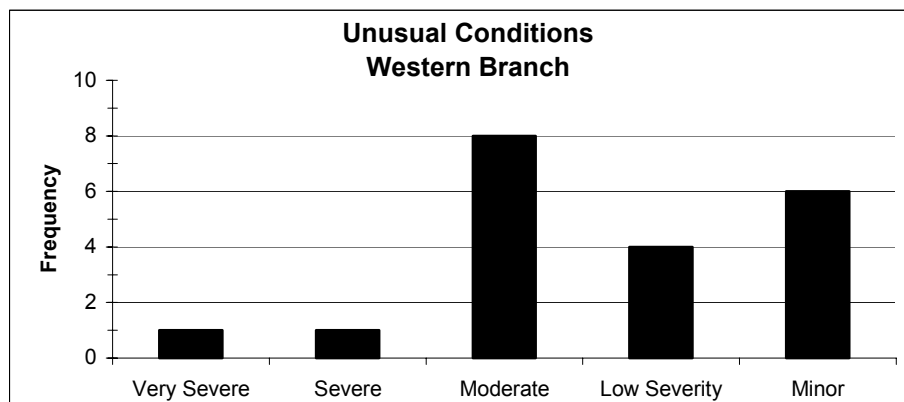
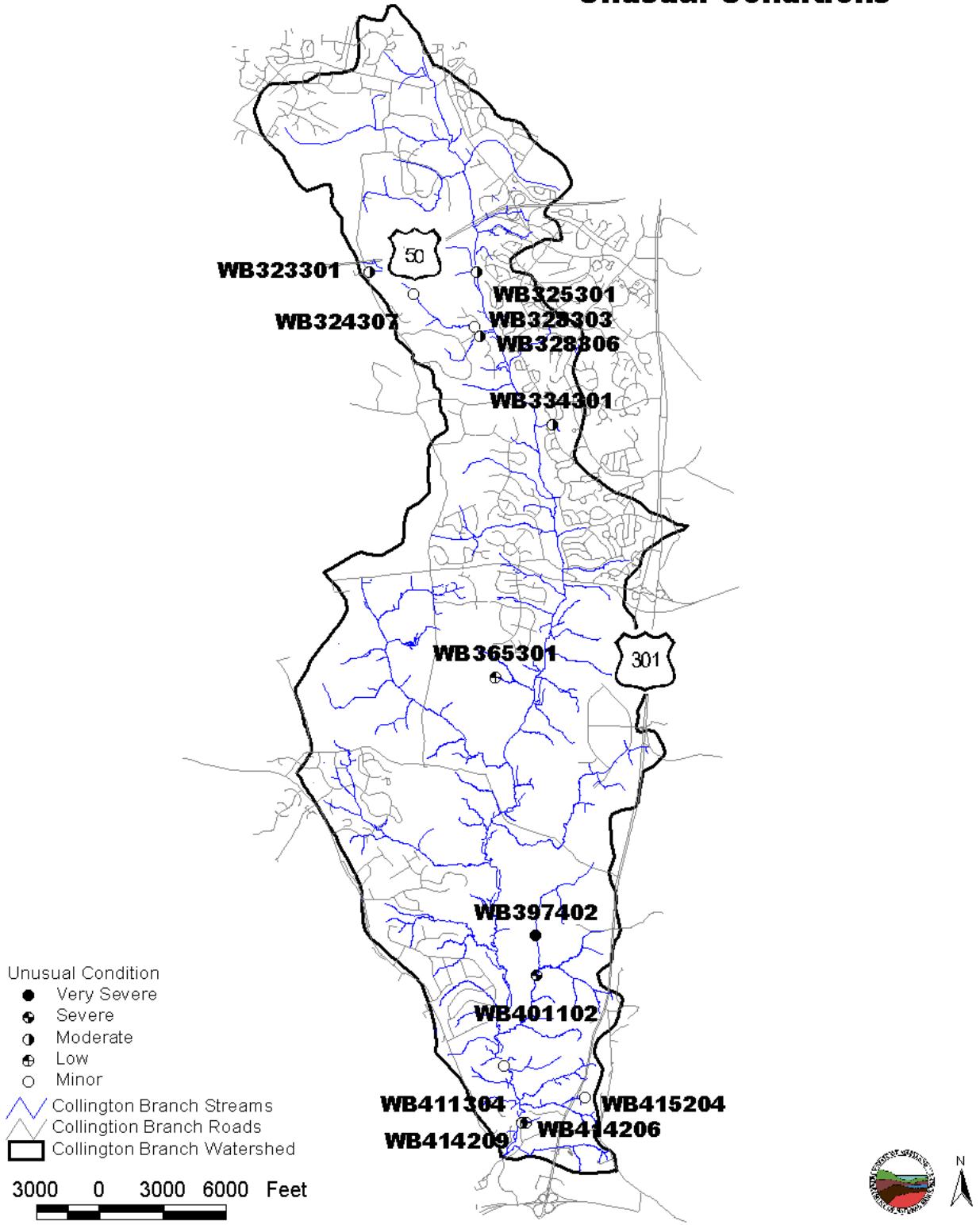


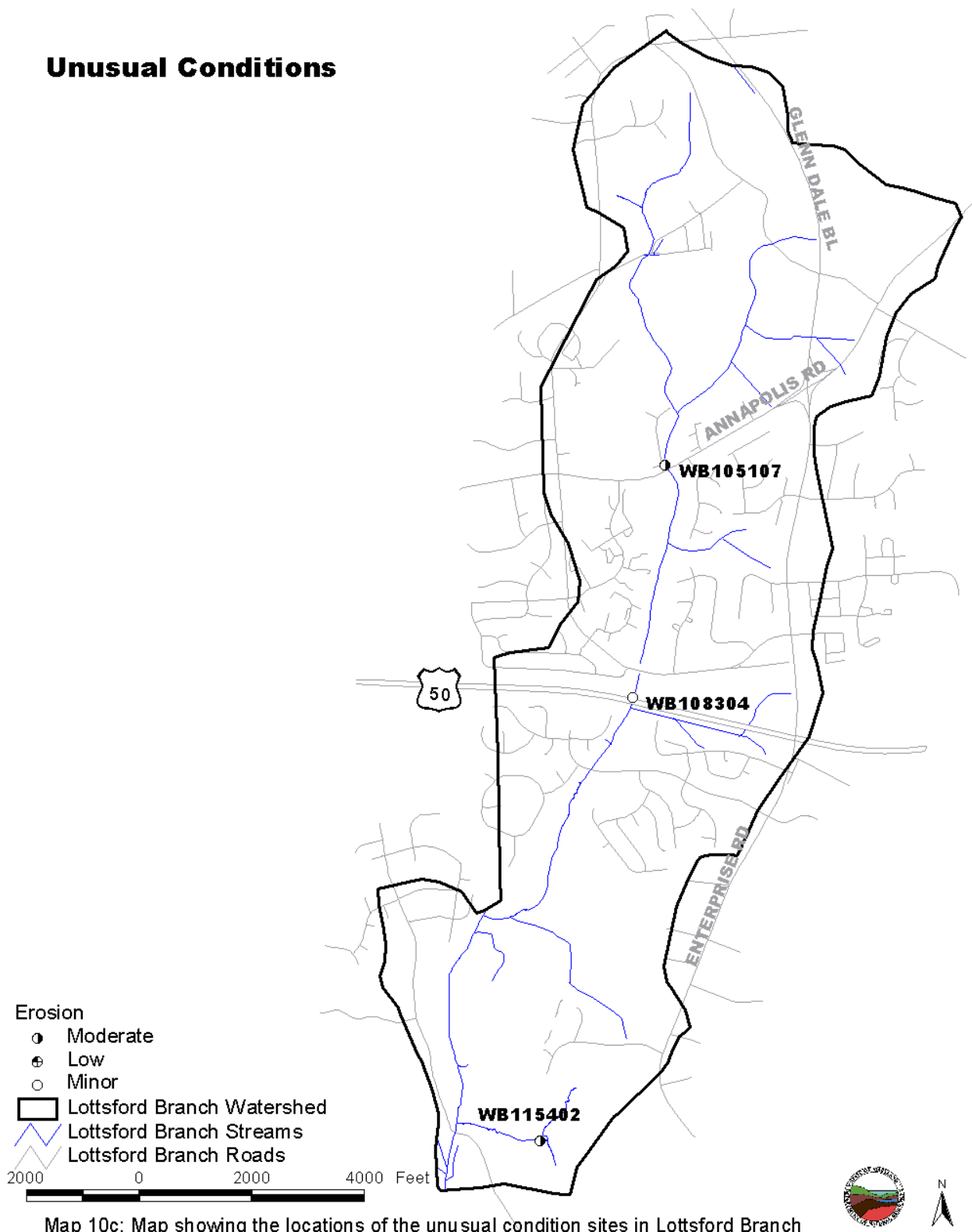
Figure 10a: Histogram showing the frequency of severity ratings given to unusual conditions seen during the Western Branch SCA survey.

Unusual Conditions

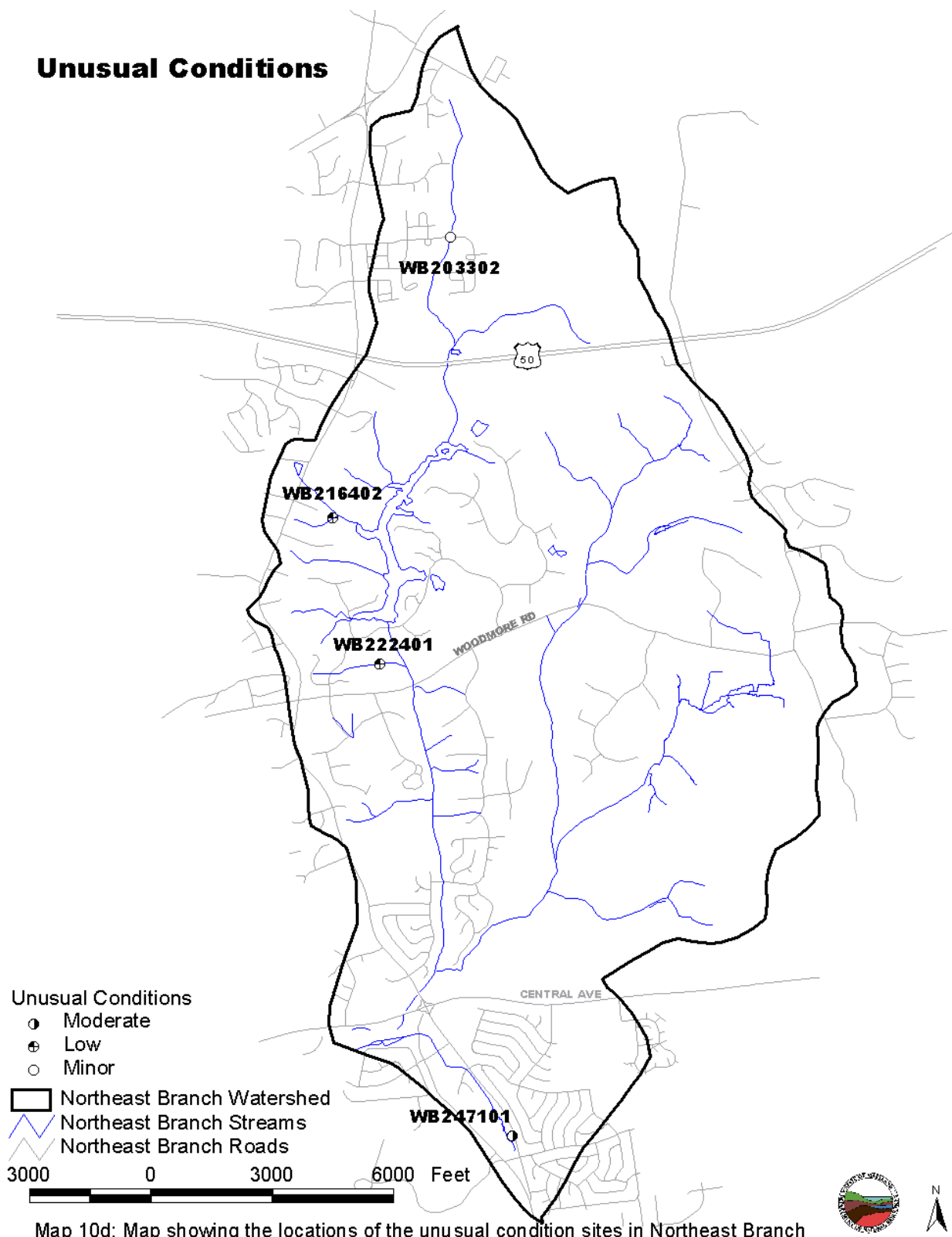


Map 10b: Map showing the locations of the unusual condition sites in Collington Branch

Unusual Conditions



Unusual Conditions



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 14 sites during the Western Branch survey. The locations of in/near stream construction sites are shown in Figure 11b, 11c, and 11d.

Collington Branch

There were 10 sites reported to have in/near stream construction in Collington Branch. Two sites were given very severe ratings. At site WB402101, in some areas silt fence was non-existent and in places where there was silt fence it looked to be failing. Excess sediment in the stream was also reported. At site WB402403, the vegetation was removed along the stream and silt fencing was not present. Excess sediment in the stream was also reported at this site.

Lottsford Branch

There were three sites reported to have in/near stream construction in Lottsford Branch. Only one received a moderate rating. At site WB105101 there was a break in the silt fence and there was excess sediment in the stream.

Northeast Branch

There was only one site reported in Northeast Branch. Site WB203303 was given a moderate rating. At the site there was a break in the silt fence and there was excess sediment in the stream.

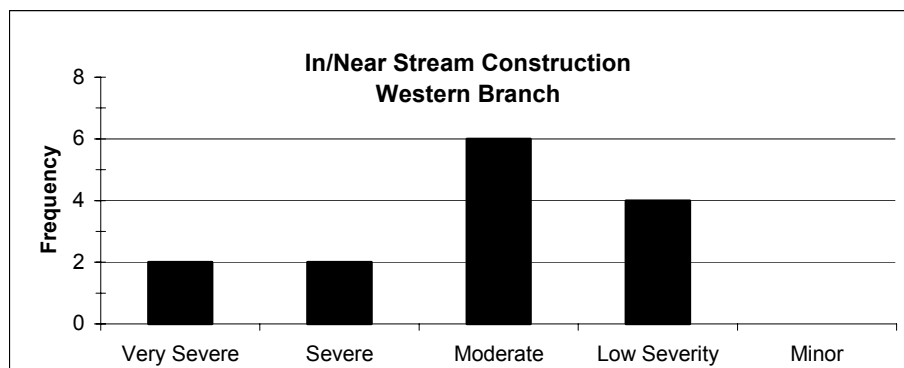
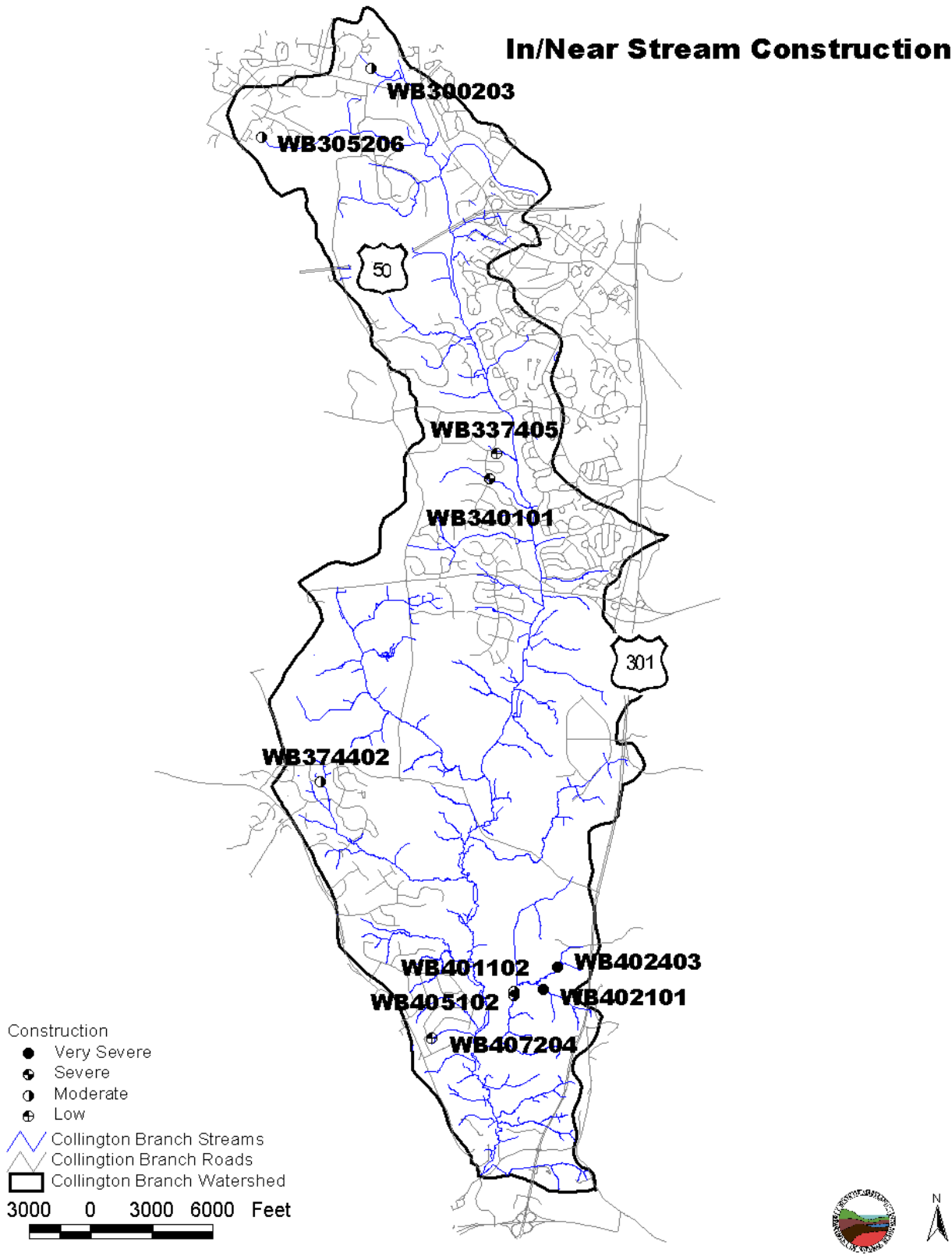


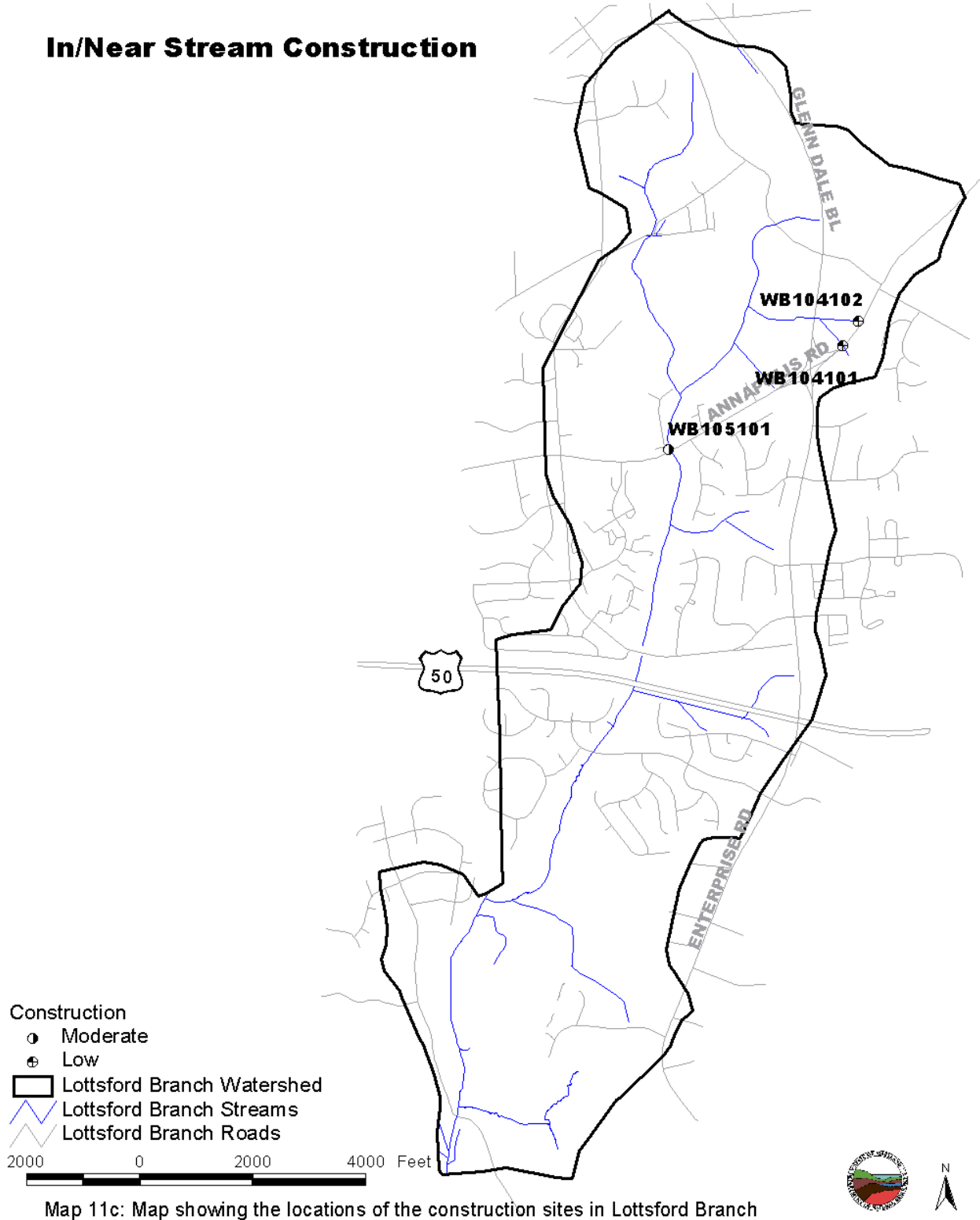
Figure 11a: Histogram showing the frequency of severity ratings of In/Near Stream Construction sites seen during the Western Branch SCA survey.

