

Toby Creek Field Reconnaissance Observations



101 South Main Street
Ashley PA, 18706

www.epcamr.org

September 26, 2018



Figure 1. A shot of Green Pond. This location has a rock farm wall along the side of the road, and a headwall along the side of Green Drive, which requires remediation.



Figure 2. A stormwater drain for the overflow from Green Pond.



Figure 3. A stream outlet overflow from Green Pond that is densely populated with Japanese knotweed and poison ivy. This location can be found looking downstream of Green Pond from behind the residences along Green Drive.



Figure 4. This photo is of an unnamed tributary at the intersection of Green Pond and Woodbine Drive. Natural vegetation is visible on one bank, and mowing is visible on both. Restoration of the riparian corridor can be achieved by mowing further from the streambank.



Figure 5. Looking downstream from the same location, there this concrete pipe culvert. Further along Green Drive, the unnamed tributary turns into a storm drain system.



Figure 6. This property belongs to Bill Alles. The Green Pond unnamed tributary flows through a storm drain near the rear of his yard and discharges behind homes along Woodbine Drive and Harris Hill Road.



Figure 7. Found just before the rear of dozens of yards on Butternut Drive, this corrugated pipe is not aligned with the unnamed tributary, causing undercutting on the opposite bank. Possible remediation: an elbow pipe could be placed at the end of the corrugated pipe to align it with the Green Pond unnamed tributary. There are indications that there are high deer populations because of a lack of branches on the Arborvitae. If riparian restoration is intended, tubex protection will be necessary until trees have grown beyond browse and antler rub damages.



Figure 8. A downstream shot of the Green Pond unnamed tributary.



Figure 9. This photo shows 35 feet of potential streambank restoration planting behind 375 Woodbine Drive. White plastic pipes extended above the grade are suspected to be lateral cleanouts from the sewer or defunct water lines. Riparian restoration will require a utility mark out to be mindful of trees not impacting sewage flows from homes.



Figure 10. Looking upstream on the Green Pond unnamed tributary, the riparian corridor is intact. Less mowing along the streambank is recommended near Butternut Drive to maintain the riparian corridor. These locations appear to be fitting for woody riparian restoration.



Figure 11. A constriction at the pipe caused by rock placement behind the plastic HDPE pipe culvert. The upstream end of the Green Pond unnamed tributary appears to be a good location for woody riparian restoration.



Figure 11a. Looking downstream at the Green Pond unnamed tributary duckweed, sediment, and pipe constriction are present.



Figure 12. The Green Pond unnamed tributary flows across Harris Hill Road at this location. A 12-inch stormwater pipe in the unnamed tributary flows into a heavily wooded area before heading downstream along Harris Hill Road.



Figure 13. A shot looking downstream on the Green Pond unnamed tributary from Harris Hill Road.



Figure 14. The Green Pond unnamed tributary concrete culvert pipe crosses the road heading downstream at 289 Harris Hill Road. There is an 18-inch black HDPE pipe to the left of the unnamed tributary, adjacent to the driveway.



Figure 15. The concrete culvert has a 3-4-inch drop to the unnamed tributary, cascading into the downstream channel. A rock apron is recommended for aquatic connectivity and to prevent further scour from developing.



Figure 16. This photo shows bank erosion. This is a great habitat along the Green Pond unnamed tributary that could benefit from streamside planting.



Figure 16a. Considering the busy traffic along Harris Hill Road, a small litter cleanup could be organized.



Figure 17. A storm drain on the opposite side of Harris Hill Road which drains to the Green Pond unnamed tributary.



Figure 18. An 18-inch black HDPE stormwater pipe found 6 feet above the Green Pond unnamed tributary. There is no rock apron; it is recommended to either use existing rocks in the channel to construct an apron or cut the length of the pipe back.



Figure 19. An image of an outlet from the end of an 18-inch stormwater pipe that drains into the Green Pond unnamed tributary. Gravel deposition and a scour pool are visible below the pipe.



Figure 20. This image shows that the stream bank is severely eroded. Root anchored stabilization is recommended. To minimize disturbance, brush wattle restoration could occur.



Figure 21. An 18-inch black HDPE stormwater pipe crossing Harris Hill Road.



Figure 22. An 18-inch black HDPE stormwater pipe that outlets to the Green Pond unnamed tributary is present at this location. Invasive removal of Japanese barberry and Multi-flora roses is recommended.



Figure 23. A shot of a concrete culvert under a private driveway that has a wide floodplain and a gravel bar deposit upstream. The driveway causes a rip-rap swale coming into the unnamed tributary.

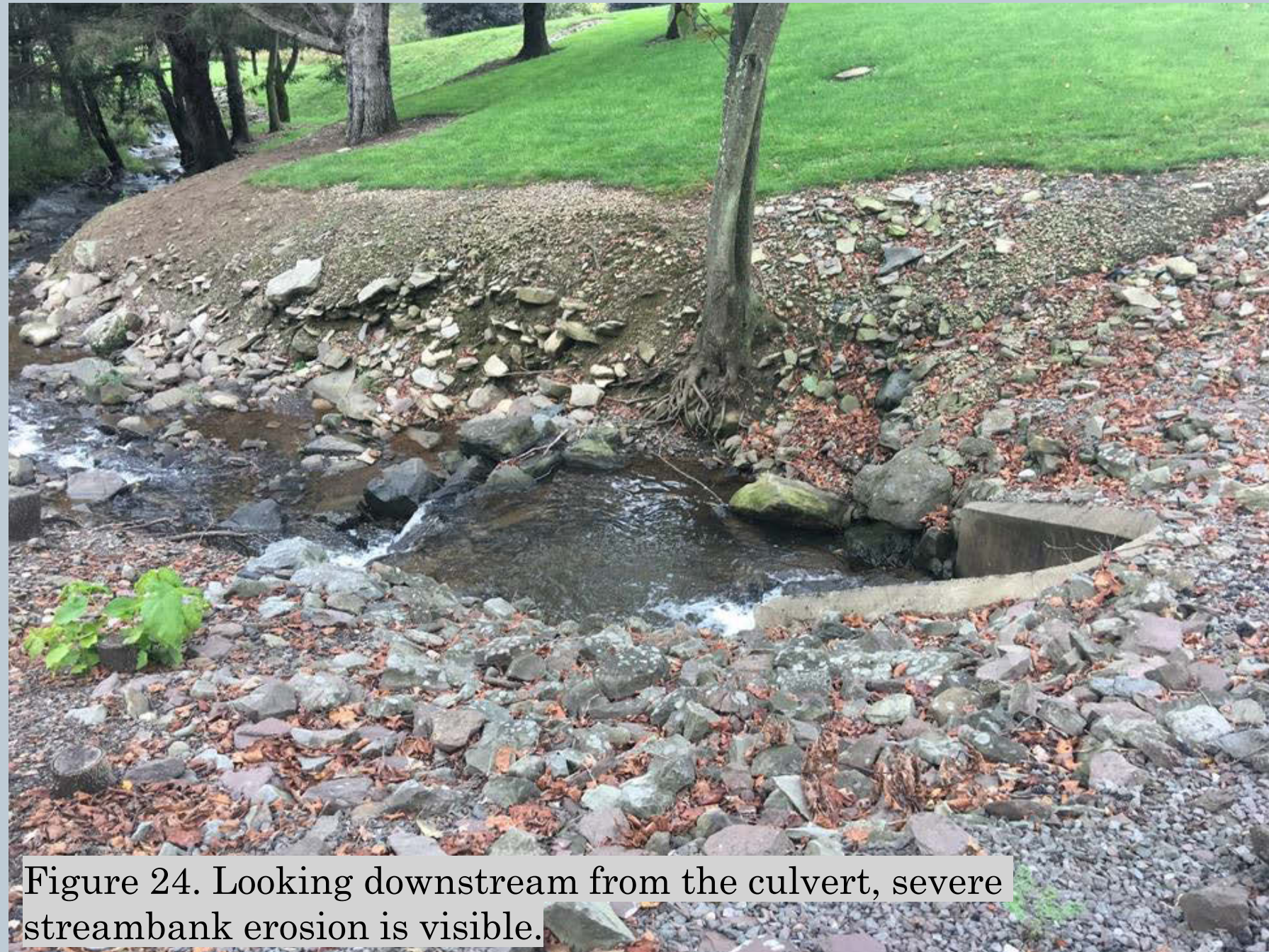


Figure 24. Looking downstream from the culvert, severe streambank erosion is visible.



Figure 24a. A shot looking upstream toward the culvert along a private driveway.



Figure 25. A log vane deflector or rip-rap are recommended, along with the removal of the rock check dam, to prevent further downcutting of the Green Pond unnamed tributary.



Figure 27. The Green Pond unnamed tributary flows under the bridge at the intersection of Harris Hill Road and E. Center Street. This view is looking downstream where a gas line lies along the unnamed tributary.



Figure 27a. A large Shagbark Hickory near the corner of East Center Street and the bottom of Harris Hill Road.

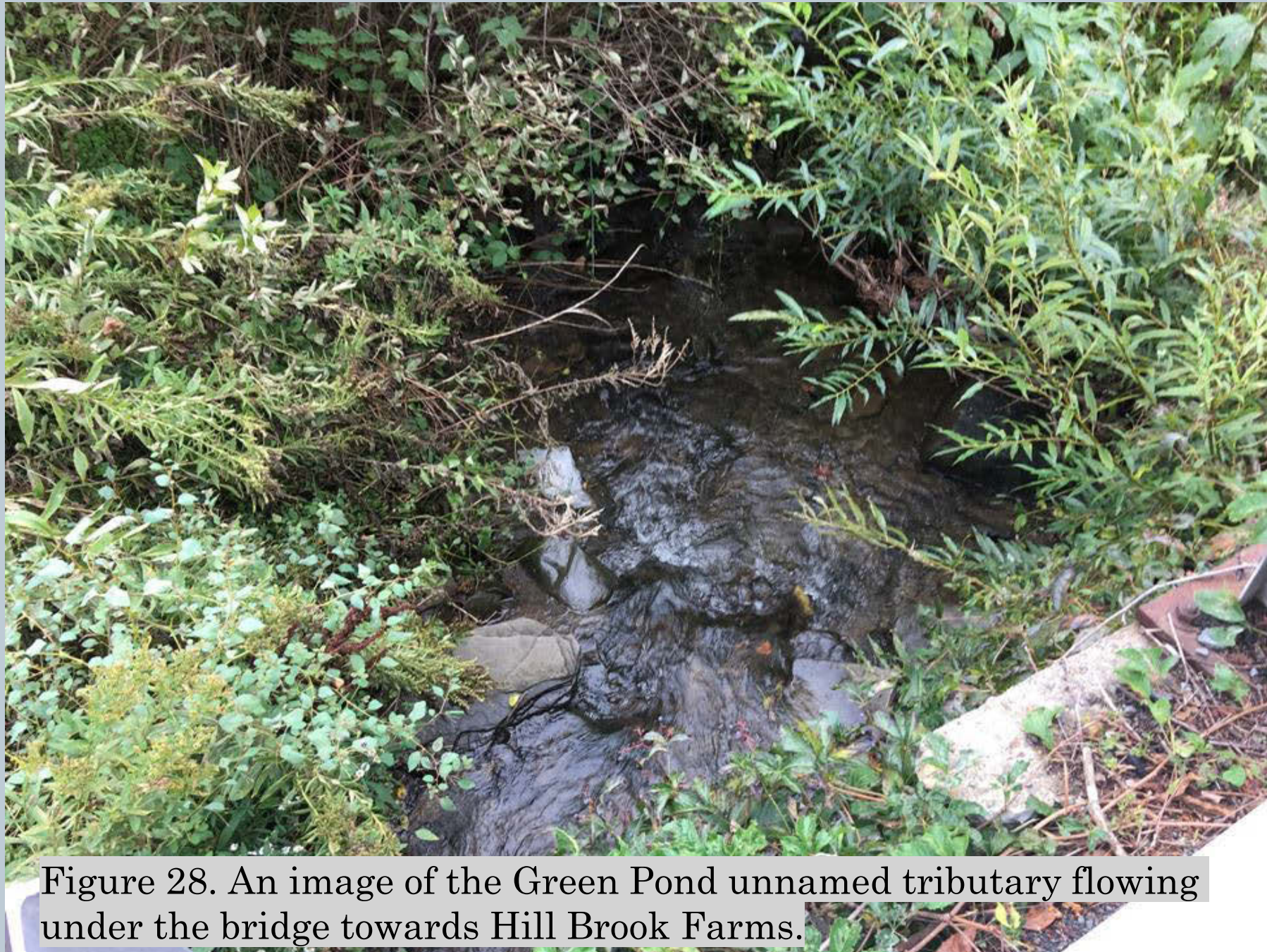


Figure 28. An image of the Green Pond unnamed tributary flowing under the bridge towards Hill Brook Farms.



Figure 29. The Green Pond unnamed tributary looking downstream along E. Center Street. This is a shot of a 36-inch concrete pipe culvert with a masonry headwall. The left wall is failing, and the headwall can easily be reconstructed by hand.



Figure 30. A piece of historic farm equipment found on site.

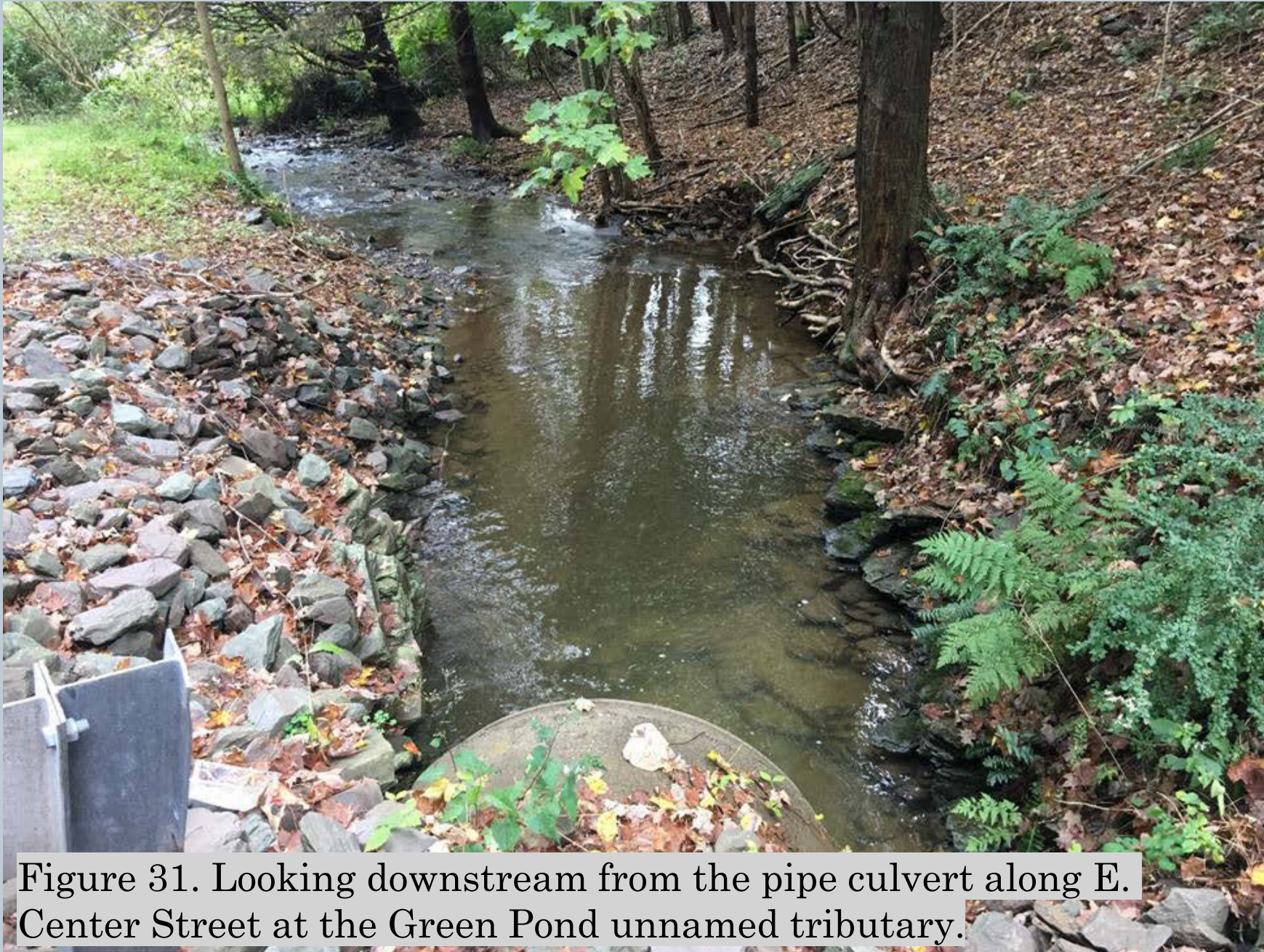


Figure 31. Looking downstream from the pipe culvert along E. Center Street at the Green Pond unnamed tributary.



Figure 32. Looking downstream at the box culvert on the Green Pond unnamed tributary, located under the private driveway at 230 E. Center Street.

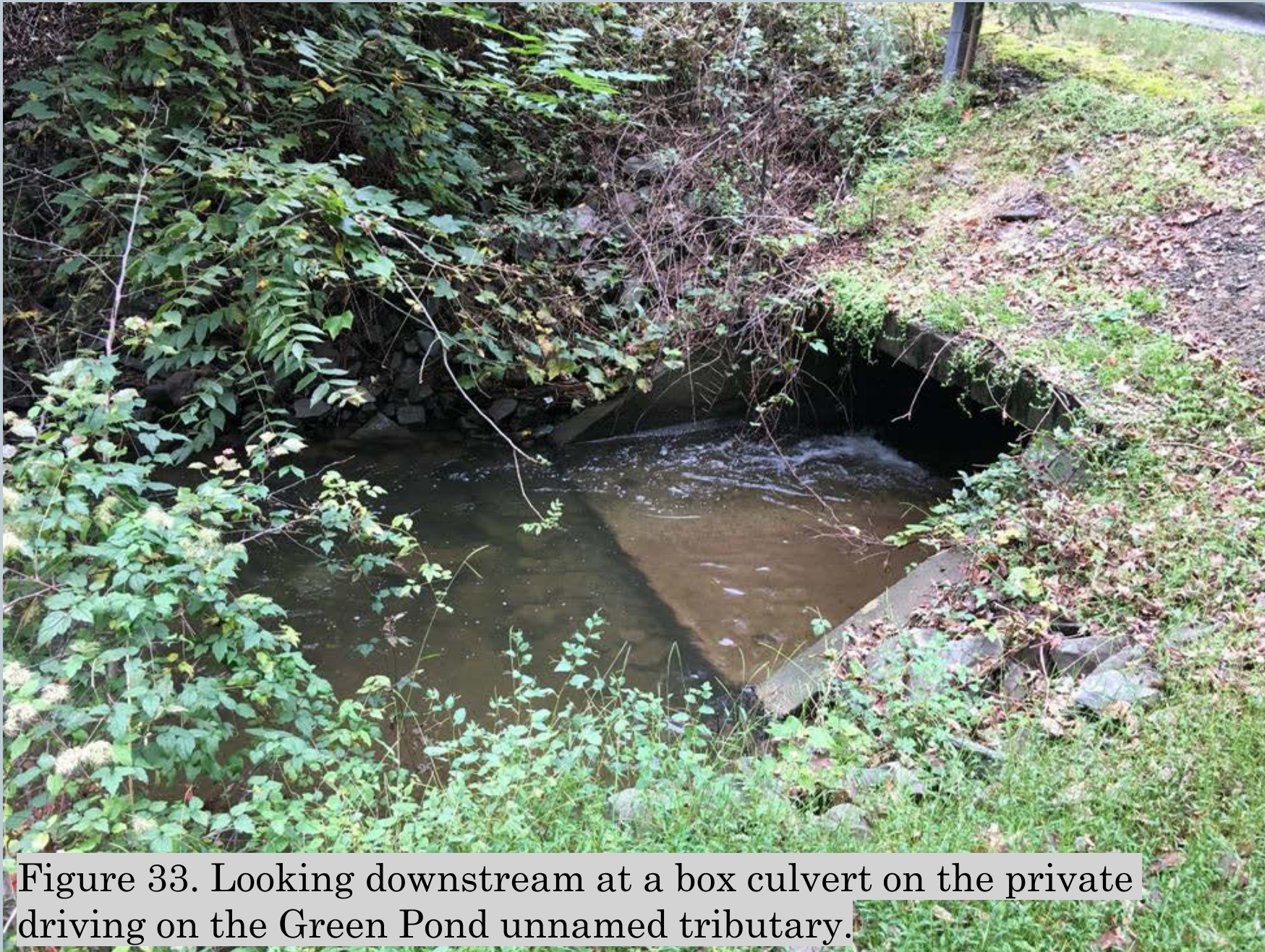


Figure 33. Looking downstream at a box culvert on the private driving on the Green Pond unnamed tributary.



Figure 34. A photo of an unnamed tributary to the Green Pond unnamed tributary which flows from a curb cut in the Echo Valley Mobile Home Park.

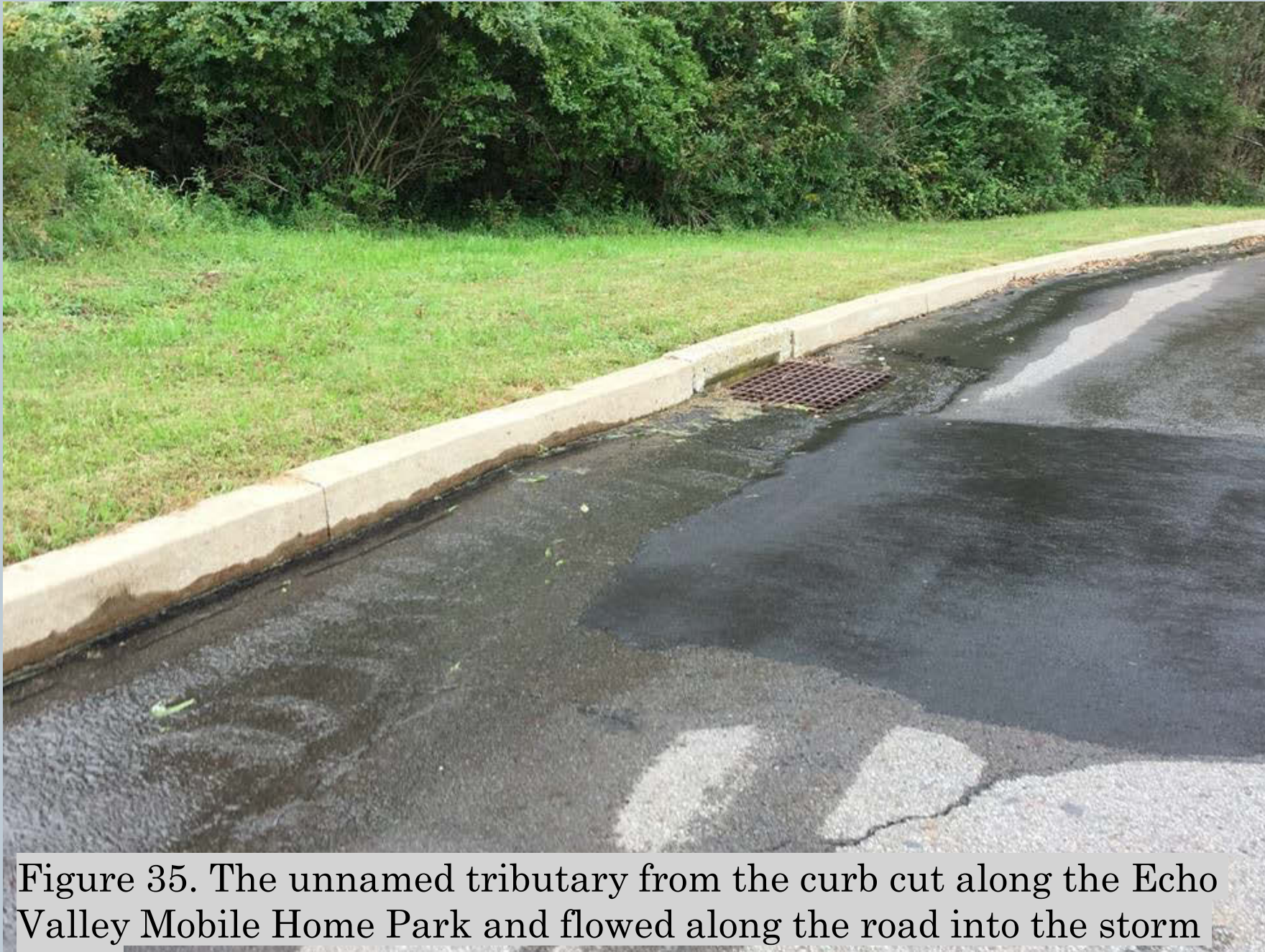


Figure 35. The unnamed tributary from the curb cut along the Echo Valley Mobile Home Park and flowed along the road into the storm drain.



Figure 36. A storm drain leading to a stormwater basin.



Figure 37. A box culvert on the Green Pond unnamed tributary, looking upstream.



Figure 38. A box culvert on the Green Pond unnamed tributary, looking downstream.



Figure 39. A stormwater basin at the Echo Valley Mobile Home Park.



Figure 40. A stormwater basin outlet concrete pipe.



Figure 41. Looking upstream at the box culvert, this location cascades to the Green Pond unnamed tributary (around 3-inches). This location could use a rock apron for aquatic organism passage.



Figure 42. A shot looking downstream at a corrugated squash culvert pipe along Echo Valley Drive. This culvert is grouted and cemented with rock and rusted out completely at the bottom of the corrugated metal culvert pipe.



Figure 43. Looking upstream on corrugated squash pipe under Echo Valley Drive. This unnamed tributary is sediment-laden. (There is another unnamed tributary to the Green Pond unnamed tributary on the opposite side of Echo Valley Drive that was inaccessible).

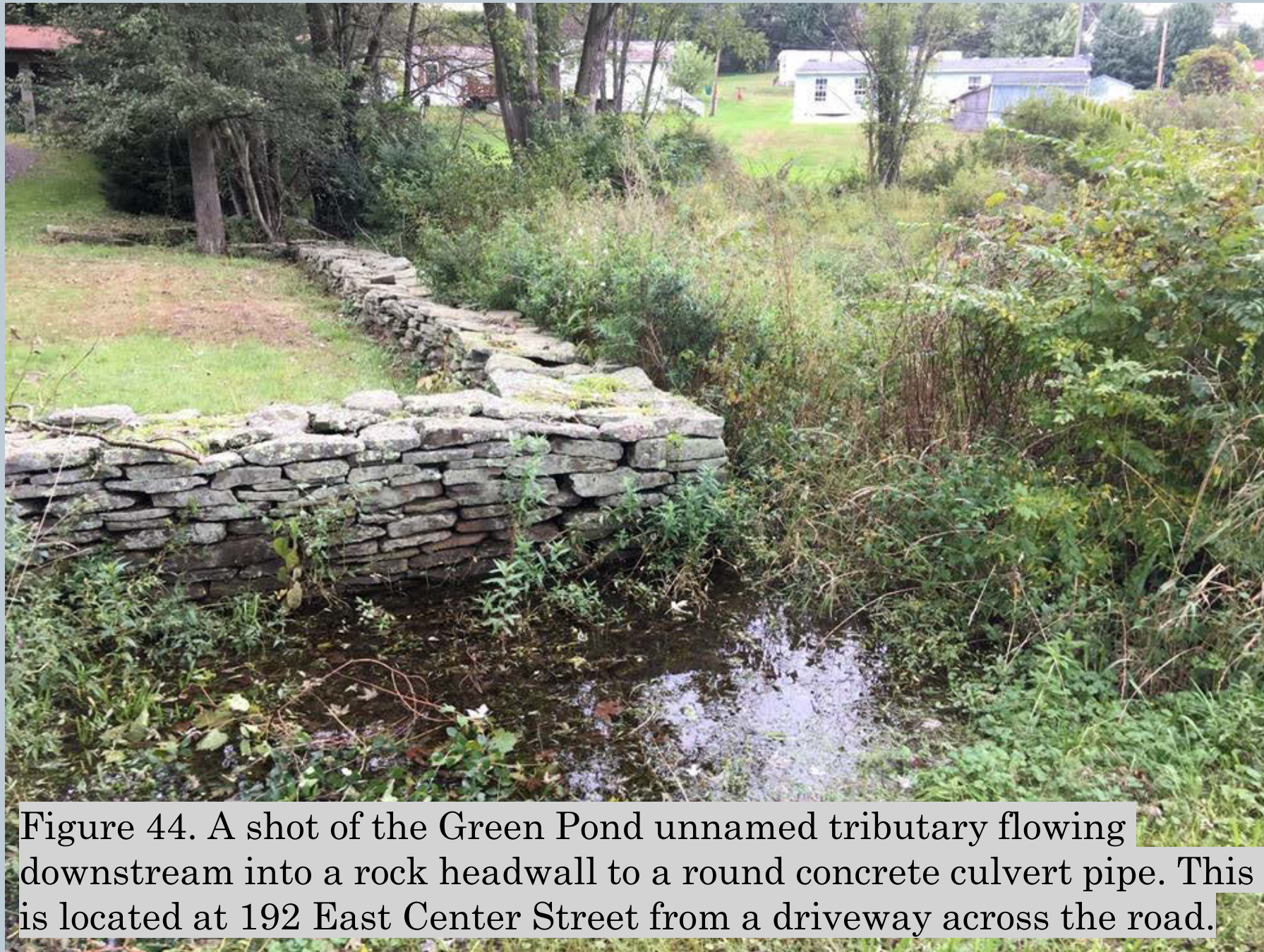


Figure 44. A shot of the Green Pond unnamed tributary flowing downstream into a rock headwall to a round concrete culvert pipe. This is located at 192 East Center Street from a driveway across the road.



Figure 45. Looking downstream on the Green Pond unnamed tributary. This location was the Stegmaier Estate 20 years prior.



Figure 46. An unnamed tributary to Toby Creek off N. Franklin Street and Ferguson Avenue.



Figure 47. An unnamed tributary to Toby Creek at the corner of N. Franklin and Ferguson Avenue.

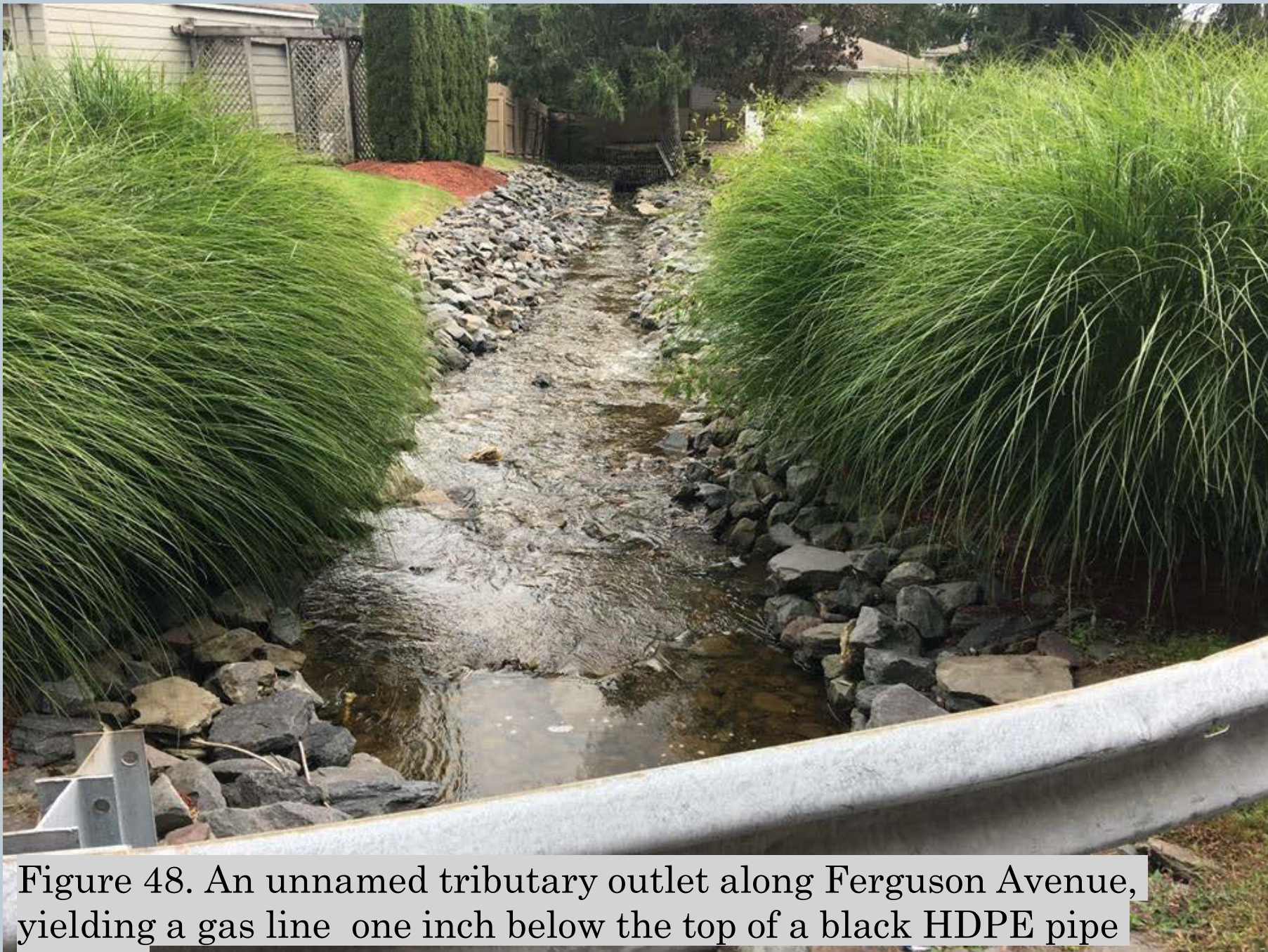


Figure 48. An unnamed tributary outlet along Ferguson Avenue, yielding a gas line one inch below the top of a black HDPE pipe culvert.



Figure 49. A headwall and concrete culvert pipe along the cul de sac on Ferguson Avenue. This is a shot of a 12-foot section of the unnamed tributary to Toby Creek.



Figure 50. A photo looking upstream on the unnamed tributary to Toby Creek off Ferguson Avenue. Minor streambank erosion and undercutting are present.



Figure 51. Taken looking downstream on the unnamed tributary to Toby Creek, behind McDonald's.



Figure 52. This shot shows woody debris blockage due to a large willow tree that has fallen. The tree needs to be cut and removed.



Figure 53. Gravel deposition on the unnamed tributary to Toby Creek.



Figure 54. Gravel bars on the unnamed tributary to Toby Creek. Streambank stabilization is recommended in this area. The fallen willow tree could be used as a log deflector to help with keeping the unnamed tributary in its banks.



Figure 55. A wingwall box culvert. This shot shows a small plunge pool looking downstream towards the Dollar General parking lot. The culvert flows under the Dollar General Parking lot.



Figure 56. An unnamed tributary to Toby Creek behind Amelia's Diner. The unnamed tributary flows out of a much wider box culvert before reaching Toby Creek. This location is sediment-laden and has a presence of Japanese knotweed.



Figure 57. A shot of an unnamed tributary that flows through a box culvert before entering Toby Creek just above Amelia's Diner.

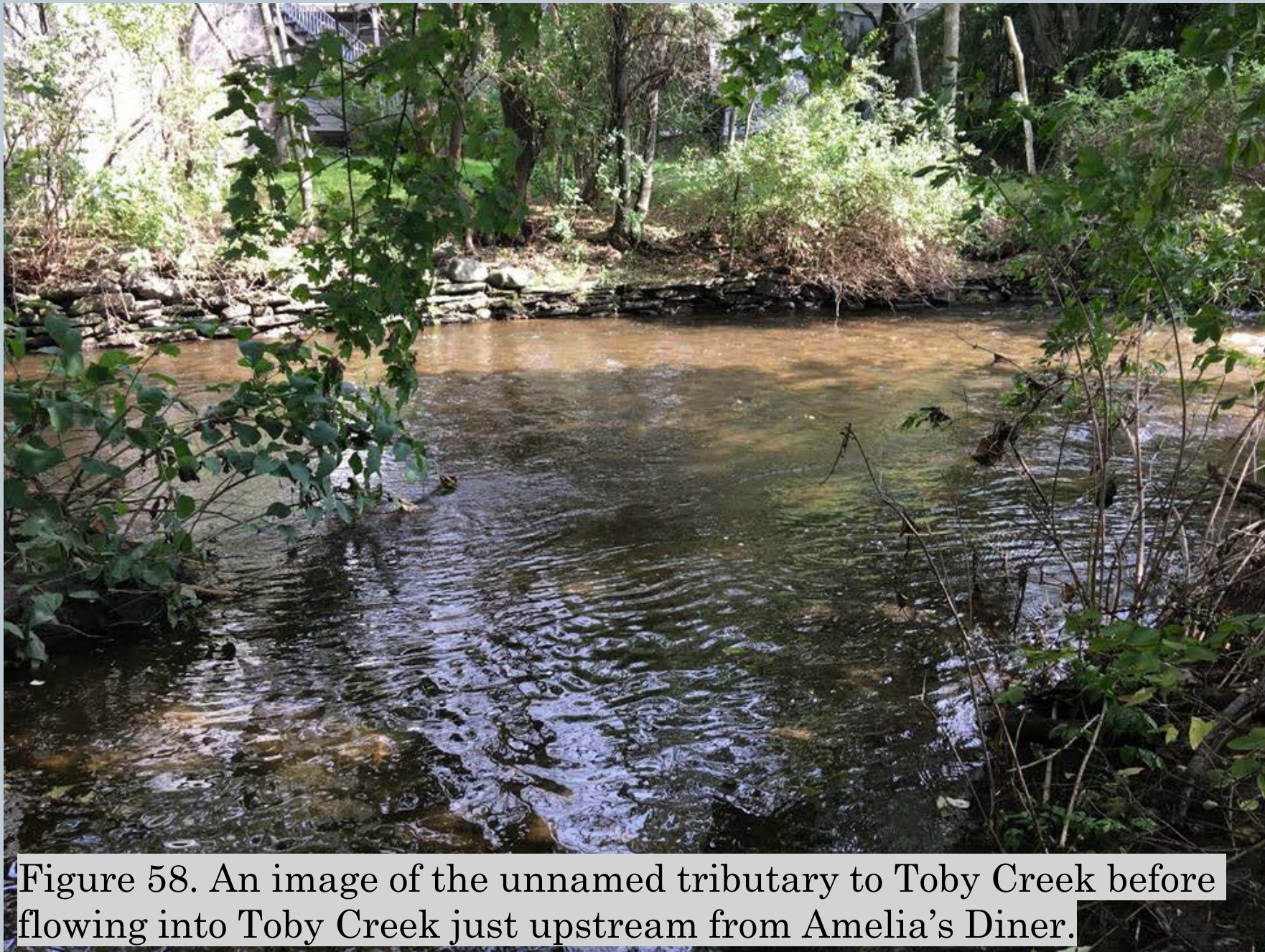


Figure 58. An image of the unnamed tributary to Toby Creek before flowing into Toby Creek just upstream from Amelia's Diner.



