

# FLOODPLAIN AND STREAM CORRIDOR PROTECTION

Use of the land adjacent to a stream has a major impact in protecting water quality, avoiding flood damages, maintaining fish and wildlife habitat, and accessing water-related recreation. Also known as the floodplain, this area adjacent to the main stream channel serves as a natural reservoir for storing excess water during a flood. When the main stream channel cannot accommodate the level of runoff from precipitation or melting snow, the spreading of flood waters into the floodplain helps reduce the amount of damage incurred by flooding. The native vegetation found in this area also serve as a buffer to protect the stream from pollution and provide a rich diversity of habitat. In general, planning that includes floodplain and stream corridor protection can serve the multiple purposes of protecting water quality, protecting property, and enhancing community character.

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## KEEPING IT CONNECTED

Open space, parks, and recreation areas are all naturally compatible with floodplains. Greenways are linear open spaces that are planned at the regional and local level. Greenways can accomplish many goals of floodplain management. Greenways:

- protect the natural functions of floodplains,
- minimize the potential for flood damage by limiting development,
- restrict development in environmentally sensitive areas, and
- provide residents with recreational opportunities.

Source: *Subdivision Design in Flood Hazard Areas*, 1997.

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*Maintaining native vegetation adjacent to the stream is one tool to protect water quality, reduce erosion, and provide recreational opportunities.*

## Planning and Regulatory Considerations

Federal, state, and local governments all have roles in floodplain management. The federal government runs the National Flood Insurance Program. This program offers flood insurance coverage to property owners within those communities participating in the program. It is the only source of flood insurance. To participate, communities must adopt and enforce development regulations in flood-prone areas.

The State of Michigan's Floodplain Regulatory Authority (found in Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended), requires that a permit be obtained prior to any alteration or occupation of the 100-year floodplain of a river, stream, or drain. The floodplain is divided into two parts, the floodway which carries most of the flow during a flood event, and the floodplain which is an area of very slow moving water. The purpose of Part 31 is to assure that the flow-carrying capacity of a watercourse is not harmfully obstructed, and that the floodway is not used for residential construction.

The state also regulates inland lakes and streams through Part 301 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended. This law prohibits numerous activities without a permit, including:

- creating, enlarging, or diminishing an inland lake or stream,
- structurally interfering with the natural flow of an inland lake or stream, or
- connecting any natural or artificially constructed waterway with an existing inland lake or stream.

The following sections detail what local communities can implement for floodplain and stream corridor protection.

## Tools for Implementing Floodplain and Stream Corridor Protection

There are several tools local communities can utilize to protect the floodplain and stream corridor, including:

- Incorporating stream corridor protection into the master plan.

- Establishing a natural features setback or buffer ordinance.
- Implementing a resource protection overlay district.
- Protecting floodplains through regulations and site plan review.

### Incorporating stream corridor protection into the master plan

Stream corridor protection can be regulated as either an overlay zone or as a separate classification or category in your ordinance. Whichever method your community pursues, it is important to include the buffer area on both the zoning map and future land use map. Amending the master plan and including the buffer designation on the future land use map is imperative to provide the legal foundation for your buffer zone. Master plan policies should indicate the importance of floodplain and stream corridor protection to:

- assist in flood control,
- protect the streambank from erosion,
- remove pollutants from storm water runoff,
- provide food and habitat for wildlife,
- prevent sediment from settling in the watercourse,
- provide habitat linkages for wildlife,
- provide tree canopy to shade and protect temperature of waterways, and
- promote scenic value and recreational opportunities.

### Establishing a natural features setback or buffer ordinance

A natural features setback establishes a minimum setback from natural features to prevent physical harm or destruction of the feature. This ordinance recognizes the relationship that adjacent ecosystem types have to one another.

The natural features setback creates a naturally vegetated strip of land adjacent to the natural feature that is left intact during and after construction. The size of the vegetated strip is up to the community, but should be a minimum of 25 feet wide.