In/Near Stream Construction

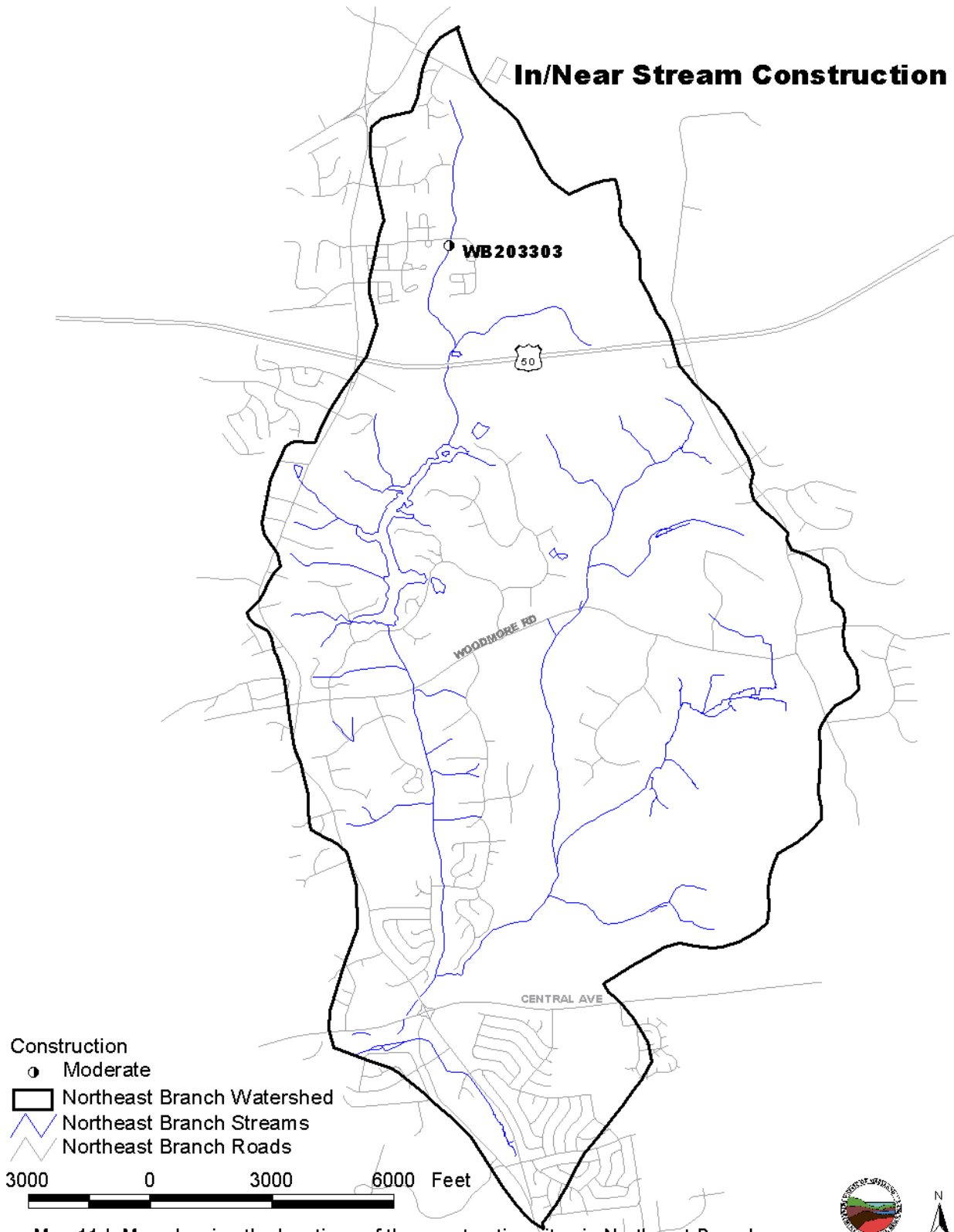


Map 11b: Map showing the locations of the construction sites in Collington Branch

In/Near Stream Construction



In/Near Stream Construction



Map 11d: Map showing the locations of the construction sites in Northeast Branch

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 three surveyed sub-watersheds of the Western Branch watershed, survey crews found 9 areas where the stream channel had been recognizably altered. Locations of channel alteration sites are shown in Figure 12b, and 12c. The total length of stream affected by channelization was estimated to be 5,845 feet, or about 1.1 miles. The majority of the sites were rip-rap channels (4), and earth channels (3). Other sites were found to be a concrete channel (1) and a vinyl plastic sheet (1). Perennial flow was reported at all 9 sites, and sediment deposition was reported at 4 sites. Vegetation was found in the channel at 3 sites. Most of the sites in the Western Branch watershed were given low severity ratings (Figure 12a). There were only two sites that received very severe ratings. Site WB243103 is a concrete channel that is 1,800 feet long. At site WB401401 the stream has been placed in a channel lined with black plastic sheeting. Both if these channels are open to the sunlight. Such channels are prone to thermal heating, which contributes to a decline in in-stream aquatic populations.

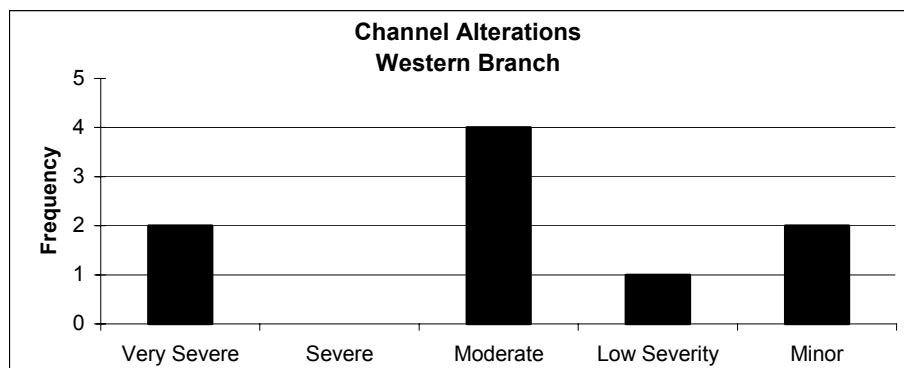
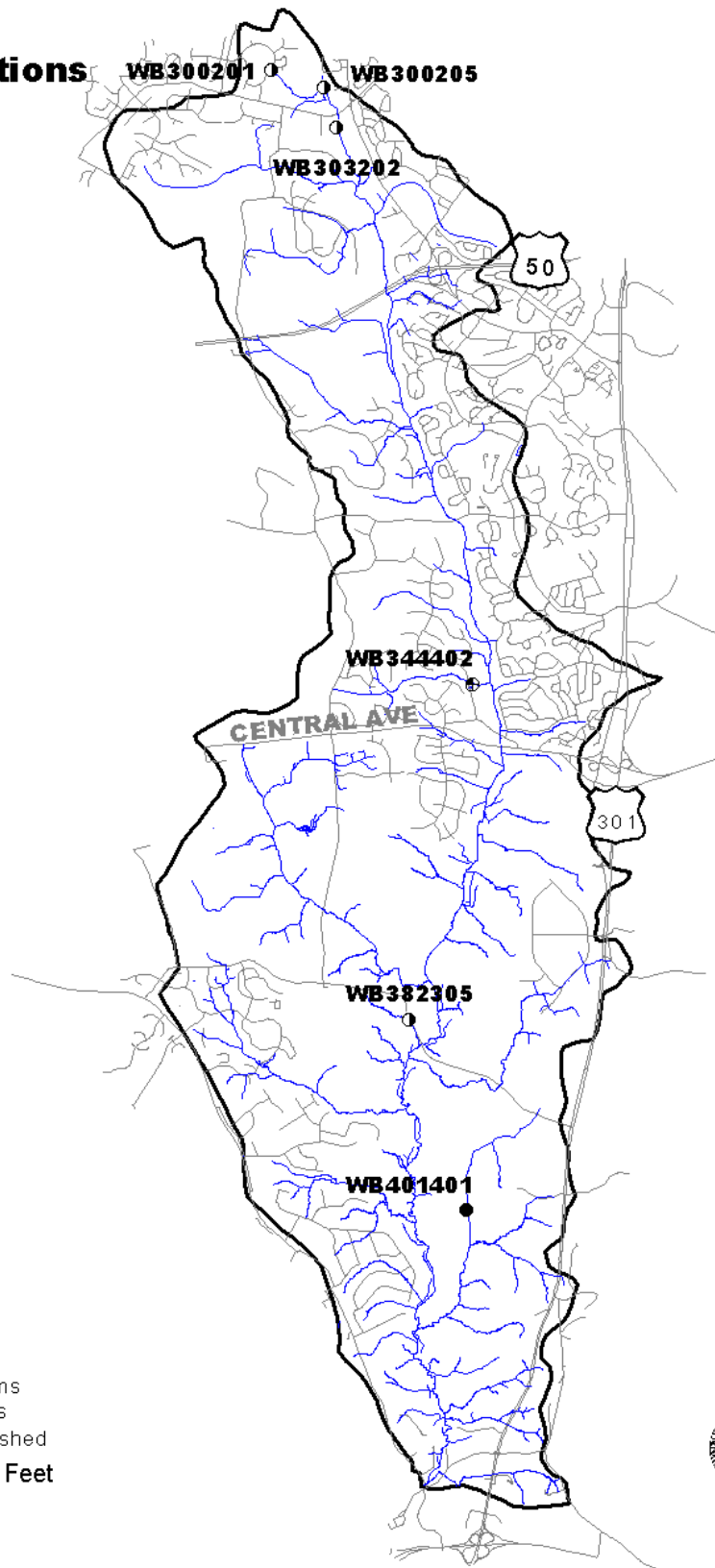


Figure 12a: Histogram showing the frequency of severity ratings given to channel alteration sites during the Western Branch SCA Survey.

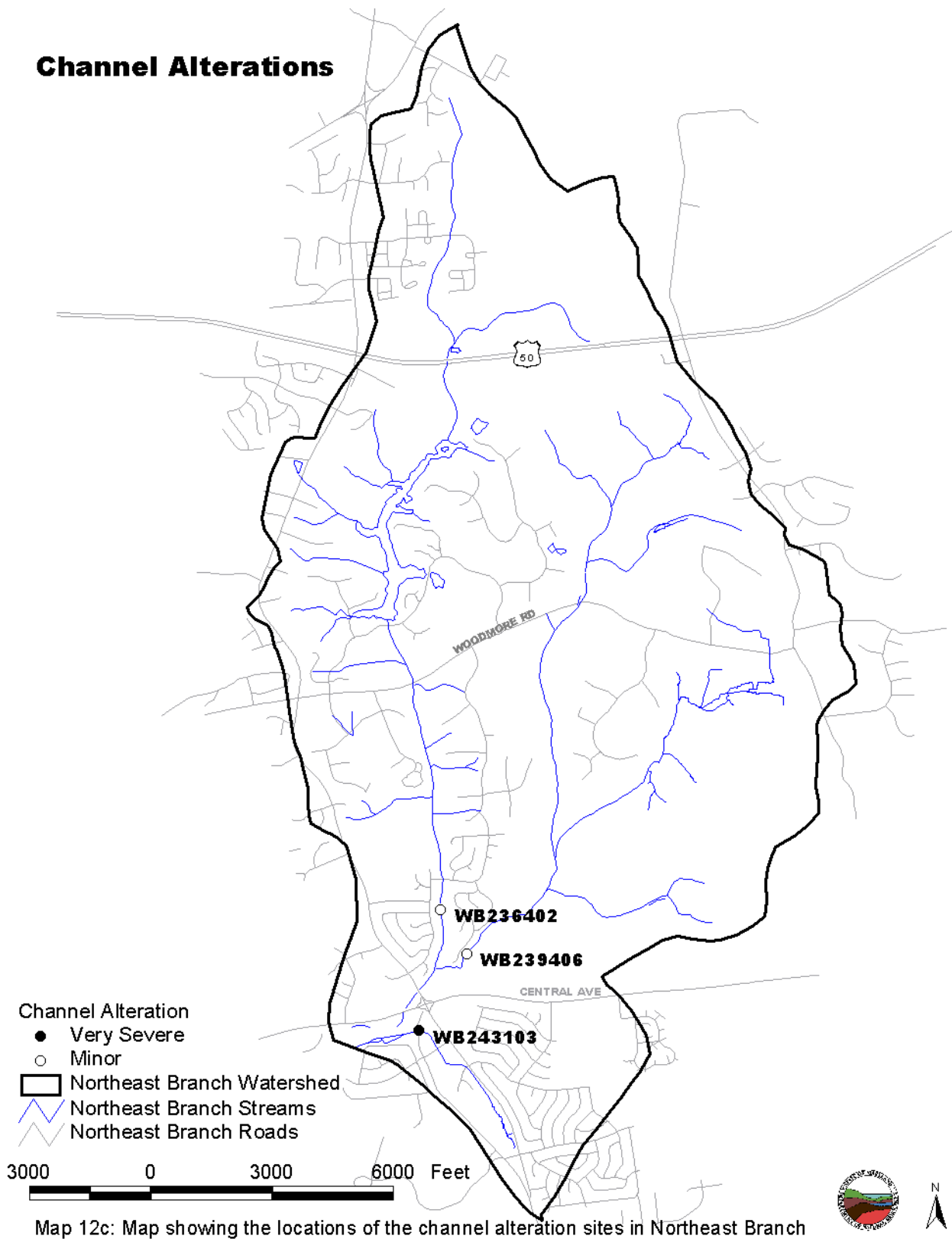
Channel Alterations



Channel Alterations

- Very Severe
 - Moderate
 - ⊕ Low
 - ▬ Collington Branch Streams
 - ▬ Collington Branch Roads
 - ▭ Collington Branch Watershed
- 3000 0 3000 6000 Feet

Channel Alterations



Map 12c: Map showing the locations of the channel alteration sites in Northeast Branch



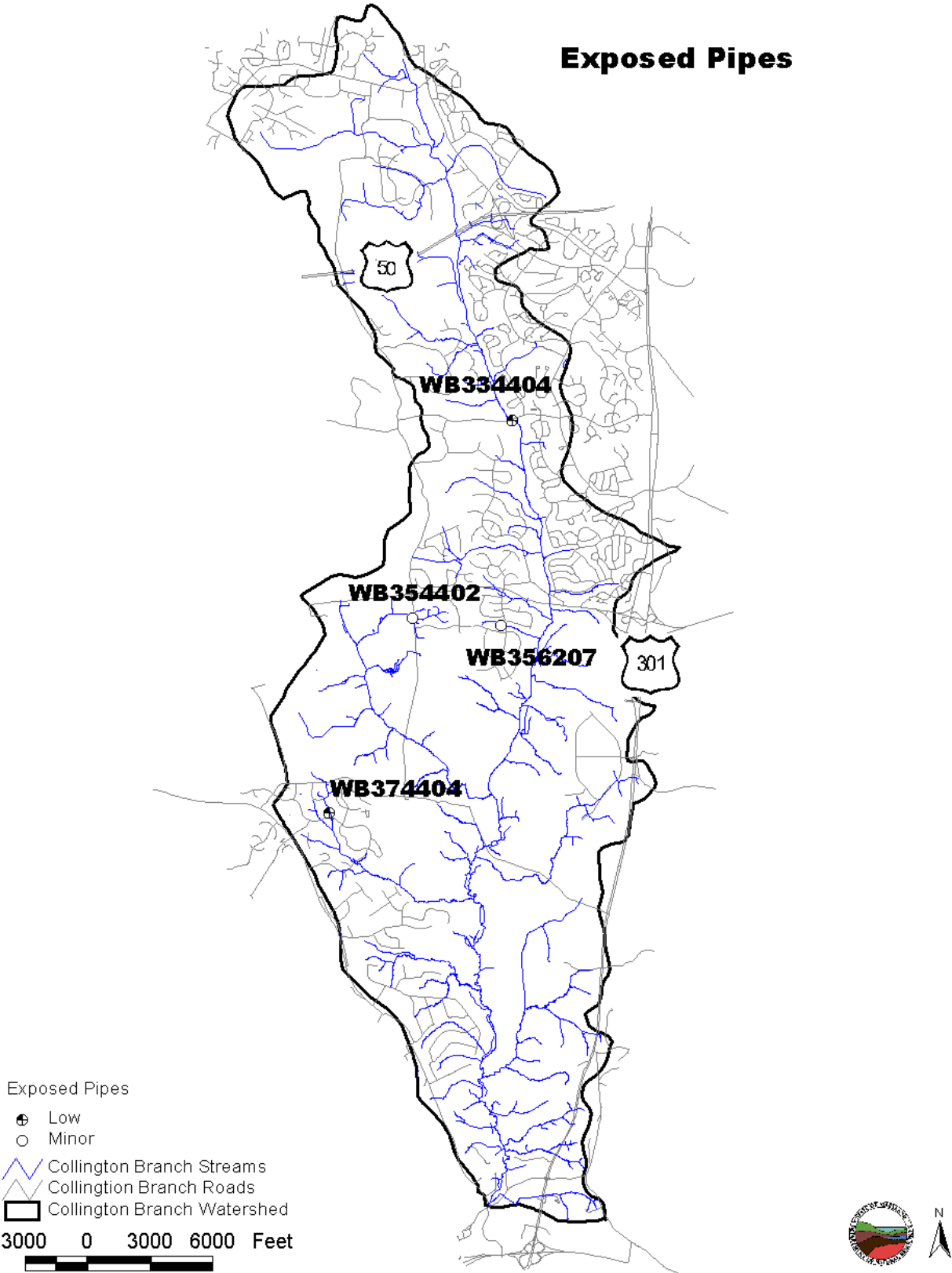
Exposed Pipes

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 4 sites during the Western Branch survey. All exposed pipes were found in Collington Branch. Locations of these sites are shown in Figures 13b. Public works officials should review the exposed pipes reported, and follow-up visits should be done based on their evaluations. All the exposed pipes were given low to minor severity ratings.