Figure 59. A headwater unnamed tributary to Toby Creek, draining from the eastern edge of the St. Nicholas Cemetery.



Figure 60. A storm drain along N. Pioneer Avenue. This drain takes all the flow down to Toby Creek, along W. Center Street, and down through Thomas' Market and McDonald's.



Figure 61. An outlet of storm drain from the unnamed tributary to Toby Creek at the intersection of W. Center Street and N. Pioneer Avenue.

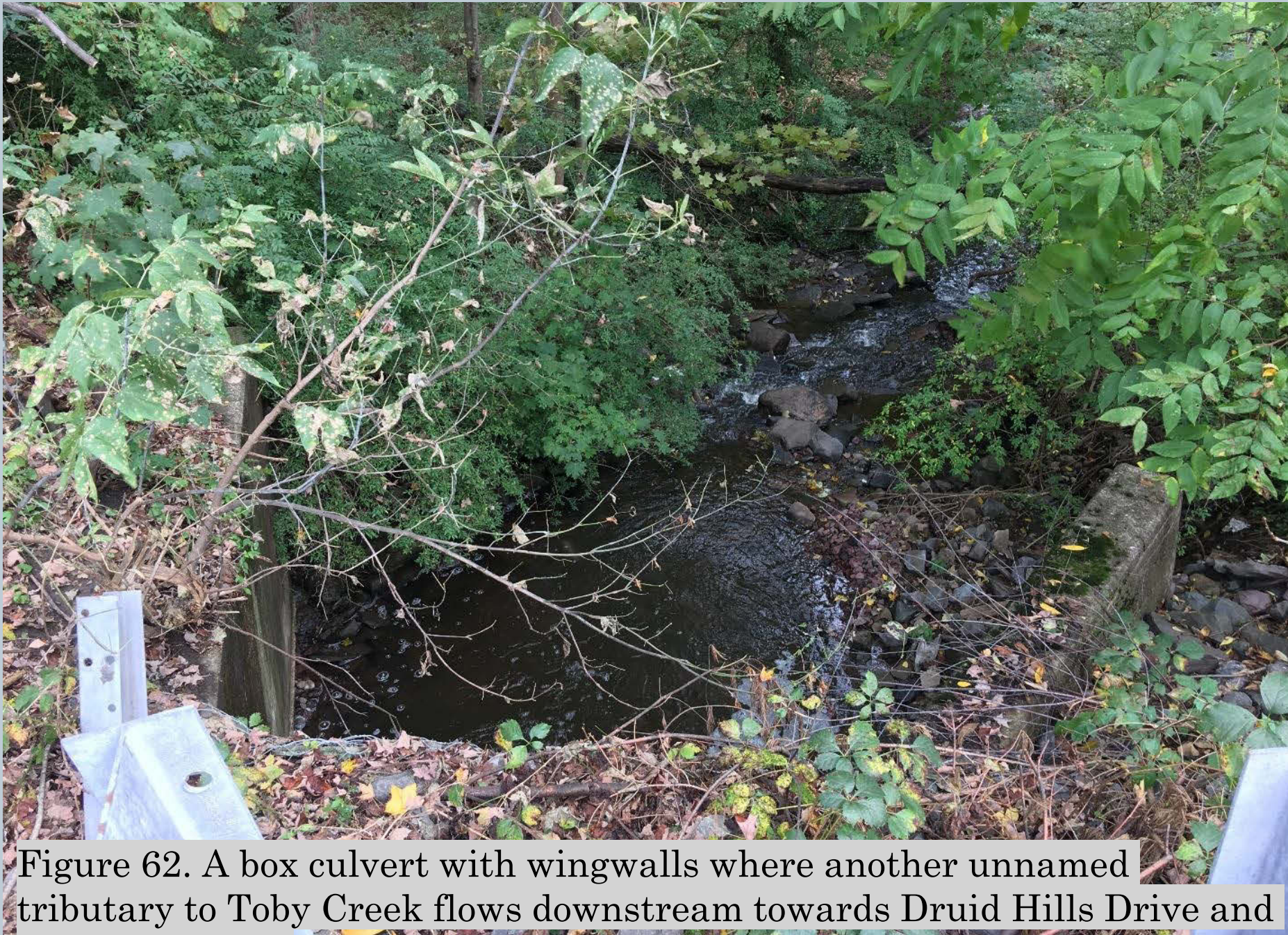


Figure 62. A box culvert with wingwalls where another unnamed tributary to Toby Creek flows downstream towards Druid Hills Drive and Ferguson Drive.



Figure 63. A collapsed area on the upstream end of another unnamed tributary to Toby Creek off Pioneer Avenue and Overbrook Road.

January 7, 2019

Connecting Neighborhoods

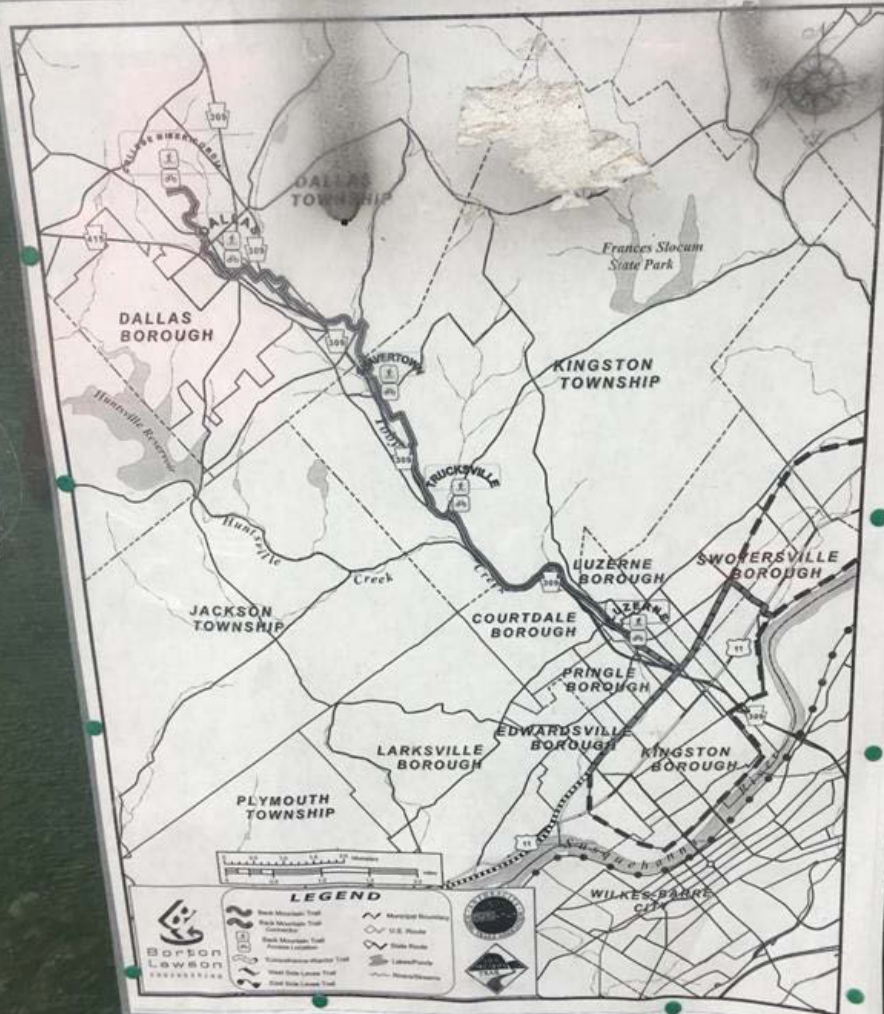




Figure 64. A shot of Trout Brook flowing through a heavily wooded area on private property located to the east of Wyoming Road, alongside of Lower Demunds Road, and through a 24-inch black HDPE pipe crossing over Lower Demunds Road into a large forested wetland area.



Figure 65. A shot of Trout Brook flowing through the black HDPE pipe culvert into a large forested wetland area that is located on private property. The culvert is not aligned beneath Lower Demunds Road.

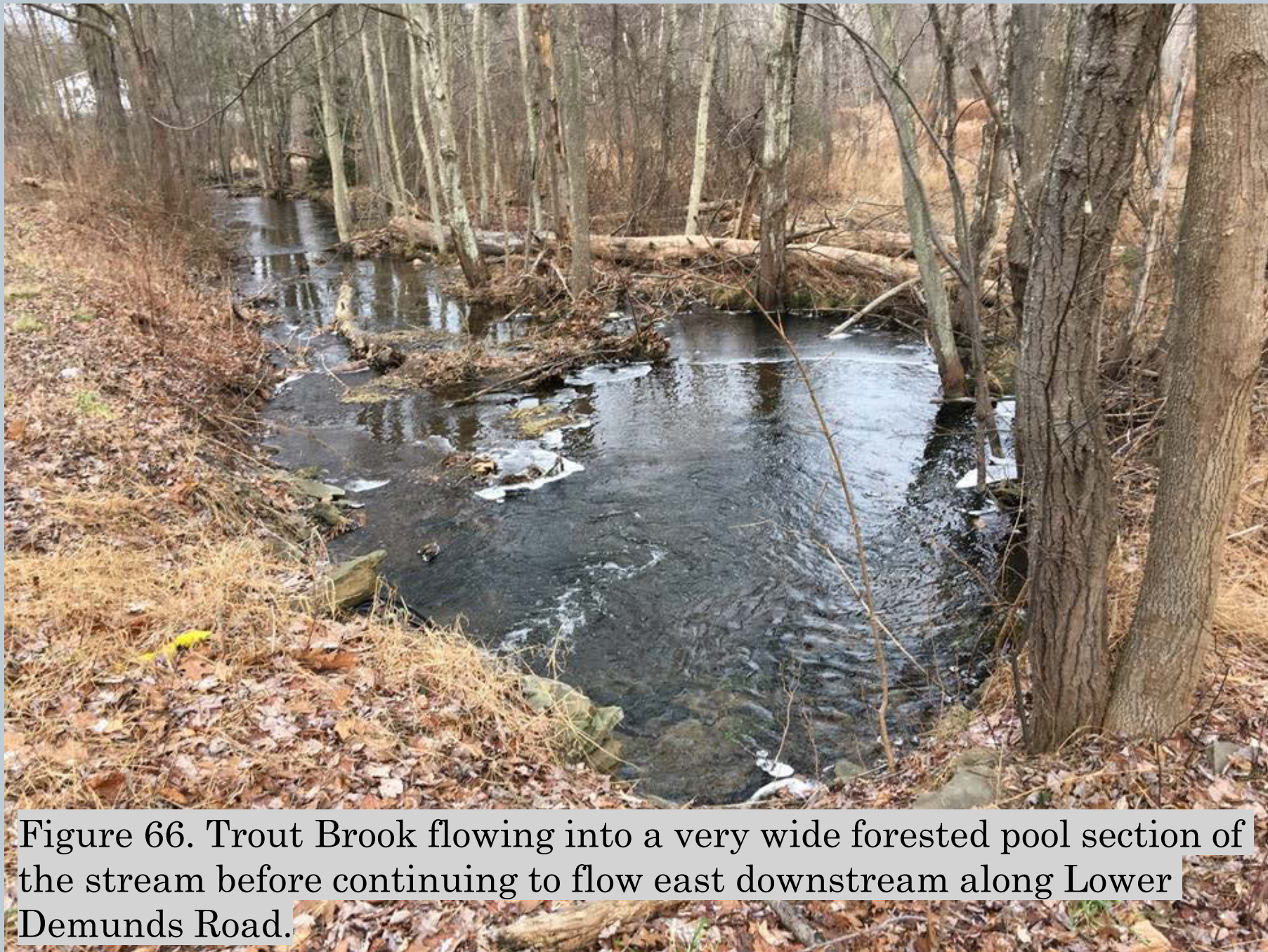


Figure 66. Trout Brook flowing into a very wide forested pool section of the stream before continuing to flow east downstream along Lower Demunds Road.



Figure 67. Trout Brook flowing downstream. This shot is located behind the end of an old farm stacked stone wall that opens to the east of Wyoming Road.



Figure 68. Roadside shot of the pasture land along the northwest side of Wyoming Road and wet areas that feed the UNT to Trout Brook before crossing Wyoming Road into Friedmans Farm.



Figure 69. Looking upstream on Trout Brook from a bridge on Wyoming Road. The bridge is found parallel to Lower Demunds Road.

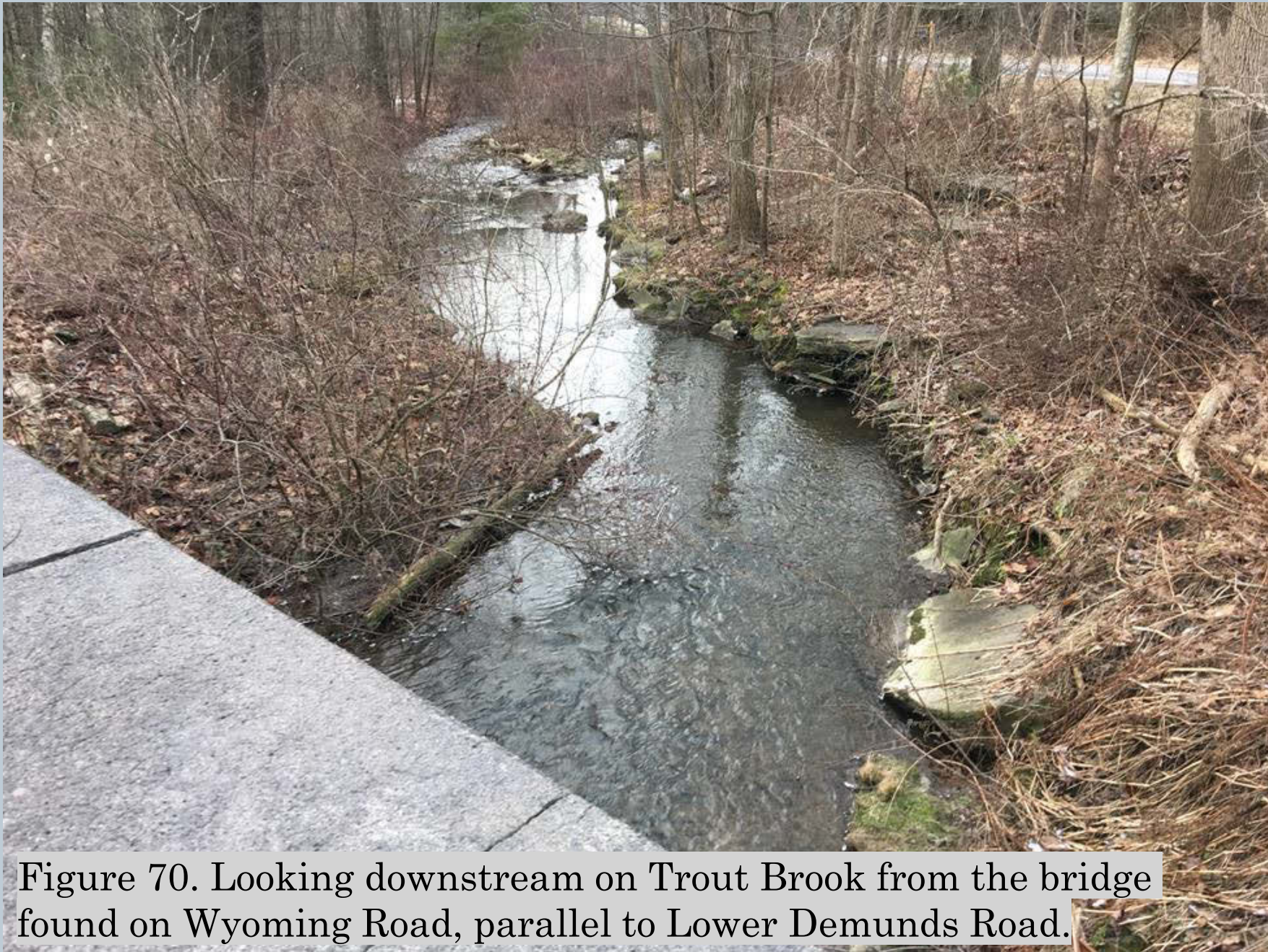


Figure 70. Looking downstream on Trout Brook from the bridge found on Wyoming Road, parallel to Lower Demunds Road.



Figure 71. This photo looks downstream on Trout Brook from a bridge on Ransom Road, along the intersection with Lower Demunds Road.



Figure 72. Looking upstream on Trout Brook from a bridge on Shepards Hill Road, along the intersection with Lower Demunds Road and Ransom Road.

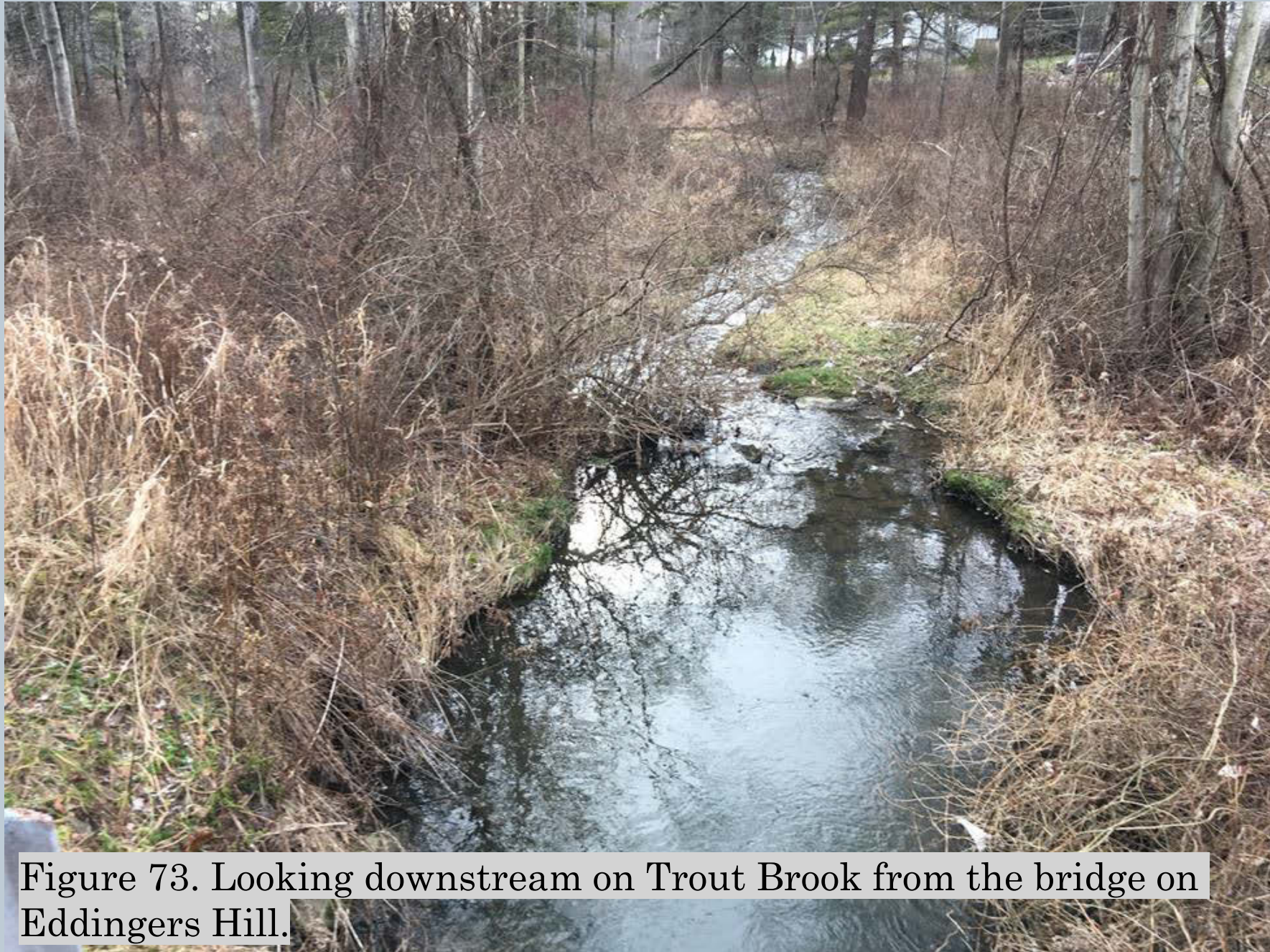


Figure 73. Looking downstream on Trout Brook from the bridge on Eddingers Hill.

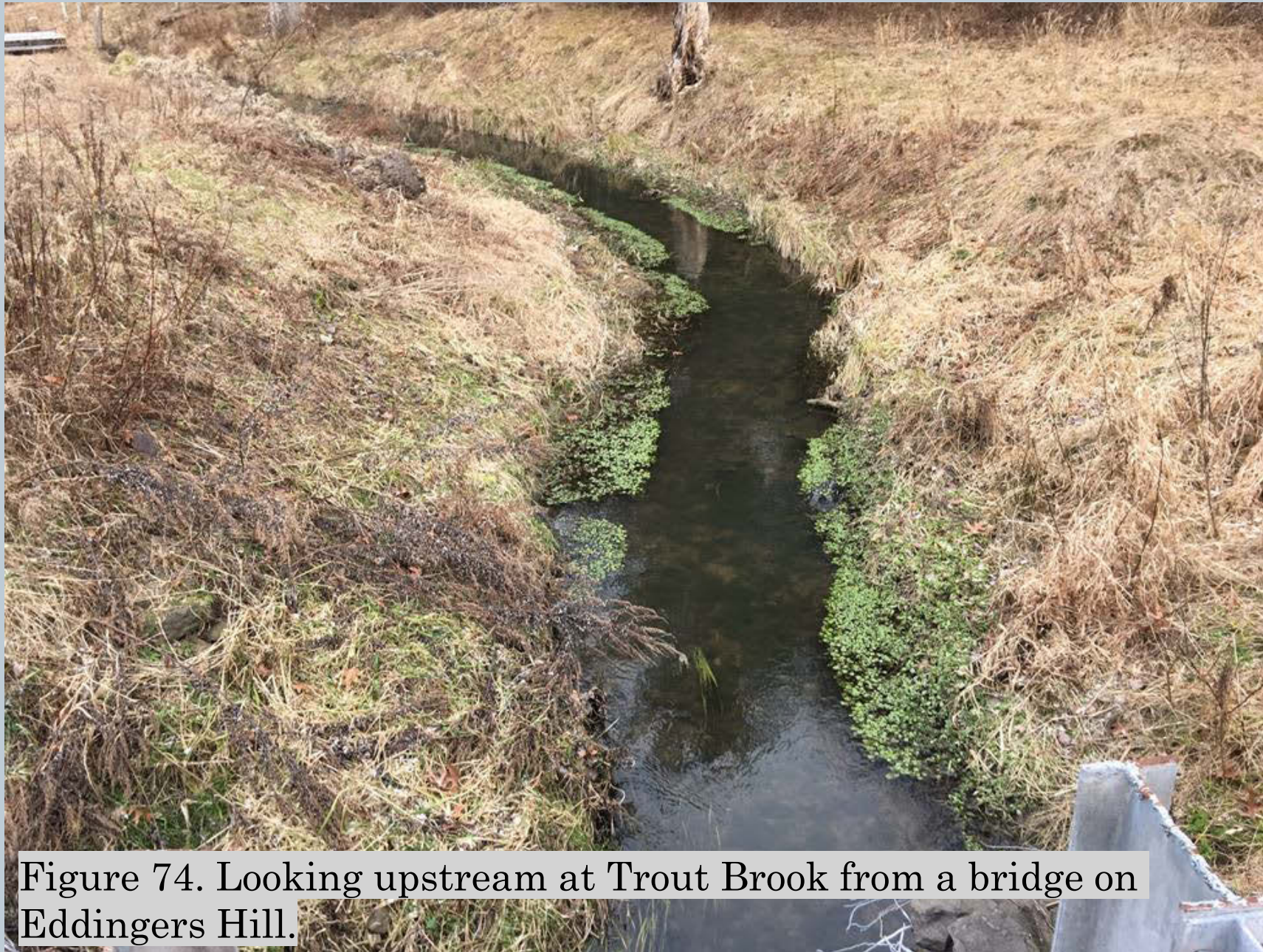


Figure 74. Looking upstream at Trout Brook from a bridge on Eddingers Hill.



Figure 75. Looking downstream on Toby Creek from behind the Pen Fern Oil Gas Station from the bridge over Lower Demunds Road. A large historic rock stabilization placement is seen along the left bank while looking downstream, and there is bed rock present looking to the right of the stream. This bed rock is found adjacent to the Pen Fern Oil Gas Station's foundation that runs up against the right bank of Trout Brook.



Figure 76. This location is looking upstream on Toby Creek, before it flows along N. Main Street and back into Dallas Borough, from the bridge over Lower Demunds Road. A large manmade stone-stacked retaining wall has been historically constructed along the left streambank looking upstream. The retaining wall has created a very straight morphology for the creek for several hundred feet.

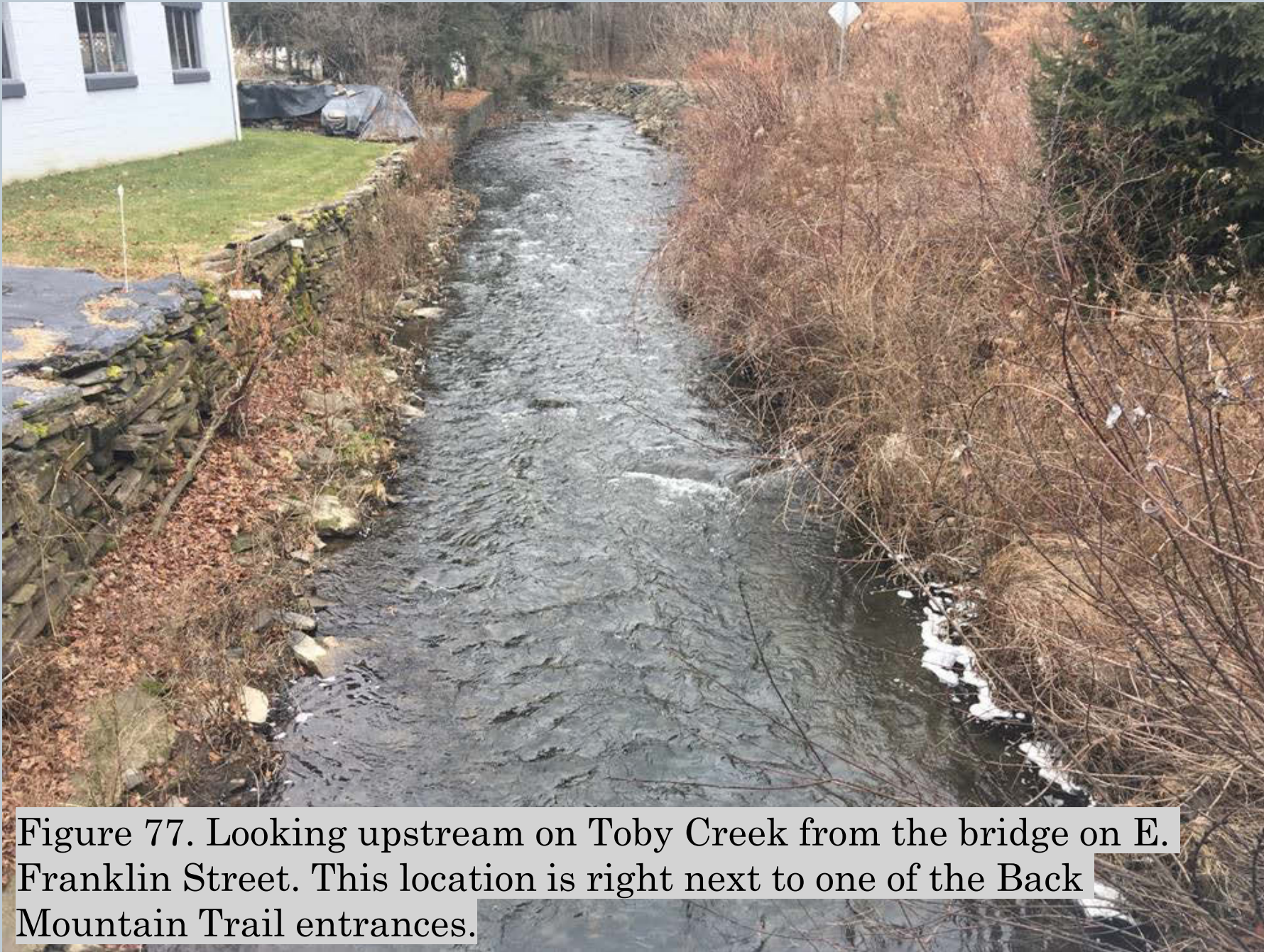


Figure 77. Looking upstream on Toby Creek from the bridge on E. Franklin Street. This location is right next to one of the Back Mountain Trail entrances.

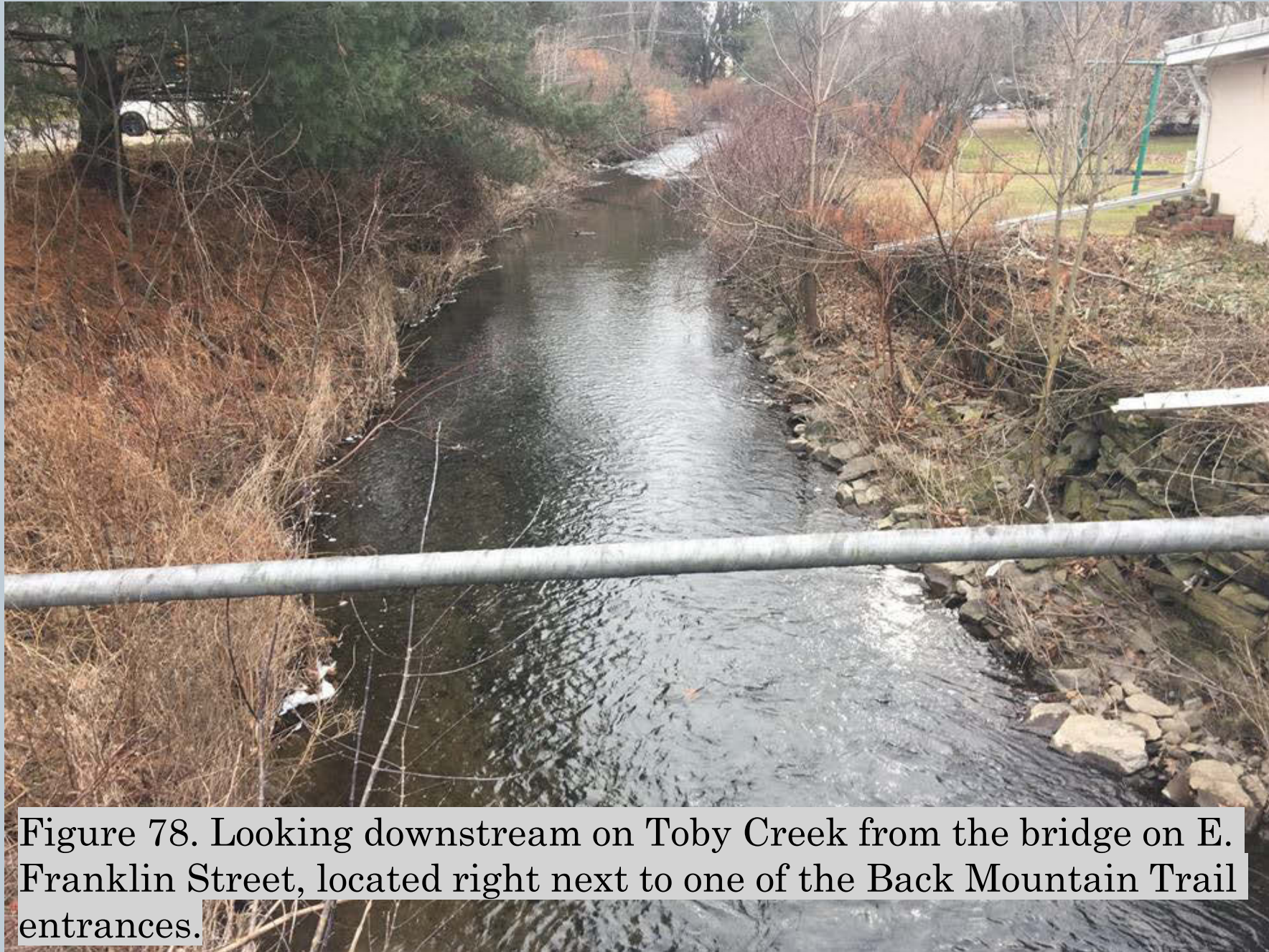


Figure 78. Looking downstream on Toby Creek from the bridge on E. Franklin Street, located right next to one of the Back Mountain Trail entrances.

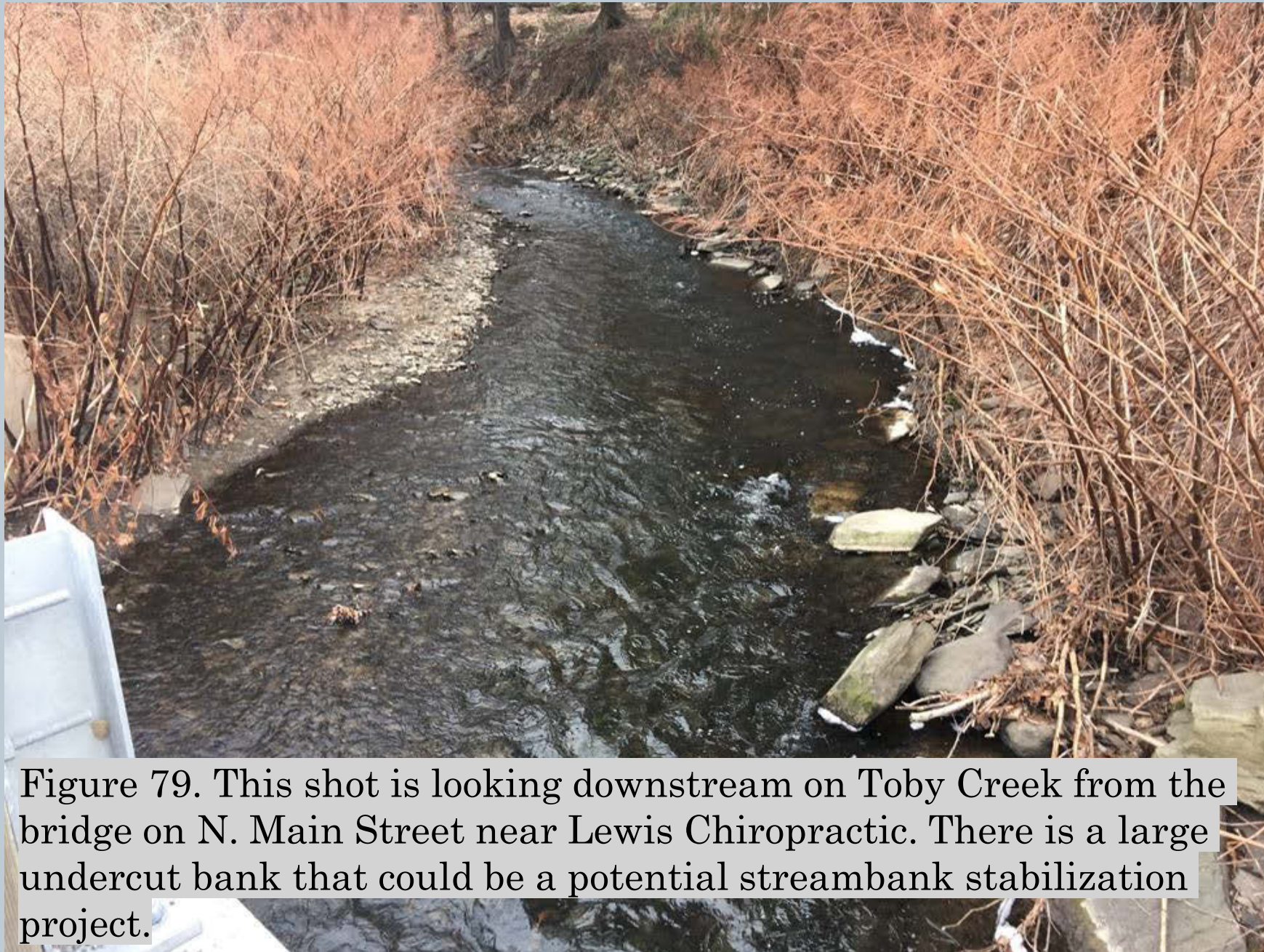


Figure 79. This shot is looking downstream on Toby Creek from the bridge on N. Main Street near Lewis Chiropractic. There is a large undercut bank that could be a potential streambank stabilization project.

