



Fact Sheet

Stream Buffer Ordinance

City of Columbia & Boone County, Missouri

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Ordinance Basics

What is a stream buffer?

A stream buffer is a zone of native grasses, trees, and shrubs growing along the edges of streams. Stream buffers help protect streams by absorbing runoff, stabilizing the soil, and catching debris and filtering pollutants.

Why Stream Buffers?

Stream buffers provide protection for land, water wildlife, and public health. Aquatic life needs cool water, and streamside vegetation helps regulate water temperature. Leaves and other debris provide food for insects that fish eat. Tree roots help stabilize stream banks and keep the soil from eroding. Plants on the stream banks also provide shelter for wildlife and filter pollutants such as fertilizers and pesticides from entering the stream.

Removing a stream buffer can cause water quality problems and adversely affect downstream landowners. If a stream flows through your property, try to maintain a healthy growth of native plants along the stream bank. If you own livestock, reduce their grazing in the buffer area to minimize damage to these areas.

What is a Stream Setback?

The stream buffer ordinance is a setback regulation that restricts development within the streamside and outer zones of the buffer system.

The citizens of Boone County and the City of Columbia have determined that these regulations are necessary to promote public health, protect property values, and reduce impacts of stormwater runoff.

Benefits

Environmental

Buffers adjacent to streams provide numerous environmental benefits, which can include:

1. Protecting the public from flooding, property damage and loss;
2. Reducing erosion and sedimentation by acting as a filter for stormwater runoff;
3. Providing recreational opportunities.
4. Removing pollutants from urban stormwater, which can cause algae blooms and impair the feeding and reproduction of fish;
5. Stabilizing stream banks by reducing flow velocities during storm events;
6. Maintaining the base flow of streams during dry periods to protect fish and wildlife resources;

Financial

By moving buildings and other structures out of the stream zone and reestablishing native vegetation, landowners can:

- Minimize property damage from floodwaters and storm surges;
- Increase property values on land next to protected floodplains (A national study of ten programs found that this land had increased in value by an average of \$10,427, Burby, 1988);
- Reduce maintenance costs for debris removal, annual mowing, fertilizing and application of pesticides when open lands are managed as a natural buffer area rather than turf.
- For more information, see Table II, Page 7

FAQ

Q. What is the effective date of the Stream Buffer Regulations?

- A. City of Columbia - January 2, 2007
Boone County - June 1, 2009

Q. When does the Stream Buffer Regulation go into effect on my property?

- A. Boone County - Structures that exist on or before June 1, 2009 can remain in the present location and footprint. Such structures can be expanded or enlarged vertically and/or away from the stream. All proposed development on or after June 1, 2009 will fall under the regulation. City of Columbia - This regulation applies to all land in the City of Columbia and goes into effect when applying for a building or land-disturbance permit.

Q. How will the Stream Buffer Ordinance affect residents of Boone County?

- A. The regulations apply to all unincorporated lands within Boone County and within the city limits. Specific exemptions have been provided for certain land uses such as agriculture and farming activity, State permitted activities, such as surface mining, and Federal permitted activities.

Q. Will the stream buffer attract unwanted animals such as rats, snakes and ticks?

- A. Buffers don't provide the types of habitats that rats prefer. Some snakes are native to Boone County, but usually avoid humans and few are venomous. As for ticks, take the appropriate precautions needed.

Q. How will the stream buffer affect property values?

- A. Studies across the nation have shown that having a stream buffer on your property does not diminish the property's value. In fact, it can increase the property value. A national survey found that land next to protected floodplains had an average increase in value of \$10,427 (Burby, 1988). Another study found that homes located next to restored streams have a three to 13 percent higher property value than similar homes located on unrestored streams (Hernandez, et al).

Q. Are there any exemptions?

A. Both the City of Columbia and Boone County regulations do not apply to:

1. Land included in a preliminary or final plat approved before January 2, 2007 (city), or June 1, 2009 (county).
2. The portion of land that is covered by a valid, unexpired building permit, for which an application is pending on January 2, 2007 (city), or June 1, 2009 (county).
3. Surface mining operations.
4. In the City of Columbia, land used for farming activities that is covered by an approved Natural Resources Conservation Services (NRCS) conservation plan that includes the application of Best Management Practices (BMPs).

In Boone County, this regulation does not apply to agricultural or farming activities.

Q. Are there variances?

A. In both the City of Columbia and Boone County, waivers may be granted for:

1. Projects or activities serving a public need where no feasible alternative is available.
2. The repair of public improvements where adverse impacts to wetlands and associated aquatic ecosystems have been addressed.
3. In Boone County, any property owner may petition the Board of Adjustment for a variance from strict compliance with the requirements of the Boone County Stream Buffer Regulations.

