

2014



Property Owner's Guide to Creek and Shoreline Maintenance

City of O'Fallon

This guide for homeowners of creekside property is intended to serve as a reference for helping homeowners understand what living next to a creek means, as well as provide recommendations for preserving healthy banks along creeks and streams flowing through their property.



Disclaimer: Every effort has been made to ensure that the information contained in this guide is accurate. The City of O'Fallon assumes no responsibility and disclaims any liability for any injury or damage resulting from the use of any specified product or information.



Why are the creeks in our City valuable?

- ☁️ The many waterways that flow through O'Fallon make up a natural storm drain system for our City, collecting rainwater, ice and snowmelt runoff.
- ☁️ They also provide habitat corridors for wildlife and a host of aesthetic benefits. Our creeks are an irreplaceable natural resource and vital part of the lives of all the people and animals that live within the watershed.
- ☁️ A degraded, eroding creekside can cause serious property damage and even decrease property values, while a healthy creek can maintain and even increase property values.
- ☁️ Stormwater is not treated or filtered water. Therefore, any pollutants that are carried into City storm drains remain there. In other words, what goes down the drain flows directly into local creeks.
- ☁️ **FACT:** The stormwater that leaves our City ultimately enters the Mississippi River, where it flows into the Gulf of Mexico. Any pollutants carried from our City can affect everyone downstream and ultimately the ocean.
- ☁️ Here are a few terms that may help you understand the information that follows in this guide:
 - A tributary is a creek that flows into a larger creek or other body of water. Many tributaries start as runoff from storm sewer discharge pipes that were installed to funnel runoff downhill and into the nearest stream.
 - The "main channel" is the deepest or central part of a creek bed through which the main current flows.
 - Streams or creeks with continuous, year round flow are classified as "perennial."
 - Streams or creeks classified as "intermittent" are those which hold water during wet the portions of the year and may dry out during the summer.
 - Streams or creeks are termed "ephemeral" if they only flow during and shortly after rainfall or other precipitation, drying out afterwards. They are dry most of the year.

What are riparian zones, corridors or buffers?

- ☁️ A riparian zone or corridor is a vegetated area or "buffer strip" of plants near a stream. It is usually forested, which helps to shade and partly protect streams from the impact of adjacent land uses. A healthy riparian zone plays a key role in increasing the water quality in associated streams and rivers, and providing environmental benefits. With the decline of many aquatic ecosystems due to agricultural production and urban land development, it has become a common conservation practice to protect and/or re-establish riparian zones to increase water quality, provide flood control and reduce water pollution.



What exactly is erosion?

- ☁️ Erosion is a natural process. When flowing water meets bare or unprotected soil, some of that soil gets carried away by the force of the flowing water, causing loss of top soil and with it, valuable nutrients.
- ☁️ The roots of trees, shrubs and plants growing along creek banks help to retain and stabilize creek bank soil, keeping it in place and making the area less susceptible to erosion.
- ☁️ Erosion is a natural action of all creeks, healthy or unhealthy. In stable, mostly undeveloped watersheds, erosion is slow.
- ☁️ In unstable and urban watersheds, the high rate and force of water passing through the watershed is beyond the natural capacity of local creeks to prevent serious erosion. O'Fallon has experienced explosive development and almost all creeks that travel through our City limits are now classified as "urbanized" creeks.
- ☁️ Peak flows also have increased the size of our creeks, which means that they can carry a greater volume and velocity of water, causing increased erosion of creek banks throughout City limits.
- ☁️ High flow rates, even from a single intense rainfall, can make significant changes in a creek bank on your property.
- ☁️ Even creek channels that have been stable for years may change if there's an increase in water volume, and runoff affecting upstream changes to creek channels also may cause serious erosion to creek banks that had been stable for years. Years ago, it was a common practice for farmers to "straighten" natural creeks. Some of the erosion that we see throughout the City today stems from these older practices.
- ☁️ Creeks are constantly changing. They naturally adjust to increased volume and velocity by down-cutting the channel bed and becoming deeper, or "incising" to adjust to the amount of flow and then "meandering" or cutting curves into the creek banks, which slows the flow down. This natural behavior is typical of all creeks and even larger waterways.
- ☁️ That is why lining creek channels with concrete and using rock with concrete on top of it are no longer recommended to correct creek erosion. Research has shown that these practices can, in some instances, increase upstream and downstream erosion and could cause other channel instabilities.
- ☁️ "Slow it down, spread it out and soak it in" is the preferred way to address storm water runoff as it drains into creeks. We no longer pipe everything. When runoff is piped, it has the potential to increase the velocity of water flowing into creeks, causing more erosion and channeling more pollutants into our waterways. When we slow it down, spread it out and soak it in, we're using natural processes that improve water quality by filtering runoff (rain and snowmelt) naturally through plants and soil. Along the way, we're preventing or lessening erosion by cutting down on the amount and velocity of water flowing into creeks.
- ☁️ Barren slopes and improper construction in riparian corridors and upland zones can contribute to bank instability. Instability, in turn can lead to bank failure and introduce large volumes of sediment (rock, sand and soil) into the creeks. As this sediment fills in the creek bed, it reduces the storage volume of water, diminishing the creek's ability to perform the down-cutting process that would enable the creek to adjust for increased flows. This, in turn, can cause the creek to carry higher levels of water, leading to increased flooding and loss of creekside vegetation, a repetitive cycle which ultimately results in bank failures. A majority of creek bank health falls upon the creekside homeowner, who must break this cycle by keeping the banks as stable as possible.