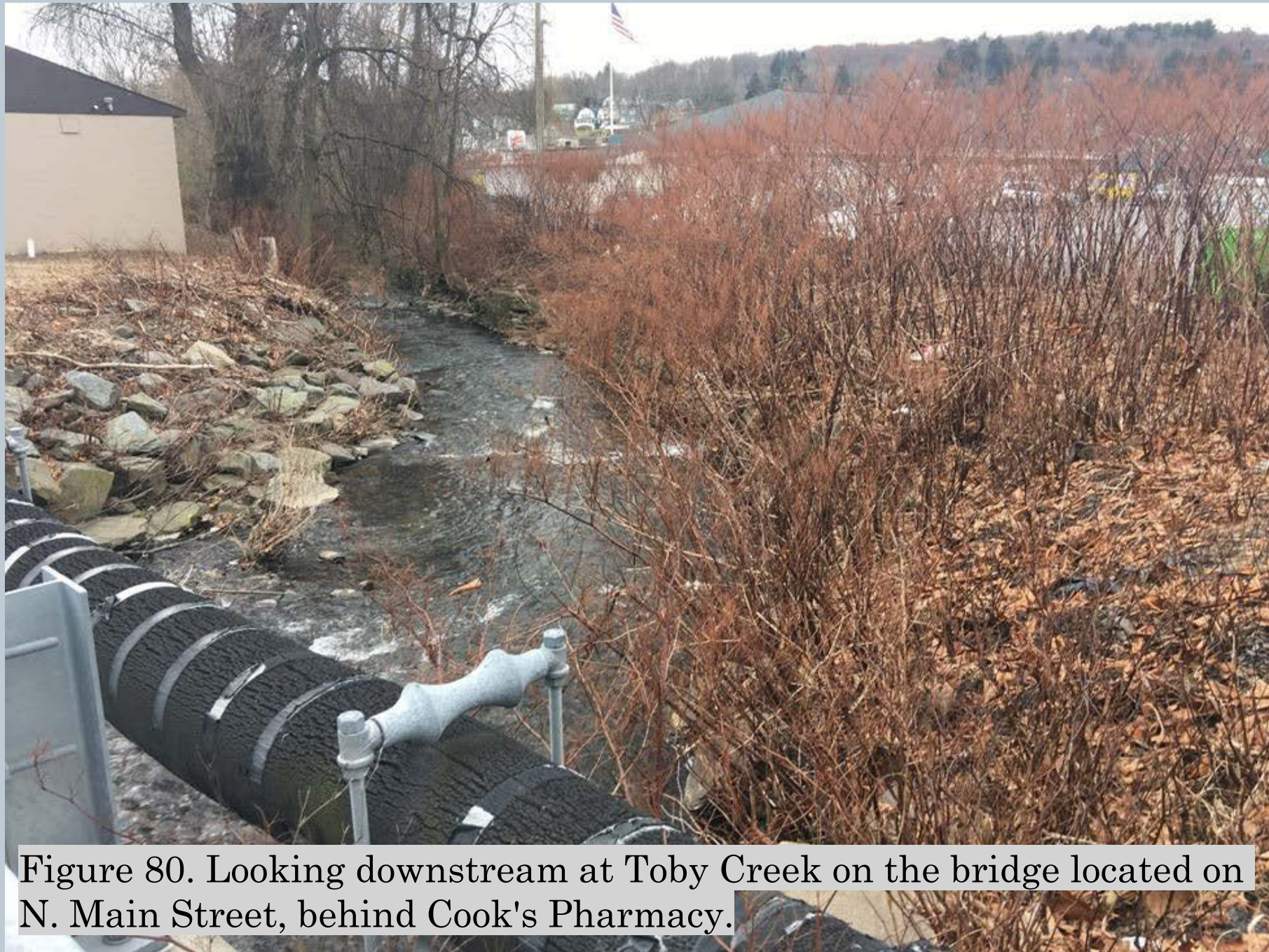


Figure 80. Looking downstream at Toby Creek on the bridge located on N. Main Street, behind Cook's Pharmacy.

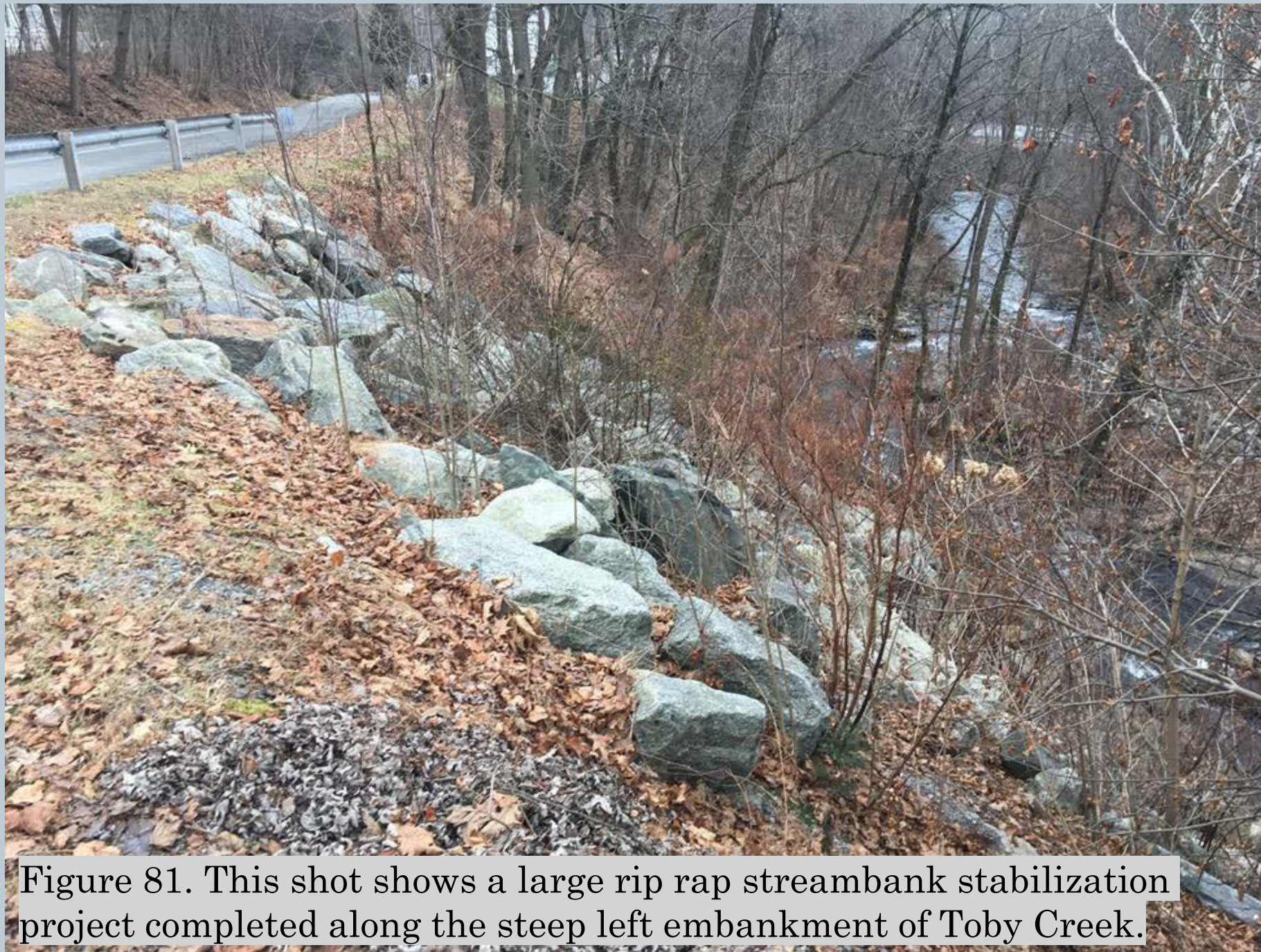


Figure 81. This shot shows a large rip rap streambank stabilization project completed along the steep left embankment of Toby Creek.



Figure 82. A Luzerne Conservation District Toby Creek Restoration Project Sign.

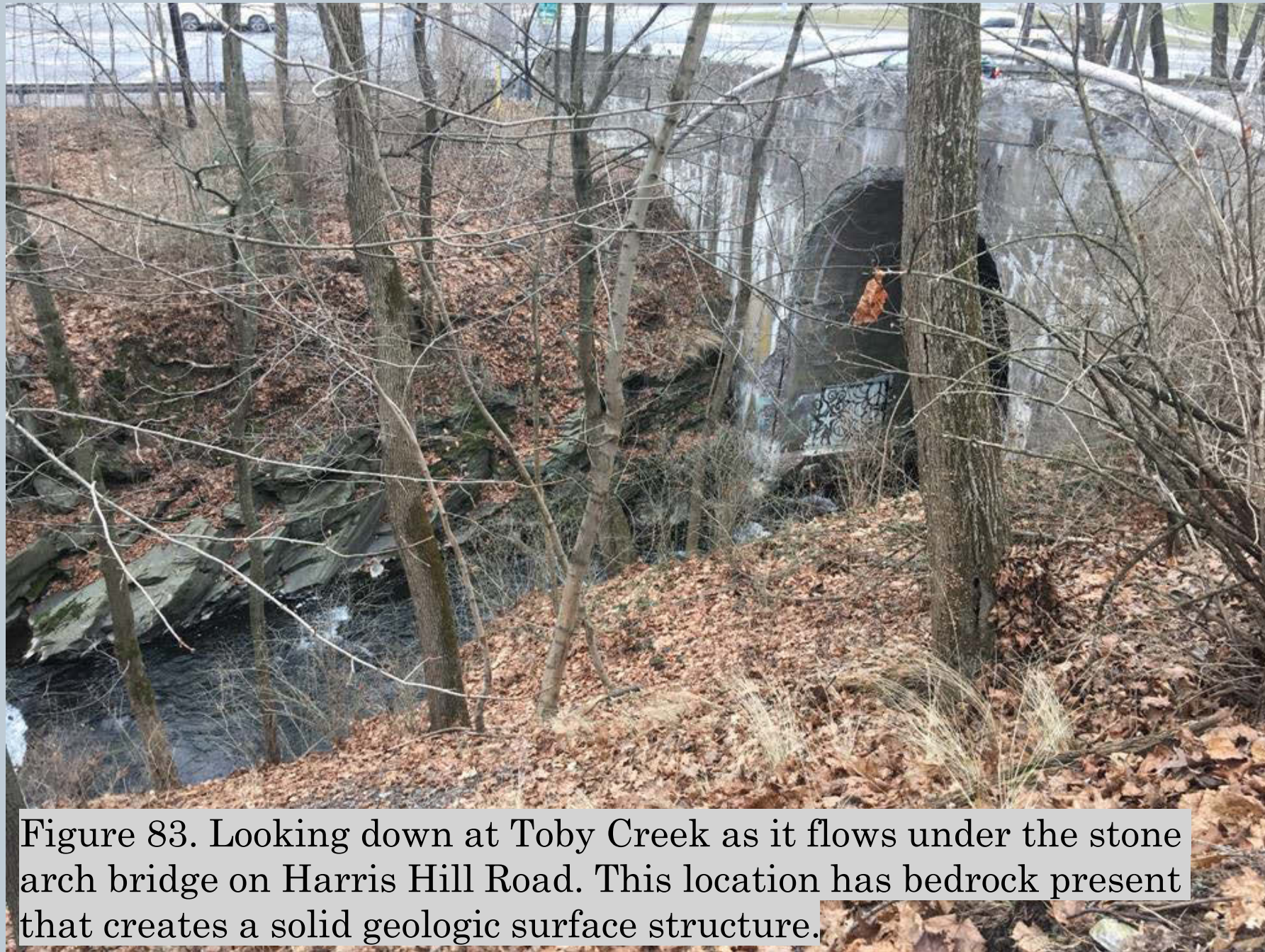


Figure 83. Looking down at Toby Creek as it flows under the stone arch bridge on Harris Hill Road. This location has bedrock present that creates a solid geologic surface structure.

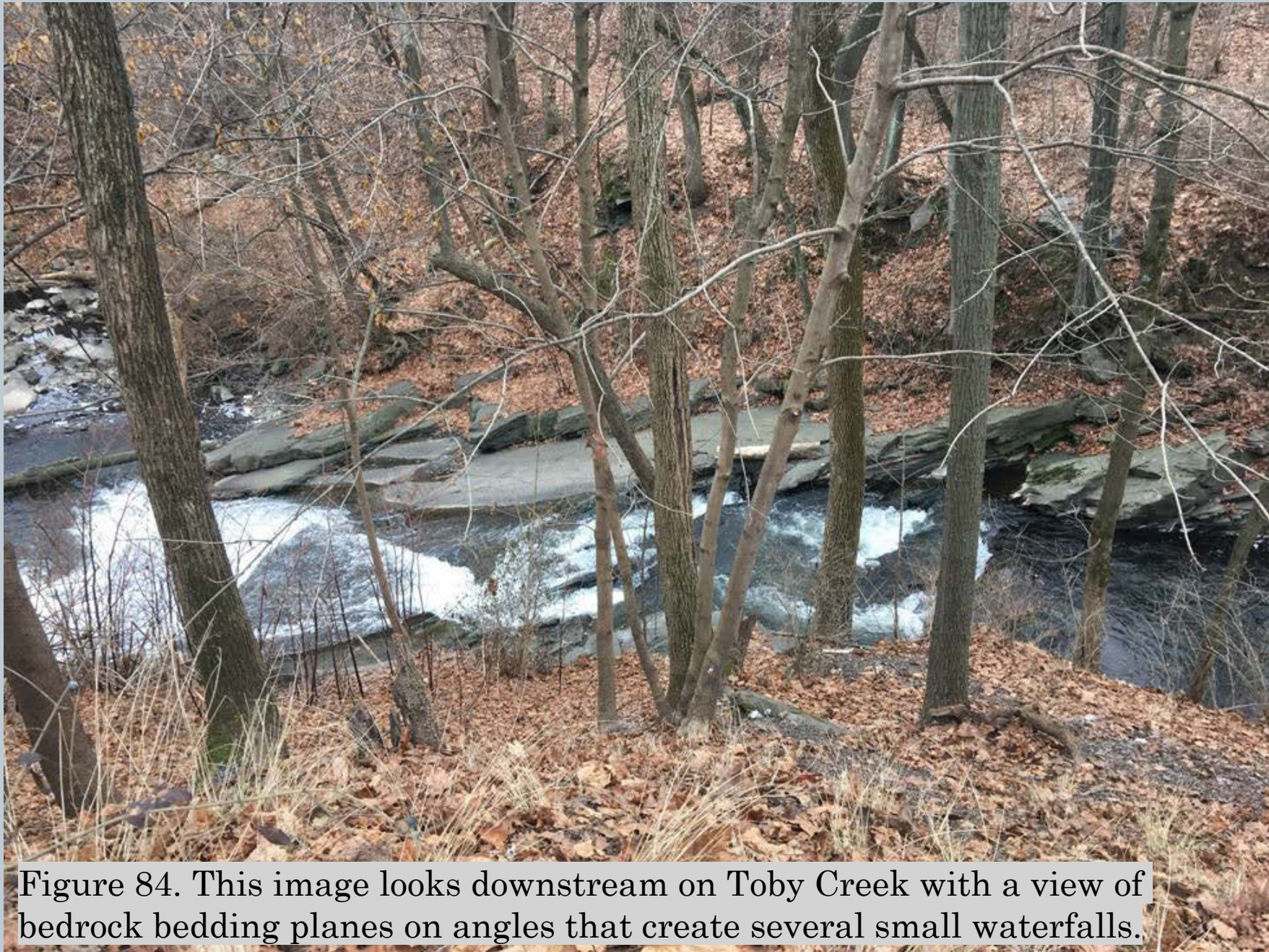


Figure 84. This image looks downstream on Toby Creek with a view of bedrock bedding planes on angles that create several small waterfalls.

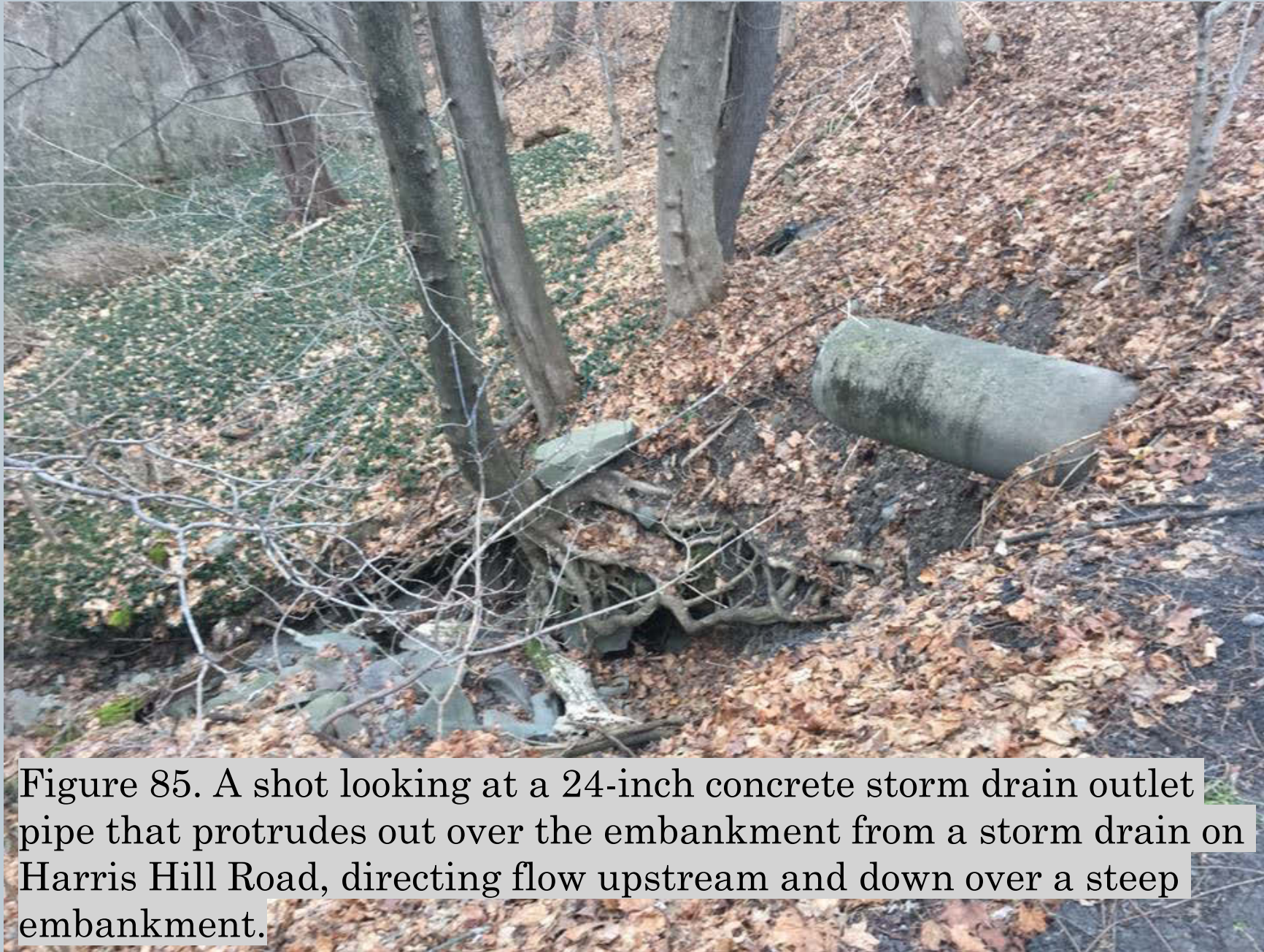


Figure 85. A shot looking at a 24-inch concrete storm drain outlet pipe that protrudes out over the embankment from a storm drain on Harris Hill Road, directing flow upstream and down over a steep embankment.



Figure 86. A shot of the severe drop from the storm drain outlet pipe. This has created a massive undercutting of the bank and stormwater channel all the way down to Toby Creek. A rip rap or large boulder step-pool reinforcement channel conveyance down to Toby Creek is needed to redirect stormwater downstream into Toby Creek rather than upstream.



Figure 87. Looking upstream on Toby Creek from the Harris Hill Road bridge, oriented parallel to the North Memorial Highway (State Route 309).



Figure 88. The Back Mountain Trail (BMT), which was constructed by the Anthracite Scenic Trails Association (ASTA), runs north along Toby Creek and the North Memorial Highway.



Figure 89. A shot looking upstream at Toby Creek from curved concrete retaining wall located along N. Main Avenue. Oriented in the direction of the Lonn Dean Salon and the North Memorial Highway concrete retaining wall, the presence of Japanese knotweed, an invasive, and a gravel bar deposition, opposite the retaining wall, on the inside of the bend of Toby Creek are present.



Figure 90. Looking downstream on Toby Creek from a curved concrete retaining wall along N. Main Street towards Plum Ave. This location has shotcrete rip rap along N. Main Street which is used to stabilize the streambank and protect the road from a historic undercutting that occurs just below the curved retaining wall on the left side of the bank.

January 8, 2019



Figure 91. A dry 18-inch concrete stormwater outfall pipe structure located under Heller's Grove Road, sticking out over the steep bank that is aligned downstream with Toby Creek.



Figure 92. A shot of a dry 24-inch concrete stormwater outfall pipe structure that is located along the left bank of Toby Creek, looking upstream along State Route 309. This structure is draining stormwater from S. Pioneer Avenue and State Route 309.



Figure 93. Taken looking downstream on Toby Creek at a scour pool that has resulted from a 24-inch concrete stormwater outfall pipe structure.



Figure 94. An 18-inch black HDPE stormwater outfall pipe structure along a bridge abutment next to Newell Fuel, along Toby Creek, that is half-filled with sediment. To obtain credit for removal, it is recommended that a DAMA Vac Truck removes the sediment and calculate the volume or weight of the sediment removed.

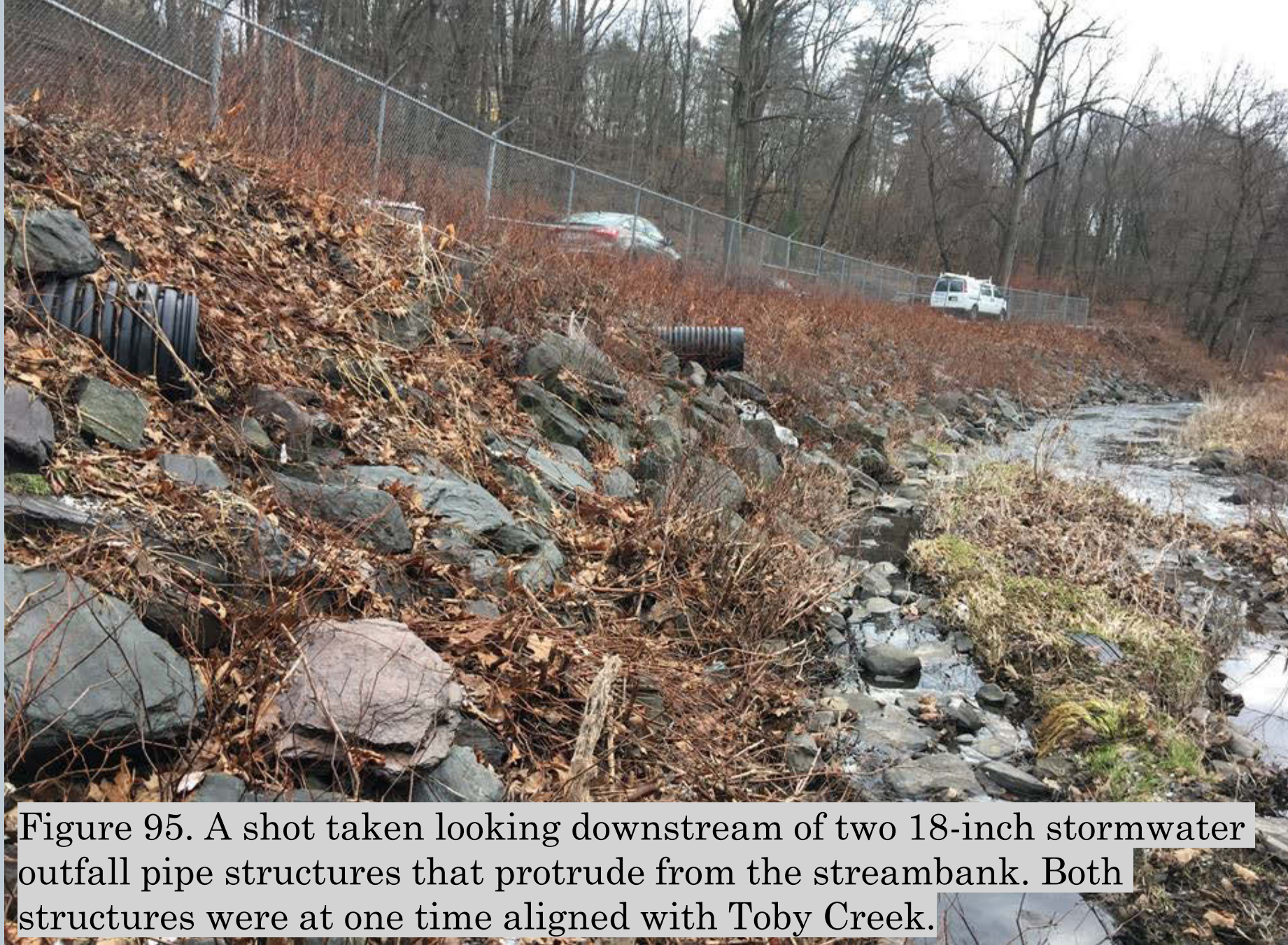


Figure 95. A shot taken looking downstream of two 18-inch stormwater outfall pipe structures that protrude from the streambank. Both structures were at one time aligned with Toby Creek.



Figure 96. A shot looking upstream on Toby Creek at a double box culvert bridge on State Route 309. 100% of the flow is contained beneath the left box and no flow was present in the right box, 50% of the left box contained cobble, and 100% of the right box contained cobble.



Figure 97. A shot looking downstream on Toby Creek from a historic hard-armored streambank stabilization project. Aggradation of cobble and gravel in the right box culvert, under the bridge over State Route 309, has created point bar gravel and cobble deposition.

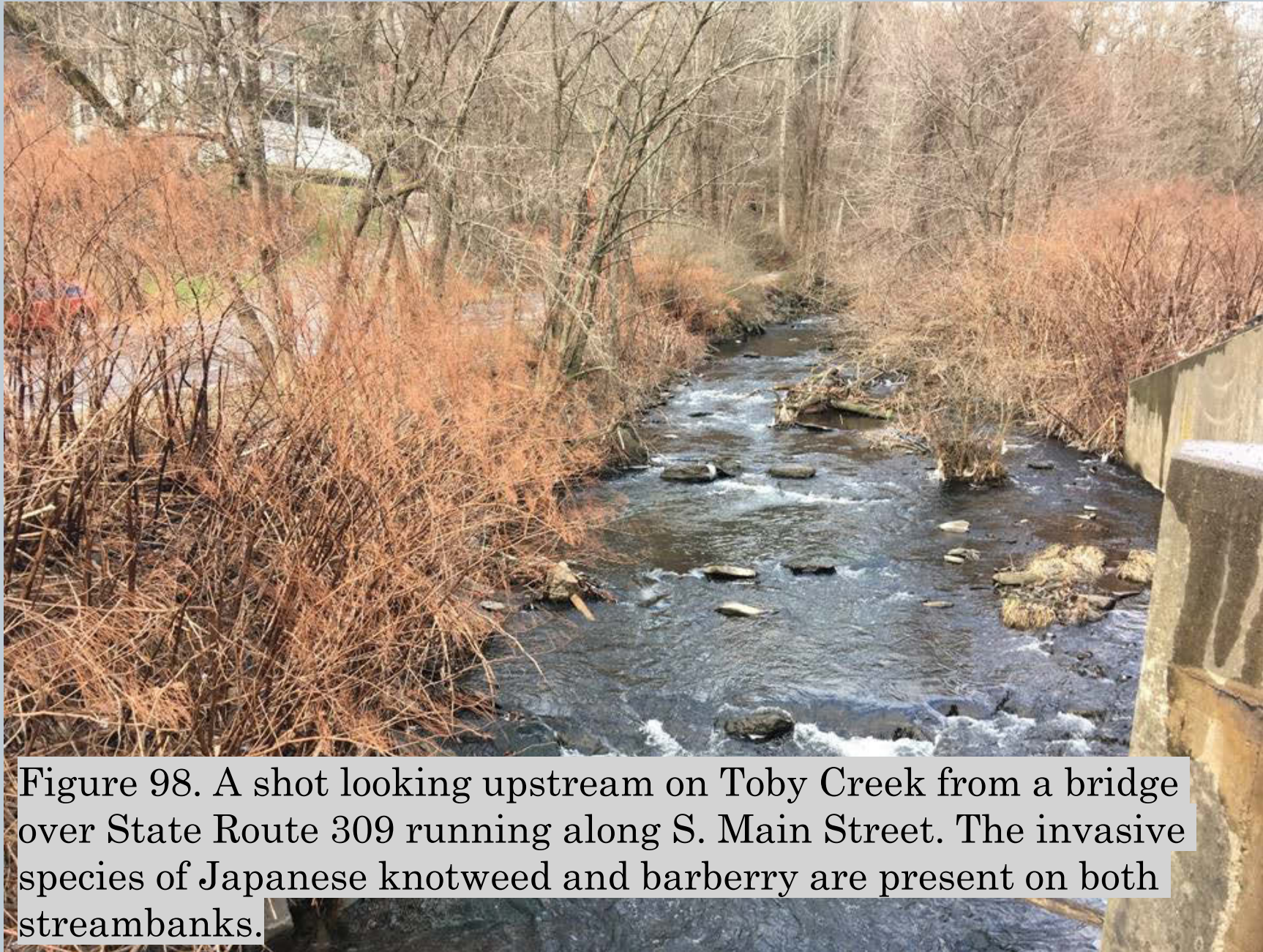


Figure 98. A shot looking upstream on Toby Creek from a bridge over State Route 309 running along S. Main Street. The invasive species of Japanese knotweed and barberry are present on both streambanks.



Figure 99. Taken looking upstream from S. Main Street along an old concrete retaining wall at a bend in Toby Creek. From just 50 feet below the double box culvert bridge running over State Route 309 (pictured), gravel and cobble deposition is seen in the left box, which carries about 30% of the flow. The right box carries the remaining 70% of the flow.



Figure 100. A shot looking upstream at a vertical bank, which has been estimated to be about 12 feet high, along the left bank along S. Main Street. This location is ideal for fishing; this could be a future location for sampling and electroshock surveying.



Figure 101. A dry 24-inch concrete stormwater pipe structure. The pipe runs perpendicular to Toby Creek, and is not aligned with the creek.

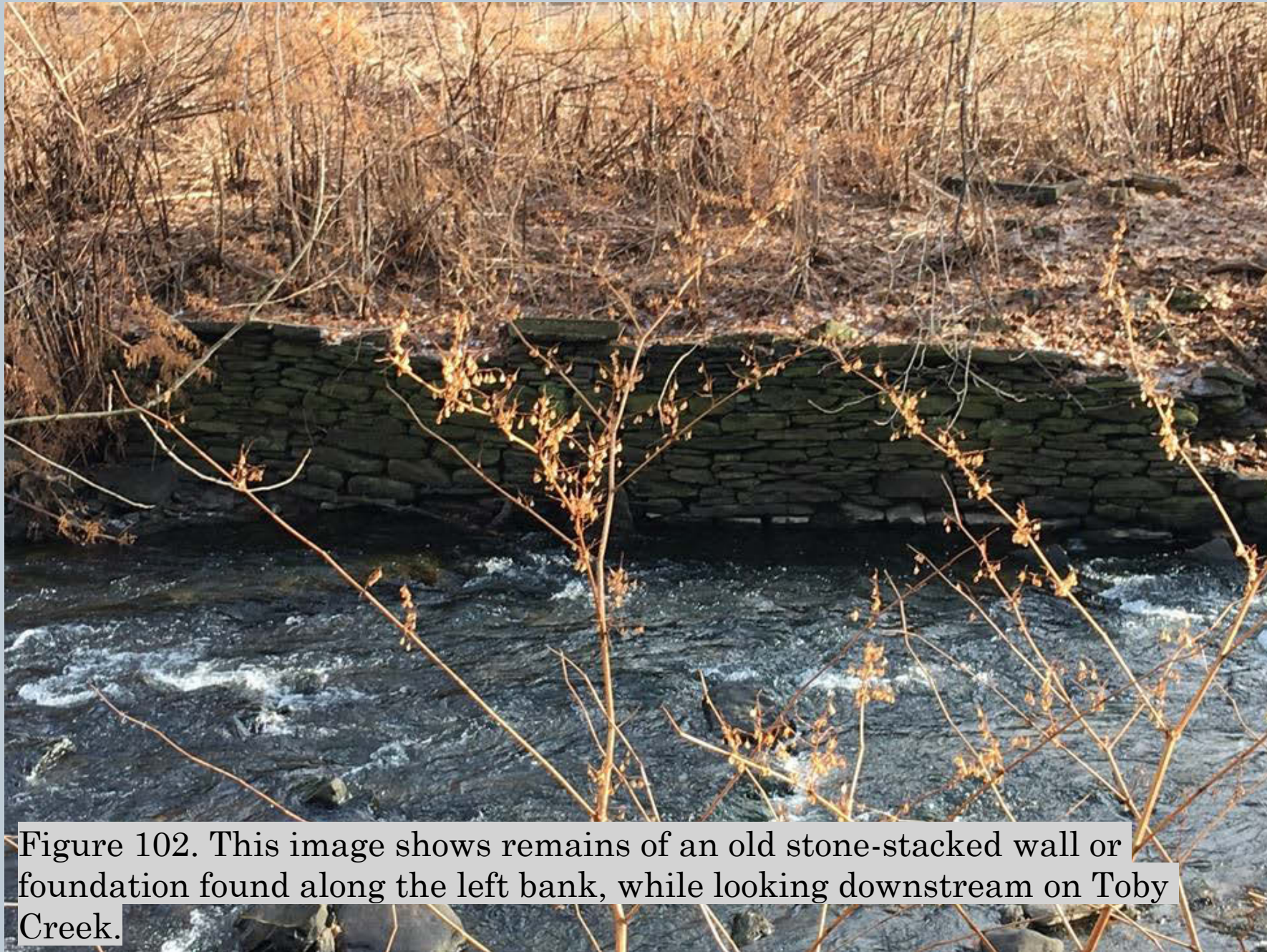


Figure 102. This image shows remains of an old stone-stacked wall or foundation found along the left bank, while looking downstream on Toby Creek.