When establishing shoreline or buffer regulations consider the following:

- Establish a minimum setback (30-100 feet) for a vegetative buffer along a lakeshore or stream. The setback width should be based on such determinants as slope, soils, and drainage area.
- Provide ample setbacks for septic tanks and drainfields along shoreland areas.
- Expand the buffer to include adjacent sensitive features, such as steep slopes and wetlands.
- Restrict clearing of buffers.
- Establish setbacks for building structures.

- Include a system to permanently mark the buffer, both physically on-site and in the land records.
- Include reference to floodplain, soil, and sedimentation control administered by other agencies in shoreline regulations.
- Screen new structures with natural vegetation through the use of a viewshed ordinance.
- Limit height of buildings so they do not intrude on the natural bluff or treelines.
- Limit commercial or industrial uses and regulate through special use permits, subject to adopted standards.
- Reclaim old development sites (industrial and utility uses) along rivers and streams to create a mix of residential development and parkland and public open space.
- Control visual impacts from public access sites (e.g., set parking areas back from the lake or river and disperse access sites along the shoreline).
- Limit the number and size of signs visible from the stream or lake.
- Promote intergovernmental coordination of regulations among communities along lake shorelines and river corridors.
- Include maintenance guidelines and enforcement procedures for buffer violations.

A strong buffer ordinance is only the first step to preserving stream buffers. In addition, communities will need an effective buffer program to manage buffers and enforce buffer regulations. During the construction phase, communities need to ensure that the clearing and grading permit is well integrated with the forest buffer application. After construction, programs that educate citizens about the importance of the buffer and how to manage it can help preserve the buffer's integrity.

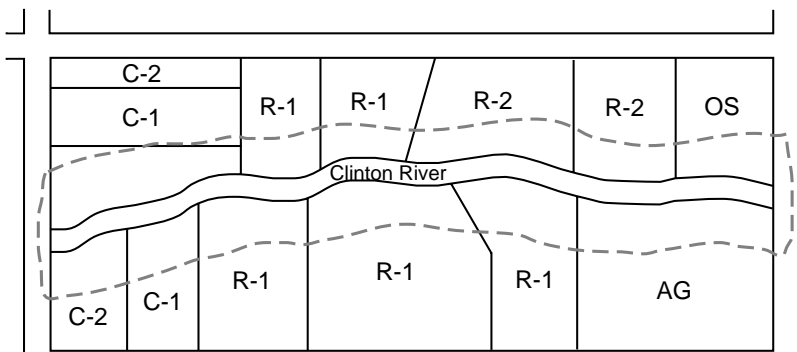
Source: Grand Traverse Bay Region Sample Regulations and the Center for Watershed Protection.

Another effective way to protect corridors of lakes and streams is through public acquisition. There are various land acquisition tools and techniques available to local governments. (See chapter on Public Open Space for more information.)

### Implementing a resource protection overlay district

Overlay districts are one approach to applying special restrictions to areas with unique conditions. Properties included within these districts retain their underlying zoning classification, but are subject to additional requirements specified in the overlay district ordinance. In preparing an overlay district, it is first necessary to identify the geographic limits of the areas to be included.

Figure 24  
River Protection Overlay Zone



Overlay zoning can be used to protect the environmental quality of a river. In this example, an overlay zone was created with boundaries extending 100 feet from the river's edge. Although the underlying zoning designations of the parcels vary, the community can impose additional requirements on properties within the overlay zone. Such provisions may include increased setbacks from the river, additional storm water management controls, or additional landscaping to reduce erosion.

Source: Macomb County Planning and Economic Development.

This involves clearly stating the purpose for creating a district as well as reflecting established local preservation policies. Adopting a resource protection overlay district accomplishes three objectives:

- It requires all parcels within the district to be inventoried, although this may be done one parcel at a time. Potential development of the site is what generally triggers the required inventory.
- It alerts a developer of the site's potentially significant resources and that it would be subject to special restrictions.
- It allows the community to identify those priority protection areas on a site that a developer must refrain from developing or develop with minimal site disturbance.