Q. Who enforces the regulations?

A. Boone County - The Boone County Resource Management Director. City of Columbia - Stormwater Utility

Start Here

3 Steps to Compliance

The stream buffer is composed of two zones, which are predominantly undisturbed strips of land extending along both sides of a stream and their adjacent wetlands, floodplains or slopes.

Follow these 3 steps to determine the necessary size buffer for your situation.

1

Determine streamside zone by USGS stream type

2

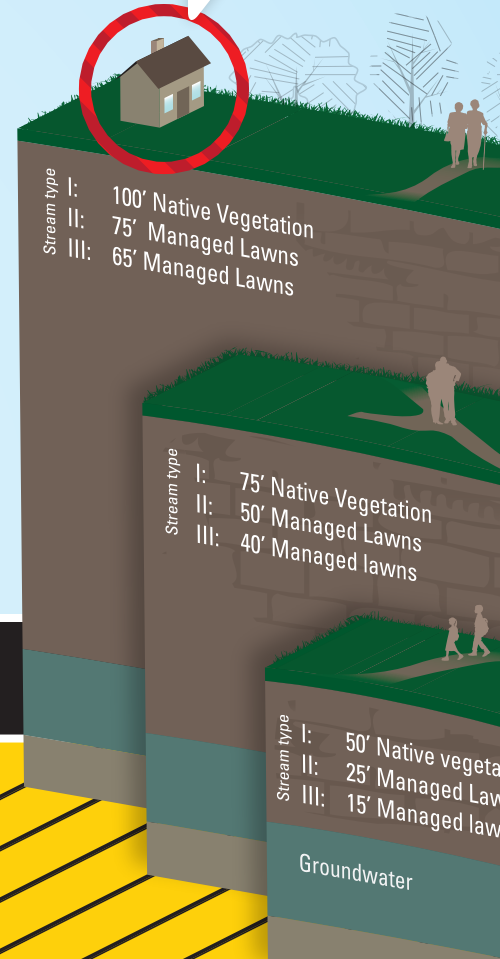
Determine outer zone by slope & stream type

3

Calculate buffer avg. if necessary (SEE PG 6)

3

What to do when space is tight? SEE P. 6



Allowable Uses

- All uses allowed in the Streamside Zone
- Detention/retention structures
- Utility corridors
- Stormwater BMPs
- Residential yards (Type II & III) streams
- Landscaped areas
- Hard-surfaced biking/hiking paths

Outer Zone



The Outer Zone will filter and slow stormwater runoff from residential and commercial development.

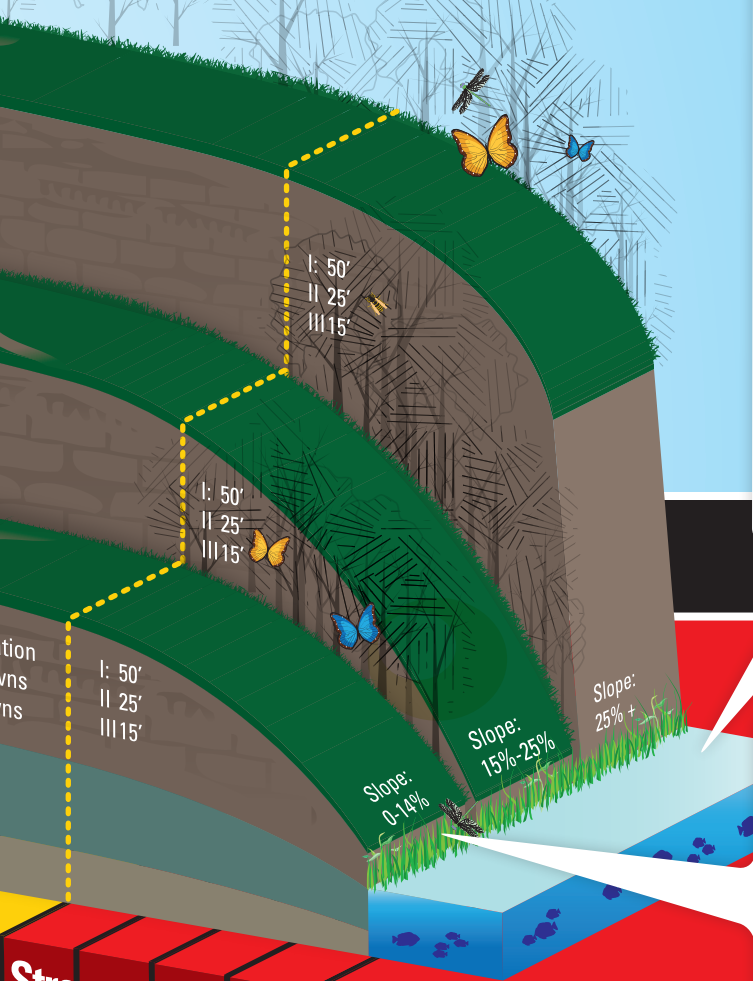
Stream Types

Type I Streams - perennial streams have flowing water all year and are shown as solid blue lines on the USGS topographical map. An example of a perennial stream is Perche Creek.

