

Double Pipe Creek Watershed Stream Corridor Assessment

Winter 2016

**Prepared By
Carroll County Bureau of Resource Management**



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I. Introduction

A Stream Corridor Assessment of the Double Pipe Creek watershed was conducted during the winter of 2016 by Carroll County Bureau of Resource Management staff. The goal of this assessment was to identify current impairments within the watershed, as well as identify locations to implement restoration practices.

The Double Pipe Creek watershed is located in northwestern Carroll County, bordered by Frederick County, Maryland. Double Pipe Creek watershed drains into the Monocacy River which is part of the Potomac River watershed.

The Double Pipe Creek watershed is managed on the 12-Digit scale and includes 21 subwatersheds. Table 1-1 lists the subwatersheds within Double Pipe Creek as well as their associated drainage and stream lengths. Figure 1-1 shows the location of the study area within Carroll County.

Table 1-1 Double Pipe Creek Subwatersheds

DNR 12-Digit	Subwatershed	Area (Acres)	Stream Miles
0281	Bear Branch	9,158	45.68
0282	Bear Branch	2,643	11.33
0278	Big Pipe Creek	8,799	45.71
0279	Big Pipe Creek	4,582	25.30
0280	Big Pipe Creek	3,937	20.57
0283	Big Pipe Creek	7,183	32.82
0284	Big Pipe Creek	5,568	27.25
0286	Big Pipe Creek	6,074	23.86
0287	Big Pipe Creek	1,796	10.04
0274	Cherry Branch/Ltl Pipe Creek	3,452	22.98
0288	Deep Run	3,456	15.45
0271	Dickenson Run	4,049	18.77
0248	Double Pipe Creek	759	4.84
0272	Little Pipe Creek	5,880	29.06
0276	Little Pipe Creek	7,442	33.28
0277	Meadow Branch	9,490	43.38
0273	Priestland/ Wolf Pit Branch	4,760	22.19
0268	Sams Creek	5,393	29.83
0269	Sams Creek	991	5.69
0285	Silver Run	6,212	27.43
0275	Turkeyfoot Run	3,833	18.47
Totals:		105,457	513.93

II. Landowner Participation

This assessment reached out to 1,781 landowners within the Double Pipe Creek watershed whose property is intersected by a stream corridor. Landowner permission was obtained through a mailing that detailed the assessment (a copy of this letter can be found in Appendix A). A response card was also included for the landowner to send back with their permission response. Only properties with owner permission were assessed. Access was granted for approximately 266 of the 514 stream miles within the Double Pipe Creek watershed. Due to unforeseen circumstances, only 170 miles of the Double Pipe Creek watershed were actually assessed. Figure 1-2 shows where landowner permission was granted to perform the assessment.

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Double Pipe Creek Watershed Stream Corridor Assessment