With an overlay zone, sites will get inventoried either lot by lot, or through a comprehensive survey initiated by the community. In the inventory process, it is important to determine the full ecological significance of a parcel in relationship to its surroundings. If a lot-by-lot inventory process is adopted, it is better to have sites prioritized for inventory, so as money is made available for a full ecological field study, priorities will have been established and permission granted by property owners for site access.

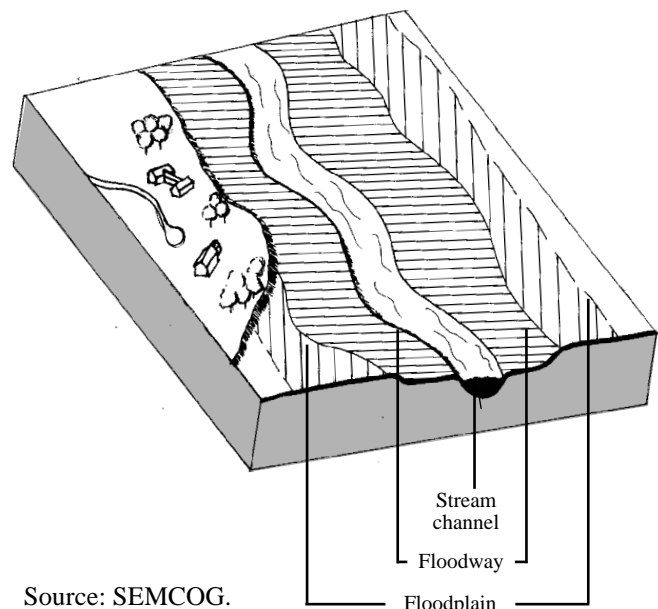
### Protecting floodplains through regulations and site plan review

Floodplains can be controlled by local ordinance and subjected to local site plan review procedures. Local regulation of floodplains can be part of the zoning ordinance and subdivision regulations or can be a separate floodplain protection ordinance. Provisions should include:

- Prohibit construction of buildings and facilities subject to water damage in the 100-year floodplain.
- Require flood-proofing measures on redevelopment or expansion proposals for buildings presently in the floodplain.

- Remove flood-prone structures from the floodway portion of the floodplain.
- Establish construction standards for development in the floodplain.
- Adopt provisions to protect natural vegetative cover in the floodplain.
- Require tree and shrub planting in floodplains to prevent erosion.
- Restrict dredging, filling, dumping, or backfilling of floodplain areas.
- Avoid land divisions within floodplain areas that will create parcels or lots that cannot be used.
- Require that flood insurance be obtained for all facilities existing in the floodplain under the National Flood Insurance Program.

Figure 25  
River Floodplain Components



Source: SEMCOG.



*Floodplain management can help reduce the problems associated with flooding.*

Other regulatory considerations are:

- Require that proposed new structures or modifications to existing structures be subject to special land use approval by the local planning commission.
- Create an overlay zone within a prescribed setback from the river, stream, or creek that regulates development and use of the floodplain based on the severity of flooding hazard.
- Require that before local approval can be granted, a permit must be secured from the Michigan Department of Environmental Quality.

Two nationally recognized building codes, BOCA (Building Officials & Code Administrators) and UBC (Uniform Building Code), have regulations concerning construction in the floodplain and are commonly used by local governments.

As part of regulating floodplains, these areas should be mapped to show the extent of the 100-year floodplain (those areas that have a one percent chance of flooding in any given year). There are various sources to help determine floodplain boundaries, including the Federal Emergency Management Agency flood insurance studies and maps. There are also county soil inventories prepared by the Natural Resource Conservation Service.