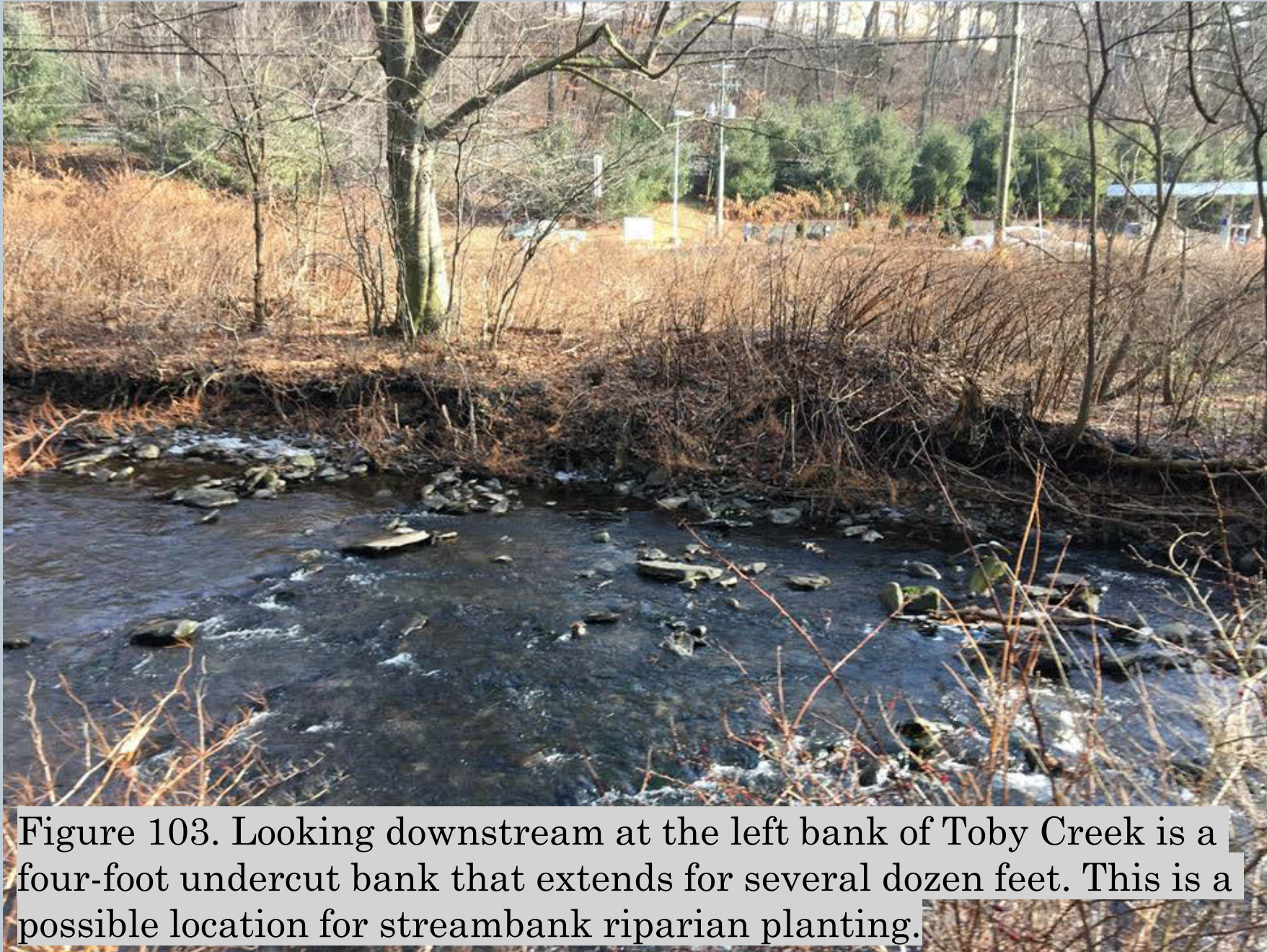


Figure 103. Looking downstream at the left bank of Toby Creek is a four-foot undercut bank that extends for several dozen feet. This is a possible location for streambank riparian planting.



Figure 104. Looking upstream, a stormwater outfall structure is present under the right streambank.



Figure 105. An old stone-stacked wall with a concrete block foundation is located above the floodplain bench and streambank. Upstream, where the wall has failed, there are gravel bar deposits. Near this location, just under a dozen tires have been illegally dumped. A small cleanup along this stretch of Toby Creek, along S. Main Street, would easily remove the tires.



Figure 106. A very large fallen tree and some woody debris that has landed in Toby Creek, redirecting flow to one of the boxes in the bridge. This has created a gravel bar deposition behind the tree, just upstream of the bridge over State Route 309, along S. Main Street.



Figure 107. Looking upstream on Toby Creek from the double box culvert bridge over State Route 309, debris can be seen piled up against the middle abutment. 70% of the creek flows through the left box on the upstream side of the bridge.

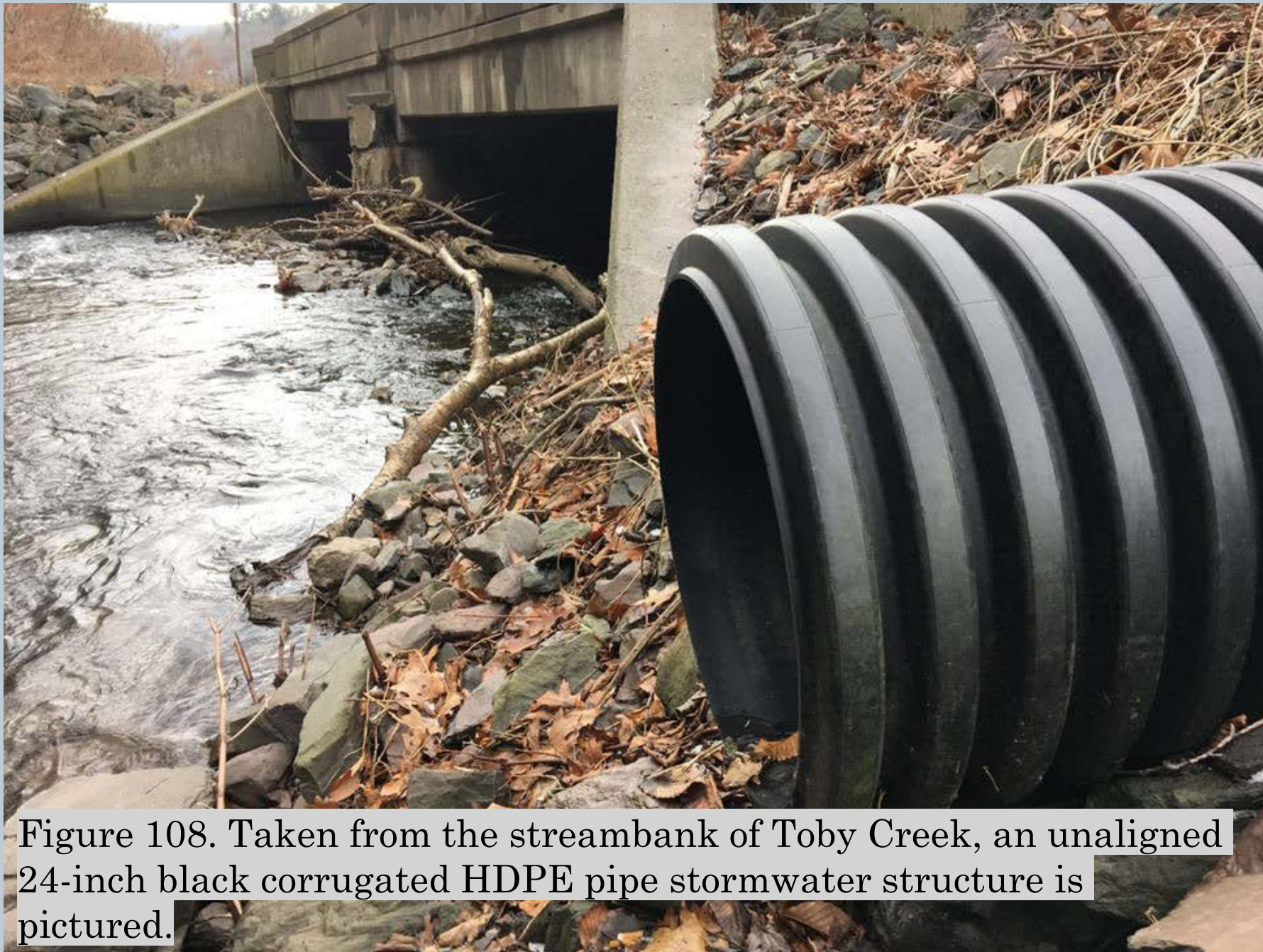


Figure 108. Taken from the streambank of Toby Creek, an unaligned 24-inch black corrugated HDPE pipe stormwater structure is pictured.

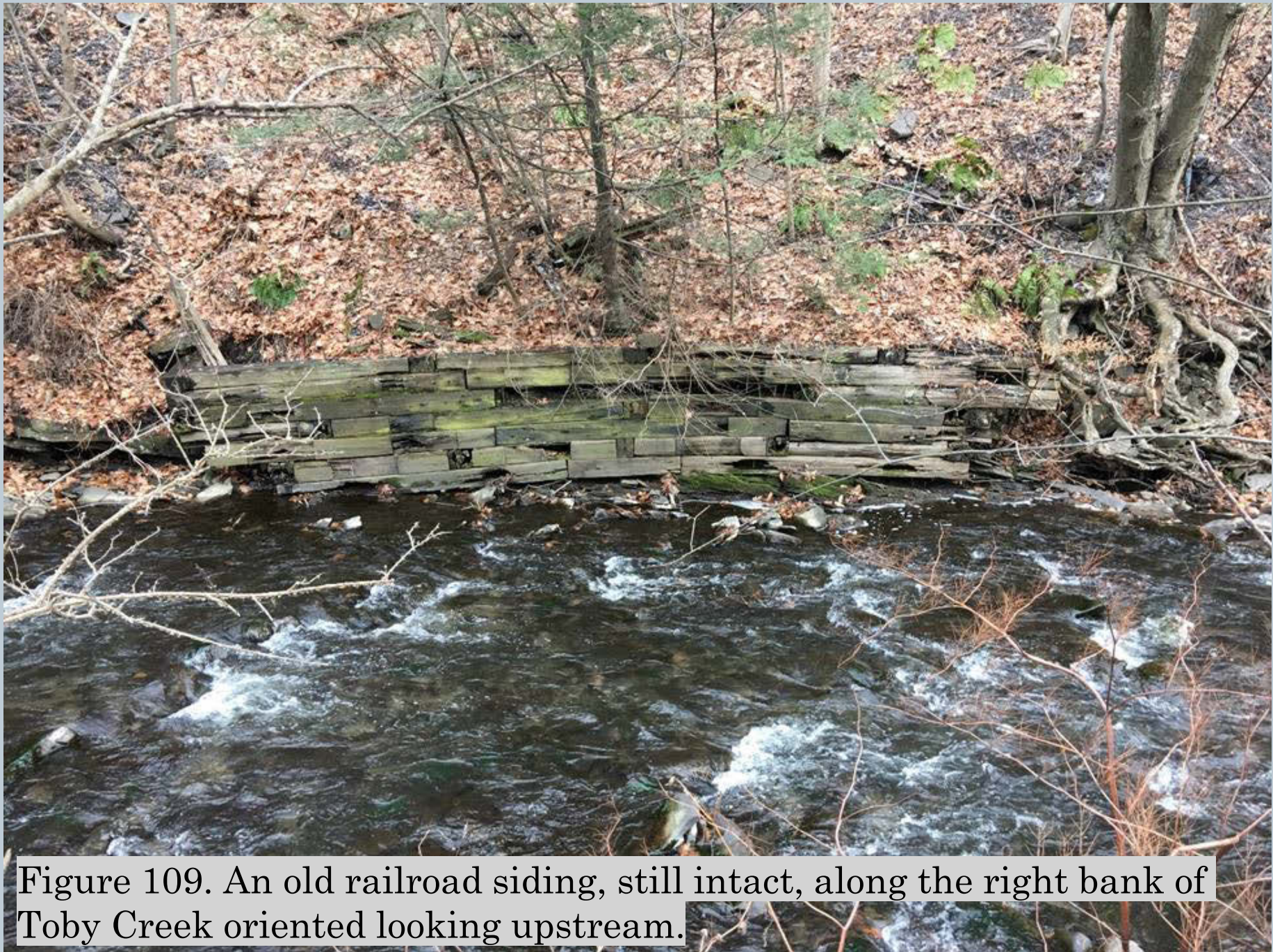


Figure 109. An old railroad siding, still intact, along the right bank of Toby Creek oriented looking upstream.

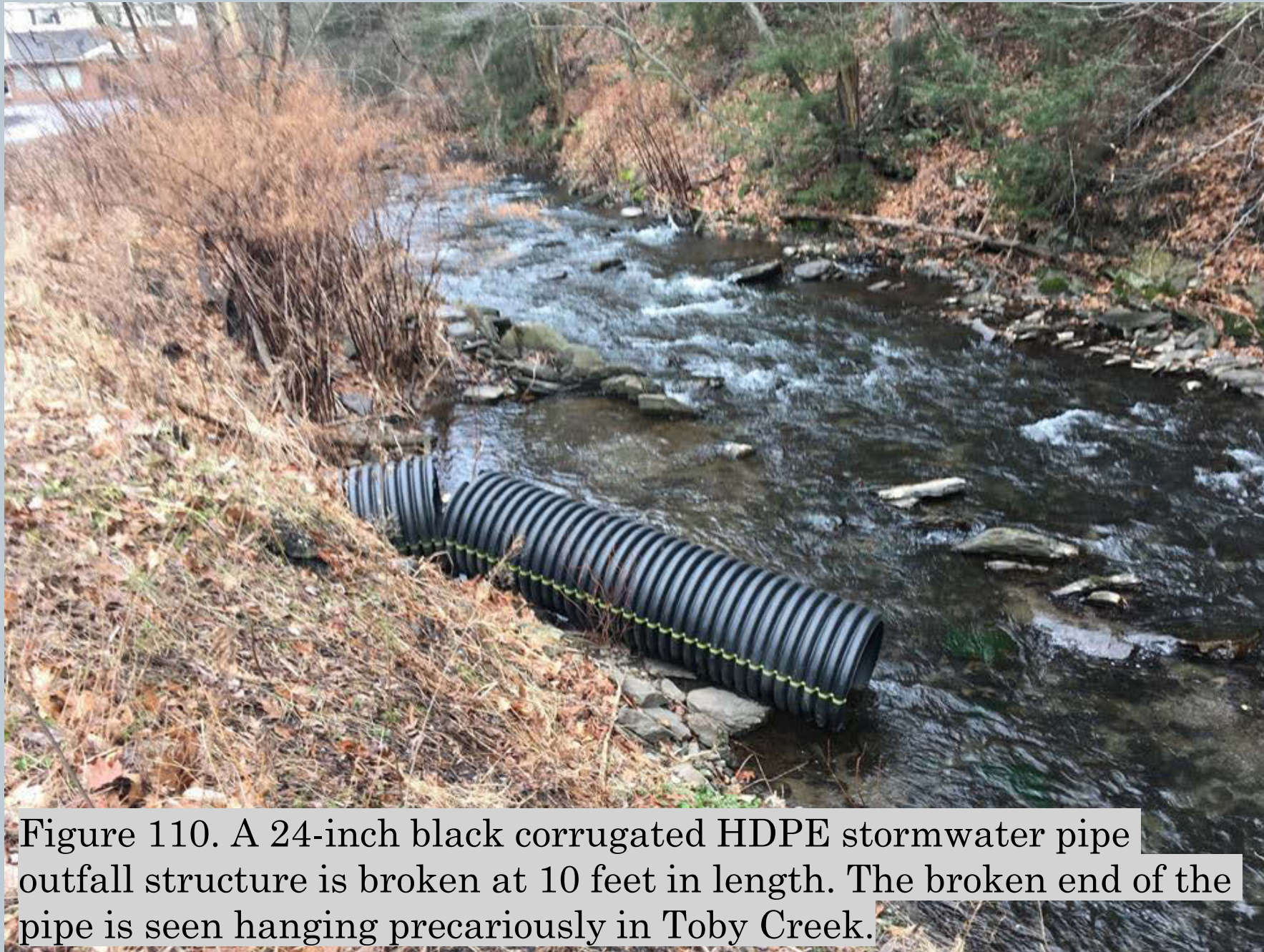


Figure 110. A 24-inch black corrugated HDPE stormwater pipe outfall structure is broken at 10 feet in length. The broken end of the pipe is seen hanging precariously in Toby Creek.



Figure 111. A shot of some minor streambank erosion on the right bank of Toby Creek, looking downstream, just beyond the broken HDPE pipe.



Figure 112. A rock gabion basket retaining wall is in place for several hundred feet along the 309 Professional Building as a streambank stabilization effort. This wall is in place from historic flooding and previous damage to the area.



Figure 113. Behind Modern the Floor Store, a small dam is in Toby Creek which is creating a small pool.

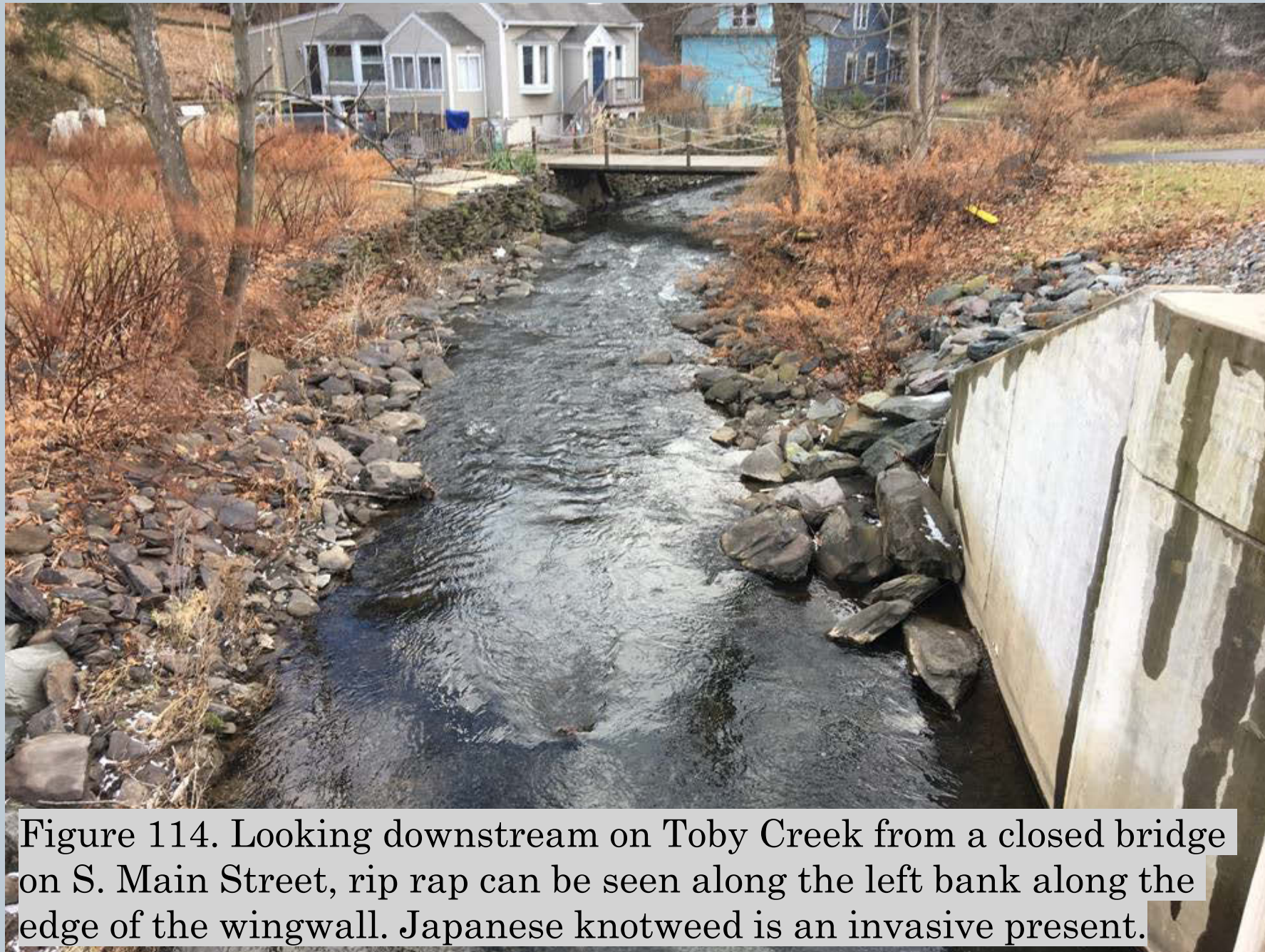


Figure 114. Looking downstream on Toby Creek from a closed bridge on S. Main Street, rip rap can be seen along the left bank along the edge of the wingwall. Japanese knotweed is an invasive present.



Figure 115. Looking upstream on Toby Creek from the closed S. Main Street bridge, there is a long concrete retaining wall that continues along the entire length of State Route 309 in this area.



Figure 116. Flowing through the lower portion of the retaining wall, an UNT from Mt. Greenwood Cemetery flows into Toby Creek.

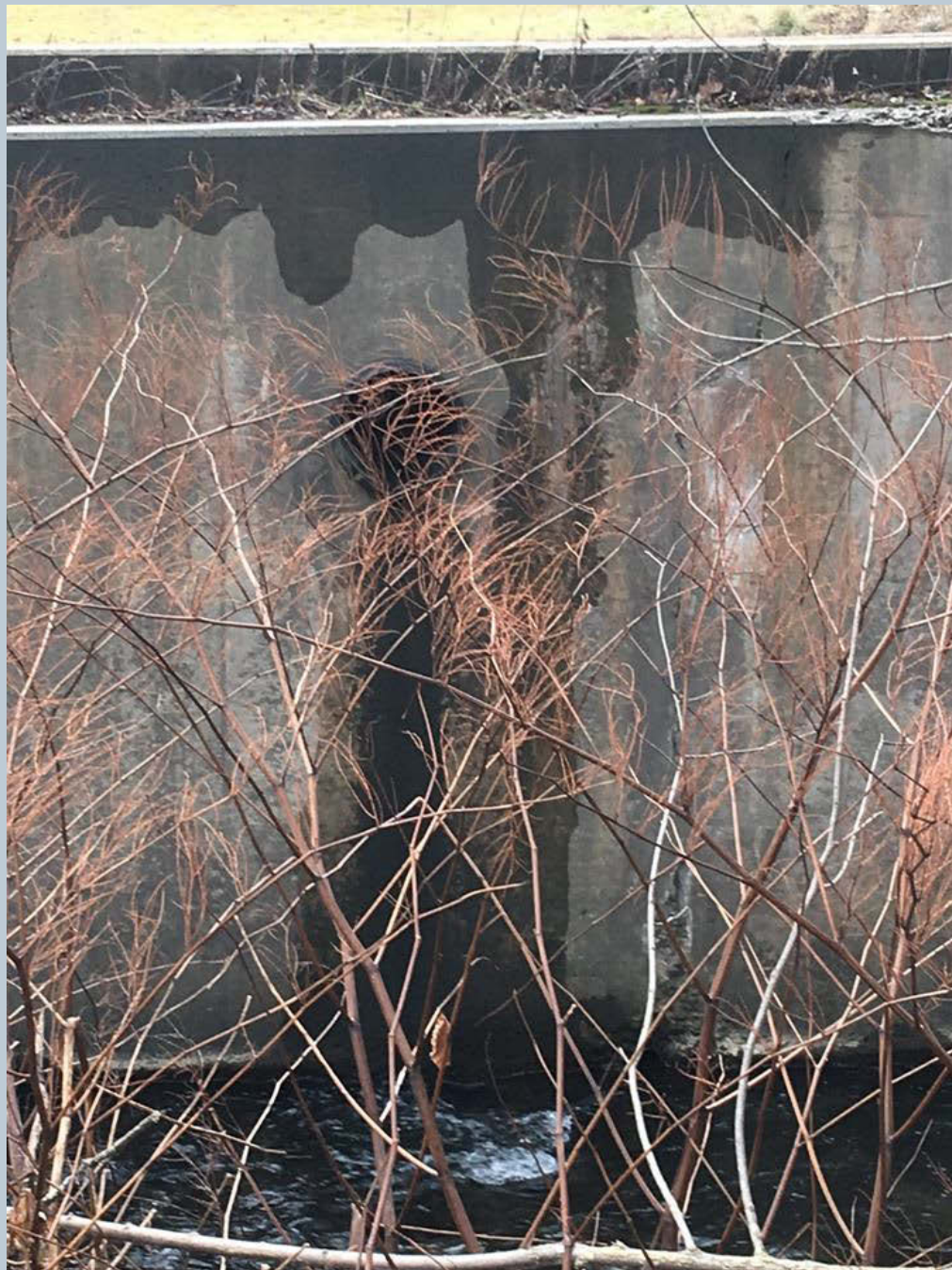


Figure 117. An 18-inch dry black HDPE stormwater pipe comes through the upper retaining wall, which is draining from State Route 309.



Figure 118. An UNT to Toby Creek flows from an 18-inch concrete pipe along N. Main Street and Division Street, which is aligned with Toby Creek.



Figure 119. An UNT to Toby Creek flows from the middle of the concrete retaining wall (pictured) along N. Main Street and Division Street.



Figure 120. A shot of an 18-inch black HDPE pipe that is disconnected from another 18-inch concrete pipe at the corner of N. Main Street and Division Street, separated by a two-foot gap and drop that allows for roadside runoff. This runoff then enters the 18-inch concrete pipe that carries the stormwater and the UNT to Toby Creek.



Figure 121. An UNT to Toby Creek that flows through a stone culvert beneath Railroad Street, directly under the deck and shed of a private residence on the corner of N. Main Street and Division Street.



Figure 122. An UNT located upstream of Railroad Street in a wetland area, before entering the stone culvert under Railroad Street. In the future, this could possibly be a detention area and wetland enhanced basin to reduce the flow and slow down the UNT through the stone culvert. The property owner(s) will need to be identified to discuss further possibilities.



Figure 123. A stormwater outlet structure that is not aligned with Toby Creek, taken from N. Main Street.



Figure 124. An image of a galvanized sheet metal drop inlet stormwater structure on the closed bridge over N. Main Street.



Figure 125. Looking downstream at an 18-inch galvanized stormwater pipe (dry) structure, covered with rip rap for protection. The structure is aligned to Toby Creek from the drop inlet structure on the closed bridge over N. Main Street.



Figure 126. A 24-inch black dry HDPE pipe for stormwater across N. Main Street is aligned with Toby Creek, looking downstream. Gravel bar deposition is present on the outside bend of Toby Creek. Additionally, N. Main Street was previously undercut in this area.



Figure 127. A 24-inch black HDPE pipe (flowing) that is not aligned, carrying an UNT across N. Main Street, perpendicular to Toby Creek.



Figure 128. A shot of a large fallen tree across Toby Creek.



Figure 129. An old 12-foot concrete pipe (dry) for stormwater runoff from Shaver Avenue directed over a steep embankment, down to N. Main Avenue.



Figure 130. A 12-foot culvert from Kost Tire aligned along the left bank, looking upstream.

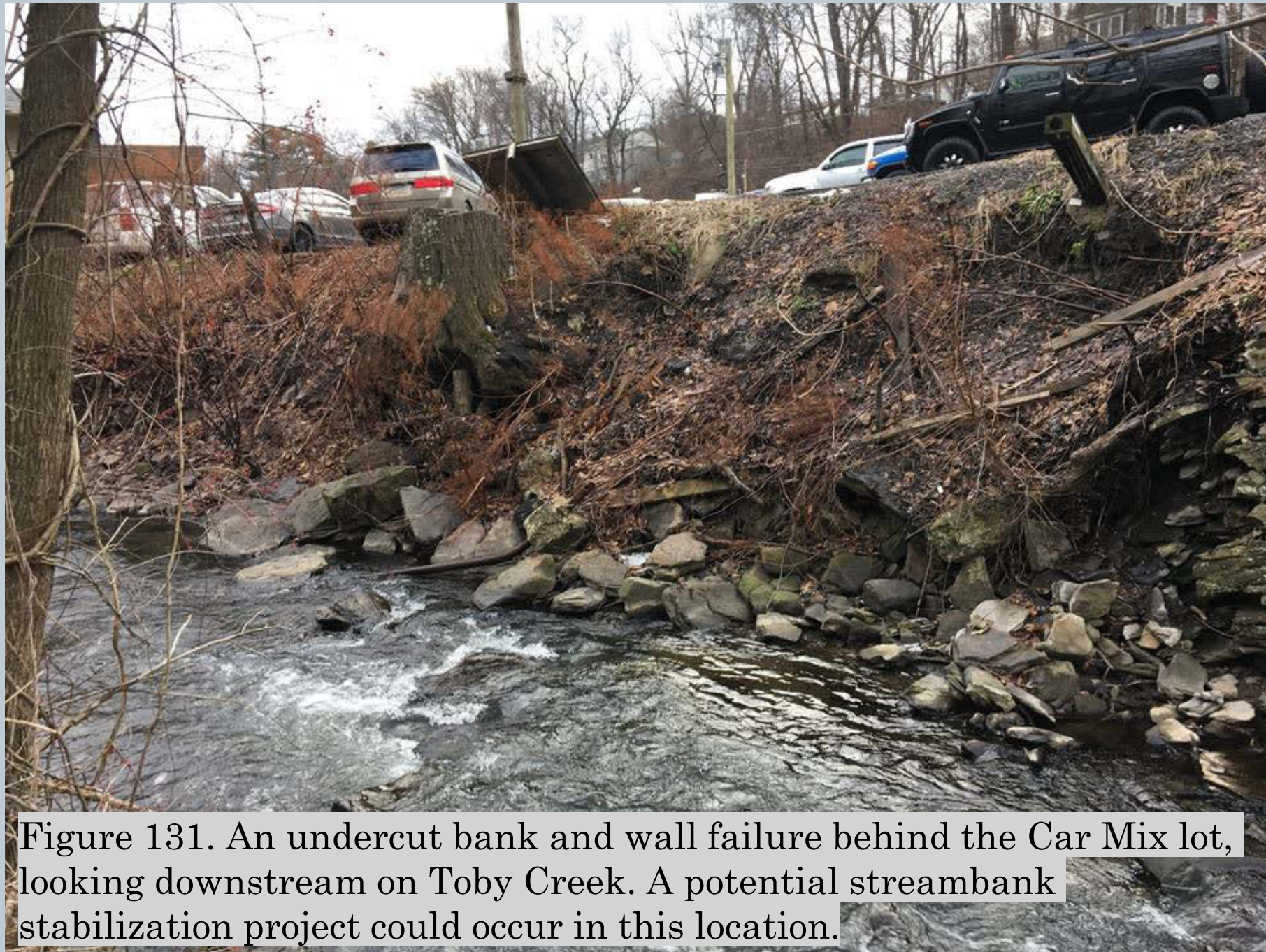


Figure 131. An undercut bank and wall failure behind the Car Mix lot, looking downstream on Toby Creek. A potential streambank stabilization project could occur in this location.



Figure 132. A shot looking upstream on Toby Creek at a box culvert bridge over State Route 309.



Figure 133. A 12-inch black HDPE stormwater pipe (dry) aligned with Toby Creek.



Figure 134. A 24-inch black HDPE stormwater pipe (dry) not aligned on State Route 309. This location is just before the bridge that is north of the Car Mix lot.



Figure 135. An 18-inch black HDPE stormwater pipe that is 100% blocked with sediment from the storm drain drop box inlet along State Route 309, that is filled and covered with leaves.



Figure 136. Looking upstream on Toby Creek, just north of the bridge over State Route 309, near the end of N. Main Street. This shot captures a large fallen tree that is angled into Toby Creek above the bridge, which raises future concerns. There has also been severe undercutting of the bedrock along the left wingwall abutment.



Figure 137. A 24-inch black HDPE stormwater outfall pipe (dry) structure that lies perpendicular to, and is not aligned with, Toby Creek.



Figure 138. A 24-inch black HDPE stormwater outfall pipe (dry) structure that is not aligned with Toby Creek.

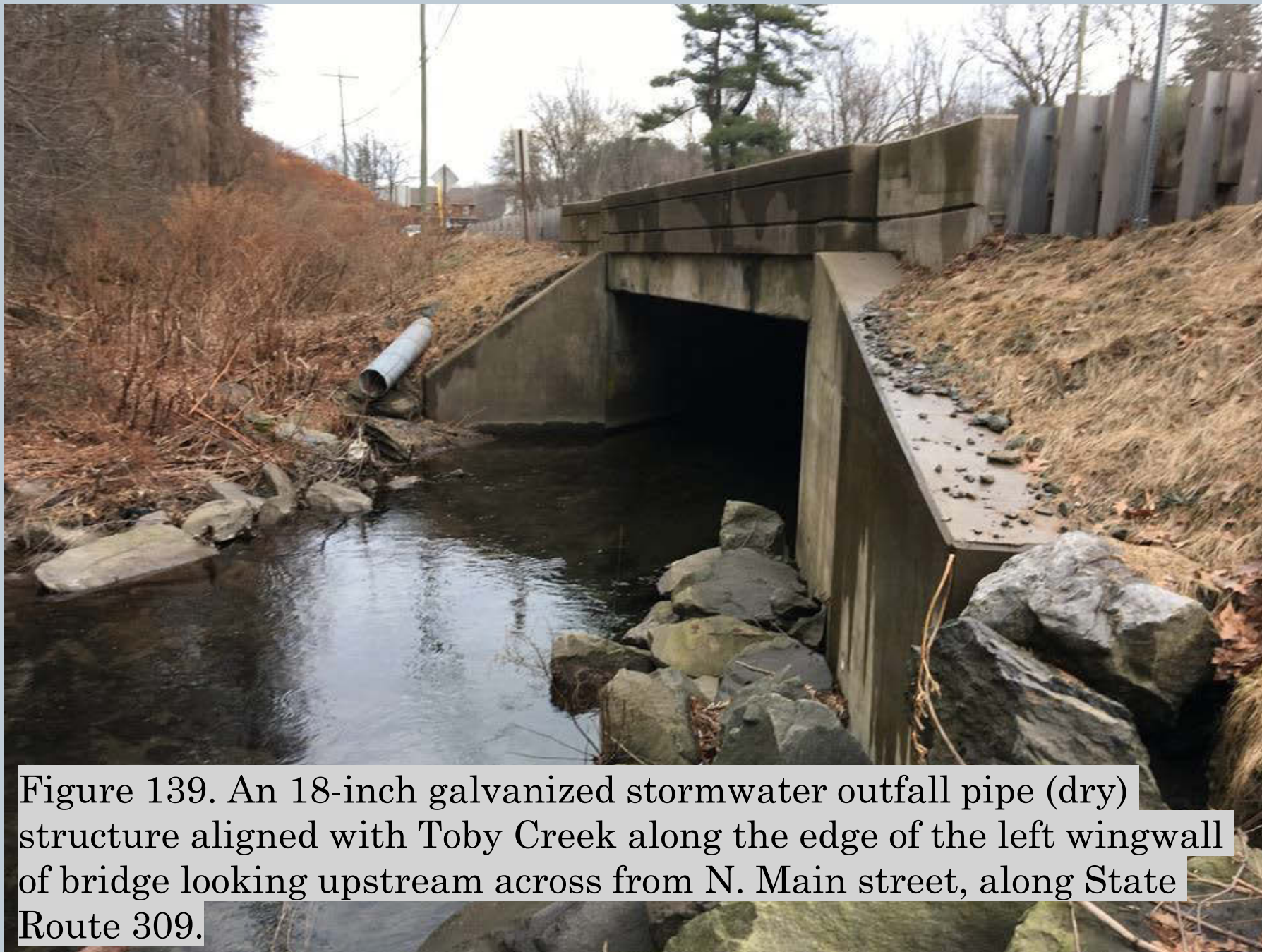


Figure 139. An 18-inch galvanized stormwater outfall pipe (dry) structure aligned with Toby Creek along the edge of the left wingwall of bridge looking upstream across from N. Main street, along State Route 309.



Figure 140. A shot of 12-inch black HDPE stormwater outfall pipe (dry) structure perpendicular and not aligned to Toby Creek.



Figure 141. Looking downstream on Toby Creek over the State Route 309 bridge and N. Main Street.



Figure 142. A shot of a 12-inch concrete outfall stormwater pipe (dry) structure aligned with Toby Creek. This is located along State Route 309 with rip-rap present.



Figure 143. An UNT to Toby Creek outfall from 12-inch opening in retaining wall from State Route 309.



Figure 144. Looking downstream on Toby Creek from the Age of Innocence Parking Lot, gabion rock-filled baskets are in place as a stabilization project along the left wall for nearly 200-feet. There is a 12-inch black corrugated HDPE pipe is floating 9-foot above the Toby Creek draining parking lot.



Figure 145. Looking upstream on Toby Creek from the W. Center Street bridge towards the Snowdon Funeral Home, this section of Toby Creek has a large historic streambank stabilization project that follows along both sides of the creek.



Figure 146. Beneath the W. Center Street Bridge there is an UNT that enters Toby Creek through an outfall pipe structure on the left bank of the retaining wall while looking downstream.

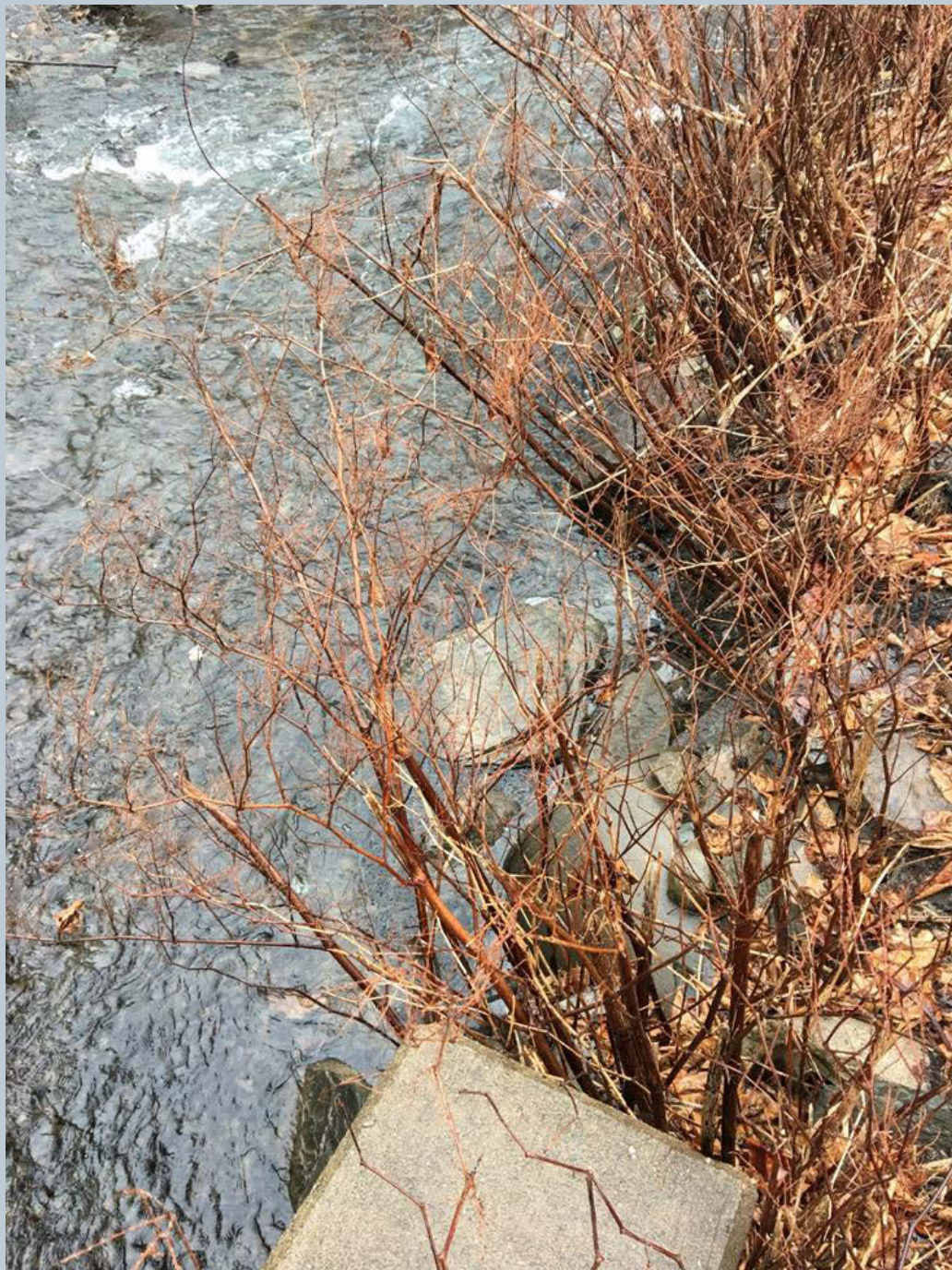


Figure 147. A shot of a 24-inch concrete stormwater pipe (dry) aligned with Toby Creek, below the wingwall off of N. Main Street.