Exposed Pipes



Map 13b: Map showing the locations of the exposed pipe sites in Collington Branch

Representative Sites

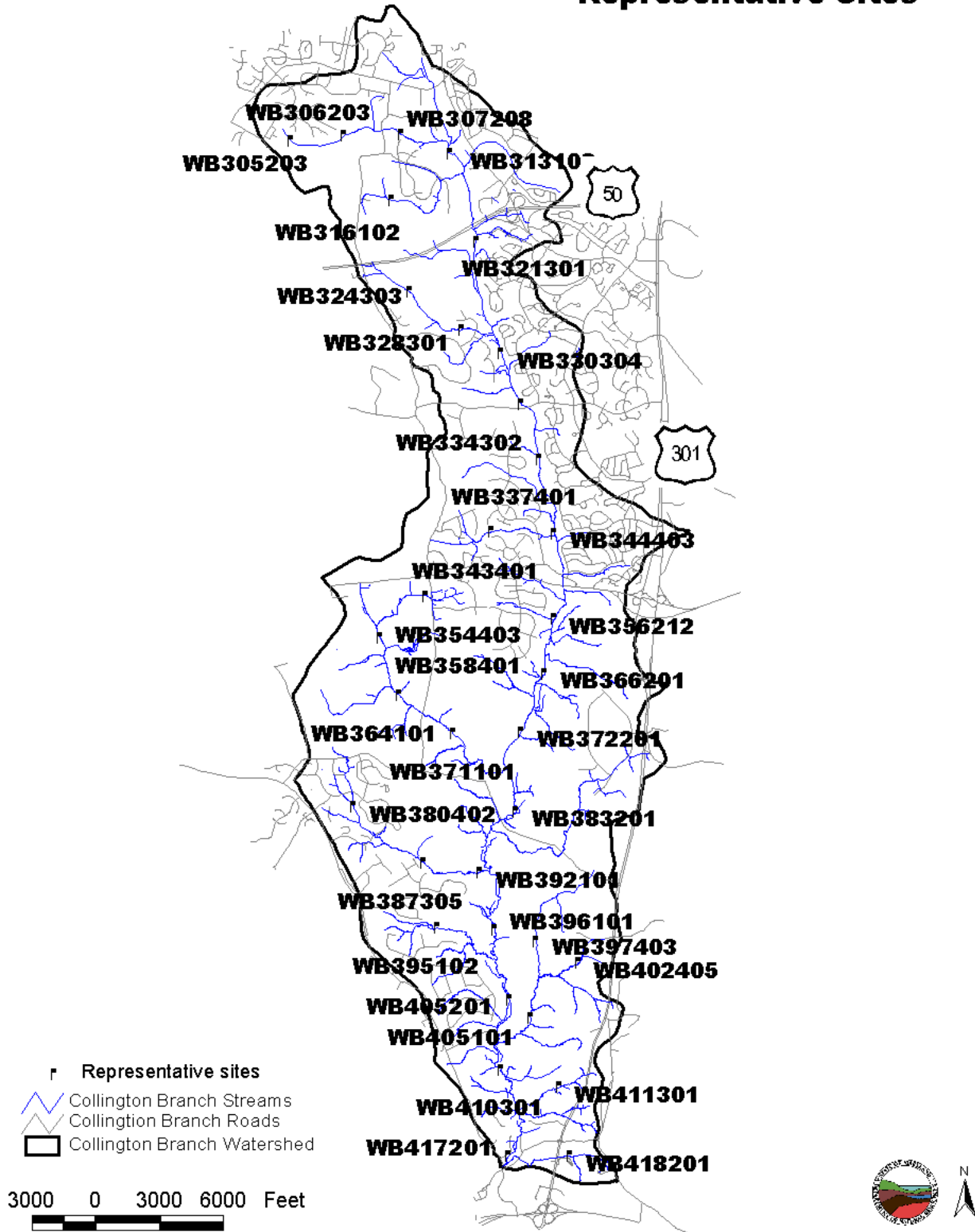
Representative sites are used to document the general condition of both in-stream habitat and the adjacent riparian (stream bank) corridor. The representative site evaluations procedures used during the survey are very similar to the habitat evaluations done as part of the Maryland Save-Our-Stream's 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.

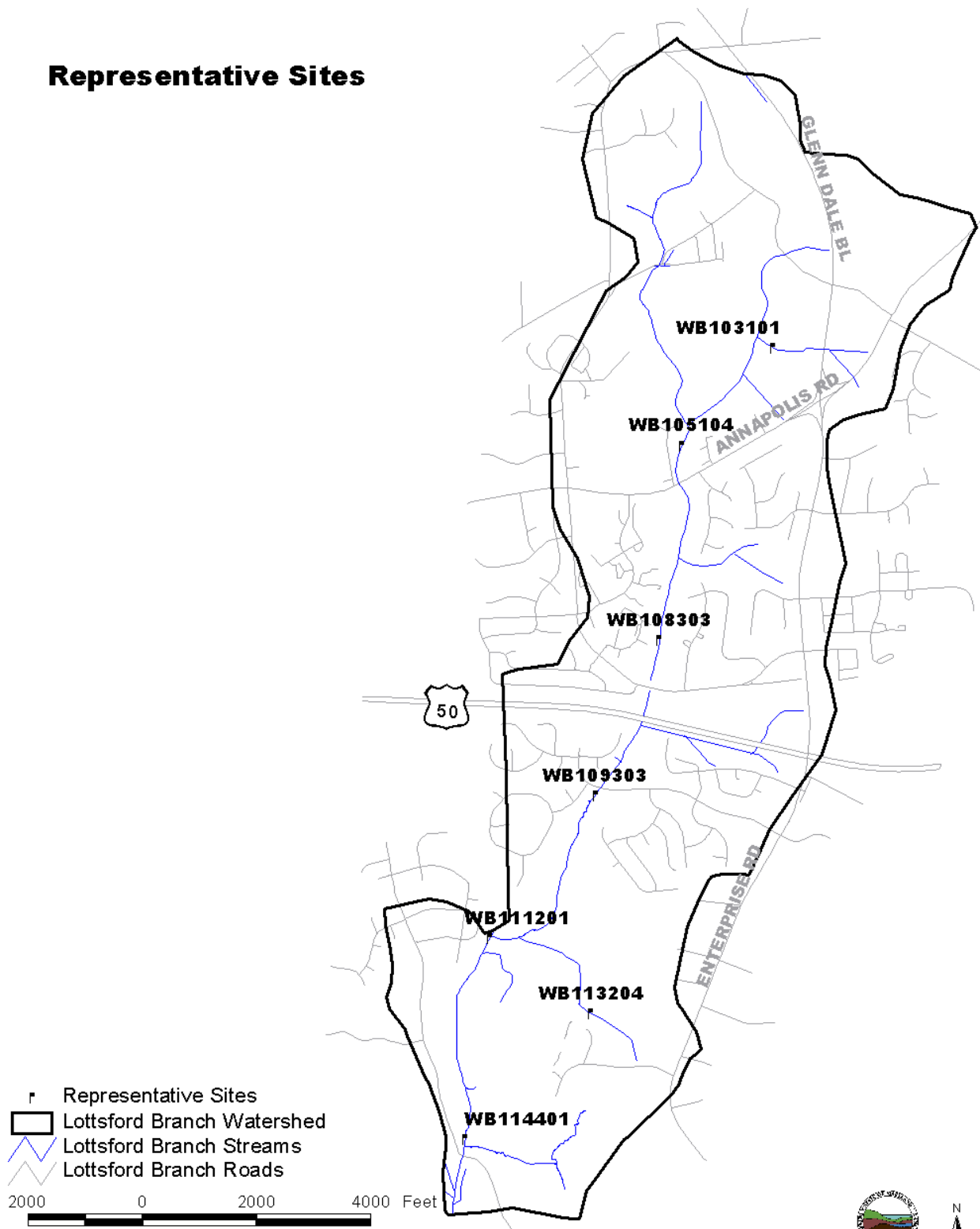
Representative site evaluations were done at approximately ½ mile intervals along the stream. Forty-eight representative data sheets were filled out during this survey. Locations of representative sites are shown in Figures 13a, 13b, and 13c, and the data is presented in Appendix B.

Representative Sites



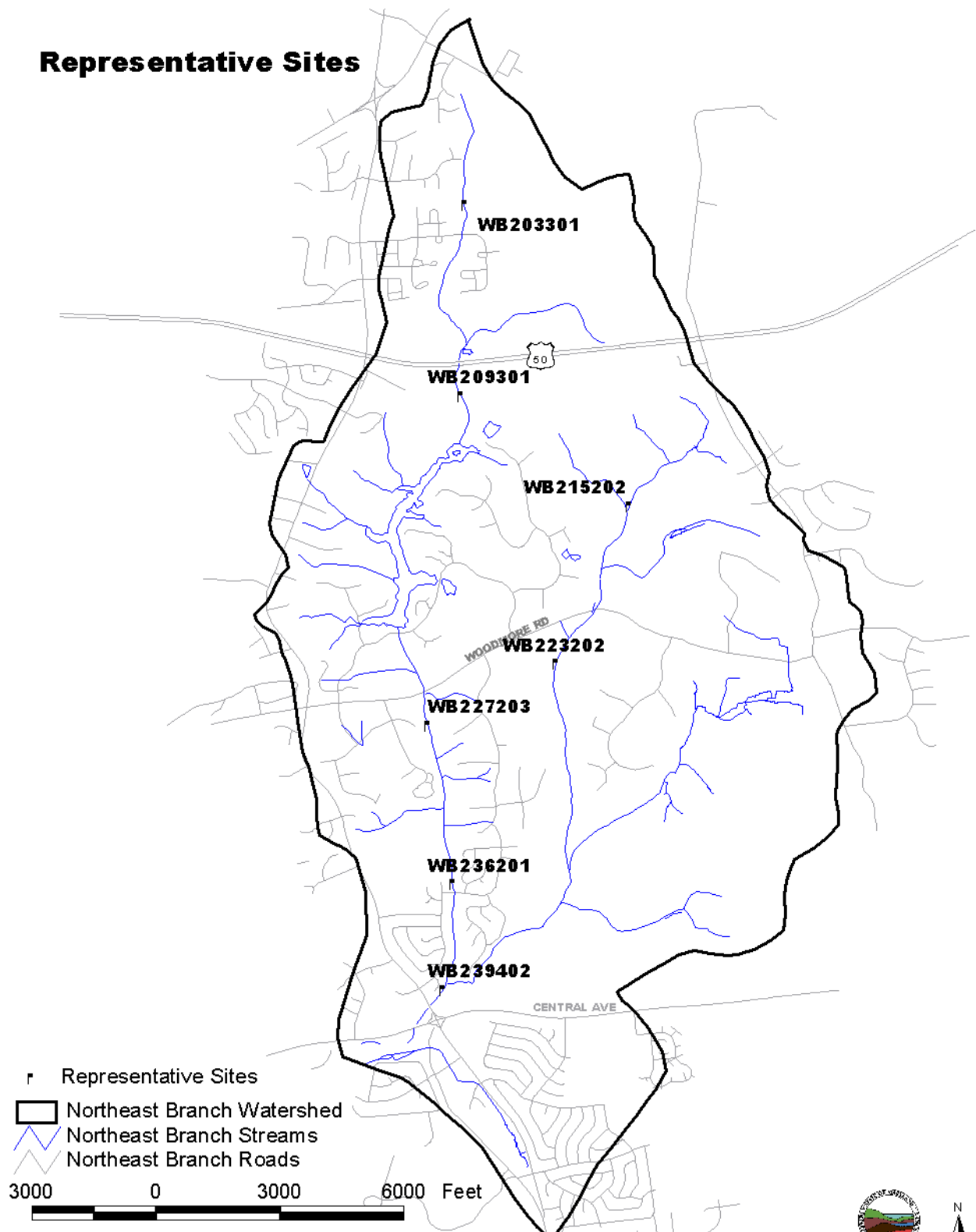
Map 14b: Map showing the locations of the representative sites in Collington Branch

Representative Sites



Map 14c: Map showing the locations of the representative sites in Lottsford Branch

Representative Sites



Map 14d: Map showing the locations of the representative sites in Northeast Branch

DISCUSSION

One of the main objectives of the Western Branch 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/summer of 2002, and over 113 miles of stream were walked. During the SCA survey 448 potential environmental problems were identified. The most common environmental concern seen during the SCA survey was pipe outfalls, which was reported at 128 sites. Other potential environmental problems identified during the survey include: 117 fish barriers, 60 erosion sites, 51 inadequate buffers, 45 trash dumping sites, 20 unusual conditions, 14 in/near stream construction sites, 4 exposed pipes, and 9 channel alterations.

Pipe outfalls were the most common problems observed in the three surveyed sub-watersheds. This is typical in a suburban area. These pipes are normally stormwater outfall pipes. 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. Another important problem to note is the presence of a large number of long erosion sites. These can be related with the number of stormwater pipes discharging directly in the stream. During storm events run-off will be concentrated into stormwater management pipes. When the resulting water goes into the stream it is usually traveling at a high velocity. This high velocity will scour the stream even in areas where there is an adequate forest buffer. Some of the more minor erosion problems, especially in areas that also had inadequate buffers, may be cured with buffer plantings. 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.

As mentioned earlier, the Maryland Department of Natural Resources has formed a partnership with Prince George's County to develop a Watershed Restoration Action Strategy (WRAS) for the Western Branch 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 Western Branch Watershed Action Strategy can be found on DNR's website (www.dnr.state.md.us/watersheds/surf/proj/wras.html).

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Appendix A

Listing of sites by site number

Appendix A- Western Branch

Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB102101	Pipe Outfall	3	1	1	144459.65884	416691.41709	Lottsford Branch
WB102102	Inadequate Buffer	3	4	1	144502.70939	416702.89724	Lottsford Branch
WB102103	Pipe Outfall	5	1	1	144353.46750	416616.79615	Lottsford Branch
WB103101	Fish Barrier	4	1	1	143991.84292	417495.02727	Lottsford Branch
WB103101	Representative Site				144000.45303	417291.25469	Lottsford Branch
WB103102	Erosion	4	1	1	143991.84292	417469.19694	Lottsford Branch
WB103104	Pipe Outfall	3	3	3	144098.03426	416651.23659	Lottsford Branch
WB104101	Comment				143845.47107	417716.02007	Lottsford Branch
WB104101	Construction	4			143847.35019	417716.95963	Lottsford Branch
WB104102	Construction	4			143977.49274	417802.12116	Lottsford Branch
WB105101	Construction	3			143285.81398	416780.38822	Lottsford Branch
WB105102	Fish Barrier	5	1	1	143386.26525	416777.51818	Lottsford Branch
WB105103	Fish Barrier	5	1	1	143575.68765	416840.65898	Lottsford Branch
WB105104	Representative Site				143478.10642	416806.21855	Lottsford Branch
WB105105	Trash Dumping	2	3	1	143621.60823	416880.83949	Lottsford Branch
WB105106	Inadequate Buffer	5	1	1	143268.59376	416791.86837	Lottsford Branch
WB105107	Unusual Condition	3	1	1	143300.16416	416777.51818	Lottsford Branch
WB106301	Pipe Outfall	3	3	1	142952.88977	417210.89367	Lottsford Branch
WB106302	Inadequate Buffer	5	2	1	142952.88977	417208.02363	Lottsford Branch
WB106304	Pipe Outfall	5	5	1	142863.91864	417030.08138	Lottsford Branch
WB106305	Pipe Outfall	3	3	2	142803.64788	416763.16800	Lottsford Branch
WB107301	Inadequate Buffer	5	2	2	141956.94051	416567.32208	Lottsford Branch
WB108301	Trash Dumping	4	2	2	142510.12042	416691.60743	Lottsford Branch
WB108302	Pipe Outfall	5	1	1	142441.27313	416800.48221	Lottsford Branch
WB108303	Representative Site				142449.27863	416688.40524	Lottsford Branch
WB108304	Unusual Condition	5	5	1	142055.00786	416603.34682	Lottsford Branch
WB109301	Pipe Outfall	3	3	1	141832.85529	416439.23411	Lottsford Branch
WB109302	Inadequate Buffer	3	1	2	141772.81405	416453.24373	Lottsford Branch
WB109303	Representative Site				141622.71097	416347.17088	Lottsford Branch
WB109304	Pipe Outfall	3	3	1	141590.68897	416313.14752	Lottsford Branch
WB110301	Pipe Outfall	3	3	2	141850.86766	417177.74130	Lottsford Branch
WB111201	Representative Site				140860.18728	415782.78328	Lottsford Branch
WB111202	Fish Barrier	5	4	3	140786.13643	415782.78328	Lottsford Branch
WB111203	Inadequate Buffer	3	3	2	140904.21752	416034.95646	Lottsford Branch
WB112401	Erosion	3	3	2	140217.74607	415614.66782	Lottsford Branch
WB112402	Fish Barrier	4	4	2	140612.01685	415640.68569	Lottsford Branch
WB112403	Inadequate Buffer	5	1	2	140612.01685	415640.68569	Lottsford Branch
WB113201	Pipe Outfall	5	1	1	140213.74332	416569.32345	Lottsford Branch
WB113202	Erosion	4	2	2	140327.82167	416531.29734	Lottsford Branch
WB113203	Inadequate Buffer	4	3	1	140395.86840	416431.22861	Lottsford Branch
WB113204	Representative Site				140461.91376	416323.15439	Lottsford Branch
WB113205	Inadequate Buffer	5	2	1	140616.01960	416265.11453	Lottsford Branch
WB114401	Representative Site				139789.91630	415656.55279	Lottsford Branch
WB115401	Erosion	5	3	2	139944.09784	416284.67715	Lottsford Branch
WB115402	Unusual Condition	3	5	2	139663.35030	416099.08360	Lottsford Branch
WB115403	Inadequate Buffer	3	3	2	139745.13077	415756.56776	Lottsford Branch
WB200301	Inadequate Buffer	1	1	1	143731.22199	418179.48994	Northeast Branch
WB201301	Pipe Outfall	5	1	1	143645.81573	418209.19647	Northeast Branch
WB201302	Pipe Outfall	5	1	1	143545.55620	418250.04294	Northeast Branch
WB201303	Pipe Outfall	5	1	1	143543.69954	418251.89960	Northeast Branch