An important element in a complete floodplain management strategy is establishing intergovernmental cooperation. Cooperation among communities along the floodplain is vital to ensure consistent application of regulations and to avoid one government transporting flooding problems to another. Review by the county drain commissioner's office may help ensure that upstream and downstream areas are not adversely affected. Working with the federal and state agencies, local officials will ensure that proposed development and use in floodplains meets all requirements of federal and state laws and regulations.

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## CASE EXAMPLE

### **Floodplain, Floodway, Watercourse, and Wetland Protection – Chapter 12 of the Charter Code of Ordinances**

**Community:** West Bloomfield Township

**Contact:** Anne Vaara, (248) 451-4876

The township has comprehensive regulations for the protection of floodplains, floodways, watercourses, and wetlands. Article IV of the ordinance specifically provides for flooding and flood hazard protection. The ordinance states that it shall be unlawful to locate the following improvements or structures within the 100-year floodplain: public and private structures for the purpose of assembly, new residential structures unless the lowest floor is elevated at least one foot above the 100-year floodplain, and mobile homes. A permit is required to:

- alter the topography on lands in a floodplain,
- allow to remain or make alterations to any operation, obstruction, or structure within the floodway or 100-year floodplain.

No permit is required for cultivating and harvesting crops, grazing pasture, forestry, outdoor plant nurseries, orchards, wildlife sanctuaries, woodland preserves, and recreation uses (parks, day camps, picnic areas, or golf courses).

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### **Natural Rivers District and Davis Creek Overlay District, Zoning Ordinance**

**Community:** Green Oak Township

**Contact:** Lesa Brookins, (810) 231-1333 ext. 104

The township has developed a natural rivers district to preserve and enhance the recreational, ecological, and aesthetic values of a natural river area for future generations. In addition, the township has developed a Davis Creek overlay district to meet many of the same goals. Specific standards found in these districts include:

- requiring a minimum setback for new buildings of 125 feet from the ordinary high water mark,
- prohibiting cutting and/or filling for building on the floodplain and filling for buildings on the upland within 500 feet of the river's edge where the groundwater table is within six feet of the surface,
- preserving a natural vegetation strip adjacent to the river on all private and publicly owned land,
- restricting placement of septic system drain fields to 150 feet from the river, and
- prohibiting use of pesticides, herbicides, and fertilizers.

## Additional Resources

Center for Watershed Protection. "The Architecture of Urban Stream Buffers." *Watershed Protection Techniques, Volume 1* (summer, 1995): 155-163.

Environmental Protection Agency. Office of Water. [www.epa.gov/owow/nps/ordinance/buffers.htm](http://www.epa.gov/owow/nps/ordinance/buffers.htm)

Federal Emergency Management Agency. *Answers to Questions About the National Flood Insurance Program*. March 1992.

Morris, Marya. *Subdivision Design in Flood Hazard Areas*. American Planning Association. 1997.

Planning and Zoning Center, Inc. "Floodplain Management." *Community Planning Handbook: Tools and Techniques for Guiding Community Change*. Michigan Society of Planning Officials. 1991.

Planning and Zoning Center, Inc. "Natural Rivers Protection." *Community Planning Handbook: Tools and Techniques for Guiding Community Change*. Michigan Society of Planning Officials. 1991.

"Protecting Inland Lakes." *Planning and Zoning News*. Vol. 8. No. 5. March 1990.

Stormwater Managers Resource Center. [www.stormwatercenter.net](http://www.stormwatercenter.net)

Tennessee Valley Authority. *Conserving Your Valuable Floodplain Resources: A Guide for Concerned Citizens, Environmental Groups, Local Officials, and State Floodplain and Natural Resource Managers*. Knoxville, TN: Tennessee Valley Authority, 1990.

Warbach, John D. *Grand Traverse Bay Region Sample Regulations*. September 1992.

Warbach, John D., Wyckoff, Mark A. and Williams, Kristine. *Protecting Inland Lakes: A Watershed Management Guidebook*. 1990.