Figure 148. A 12-inch white PVC-like stormwater pipe, aligned with Toby Creek, is located two feet above the water level along an old retaining wall, located behind the clothing recycling bins near Cook's Pharmacy.



Figure 149. In this section of Toby Creek, there is severe undercutting of the streambank along N. Main Street and the opposite bank, alongside a utility shed. This is due to the 90-degree turn into the right bank, while looking upstream. A streambank stabilization project is recommended.

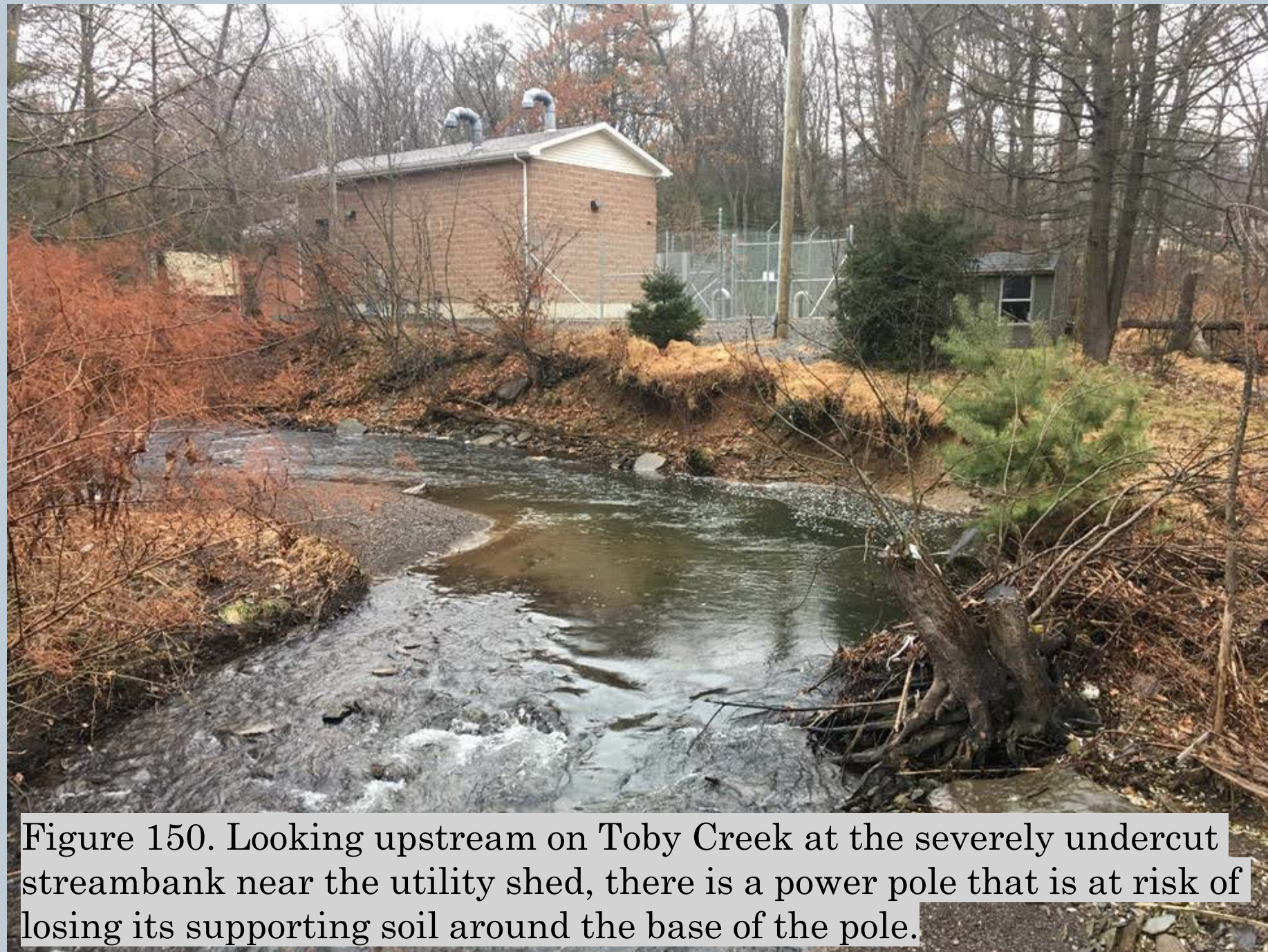


Figure 150. Looking upstream on Toby Creek at the severely undercut streambank near the utility shed, there is a power pole that is at risk of losing its supporting soil around the base of the pole.

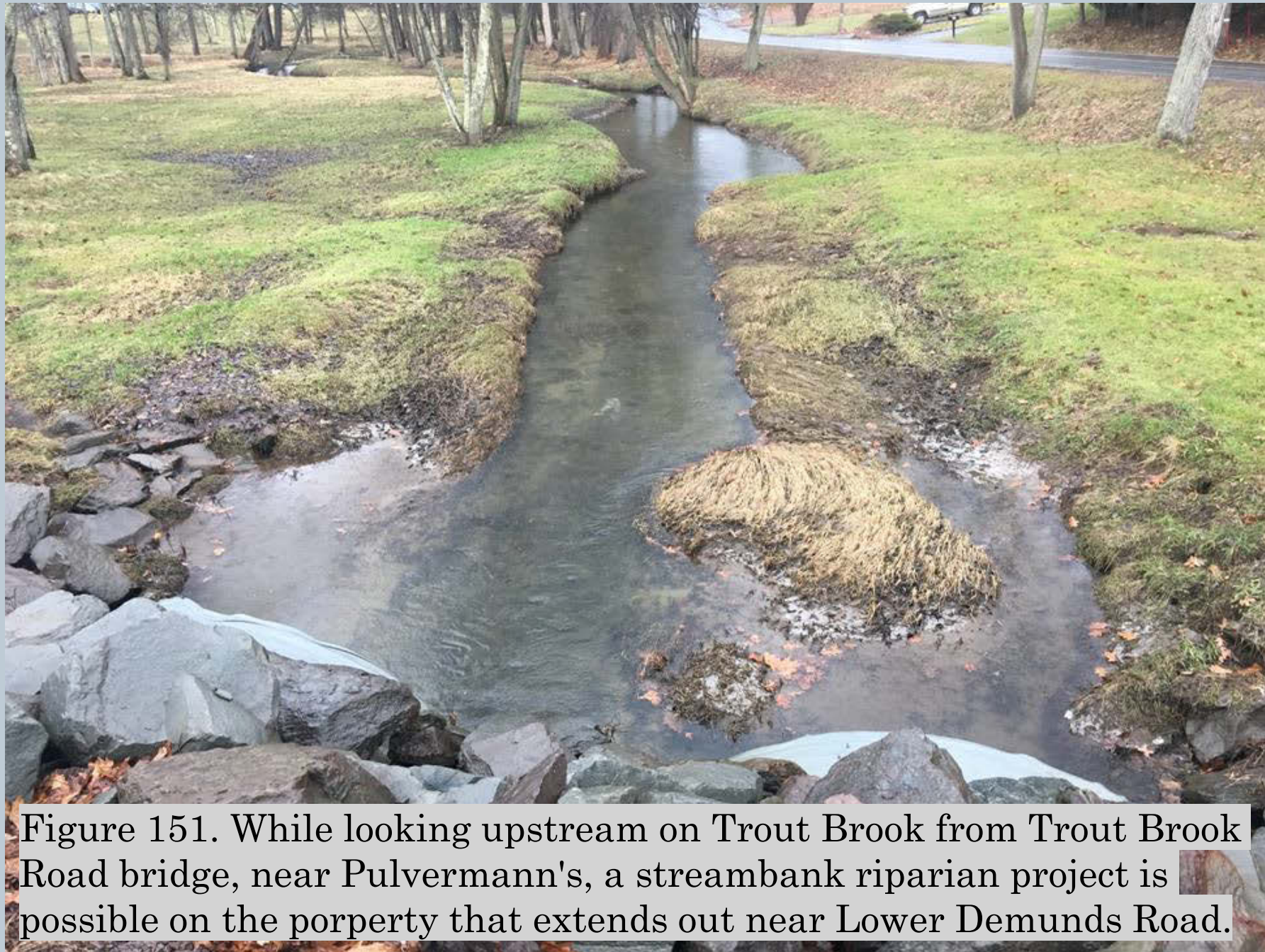


Figure 151. While looking upstream on Trout Brook from Trout Brook Road bridge, near Pulvermann's, a streambank riparian project is possible on the property that extends out near Lower Demunds Road.



Figure 152. A shot taken while looking downstream on Trout Brook from Trout Brook Road bridge.

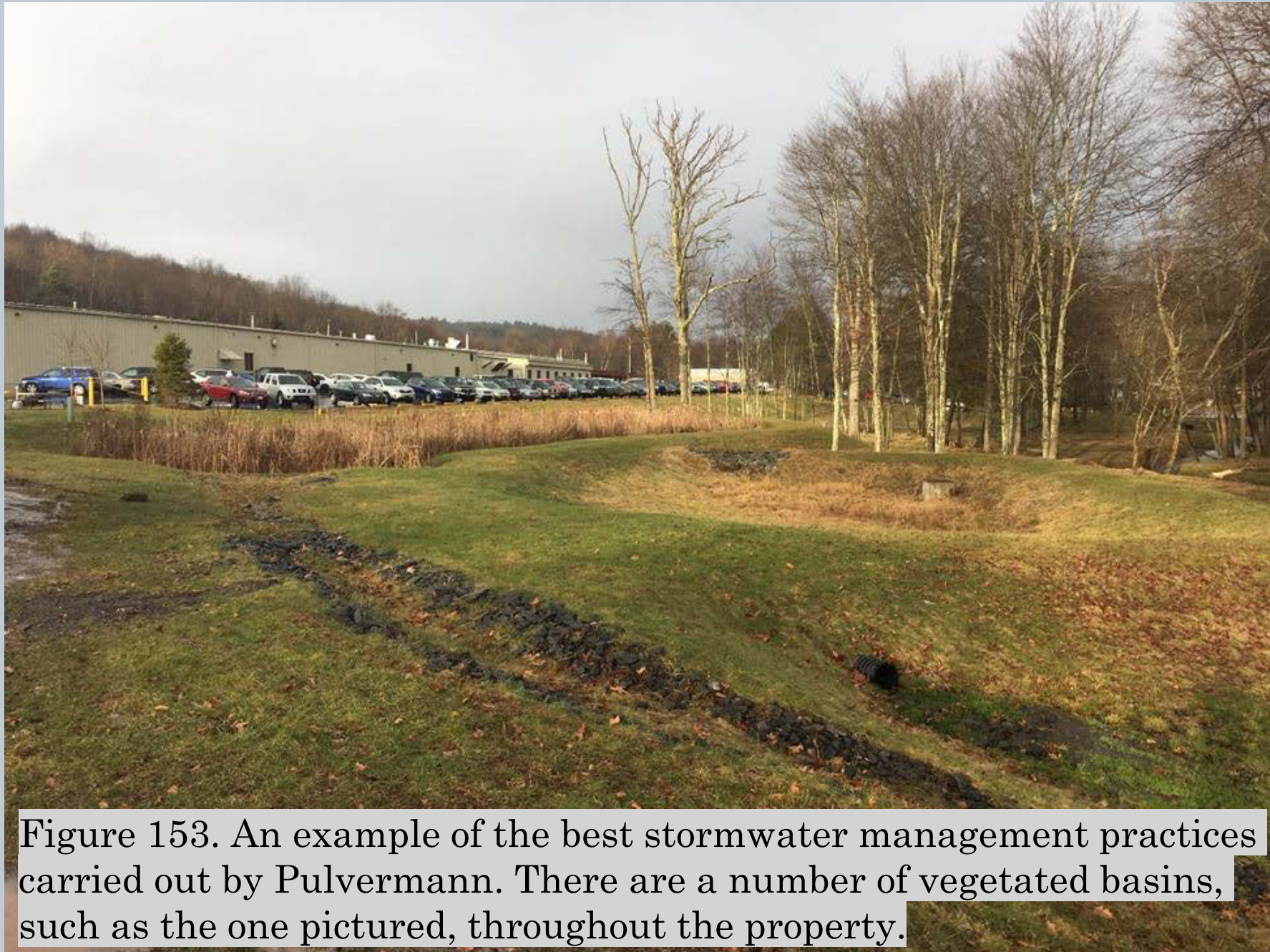


Figure 153. An example of the best stormwater management practices carried out by Pulvermann. There are a number of vegetated basins, such as the one pictured, throughout the property.

August 27, 2018



Figure 154. A shot of "Wildcat Falls", an UNT to Toby Creek. This UNT flows down along the steep slope of the mountain cut, which also crosses under the Back Mountain Trail Bridge. The DAMA plant can be found to the northwest. There is a sewer line incased with concrete that crosses the tributary and enters the DAMA plant. There is also a culvert that runs southeast under the DAMA Plant road before exiting along Toby Creek.

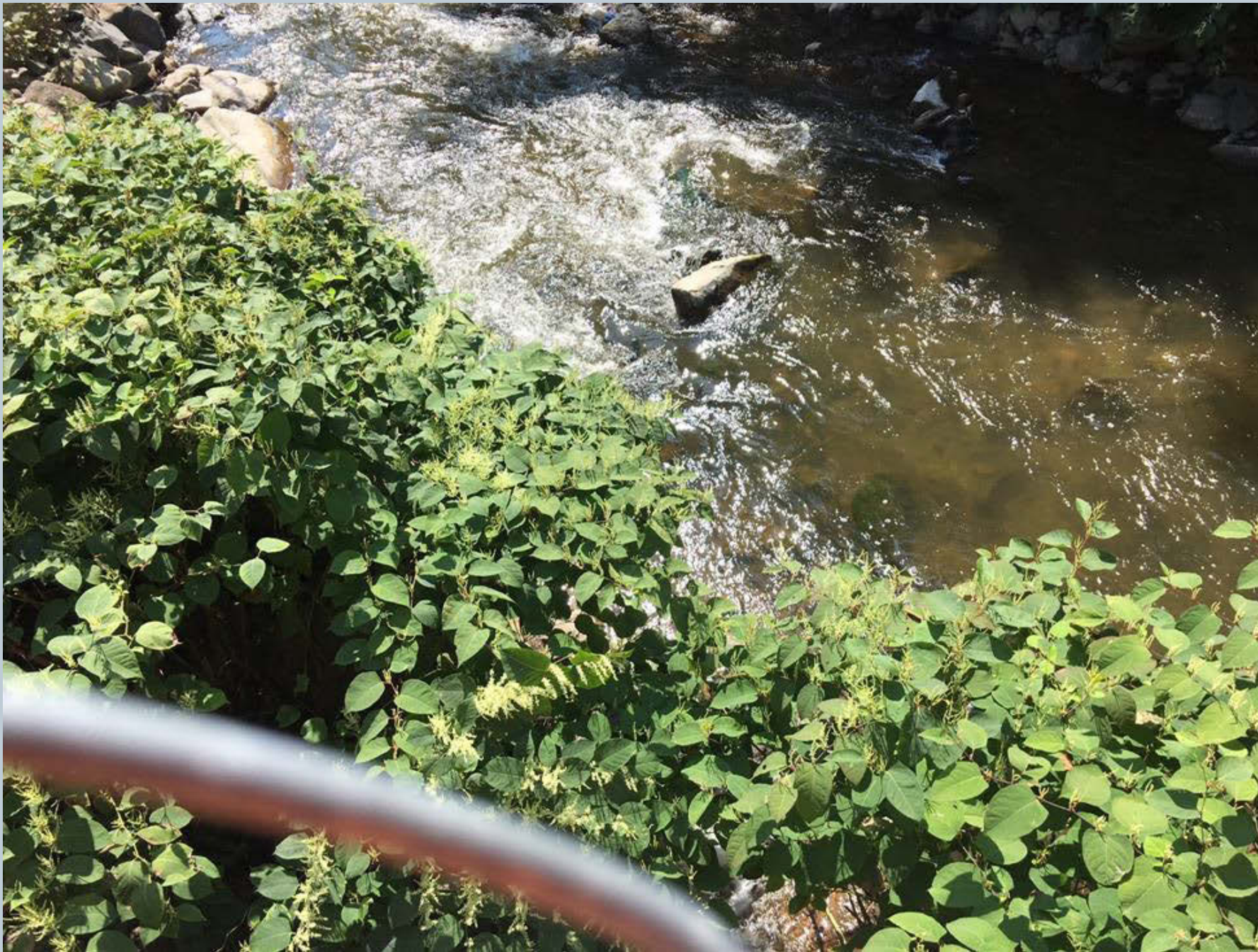


Figure 155. Wildcat Falls entering Toby Creek downstream. The outlet to the culvert is found on the other side of the DAMA fence and is only accessible from an upstream point on Toby Creek. This point has two large culverts which are located at the other end of the DAMA Plant property. The invasive, Japanese knotweed, is prevalent along both banks looking up and downstream.

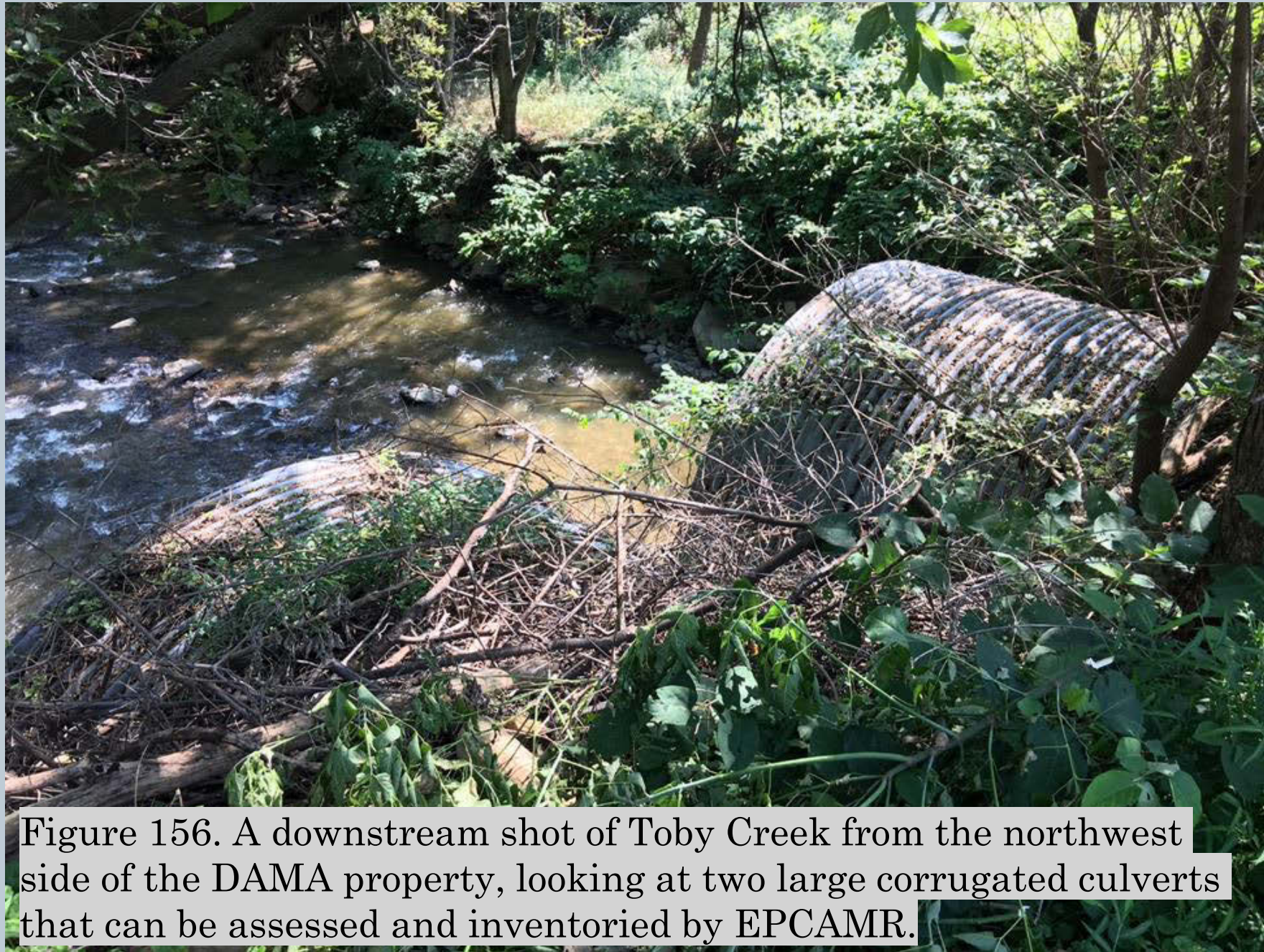


Figure 156. A downstream shot of Toby Creek from the northwest side of the DAMA property, looking at two large corrugated culverts that can be assessed and inventoried by EPCAMR.

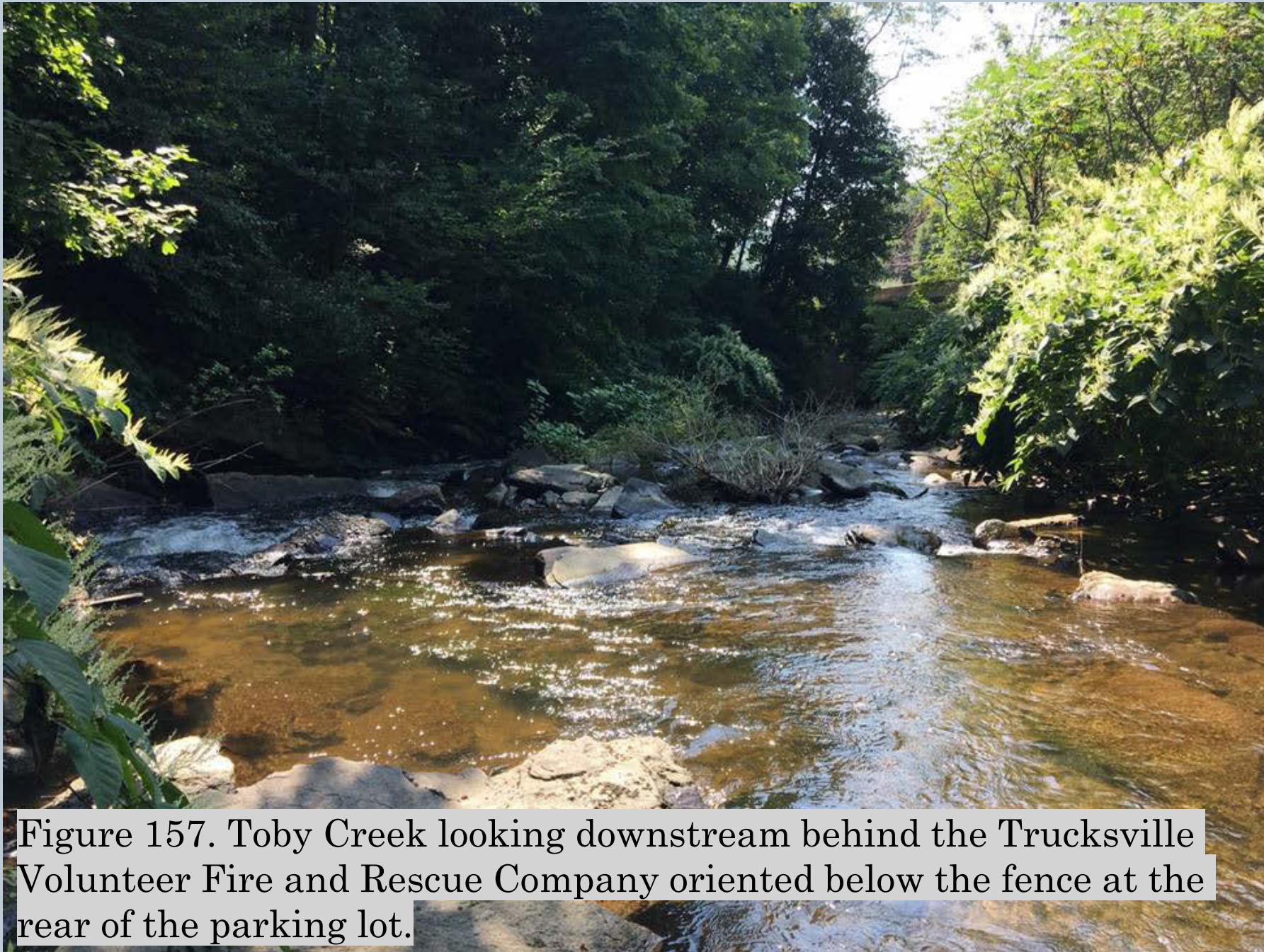


Figure 157. Toby Creek looking downstream behind the Trucksville Volunteer Fire and Rescue Company oriented below the fence at the rear of the parking lot.

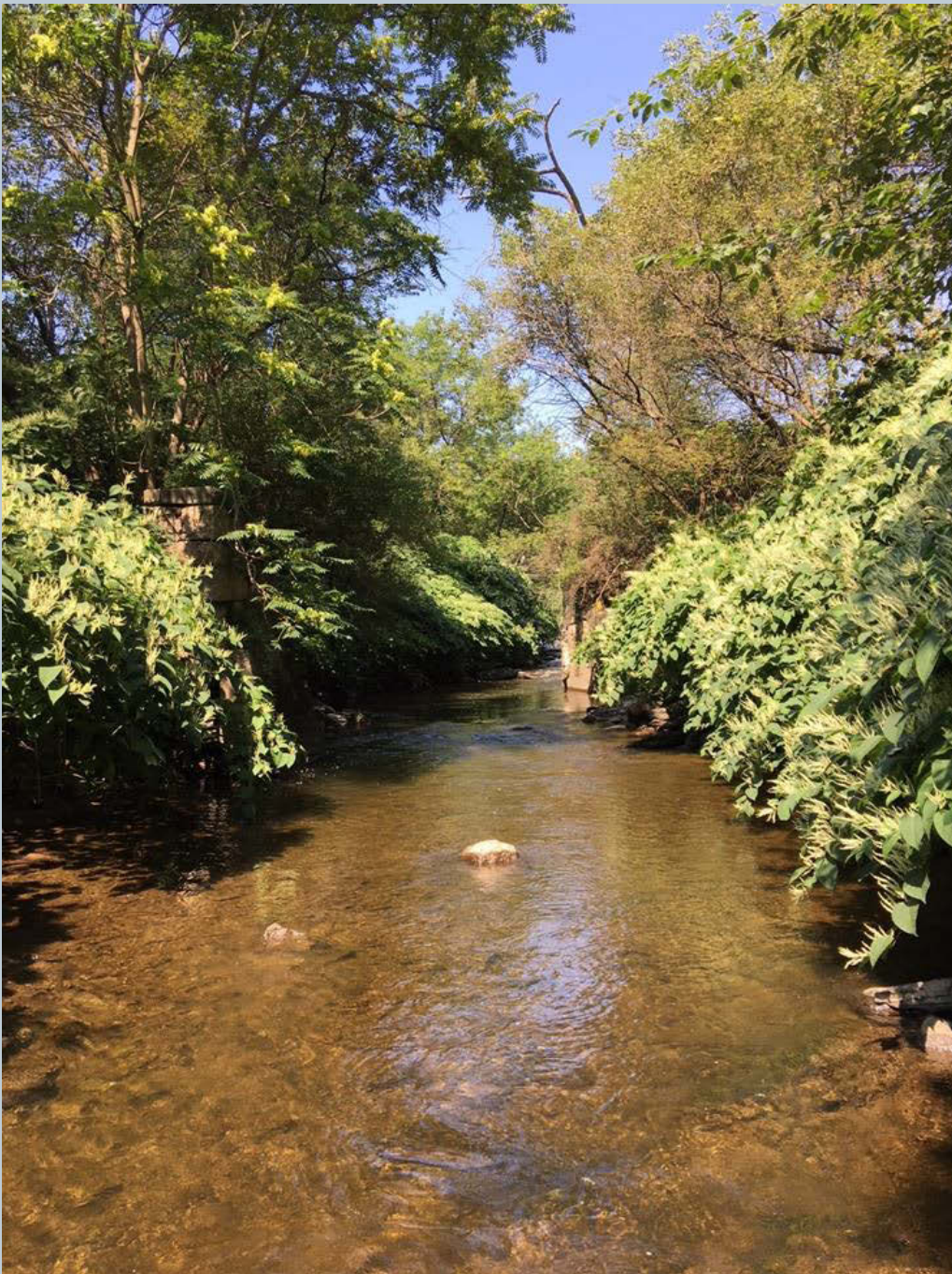


Figure 158. A shot of Toby Creek from behind the Trucksville Volunteer Fire and Rescue Company, looking upstream at old quarry-cut stone from a historic bridge abutment. This may have been a railroad or bridge crossing. Streambanks along both sides have a presence of Japanese knotweed.



Figure 159. This photo is looking downstream at a stone arch that is over a concrete culvert. The culvert is on another UNT that flows along Carverton Road behind Pizza Perfect, in Trucksville. A hard armoring and rip-rap with a shot-crete and a quarry-cut retaining wall is found alongside of the northeastern side of the streambank, behind Pizza Perfect, and along the opposite bank from the meander to the stone arch culvert.



Figure 160. A shot of a black HDPE pipe sticking out from the retaining wall that drains a stormwater from the parking lot.

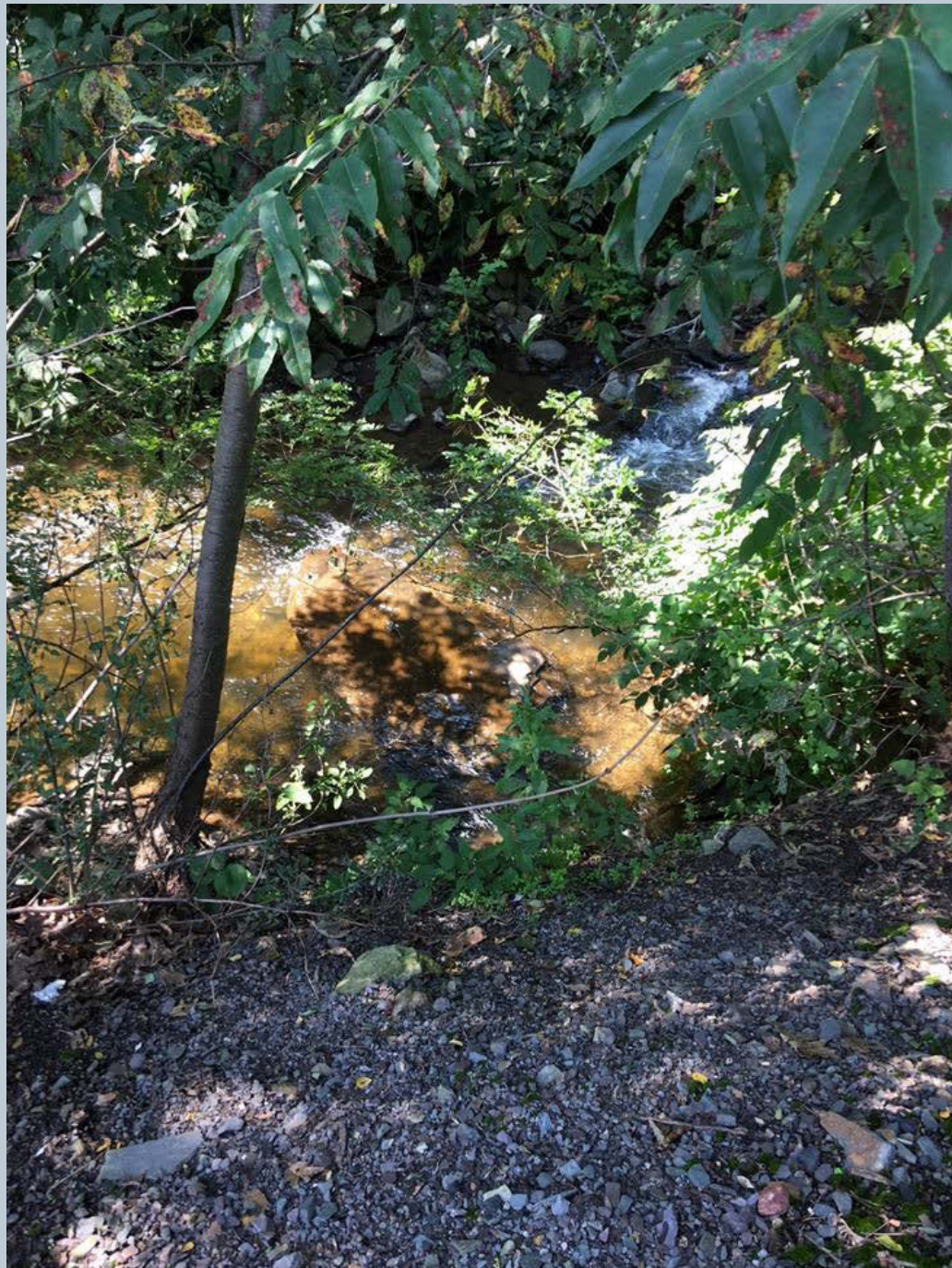


Figure 161. An UNT looking downstream as it comes to a confluence with Toby Creek. This is located behind the Gas Station along Carverton Road.



Figure 162. A shot of Toby Creek looking downstream from the bridge at Carverton Road and State Route 309.



Figure 163. A shot of Toby Creek, looking downstream from a bridge at Carverton Road and State Route 309. A water or sewer line is secured overhead and above Toby Creek at approximately 20 feet. This line comes out of a retaining wall from the Trucksville Volunteer Fire and Rescue Company.



Figure 164. A shot of an UNT looking upstream along Carverton Road from the small bridge near Pizza Perfect.

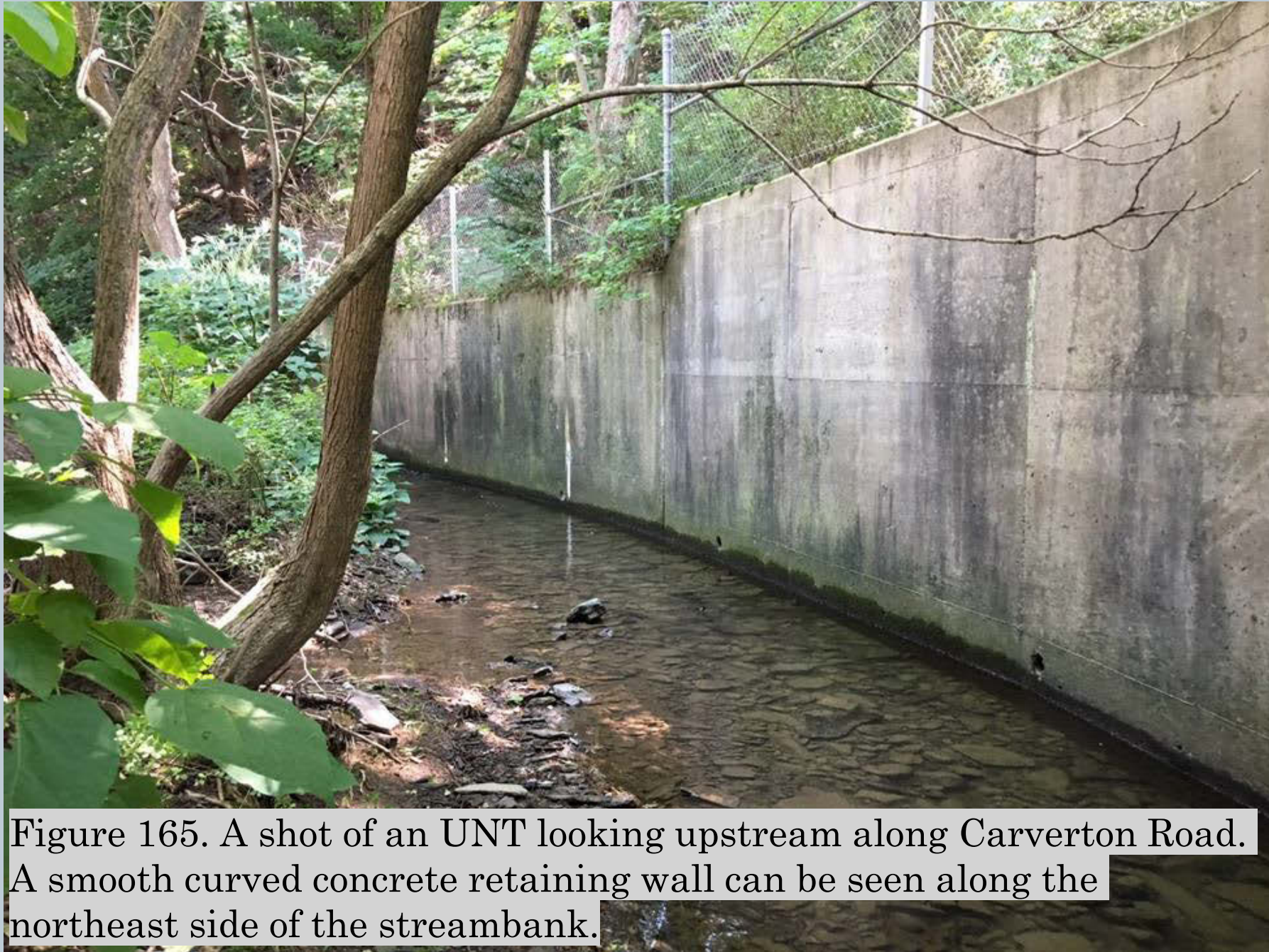


Figure 165. A shot of an UNT looking upstream along Carverton Road. A smooth curved concrete retaining wall can be seen along the northeast side of the streambank.