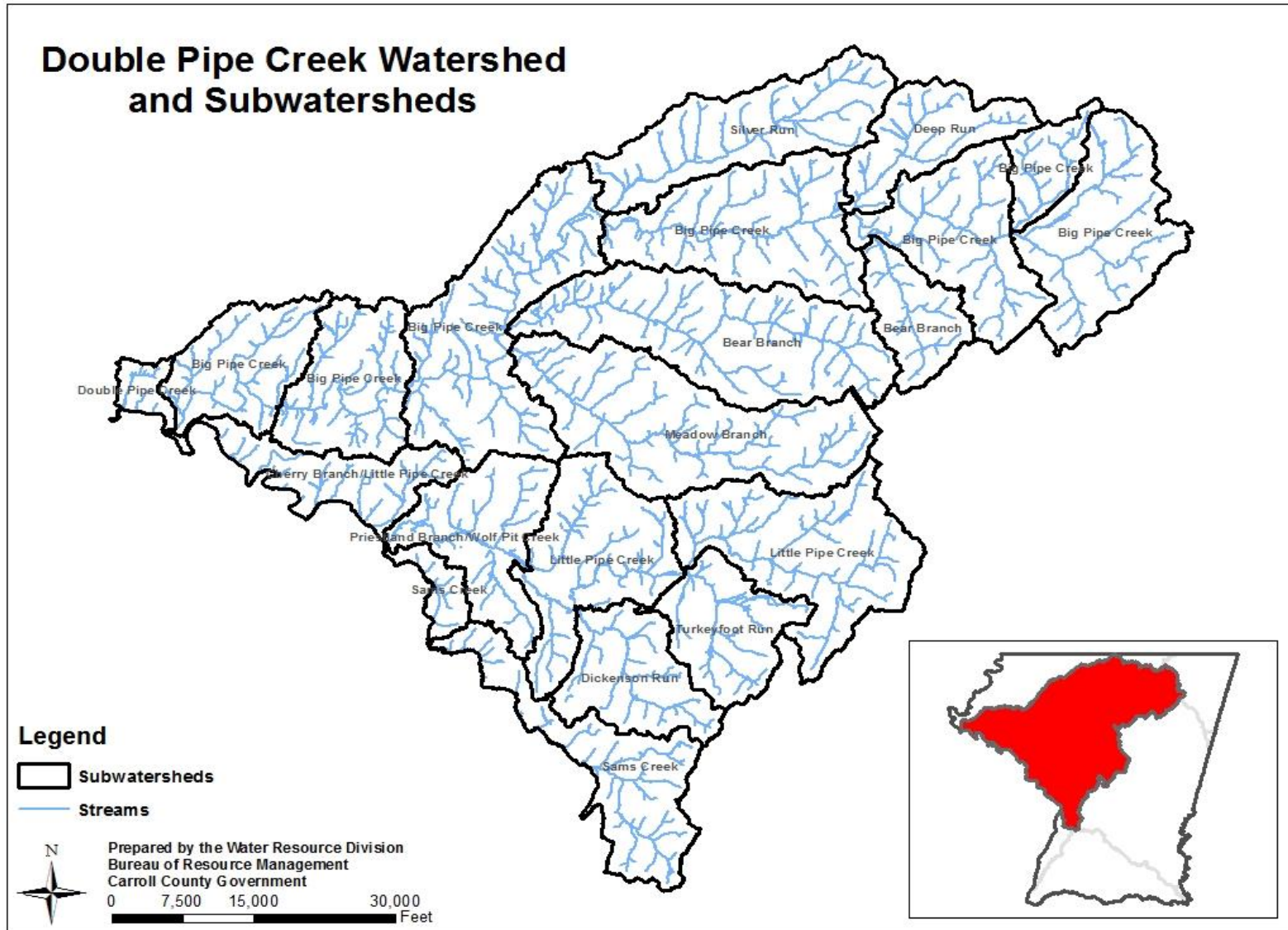


Figure 1-1: Double Pipe Creek Watershed Location Map

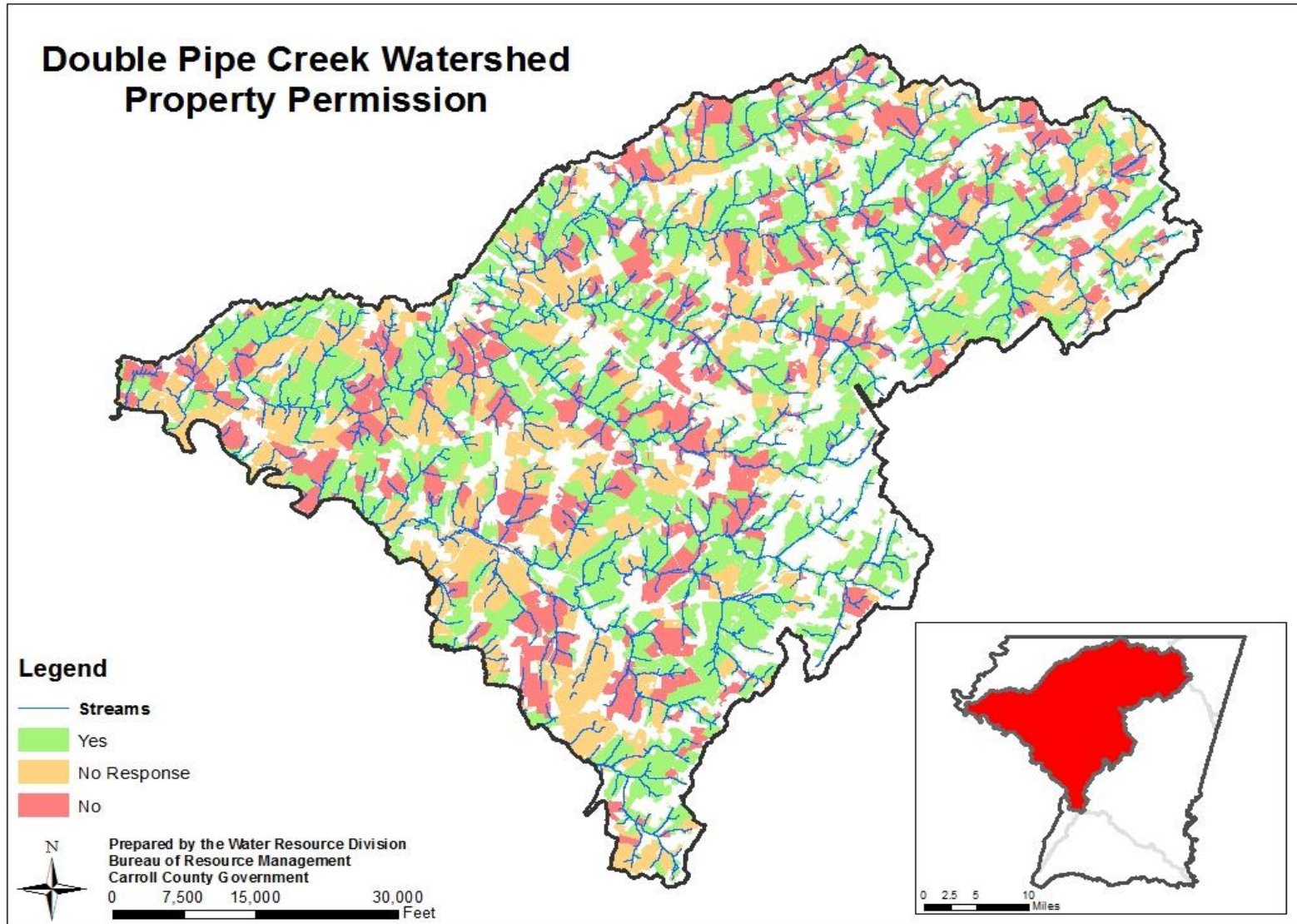


Figure 1-2: Landowner Participation

III. Methods

The field investigation consisted of two-person teams walking within the stream channel in order to visually assess potential environmental impacts to the stream corridor. Field teams carry Global Position System (GPS) enabled Toughbooks® that allow identified impacts to be recorded on site into an ArcGIS® database where it is assigned a unique ID number.

All stream corridors are assessed based on the survey protocols outlined by the Maryland Department of Natural Resources (DNR) watershed restoration division using standard stream corridor assessment protocols as outlined in the “Stream Corridor Assessment Survey: SCA Protocols” (MDNR, 2001). Field teams collect information relating to eroded stream banks, channel alterations, exposed utility pipes, drainage pipe outfalls, fish barriers (debris jams), inadequate streamside buffers, trash dumps, and construction activity that are either in or near the stream. Any unusual conditions are also noted. Each impairment is then ranked on a scale of 1 to 5 in relation to the impairment’s severity, accessibility, and correctability. These numeric rankings are used to prioritize areas for restoration.

IV. Results

A total of 944 data points were collected across the watershed. Inadequate buffers and stream bank erosion were the most frequently identified problems. Drainage pipe outfalls and fish barriers were also regularly present throughout the watershed. Table 1-2 lists the data points by severity across the entire watershed. The most commonly identified impacts are shown in Figure 1-3 and Table 1-3 presents a summary of the number of impacts identified in each subwatershed. Criteria for ranking each impairments severity can be found in Appendix B.

Table 1-2: Data Points by Severity

Identified Impacts	Total	Very Severe	Severe	Moderate	Low	Minor
Erosion	234	51	27	73	38	45
Inadequate Buffer	194	61	31	65	22	15
Pipe Outfall	54	4	3	6	4	37
Fish Barrier	73	2	7	25	25	14
Trash Dump	27	2	3	7	2	13
Channel Alteration	21	0	1	3	9	8
Construction	0	0	0	0	0	0
Exposed Pipe	20	1	1	1	7	6
Unusual Condition	31	2	0	10	5	11
Total	654	123	73	190	113	149