Type II Streams - intermittent streams carry water during wet periods of the year and are shown as dashed blue lines on the USGS topographical map. Examples of intermittent streams are the Little Bonne Femme and the Merideth Branch.

Type III Streams - intermittent streams or natural channels that are not shown on the USGS topographical map as either blue or dashed blue lines, but have a drainage area greater than 50 acres. An example of this would be an unnamed tributary or drainage ways. These streams only carry water after a rainfall event.

See USGS maps for stream types.



Slope

TABLE I. Modifications Based on Slope

Percent Slope	Width of Outer Zone
0% - 14%	No Change
15% - 25%	add 25 feet
Greater than 25%	add 50 feet

Streamside Zone
"No Mow Zone"

Streambank stabilization
temperature moderation

- Allowable Activities
- Flood control
 - Road & utility crossings
 - Stream or stream bank restoration
 - Restoration of native vegetation
 - Foot & biking paths

The function of the Streamside zone is to protect the physical and ecological integrity of the stream ecosystem

When Space is Tight: Buffer Averaging - Columbia

In Columbia, the Outer Zone of the stream buffer may be reduced, and the buffer can become narrower at some points as long as the average width of the outer buffer remains the same, and the Streamside Zone is not narrowed by the averaging.

Averaging uses:

1. To allow for the presence of addition to an existing structure
2. To recover a lost lot.



Before you build, contact us! (See back page)

Example: Recovering a Lost Lot

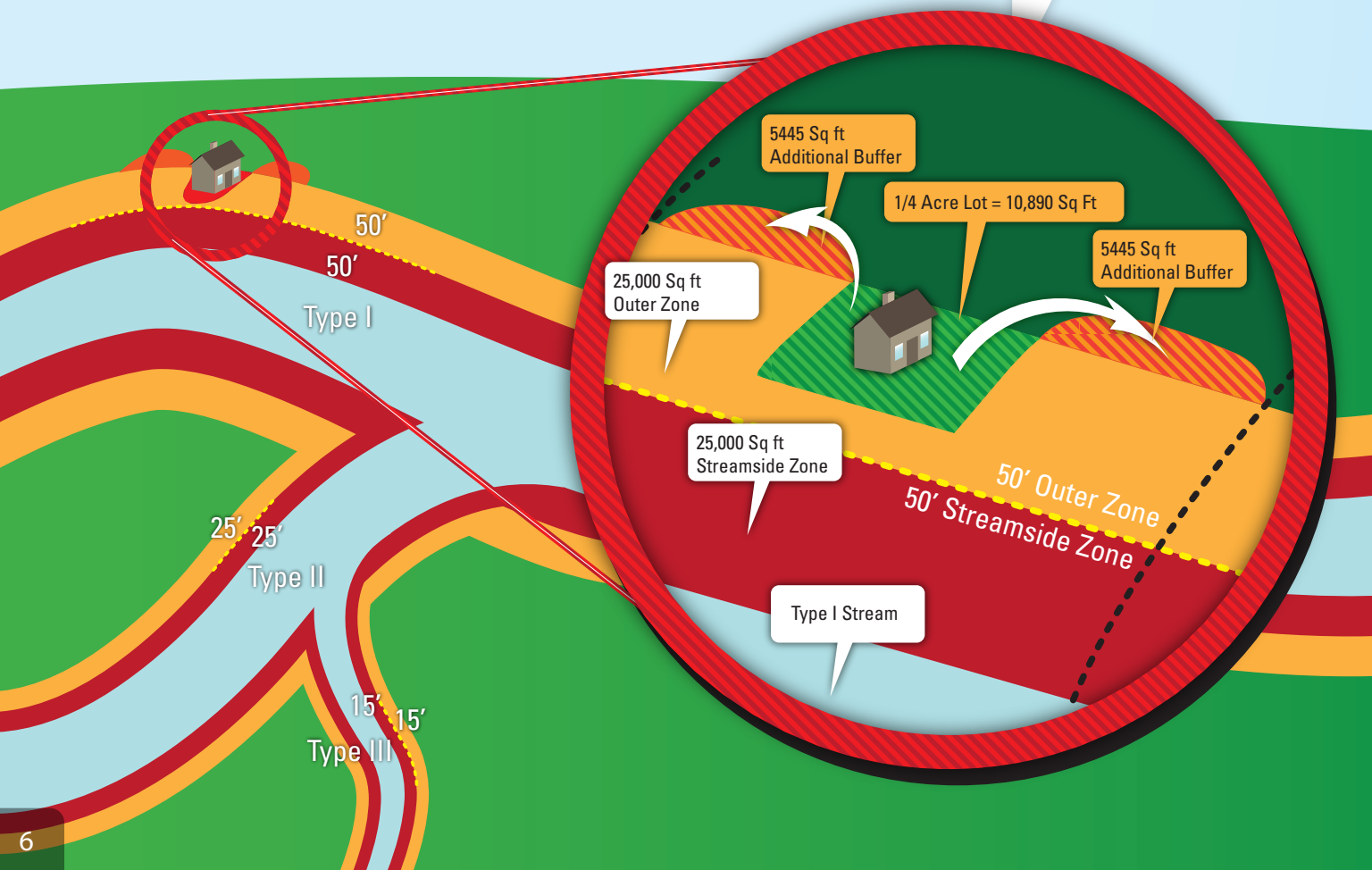
If a landowner has an area that runs along the stream for 500 feet and the Outer Zone on this property is 50 feet wide, the total area in the Outer Zone should be 25,000 square feet.