Figure 166. A rusted 18-inch corrugated pipe facing upstream. The pipe is not aligned when entering the UNT, creating a scour pool next to a large root wad from a tree along the streambank.

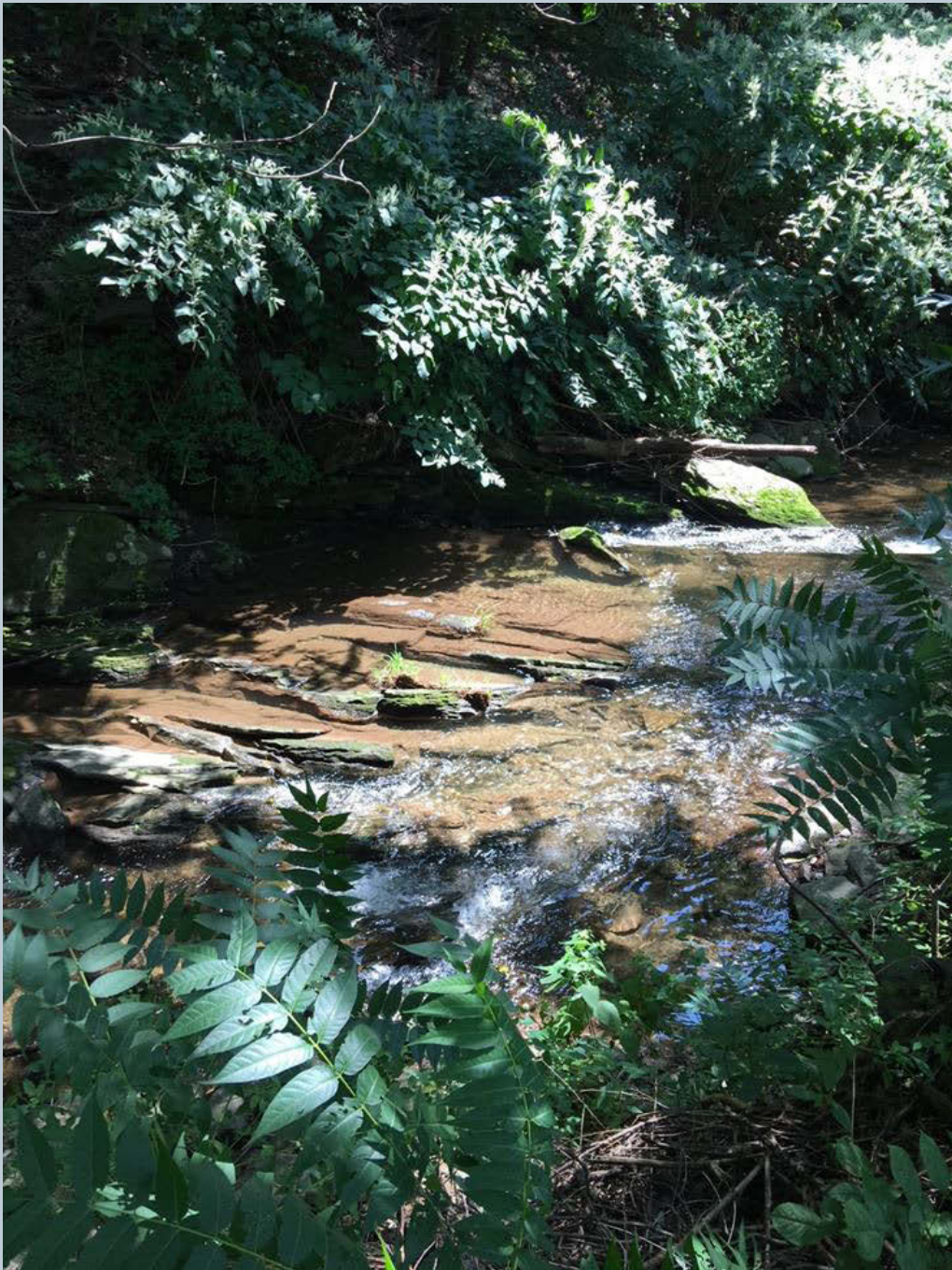


Figure 167. At this location, the UNT has a great grade control and parent bedrock material which emerges from the streambed and along the bank. Invasive species present include the Tree of Heaven, Japanese knotweed, Japanese barberry, and orange and yellow Jewelweed.



Figure 168. A shot of a two-foot concrete dam located below the bridge that is over the UNT to Toby Creek. An 18-inch corrugated metal pipe that enters the UNT from the northwesterly direction along the right bank, looking upstream. It is currently undetermined if the concrete dam is in an encased sewer line.

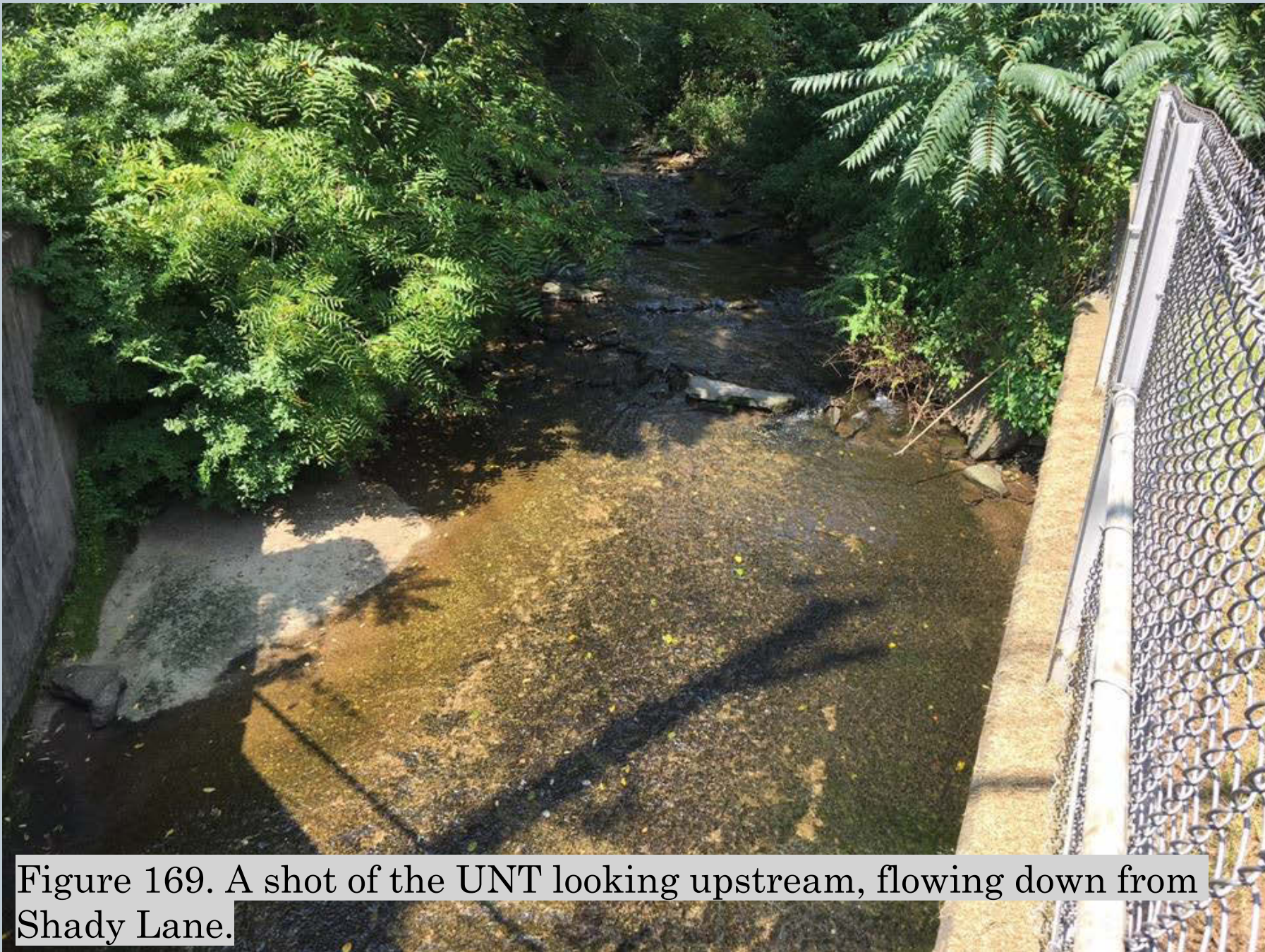


Figure 169. A shot of the UNT looking upstream, flowing down from Shady Lane.



Figure 170. A shot of a macadam sluceway diversion taken from an upper parking lot area which is located between Berkshire Hathaway (Ted Poggi, Realtor) and the Church along Carverton Road, which enters a storm drain on the property before crossing Caverton Road.

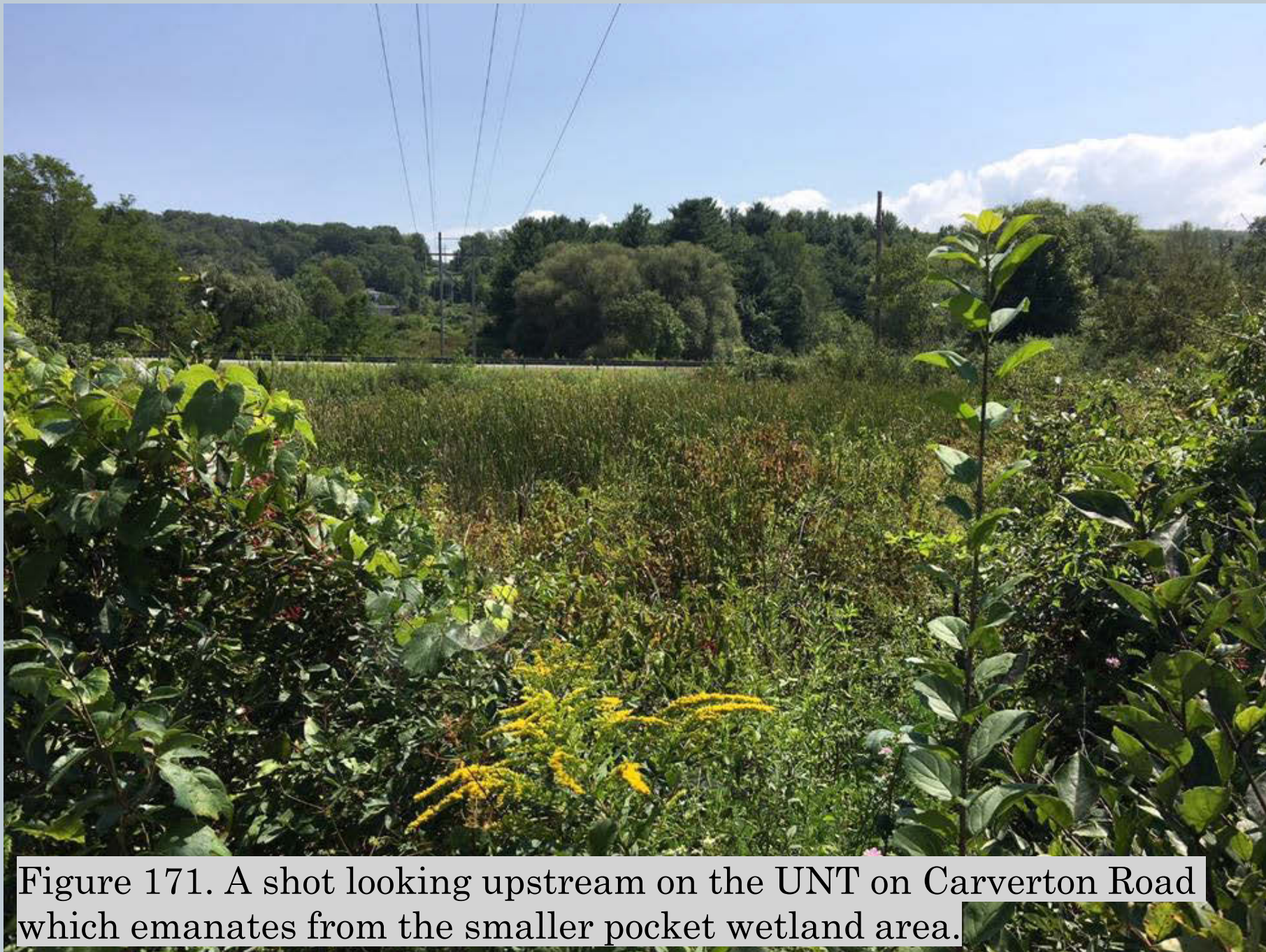


Figure 171. A shot looking upstream on the UNT on Carverton Road which emanates from the smaller pocket wetland area.



Figure 172. An image of the UNT and the gas line running parallel to Old Carverton Road.



Figure 173. A shot taken while looking downstream on the UNT on Old Carverton Road as it flows southwest from the wetland area towards the steeper ravine.



Figure 174. A shot of an 18-inch or 24-inch corrugated pipe and headwall to the larger wetlands complex, located downstream of Dug Road. This pipe is located between Terrace Road and Carverton Road.

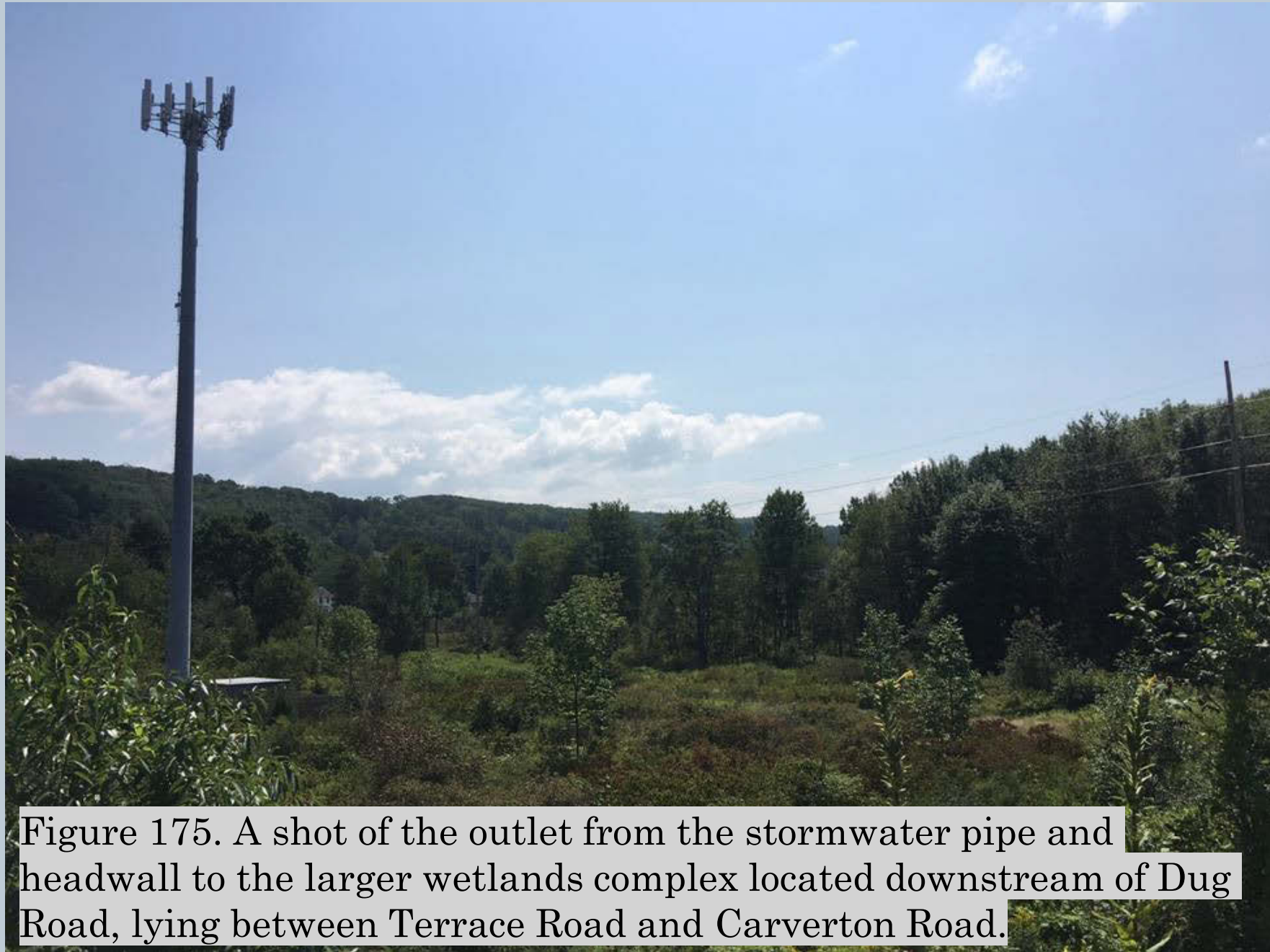


Figure 175. A shot of the outlet from the stormwater pipe and headwall to the larger wetlands complex located downstream of Dug Road, lying between Terrace Road and Carverton Road.



Figure 176. Looking downstream on the UNT crossing Dug Road. At this location, dozens of minnows (black-nosed dace) are present.



Figure 177. An image of a metal corrugated pipe that has rusted out.



Figure 178. A shot taken looking upstream on the UNT to the northeast of Dug Road, where large woody debris is found blocking the culvert from a previous high-water event. The debris pile can easily be removed by hand to make the UNT passable through the pipe culvert.



Figure 179. A shot of another UNT along Manor Road, which seems to be another headwater UNT with flow full of jewelweed along the streambanks, flowing down towards the ravine.

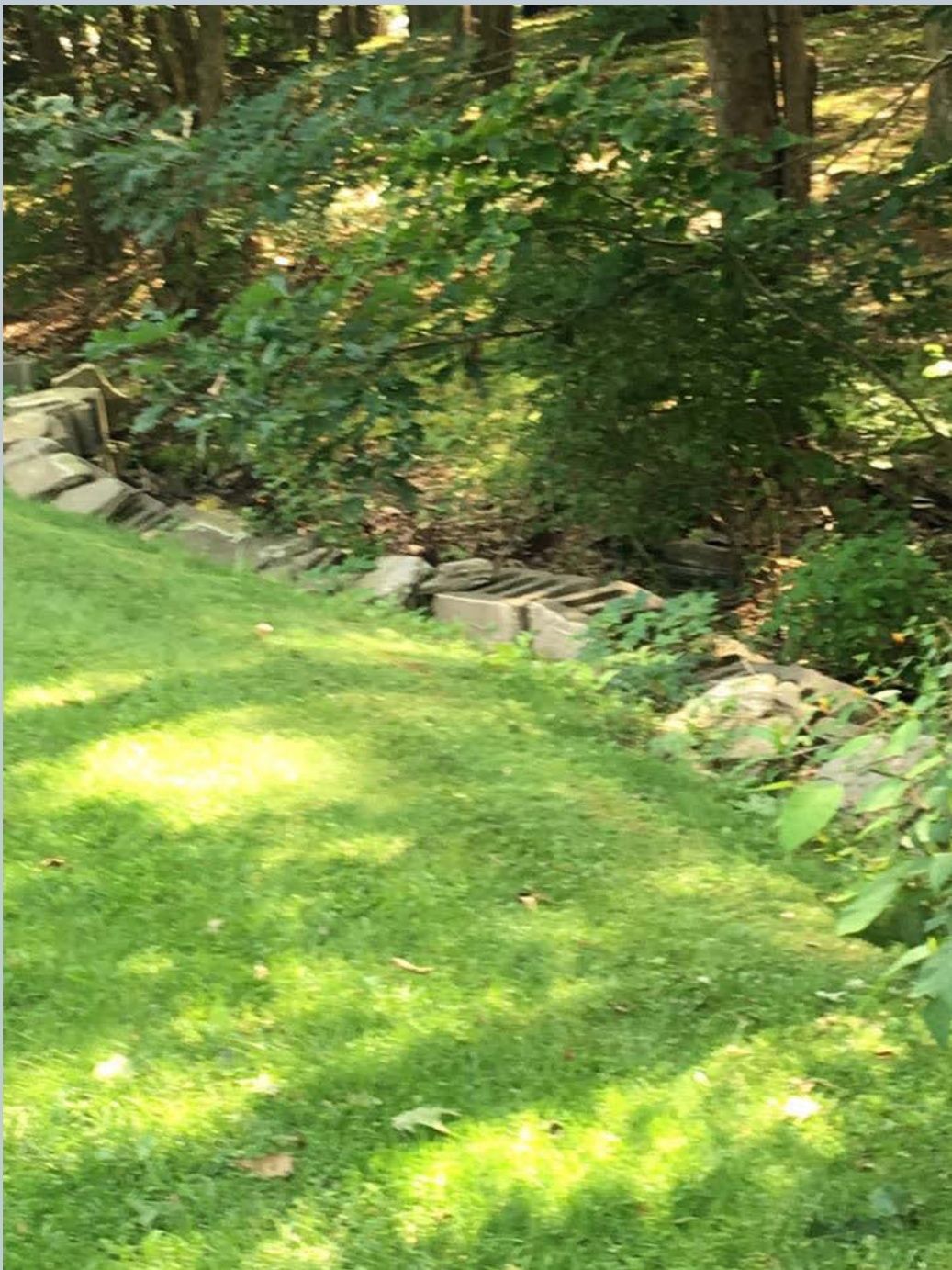


Figure 180. A shot of cinderblocks along the streambank on the Swago property.

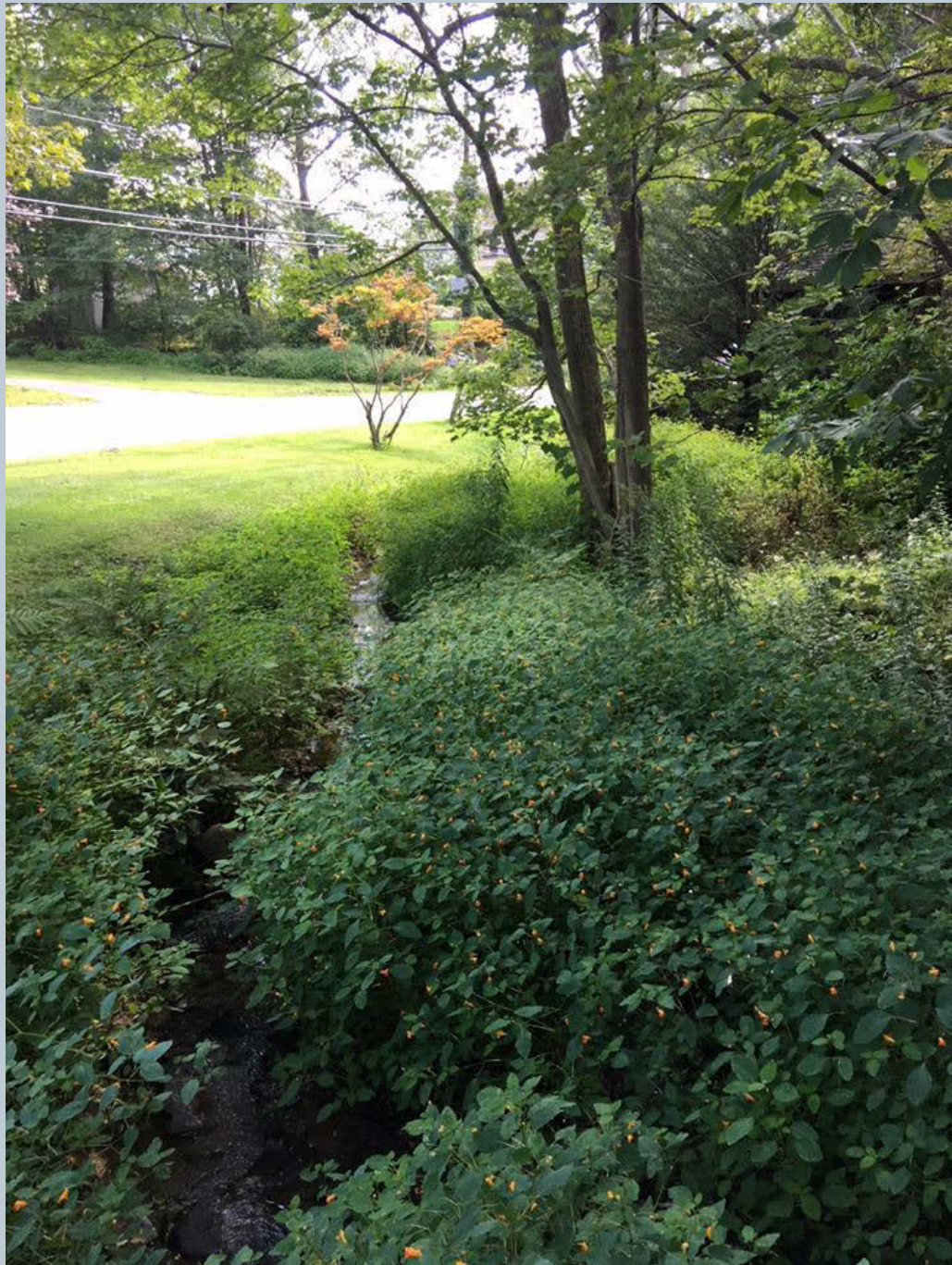


Figure 181. An image of the UNT from Mr. Swago's footbridge looking downstream at an abundance of jewelweed.



Figure 182. A shot of rip-rap, cut telephone poles, and a shot-crete impediment for stabilization along the bank just above Mr. Swago's covered bridge.



Figure 183. A shot of some rip-rap impediment on the UNT. This impediment could be removed and replaced with a small cross-vane to keep the flow of the UNT in the center of the stream channel to allow the high water flows to pass under the covered bridge. Some engineering may be necessary in this location.



Figure 184. A shot of the Swago's covered bridge.



Figure 185. A shot of the UNT looking downstream, below the coverage bridge.



Figure 186. A shot of another UNT flowing downstream through an 18-inch or 24-inch black HDPE culvert pipe along Manor Road. The downstream outlet from the pipe culvert has a small scour pool and highly eroded streambank opposite the pipe that could use some rock reinforcement along the streambank or willow staking to reinforce the streambank and stabilize it.

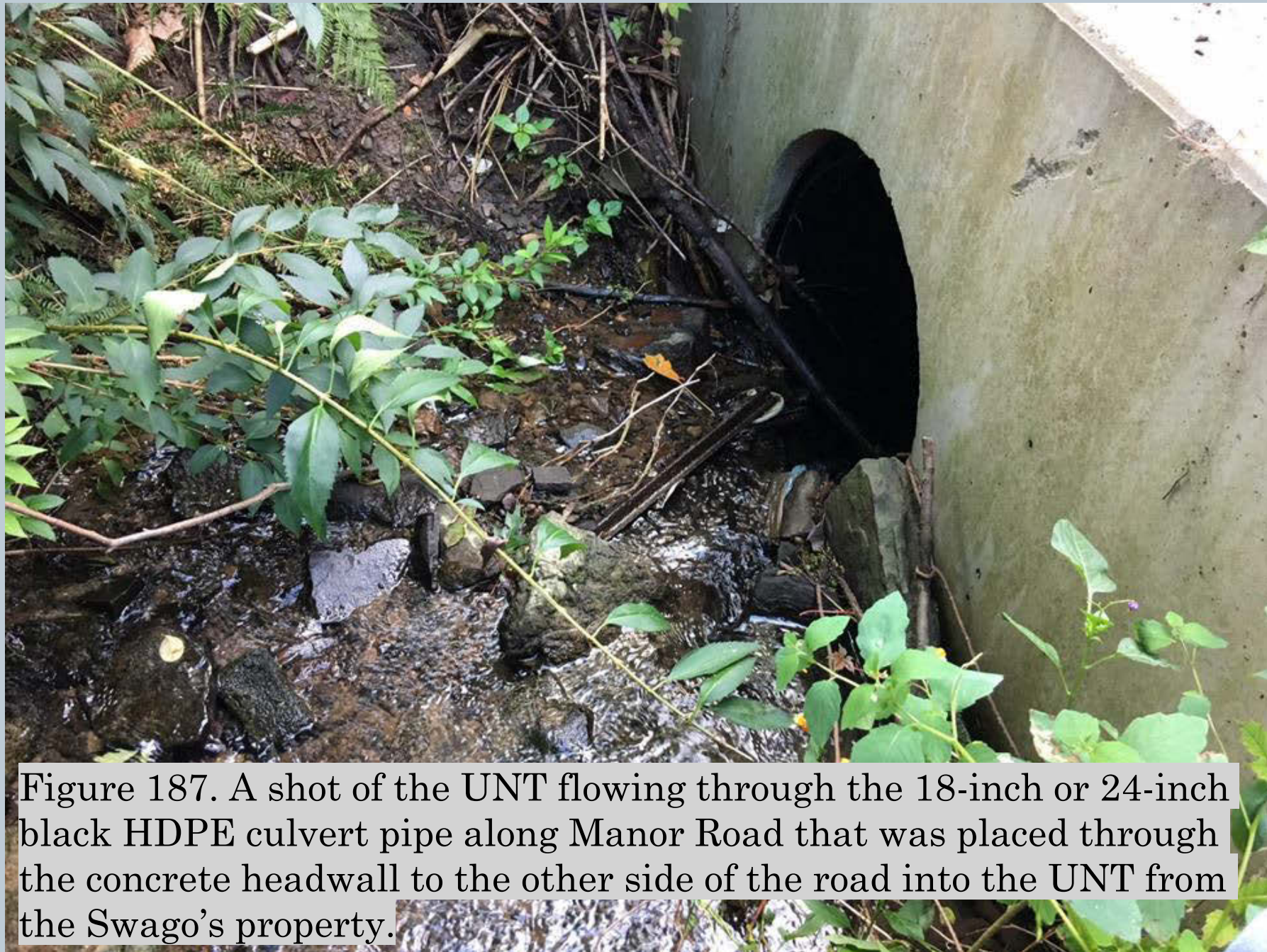


Figure 187. A shot of the UNT flowing through the 18-inch or 24-inch black HDPE culvert pipe along Manor Road that was placed through the concrete headwall to the other side of the road into the UNT from the Swago's property.



Figure 188. A shot of the Windsor Farms stormwater basin.



Figure 189. An image of the Green Pond tributary to the UNT to Toby Creek, looking downstream. Minnows were present.



Figure 190. A shot of the Green Pond tributary to the UNT to Toby Creek, looking upstream. The small tributary is well vegetated with wetland and herbaceous plants.



Figure 191. Two smaller stormwater headwalls with 18-inch pipes feed runoff towards a grassed waterway conveyance swale that is well vegetated and full of poison ivy.

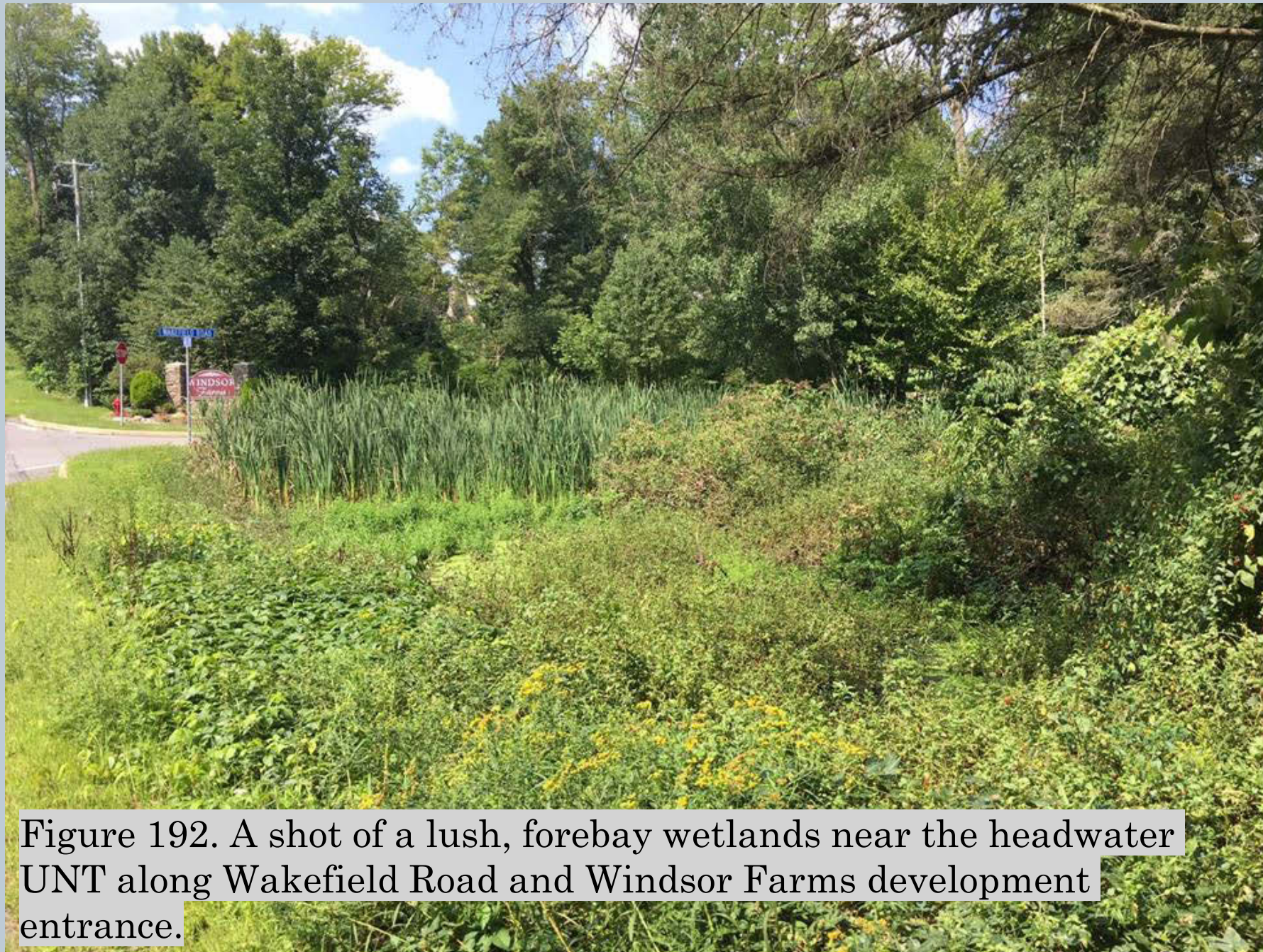


Figure 192. A shot of a lush, forebay wetlands near the headwater UNT along Wakefield Road and Windsor Farms development entrance.

July 17, 2019



Figure 193. Inlet pipe at the dip in Irem Road at the bottom of the hill. Catfish were present. A severe constriction exists upstream and beneath the road to the other side of the golf course. Pipe is recommended to be replaced to a larger box culvert.



Figure 194. Upstream of Inlet pipe at the dip in Irem Road at the bottom of the hill. Catfish were present. A severe constriction exists upstream. Pipe is recommended to be replaced to a larger box culvert. A small riparian restoration could be implemented in this area.



Figure 195. Downstream of culvert at the dip in Irem Road at the bottom of the hill. The herbaceous woody shrubbery has overgrown the outlet to the point it isn't even visible.

Figure 196. Looking upstream from the Irem Golf Course at the lush riparian area near the bridge crossing and culvert crossing along Irem Road.



Figure 197. Ephemeral stream channel along the intersection of Country Club Road and Ridgeway Drive where the baseflow of the unnamed tributary passes below the pipe culvert.





Figure 198. Ephemeral stream channel along the intersection of Country Club Road and Ridgeway Drive where the headwall is failing causing a cascading feature leading into the inlet of the culvert.

Figure 199. Downstream channel of the unnamed tributary along the intersection of Country Club Road and Ridgeway Drive where the baseflow is extremely low.



