



Stream Corridor Restoration



Northern Virginia Regional Commission

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What is stream corridor restoration?

In Northern Virginia, stream corridor restoration is one of many ways to restore and manage streams and the low-lying ground next to them called floodplains. It reduces the effects of development on natural resources and works with stormwater management practices to reduce erosion and flooding. It improves water quality and provides healthy habitats that support wildlife. Local governments design stream corridor restoration projects that account for the impacts from buildings and roads, with a focus on public health and safety. It is important to note that streams in the urban environment of Northern Virginia may look different than in other areas. As water flows, it wears down the stream bottom which makes the stream deeper and the sides of the stream taller. When this happens, the deeply incised stream channel is unable to do its job correctly. Local governments rebuild stream channels with a gentle slope to reconnect the stream to the floodplain. This creates stable stream banks that provide habitat for native plants.

Why do local governments do stream corridor restoration?

Population growth led to a fast change in the way we use our land. The impacts to our local streams are the result of changes in land use from forest, to agriculture, to the current urban communities. When we build roads and buildings, we create more hard surfaces that water cannot soak into. This causes more water to runoff into streams. Large amounts of stormwater overwhelm our streams during rain events which can wear down streams. This forces streams to grow deeper and wider, exposing tree roots and systems such as sanitary sewer pipes. Many streams in our region are too polluted to meet the water quality standards set in the Clean Water Act. Local governments do stream corridor restoration to address these impacts and to improve water quality while protecting public infrastructure and property.

What are the benefits of stream corridor restoration?

The benefits of stream corridor restoration go beyond stable stream banks, reducing erosion, and reducing sediment pollution. Reducing erosion improves the water quality of local streams, making them a better habitat for fish and aquatic bugs. Widening streams may cause property damage to nearby homes and infrastructure and pose a risk to public safety if left untouched. Fixing these streams with stream corridor restoration projects reduces that threat. Additionally, there are opportunities for the repair of exposed and damaged systems such as sanitary sewer and stormwater pipes during construction of stream corridor restoration projects.

Are there rules we must follow to protect our streams and rivers?

Stream corridor restoration projects need both federal and state level permits to assess potential effects of a project before it begins. Local governments must follow the Municipal Separate Storm Sewer System (MS4) permit to manage stormwater flowing into our local streams. These include land use policy, stormwater regulations, and improvement projects. Total Maximum Daily Loads (TMDLs) are specific requirements under MS4 permits for the release of stormwater to our local streams. A TMDL is the maximum amount of sediment and pollution that can occur in a body of water to meet water quality standards set by the Clean Water Act. Local governments fund projects including stream corridor restoration and upstream stormwater management practices to meet these requirements. Stream corridor restoration projects help reduce nutrient and sediment pollution to an acceptable level.



The photo on the left shows a stream before restoration in Fairfax County. It shows unstable trees along the incised stream. The photo on the right shows the same stream six years after stream corridor restoration. It shows gently sloping banks and stable trees which filter water and create habitat for wildlife.



Frequently Asked Questions

Why are expensive projects done instead of focusing our efforts on cheaper projects?

Local governments do both large-scale stream corridor restoration projects and stormwater management projects like rain garden or tree plantings in our region. Planting rain gardens and trees along streams improves local water quality, but these practices are not enough alone to meet water quality regulations. In urban areas, stream corridor restoration projects offer a cost-effective solution based on dollars spent per pound of pollution reduced. Development such as roads and buildings cover most of the land in our area which limits the amount of space available for stormwater management projects. Also, stream corridor restoration projects often have low maintenance costs to ensure they work properly.

Why are stream corridor restoration projects expensive?

They are high cost because they include the cost of all planning, design, construction, and maintenance. These projects often range from \$1,200 to \$2,000 per linear foot of stream restored. They are still more cost effective in terms of pollution removed per dollar spent than many alternatives. It is important to remember that money spent on these large-scale projects are not taking away the millions of dollars available to fund small-scale low-cost restoration projects.

Why are trees removed during stream corridor restoration?

Trees near urban streams capture stormwater and help it soak into the ground. This helps reduce runoff to streams during storms. Trees protect our local streams from erosion and pollution by reducing sediment and taking up nutrients. The trees removed from a stream corridor restoration project are based on an inventory and assessment of trees led by an urban forester. The goal is to remove as few trees as possible. Construction teams remove trees if they are unhealthy or dead, falling into the stream, threaten infrastructure or property, or become damaged from construction. Project designs minimize the number of trees removed and include native tree and vegetation plantings with monitoring in place to ensure they survive after construction.

Why do local governments use different approaches to improve local water quality?

Local governments protect and improve our local streams with a combination of different approaches working together. Local governments use policy that guides decision making on the management of land use, the environment, and flooding. They use stormwater management to reduce runoff from rain, control flooding, and reduce erosion. They use stormwater improvement projects like stream corridor restoration, improving existing stormwater systems and constructing new stormwater facilities. Planting trees and rain gardens capture and filter stormwater, which addresses the source problem of polluted waters entering our streams. Stream corridor restoration projects improve the functionality of our streams and floodplains to allow them to handle stormwater during storms. The best approach is using both in-stream and up-stream approaches whenever possible.

Why don't we let the stream heal itself naturally?

It is true that streams heal naturally, however this occurs over long periods of time at a geologic scale. The time needed for a stream to heal itself gets longer as the stream becomes more degraded. Even with regulations and efforts to develop in a way that has less impact on streams, our local streams continue to worsen. Stream corridor restoration is one way to manage our streams long-term. If left untouched, widening streams would allow more property damage to occur. It would also not allow for exposed system fixes to occur during restoration projects.