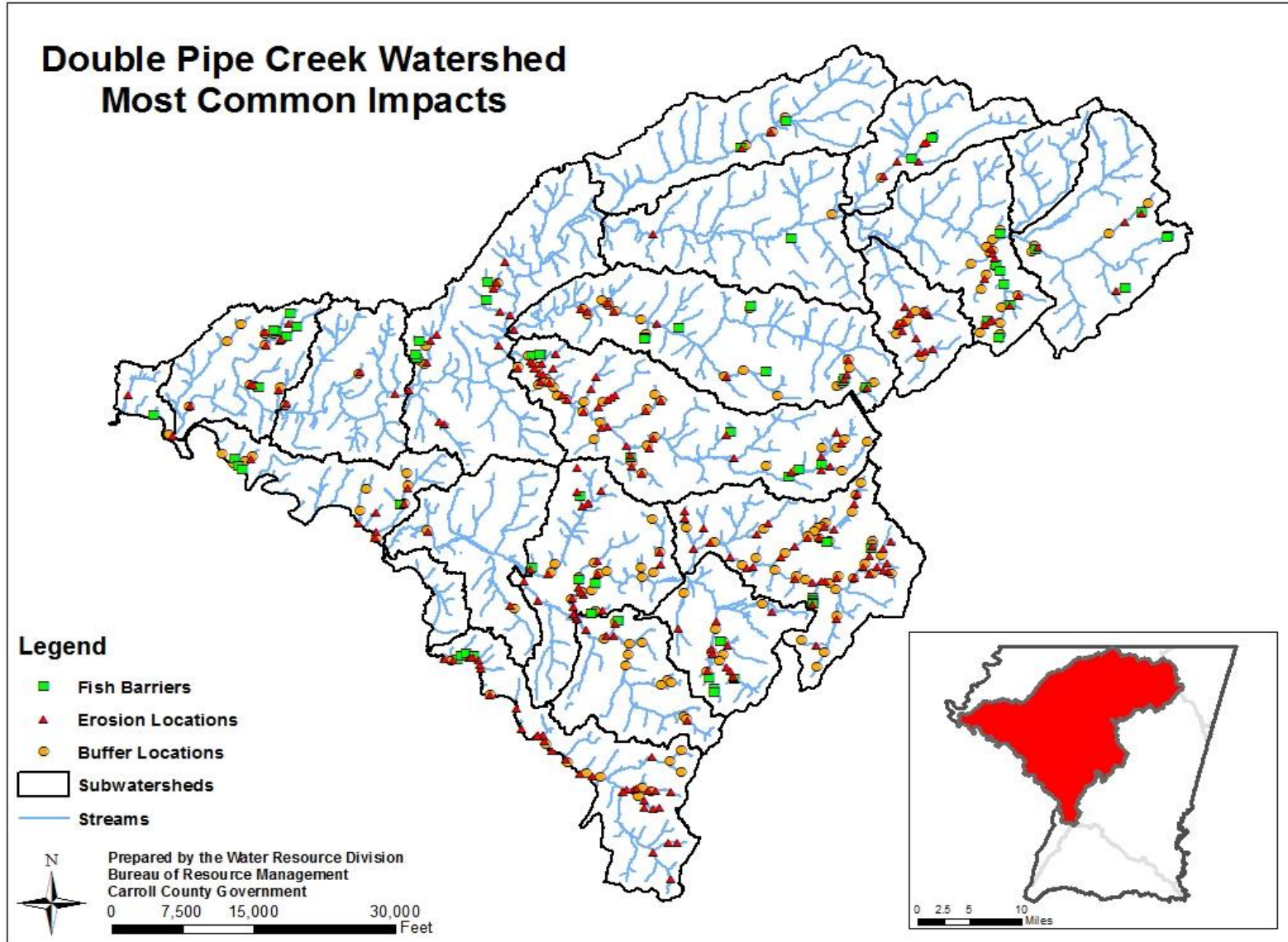


Figure 1-3: Most Commonly Identified Impacts

Double Pipe Creek Watershed Stream Corridor Assessment

Table 1-3: Stream Corridor Assessment – Identified Impacts

DNR 12-Digit	In-Stream Construction	Erosion	Fish Barrier	Inadequate Buffer	Trash Dump	Channel Alteration	Pipe Outfall	Exposed Pipe	Total
0281	0	11	8	18	0	4	3	2	46
0282	0	12	0	6	0	0	1	2	21
0278	0	12	5	5	3	0	3	0	28
0279	0	3	0	2	2	0	0	0	7
0280	0	10	6	11	4	0	8	0	39
0283	0	1	1	1	0	0	0	0	3
0284	0	9	7	16	0	0	2	0	34
0286	0	4	5	4	0	0	0	0	13
0287	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
0274	0	7	4	10	0	1	1	2	25
0288	0	5	3	2	0	0	0	0	10
0271	0	9	3	12	2	1	1	7	35
0248	0	1	1	0	0	0	3	0	5
0272	0	21	4	17	2	1	4	0	49
0276	0	39	6	33	8	10	15	4	115
0277	0	38	9	29	2	2	6	2	88
0273	0	2	0	2	0	1	2	0	7
0268	0	37	4	14	2	0	2	0	56
0269	0	0	0	0	0	0	0	0	0
0285	0	2	2	4	0	1	2	0	11
0275	0	11	5	8	2	0	1	1	28
Total	0	234	73	194	27	21	54	20	623

A. Erosion

The most common problem identified through the Stream Corridor Assessment was erosion. A total of 40 miles (23.5%) of the 170 miles assessed were found to have an erosion problem, with approximately 14 percent of the assessed stream length categorized as having a severe or very severe erosion problem. Figure 1-4 shows the location of active erosion sites identified during the Stream Corridor Assessment.

B. Inadequate Buffer

Buffer areas were identified as inadequate for 42 miles (25%) of the streams assessed, with 17 percent of the assessed stream length classified as severely or very severely un-buffered. 108 of the sites identified both sides of the stream as completely unshaded, and livestock was noted to be present at 34 different sites. Of the 234 sites identified, 21 had been recently planted but were not yet established. Figure 1-5 shows the location of identified inadequate buffers.

Table 1-4 presents the linear feet of inadequate buffer and stream erosion identified in each subwatershed.

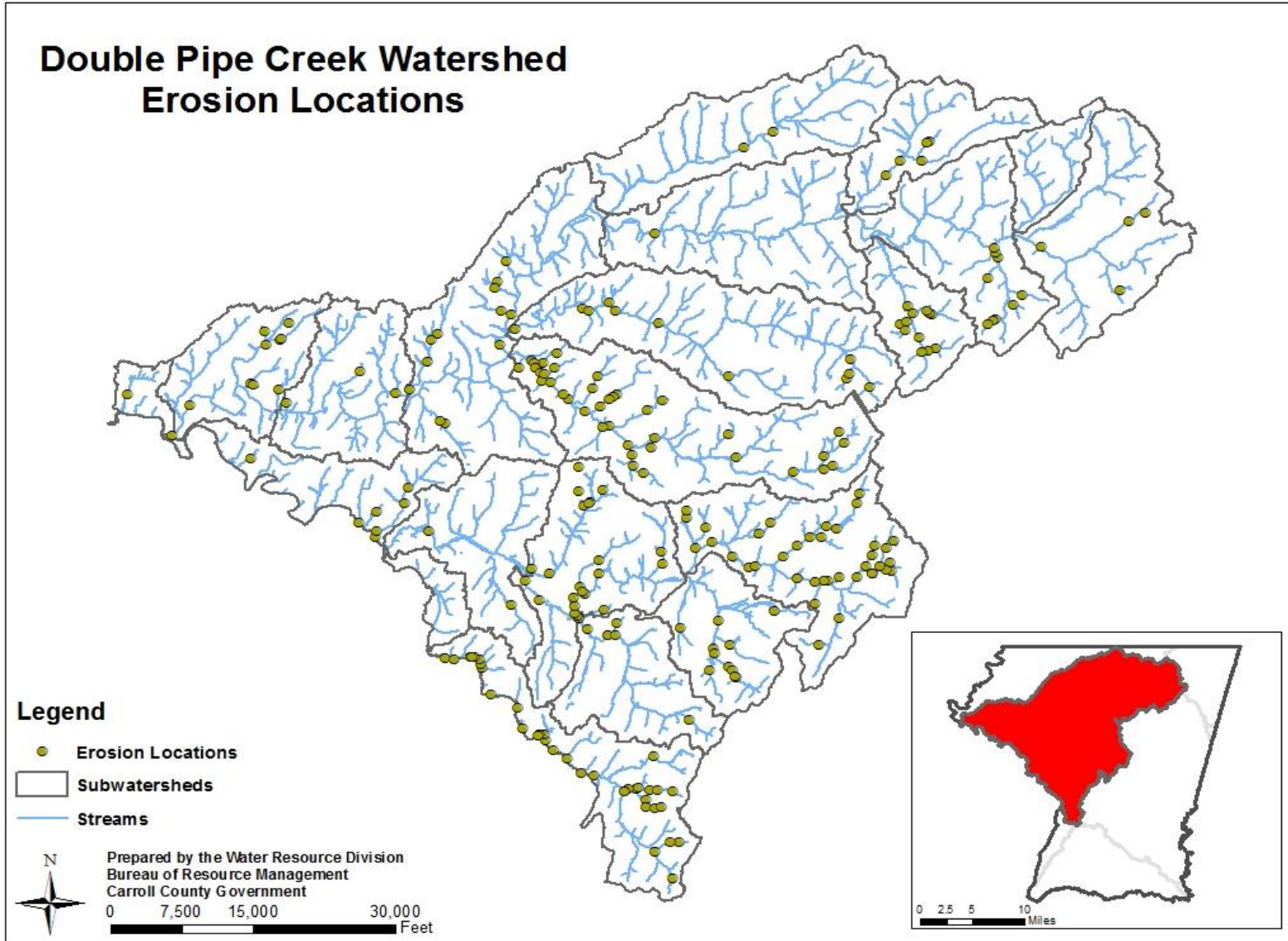


Figure 1-4: Erosion Locations

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Table 1-4: Linear feet of Inadequate Buffer and Stream Erosion