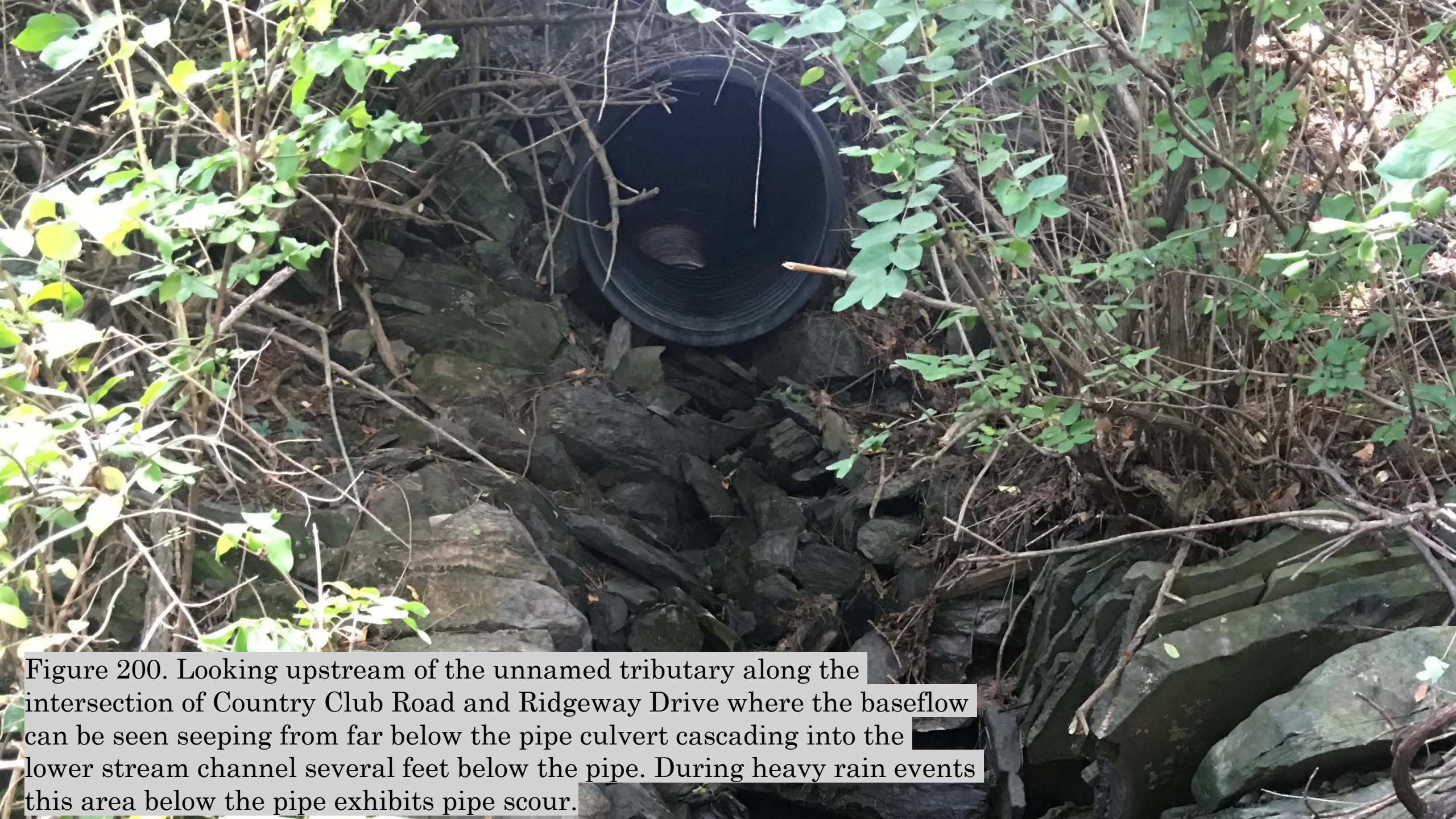


Figure 200. Looking upstream of the unnamed tributary along the intersection of Country Club Road and Ridgeway Drive where the baseflow can be seen seeping from far below the pipe culvert cascading into the lower stream channel several feet below the pipe. During heavy rain events this area below the pipe exhibits pipe scour.

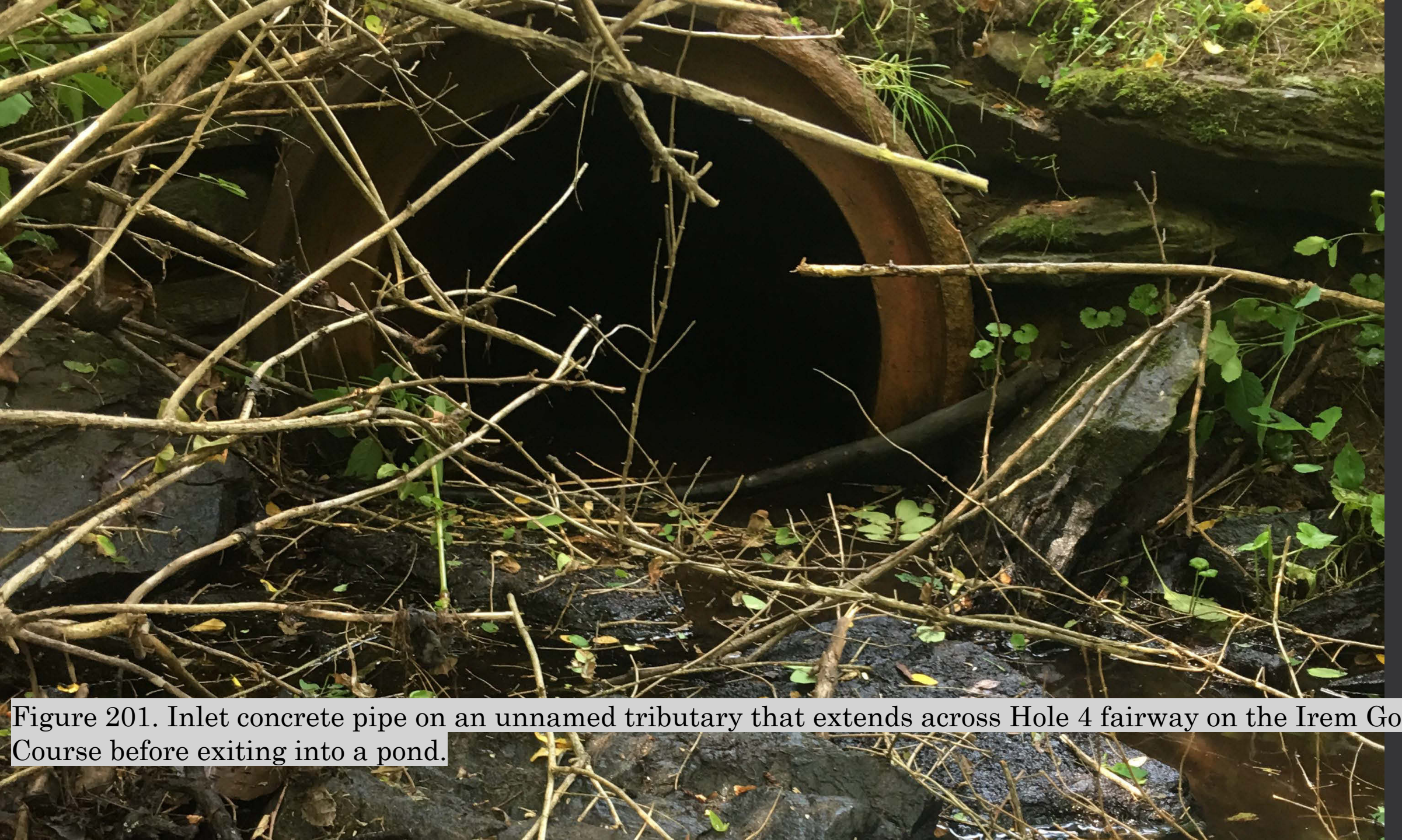


Figure 201. Inlet concrete pipe on an unnamed tributary that extends across Hole 4 fairway on the Irem Golf Course before exiting into a pond.



Figure 202. Looking upstream of culvert on unnamed tributary above Hole 4 on the Irem Golf Course. Litter is present and a small cleanup is recommended.

Figure 203. Outlet of concrete pipe on an unnamed tributary looking downstream that extends across Hole 4 and is piped once beneath the fairway on the Irem Golf Course before exiting into a pond.





Figure 204. Outlet of concrete pipe on an unnamed tributary that extends across Hole 4 and is piped once beneath the fairway on the Irem Golf Course.



Figure 205. Inlet of another concrete section of pipe on an unnamed tributary that extends across Hole 4 and is piped once beneath the fairway on the Irem Golf Course.



Figure 206. Outlet of another concrete section of pipe on an unnamed tributary that extends across Hole 4 and is piped once beneath the fairway on the Irem Golf Course with an excellent riparian area of native vegetation.

Figure 207. Aquatic Organism Passage Culvert Assessment Training being provided by the EPCAMR Executive Director to DAMA and EPCAMR Staff and Interns on Hole 4 of the Irem Golf Course.



Figure 208. Outlet HDPE Pipe with an outlet drop freefall into the pond on Hole 4 of the Irem Golf Course.



Figure 209. Outlet HDPE Pipe with an outlet drop freefall into the pond on Hole 4 of the Irem Golf Course.



Figure 210. Outlet of corrugated metal pipe on Irem Road below Hole 3 where a rock wall is constructed on the upstream end of the pipe that is filled with woody debris.

Recommend removing woody debris and reason for why the headwall is constructed away from the culvert creating an inlet drop and scour area before the unnamed tributary enters the culvert.



Figure 211.
An
unnamed
tributary to
Toby Creek
at an inlet
of
corrugated
metal pipe
on Glenn
Riddle Lane
with a
moderate
constriction.



Figure 212.
An
unnamed
tributary to
Toby Creek
looking
upstream of
the inlet
corrugated
metal pipe
on Glenn
Riddle Lane
with an
excellent
riparian
area.



Figure 213.
An
unnamed
tributary to
Toby Creek
looking
downstream
of the outlet
corrugated
metal pipe
on Glenn
Riddle Lane
with an
excellent
landscaped
riparian
area.



Figure 214. An unnamed tributary to Toby Creek looking upstream of the outlet corrugated metal pipe on Glenn Riddle Lane with an excellent landscaped riparian area.



Figure 215. An unnamed tributary to Toby Creek looking downstream of the inlet corrugated metal pipe on Sunny Brook Lane. A riparian restoration projects is recommended here as opposed to placing rock in the entire stream channel.



Figure 216. An unnamed tributary to Toby Creek looking upstream of the inlet corrugated metal pipe on Sunny Brook Lane. A riparian restoration projects is recommended here as opposed to placing rock in the entire stream channel that is being washed away periodically.



Figure 217. An unnamed tributary to Toby Creek looking upstream of the outlet corrugated metal pipe on Sunny Brook Lane. The pipe is full of sediment and is slightly rusted out.



Figure 218. An unnamed tributary to Toby Creek looking downstream of the outlet corrugated metal pipe on Sunny Brook Lane. A riparian restoration projects is recommended here as opposed to placing rock in the entire stream channel that is being washed away periodically.



Figure 219. An unnamed tributary to Toby Creek looking downstream of the bridge on Midland Drive at the entrance to Fern Knoll Cemetery. Many fish were present at this location and it was one of the electroshocking sites for the fishery survey.



Figure 220. An unnamed tributary to Toby Creek looking upstream of the bridge on Midland Drive at the entrance to Fern Knoll Cemetery. Many fish were present at this location and it was one of the electroshocking sites for the fishery survey and the riparian area is well established.



Figure 221. An unnamed tributary to Toby Creek looking upstream towards the bridge on Midland Drive at the entrance to Fern Knoll Cemetery. Many fish were present at this location and it was one of the electroshocking sites for the fishery survey.



Figure 222. An unnamed tributary to Toby Creek looking downstream from the bridge on Midland Drive at the entrance to Fern Knoll Cemetery. Many fish were present at this location and it was one of the electroshocking sites for the fishery survey. Removal of a check dam and a riparian restoration project along the righthand streambank is recommended.



Figure 223.
An unnamed
tributary to
Toby Creek
looking
downstream
towards the
bridge on
Hildebrandt
Road with
some rock
armoring
along the
wingwalls
and native
riparian
plants along
the banks of
the
tributary.



Figure 224. An unnamed tributary to Toby Creek looking upstream of the bridge on Hildebrandt Road with some rock armoring along the wingwalls and native riparian plants along the banks of the tributary and some remnant erosion control filter socks.



Figure 225. An unnamed tributary to Toby Creek looking downstream of the bridge on Hildebrandt Road with some native riparian plants along the banks of the tributary and some remnant erosion control filter socks.



Figure 226. An unnamed tributary to Toby Creek looking upstream towards the bridge on Hildebrandt Road with some rock armoring along the wingwalls and native riparian plants along the banks of the tributary and some remnant erosion control filter socks.



Figure 227. An unnamed tributary to Toby Creek looking downstream from the bridge on Hildebrandt Road where there are native riparian plants along the banks of the tributary and an excellent riparian buffer area in the background further downstream.



Figure 228. EPCAMR Staff and interns taking Aquatic Organism Passage and culvert measurements of the estimated bankfull width of the unnamed tributary to Toby Creek above the bridge on Hildebrandt Road.



September 17, 2019

Figure 229.
DHL/EPCAMR
Volunteer finds a
baby snapping turtle
along the outlet
culvert on McAuley
Drive.



Figure 230. Looking upstream on an unnamed tributary to Toby Creek at a multiple structure culvert along the outlet culvert on McAuley Drive with water flowing through one of them to the far right. A concrete footer creates a several inch drop until the water reaches the stream channel. Sediment deposition noted downstream.



Figure 231. Looking downstream on an unnamed tributary to Toby Creek at a multiple structure culvert along the outlet culvert on McAuley Drive. The riparian corridor below the culvert is excellent. Minnows were noted above and below the culvert with some dead upstream possibly from low oxygen levels and flow in the summer.



Figure 232. Looking upstream on an unnamed tributary to Toby Creek at a multiple structure culvert along the outlet culvert on McAuley Drive. Recommend Misericordia University not mow the grass along the streambank and replanting the riparian corridor on the upstream end of the culvert to create cooler water conditions and reduce sediment loads downstream caused by the eroded streambanks.



Figure 233. Looking downstream on an unnamed tributary to Toby Creek at a multiple structure culvert along the outlet culvert on McAuley Drive. Recommend Misericordia excavate the sediment bar that is blocking the flow of water from the tributary along the grassy area to the center and right culvert structures that is creating a constriction of the flow down to the one pipe on the left of the culvert.



Figure 234.
Looking upstream
on an unnamed
tributary to Toby
Creek off Lake
Street on
Misericordia
University
grounds above the
pedestrian bridge
and the bridge on
Lake Street.
Freshwater snails
present in the
pooled water
beneath the
bridge.



Figure 235. Looking downstream on an unnamed tributary to Toby Creek off Lake Street on Misericordia University grounds below the pedestrian bridge and the bridge on Lake Street. Heavy sediment deposition was noted all the way through the culvert. Recommend removal of the sediment.



Figure 236.
Looking
downstream on
an unnamed
tributary to
Toby Creek off
Lake Street
that flows
through the
Meadows
Nursing Home
property with
DHL/EPCAMR
Volunteer.
Recommend
not mowing up
to the
streambank
and planting
additional
riparian area
plants along
the corridor.



Figure 237. Looking upstream on an unnamed tributary to Toby Creek off Lake Street that flows through the Meadows Nursing Home property with DHL/EPCAMR Volunteers. Recommend not mowing up to the streambank and planting additional riparian area plants along the corridor and removal of chain link fence in the channel.



Figure 238.
Looking
downstream on an
unnamed tributary
to Toby Creek that
flows through the
Meadows Nursing
Home property
with
DHL/EPCAMR
Volunteer Gabby
Zawacki along
Center Hill Road.
Recommend not
mowing up to the
streambank and
planting additional
riparian area
plants along the
corridor and
removal of chain
link fence in the
channel.



Figure 239.
Looking upstream
on an unnamed
tributary to Toby
Creek off that
flows through the
Meadows Nursing
Home property
with
DHL/EPCAMR
Volunteers and
DAMA
Stormwater
Coordinator along
Center Hill Road.



Figure 240. Looking downstream on an unnamed tributary to Toby Creek that flows through the Meadows Nursing Home property along Center Hill Road. Recommend not mowing up to the streambank and planting additional riparian area plants along the corridor and removal of sediment in ponded area of the tributary further downstream. Minnows were present under the bridge.



Figure 241. Looking upstream on an unnamed tributary to Toby Creek that flows through the Meadows Nursing Home property along Center Hill Road. Recommend not mowing up to the streambank and planting additional riparian area plants along the corridor and removal of sediment and anti-skid/road salt deposition inside the culvert and in ponded area of the tributary further downstream. Minnows were present under the bridge.



Figure 242. Looking upstream on Toby Creek that flows along the Dallas Memorial Highway and the newly constructed Lake Street Community Park. This was an electroshocking location. This section of the main stem is heavily silted from roadside stormwater runoff. A recommended streambank riparian planting should be considered on the upstream right-hand side streambank.



Figure 243. Looking downstream on Toby Creek that flows along the Dallas Memorial Highway towards the roundabout in Dallas. This section of the main stem is heavily silted from roadside stormwater runoff. Beneath the culvert the entire stretch of Toby Creek is full of sediment.



Figure 244. Piles of sediment that are being deposited following rain events from culvert pipes that drain to Toby Creek from above the somewhere near the roundabout in Dallas. This section of the main stem is heavily silted from roadside stormwater runoff. Beneath the culvert the entire stretch of Toby Creek is full of sediment. A DAMA Vac Truck is recommended to remove the sediment.

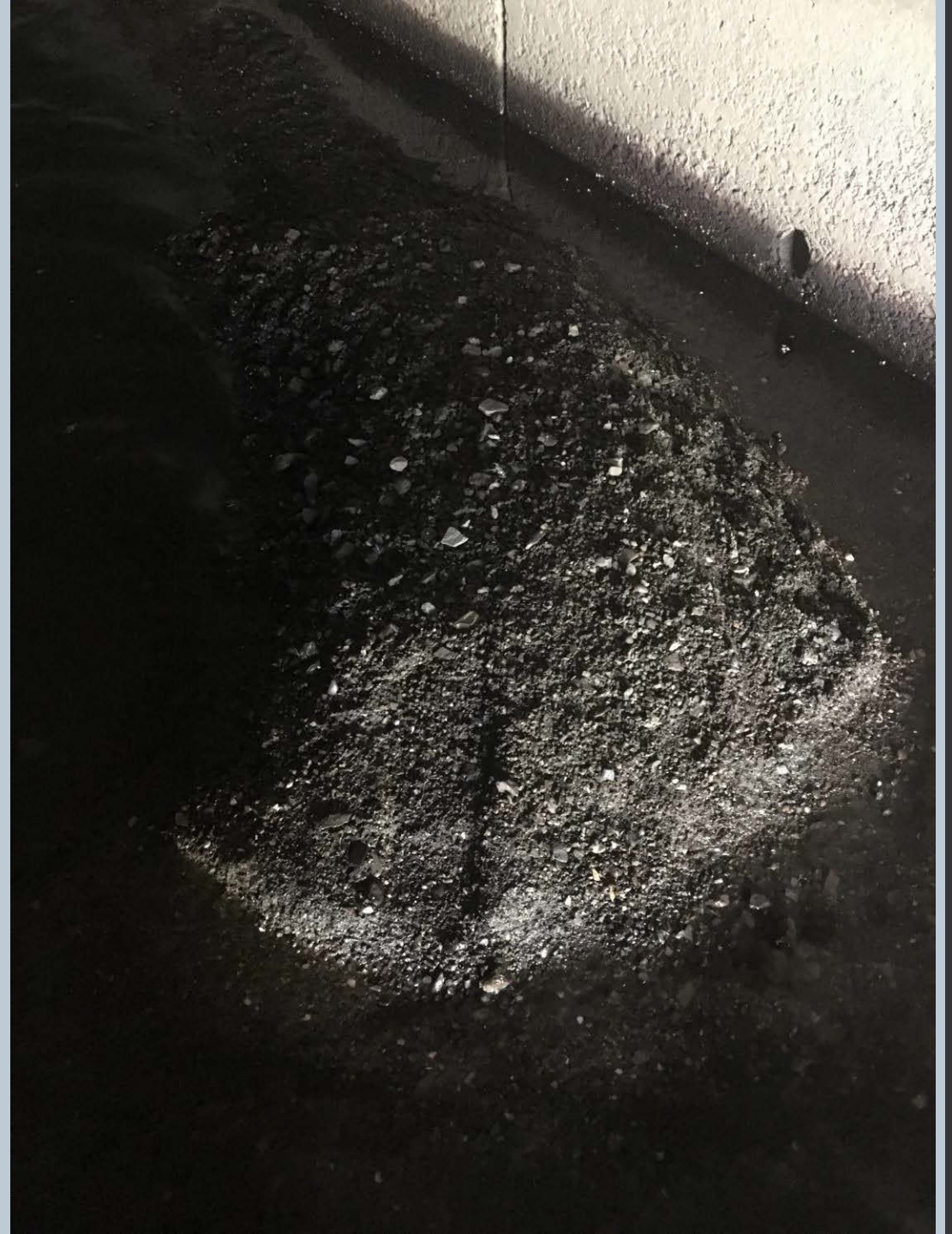


Figure 245. Culvert pipe draining to Toby Creek from somewhere above the roundabout in Dallas. This section of the main stem is heavily silted from roadside stormwater runoff. Beneath the culvert the entire stretch of Toby Creek is full of sediment. A DAMA Vac Truck is recommended to remove the sediment.



Figure 246.
Culvert pipe
draining to Toby
Creek from
somewhere above
the roundabout in
Dallas. This
section of the
main stem is
heavily silted from
roadside
stormwater
runoff. Beneath
the culvert the
entire stretch of
Toby Creek is full
of sediment. A
DAMA Vac Truck
is recommended to
remove the
sediment.



Figure 247.
Culvert that
directs Toby Creek
from beneath Main
Street, under the
commercial
district, until it
outlets along Verve
Vertu in Dallas.
This section of the
main stem is
heavily silted from
roadside
stormwater runoff.
Beneath the
culvert large
stretches of Toby
Creek are full of
sediment. A DAMA
Vac Truck is
recommended to
remove the
sediment.



Figure 248. Open area before the next culvert that directs Toby Creek from beneath Main Street, under the commercial district, until it outlets along Verve Vertu in Dallas. This is an open section before going into another culvert under the commercial district in Dallas.



Figure 249. Culvert that directs Toby Creek from beneath Main Street, under the commercial district, until it outlets along Verve Vertu in Dallas. This is an open section before going into another culvert under the commercial district in Dallas.



Figure 250. Culvert that directs Toby Creek from beneath Main Street, under the commercial district, until it outlets along Verve Vertu in Dallas. This is an open section before going into another culvert under the commercial district in Dallas.



Figure 251. Looking upstream at the culvert and old stone masonry work beneath Main Street in Dallas under the commercial district, until it outlets along Verve Vertu in Dallas. Invasives are present downstream of this area, including Japanese Knotweed.



Figure 252. Looking downstream from the culvert over Main Street beneath Main Street in Dallas under the commercial district. This section of the stream is along Verve Vertu in Dallas. Invasives are present downstream in this area, including Japanese Knotweed. An Invasive Removal Project and riparian planting is recommended.



September 18, 2019

Figure 253. Looking downstream on two corrugated metal pipe culverts on an unnamed tributary to Toby Creek from Pioneer Ave. and Overbrook Road with the culvert on the right severely collapses. Replacement of both structures is recommended.



Figure 254. Looking upstream at the erosion caused by stormwater runoff behind the wingwall of the multiple culverts that are failing beneath Pioneer Avenue and Overbrook Road. Rerouting of the stormwater drainage into a properly functioning inlet structure is recommended at this intersection.



Figure 255.
Looking
downstream at
dry, unnamed
tributary that
conveys mostly
stormwater
through Druid
Hills below
Pioneer Avenue
and Overbrook
Road.



Figure 256. Inlet drop structure filled with sediment from stormwater coming down Pioneer Avenue.

Recommend DAMA Vac Truck clean out this concrete culvert that is carrying sediment further downstream through the Druid Hills location towards W. Franklin Street and Ferguson Avenue.



Figure 257. Multiple concrete pipe structures are collapsed and disconnected from an unnamed tributary to Toby Creek that conveys mostly stormwater through Druid Hills below Pioneer Avenue and Overbrook Road. The wingwalls of the culvert foundation are undermined with very little support beneath it. Replacement of the entire structure and foundation should be designed and constructed is recommended.



Figure 258. Multiple concrete pipe structures are collapsed and disconnected from an unnamed tributary to Toby Creek that conveys mostly stormwater through Druid Hills below Pioneer Avenue and Overbrook Road. The wingwalls of the culvert foundation are undermined with very little support beneath it. Replacement of the entire structure and foundation should be designed and constructed is recommended.



Figure 259. Dry, unnamed tributary to Toby Creek and black HDPE pipe at the corner of W. Franklin and Ferguson Avenue.



Figure 260. Dry, unnamed tributary to Toby Creek at the corner of W. Franklin and Ferguson Avenue filled with sediment. Recommend removal of sediment with a DAMA Vac Truck since the culvert is nearly filled with fine gravels.



Figure 261. Dry, unnamed tributary to Toby Creek at the corner of W. Franklin and Ferguson Avenue filled with sediment. Recommend removal of sediment with a DAMA Vac Truck since the culvert is nearly filled with fine gravels.



Figure 262. Dry, unnamed tributary to Toby Creek at the corner of W. Franklin and Ferguson Avenue filled with fallen rock from around the inlet corrugated metal pipe. DHL/EPCAMR Volunteer taking measurements of the culvert. Recommend removal of rocks from the pipe inlet to improve stormwater flows through the private property.



Figure 263. Dry, unnamed tributary to Toby Creek at the corner of W. Franklin and Ferguson Avenue flows through a private residence that has beautifully landscaped the conveyance with a stone rock wall. Recommend having a discussion with the landowner about considering a riparian restoration project in this area.

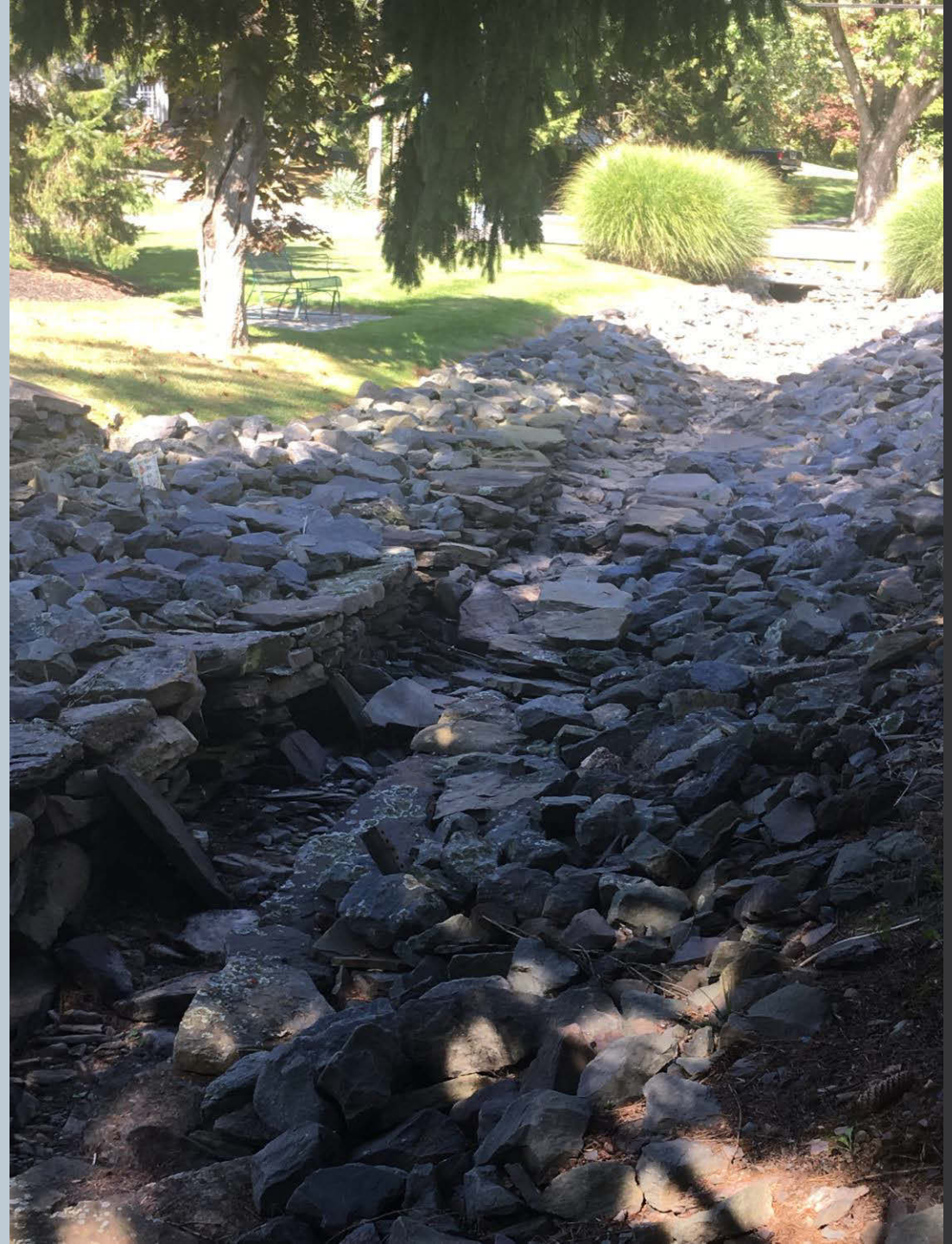


Figure 264. Dry, unnamed tributary to Toby Creek at the outlet of the metal corrugated pipe from the rear of the private residence along West Franklin and Ferguson Avenue. The pipe is half full of sediment. The DAMA Vac Truck is recommended for cleanout of this outlet pipe that is located behind the fence at the rear of the McDonald's.



Figure 265. Dry, unnamed tributary to Toby Creek at the outlet of the metal corrugated pipe from the rear of the private residence along West Franklin and Ferguson Avenue. The pipe is half full of sediment. The DAMA Vac Truck is recommended for cleanout of this outlet pipe that is located behind the fence at the rear of the McDonald's.



Figure 266. Dry, unnamed tributary to Toby Creek behind McDonald's conveys water into a drop inlet concrete culvert beneath the Back Mountain Shopping Center that is severely blocked with woody debris, trash, and sediment. A small litter cleanup is recommended for the area and removal of the woody debris and branches that are blocking the flow of water through the culvert. Green frogs were present.



Figure 267. The first sign of some baseflow was found near the headwall of the culvert beneath all of the sediment and woody debris blockage at the inlet. This would carry flow beneath the Back Mountain Shopping Center over to where it outlets near Amelia's Diner across the Dallas Memorial Highway. DAMA Stormwater Coordinator and Gabby Zawacki, DHL/EPCAMR Volunteer look in amazement.



Figure 268. Looking downstream into the concrete culvert beneath the Back Mountain Shopping Center into the first 20' and woody debris and large stone are found blocking the flow of stormwater through the length of the pipe of the unnamed tributary to Toby Creek that crosses the parking lot and under the Dallas Memorial Highway before it outlets near Amelia's Diner and the Gas Station. Removal of the rocks and woody debris is recommended.



Figure 269. Looking upstream into the large culvert that combines flows from several other culverts beneath the Back Mountain Shopping Center that are draining two unnamed tributaries to Toby Creek. This larger culvert is constructed beneath the Dallas Memorial Highway adjacent to Amelia's and the Gas Station. The other unnamed tributary comes from W. Center Street and N. Pioneer Avenue across from the Cemetery.



Figure 270.
Looking upstream
at an unnamed
tributary to Toby
Creek that flows
from the
mountainside
adjacent to the
Cemetery above
W. Center Street
and N. Pioneer
Avenue across.



Figure 271.
Looking upstream
at an unnamed
tributary to Toby
Creek that flows
from the
mountainside
adjacent to the
Cemetery above
W. Center Street
and N. Pioneer
Avenue across.
The riparian area
is excellent.



Figure 272. Looking downstream at an unnamed tributary to Toby Creek that flows from the mountainside adjacent to the Cemetery above W. Center Street and N. Pioneer Avenue across. It crosses the road and enters a culvert system all the way down along W. Center Street into the parking lot near Gerrity's before connecting with a larger culvert that empties into Toby Creek adjacent to Amelia's Diner and the Gas Station.



September 24, 2019

Figure 273.
Looking
downstream on
Toby Creek from
a bridge over the
Dallas Memorial
Highway.
Invasive Japanese
Knotweed is
prolific. An
invasive removal
project is
recommended and
planting with
native vegetation.



Figure 274.
Looking
downstream on
Toby Creek from
the inlet side over
the Dallas
Memorial
Highway.
DHL/EPCAMR
Volunteers and
Tom Mayka,
DAMA
Stormwater
Coordinator were
assisting with
taking culvert
measurements for
aquatic organism
passage.



Figure 275. Looking upstream on Toby Creek standing in front of the inlet side of the of the bridge culvert over the Dallas Memorial Highway. The habitat is excellent with a nice riffle-run-pool feature shown and again Japanese Knotweed is prevalent. Recommend an invasive removal project and planting with native vegetation along this stream corridor.



Figure 276. Looking upstream on Toby Creek standing in front of the outlet side of the of the bridge culvert over the Dallas Memorial Highway. Japanese Knotweed is prevalent. Recommend an invasive removal project and planting with native vegetation along this stream corridor. Several trees are down across Toby Creek that should be removed.



Figure 277. Looking downstream on Toby Creek standing in front of the inlet side of the of the bridge culvert over the Dallas Memorial Highway. Concrete sandbags are along the culvert for stabilization. Large sediment deposits beneath the bridge due to the skewed alignment of the bridge with Toby Creek along N. Main Street.



Figure 278. Looking upstream on Toby Creek standing in front of the inlet side of the bridge culvert over the Dallas Memorial Highway. Large rip rap rock has been placed along the streambank along N. Main Street to prevent further erosion. DHL/EPCAMR Volunteer is taking notes.



Figure 279. Looking upstream on Toby Creek standing in front of the outlet side of the bridge culvert over the Dallas Memorial Highway on the other side of N. Main Street. Large rip rap rock has been placed along the streambank on the downstream side to prevent to prevent further erosion. DHL/EPCAMR Volunteers are taking culvert measurements for aquatic organism passage.



Figure 280. Looking downstream on Toby Creek standing in front of the outlet side of the of the bridge culvert over the Dallas Memorial Highway on the other side of N. Main Street.

DHL/EPCAMR
Volunteers and Tom
Mayka-DAMA
Stormwater
Coordinator were
taking culvert
measurements for
aquatic organism
passage while
standing in a very
large pool and great
habitat for fish.



Figure 281.
Looking upstream
on Toby Creek
standing in front
of the inlet side of
the of the bridge
culvert over the
Dallas Memorial
Highway heading
towards E. Center
Street. Several
large trees have
fallen in the
channel.
Recommend
removal of them if
they are not
lodged into the
stream to avoid
blockages at the
bridge.



Figure 282. Looking upstream on Toby Creek standing in front of the outlet side of the of the bridge culvert over the Dallas Memorial Highway DHL/EPCAMR Volunteer and Tom Mayka-DAMA Stormwater Coordinator were taking culvert measurements for aquatic organism passage. Concrete filled sandbags for stabilization were throughout the bridge culvert and sediment was highly deposited beneath the entire length of the bridge.



Figure 283. Looking downstream on Toby Creek standing in front of the outlet side of the bridge culvert over the Dallas Memorial Highway. DHL/EPCAMR Volunteer was taking culvert measurements for aquatic organism passage while standing in a large pool that was sediment-laden.



Figure 284. Looking upstream on Toby Creek standing in front of the outlet side of the bridge culvert over the Dallas Memorial Highway. Tom Mayka-DAMA Stormwater Coordinator was taking culvert measurements for aquatic organism passage. Fish were present in this section.



Figure 285. Looking upstream at a black HDPE Corrugated pipe carrying flow from an unnamed tributary to Toby Creek that flows along Division Street down to the intersection with N. Main Street that drops into a scour pool and then flows into a concrete pipe before crossing N. Main Street and entering Toby Creek. Recommend connecting the pipe with a sleeve or collar to prevent the scour pool since the two pipes are not aligned.



Figure 286. Looking downstream at a black HDPE Corrugated pipe carrying flow from an unnamed tributary to Toby Creek that flows along Division Street down to the intersection with N. Main Street that drops into a scour pool and then flows into the concrete pipe before crossing N. Main Street and entering Toby Creek.



Figure 287.
Looking
downstream at a
concrete pipe
culvert that is
carrying flow from
an unnamed
tributary to Toby
Creek that flows
along Division
Street down to the
intersection with
N. Main Street
that drops into a
scour pool and then
flows into the
concrete pipe
before crossing N.
Main Street
creating another
scour pool before
entering Toby
Creek.



Figure 288. Looking upstream at a concrete pipe culvert that is carrying flow from an unnamed tributary to Toby Creek that flows along Division Street down to the intersection with N. Main Street that drops into a scour pool and then flows into the concrete pipe before crossing N. Main Street creating another scour pool before entering Toby Creek. Recommend a rock apron at the outlet since the outlet grade is well above the stream channel.



Figure 289. Looking downstream on Toby Creek along N. Main Street where the new bridge was constructed where a large gravel bar extends the entire length of the bridge from the inlet to the outlet. Recommend gravel bar removal and point bar removal at the other end of the bridge.