- ☁ Bank erosion generally occurs as the result of stream flow impacting the base or “toe” of an unprotected slope. When the bank slope readjusts as its base continues to be washed away, cracks often become evident at the top of the bank as soil begins to peel away.
- ☁ Severe erosion is accompanied by bank instability and ultimately bank collapse. Very steep banks are especially vulnerable to active erosion of the bank, which may break away and fall into the creek. You may hear the terms “bank failure or bank slump” utilized when this occurs.
- ☁ The dumping of grass clippings, bush clippings, leaves and tree branches on banks interferes with stabilization efforts, because the clippings can smother existing plants, causing them to die. Once they die, their root structure is no longer viable and no longer capable of holding the soil, which then becomes bare and unstable. **This practice is against City ordinance and can be a ticketable offense in which fines can be assessed (Ordinance section 405.245).**
- ☁ Below are examples of good creekside habitat and stewardship:



Why me, the creekside property owner? Why am I responsible for maintenance?

- ☁ Most creeks are not owned by the City, and therefore are not the City’s to maintain. If there’s a question of ownership, a proper survey of the parcel can determine who owns the property through which a creek flows.
- ☁ Creekside property, in most cases, utilizes the creek’s centerline as the property line. If the creek flows between two private properties, each property owner usually assumes the responsibility for maintenance up to the middle of the channel, unless a professional survey states otherwise.
- ☁ Some properties completely contain the creek within the yard, with the property owner responsible for creek banks lying on both sides.
- ☁ Some residential subdivisions have creek areas included as part of the common ground. Creek maintenance then becomes the responsibility of the subdivision’s Homeowners Association.
- ☁ Some creeks may appear to be completely off of your property, yet may still be part of your private property. Despite the perception that a fence at the top of a creek bank defines a property line, a professional survey of the property parcel may find otherwise, with responsibility for the maintenance of the creek falling on the official property owner. A proper survey of the parcel in question determines the final owner of the property through which a creek flows.
- ☁ By ordinance, you and your neighbors along on both sides of the creek share responsibility for maintaining the banks with healthy riparian corridor vegetation. By keeping up with this



you can help prevent erosion, avoid flood loss and property damage, you also can help preserve our community's water quality, improve wildlife habitat and provide an important benefit to everyone in the community.

- ☁️ Some residential subdivisions have their creek areas included as part of the common ground. In that case, creek maintenance then becomes the responsibility of the subdivision's Homeowners Association.
- ☁️ Most of the creeks flowing through the City are under the jurisdiction of the US Army Corps of Engineers (USACE), which is the regulating authority for jurisdictional waterways per federal regulations. If a creek is designated as a "blue line" on a topographical map, then special requirements may be required before you can perform any non-routine maintenance to a creek. Routine maintenance, such as tree removal or picking up trash, is classified as routine maintenance. An example of non-routine maintenance would be a creek bank stabilization project to repair the creek bank. Should you want to perform non-routine maintenance, there could be a formal permitting process that must be met by the USACE and or other required state or federal agencies. It is recommended that you discuss this with the City prior to moving forward.