Stream Segment (DNR 12-Digit)	Erosion	Inadequate Buffer*
Bear Branch (0281)	6,350	16,350
Bear Branch (0282)	7,225	6,550
Big Pipe Creek (0278)	10,250	11,375
Big Pipe Creek (0279)	3,000	2,300
Big Pipe Creek (0280)	10,350	13,900
Big Pipe Creek (0283)	3,800	1,100
Big Pipe Creek (0284)	13,720	16,400
Big Pipe Creek (0286)	7,950	5,600
Big Pipe Creek (0287)	n/a	n/a
Cherry Branch/Ltl Pipe Creek (0274)	8,400	7,350
Deep Run (0288)	4,490	1,700
Dickenson Run (0271)	10,750	8,400
Double Pipe Creek (0248)	1,300	0
Little Pipe Creek (0272)	25,050	27,801
Little Pipe Creek (0276)	30,240	29,940
Meadow Branch (0277)	34,145	34,170
Priestland/Wolf Pit Branch (0273)	4,500	5,500
Sams Creek (0268)	22,565	13,730
Sams Creek (0269)	0	0
Silver Run (0285)	1,600	4,500
Turkeyfoot Run (0275)	5,625	13,700
Total	211,310	220,366

*Linear footage includes maximum of left or right bank at buffer location

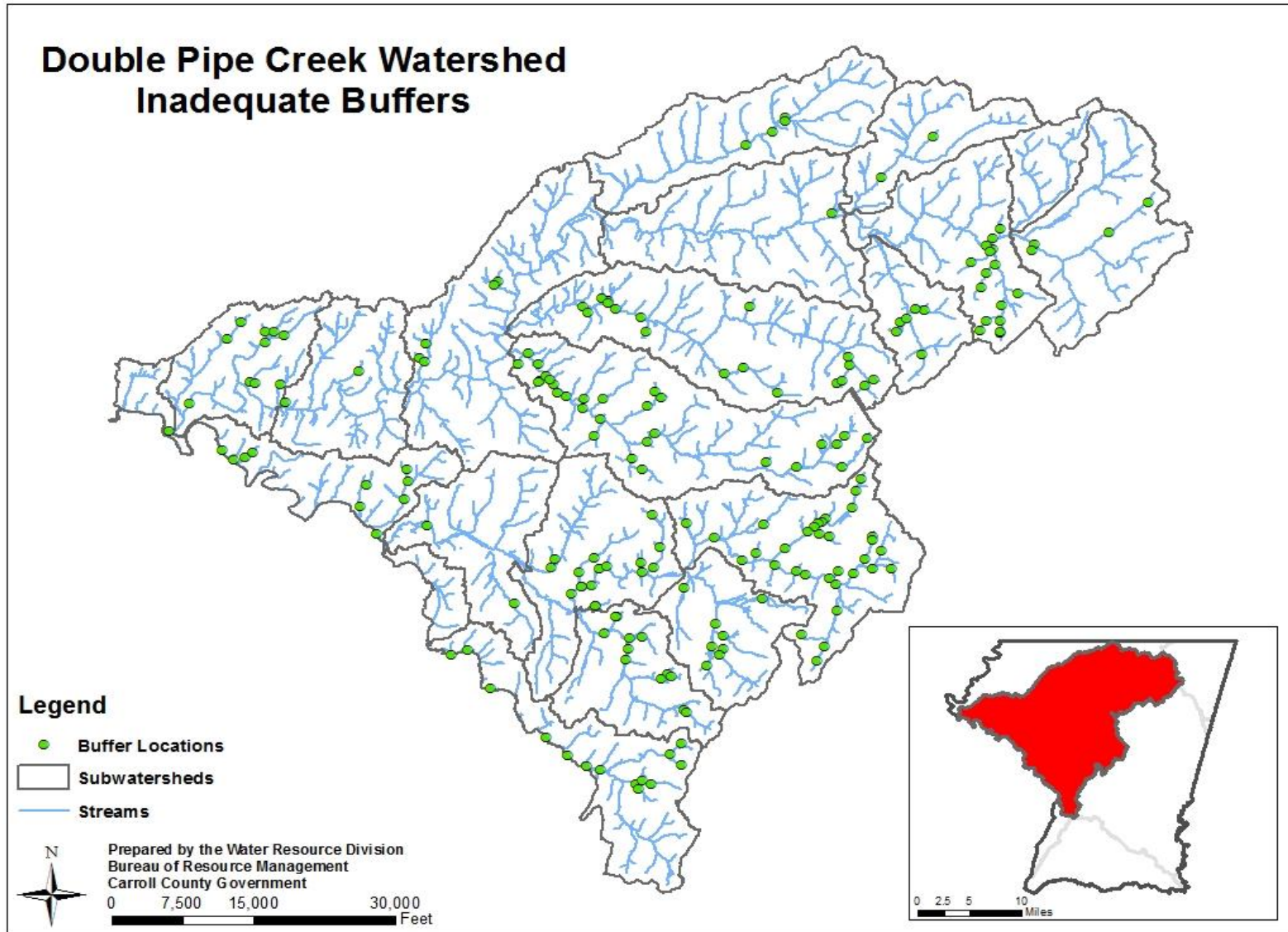


Figure 1-5: Inadequate Buffers

C. Pipe Outfalls

Outfalls were found throughout the entire watershed, but the highest concentrations were located in the Little Pipe Creek (0276) subwatershed. This higher concentration can be attributed to the city of Westminster, which makes up the headwaters of this subwatershed. The majority of the outfalls identified were 6" or less in diameter and were given a low impact rating. The location of identified pipe outfalls can be found in Figure 1-6.

D. Exposed Pipes

Exposed pipes were identified at 20 different locations within the watershed, with the majority being concentrated around the Cities of Westminster and New Windsor. Any exposed pipe identified during the SCA is reported to the appropriate public works department for additional investigation.

E. Channel Alteration

Impacts from channel alterations were found at 21 different sites within the watershed and totaled 4,659 linear feet. The vast majority of alterations identified were associated with the protection of infrastructure and were given a minor severity ranking. Figure 1-7 shows the location of identified channel alterations within the watershed.

F. Fish Barriers

There were 74 fish barriers identified during the survey; all of the sites were associated with temporary debris dams, perched road culverts, or natural falls. 34 of the identified sites significantly restricted upstream fish movement and received a moderate or worse severity rating. Figure 1-8 shows the location of identified fish barriers.

G. Trash Dumps

Impacts from trash were minimal with 27 identified locations within the watershed; most of the sites had a moderate to minor severity rating. Five sites had a severe or very severe rating with the largest site estimated to have approximately 30 truckloads of waste. The location of identified trash sites can be found in Figure 1-9.

H. In or Near Stream Construction

No in or near stream construction sites were identified during the assessment.

I. Unusual Conditions/Comments

Field crews identified 31 unusual conditions during the assessment. The majority of the unusual conditions were comment based, noting or describing something out of the ordinary. Excess algae was the most common unusual condition noted. The location of these can be found in Figure 1-10.