Appendix A- Western Branch

Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB201304	Pipe Outfall	5	1	1	143508.42304	418263.03955	Northeast Branch
WB201305	Pipe Outfall	3	3	1	143475.00319	418266.75286	Northeast Branch
WB201306	Pipe Outfall	3	3	1	143426.73009	418248.18628	Northeast Branch
WB203301	Representative Site				142934.71572	418199.91318	Northeast Branch
WB203302	Unusual Condition	5	4	1	142724.91337	418181.34660	Northeast Branch
WB203303	Construction	3			142671.07029	418170.20665	Northeast Branch
WB209301	Representative Site				141534.79561	418175.77662	Northeast Branch
WB211201	Inadequate Buffer	4	3	1	141528.84725	419778.86294	Northeast Branch
WB212401	Pipe Outfall	5	1	3	140769.85253	417191.74790	Northeast Branch
WB215201	Inadequate Buffer	5	2	1	141000.26238	419628.37172	Northeast Branch
WB215202	Representative Site				140721.66707	419400.76930	Northeast Branch
WB215203	Inadequate Buffer	4	3	1	140796.29081	419434.34998	Northeast Branch
WB215204	Fish Barrier	5	1	1	140660.72434	419387.08828	Northeast Branch
WB216401	Trash Dumping	5	1	2	140602.26907	417009.07825	Northeast Branch
WB216402	Unusual Condition	4	3	2	140616.24574	417306.41870	Northeast Branch
WB221401	Fish Barrier	4	4	2	139497.51958	417500.62966	Northeast Branch
WB221403	Inadequate Buffer	3	3	2	139486.40780	417360.09843	Northeast Branch
WB221404	Pipe Outfall	3	3	1	139467.35734	417140.62897	Northeast Branch
WB222401	Unusual Condition	4	3	1	139530.49467	417656.57930	Northeast Branch
WB223201	Inadequate Buffer	4	1	1	139813.58206	419005.77933	Northeast Branch
WB223202	Representative Site				139569.74609	418864.07361	Northeast Branch
WB223203	Inadequate Buffer	5	2	1	139873.58358	418899.81919	Northeast Branch
WB227201	Pipe Outfall	3	3	2	138965.78331	418133.35586	Northeast Branch
WB227202	Pipe Outfall	3	3	2	138920.78852	418069.07759	Northeast Branch
WB227203	Representative Site				139118.76560	417932.80766	Northeast Branch
WB227204	Erosion	2	3	3	139352.73851	417903.23965	Northeast Branch
WB227205	Fish Barrier	4	4	1	139315.45711	418007.37045	Northeast Branch
WB227206	Pipe Outfall	3	3	2	139339.88286	418078.07655	Northeast Branch
WB227207	Pipe Outfall	3	3	1	139298.74476	418282.48145	Northeast Branch
WB232201	Pipe Outfall	3	3	1	138707.38466	418395.61121	Northeast Branch
WB232202	Pipe Outfall	3	3	1	138810.22990	418393.04008	Northeast Branch
WB232203	Pipe Outfall	3	3	2	138776.80520	418215.63205	Northeast Branch
WB232204	Fish Barrier	4	4	1	138730.52484	418183.49292	Northeast Branch
WB232205	Pipe Outfall	3	3	2	138414.27574	418214.34649	Northeast Branch
WB232206	Fish Barrier	5	4	2	138384.70774	418111.50125	Northeast Branch
WB232207	Pipe Outfall	3	3	2	138380.85104	418229.77327	Northeast Branch
WB232208	Pipe Outfall	5	4	2	138585.25595	417981.65914	Northeast Branch
WB232209	Pipe Outfall	3	3	2	138568.54360	417882.67060	Northeast Branch
WB232210	Pipe Outfall	5	1	2	138437.41592	417571.56377	Northeast Branch
WB232211	Fish Barrier	5	5	1	138412.99018	417579.27716	Northeast Branch
WB236201	Representative Site				137948.90106	418112.78682	Northeast Branch
WB236402	Channel Alteration	5	2	3	137666.07666	418110.21569	Northeast Branch
WB236403	Erosion	1	5	2	137882.05165	418128.21360	Northeast Branch
WB239401	Trash Dumping	4	2	2	137419.24810	418130.78473	Northeast Branch
WB239402	Representative Site				137171.13397	418039.50959	Northeast Branch
WB239403	Erosion	3	3	2	137466.81402	418407.18130	Northeast Branch
WB239404	Fish Barrier	5	1	1	137356.25539	418323.61955	Northeast Branch
WB239405	Pipe Outfall	3	3	1	137347.25643	418313.33502	Northeast Branch
WB239406	Channel Alteration	5	2	1	137331.82965	418299.19380	Northeast Branch
WB239407	Fish Barrier	5	2	2	137111.99796	417999.65706	Northeast Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB243101	Erosion	3	4	3	136750.48289	417940.63175	Northeast Branch
WB243102	Fish Barrier	3	4	2	136748.83466	417943.92820	Northeast Branch
WB243103	Channel Alteration	1	5	3	136752.13111	417950.52112	Northeast Branch
WB243104	Pipe Outfall	3	3	2	136734.00061	418006.56086	Northeast Branch
WB243105	Pipe Outfall	3	3	2	136506.54517	418153.25313	Northeast Branch
WB243106	Pipe Outfall	3	5	1	136491.71112	418285.11136	Northeast Branch
WB243107	Inadequate Buffer	1	4	2	136483.46998	418304.89009	Northeast Branch
WB247101	Unusual Condition	3	3	1	135988.12311	418643.93132	Northeast Branch
WB300201	Channel Alteration	3	3	1	145211.66818	420241.84919	Collington Branch
WB300202	Fish Barrier	5	5	1	145002.92278	420426.62408	Collington Branch
WB300203	Construction	3			145000.29888	420430.55993	Collington Branch
WB300204	Pipe Outfall	3	3	1	145000.29888	420872.68730	Collington Branch
WB300205	Channel Alteration	3	3	2	144995.96842	420873.57261	Collington Branch
WB300205	Inadequate Buffer	3	5	1	144997.67498	420873.99925	Collington Branch
WB302201	Pipe Outfall	3	3	1	144483.39033	420029.10303	Collington Branch
WB303201	Pipe Outfall	5	1	1	144865.16796	420933.03703	Collington Branch
WB303202	Channel Alteration	3	5	1	144509.62934	421030.12137	Collington Branch
WB305201	Fish Barrier	5	1	2	143813.40039	418894.59895	Collington Branch
WB305202	Fish Barrier	5	1	3	143850.01210	418837.24060	Collington Branch
WB305203	Representative Site				143853.67327	418831.13864	Collington Branch
WB305204	Erosion	1	3	2	143858.55484	418826.25708	Collington Branch
WB305205	Trash Dumping	5	1	2	143912.25202	418789.64537	Collington Branch
WB305206	Construction	3			143951.78416	418752.80406	Collington Branch
WB306201	Trash Dumping	5	1	2	144268.60605	420085.70011	Collington Branch
WB306202	Inadequate Buffer	5	1	3	143991.57740	419797.68794	Collington Branch
WB306203	Representative Site				143943.98217	419656.12264	Collington Branch
WB306204	Inadequate Buffer	3	3	4	143878.08109	419592.66233	Collington Branch
WB306205	Fish Barrier	4	3	4	143835.36742	419514.55734	Collington Branch
WB307201	Pipe Outfall	5	1	2	144040.39303	420985.12793	Collington Branch
WB307202	Pipe Outfall	5	1	2	143940.32100	421025.40082	Collington Branch
WB307203	Pipe Outfall	5	1	2	143939.10061	421008.31535	Collington Branch
WB307204	Pipe Outfall	3	3	2	143898.82772	421052.24941	Collington Branch
WB307205	Fish Barrier	5	4	2	143895.16655	421058.35136	Collington Branch
WB307206	Pipe Outfall	5	1	2	143934.21905	420576.29710	Collington Branch
WB307207	Fish Barrier	5	2	3	143946.42295	420564.09320	Collington Branch
WB307208	Representative Site				143963.50842	420539.68539	Collington Branch
WB307209	Fish Barrier	5	4	2	143968.38998	420503.07367	Collington Branch
WB307210	Fish Barrier	4	4	1	144175.85637	421148.66026	Collington Branch
WB308201	Pipe Outfall	3	3	1	144163.65247	421170.62729	Collington Branch
WB308202	Inadequate Buffer	4	2	1	144165.78815	421168.03396	Collington Branch
WB308203	Fish Barrier	4	5	1	143930.86298	421415.16304	Collington Branch
WB308204	Pipe Outfall	5	1	1	143941.54139	421418.36657	Collington Branch
WB308205	Pipe Outfall	3	2	1	144028.18912	421443.99477	Collington Branch
WB308206	Fish Barrier	3	5	1	143753.90635	421688.22542	Collington Branch
WB308207	Pipe Outfall	3	3	1	143936.96493	422023.83282	Collington Branch
WB308208	Pipe Outfall	3	3	1	143889.67480	422072.64844	Collington Branch
WB308209	Pipe Outfall	5	1	1	143880.52187	422077.22490	Collington Branch
WB308210	Inadequate Buffer	1	4	1	143840.85917	421965.86427	Collington Branch
WB312101	Pipe Outfall	5	1	1	143486.94592	420699.32772	Collington Branch
WB312102	Inadequate Buffer	3	4	1	143482.36946	420720.68456	Collington Branch

