

## 4.0 Buffer Areas and 100-Year Floodplain

Chapter 2003-423, Laws of Florida, also requires an evaluation of the environmental benefits, legal issues, and economic impacts of limiting activities on waters and environmentally sensitive areas around waterbodies by establishing a buffer within the 100-year floodplain of major perennial streams within the Peace River basin. The *Peace River Cumulative Impact Study* was also required to recommend ways in which any buffer areas recommended as prohibited areas could be considered as mitigation under applicable permitting programs. The *Cumulative Impact Study* suggested several changes, including a legal and economic review of the establishment of floodplain buffers and their effects on the maintenance of water quality, moderation of stream flow extremes, and protection of habitats of water-dependent wildlife (PBS&J, 2007).

### 4.1 Environmental Benefits

Floodplains are normally dry or semi-dry land areas to which water naturally flows as water levels rise (Figures 4.1 and 4.2). Floodplains typically are located near rivers, lakes, and the coast, but many of Florida's flood-prone lands are simply low-lying areas or depressions where water naturally collects after rain storms. The 100-year floodplain is the area adjacent to a river, stream, or waterbody that is covered by water in the event of a 100-year flood (a flood having a one percent chance of being equaled or exceeded in magnitude in any given year).



Figure 4.1 Peace River Tributary Floodplain (C. Keenan)



Figure 4.2 Peace River Floodplain (C. Keenan)

Riparian buffers have been defined as areas vegetated with grasses, shrubs, or trees adjacent to flowing waters that contain both aquatic and terrestrial ecosystems, including surrounding wetlands and estuaries (CRJC, 2000; PENTEC, 2001). Buffers are a key to protecting and preserving rivers, streams, and wetlands, representing a unique position in the landscape as a transition zone between the aquatic and terrestrial habitats. Buffers provide many benefits to these habitats that otherwise might be adversely impacted by anthropogenic uses, such as:

- 1) Moderating stream flow by reducing large fluctuations in water levels and providing natural storage areas for floodwaters, stream bank erosion is minimized, native vegetation is preserved to provide more beneficial wildlife habitat, and flooding is reduced;
- 2) Providing wildlife habitat by serving as wildlife corridors, nesting and breeding habitat, and food sources; and
- 3) Improving water quality through the removal of sediments, nutrients, and pollutants before entering surface waters and by serving as recharge areas for the aquifer, the primary source of drinking water.

An upland buffer within the 100-year floodplain would generally provide benefits to the hydrology and habitat, but the effects of the buffer can be influenced by its overall size, nature of the vegetation, slope, soil type, and land use.

There is no standardized width for regulating all potential impacts on all ecological and hydrological functions provided by buffers. The appropriate width of the buffer is dependent on the desired primary function of the buffer, with the minimum acceptable width being the one that can be

reasonably obtained and maintained while providing the needed level of protection. Buffers intended primarily to maintain water quality and moderate stream flow do not need to be extensive. Vegetated buffers as narrow as 50 feet can stabilize eroding banks, filter sediment and contaminants from runoff, and reduce downstream flooding (CRJC, 2000). However, as the ecological values of, and adverse impacts to, an area of interest increase, buffer widths should be increased accordingly to compensate. In general, the widths of buffers proposed to sustain a full range of wildlife habitat functions need to be greater than those required for water quality or stream flow moderation (CRJC, 2000; PENTEC, 2001).

## 4.2 Legal Issues

The Agricultural Ground and Surface Water Management program, a cooperative effort by the Southwest Florida Water Management District and the U.S. Department of Agriculture-Natural Resource Conservation Service established in 1991, standardizes the requirements for wetland impact exemptions and permit applications and provides technical standards and assistance needed to meet exemption criteria for temporary, ordinary, and permanent agricultural operations. Operations that do not meet the exemption criteria are required to be permitted pursuant to the same Environmental Resource Permit (ERP) rules that apply to other sectors of the regulated public. Exemption criteria and standards set by this program include:

1. Requiring 50-foot buffers on wetlands;
2. Prohibiting the filling or flow restriction in the 100-year floodplain;
3. Allowing grazing in wetlands at U.S. Department of Agriculture-Natural Resource Conservation Services stocking rates;
4. Requiring a conservation farming plan; and
5. Requiring the implementation of Improved Management Practices that address erosion control, wetland protection, drainage management, and nutrient/pesticide management for each agricultural activity.

Except for mining proposed directly in waters of the State, the mechanisms that allow regulation of phosphate mining or dictate the conditions under which it may occur were established only in 1995 when the Environmental Resource Permit rule went into effect. Most previous phosphate mine regulation by the DEP and its predecessor agencies was for post-mining reclamation. Substantial differences existed between reclamation and phosphate mining regulation under Environmental Resource Permit rules, including:

1. Isolated wetlands are jurisdictional and impacts require mitigation;
2. Minimum flows and levels for surface and groundwaters must be maintained;
3. Cumulative impacts must be avoided;
4. Secondary impacts to wetlands are considered and mitigated;
5. Wetland dependent listed species have to be addressed; and
6. A public interest test must be met.