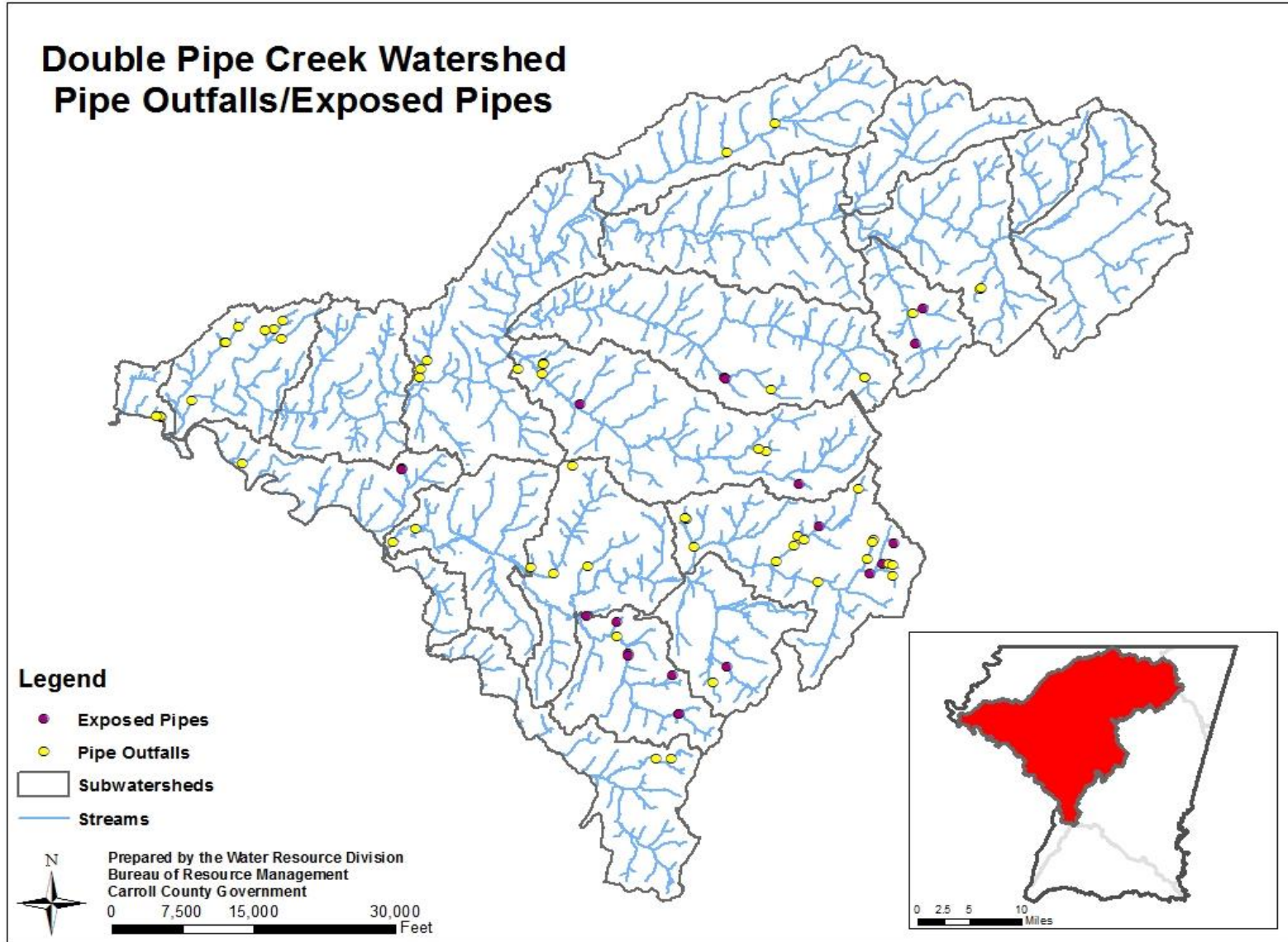


Figure 1-6: Pipe Outfalls and Exposed Pipes

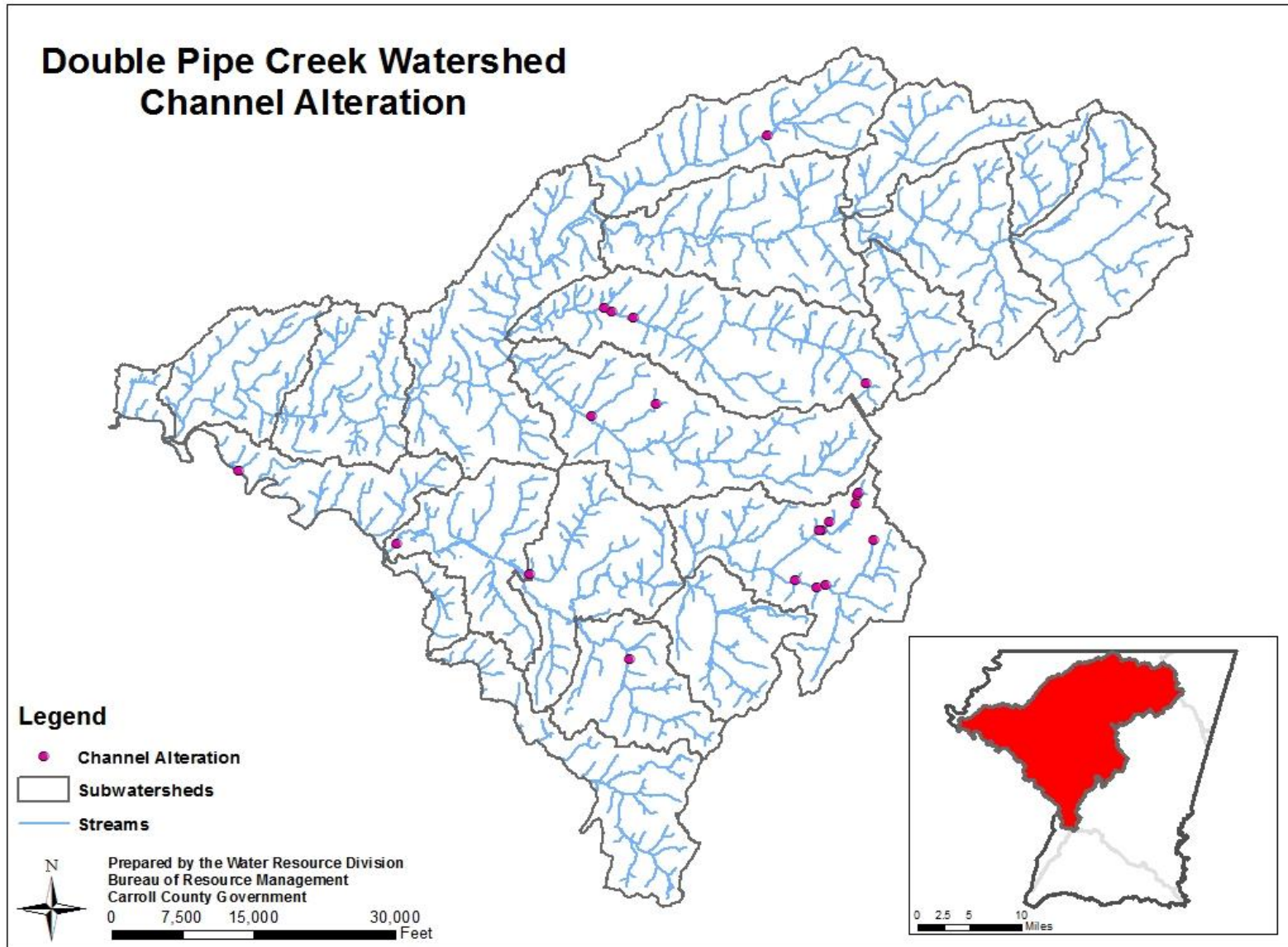


Figure 1-7: Channel Alteration

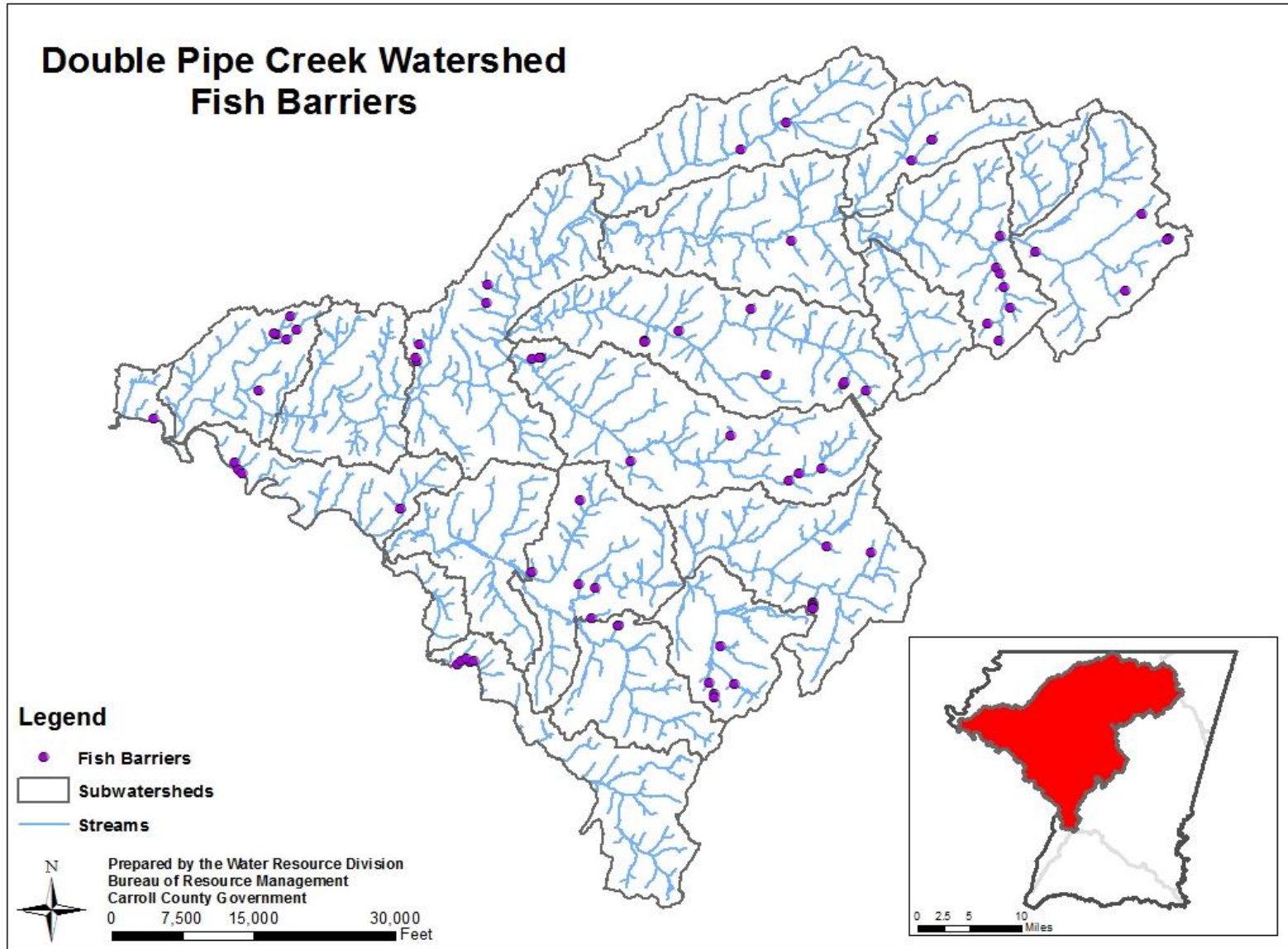


Figure 1-8: Fish Barriers

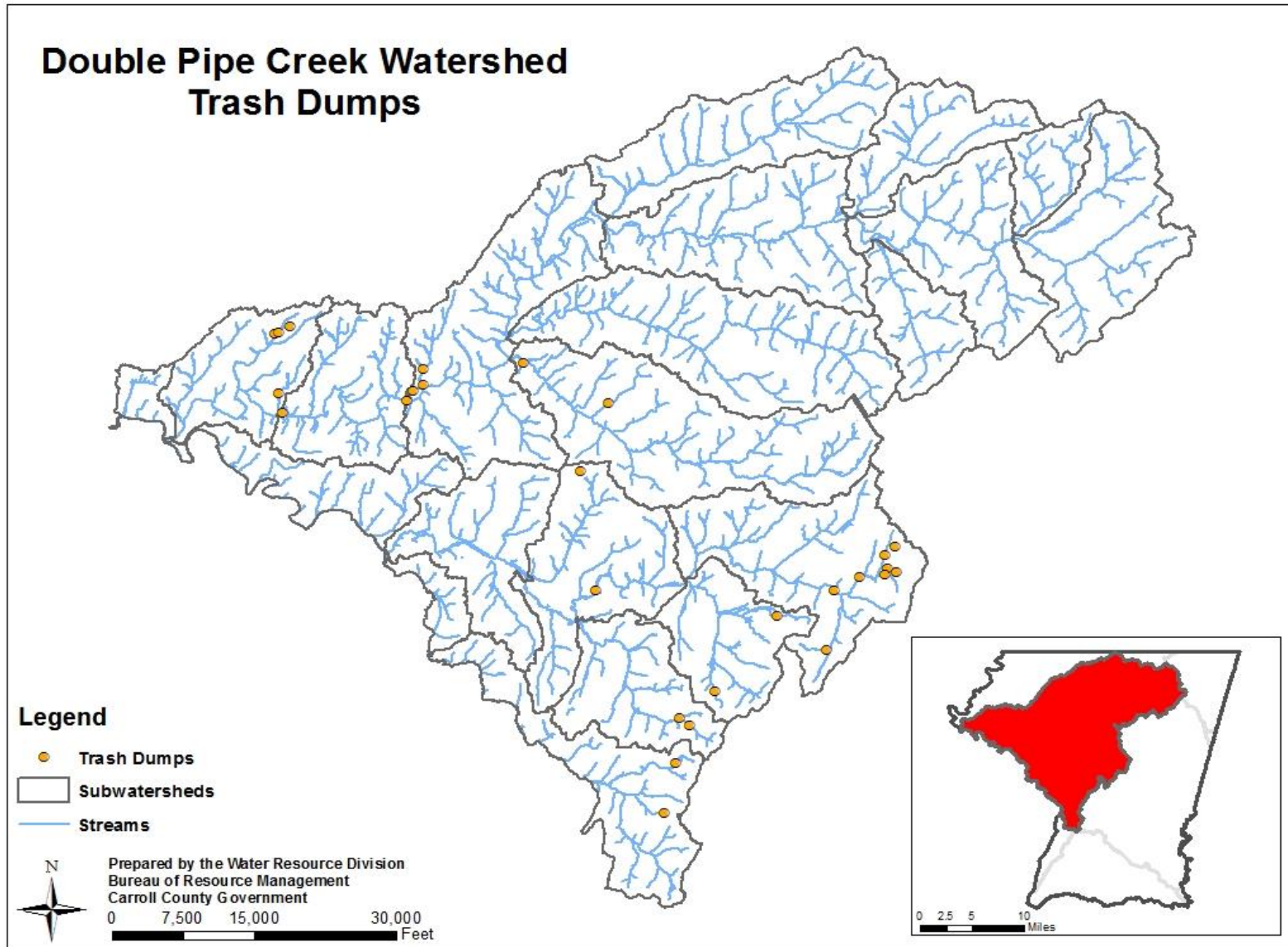


Figure 1-9: Trash Dumps

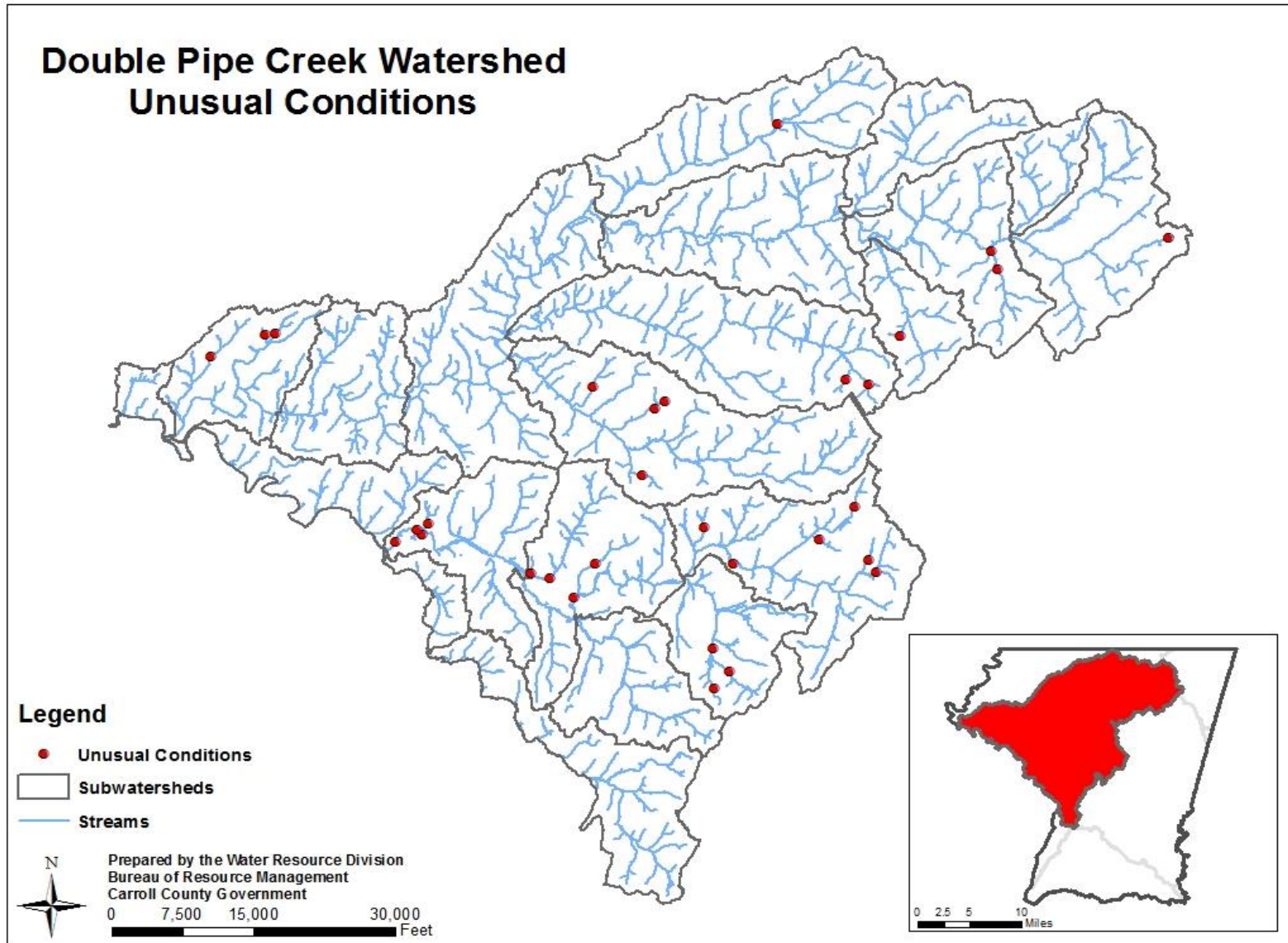


Figure 1-10: Unusual Conditions

V. Subwatershed Summary

Bear Branch (0281): 64% of the total possible stream length was assessed for this subwatershed. Erosion problems were identified along 6,350 linear feet (9%) of the assessed stream channel, with 2,500 feet (39%) classified as severely eroded. Inadequate buffers were identified along 16,350 linear feet (22%) of the streambank, with 7,550 feet (46%) classified as severe.

Bear Branch (0282): 56% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 7,225 linear feet (26%) of the assessed stream channel, with 6,080 feet (84%) classified as severely eroded. Inadequate buffers were identified along 6,550 linear feet (23%) of the streambank, with 5,600 feet (86%) classified as severe.

Big Pipe Creek (0278): 41% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 10,250 linear feet (21%) of the stream channel, with 4,500 feet (44%) classified as severely eroded. Inadequate buffers were identified along 11,375 linear feet (24%) of the streambank, with 10,100 feet (89%) classified as severe.