Appendix A- Western Branch

Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB313101	Inadequate Buffer	4	2	4	143291.68344	421236.29955	Collington Branch
WB313102	Representative Site				143660.85157	421283.58969	Collington Branch
WB313201	Pipe Outfall	5	1	2	143647.12218	421558.17756	Collington Branch
WB313301	Fish Barrier	5	2	3	143201.67963	421532.24426	Collington Branch
WB313302	Trash Dumping	3	3	2	143261.17367	421512.41291	Collington Branch
WB314201	Pipe Outfall	3	3	1	143576.94972	422195.83161	Collington Branch
WB314202	Pipe Outfall	3	3	1	143566.27130	422203.45905	Collington Branch
WB314203	Pipe Outfall	3	3	1	143290.15795	422316.34517	Collington Branch
WB314204	Pipe Outfall	5	1	1	143221.51098	422406.34897	Collington Branch
WB314205	Pipe Outfall	3	3	1	143198.62866	422505.50570	Collington Branch
WB314206	Fish Barrier	4	5	2	143194.05219	422516.18412	Collington Branch
WB314207	Pipe Outfall	3	3	1	143162.01694	422674.83489	Collington Branch
WB314208	Pipe Outfall	5	1	1	143155.91499	422717.54856	Collington Branch
WB314209	Pipe Outfall	3	3	1	143136.08364	422819.75627	Collington Branch
WB314210	Pipe Outfall	5	1	1	143134.55816	422824.33273	Collington Branch
WB314211	Pipe Outfall	3	3	1	143125.40523	422870.09738	Collington Branch
WB314212	Pipe Outfall	5	1	1	143108.62486	422891.45421	Collington Branch
WB314213	Pipe Outfall	3	1	1	143096.42095	422906.70909	Collington Branch
WB315101	Inadequate Buffer	3	3	1	142856.91931	419933.53266	Collington Branch
WB315102	Trash Dumping	5	3	1	143001.84069	419950.31303	Collington Branch
WB315103	Trash Dumping	5	4	3	143021.67203	420125.74417	Collington Branch
WB315105	Trash Dumping	4	3	2	142998.78971	420215.74797	Collington Branch
WB316102	Representative Site				142946.92311	420377.44972	Collington Branch
WB316103	Fish Barrier	5	1	2	142936.24469	420444.57120	Collington Branch
WB316104	Fish Barrier	5	2	2	142786.74685	421007.47633	Collington Branch
WB316105	Pipe Outfall	3	3	1	143017.09557	421019.68024	Collington Branch
WB316106	Pipe Outfall	3	3	1	143021.67203	421021.20572	Collington Branch
WB317301	Fish Barrier	5	2	2	142483.17471	421649.70685	Collington Branch
WB317302	Inadequate Buffer	3	1	1	142495.37862	421639.02843	Collington Branch
WB319301	Fish Barrier	5	2	2	141879.08140	420166.93235	Collington Branch
WB321301	Representative Site				142304.69260	421675.64014	Collington Branch
WB321302	Fish Barrier	5	1	3	142351.98273	421686.31856	Collington Branch
WB321303	Trash Dumping	5	2	1	142455.71592	421725.98125	Collington Branch
WB321304	Fish Barrier	5	5	1	142417.57872	421901.41239	Collington Branch
WB321305	Pipe Outfall	3	3	1	142368.76310	421994.46717	Collington Branch
WB322301	Pipe Outfall	3	3	1	142419.10421	422136.33757	Collington Branch
WB322302	Pipe Outfall	5	1	1	142394.69640	422261.42760	Collington Branch
WB323301	Trash Dumping	3	1	2	141793.65406	420008.28158	Collington Branch
WB323301	Unusual Condition	3	5	2	141799.75601	420031.16391	Collington Branch
WB324301	Fish Barrier	3	4	2	141694.47222	420403.15791	Collington Branch
WB324302	Fish Barrier	3	5	3	141604.40237	420544.02696	Collington Branch
WB324303	Representative Site				141532.91836	420666.97946	Collington Branch
WB324304	Fish Barrier	5	2	3	141511.47316	420685.56530	Collington Branch
WB324305	Inadequate Buffer	3	2	3	141504.32476	420692.71370	Collington Branch
WB324306	Pipe Outfall	3	3	3	141474.30147	420711.29955	Collington Branch
WB324307	Unusual Condition	5	5	3	141467.15307	420714.15891	Collington Branch
WB324308	Fish Barrier	3	5	2	141315.65458	420791.34560	Collington Branch
WB325301	Unusual Condition	3	5	3	141797.40920	421674.90401	Collington Branch
WB325302	Inadequate Buffer	4	2	3	141828.86216	421676.33369	Collington Branch
WB327301	Trash Dumping	3	4	3	141255.56040	420851.40821	Collington Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB328301	Representative Site				140949.60883	421444.72550	Collington Branch
WB328302	Inadequate Buffer	5	1	2	140963.90563	421463.31134	Collington Branch
WB328303	Unusual Condition	5	5	1	140956.75723	421644.88073	Collington Branch
WB328304	Fish Barrier	3	5	1	140943.89011	421677.76337	Collington Branch
WB328305	Pipe Outfall	5	2	1	140943.89011	421679.19305	Collington Branch
WB328306	Fish Barrier	3	2	1	140805.21113	421726.37250	Collington Branch
WB328306	Unusual Condition	3	5	1	140803.78145	421726.37250	Collington Branch
WB328307	Fish Barrier	5	2	2	140666.53215	422028.03502	Collington Branch
WB329301	Pipe Outfall	3	5	1	141134.03758	422171.00305	Collington Branch
WB330301	Trash Dumping	5	1	2	140503.54860	421267.44515	Collington Branch
WB330302	Fish Barrier	5	1	2	140457.79884	421276.02323	Collington Branch
WB330303	Fish Barrier	5	1	2	140422.05683	421397.54605	Collington Branch
WB330304	Representative Site				140593.61846	422055.19895	Collington Branch
WB330305	Inadequate Buffer	2	1	1	140317.69018	422039.47247	Collington Branch
WB330306	Inadequate Buffer	4	1	2	140044.62126	421573.39672	Collington Branch
WB331301	Fish Barrier	5	2	3	140506.40796	422079.50351	Collington Branch
WB331302	Fish Barrier	5	2	3	140430.63491	422100.94871	Collington Branch
WB331303	Pipe Outfall	3	3	2	140289.09657	422168.14368	Collington Branch
WB331304	Fish Barrier	3	2	2	140409.18971	422178.15145	Collington Branch
WB331305	Pipe Outfall	3	3	2	140444.93172	422202.45601	Collington Branch
WB331306	Fish Barrier	5	3	1	140512.12669	422333.98659	Collington Branch
WB331307	Fish Barrier	4	2	2	140056.05870	422115.24552	Collington Branch
WB333301	Trash Dumping	5	1	2	140018.88701	421683.48209	Collington Branch
WB334301	Fish Barrier	5	2	2	139891.64547	422315.40075	Collington Branch
WB334301	Unusual Condition	3	5	1	139434.34272	422849.44685	Collington Branch
WB334302	Representative Site				139807.29434	422364.00987	Collington Branch
WB334304	Pipe Outfall	3	3	1	139782.98978	422408.32996	Collington Branch
WB334305	Fish Barrier	5	1	1	139775.84138	422436.92357	Collington Branch
WB334402	Fish Barrier	5	1	2	139489.90533	422575.60255	Collington Branch
WB334403	Trash Dumping	5	1	1	139755.82585	422504.11854	Collington Branch
WB334404	Exposed Pipe	4	1	1	139760.11489	422455.50941	Collington Branch
WB336101	Fish Barrier	4	3	1	138896.58804	421889.35604	Collington Branch
WB337401	Representative Site				138968.07205	422634.21944	Collington Branch
WB337402	Pipe Outfall	3	3	1	139338.35923	422945.88972	Collington Branch
WB337403	Pipe Outfall	3	1	1	139416.99164	422695.69568	Collington Branch
WB337404	Fish Barrier	4	1	2	139103.89167	422474.09525	Collington Branch
WB337405	Construction	4			139122.47752	422336.84595	Collington Branch
WB339101	Fish Barrier	5	1	1	138726.45610	421516.20951	Collington Branch
WB340101	Construction	2			138727.88578	422231.04961	Collington Branch
WB340102	Fish Barrier	3	5	2	138336.15340	422665.67240	Collington Branch
WB340401	Pipe Outfall	5	1	1	138313.27851	422944.46004	Collington Branch
WB340402	Erosion	3	1	2	138217.48994	422878.69475	Collington Branch
WB342101	Erosion	5	2	2	137714.24250	421011.53239	Collington Branch
WB343101	Fish Barrier	5	1	2	137662.77402	421290.32003	Collington Branch
WB343102	Pipe Outfall	3	3	1	137751.41419	421391.82733	Collington Branch
WB343103	Fish Barrier	5	3	1	137672.78178	421566.24831	Collington Branch
WB343104	Erosion	1	4	1	137732.82835	421619.14648	Collington Branch
WB343105	Inadequate Buffer	4	3	1	137797.16396	421544.80311	Collington Branch
WB343106	Pipe Outfall	3	5	1	137818.60916	421524.78759	Collington Branch
WB343107	Pipe Outfall	3	3	1	138038.77991	421473.31910	Collington Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB343108	Pipe Outfall	5	1	1	137887.23381	421684.91177	Collington Branch
WB343401	Representative Site				137851.49181	421910.80125	Collington Branch
WB344401	Trash Dumping	2	3	4	137855.78085	422215.32313	Collington Branch
WB344402	Channel Alteration	4	1	1	137782.86716	422671.39112	Collington Branch
WB344403	Representative Site				137824.32788	422872.97603	Collington Branch
WB344404	Pipe Outfall	3	1	1	138090.24840	422388.31444	Collington Branch
WB344405	Fish Barrier	4	3	1	138164.59177	422652.80528	Collington Branch
WB345301	Pipe Outfall	5	5	1	137835.76532	423353.34858	Collington Branch
WB345302	Trash Dumping	5	1	1	137834.33564	423333.33306	Collington Branch
WB345303	Inadequate Buffer	3	1	2	137827.18724	423244.69289	Collington Branch
WB345304	Fish Barrier	5	1	2	137818.60916	423188.93536	Collington Branch
WB345305	Pipe Outfall	3	5	1	137798.59364	423137.46687	Collington Branch
WB345306	Fish Barrier	5	2	2	137790.01556	423107.44359	Collington Branch
WB345307	Trash Dumping	4	2	2	137781.43747	423054.54542	Collington Branch
WB347401	Fish Barrier	5	1	1	137015.12888	419899.24118	Collington Branch
WB349201	Inadequate Buffer	2	4	1	137258.17452	422032.32406	Collington Branch
WB350201	Pipe Outfall	3	3	1	137255.31516	422130.97200	Collington Branch
WB350203	Inadequate Buffer	3	3	1	137261.03388	422191.01857	Collington Branch
WB350204	Pipe Outfall	5	1	1	137202.41699	422306.82267	Collington Branch
WB350205	Pipe Outfall	5	1	1	137139.51106	422305.39299	Collington Branch
WB350206	Pipe Outfall	5	1	1	137046.58184	422388.31444	Collington Branch
WB350301	Pipe Outfall	3	3	1	137572.76669	422921.49278	Collington Branch
WB350302	Fish Barrier	5	2	2	137501.82204	422936.21714	Collington Branch
WB350303	Erosion	4	4	2	137515.20783	422933.53998	Collington Branch
WB351301	Pipe Outfall	3	3	2	137335.37725	422991.63949	Collington Branch
WB351302	Fish Barrier	5	2	1	137209.56539	423138.89655	Collington Branch
WB351303	Inadequate Buffer	4	2	1	137210.99507	423158.91207	Collington Branch
WB351304	Fish Barrier	5	2	1	137190.97955	423290.44265	Collington Branch
WB351305	Erosion	3	4	1	137172.39370	423327.61434	Collington Branch
WB351307	Fish Barrier	4	4	2	137199.55763	423530.62893	Collington Branch
WB351308	Fish Barrier	5	1	2	137216.71379	423603.54262	Collington Branch
WB351309	Pipe Outfall	3	3	2	137222.43251	423616.40974	Collington Branch
WB351310	Pipe Outfall	3	3	2	137282.47908	423705.04992	Collington Branch
WB351311	Inadequate Buffer	5	2	1	137312.50236	423763.66680	Collington Branch
WB351312	Pipe Outfall	5	2	2	137315.36172	423790.83073	Collington Branch
WB353401	Erosion	3	2	3	136926.48871	419893.52246	Collington Branch
WB354401	Fish Barrier	4	1	1	136823.55173	420994.37623	Collington Branch
WB354402	Exposed Pipe	5	1	1	136824.98141	420994.37623	Collington Branch
WB354403	Representative Site				136873.59054	420901.44701	Collington Branch
WB354404	Trash Dumping	3	1	1	136876.44990	420877.14245	Collington Branch
WB354405	Erosion	3	1	1	136875.02022	420861.41597	Collington Branch
WB354408	Inadequate Buffer	2	2	3	136749.20836	420488.26943	Collington Branch
WB355201	Pipe Outfall	3	2	1	136739.95985	421995.51156	Collington Branch
WB356201	Erosion	3	3	3	136504.73304	422854.39019	Collington Branch
WB356201	Pipe Outfall	3	3	1	136573.35769	422617.06327	Collington Branch
WB356202	Pipe Outfall	3	3	1	136627.68554	422537.00118	Collington Branch
WB356203	Inadequate Buffer	2	3	1	136646.27138	422531.28246	Collington Branch
WB356204	Pipe Outfall	3	3	1	136710.60699	422349.71307	Collington Branch
WB356205	Pipe Outfall	5	1	1	136683.44307	422349.71307	Collington Branch
WB356206	Pipe Outfall	3	3	1	136723.47412	422282.51810	Collington Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB356207	Exposed Pipe	5	1	1	136722.04444	422281.08842	Collington Branch
WB356208	Pipe Outfall	3	3	1	136770.65356	422168.14368	Collington Branch
WB356209	Pipe Outfall	5	1	1	136797.81749	422095.22999	Collington Branch
WB356210	Pipe Outfall	5	1	1	136952.22295	422697.12536	Collington Branch
WB356211	Trash Dumping	3	2	1	136799.24717	422872.97603	Collington Branch
WB356212	Representative Site				136524.74857	422862.96827	Collington Branch
WB356301	Fish Barrier	3	4	3	136544.76409	422741.44545	Collington Branch
WB356302	Fish Barrier	4	3	3	136567.63897	422688.54728	Collington Branch
WB357302	Erosion	3	4	2	136882.16862	423024.52213	Collington Branch
WB357303	Fish Barrier	5	2	3	136829.27045	423033.10022	Collington Branch
WB357304	Erosion	3	3	1	136926.48871	423466.29332	Collington Branch
WB357305	Fish Barrier	5	3	2	136926.48871	423447.70748	Collington Branch
WB357306	Fish Barrier	5	1	2	136915.05126	423379.08283	Collington Branch
WB357308	Fish Barrier	5	1	2	136932.20743	423124.59975	Collington Branch
WB358201	Trash Dumping	4	4	2	135771.61742	419668.28920	Collington Branch
WB358202	Fish Barrier	4	1	2	135860.16560	419962.80815	Collington Branch
WB358203	Pipe Outfall	3	3	2	135869.79040	419980.13279	Collington Branch
WB358401	Representative Site				136239.57886	420203.31488	Collington Branch
WB359301	Fish Barrier	5	1	4	136108.78588	420487.41369	Collington Branch
WB359303	Erosion	3	4	3	136061.83837	420285.99374	Collington Branch
WB360301	Trash Dumping	3	3	3	135939.16908	421721.67882	Collington Branch
WB360302	Erosion	4	3	3	135907.36593	421848.89142	Collington Branch
WB361201	Erosion	3	3	4	136201.16646	422816.61586	Collington Branch
WB363301	Fish Barrier	5	3	3	135225.86985	419996.73651	Collington Branch
WB363302	Fish Barrier	5	4	2	135192.55226	419407.62101	Collington Branch
WB364101	Representative Site				135353.08245	420491.95700	Collington Branch
WB364102	Erosion	3	4	3	135189.52339	420688.83365	Collington Branch
WB364202	Trash Dumping	3	2	3	135386.67232	420483.05962	Collington Branch
WB365301	Unusual Condition	4	5	3	135539.35804	421971.56072	Collington Branch
WB366201	Representative Site				135684.99005	422721.92030	Collington Branch
WB366202	Erosion	3	4	4	135527.78610	422595.24139	Collington Branch
WB366203	Fish Barrier	5	2	2	135526.25985	422676.13274	Collington Branch
WB366204	Pipe Outfall	3	3	4	135333.95211	422937.12182	Collington Branch
WB366205	Fish Barrier	5	4	4	135347.68838	422947.80558	Collington Branch
WB366302	Fish Barrier	5	1	3	135474.36729	422256.41348	Collington Branch
WB366303	Fish Barrier	5	1	2	135388.89718	422428.87994	Collington Branch
WB367201	Erosion	3	3	3	135654.46501	423541.51756	Collington Branch
WB367202	Pipe Outfall	3	3	3	135626.99247	423570.51635	Collington Branch
WB367203	Erosion	3	4	3	135500.31357	423646.82894	Collington Branch
WB367204	Pipe Outfall	3	4	1	135405.68595	423668.19647	Collington Branch
WB367205	Pipe Outfall	3	3	3	135735.35636	423457.57371	Collington Branch
WB367206	Trash Dumping	5	2	1	135338.99911	423187.29918	Collington Branch
WB369101	Inadequate Buffer	2	1	3	134647.13877	420110.50333	Collington Branch
WB370101	Erosion	4	3	4	134940.17913	421113.25082	Collington Branch
WB370104	Trash Dumping	3	1	3	134880.65530	420441.69999	Collington Branch
WB371101	Representative Site				134761.28684	421329.71814	Collington Branch
WB371102	Erosion	3	3	3	134569.41896	421499.08299	Collington Branch
WB372201	Representative Site				134790.84689	422362.76760	Collington Branch
WB372301	Pipe Outfall	3	3	3	135155.97263	422582.37221	Collington Branch
WB373201	Pipe Outfall	3	3	1	135002.51398	423233.24852	Collington Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB373202	Trash Dumping	4	2	1	135018.38902	423243.83187	Collington Branch
WB373203	Pipe Outfall	3	3	2	135097.76418	423225.31100	Collington Branch
WB374401	Pipe Outfall	3	3	1	134241.83537	419776.46033	Collington Branch
WB374402	Construction	3			134124.09555	419658.72051	Collington Branch
WB374403	Fish Barrier	4	1	2	134081.76214	419669.30386	Collington Branch
WB374404	Exposed Pipe	4	3	1	133933.59517	419751.32486	Collington Branch
WB375101	Erosion	3	1	4	134363.54395	421049.10872	Collington Branch
WB376301	Erosion	3	4	4	134188.91860	422094.21498	Collington Branch
WB376302	Trash Dumping	2	4	2	134158.49146	421850.79783	Collington Branch
WB377201	Erosion	3	3	1	133970.63691	422225.18399	Collington Branch
WB378201	Pipe Outfall	3	3	3	134073.82462	423443.59269	Collington Branch
WB379201	Pipe Outfall	3	3	2	134450.85663	424314.07360	Collington Branch
WB379202	Comment				134327.82513	424020.38551	Collington Branch
WB379203	Pipe Outfall	3	3	1	134265.64792	424036.26055	Collington Branch
WB380301	Pipe Outfall	3	3	1	133508.93807	419523.78274	Collington Branch
WB380302	Fish Barrier	5	3	2	133474.54217	419657.39759	Collington Branch
WB380401	Erosion	4	2	1	133782.78237	419781.75200	Collington Branch
WB380402	Representative Site				133637.26124	419801.59579	Collington Branch
WB382201	Erosion	3	4	1	133415.01080	422010.87106	Collington Branch
WB382301	Inadequate Buffer	3	5	1	133569.79236	421981.76684	Collington Branch
WB382302	Trash Dumping	4	2	1	133724.57392	421918.26671	Collington Branch
WB382303	Erosion	3	3	2	133773.52193	421783.32894	Collington Branch
WB382304	Fish Barrier	5	2	3	133924.33474	421449.95327	Collington Branch
WB382305	Channel Alteration	3	3	1	133751.03231	421905.03752	Collington Branch
WB383201	Representative Site				133560.53192	422282.06952	Collington Branch
WB384201	Erosion	1	5	4	133921.68890	423250.44647	Collington Branch
WB384203	Pipe Outfall	3	3	1	133584.34447	423331.14455	Collington Branch
WB386301	Fish Barrier	4	5	1	133172.91656	420169.36737	Collington Branch
WB386302	Comment				133088.24972	420048.98171	Collington Branch
WB387301	Pipe Outfall	3	5	2	132958.60363	420336.05520	Collington Branch
WB387302	Erosion	4	3	3	133060.46842	420310.91973	Collington Branch
WB387303	Trash Dumping	4	3	2	132846.15549	420788.49361	Collington Branch
WB387304	Pipe Outfall	3	3	2	132824.98878	420807.01448	Collington Branch
WB387305	Representative Site				132777.36368	420877.12920	Collington Branch
WB388101	Inadequate Buffer	5	5	3	133325.05228	421783.32894	Collington Branch
WB388102	Erosion	3	2	1	133322.40644	421782.00602	Collington Branch
WB388103	Erosion	1	5	4	133207.31246	421861.38118	Collington Branch
WB388301	Trash Dumping	3	2	2	133237.73961	422054.52740	Collington Branch
WB388302	Fish Barrier	5	4	2	133249.64588	421992.35019	Collington Branch
WB389302	Fish Barrier	5	3	3	132926.10943	422506.67642	Collington Branch
WB391301	Pipe Outfall	3	3	2	132529.23363	421003.92275	Collington Branch
WB392101	Representative Site				132626.38552	421727.39426	Collington Branch
WB392301	Pipe Outfall	5	5	1	132554.36910	421272.76476	Collington Branch
WB393401	Fish Barrier	4	3	3	132248.77473	422899.95553	Collington Branch
WB393402	Erosion	3	3	3	132226.28510	422906.57013	Collington Branch
WB393403	Erosion	3	4	3	132148.23286	422681.67384	Collington Branch
WB394401	Fish Barrier	4	5	1	132496.22092	423376.95861	Collington Branch
WB394402	Fish Barrier	5	1	4	132334.83674	423083.40636	Collington Branch
WB395101	Trash Dumping	5	1	2	131765.89831	421127.77195	Collington Branch
WB395102	Representative Site				131774.01617	421090.42980	Collington Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB395103	Erosion	3	4	3	131772.39260	421062.82908	Collington Branch
WB395104	Fish Barrier	5	3	2	131827.59404	420962.16763	Collington Branch
WB395105	Inadequate Buffer	5	5	1	131861.68905	420884.23618	Collington Branch
WB395106	Pipe Outfall	3	3	1	131866.55977	420585.49895	Collington Branch
WB395107	Fish Barrier	5	4	1	131887.66620	420475.09607	Collington Branch
WB395108	Pipe Outfall	3	3	2	131931.50264	420434.50677	Collington Branch
WB395109	Pipe Outfall	5	1	1	131957.47979	420418.27105	Collington Branch
WB395210	Erosion	1	5	1	131764.27474	420996.26263	Collington Branch
WB395211	Fish Barrier	5	3	1	131715.56758	420669.92469	Collington Branch
WB395212	Fish Barrier	5	3	1	131718.81473	420590.36967	Collington Branch
WB395213	Erosion	3	2	1	131769.14546	420465.35464	Collington Branch
WB395214	Inadequate Buffer	3	2	1	131752.90974	420281.89102	Collington Branch
WB396101	Representative Site				131752.90974	421955.79360	Collington Branch
WB396101	Trash Dumping	5	2	2	131733.06667	421427.76845	Collington Branch
WB396102	Trash Dumping	4	3	4	131645.75399	421947.67574	Collington Branch
WB397401	Inadequate Buffer	5	1	2	131757.54654	422972.84927	Collington Branch
WB397402	Unusual Condition	1	4	1	131517.80668	422597.17444	Collington Branch
WB397403	Representative Site				131564.76604	422592.23135	Collington Branch
WB397404	Erosion	3	3	3	131606.78230	422592.23135	Collington Branch
WB398401	Inadequate Buffer	2	3	1	131595.30199	423636.85279	Collington Branch
WB398402	Erosion	2	5	3	131591.24274	423435.24351	Collington Branch
WB398403	Trash Dumping	3	4	3	131549.29719	423393.29795	Collington Branch
WB399101	Pipe Outfall	3	3	1	131327.27381	421073.99604	Collington Branch
WB399102	Erosion	2	4	3	131333.45968	421080.18190	Collington Branch
WB399103	Trash Dumping	5	1	2	131349.95532	421141.00958	Collington Branch
WB400101	Erosion	3	3	4	131290.41637	421972.36412	Collington Branch
WB400101	Fish Barrier	3	3	1	131470.83744	421489.09338	Collington Branch
WB400102	Erosion	3	3	2	131340.67652	421509.71294	Collington Branch
WB400103	Fish Barrier	5	1	3	131246.59982	421491.67083	Collington Branch
WB400104	Comment				131177.00883	421441.41067	Collington Branch
WB400104	Fish Barrier	3	4	1	131177.00883	421441.41067	Collington Branch
WB400105	Fish Barrier	4	5	1	131046.84791	421206.86327	Collington Branch
WB400106	Fish Barrier	5	1	3	131394.80285	421165.62417	Collington Branch
WB400107	Comment				131460.52767	421268.72193	Collington Branch
WB401102	Construction	3			130911.53210	422603.83789	Collington Branch
WB401102	Unusual Condition	2	5	1	130910.24338	422603.83789	Collington Branch
WB401401	Channel Alteration	1	3	2	131430.88706	422601.26045	Collington Branch
WB402101	Construction	1			130939.88399	423053.60186	Collington Branch
WB402401	Fish Barrier	5	2	3	131343.25397	423328.09964	Collington Branch
WB402402	Fish Barrier	5	2	3	131253.04343	423567.80193	Collington Branch
WB402403	Construction	1			131267.21937	423268.81843	Collington Branch
WB402404	Inadequate Buffer	1	5	2	131268.50809	423268.81843	Collington Branch
WB402405	Representative Site				131233.71260	423240.46655	Collington Branch
WB402406	Fish Barrier	4	1	2	131179.58628	423110.30563	Collington Branch
WB404201	Fish Barrier	5	3	3	130304.54405	421523.88888	Collington Branch
WB404202	Erosion	2	3	3	130298.10044	421492.95955	Collington Branch
WB404203	Trash Dumping	4	3	2	130580.33056	421169.49033	Collington Branch
WB404204	Erosion	3	3	1	130634.45688	421222.32794	Collington Branch
WB404205	Trash Dumping	4	3	2	130829.05390	421547.08587	Collington Branch
WB404206	Fish Barrier	4	2	2	130785.23735	421632.14152	Collington Branch

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Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB405101	Representative Site				130389.59971	422503.31758	Collington Branch
WB405102	Construction	2			130855.92490	422591.22481	Collington Branch
WB405102	Fish Barrier	3	3	4	130854.82834	422590.95067	Collington Branch
WB405201	Representative Site				130676.98471	422175.98220	Collington Branch
WB406101	Inadequate Buffer	4	1	1	130639.61177	423690.23052	Collington Branch
WB406102	Fish Barrier	5	2	1	130655.07643	423597.44253	Collington Branch
WB406103	Fish Barrier	5	1	2	130669.25237	423544.60493	Collington Branch
WB406104	Erosion	2	3	2	130670.54110	423535.58388	Collington Branch
WB407201	Erosion	3	3	2	129866.37858	421996.84984	Collington Branch
WB407202	Pipe Outfall	3	3	3	129988.80717	421982.67390	Collington Branch
WB407203	Trash Dumping	5	2	2	130243.97412	421428.52345	Collington Branch
WB407204	Construction	4			130210.46735	421364.08735	Collington Branch
WB408101	Erosion	3	3	4	129995.25078	422978.85599	Collington Branch
WB408102	Fish Barrier	5	1	3	130048.08838	422562.59879	Collington Branch
WB408103	Fish Barrier	5	2	3	130122.83426	422428.57170	Collington Branch
WB408105	Fish Barrier	5	1	3	130173.09441	422348.67094	Collington Branch
WB409101	Trash Dumping	5	1	2	130063.55305	423128.34774	Collington Branch
WB409102	Trash Dumping	1	1	2	130048.08838	423062.62292	Collington Branch
WB410301	Representative Site				129599.61313	422043.24383	Collington Branch
WB411301	Representative Site				129325.11535	422941.48305	Collington Branch
WB411302	Fish Barrier	5	1	3	129072.52585	422578.06345	Collington Branch
WB411303	Pipe Outfall	3	3	2	129162.73639	422242.99574	Collington Branch
WB411304	Unusual Condition	5	5	4	129505.53643	422099.94760	Collington Branch
WB411309	Comment				129343.15746	422973.70110	Collington Branch
WB412301	Pipe Outfall	3	3	1	129519.71237	423368.05002	Collington Branch
WB412302	Erosion	3	4	1	129515.84621	423356.45153	Collington Branch
WB412303	Erosion	1	5	1	129510.05785	423328.71132	Collington Branch
WB412304	Fish Barrier	5	1	1	129509.85088	423322.81907	Collington Branch
WB412305	Trash Dumping	4	1	1	129508.11387	423304.90265	Collington Branch
WB412306	Fish Barrier	5	4	2	129487.67950	423268.97428	Collington Branch
WB412307	Fish Barrier	5	1	3	129390.84017	423142.52368	Collington Branch
WB412308	Fish Barrier	5	1	3	129368.93190	423092.26352	Collington Branch
WB414201	Erosion	1	5	1	128908.85816	422334.49500	Collington Branch
WB414202	Trash Dumping	2	4	2	128876.64011	422529.09202	Collington Branch
WB414203	Fish Barrier	5	1	3	128904.99199	422732.71009	Collington Branch
WB414204	Fish Barrier	5	4	4	128934.63260	422847.40635	Collington Branch
WB414205	Erosion	3	5	1	128763.23257	422339.64989	Collington Branch
WB414206	Unusual Condition	3	3	1	128636.93782	422371.86794	Collington Branch
WB414207	Pipe Outfall	3	3	1	128631.78293	422364.13561	Collington Branch
WB414208	Trash Dumping	3	4	1	128627.91677	422396.35365	Collington Branch
WB414209	Unusual Condition	4	5	1	128631.78293	422444.03637	Collington Branch
WB414301	Erosion	4	4	2	128975.87170	422319.03034	Collington Branch
WB415201	Trash Dumping	3	4	2	128977.16042	423105.15074	Collington Branch
WB415202	Fish Barrier	5	3	1	128993.91381	423154.12218	Collington Branch
WB415203	Fish Barrier	5	1	1	128999.06869	423192.78383	Collington Branch
WB415204	Unusual Condition	5	5	2	129024.84313	423361.60641	Collington Branch
WB415205	Erosion	3	5	1	128647.24760	423333.25453	Collington Branch
WB417201	Representative Site				128274.80694	422170.82731	Collington Branch
WB417202	Inadequate Buffer	2	4	1	128218.10318	422762.35070	Collington Branch
WB417203	Inadequate Buffer	1	2	1	128131.75881	422102.52504	Collington Branch