A Final Order, signed on July 31, 2006, following litigation over an Environmental Resource Permit application for Mosaic Fertilizer's Altman Tract, clarified the way the DEP now undertakes its review of phosphate mining applications under this program.

A prominent feature of urban development is the intolerance of flooding, historically controlled by local, State, and Federal agencies with land use, building, and stormwater runoff regulations. Local government has zoning authority, applies floodplain building ordinances in conjunction with the Federal Flood Insurance Program, and specifies stormwater regulations. State government, through the DEP, regulates water quality and quantity through delegation to the Southwest Florida Water Management District (PBS&J, 2007). The District controls water quality in much of the Peace River basin through Chapters 40D-4, 40D-6, 40D-40, and 40D-400 of the Florida Administrative Code and also regulates floodplain encroachment by requiring compensating storage for fill placed within the 100-year floodplain.

Legislation enacted in 1996 (Section 373.4137, F.S.) facilitates environmental permitting approval for transportation projects by allowing the Florida Department of Transportation to fund compensatory mitigation in the Peace River basin through the Water Management District. The District can either accept all obligations for compensatory mitigation for specific impacts for a set fee of \$75,000 per acre of impact, adjusted annually for inflation; or, in consultation with the Florida Department of Transportation, contract directly with an approved wetland mitigation bank to purchase wetland mitigation credits. Transportation projects still have to reduce or eliminate impacts to wetlands and other surface waters, but the process for compensating for wetland impacts removes at least one impediment to the construction of needed facilities. With an active Section 373.4137, F.S. program in Southwest Florida Water Management District and three permitted wetland mitigation banks in the Peace River watershed, there are ample options to build transportation facilities without incurring cumulative impacts (PBS&J, 2007).

The *Cumulative Impact Study* determined that the two most effective approaches to floodplain protection are to avoid, wherever possible, siting incompatible land uses within flood-prone areas and to ensure that land development does not alter natural patterns of water movement and storage. This strategy emphasizes harmonizing growth and development with the natural environment. This is, of course, preferable to intentionally altering the natural surface water systems through ditches, canals, dams, and control structures following encroachment into the floodplain—a long, expensive process with significant environmental impacts (PBS&J, 2007).

### **4.3 Economic Impacts**

The Uniform Mitigation Assessment Method (UMAM), adopted by the DEP in February 2004, provides a consistent process or method to assess and quantify the functions of wetlands and other surface waters proposed to be impacted, and to determine the amount of mitigation necessary to offset impacts to those wetlands and other surface waters based on the amount of ecological improvement provided by a specific mitigation plan. As an example, a mitigation proposal to preserve upland habitat in the 100-year floodplain would be evaluated on site-specific characteristics such as buffer width, landscape setting, connectivity, habitat quality, and measures to minimize risk factors. The preservation of upland portions of the 100-year floodplain is an ecologically beneficial activity that has been shown to generate wetland mitigation credit. Though there are potential physical restrictions on the uses of floodplain uplands, they are susceptible to and often used for such activities as cattle grazing, row crops, and phosphate mining. The preservation of a variety of habitat types, whether cleared or intact, would provide beneficial buffering to the floodplain wetland systems in the region. It has been determined that preservation of native upland floodplain habitat could potentially generate 0.42 credits per acre.

Preserving upland habitat in the 100-year floodplain as mitigation has the potential to result in economic value to the landowner. The value of mitigation credits in the Peace River basin has been observed to be approximately \$120,000 per credit for forested wetlands mitigation and \$72,000 per credit for herbaceous wetland mitigation. Therefore, based on a potential UMAM score of 0.42 credits per acre, a landowner willing to preserve native upland floodplain habitat could receive a value of up to \$50,000 per acre. This could be achieved either by sale of this credit to a third party, or in avoided costs if the credit were used to offset wetland impacts proposed by the landowner himself. By comparison, the preservation of pasture (at approximately 0.03 credits per acre) in the floodplain would generate only \$3,600 per acre, while the restoration of native cover (at an approximated 0.23 credits per acre) on this same pasture could generate another \$27,600 per acre, for a total value of \$31,200. Preservation of native floodplain wetlands could generate \$14,000 to \$18,000 per acre, provided substantial upland buffering is preserved as well. However, wetland preservation without corresponding upland supporting habitat would receive substantially less credit than preservation of a synergistic combination of upland and wetland habitats within the floodplain (PBS&J, 2007).