Big Pipe Creek (0279): 52% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 3,000 linear feet (10%) of the stream channel, with 1,800 feet (60%) classified as severely eroded. Inadequate buffers were identified along 2,300 linear feet (8%) of the streambank, with 700 feet (30%) classified as severe.

Big Pipe Creek (0280): 89% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 10,350 linear feet (23%) of the stream channel, with 8,000 feet (77%) classified as severely eroded. Inadequate buffers were identified along 13,900 linear feet (31%) of the streambank, with 3,900 feet (28%) classified as severe.

Big Pipe Creek (0283): 18% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 3,800 linear feet (22%) of the stream channel, with all 3,800 feet classified as severely eroded. Inadequate buffers were identified along 1,100 linear feet (6%) of the streambank, with all 1,100 feet classified as severe.

Big Pipe Creek (0284): 60% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 13,720 linear feet (24%) of the stream channel, with 11,370 feet (83%) classified as severely eroded. Inadequate buffers were identified along 16,400 linear feet (29%) of the streambank, with 14,900 feet (91%) classified as severe.

Big Pipe Creek (0286): 36% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 7,950 linear feet (42%) of the stream channel, with 7,200 feet (91%) classified as severely eroded. Inadequate buffers were identified along 5,600 linear feet (30%) of the streambank, with 4,300 feet (77%) classified as severe.

Big Pipe Creek (0287): This subwatershed was not assessed during this Stream Corridor Assessment.

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Cherry Branch/Little Pipe Creek (0274): 66% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 8,400 linear feet (22%) of the stream channel, with 5,700 feet (68%) classified as severely eroded. Inadequate buffers were identified along 7,350 linear feet (19%) of the streambank, with none classified as severe.

Deep Run (0288): 36% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 4,490 linear feet (29%) of the stream channel, with 2,490 feet (56%) classified as severely eroded. Inadequate buffers were identified along 1,700 linear feet (11%) of the streambank, with 900 feet (53%) classified as severe.

Dickenson Run (0271): 95% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 10,750 linear feet (23%) of the stream channel, with 3,700 feet (34%) classified as severely eroded. Inadequate buffers were identified along 8,400 linear feet (18%) of the streambank, with 6,350 feet (76%) classified as severe.

Double Pipe Creek (0248): 85% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 1,300 linear feet (25%) of the stream channel, with all 1,300 feet classified as severely eroded. No inadequate buffers were identified within this subwatershed.

Little Pipe Creek (0272): 85% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 25,050 linear feet (39%) of the stream channel, with 14,300 feet (57%) classified as severely eroded. Inadequate buffers were identified along 27,801 linear feet (43%) of the streambank, with 25,101 feet (90%) classified as severe.