Appendix A- Western Branch

Location	Problem	Severity	Correctability	Access	Northing	Easting	Stream
WB418201	Representative Site				128261.91972	423119.32668	Collington Branch
WB418202	Erosion	2	5	2	128255.47611	423161.85451	Collington Branch

Appendix B

Listing of sites by problem category

Pipe Outfalls- Western Branch

Problem	Site	Outfall type	Pipe type	Location	Diameter	Channel width	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	WB102101	Unknown	Plastic	Left Bank	18		Yes	Clear	Rotten eggs	3	1	1
Pipe Outfall	WB103104	Pumping Station	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	3
Pipe Outfall	WB106301	Stormwater	Concrete Pipe	Head of stream	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB106305	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	2
Pipe Outfall	WB109301	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB109304	Stormwater	Concrete Pipe	Right Bank	12		Yes	Clear	None	3	3	1
Pipe Outfall	WB110301	Stormwater	Concrete Pipe	Right Bank	18		Yes	Clear	None	3	3	2
Pipe Outfall	WB201305	Stormwater	Concrete Pipe	Left Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB201306	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB221404	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB227201	Stormwater	Concrete Pipe	Right Bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	WB227202	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB227206	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	2
Pipe Outfall	WB227207	Stormwater	Concrete Pipe	Head of stream	48		Yes	Clear	None	3	3	1
Pipe Outfall	WB232201	Stormwater	Concrete Pipe	Head of stream	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB232202	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB232203	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	2
Pipe Outfall	WB232205	Stormwater	Concrete Pipe	Right Bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	WB232207	Stormwater	Concrete Pipe	Left Bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	WB232209	Stormwater	Concrete Pipe	Left Bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	WB239405	Stormwater	Concrete Pipe	Right Bank	12		Yes	Clear	None	3	3	1
Pipe Outfall	WB243104	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB243105	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB243106	Stormwater	Concrete Pipe	Head of stream	48		Yes	Medium brown	None	3	5	1
Pipe Outfall	WB300204	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB302201	Stormwater	Concrete Pipe	Right Bank	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB307204	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	2
Pipe Outfall	WB308201	Stormwater	Concrete Pipe	Left Bank	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB308205	Stormwater	Concrete Pipe	Head of stream	36		Yes	Green	None	3	2	1
Pipe Outfall	WB308207	Stormwater	Concrete Pipe	Right Bank	48		Yes	Clear	None	3	3	1
Pipe Outfall	WB308208	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB314201	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB314202	Stormwater	Concrete Pipe	Left Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB314203	Stormwater	Concrete Pipe	Left Bank	18		Yes	Clear	None	3	3	1

Pipe Outfalls- Western Branch

Problem	Site	Outfall type	Pipe type	Location	Diameter	Channel width	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	WB314205	Stormwater	Concrete Pipe	Left Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB314207	Stormwater	Concrete Pipe	Right Bank	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB314209	Stormwater	Concrete Pipe	Left Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB314211	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB314213	Stormwater	Corrugated Metal	Left Bank	8		Yes	Clear	None	3	1	1
Pipe Outfall	WB316105	Stormwater	Concrete Pipe	Left Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB316106	Stormwater	Plastic	Left Bank	6		Yes	Clear	None	3	3	1
Pipe Outfall	WB321305	Stormwater	Concrete Pipe	Head of stream	12		Yes	Clear	None	3	3	1
Pipe Outfall	WB322301	Stormwater	Concrete Pipe	Head of stream	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB324306	Agricultural	Plastic	Right Bank	4		Yes	Clear	None	3	3	3
Pipe Outfall	WB329301	Stormwater	Concrete Pipe	Head of stream	48		Yes	Orange brown	None	3	5	1
Pipe Outfall	WB331303	Stormwater	Concrete Pipe	Left Bank	24		Yes	Clear	None	3	3	2
Pipe Outfall	WB331305	Stormwater	Concrete Pipe	Left Bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	WB334304	Stormwater	Concrete Pipe	Left Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB337402	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB343102	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB343106	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	Musky	3	5	1
Pipe Outfall	WB343107	Stormwater	Concrete Pipe	Head of stream	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB344404	Stormwater	Concrete Pipe	Head of stream	16	6	Yes	Yellow brown	Oily	3	1	1
Pipe Outfall	WB345301	Stormwater	Concrete Pipe	Head of stream	60		Yes	Clear	Fishy	3	5	1
Pipe Outfall	WB345305	Stormwater	Concrete Pipe	Right Bank	24		Yes	Green, cloudy	Rotten eggs	3	5	1
Pipe Outfall	WB350201	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB350301	Stormwater	Concrete Pipe	Left Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB351301	Stormwater	Concrete Pipe	Left Bank	18		Yes	Clear	None	3	3	2
Pipe Outfall	WB351309	Stormwater	Concrete Pipe	Left Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB351310	Stormwater	Concrete Pipe	Left Bank	48		Yes	Clear	None	3	3	2
Pipe Outfall	WB355201	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	2	1
Pipe Outfall	WB356201	Stormwater	Concrete Pipe	Right Bank	12		Yes	Clear	None	3	3	1
Pipe Outfall	WB356202	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB356204	Stormwater	Concrete Pipe	Left Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB356206	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB356208	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB358203	Pond runoff	Plastic	Right Bank	12		Yes	Clear	None	3	3	2
Pipe Outfall	WB366204	Stormwater	Corrugated Metal	Left Bank	36		Yes	Clear	None	3	3	4

Pipe Outfalls- Western Branch

Problem	Site	Outfall type	Pipe type	Location	Diameter	Channel width	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	WB367202	Stormwater	Corrugated Metal	Left Bank	12		Yes	Clear	None	3	3	3
Pipe Outfall	WB367204	Stormwater	Concrete Pipe	Head of stream	36		Yes	Red flock	None	3	4	1
Pipe Outfall	WB367205	Stormwater	Corrugated Metal	Left Bank	24		Yes	Clear	None	3	3	3
Pipe Outfall	WB372301	Stormwater	Concrete Pipe	Left Bank	12		Yes	Clear	None	3	3	3
Pipe Outfall	WB373201	Stormwater	Concrete Pipe	Head of stream	50		Yes	Clear	None	3	3	1
Pipe Outfall	WB373203	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB374401	Stormwater	Concrete Pipe	Head of stream	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB378201	Stormwater	Corrugated Metal	Right Bank	24		Yes	Clear	None	3	3	3
Pipe Outfall	WB379201	Stormwater	Concrete Pipe	Head of stream	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB379203	Stormwater	Corrugated Metal	Right Bank	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB380301	Stormwater	Concrete Pipe	Right Bank	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB384203	Stormwater	Concrete Pipe	Right Bank	18		Yes	Clear	None	3	3	1
Pipe Outfall	WB387301	Stormwater	Concrete Pipe	Right Bank	36		Yes	Chalky white	None	3	5	2
Pipe Outfall	WB387304	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	2
Pipe Outfall	WB391301	Stormwater	Concrete Pipe	Right Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB395106	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	1
Pipe Outfall	WB395108	Stormwater	Smooth Metal Pipe	Left Bank	4		Yes	Clear	None	3	3	2
Pipe Outfall	WB399101	Stormwater	Smooth Metal Pipe	Right Bank	4		Yes	Clear	None	3	3	1
Pipe Outfall	WB407202	Stormwater	Concrete Pipe	Right Bank	24		Yes	Clear	None	3	3	3
Pipe Outfall	WB411303	Agricultural	Concrete Pipe	Left Bank	36		Yes	Clear	None	3	3	2
Pipe Outfall	WB412301	Stormwater	Corrugated Metal	Left Bank	12		Yes	Clear	None	3	3	1
Pipe Outfall	WB414207	Stormwater	Corrugated Metal	Left Bank	36		Yes	Clear	None	3	3	1
Pipe Outfall	WB102103	Unknown	Plastic	Left Bank	8		No			5	1	1
Pipe Outfall	WB106304	Stormwater	Concrete Pipe	Right Bank	18		No			5	5	1
Pipe Outfall	WB108302	Stormwater	Concrete Pipe	Left Bank	24		No			5	1	1
Pipe Outfall	WB113201	Stormwater	Concrete Pipe	Head of stream	24		No			5	1	1
Pipe Outfall	WB201301	Stormwater	Concrete Pipe	Right Bank	24		No			5	1	1
Pipe Outfall	WB201302	Stormwater	Concrete Pipe	Left Bank	36		No			5	1	1
Pipe Outfall	WB201303	Stormwater	Concrete Pipe	Right Bank	18		No			5	1	1
Pipe Outfall	WB201304	Stormwater	Concrete Pipe	Right Bank	18		No			5	1	1
Pipe Outfall	WB212401	Stormwater	Plastic	Right Bank	12		No			5	1	3
Pipe Outfall	WB232208	Stormwater	Concrete Pipe	Left Bank	24		No			5	4	2
Pipe Outfall	WB232210	Stormwater	Rip rap	Head of stream		2	No			5	1	2
Pipe Outfall	WB303201	Stormwater	Concrete Pipe	Left Bank	24		No			5	1	1

Pipe Outfalls- Western Branch

Problem	Site	Outfall type	Pipe type	Location	Diameter	Channel width	Discharge	Color	Odor	Severity	Correctability	Access
Pipe Outfall	WB307201	Stormwater	Concrete Pipe	Head of stream	18		No			5	1	2
Pipe Outfall	WB307202	Stormwater	Concrete Pipe	Left Bank	18		No			5	1	2
Pipe Outfall	WB307203	Stormwater	Concrete Pipe	Right Bank	24		No			5	1	2
Pipe Outfall	WB307206	Stormwater	Concrete Pipe	Right Bank	12		No			5	1	2
Pipe Outfall	WB308204	Stormwater	Corrugated Metal	Left Bank	6		No			5	1	1
Pipe Outfall	WB308209	Stormwater	Corrugated Metal	Right Bank	6		No			5	1	1
Pipe Outfall	WB312101	Stormwater	Concrete Channel	Head of stream		4	No			5	1	1
Pipe Outfall	WB313201	Stormwater	Concrete Pipe	Head of stream	12		No			5	1	2
Pipe Outfall	WB314204	Stormwater	Corrugated Metal	Left Bank	12		No			5	1	1
Pipe Outfall	WB314208	Stormwater	Corrugated Metal	Right Bank	12		No			5	1	1
Pipe Outfall	WB314210	Stormwater	Corrugated Metal	Left Bank	12		No			5	1	1
Pipe Outfall	WB314212	Stormwater	Corrugated Metal	Left Bank	8		No			5	1	1
Pipe Outfall	WB322302	Stormwater	Concrete Pipe	Left Bank	18		No			5	1	1
Pipe Outfall	WB328305	Stormwater	Concrete Pipe	Right Bank	18		No			5	2	1
Pipe Outfall	WB337403	Stormwater	Concrete Pipe	Left Bank	24		No			5	1	1
Pipe Outfall	WB340401	Stormwater	Corrugated Metal	Head of stream	24		No			5	1	1
Pipe Outfall	WB343108	Stormwater	Plastic	Head of stream	6		No			5	1	1
Pipe Outfall	WB350204	Stormwater	Concrete Pipe	Left Bank	12		No			5	1	1
Pipe Outfall	WB350205	Stormwater	Concrete Pipe	Right Bank	24		No			5	1	1
Pipe Outfall	WB350206	Stormwater	Concrete Pipe	Right Bank	12		No			5	1	1
Pipe Outfall	WB351312	Stormwater	Plastic	Right Bank	6		No			5	2	2
Pipe Outfall	WB356205	Stormwater	Concrete Pipe	Right Bank	12		No			5	1	1
Pipe Outfall	WB356209	Stormwater	Concrete Pipe	Left Bank	12		No			5	1	1
Pipe Outfall	WB356210	Stormwater	Concrete Pipe	Right Bank	24		No			5	1	1
Pipe Outfall	WB392301	Stormwater	Concrete Pipe	Right Bank	18		No			5	5	1
Pipe Outfall	WB395109	Unknown	Plastic	Left Bank	4		No			5	1	1

Fish Barriers- Western Branch

Problem	Site	Blockage	Type	Because	Water drop	Water depth	Severity	Correctability	Access
Fish Barrier	WB243102	Total	Channelized	Too High	48		3	4	2
Fish Barrier	WB308206	Total	Instream Pond	Too High	72		3	5	1
Fish Barrier	WB324301	Total	Road Crossing	Too High	24		3	4	2
Fish Barrier	WB324302	Total	Road Crossing	Too High	24		3	5	3
Fish Barrier	WB324308	Total	Road Crossing	Too High/Shallow	36		3	5	2
Fish Barrier	WB328304	Total	Road Crossing	Too High/Fast	6		3	5	1
Fish Barrier	WB328306	Total	Dam	Too High	24		3	2	1
Fish Barrier	WB331304	Total	Weir	Too High	24		3	2	2
Fish Barrier	WB340102	Total	Railroad Crossing	Too High	8		3	5	2
Fish Barrier	WB356301	Total	Railroad Crossing	Too High	24		3	4	3
Fish Barrier	WB400101	Total	Road Crossing	Too High	24		3	3	1
Fish Barrier	WB400104	Total	Road Crossing	Too High	36		3	4	1
Fish Barrier	WB405102	Total	Dam	Too High	36		3	3	4
Fish Barrier	WB103101	Total	Road Crossing	Too High	24		4	1	1
Fish Barrier	WB112402	Total	Road Crossing	Too Fast			4	4	2
Fish Barrier	WB221401	Total	Road Crossing	Too High	36		4	4	2
Fish Barrier	WB227205	Total	Instream Pond	Too High	72		4	4	1
Fish Barrier	WB232204	Total	Instream Pond	Too High	72		4	4	1
Fish Barrier	WB306205	Total	Instream Pond	Too Shallow		0.5	4	3	4
Fish Barrier	WB307210	Partial	Channelized	Too Fast			4	4	1
Fish Barrier	WB308203	Total	Road Crossing	Too High	12		4	5	1
Fish Barrier	WB314206	Total	Dam	Too High	36		4	5	2
Fish Barrier	WB331307	Partial	Pipe Crossing	Too High	36		4	2	2
Fish Barrier	WB336101	Total	Road Crossing	Too High	60		4	3	1
Fish Barrier	WB337404	Partial	Railroad Crossing	Too High	24		4	1	2
Fish Barrier	WB344405	Partial	Instream Pond	Too High	288		4	3	1
Fish Barrier	WB351307	Total	Grade change	Too High	84		4	4	2
Fish Barrier	WB354401	Total	Road Crossing	Too High	24		4	1	1
Fish Barrier	WB356302	Partial	Channelized	Too High	18		4	3	3
Fish Barrier	WB358202	Partial	Instream Pond	Too High	40		4	1	2
Fish Barrier	WB374403	Partial	Dam	Too High	5		4	1	2
Fish Barrier	WB386301	Total	Instream Pond	Too High	144		4	5	1
Fish Barrier	WB393401	Total	Dam	Too High	24		4	3	3
Fish Barrier	WB394401	Total	Road Crossing	Too Shallow		1	4	5	1

Fish Barriers- Western Branch

Problem	Site	Blockage	Type	Because	Water drop	Water depth	Severity	Correctability	Access
Fish Barrier	WB400105	Total	Road Crossing	Too High	48		4	5	1
Fish Barrier	WB402406	Total	Dam	Too High	36		4	1	2
Fish Barrier	WB404206	Partial	Dam	Too High	30		4	2	2
Fish Barrier	WB105102	Temporary	Beaver Dam	Too Shallow		0.25	5	1	1
Fish Barrier	WB105103	Temporary	Beaver Dam	Too High	42		5	1	1
Fish Barrier	WB111202	Partial	Wetland	Too Shallow		0.25	5	4	3
Fish Barrier	WB215204	Temporary	Debris Dam	Too High	4		5	1	1
Fish Barrier	WB232206	Total	Instream Pond	Too High	72		5	4	2
Fish Barrier	WB232211	Total	Instream Pond	Too High	72		5	5	1
Fish Barrier	WB239404	Temporary	Beaver Dam	Too High	18		5	1	1
Fish Barrier	WB239407	Temporary	Beaver Dam	Too High	36		5	2	2
Fish Barrier	WB300202	Total	Road Crossing	Too Shallow		1	5	5	1
Fish Barrier	WB305201	Temporary	Beaver Dam	Too High	12		5	1	2
Fish Barrier	WB305202	Temporary	Beaver Dam	Too High	36		5	1	3
Fish Barrier	WB307205	Total	Channelized	Too High	24		5	4	2
Fish Barrier	WB307207	Total	Natural Falls	Too High	7		5	2	3
Fish Barrier	WB307209	Temporary	Beaver Dam	Too High	36		5	4	2
Fish Barrier	WB313301	Temporary	Beaver Dam	Too High	36		5	2	3
Fish Barrier	WB316103	Temporary	Debris Dam	Too Shallow		0.25	5	1	2
Fish Barrier	WB316104	Temporary	Debris Dam	Too Shallow		0.25	5	2	2
Fish Barrier	WB317301	Temporary	Beaver Dam	Too High	60		5	2	2
Fish Barrier	WB319301	Temporary	Debris Dam	Too High	24		5	2	2
Fish Barrier	WB321302	Temporary	Debris Dam	Too High	18		5	1	3
Fish Barrier	WB321304	Total	Instream Pond	Too High	36		5	5	1
Fish Barrier	WB324304	Temporary	Debris Dam	Too High	12		5	2	3
Fish Barrier	WB328307	Temporary	Debris Dam	Too High	24		5	2	2
Fish Barrier	WB330302	Temporary	Debris Dam	Too High	18		5	1	2
Fish Barrier	WB330303	Temporary	Debris Dam	Too High	18		5	1	2
Fish Barrier	WB331301	Temporary	Debris Dam	wide	18		5	2	3
Fish Barrier	WB331302	Temporary	Beaver Dam	Too High	36		5	2	3
Fish Barrier	WB331306	Total	Channelized	Too High	60		5	3	1
Fish Barrier	WB334301	Temporary	Beaver Dam	Too High	24		5	2	2
Fish Barrier	WB334305	Temporary	Debris Dam	Too High	36		5	1	1
Fish Barrier	WB334402	Temporary	Beaver Dam	Too High	36		5	1	2