If the landowner lost a 1/4 acre lot within that area totaling 10,890 square feet, they can recover that lot by adding an additional 10,890 square feet of green space outside the outer zone to compensate for moving into the Outer Zone.

Step 1: Determine the Streamside Zone width by stream type. In this case it is a Type I Stream which means a Streamside Zone width: 50'.

Step 2: Determine the Outer Zone by slope & stream type. A 0-14% slope means no increase in outer buffer zone; so the Outer Zone width is 50'.

Step 3: Incorporate the missing lot area into the outer zone. This addition to the outer zone ensures that the average Outer Zone area stays the same.



Tables & Charts

TABLE II. A summary of approximate pollutant removal effectiveness and wildlife habitat value of vegetated buffers according to buffer width. (Source: Desbonnet et al. 1994)

Buffer Width	Pollutant Removal	Effectiveness of Wildlife Habitat Value
0-50 Feet	50% +	Useful for temporary activities of wildlife & birds
50-100 Feet	70% +	Bird habitat and wildlife travel corridor
100-200 Feet	75% +	General wildlife habitat for birds & reptiles
200+ Feet	80% +	Excellent wildlife habitat; likely to support a diverse community

TABLE III. Stream Buffers

Stream Types:	Streamside Zone			Outer Zone		
	Type I	Type II	Type III	Type I	Type II	Type III
Width	50	25	15	50	25	15
Vegetation	Native Vegetation			Type I - Native Vegetation Type II - Managed Lawns Permissible Type III - Managed Lawns Permissible		
Uses	Flood control, foot and bicycle paths, road crossings, utility crossings, stream or stream bank restoration and restoration of native vegetation			All uses allowed in Streamside Zone, hard-surfaced biking/hiking paths, detention/retention structures, utility corridors, stormwater BMPs, residential yards, landscaped areas		
Function	Protect the physical and ecological integrity of the stream ecosystem			Protect key components of the stream and filter and slow velocity of water runoff		

TABLE IV. Additional Land Use Restrictions Near Streams in Columbia

Use	Required Distance
* Storage and use of hazardous substances	300 feet
* Above or below-ground petroleum storage facilities	300 feet
Drain fields from on-site sewage disposal and treatment systems	200 feet
Raised septic systems	200 feet
* Salvage yards or automobile recyclers	600 feet
Confined animal feed-lot operations	500 feet
Tilled land (for crops)	200 feet

* Boone County Also

Contact

If you have questions about the stream buffer regulations, would like a copy, or would like to report a complaint, please contact:



Boone County
Resource Management
Stormwater Program
573-886-4330



City of Columbia
Stormwater Utilities
573-874-2489

More Information

To find out more or download the regulations, please visit our web sites:

Boone County
<https://www.showmeboone.com/stormwater/>

City of Columbia
como.gov/utilities/stormwater

University of Missouri - Columbia
<https://ehs.missouri.edu/env/stormwater>

To find out more information about stream buffers and watersheds, visit these sites:

Missouri Department of Natural Resources
www.dnr.mo.gov/env/wpp/stormwater/

Missouri Watershed Information Network
www.mowin.org

Center for Watershed Protection
www.cwp.org