Figure 290. Looking upstream on Toby Creek along N. Main Street where the new bridge was constructed where a large gravel bar extends the entire length of the bridge from the inlet to the outlet. Recommend gravel bar removal and point bar removal at the other end of the bridge. Seepage from an unnamed tributary on the other side of the Dallas Memorial Highway near the Greenwood Cemetery is can be seen entering Toby Creek through the pipe in the concrete retaining wall.



Figure 291. Looking upstream on Toby Creek along N. Main Street where the new bridge was constructed where a point bar extends from beneath the bridge from the outlet. Recommend point bar removal at the other end of the bridge.



Figure 292. Looking downstream on Toby Creek along N. Main Street where the new bridge was constructed where a point bar extends from beneath the bridge from the outlet. Recommend point bar removal at the other end of the bridge. Japanese knotweed is prevalent and an invasive plant removal and native riparian restoration is recommended for this area.



Figure 293. Looking downstream on Toby Creek along W. Center Street and a Great Blue Heron can be seen plucking fish from the stream channel while we were assessing the culvert and the stream.



Figure 294. Looking downstream on Toby Creek along W. Center Street. Several storm drains from W. Center drop stormwater runoff along the concrete walls beneath the bridge into Toby Creek.



Figure 295.
Looking upstream
on Toby Creek
along W. Center
Street towards
Snowdon Funeral
Home. A riparian
restoration is
recommended in
this area along the
left bank looking
upstream and a
closer look is
needed for some of
the failing large
boulders that have
come loose from the
retaining wall
along a few
sections of the
right bank of Toby
Creek.



Figure 296.
DHL/EPCAMR
Volunteers and
DAMA Stormwater
Coordinator take
notes on the
stormwater pipe
entering Toby
Creek from W.
Center Street and
the Dallas
Memorial Highway
and grab a GPS
location for the
culvert.



Figure 297.
Looking
downstream on
Toby Creek below
the bridge on W.
Center Street at a
very steep and
vertical rock-filled
gabion basket wall
that has some
areas that are
undermined along
the stream channel
and the retaining
wall along the
Dallas Memorial
Highway. A rather
large pool exists in
this area.



Figure 298. Looking upstream on Toby Creek below the bridge on W. Center Street at a very steep and vertical rock-filled gabion basket wall that has some areas that are undermined along the stream channel and the retaining wall along the Dallas Memorial Highway. A black HDPE pipe is protruding from the rock-filled gabion basket retaining wall nearly 10' above the stream channel that is not aligned. Recommend that the pipe be brought to grade and realigned to the flow alignment of Toby Creek.



September 26, 2019

Figure 299. Bridge culvert over Carverton Road adjacent to the Trucksville Pocket Park. A stormwater corrugated metal pipe is pointed directly into the unnamed tributary causing a scour pool formation below the concrete dam. Heavy sediment below the concrete dam. Fish present below the outlet of the culvert. This dam is impeding aquatic passage. Recommend design and construction of a step pool feature to allow for fish passage and realignment and grading of the stormwater pipe along the right bank looking upstream.



Figure 300. Bridge culvert over Carverton Road adjacent to the Trucksville Pocket Park. A stormwater corrugated metal pipe is pointed directly into the unnamed tributary looking downstream causing a scour pool formation below the concrete dam. Heavy sediment below the concrete dam. Fish present below the outlet of the culvert. This dam is impeding aquatic passage. Recommend design and construction of a step pool feature to allow for fish passage and realignment and grading of the stormwater pipe along the left bank looking downstream.



Figure 301. Bridge culvert over Carverton Road looking upstream on the unnamed tributary with Tom Mayka, DAMA Stormwater Coordinator where the concrete footer meets the unnamed tributary.



Figure 302. Bridge culvert over Carverton Road looking downstream on the unnamed tributary with Tom Mayka, DAMA Stormwater Coordinator where the concrete footer meets the unnamed tributary.



Figure 303. Bridge culvert over Old Carverton Road looking upstream on the unnamed tributary with Tom Mayka, DAMA Stormwater Coordinator taking measurements.



Figure 304. Bridge culvert over Old Carverton Road looking upstream on the unnamed tributary with Tom Mayka, DAMA Stormwater Coordinator taking measurements.



Figure 305. Bridge culvert over Old Carverton Road looking downstream on the unnamed tributary where fish were present along with a lot of wild grape vine overgrowth and an excellent riparian corridor.



Figure 306. Bridge culvert over Old Carverton Road looking upstream on the unnamed tributary where fish were present along with a lot of wild grape vine overgrowth and an excellent riparian corridor. Tom Mayka, DAMA Stormwater Coordinator is taking culvert measurements for aquatic organism passage.



Figure 307.
Looking upstream
on stormwater
forebay at the
entrance to
Windsor Farms
development on an
unnamed tributary
to Toby Creek
along Manor
Drive.



Figure 308.
Looking
downstream on
stormwater
forebay at the
entrance to
Windsor Farms
development on
an unnamed
tributary to Toby
Creek along
Manor Drive.
Lots of poison ivy
present and
jewelweed.



Figure 309.
Looking
downstream on
stormwater
forebay at the
entrance to
Windsor Farms
development on
an unnamed
tributary to Toby
Creek along
Manor Drive.



Figure 310. Looking upstream on concrete culvert coming across Manor Drive from stormwater forebay at the entrance to Windsor Farms development on an unnamed tributary to Toby Creek. A flagstone rock wall constriction is at the outlet of the pipe culvert that has some undermined rock.

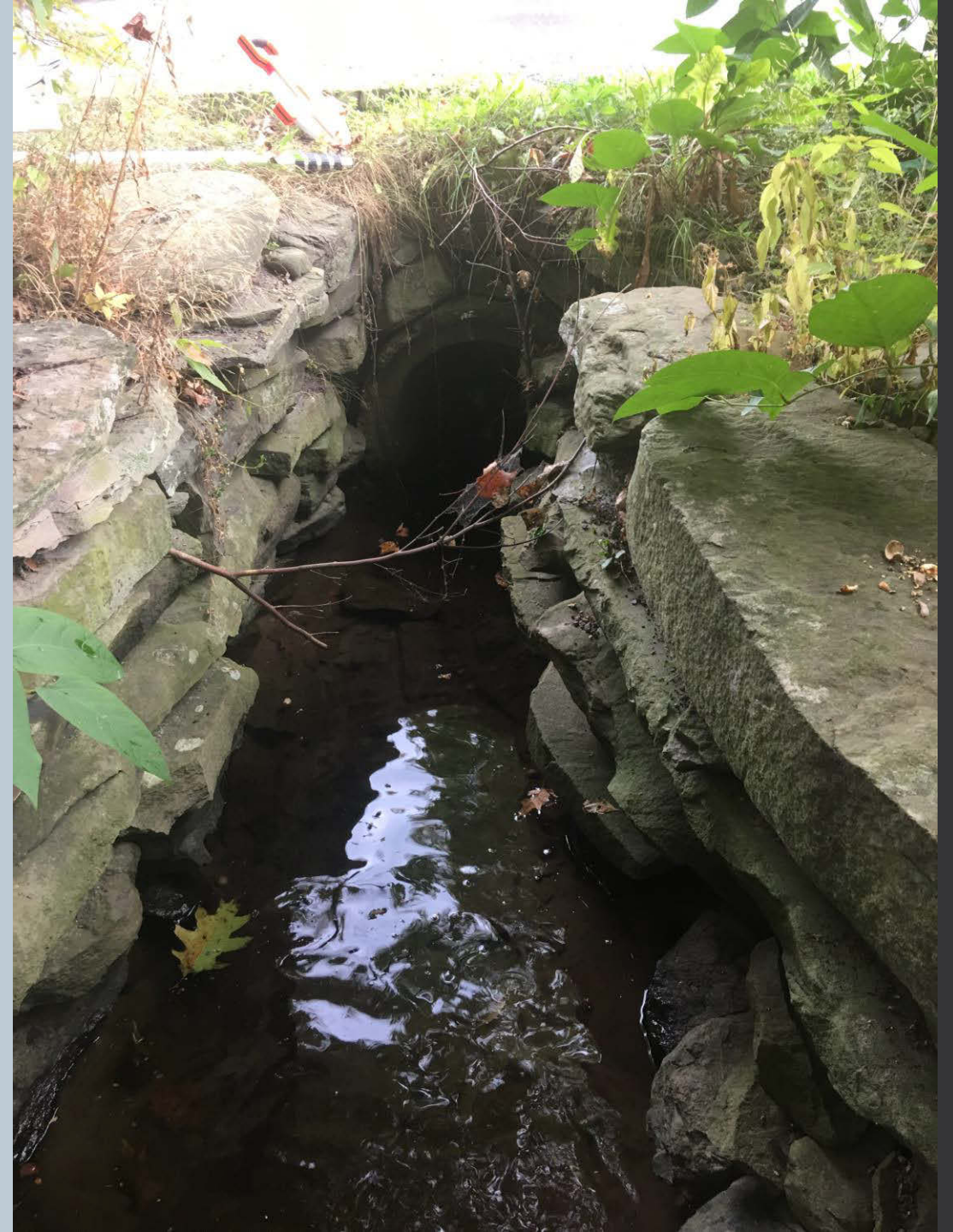


Figure 311. Looking downstream on the Swoga property where a severe blockage is on the unnamed tributary along Manor Drive. Sidewalls are failing beneath the covered bridge and litter and debris have blocked the unnamed tributary. Recommend a small cleanout of the area and shoring up of the culvert wall. There is a several foot drop to the channel that could use a step pool structure constructed to prevent further scouring of the area under the bridge.



Figure 312. Looking upstream on the Swoga property where a severe blockage is on the unnamed tributary along Manor Drive. Recommend a small cleanout of the area and shoring up of the culvert wall. There is a several foot drop to the channel where a recommended step pool structure could be designed and constructed to prevent further scouring of the area under the bridge.



Figure 313.

Looking downstream on the Swoga property at the outlet of the culvert on the unnamed tributary along Manor Drive. There is a several foot drop to the channel where a recommended step pool structure could be designed and constructed to prevent further scouring of the area below the bridge.



Figure 314.
Looking upstream
on the Swoga
property at the
outlet of the
culvert on the
unnamed tributary
along Manor Drive.
There is a several
foot drop to the
channel where a
recommended step
pool structure
could be designed
and constructed to
prevent further
scouring of the
area below the
bridge.



Figure 315.
Looking upstream
on unnamed
tributary to Toby
Creek along Manor
Drive at the bend
in the road across
from the Swoga
property. Sediment
and debris are
causing an inlet
drop. Recommend
removal of the
sediment and
debris with a small
cleanout by hand
and a DAMA Vac
Truck.



Figure 316.
Looking
downstream at the
culvert inlet on an
unnamed tributary
to Toby Creek
along Manor Drive
at the bend in the
road across from
the Swoga
property. Sediment
and debris are
causing an inlet
drop. Recommend
removal of the
sediment and
debris with a small
cleanout by hand
and a DAMA Vac
Truck.



Figure 317.
Looking upstream
at the culvert
outlet on an
unnamed tributary
to Toby Creek
along Manor Drive
at the bend in the
road. A large scour
pool has developed
below this culvert
and severe erosion
of the streambank.
Several large trees
are precariously
leaning towards
Manor Drive.
Recommend a
larger rock apron
and shoring up of
the outlet and bank
stabilization in this
area.



Figure 318. Looking downstream from the culvert outlet on an unnamed tributary to Toby Creek along Manor Drive at the bend in the road. A large scour pool has developed below this culvert and severe erosion of the streambank. Several large trees are precariously leaning towards Manor Drive. Recommend a larger rock apron and shoring up of the outlet and bank stabilization in this area.



Figure 319. Looking downstream along the bend in Manor Drive from the large scour pool area to where this stormwater flow and unnamed tributary meets up with the other unnamed tributary from the Swago property below the covered bridge.



Figure 320. Looking upstream on the Swoga property at the outlet of the culvert on the unnamed tributary along Manor Drive. There is a several foot drop to the channel and blockage of woody debris and loose rock where a recommended step pool structure could be designed and constructed to prevent further scouring of the area below the bridge.



Figure 321.
Looking along one
of the stormwater
conveyance
channels along
Dug Road at the
dip across from the
Day Care Center
where woody
debris blockage
and some litter has
accumulated.
Recommend
clearing out the
woody debris from
the area in front of
the culvert.



Figure 322.
Looking upstream
of the culvert along
Dug Road where a
sediment gravel
bar is present and
a scour pool
created by the two
stormwater
conveyances that
come off of both
hillsides along Dug
Road in both
directions to this
low lying area.
Fish present.



Figure 323.
Looking
downstream
of the culvert
inlet along
Dug Road
where a
sediment
gravel bar is
present and a
scour pool
created by
the two
stormwater
conveyances
that come off
of both
hillsides
along Dug
Road in both
directions to
this low lying
area. Fish
present.



Figure 324. Looking downstream of the culvert outlet along Dug Road where a sediment gravel bar is present and a scour pool created by the two stormwater conveyances that come off of both hillsides along Dug Road in both directions to this low lying area. Fish present. The bottom of the corrugated metal pipe is rusted out and is recommended to be replaced.



Figure 325. Looking downstream of the culvert outlet along Dug Road where a sediment gravel bar is present and a scour pool created by the two stormwater conveyances that come off of both hillsides along Dug Road in both directions to this low lying area. Fish present. The bottom of the corrugated metal pipe is rusted out and is recommended to be replaced. A cable is also laying in the unnamed tributary that should be removed.



Figure 326. Looking upstream of the culvert outlet along Terrace Drive where a tire is embedded in unnamed tributary below Dug Road. Fish present.



Figure 327. Looking downstream of the culvert outlet along Terrace Drive where a tire is embedded in unnamed tributary below Dug Road. Fish present.



Figure 328.
Looking
downstream of
the culvert
outlet along
Terrace Drive
where a tire is
embedded in
unnamed
tributary below
Dug Road. Fish
present. The
riparian corridor
is excellent.



Figure 329.
Looking
upstream of the
culvert outlet
along Terrace
Drive where a
tire is embedded
in unnamed
tributary below
Dug Road. Fish
present. The
riparian corridor
is excellent.



Figure 330.
Looking
downstream of
the culvert inlet
along Carverton
Road which joins
with the
unnamed
tributary from
Dug Road. Fish
present.



Figure 331. Looking upstream from the culvert inlet along Carverton Road which joins with the unnamed tributary from Dug Road. Fish present.



Figure 332. Looking downstream from the culvert outlet along Carverton Road which joins with the unnamed tributary from Dug Road. Fish present.



October 2, 2019

Figure 333. Looking upstream on Toby Creek that was literally dry from the culvert outlet along W. Center Hill Road and the Dallas Memorial Highway near Leggio's parking lot. Sediment filled the length of the entire culvert.



Figure 334.
Looking
upstream on
Toby Creek of
the culvert
inlet along W.
Center Hill
Road and the
Dallas
Memorial
Highway. The
stream was dry
and the
riparian area
thick and
dense.



Figure 335. Looking upstream on Toby Creek towards the culvert outlet along W. Center Hill Road along the Dallas Memorial Highway from the parking lot of Leggio's. The area is grassed, however, it is also mowed up to the streambank's edge. Recommend a riparian stream restoration along this entire length of Toby Creek.



Figure 336. Looking downstream of Toby Creek from the culvert outlet next to the Leggio's parking lot. A riparian planting is recommended along both sides of the streambank and discontinuation of the mowing that frequently occurs.



Figure 337. Looking upstream on Toby Creek on the inlet side of the culvert that crosses a private road to the Meadows Nursing Home. Riparian area is well established.



Figure 338. Looking downstream on Toby Creek on the outlet side of the culvert that crosses a private road to the Meadows Nursing Home. The culvert is filled with sediment and the baseflow of the stream is below the sediment deposition.



Figure 339. Looking downstream on Toby Creek from the culvert pipe that extends across the private road to the Meadows Nursing Home.



Figure 340. Looking downstream on Toby Creek from the culvert pipe that extends across the private road to the Meadows Nursing Home. Fish and frogs were present in some of the shallow pools of water within the stream channel that meanders back and forth in this area behind J & J's Subs. Riparian area is well established.



Figure 341. Looking downstream above the culvert inlet on Toby Creek near the former Payne Printing Company that is now owned by Misericordia University.



Figure 342. Looking upstream on Toby Creek below the culvert outlet near the former Payne Printing Company that is now owned by Misericordia University. A sumac tree is growing in front of the culvert that is creating a blockage in the channel. A small pool of water contained fish minnows on this stretch of road. Recommend removing the sumac tree.



Figure 343. Looking downstream on Toby Creek below the culvert outlet near the former Payne Printing Company that is now owned by Misericordia University. A sumac tree is growing in front of the culvert that is creating a blockage in the channel. A small pool of water contained fish minnows on this stretch of road. Recommend removing the sumac tree and a small roadside litter cleanup of the area.

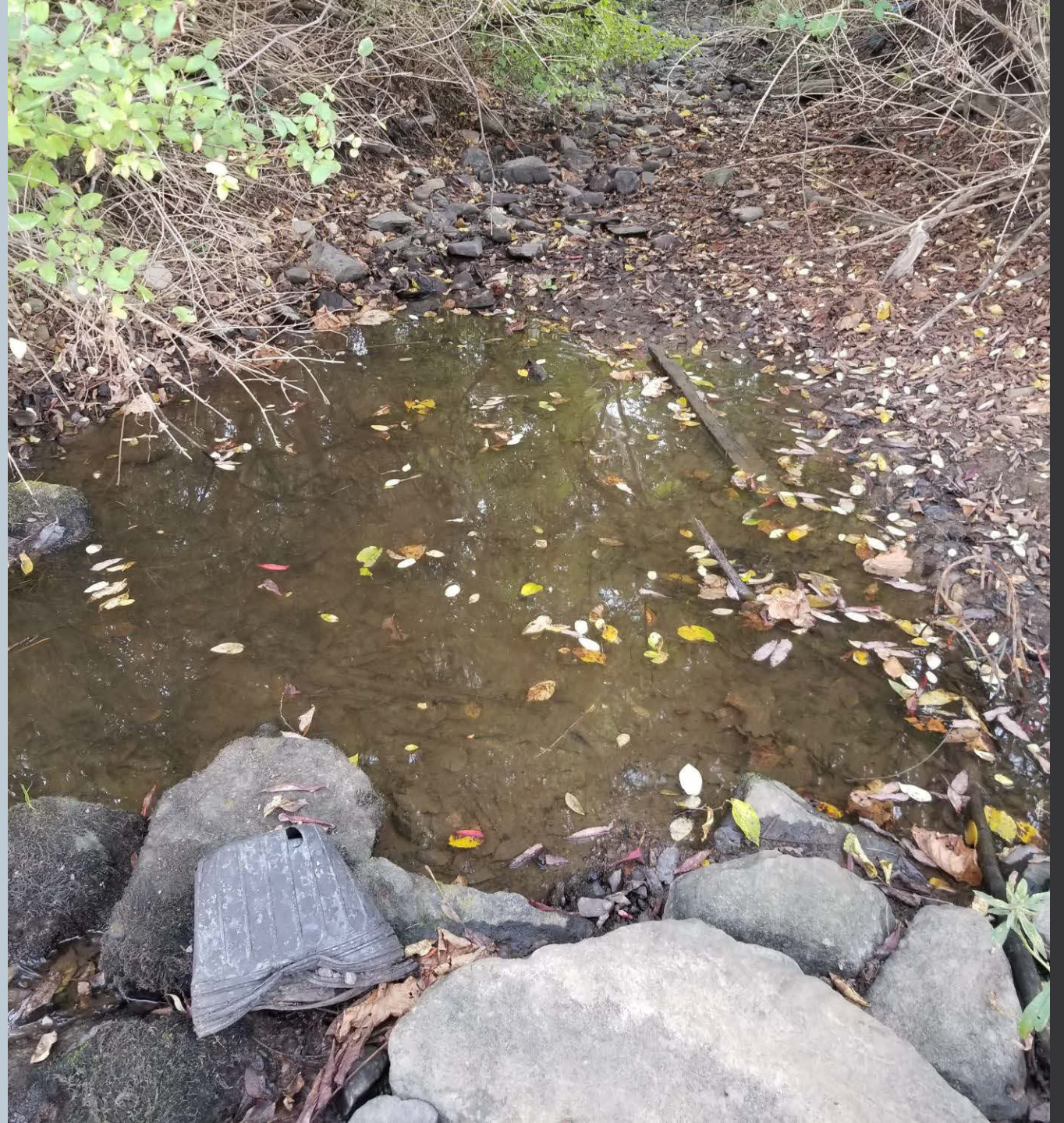


Figure 344. Looking upstream on an unnamed tributary to Toby Creek within Newberry Estates along a private road. A large number of green frogs were present. The rock-lined channel upstream is recommended to be redesigned into a riparian restoration area for the headwaters of the unnamed tributary if the Golf Course owners would be willing to partner on a project.



Figure 345. A large number of green frogs were present in Newberry Estates at the headwaters of the unnamed tributary to Toby Creek.



Figure 346. Looking downstream on the unnamed tributary to Toby Creek at the double structure pipe culvert beneath the bridge over the private road within Newberry Estates. The pool in front of the structures is sediment-laden.

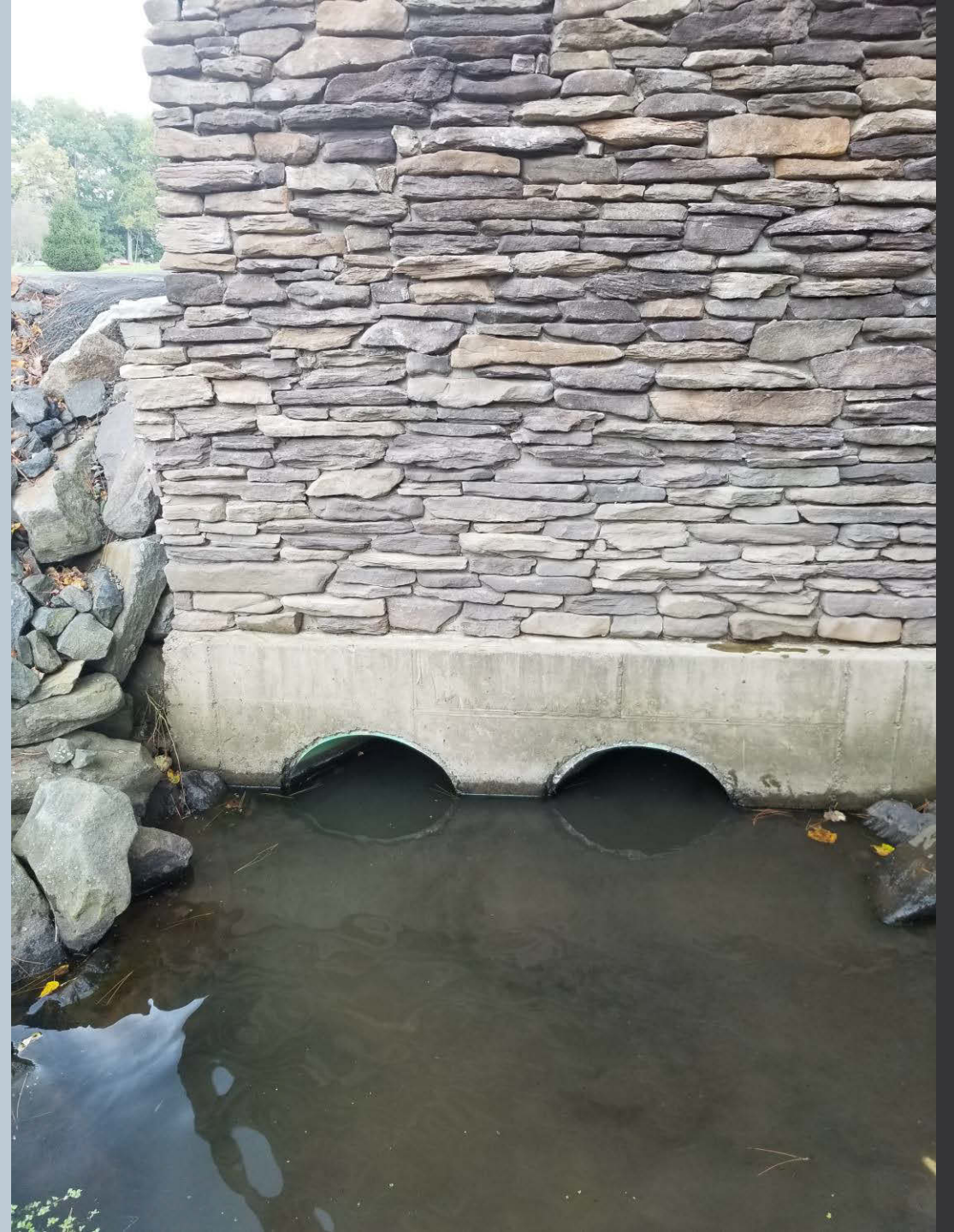


Figure 347. Looking upstream on the unnamed tributary to Toby Creek at the double structure pipe culvert beneath the bridge over the private road within Newberry Estates. The pool in front of the structures is sediment-laden and the half full of sediment and green algae growth.



Figure 348. Looking downstream on the unnamed tributary to Toby Creek at the double structure pipe culvert beneath the bridge over the private road within Newberry Estates. The pool in front of the structures is sediment-laden and the half full of sediment and green algae growth. Lots of green frogs were present.



Figure 349. Looking upstream on the ponded area of the unnamed tributary to Toby Creek above another bridge further downstream that connects and drains to a lower pond within Newberry Estates along the private road. Algal bloom presence in the pond.



Figure 350. Looking downstream at a double culvert structure with a wooden weir to control the flow of water from the unnamed tributary out of the upper pond to the lower pond along the private road in Newberry Estates. Algal bloom presence in the pond.



Figure 351. Looking upstream at a double culvert structure that is slowly draining the upper pond through a concrete sluiceway into a lower pond along the private road in Newberry Estates.



Figure 352. Looking downstream at the lower pond at a concrete sluiceway that drains the upper pond on from the unnamed tributary to Toby Creek into a lower pond along the private road in Newberry Estates. Plenty of aeration being provided to the lower pond from the aerator in the background at the center of the lower pond.

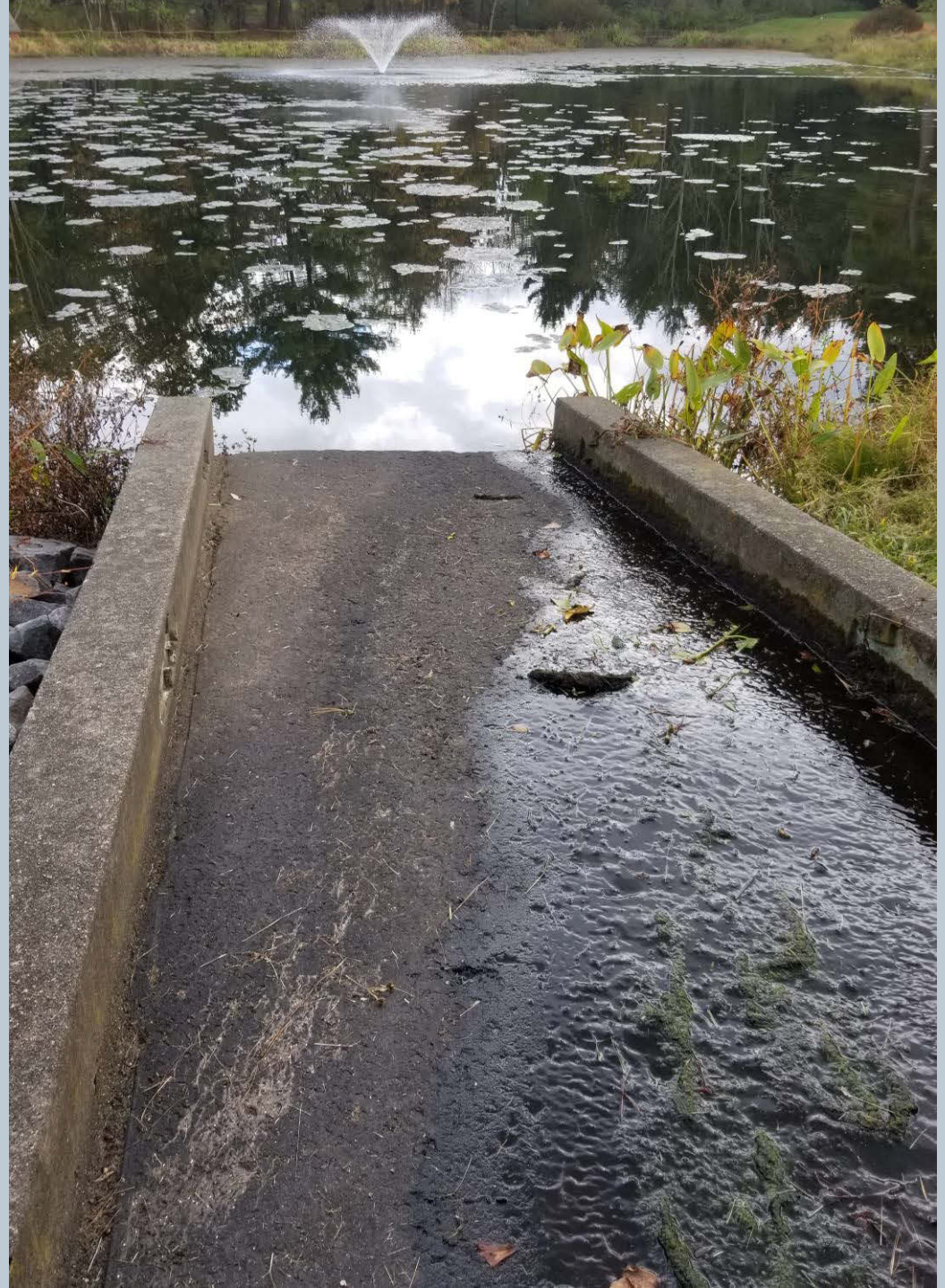


Figure 353. Looking upstream on Toby Creek along the Dallas Memorial Highway in Kingston Township. Japanese knotweed is prevalent along the left bank looking upstream. An invasive removal project and native riparian restoration planting is suggested for this area.



Figure 354. Looking downstream on Toby Creek along the Dallas Memorial Highway in Kingston Township. The majority of the flow of Toby Creek is flowing through the structure along the right bank looking downstream.



Figure 355. Looking downstream on Toby Creek along the Dallas Memorial Highway in Kingston Township. The majority of the flow of Toby Creek is flowing through the structure along the right bank looking downstream.



Figure 356. Looking downstream on Toby Creek along the Dallas Memorial Highway in Kingston Township. The structure on the left side of the channel is dry and filled with boulders and cobble and aggraded with a large sediment load over the entire length beneath the bridge span.



Figure 357. Looking downstream on Toby Creek where a large gravel bar is in the channel along the structure flowing under the bridge. A large amount of Japanese knotweed is present along the left-hand bank looking downstream next to Newell's Fuel.



Figure 358. Looking upstream on Toby Creek at the double structure bridge culvert over the Dallas Memorial Highway next to Newell's Fuel. Gravel bar is present in the structure to the right over the entire length of the bridge span.



Figure 359. Looking at an elevated black HDPE stormwater pipe sitting several feet above Toby Creek that has led to the created of a gravel bar formation below the pipe when scour occurs during storm events. It's recommended to realign the pipe facing downstream and to bring it to grade or create a rock apron to dissipate the energy of the water that freefalls into Toby Creek during storm events.



Figure 360. Looking downstream on Toby Creek near Modern Floors Professional Building from the outlet of one of the structures from the bridge culvert over the Dallas Memorial Highway.



Figure 361. Looking upstream from the outlet culvert on Toby Creek near Modern Floors Professional Building from the outlet of one of the structures from the bridge culvert over the Dallas Memorial Highway. A large gravel bar has formed a large sediment deposition under the entire length of the structure to the left hand side looking upstream.



Figure 362. Looking upstream on Toby Creek near Modern Floors Professional Building from the outlet of one of the structures from the bridge culvert over the Dallas Memorial Highway where the majority of the flow can be seen and a gravel bar deposition at the inlet side of the structure of the culvert. Fish present.



Figure 363. Looking upstream on Toby Creek near Modern Floors Professional Building from the outlet of one of the structures from the bridge culvert over the Dallas Memorial Highway where a gravel bar deposition at the outlet side of the structure of the culvert.



Figure 364. Looking downstream on Toby Creek at a major woody debris blockage with several fallen trees and debris that have redirected the flow to the one structure to the left-hand side of the structure. This bridge is just below Modern Floors. Recommend the removal of the trees and debris with a small cleanup to unblock the inlets of the two structures.



Figure 365. Looking upstream on Toby Creek where a fallen tree is across the channel well above it hanging precariously in the air. This area is just below Modern Floors. Japanese knotweed present along the entire left bank looking upstream. Recommend an Invasives removal project and a native riparian restoration planting along the corridor in this area.



Figure 366.
Looking
downstream on
Toby Creek below
the Barber Shop
parking lot that
flows under the
bridge culvert
towards Offset
Paperback on the
other side of the
Dallas Memorial
Highway. An
unnamed
tributary flows in
from the pipe
culvert that
comes through
the right wing-
wall that starts
to flow up behind
Jack Williams.



Figure 367. Looking upstream on Toby Creek below the Barber Shop parking lot. Some Japanese knotweed is present along the right bank looking upstream. Streambank erosion is along the left bank that undercuts it moderately before entering the bridge culvert crossing. Recommend small Invasives removal project and riparian restoration and creating a log deflector to protect the bank and redirect the flow before it enters the culvert.



Figure 368. An unnamed tributary flows into Toby Creek near the Barber Shop from the pipe culvert that comes through the right wing-wall that starts to flow up behind Jack Williams and flows through a series of storm drains along the Dallas Memorial Highway.



Figure 369. Looking downstream on Toby Creek from the bridge culvert over the Dallas Memorial Highway next to Offset Paperback. Japanese knotweed is prevalent here. Recommend an Invasives Removal Project and native riparian restoration in partnership with Offset Paperback.



Figure 370. Looking downstream on Toby Creek from the bridge and primary access road to Walgreen's from the Dallas Memorial Highway. Minnows were present in great abundance as were sculpins and crayfish. This area was heavily sediment-laden beneath the bridge in the pool. Japanese knotweed is prevalent. Recommend an Invasives Removal Project and native riparian planting in this area.



Figure 371. Looking upstream on Toby Creek from the bridge and primary access road to Walgreen's from the Dallas Memorial Highway. Minnows were present in great abundance as were sculpins and crayfish. This area was heavily sediment-laden beneath the bridge in the pool. Japanese knotweed is prevalent. Recommend an Invasives Removal Project and native riparian planting in this area.



Figure 372. Looking downstream on Toby Creek from the bridge and primary access road to Walgreen's from the Dallas Memorial Highway. Minnows were present in great abundance as were sculpins and crayfish. This area was heavily sediment-laden beneath the bridge in the pool. Japanese knotweed is prevalent. Recommend an Invasives Removal Project and native riparian planting in this area.



Figure 373. Two concrete storm drains enter Toby Creek that are not aligned with the stream and are well above the grade of the channel causing scour pool development below them when stormwater freefalls into the stream.



Figure 374. Looking downstream on Toby Creek that has minimal flow due to the baseflow of the stream being below the cobble and boulder gravel bar aggradation in the channel over the entire length of the bridge culvert at the entrance to Dunkin Donuts and Walgreen's. Some woody debris is at the inlet that can easily be removed by hand.



Figure 375. Looking upstream on Toby Creek that has minimal flow due to the baseflow of the stream being below the cobble and boulder gravel bar aggradation in the channel over the entire length of the bridge culvert at the entrance to Dunkin Donuts and Walgreen's. Some woody debris is at the inlet that can easily be removed by hand.



Figure 376. Looking upstream on Toby Creek that has minimal flow due to the baseflow of the stream being below the cobble and boulder gravel bar aggradation in the channel over the entire length of the bridge culvert at the entrance to Dunkin Donuts and Walgreen's. Another black HDPE storm drain is coming into Toby Creek near the stream channel along the wingwall before entering the inlet of the bridge culvert.



Figure 377. Looking downstream on Toby Creek that has minimal flow due to the baseflow of the stream being below the cobble and boulder gravel bar aggradation in the channel over the entire length of the bridge culvert at the entrance to Dunkin Donuts and Walgreen's. A large gravel bar has formed near the outlet of the culvert and the baseflow of Toby Creek can be seen flowing along the retaining wall and seeping from beneath the gravel bar.



Figure 378. Looking upstream on Toby Creek that has minimal flow due to the baseflow of the stream being below the cobble and boulder gravel bar aggradation in the channel over the entire length of the bridge culvert at the entrance to Dunkin Donuts and Walgreen's. A large gravel bar has formed near the outlet of the culvert and the baseflow and deep pool in Toby Creek can be seen flowing along the retaining wall and seeping from beneath the gravel bar. Fish present.



Figure 379. Looking downstream on Toby Creek that has minimal flow due to the baseflow of the stream being below the cobble and boulder gravel bar aggradation in the channel over the entire length of the bridge culvert at the entrance to Dunkin Donuts and Walgreen's. Japanese knotweed is prevalent and honey locust trees are growing on the gravel bar that has caused a major blockage at the outlet of the culvert. An Invasive Removal Project is recommended for this area and the removal of the honey locust trees. Crayfish and a number of fish species were in abundance in a deep pool just below this area.