Fish Barriers- Western Branch

Problem	Site	Blockage	Type	Because	Water drop	Water depth	Severity	Correctability	Access
Fish Barrier	WB339101	Total	Road Crossing	Too High	12		5	1	1
Fish Barrier	WB343101	Total	Dam	Too High	15		5	1	2
Fish Barrier	WB343103	Temporary	Beaver Dam	Too High	36		5	3	1
Fish Barrier	WB345304	Temporary	Debris Dam	Too High	24		5	1	2
Fish Barrier	WB345306	Temporary	Debris Dam	Too High	24		5	2	2
Fish Barrier	WB347401	Temporary	Debris Dam	Too High	48		5	1	1
Fish Barrier	WB350302	Temporary	Debris Dam	Too High	36		5	2	2
Fish Barrier	WB351302	Total	Natural Falls	Too High	36		5	2	1
Fish Barrier	WB351304	Temporary	Debris Dam	Too High	24		5	2	1
Fish Barrier	WB351308	Temporary	Debris Dam	Too High	36		5	1	2
Fish Barrier	WB357303	Temporary	Debris Dam	Too High/Fast	24		5	2	3
Fish Barrier	WB357305	Total	Grade change	Too High	60		5	3	2
Fish Barrier	WB357306	Temporary	Debris Dam	Too High	24		5	1	2
Fish Barrier	WB357308	Temporary	Debris Dam	Too Shallow		1	5	1	2
Fish Barrier	WB359301	Temporary	Debris Dam	Too Shallow		0.25	5	1	4
Fish Barrier	WB363301	Temporary	Debris Dam	Too High	36		5	3	3
Fish Barrier	WB363302	Temporary	Debris Dam	Too High	24		5	4	2
Fish Barrier	WB366203	Temporary	Beaver Dam	Too High	48		5	2	2
Fish Barrier	WB366205	Temporary	Debris Dam	Too High	48		5	4	4
Fish Barrier	WB366302	Temporary	Debris Dam	Too High	18		5	1	3
Fish Barrier	WB366303	Temporary	Debris Dam	Too High	18		5	1	2
Fish Barrier	WB380302	Total	Channelized	Too High	24		5	3	2
Fish Barrier	WB382304	Temporary	Debris Dam	Too High	24		5	2	3
Fish Barrier	WB388302	Temporary	Beaver Dam	Too High	36		5	4	2
Fish Barrier	WB389302	Temporary	Debris Dam	Too High	36		5	3	3
Fish Barrier	WB394402	Temporary	Debris Dam	Too Shallow		0.25	5	1	4
Fish Barrier	WB395104	Temporary	Debris Dam	Too High	36		5	3	2
Fish Barrier	WB395107	Temporary	Debris Dam	Too High	50		5	4	1
Fish Barrier	WB395211	Total	Road Crossing	Too High	180		5	3	1
Fish Barrier	WB395212	Total	Road Crossing	Too High	120		5	3	1
Fish Barrier	WB400103	Temporary	Debris Dam	Too High	9		5	1	3
Fish Barrier	WB400106	Temporary	Debris Dam	Too High	26		5	1	3
Fish Barrier	WB402401	Total	Natural Falls	Too High	24		5	2	3
Fish Barrier	WB402402	Total	Natural Falls	Too High	12		5	2	3

Fish Barriers- Western Branch

Problem	Site	Blockage	Type	Because	Water drop	Water depth	Severity	Correctability	Access
Fish Barrier	WB404201	Partial	Natural Falls	Too High	24		5	3	3
Fish Barrier	WB406102	Temporary	Debris Dam	Too High	36		5	2	1
Fish Barrier	WB406103	Temporary	Debris Dam	Too High	40		5	1	2
Fish Barrier	WB408102	Temporary	Debris Dam	Too High	8		5	1	3
Fish Barrier	WB408103	Total	Natural Falls	Too High	46		5	2	3
Fish Barrier	WB408105	Temporary	Debris Dam	Too High	24		5	1	3
Fish Barrier	WB411302	Total	Natural Falls	Too High	40		5	1	3
Fish Barrier	WB412304	Total	Natural Falls	Too High	30		5	1	1
Fish Barrier	WB412306	Temporary	Natural Falls	Too High	36		5	4	2
Fish Barrier	WB412307	Temporary	Debris Dam	Too High	12		5	1	3
Fish Barrier	WB412308	Temporary	Debris Dam	Too High	18		5	1	3
Fish Barrier	WB414203	Temporary	Debris Dam	Too High	8		5	1	3
Fish Barrier	WB414204	Temporary	Debris Dam	Too High	30		5	4	4
Fish Barrier	WB415202	Total	Natural Falls	Too High	5		5	3	1
Fish Barrier	WB415203	Temporary	Debris Dam	Too High	18		5	1	1

Erosion- Western Branch

Problem	Site	Type	Cause	Length	Height	Land use left	Land use right	Infrastructure	Describe	Severity	Correctability	Access
Erosion	WB236403	Widening	Below Road Crossing	2800	6	Forest	Forest	No		1	5	2
Erosion	WB305204	Headcutting	Land use change	1000	10	Shrubs/Small Trees	Forest	Yes		1	3	2
Erosion	WB343104	Unknown	Unknown	1200	8	Lawn	Lawn	No		1	4	1
Erosion	WB384201	Widening	Unknown	9000	12	Forest	Forest	No		1	5	4
Erosion	WB388103	Widening	Unknown	6400	6	Forest	Forest	No		1	5	4
Erosion	WB395210	Widening	Unknown	1700	12	Forest	Forest	No		1	5	1
Erosion	WB412303	Downcutting	Below Road Crossing	1800	13	Paved	Forest	Yes	Gas Sation	1	5	1
Erosion	WB414201	Widening	Below Road Crossing	5000	10	Forest	Forest	No		1	5	1
Erosion	WB227204	Widening	Below Road Crossing	1200	6	Forest	Forest	No		2	3	3
Erosion	WB398402	Widening	Unknown	2000	8	Forest	Forest	No		2	5	3
Erosion	WB399102	Downcutting	Unknown	1500	6	Lawn	Forest	No		2	4	3
Erosion	WB404202	Downcutting	Unknown	1600	8	Forest	Forest	No		2	3	3
Erosion	WB406104	Widening	Unknown	2500	6	Forest	Forest	No		2	3	2
Erosion	WB418202	Widening	Below Road Crossing	3400	4	Forest	Forest	No		2	5	2
Erosion	WB112401	Widening	Unknown	1400	3	Forest	Forest	No		3	3	2
Erosion	WB239403	Widening	Unknown	1200	4	Forest	Forest	No		3	3	2
Erosion	WB243101	Widening	Unknown	2000	5	Forest	Forest	No		3	4	3
Erosion	WB340402	Unknown	Land use change	3300	4	Multiflora Rose	Shrubs/Small Trees	No		3	1	2
Erosion	WB351305	Widening	Below Road Crossing	1400	5	Forest	Paved	No		3	4	1
Erosion	WB353401	Downcutting	Below Road Crossing	2300	3	Shrubs/Small Trees	Shrubs/Small Trees	No		3	2	3
Erosion	WB354405	Widening	Below Road Crossing	350	6	Shrubs/Small Trees	Shrubs/Small Trees	No		3	1	1
Erosion	WB356201	Widening	Unknown	4300	4	Forest	Forest	No		3	3	3
Erosion	WB357302	Widening	Unknown	1300	5	Forest	Forest	No		3	4	2
Erosion	WB357304	Downcutting	Unknown	650	6	Lawn	Forest	No		3	3	1
Erosion	WB359303	Widening	Land use change	4300	5	Shrubs/Small Trees	Shrubs/Small Trees	No		3	4	3
Erosion	WB361201	Widening	Below Road Crossing	3200	6	Forest	Forest	No		3	3	4
Erosion	WB364102	Unknown	Unknown	2600	5	Forest	Forest	No		3	4	3
Erosion	WB366202	Widening	Unknown	1700	3	Forest	Forest	No		3	4	4
Erosion	WB367201	Widening	Below Road Crossing	4500	6	Forest	Forest	No		3	3	3
Erosion	WB367203	Widening	Land use change	350	30	Forest	Forest	No		3	4	3
Erosion	WB371102	Unknown	Unknown	3500	6	Forest	Forest	No		3	3	3
Erosion	WB375101	Unknown	Unknown	1800	3	Forest	Forest	No		3	1	4
Erosion	WB376301	Headcutting	Unknown	2350	5	Shrubs/Small Trees	Forest	No		3	4	4
Erosion	WB377201	Widening	Unknown	2200	3	Forest	Forest	No		3	3	1
Erosion	WB382201	Widening	Below Road Crossing	250	4	Forest	Forest	No		3	4	1
Erosion	WB382303	Downcutting	Unknown	1600	5	Forest	Forest	No		3	3	2
Erosion	WB388102	Widening	Unknown	300	6	railroad	Forest	Yes	Railroad	3	2	1
Erosion	WB393402	Widening	Unknown	1600	3	Forest	Forest	No		3	3	3

Erosion- Western Branch

Problem	Site	Type	Cause	Length	Height	Land use left	Land use right	Infrastructure	Describe	Severity	Correctability	Access
Erosion	WB393403	Downcutting	Unknown	1600	4	Forest	Forest	No		3	4	3
Erosion	WB395103	Widening	Unknown	1300	8	Forest	Forest	No		3	4	3
Erosion	WB395213	Widening	Unknown	400	6	Forest	Lawn			3	2	1
Erosion	WB397404	Downcutting	Unknown	400	8	Forest	Forest	No		3	3	3
Erosion	WB400101	Downcutting	Unknown	500	6	Forest	Forest	No		3	3	4
Erosion	WB400102	Widening	Land use change	600	4	Forest	Forest	No		3	3	2
Erosion	WB404204	Widening	Unknown	1600	3	Forest	Forest	No		3	3	1
Erosion	WB407201	Widening	Land use change	1400	4	Railroad	Forest	No		3	3	2
Erosion	WB408101	Widening		2000	4	Forest	Forest	No		3	3	4
Erosion	WB412302	Downcutting	Below Road Crossing	30	20	Forest	Paved	Yes	Parking lot	3	4	1
Erosion	WB414205	Widening	Unknown	2500	4	Forest	Forest	Yes	Trail washing out	3	5	1
Erosion	WB415205	Widening	Crop field runoff	1600	10	Forest	Cropfield	No		3	5	1
Erosion	WB103102	Widening	Below Road Crossing	800	4	Shrubs/Small Trees	Shrubs/Small Trees	No		4	1	1
Erosion	WB113202	Widening	Unknown	400	3.5	Shrubs/Small Trees	Shrubs/Small Trees	No		4	2	2
Erosion	WB350303	Widening	Unknown	300	5	Lawn	Forest	No		4	4	2
Erosion	WB360302	Widening	Below Road Crossing	800	6	Forest	Forest	No		4	3	3
Erosion	WB370101	Unknown	Unknown	900	4	Forest	Forest	No		4	3	4
Erosion	WB380401	Widening	Land use change	900	1.5	Shrubs/Small Trees	Lawn	No		4	2	1
Erosion	WB387302	Downcutting	Unknown	600	10	Forest	Forest	No		4	3	3
Erosion	WB414301	Widening	Unknown	1220	5	Forest	Forest	No		4	4	2
Erosion	WB115401	Downcutting	Unknown	500	3	Forest	Forest	No		5	3	2
Erosion	WB342101	Widening	Unknown	400	3	Forest	Forest	No		5	2	2

Inadequate Buffers- Western Branch

Problem	Site	Inadequate on	Unshaded	Width left (ft)	Width right (ft)	Length left (ft)	Length right (ft)	Land use left (ft)	Land use right	Buffer established	Livestock	Severity	Correctability	Access	Wetland
Inadequate Buffer	WB200301	Both	Neither	0	0	1000	1000	Lawn	Lawn	No	No	1	1	1	3
Inadequate Buffer	WB243107	Both	Both	0	0	1200	1200	Lawn	Lawn	Yes	No	1	4	2	4
Inadequate Buffer	WB308210	Both	Neither	10	10	2800	4000	Lawn	Lawn	No	No	1	4	1	3
Inadequate Buffer	WB402404	Both	Neither	0	0	5000	5000	Construction	Construction	No	No	1	5	2	3
Inadequate Buffer	WB417203	Both	Both	0	0	1200	1200	Lawn	Lawn	No	No	1	2	1	3
Inadequate Buffer	WB330305	Both	Neither	0	0	700	700	Lawn	Lawn	No	No	2	1	1	3
Inadequate Buffer	WB349201	Both	Neither	0	10	2800	2800	Paved	Lawn	No	No	2	4	1	4
Inadequate Buffer	WB354408	Both	Both	0	0	1000	1000	Pasture	Pasture	No	No	2	2	3	1
Inadequate Buffer	WB356203	Both	Neither	10	10	2000	2000	Lawn	Lawn	No	No	2	3	1	4
Inadequate Buffer	WB369101	Both	Left	0	0	800	800	Cropfield	Bamboo	No	No	2	1	3	5
Inadequate Buffer	WB398401	Both	Both	0	0	1000	1000	Cropfield	Lawn	No	No	2	3	1	1
Inadequate Buffer	WB417202	Both	Right	10	0	800	800	Paved	Paved	No	No	2	4	1	3
Inadequate Buffer	WB102102	Left		0		1200		Paved	Shrubs/Small Trees	No	No	3	4	1	3
Inadequate Buffer	WB109302	Right	Neither		0		800	Forest	Lawn	No	No	3	1	2	3
Inadequate Buffer	WB111203	Left	Both	0		1200		Shrubs/Small Trees	Forest	No	No	3	3	2	1
Inadequate Buffer	WB115403	Both	Both	0	0	800	800	Lawn	Lawn	No	No	3	3	2	2
Inadequate Buffer	WB221403	Both	Both	0	0	300	300	Golf course	Golf course	No	No	3	3	2	1
Inadequate Buffer	WB300205	Both	Neither	10	10	600	600	Paved	Railroad	No	No	3	5	1	2
Inadequate Buffer	WB306204	Both	Both	0	0	1400	1400	Forest	Lawn	No	No	3	3	4	2
Inadequate Buffer	WB312102	Left	Neither	0		1300		Paved	Forest	No	No	3	4	1	3
Inadequate Buffer	WB315101	Both	Neither	0	10	500	500	Lawn	Lawn	No	Yes, Cattle	3	3	1	3
Inadequate Buffer	WB317302	Right	Both		0		600	Forest	Paved	No	No	3	1	1	1
Inadequate Buffer	WB324305	Right	Neither		0		700	Forest	Cropfield	No	Yes, Horses	3	2	3	1
Inadequate Buffer	WB345303	Right	Right		0		2200	Forest	Lawn	No	No	3	1	2	4
Inadequate Buffer	WB350203	Both	Both	0	0	900	150	Lawn	Paved	No	No	3	3	1	4
Inadequate Buffer	WB382301	Left	Left	0		700		Paved	Forest	No	No	3	5	1	5
Inadequate Buffer	WB395214	Right	Neither		0		1000	Forest	Lawn	No	No	3	2	1	5
Inadequate Buffer	WB113203	Both	Neither	10	600	15	600	Lawn	Cropfield	No	Yes, Horses	4	3	1	2
Inadequate Buffer	WB211201	Both		20	20	600	2200	airport	Lawn	No	No	4	3	1	5
Inadequate Buffer	WB215203	Both	Both	0	0	500	500	Pasture	Pasture	No	No	4	3	1	1
Inadequate Buffer	WB223201	Both	Both	10	10	600	1000	Lawn	Lawn	No	No	4	1	1	3
Inadequate Buffer	WB308202	Left	Neither	20		600		Lawn	Forest	No	No	4	2	1	5
Inadequate Buffer	WB313101	Both	Both	0	0	500	500	Shrubs/Small Trees	Shrubs/Small Trees	No	No	4	2	4	1

Inadequate Buffers- Western Branch

Problem	Site	Inadequate on	Unshaded	Width left (ft)	Width right (ft)	Length left (ft)	Length right (ft)	Land use left (ft)	Land use right	Buffer established	Livestock	Severity	Correctability	Access	Wetland
Inadequate Buffer	WB325302	Both	Both	0	0	2500	2500	Wetland	Wetland	No	No	4	2	3	1
Inadequate Buffer	WB330306	Both	Neither	0	10	300	300	Lawn	Multiflora Rose	No	No	4	1	2	4
Inadequate Buffer	WB343105	Right	Neither		20		1200	Shrubs/Small Trees	Lawn	No	No	4	3	1	5
Inadequate Buffer	WB351303	Right	Neither		20		1100	Shrubs/Small Trees	Forest	No	No	4	2	1	5
Inadequate Buffer	WB406101	Left	Neither	10		300		Lawn	Forest	No	No	4	1	1	5
Inadequate Buffer	WB105106	Both	Both	0	0	200	200	Shrubs/Small Trees	Pasture	No	Yes, Horses	5	1	1	2
Inadequate Buffer	WB106302	Both	Neither	0	0	200	200	Lawn	Lawn	No	No	5	2	1	2
Inadequate Buffer	WB107301	Right	Neither		10		300	Forest	Lawn	No	No	5	2	2	1
Inadequate Buffer	WB112403	Both	Both	0	0	100	100	Lawn	Lawn	No	No	5	1	2	1
Inadequate Buffer	WB113205	Left	Neither	25		600		Field/road	Shrubs/Small Trees	No	No	5	2	1	3
Inadequate Buffer	WB215201	Right	Neither		40		450	Forest	Lawn	No	No	5	2	1	5
Inadequate Buffer	WB223203	Both	Neither	10	10	400	400	Lawn	Lawn	No	No	5	2	1	3
Inadequate Buffer	WB306202	Left	Both	10		400		Lawn	Forest	No	No	5	1	3	1
Inadequate Buffer	WB328302	Both	Both	0	0	650	650	Wetland	Wetland	No	No	5	1	2	1
Inadequate Buffer	WB351311	Right	Neither		10		450	Forest	Multiflora Rose	No	No	5	2	1	5
Inadequate Buffer	WB388101	Left	Neither	10		200		Railroad	Forest	No	No	5	5	3	4
Inadequate Buffer	WB395105	Left	Neither	15		1350		Lawn	Forest	No	No	5	5	1	5
Inadequate Buffer	WB397401	Left	Neither	30		200		Cropfield	Forest	No	No	5	1	2	1