Little Pipe Creek (0276): 85% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 30,240 linear feet (30%) of the stream channel, with 17,150 feet (57%) classified as severely eroded. Inadequate buffers were identified along 29,940 linear feet (29%) of the streambank, with 14,750 feet (49%) classified as severe.

Meadow Branch (0277): 85% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 34,145 linear feet (32%) of the stream channel, with 24,200 feet (71%) classified as severely eroded. Inadequate buffers were identified along 34,170 linear feet (32%) of the streambank, with 24,450 feet (72%) classified as severe.

Priestland/Wolf Pit Branch (0273): 54% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 4,500 linear feet (23%) of the stream channel, with 3,000 feet (67%) classified as severely eroded. Inadequate buffers were identified along 5,500 linear feet (28%) of the streambank, with all 5,500 feet classified as severe.

Sams Creek (0268): 100% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 22,565 linear feet (26%) of the stream channel, with

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9,050 feet (40%) classified as severely eroded. Inadequate buffers were identified along 13,730 linear feet (16%) of the streambank, with all 13,730 feet classified as severe.

Sams Creek (0269): 73% of the total possible stream length was assessed for this subwatershed. No erosion problems or inadequate buffers were identified along the stream channel.

Silver Run (0285): 31% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 1,600 linear feet (42%) of the stream channel, with none classified as severely eroded. Inadequate buffers were identified along 4,500 linear feet (30%) of the streambank, with 1,500 feet (33%) classified as severe.

Turkeyfoot Run (0275): 83% of the total possible stream length was assessed for this subwatershed. Erosion Problems were identified along 5,625 linear feet (9%) of the stream channel, with 3,200 feet (57%) classified as severely eroded. Inadequate buffers were identified along 13,700 linear feet (23%) of the streambank, with 12,700 feet (93%) classified as severe.

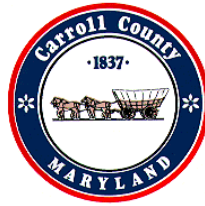
VI. Summary

The Bureau is currently developing two plans for the Double Pipe Creek watershed. The first is a Characterization Plan that references the natural and human characteristics of the watershed and discusses any water quality data that has been collected within the watershed. The second is a Restoration Plan that will define the Bureau's goals for addressing environmental concerns within the watershed. The focus will be to address erosion problems through stormwater management and tree planting.

**Appendix A:
SCA Permission Letter**

Double Pipe Creek Watershed Stream Corridor Assessment

Gale J. Engles, Chief
Bureau of Resource Management
410-386-2145, 410-386-2210
Fax: 410-386-2924
Toll Free: 1-888-302-3978
MD RELAY Call 711 or 800-735-2258
(TTY)



Department of
Land & Resource Management
Carroll County Government
225 North Center Street
Westminster, MD 21157

October 16, 2015

Dear Watershed Resident:

The Carroll County Bureau of Resource Management will be conducting a stream corridor assessment of the streams located in the Double Pipe Creek watershed. The goal of this assessment is to identify and prioritize locations that would benefit from potential storm water improvement efforts. The County is contacting all landowners within the watershed who own land adjacent to a stream corridor, and requesting permission from the landowner to allow the survey team to pass through their property during the winter of 2015/2016.

County staff will be performing all fieldwork for this survey. Teams of two to three field crew members will be walking the stream corridors in the watershed, making field observations of various characteristics such as erosion, undermined pipes, un-shaded stream corridors, trash dumps and other related environmental concerns that may impact water quality. Each team will pass through your property for a short time and will not be altering the landscape in any way. Each member of the team will be appropriately identified and observe proper protocols.

The information collected from this survey will be used to help direct future stream restoration and protection efforts. Please use the enclosed card to indicate your choice for permission and return the card to our office by November 20, 2015. For more information about this study, please contact me at (410) 386-2167. Thank you in advance for your participation.

Sincerely,

Byron Madigan

Byron R. Madigan
Water Resources Supervisor
Department of Land and Resource Management
Carroll County Government
bmadigan@ccg.carr.org

Appendix B:
Impairment Severity Criteria

Double Pipe Creek Watershed Stream Corridor Assessment

1) **BF-Inadequate Buffer**

- a) Severe
 - i) Length of stream (>1000') w/ no trees on either side
- b) Moderate
 - i) Moderate length of stream with trees on only one side
- c) Minor
 - i) Stream section with trees on both sides, but with buffer <50'

2) **ER-Erosion Site**

- a) Severe Rating of 1
 - i) Long section >1000' w/ unstable banks on both sides
 - ii) Incised several feet and eroding very fast
 - iii) Stream bank is eroded below the root zone
- b) Moderate Rating of 3
 - i) Long section >1000' w/ moderate erosion problems
 - ii) **OR** shorter reach 300-400' w/ high banks >4'
- c) Minor Rating of 5
 - i) Short section of stream <300' w/ erosion at one or two meander bends

3) **EX-Exposed Pipe (Sewer Line, etc.)**

- a) Severe Rating of 1
 - i) Any pipe that is leaking or being undermined
 - ii) Or suspended above the stream bed
- b) Moderate Rating of 3
 - i) Long section of pipe that is partially exposed but no immediate threat the pipe will be undermined
- c) Minor Rating of 5
 - i) Small section of top of pipe exposed
 - ii) Stream bank appears stable

4) **FB- Fish Barrier**

- a) Severe Rating of 1
 - i) Dam or road culvert on large stream (3rd order or >) totally blocking upstream movement
- b) Moderate Rating of 3
 - i) Total fish blockage on a tributary significantly isolating a reach of stream
- c) Minor Rating of 5
 - i) Temporary barrier such as beaver dam

5) **OF- Pipe Outfall (storm discharge, field drain, etc.)**

- a) Severe Rating of 1
 - i) Outfall with strong discharge and distinct color/smell
 - ii) Discharge causing significant impact downstream
- b) Moderate Rating of 3
 - i) Outfall with small discharge
- c) Minor Rating of 5
 - i) Storm water pipes that have no dry weather discharge

6) CH- Channel Alteration

- a) Severe Rating of 1
 - i) Concrete channel w/ shallow water
 - ii) Significant section channelized >1000'
- b) Moderate Rating of 3
 - i) Channel >500' previously channelized
 - ii) Beginning to stabilize with vegetation
- c) Minor Rating of 5
 - i) Earthen channel <100'
 - ii) Size and shape of un-channelized reaches

7) TR- Trash Dump (within 50 feet of stream)

- a) Severe Rating of 1
 - i) Large amount scattered over large area, difficult access
 - ii) Chemical drums or hazmat regardless of amount
- b) Moderate Rating of 3
 - i) Large amount in small area with easy access
 - ii) Able to be cleaned up in a few days
- c) Minor Rating of 5
 - i) Small amount less than two pickups with easy access

8) UN- Unusual Condition

- a) Severe Rating of 1
 - i) Has direct and wide reaching impact on aquatic life
- b) Moderate Rating of 3
 - i) Has some adverse impacts at site
 - ii) Significant problem, but not the worst seen
- c) Minor Rating of 5
 - i) Problem does not appear to be affecting stream

9) CO- Stream Construction

- a) Severe Rating of 1
 - i) Large construction site w/ large amount of disturbance
 - ii) Absence of sediment control measures
- b) Moderate Rating of 3
 - i) Site near stream w/ little disturbance to banks
 - ii) Within riparian w/ some sediment entering stream
- c) Minor Rating of 5
 - i) Site away from stream and outside riparian
 - ii) Sediment control adequate no evidence sediment in stream