FACT: When most of our older, existing subdivisions were developed, the City ordinance at that time utilized a creek bank setback of "30 feet from the centerline of the creek for the building line," which in most cases means that the creek traveling through the property is part of that parcel unless designated otherwise. Another example of designation would be an adjoining property-owner parcel, or subdivision common ground.

How Do I Prevent Erosion From Occurring?

- ☁️ Check banks regularly for signs of erosion and address problems as they arise; do not wait for issues to get ahead of you.
- ☁️ Avoid cutting down trees along the creek, because tree roots stabilize the bank itself. For the same reason, avoid removing native vegetation along the bank.
- ☁️ Stabilize banks by planting trees, shrubs and flowers that are native to Missouri. Native plants growing within a riparian corridor help to retain soil, so it is recommended to plant bare areas with natives as quickly as possible.
- ☁️ It's important to avoid planting non-native plants, because they can become invasive, taking over native woodland and wetlands. For example, bush honeysuckle, which is from Asia, is a hardy, invasive species that is seen spreading throughout the City and state, ruining woodlands. It is very difficult to eradicate. Although the pretty white flowers smell good and red berries are eaten by wildlife, the plant out-competes native trees and flowers. Birds, for example, need insect larvae like caterpillars to feed their young. Caterpillars for their part, can *only* live on native plants. No species of caterpillar or insect larvae can eat bush honeysuckle.
- ☁️ There are many ways to remove bush honeysuckle, but most require the assistance of chemicals. We recommend researching the Internet to find the best method for eliminating invasives from your creek bank. A good source of reference is the Missouri Department of Conservation at <http://mdc.mo.gov/your-property/problem-plants-and-animals/invasive-plants/bush-honeysuckles-control>.



☁ In times of flooding, vegetated creek banks may help protect your property from eroding and flooding by slowing the flow of runoff into the creek, decreasing the abrasiveness of the quickly-flowing water. Vegetation also helps check upstream runoff by keeping the amount of runoff from overflowing creek banks and onto private property beyond the floodway/floodplain.

☁ **Well-vegetated creek banks can protect against erosion by:**

- 🌳 Providing roots that bind soil in place. Plant leaves also lessen the impact of falling rain drops, helping to keep soil particles in place.
- 🌳 Slowing the velocity of runoff.
- 🌳 Filtering soil out of runoff, keeping it out of creek channels.
- 🌳 Permitting water to infiltrate or filter into the soil, which also helps to remove pollutants and decrease volume.
- 🌳 Protecting creek banks from undercutting or slumping.

☁ **Never throw brush, grass clippings, pruning, leaves or other landscape materials onto the creek bank.**

- 🌳 Yard clippings can smother and kill plants growing along the bank. Without the roots of thriving vegetation to hold the soil in place, banks will become bare and may fail.
- 🌳 Clippings can also be carried into the creek by wind or rain and create a blockage downstream, causing erosion.
- 🌳 When these materials get into waterways and break down, they can contribute to decreased water quality by increasing nitrogen and phosphorous which can, in turn, encourage algae blooms that remove oxygen from the water, negatively affecting aquatic life.
- 🌳 **This practice is against City ordinance and can be a ticketable offense in which fines can be assessed (Ordinance section 405.245).**

☁ **Manage debris accumulation**

- 🌳 Accumulation of some natural materials in the creek and along the banks may create food and shelter for fish and wildlife. However, excessive debris could cause blockages and compromise the creek's ability to effectively carry stormwater. This can increase flooding and erosion.
- 🌳 Routinely check and remove fallen trees, branches, limbs and brush as well as trash, litter and other unwanted unnatural objects from your creek.
- 🌳 Use caution in removing tires and other items deeply buried in the creek bed or banks. Removing them may cause more disturbance and damage to the creek than if they are left in place. They may also be very heavy. Footing is usually unstable and with the additional weight of the object, be aware of potential safety concerns that can increase the difficulty in removing items as well as cause injury. Consult a professional for the best advice when removing large items such as tires.
- 🌳 Should you want to clean a creek of unwanted trash and debris on a section beyond your property, the City offers multiple volunteering events in the spring and fall that can assist you in getting this task completed. For more information, check the City's



Volunteer Services webpage at www.ofallon.mo.us/volunteer or contact the department at volunteer@ofallon.mo.us.