Trash Dumping-Western Branch

Problem	Site	Type	Amount (pickup truck)	Other measure	Extent	Volunteers	Ownership	Severity	Correctability	Access
Trash Dumping	WB409102	Appliances/ Tires		8 dumptrucks	Single Site	No	Private	1	1	2
Trash Dumping	WB105105	Residential	14		Large Area	Yes	Unknown	2	3	1
Trash Dumping	WB344401	Residential	6		Large Area	Yes	Unknown	2	3	4
Trash Dumping	WB376302	Mixed	15		Large Area	Yes	Unknown	2	4	2
Trash Dumping	WB414202	Residential	20		Large Area	Yes	Unknown	2	4	2
Trash Dumping	WB313302	Residential	5		Single Site	No	Unknown	3	3	2
Trash Dumping	WB323301	Residential		3-4 dump trucks	Large Area	No	Unknown	3	1	2
Trash Dumping	WB327301	Construction	6		Large Area	No	Private	3	4	3
Trash Dumping	WB354404	Mixed	3		Large Area	Yes	Unknown	3	1	1
Trash Dumping	WB356211	Residential		4 dumptrucks	Single Site	No	Unknown	3	2	1
Trash Dumping	WB360301	Residential		10-12 dumptrucks	Large Area	No	Unknown	3	3	3
Trash Dumping	WB364202	Residential	4		Large Area	No	Unknown	3	2	3
Trash Dumping	WB370104	Residential	3		Single Site	Yes	Private	3	1	3
Trash Dumping	WB388301	Mixed	6		Single Site	Yes	Private	3	2	2
Trash Dumping	WB398403	Yard Waste	10		Large Area	No	Private	3	4	3
Trash Dumping	WB414208	Residential	5		Large Area	No	Unknown	3	4	1
Trash Dumping	WB415201	Tires	5		Single Site	No	Unknown	3	4	2
Trash Dumping	WB108301	Residential		3-4 dump trucks	Large Area	Yes	Unknown	4	2	2
Trash Dumping	WB239401	Residential	3		Single Site	Yes	Unknown	4	2	2
Trash Dumping	WB315105	Tires	12		Large Area	No	Private	4	3	2
Trash Dumping	WB345307	Yard Waste	6		Single Site	Yes	Unknown	4	2	2
Trash Dumping	WB358201	Construction vehicles		2 tow trucks	Single Site	No	Unknown	4	4	2
Trash Dumping	WB373202	Floatables	3		Large Area	Yes	Unknown	4	2	1
Trash Dumping	WB382302	Mixed	3		Large Area	Yes	Public	4	2	1
Trash Dumping	WB387303	Construction		3 dumptrucks	Single Site	No	Public	4	3	2
Trash Dumping	WB396102	Residential	4		Single Site	No	Unknown	4	3	4
Trash Dumping	WB404203	Residential	2		Large Area	Yes	Unknown	4	3	2
Trash Dumping	WB404205	Mixed	3		Large Area	Yes	Unknown	4	3	2
Trash Dumping	WB412305	Mixed	1		Large Area	Yes	Unknown	4	1	1
Trash Dumping	WB216401	Residential	2		Single Site	Yes	Unknown	5	1	2
Trash Dumping	WB305205	Residential	2		Single Site	Yes	Private	5	1	2

Trash Dumping-Western Branch

Problem	Site	Type	Amount (pickup truck)	Other measure	Extent	Volunteers	Ownership	Severity	Correctability	Access
Trash Dumping	WB306201	Tires	1		Single Site	Yes	Unknown	5	1	2
Trash Dumping	WB315102	Residential	2		Single Site	No	Private	5	3	1
Trash Dumping	WB315103	Residential	3		Large Area	No	Private	5	4	3
Trash Dumping	WB321303	Residential	3		Single Site	Yes	Unknown	5	2	1
Trash Dumping	WB330301	Yard Waste	2		Single Site	Yes	Private	5	1	2
Trash Dumping	WB333301	Yard Waste	3		Single Site	Yes	Private	5	1	2
Trash Dumping	WB334403	Floatables	3		Single Site	Yes	Unknown	5	1	1
Trash Dumping	WB345302	Yard Waste	4		Single Site	Yes	Unknown	5	1	1
Trash Dumping	WB367206	Floatables	3		Single Site	Yes	Unknown	5	2	1
Trash Dumping	WB395101	Residential	2		Single Site	Yes	Private	5	1	2
Trash Dumping	WB396101	Residential	5		Single Site	No	Private	5	2	2
Trash Dumping	WB399103	Residential	2		Single Site	Yes	Private	5	1	2
Trash Dumping	WB407203	Mixed	1		Large Area	Yes	Unknown	5	2	2
Trash Dumping	WB409101	Residential	7		Single Site	Yes	Private	5	1	2

Unusual Conditions/Comments- Western Branch

Problem	Site	Describe	Possible cause	Severity	Correctability	Access
Unusual Condition	WB397402	Odor, oil black H2O w/ oil & gas smell, fuel puddle	construction equipment	1	4	1
Unusual Condition	WB401102	Big Dam shallow stream, creates 4300acre pond & erosion	Development	2	5	1
Unusual Condition	WB105107	Odor, oil - 450 west & Silvergate Lane; diesel fuel odor	Construction equip. Chaleston Homes 301-809-6129	3	1	1
Unusual Condition	WB115402	Stream piped for 150 ft.		3	5	2
Unusual Condition	WB247101	Stream piped for 2200 ft.		3	3	1
Unusual Condition	WB323301	Algae, Red flock runs entire length of stream	stream not moving	3	5	2
Unusual Condition	WB325301	Large sediment/mud flat area along railroad	railroad?	3	5	3
Unusual Condition	WB328306	Wetland created by culvert w/ 4in hole	concrete wall backing up water	3	5	1
Unusual Condition	WB334301	Stream underground		3	5	1
Unusual Condition	WB414206	Road washing out, connected to ES at 414205	unknown	3	3	1
Unusual Condition	WB216402	Stream piped for 100 ft.		4	3	2
Unusual Condition	WB222401	Stream piped for 200 ft.		4	3	1
Unusual Condition	WB365301	Red flock	stream not moving	4	5	3
Unusual Condition	WB414209	Rotten egg smell	unknown	4	5	1
Unusual Condition	WB108304	Large wetland/marsh area, runs for approx 2500 ft	culvert too small which passes under interstate 50	5	5	1
Unusual Condition	WB203302	Large beaver dam causing huge wetland area	beavers--affects 2100 feet of stream	5	4	1

Unusual Conditions/Comments- Western Branch

Problem	Site	Describe	Possible cause	Severity	Correctability	Access
Unusual Condition	WB324307	Huge pond in middle of stream		5	5	3
Unusual Condition	WB328303	Stream becomes large wetland swamp		5	5	1
Unusual Condition	WB411304	Manhole emitting very strong sewage odor	manhole	5	5	4
Unusual Condition	WB415204	Strong smells like rotting fish	unknown	5	5	2
Comment	WB104101	Channelized fish barrier and in stream const. Ina	head crossing, road widening, Annapolis Rd & 450			
Comment	WB379202	Pipe outfall blocked off				
Comment	WB386302	Stream underground				
Comment	WB400104	Old culvert eroded causing a huge fish barrier	erosion			
Comment	WB400107	Cut trees left in stream causing multiple fish barriers				
Comment	WB411309	Trash/tires collecting debris causing many fish barrier				

In/Near Stream Construction- Western Branch

Problem	Site	Type of activity	Sediment control	Why, if inadequate	Excess sediment	Length affected (ft.)	Company	Location	Severity
Construction	WB402101	Residential	Inadequate	No silt fence;vegetation removed	Yes	5280	Reliable Contractors	West side of 301S. After Forest Hills Motel	1
Construction	WB402403	Unknown	Inadequate		Yes	2000	Reliable Contractors	private land @ 301/Swanson Rd.	1
Construction	WB340101	Residential	Inadequate	Bare ground below silt fence	Yes	2400		Pin Oak Pkway	2
Construction	WB405102	Unknown	Inadequate		Yes	>2000	Reliable Contractors	West side of 301S. Behind Forest Hills Motel	2
Construction	WB105101	Residential	Inadequate	Break in silt fence	Yes	400		annapolis rd & Silvergate Lane	3
Construction	WB203303	Residential	Inadequate	Break in silt fence	Yes	1200		marleigh dr & stablemere ct (new subdivision)	3
Construction	WB300203	Residential	Adequate		Yes	700		map 300 off Gulliver Trail Rd	3
Construction	WB305206	Residential	Inadequate		Yes	500	Mid-Atlantic Builders	Hillmeade Rd	3
Construction	WB374402	Residential	Inadequate	No silt fence	Yes	500	AP Burgess Electrical Co	Manor House Rd	3
Construction	WB401102	Pond		No silt fence	Yes	300			3
Construction	WB104101	Road	Adequate		Yes	200		annapolis rd & 450	4
Construction	WB104102	Road	Adequate		Yes	1800		annapolis rd & 450	4
Construction	WB337405	Residential	Adequate		No			Del Sol Ct	4
Construction	WB407204	Residential	Adequate		No	2	Systems Inspection	end of stream	4

Channel Alteration- Western Branch

Problem	Site	Type	Bottom width (in)	Length (ft)	Perennial?	Sediment?	Vegetation?	Road crossing?	Length above X (ft)	Length below X (ft)	Severity	Correctability	Access
Channel Alteration	WB243103	Concrete	72	1800	Yes	No	No	No			1	5	3
Channel Alteration	WB401401	Plastic sheeting	96	1000	Yes	Yes	No	No			1	3	2
Channel Alteration	WB300201	Riprap	36	700	Yes	Yes	No	No			3	3	1
Channel Alteration	WB300205	Earth Channel	96	600	Yes	No	Yes	No			3	3	2
Channel Alteration	WB303202	Earth Channel	72	1000	Yes	No	No	No			3	5	1
Channel Alteration	WB382305	Earth Channel	36	600	Yes	No	Yes	No			3	3	1
Channel Alteration	WB344402	Riprap	48	100	Yes	Yes	Yes	No			4	1	1
Channel Alteration	WB236402	Riprap	144	20	Yes	No	No	No			5	2	3
Channel Alteration	WB239406	Riprap	72	25	Yes	Yes	No	No			5	2	1

Exposed Pipes- Western Branch

Problem	Site	Pipe location	Pipe type	Diameter (in)	Length exposed (ft)	Purpose	Discharge	Color	Odor	Severity	Correctability	Access
Exposed Pipe	WB334404	Above the stream	Smooth metal	8	10	Unknown	No			4	1	1
Exposed Pipe	WB374404	Along the bank	Plastic	1.5	150	Unknown	No			4	3	1
Exposed Pipe	WB354402	Along the bank	Smooth metal	12	2	Unknown	No			5	1	1
Exposed Pipe	WB356207	Above the stream	Smooth metal	1.5	6	Unknown	No			5	1	1

Representative Sites A

Problem	Site	Macroinvertebrate	Embeddedness	Shelter for Fish	Channel alteration	Sediment deposition	Velocity/depth	Channel flow	Bank vegetation	Bank condition	Riparian veg
Collington Branch											
Representative Site	WB305203	Optimal	Poor	Optimal	Optimal	Poor	Suboptimal	Suboptimal	Optimal	Optimal	Optimal
Representative Site	WB306203	Poor	Poor	Marginal	Optimal	Poor	Marginal	Suboptimal	Optimal	Suboptimal	Optimal
Representative Site	WB307208	Poor	Poor	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Optimal	Optimal
Representative Site	WB313102	Marginal	Poor	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Optimal	Poor
Representative Site	WB316102	Suboptimal	Marginal	Suboptimal	Optimal	Optimal	Marginal	Optimal	Suboptimal	Optimal	Optimal
Representative Site	WB321301	Marginal	Poor	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal
Representative Site	WB324303	Poor	Poor	Poor	Optimal	Poor	Marginal	Suboptimal	Optimal	Optimal	Optimal
Representative Site	WB328301	Poor	Poor	Poor	Optimal	Poor	Marginal	Optimal	Optimal	Optimal	Marginal
Representative Site	WB330304	Marginal	Poor	Optimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Optimal	Optimal
Representative Site	WB334302	Suboptimal	Poor	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal
Representative Site	WB337401	Marginal	Marginal	Poor	Suboptimal	Marginal	Marginal	Suboptimal	Marginal	Poor	Marginal
Representative Site	WB343401	Poor	Marginal	Marginal	Suboptimal	Marginal	Marginal	Optimal	Suboptimal	Marginal	Suboptimal
Representative Site	WB344403	Marginal	Poor	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal	Marginal	Marginal	Marginal
Representative Site	WB354403	Poor	Poor	Poor	Optimal	Marginal	Marginal	Suboptimal	Suboptimal	Marginal	Marginal
Representative Site	WB356212	Marginal	Poor	Suboptimal	Optimal	Marginal	Suboptimal	Suboptimal	Optimal	Marginal	Optimal
Representative Site	WB358401	Suboptimal	Marginal	Marginal	Optimal	Marginal	Suboptimal	Optimal	Marginal	Poor	Marginal
Representative Site	WB364101	Marginal	Marginal	Marginal	Optimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Marginal	Optimal
Representative Site	WB366201	Marginal	Marginal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Marginal	Optimal
Representative Site	WB371101	Optimal	Suboptimal	Marginal	Optimal	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Optimal
Representative Site	WB372201	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal
Representative Site	WB380402	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Marginal	Optimal	Marginal	Suboptimal
Representative Site	WB383201	Suboptimal	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Marginal	Suboptimal
Representative Site	WB387305	Suboptimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal
Representative Site	WB392101	Suboptimal	Marginal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Optimal	Marginal	Optimal
Representative Site	WB395102	Marginal	Marginal	Marginal	Optimal	Poor	Suboptimal	Suboptimal	Optimal	Marginal	Optimal
Representative Site	WB396101	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Marginal	Optimal
Representative Site	WB397403	Marginal	Suboptimal	Poor	Marginal	Marginal	Marginal	Optimal	Poor	Suboptimal	Poor
Representative Site	WB402405	Poor	Poor	Poor	Optimal	Poor	Marginal	Suboptimal	Poor	Poor	Poor
Representative Site	WB405101	Optimal	Marginal	Marginal	Optimal	Poor	Optimal	Optimal	Optimal	Suboptimal	Optimal
Representative Site	WB405201	Optimal	Suboptimal	Optimal	Optimal	Marginal	Optimal	Optimal	Marginal	Suboptimal	Optimal
Representative Site	WB410301	Suboptimal	Marginal	Suboptimal	Optimal	Poor	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal
Representative Site	WB411301	Poor	Poor	Marginal	Optimal	Poor	Marginal	Optimal	Suboptimal	Poor	Suboptimal
Representative Site	WB417201	Poor	Poor	Poor	Optimal	Poor	Marginal	Optimal	Marginal	Optimal	Suboptimal
Representative Site	WB418201	Optimal	Suboptimal	Marginal	Optimal	Suboptimal	Optimal	Optimal	Optimal	Suboptimal	Optimal

Representative Sites A

Problem	Site	Macroinvertebrate	Embeddedness	Shelter for Fish	Channel alteration	Sediment deposition	Velocity/depth	Channel flow	Bank vegetation	Bank condition	Riparian veg
Lottsford Branch											
Representative Site	WB103101	Marginal	Poor	Marginal	Suboptimal	Marginal	Marginal	Optimal	Suboptimal	Marginal	Suboptimal
Representative Site	WB105104	Marginal	Marginal	Suboptimal	Suboptimal	Optimal	Marginal	Optimal	Poor	Poor	Marginal
Representative Site	WB108303	Marginal	Poor	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Optimal	Optimal
Representative Site	WB109303	Marginal	Poor	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Optimal	Marginal
Representative Site	WB111201	Suboptimal	Marginal	Marginal	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Marginal	Suboptimal
Representative Site	WB113204	Marginal	Poor	Marginal	Suboptimal	Marginal	Marginal	Suboptimal	Suboptimal	Optimal	Suboptimal
Representative Site	WB114401	Marginal	Poor	Poor	Optimal	Suboptimal	Suboptimal	Optimal	Poor	Suboptimal	Poor
Northeast Branch											
Representative Site	WB203301	Marginal	Poor	Marginal	Optimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Suboptimal	Optimal
Representative Site	WB209301	Poor	Poor	Optimal	Optimal	Suboptimal	Marginal	Optimal	Optimal	Optimal	Optimal
Representative Site	WB215202	Poor	Poor	Poor	Optimal	Marginal	Suboptimal	Optimal	Optimal	Optimal	Poor
Representative Site	WB223202	Poor	Poor	Marginal	Optimal	Marginal	Suboptimal	Optimal	Optimal	Optimal	Marginal
Representative Site	WB227203	Marginal	Poor	Optimal	Optimal	Suboptimal	Optimal	Optimal	Marginal	Marginal	Suboptimal
Representative Site	WB236201	Marginal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Poor	Optimal
Representative Site	WB239402	Poor	Poor	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Marginal	Poor	Suboptimal

Representative Sites B

Problem	Site	Riffle width (in)	Run width (in)	Pool width (in)	Riffle depth (in)	Run depth (in)	Pool depth (in)	Bottom type
Collington Branch								
Representative Site	WB305203	36	48	192	2	4	36	Silts
Representative Site	WB306203	18	36	36	4	1	8	Silts
Representative Site	WB307208			36			10	Silts
Representative Site	WB313102			240			24	Silts
Representative Site	WB316102	14	36	40	1	3	8	Sand
Representative Site	WB321301	36	60		2	12		Silts
Representative Site	WB324303		24	24		4	10	Silts
Representative Site	WB328301		36			6		Silts
Representative Site	WB330304		96			48		Silts
Representative Site	WB334302		96	60		10	24	Silts
Representative Site	WB337401	24	12	6	8	10	3	Silts
Representative Site	WB343401	8	6	4	15	10	6	Silts
Representative Site	WB344403	36	10	8	12	15	6	Silts
Representative Site	WB354403	18	8	6	24	18	4	Silts
Representative Site	WB356212	60	192	192	8	10	12	Gravel
Representative Site	WB358401	24	32	10	62	52	12	Silts
Representative Site	WB364101	72	72	72	1	3	8	Sand
Representative Site	WB366201	144	192	192	4	4	24	Gravel
Representative Site	WB371101	48	24	60	8	12	20	Sand
Representative Site	WB372201	36	46	40	6	12	20	Silts
Representative Site	WB380402	12	20	30	3	4	6	Gravel
Representative Site	WB383201	36	30	48	20	24	36	Silts
Representative Site	WB387305	2	3	12	96	96	48	Gravel
Representative Site	WB392101	24	48	60	2	6	24	Gravel
Representative Site	WB395102	40	48	48	2	4	20	Sand
Representative Site	WB396101	12	48	100	2	18	36	Gravel
Representative Site	WB397403	36	36	96	2	4	8	Gravel
Representative Site	WB402405	18	36		2	4		Gravel
Representative Site	WB405101	48	36	40	3	18	36	Gravel
Representative Site	WB405201	240	60	40	25	25	36	Silts
Representative Site	WB410301	48	96	48	5	24	40	Gravel
Representative Site	WB411301	36	40		2.5	2.5		Silts
Representative Site	WB417201		180			30		Gravel
Representative Site	WB418201	18	20	27	5	3	12	Silts

Representative Sites B

Problem	Site	Riffle width (in)	Run width (in)	Pool width (in)	Riffle depth (in)	Run depth (in)	Pool depth (in)	Bottom type
Lottsford Branch								
Representative Site	WB103101	6	8	4	24	32	12	Silts
Representative Site	WB105104	6	8	12	24	48	32	Sand
Representative Site	WB108303	n/a	n/a	n/a	n/a	n/a	n/a	Silts
Representative Site	WB109303	48	60	96	3	8	18	Silts
Representative Site	WB111201	60	84	70	12	15	22	Silts
Representative Site	WB113204	24	24	30	3	1.5	5	Silts
Representative Site	WB114401		96	48		12	54	Silts
Northeast Branch								
Representative Site	WB203301		72			4		Silts
Representative Site	WB209301		96	480		12	24	Silts
Representative Site	WB215202	30	48		5	6		Sand
Representative Site	WB223202	10	60		14	8		Silts
Representative Site	WB227203	72	144	72	12	12	24	Silts
Representative Site	WB236201	72	180	80	18	18	24	Silts
Representative Site	WB239402	24	72	12	32	72	24	Silts