- 🌳 We also assist with organizing subdivision creek cleanups. These are usually organized by the subdivision homeowners' association. For more information, contact Volunteer Services (above) or Stormwater Management at www.ofallon.mo.us/stormwater-management.

How Can I Protect The Portion Of The Creek That Runs Through My Property?

☁️ Control runoff by:

- 🌳 Minimizing paved areas. Impervious (non-porous) concrete driveways, walkways and patios increase the amount and velocity of water that flows into creeks. Instead, build wooden decks, brick or stone patios, and use gravel, paving stones or concrete blocks to allow water to penetrate soil.
- 🌳 Manage roof runoff in a way that protects your creek banks. For example, discharge pipes should not be allowed to drape down the creek bank. Either place the pipe at the flow level of the creek, or end the pipe several feet away from the top of the bank to allow runoff to soak into the soil instead of draining directly to the creek.
- 🌳 Another method is to send the discharge into a flower bed or gravel to slow it down and allow it to soak in so that not all of the discharge reaches the creek itself. This practice will reduce erosion by decreasing the force of water against bare soil.
- 🌳 Keep banks vegetated by planting or maintaining trees, shrubs, flowers and grasses which will help keep soil in place. Tree and plant canopies protect the soil from erosion by intercepting rainfall, decreasing the impact and percentage of raindrops directly hitting the earth. Also, native vegetation needs less water to survive and more easily adapts to flood conditions. In sum, plant growth serves to dissipate the energy, decrease the velocity and deflect the flow of runoff away from the bank, reducing the potential for transferring erosion problems to new locations.
- 🌳 It is difficult to support vegetation on an eroding bank. Experts recommend that the area be temporarily stabilized with turf reinforcement mats (TRM) or other types of man-made materials designed to protect the surface until proper vegetation can be established. These TRMs are woven netting made of either synthetic or natural materials that are stapled onto the soil to hold them in place, and which will biodegrade over time.
- 🌳 Preserve a "buffer strip" of dense natural vegetation at least 5-10 feet from the top of the bank, and do not mow up to the edge of the creek.
- 🌳 Beware of planting shallow-rooted invasive plants (like bush honeysuckle) that will not effectively maintain creek stabilization and that can force out native plants. Whenever possible, it is recommended to remove invasive plants and replace them with beneficial native Missouri trees, shrubs and flowers.
- 🌳 Get expert technical advice before attempting the vegetation of a creek bank if you are not well-acquainted with native Missouri plants, shrubs or trees that are beneficial to creek bank stabilization.
- 🌳 There are many Internet reference resources and contractors that can assist you with choosing the correct plants for your site. Should you need assistance with



finding resources, please contact the City's Stormwater Management Coordinator at 636-240-2000.

- 🌳 If your creek bank is steep and there is sufficient space between the top of the banks and your backyard, consider diminishing the bank's steepness by increasing the slope prior to trying to stabilizing the area or planting vegetation.
- 🌳 If the creek is located in the common ground for the subdivision, it is recommended that the subdivision put together an inspection program to provide for creek bank maintenance. Depending on the state of the creek bank, homeowners may be able to provide the maintenance, or a contractor's help may be required.
- 🌳 Be careful when placing rock on the creek bank to correct creek bank erosion. Usually very large rocks, called "rip rap" or "revetment rock," are utilized for creek bank stabilization. Be careful not to use rocks that are the wrong size or too small, as they are likely to wash away.
- 🌳 Make sure to follow manufacturer's directions in applying chemicals to control vegetation, and keep in mind that healthy vegetation is the key to protecting your creek bank.

