

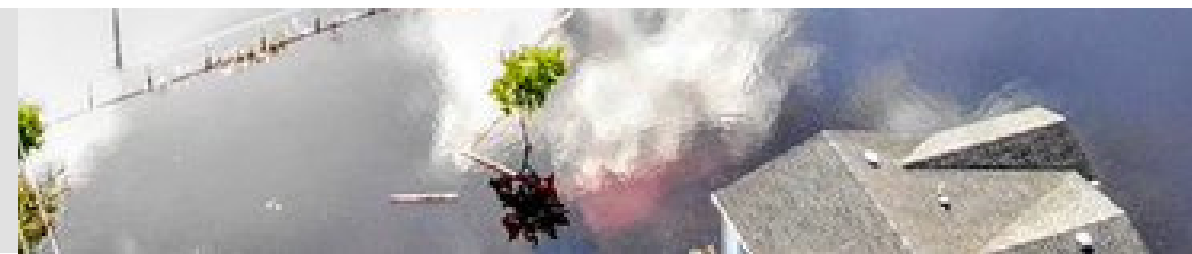
# WETLAND PROTECTIONS FOR HORRY COUNTY



HORRY COUNTY RISING, INC.  
HORRYCOUNTYRISING.COM

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Founder & President



# OUTLINE

## VALUE OF PROTECTING HORRY COUNTY'S WETLANDS TOPIC HIGHLIGHTS



- 1. Policy Goals in 2022**
- 2. Survey & Support**
- 3. Policy Values**
- 4. Policy Considerations**
- 5. Research & Talking Points**
- 6. Incentives**
- 7. Changes in Land Use**
- 8. Wetlands & Water Resources**
- 9. Words from Founder**

# REFLECTION & MOTIVATION

**THE SINGLE RAINDROP NEVER FEELS  
RESPONSIBLE FOR THE FLOOD.**

Douglas Adams



# POLICY GOALS

# 2022

## **ADOPT NEW WETLAND BUFFER REGULATION**

Provide a buffer between people, property and local wetlands based on drainage basin and wetland size.

## **ADOPT NEW WETLAND FILL REGULATION**

Provide regulatory standards to minimize wetland fill based on acreage, land use, connectivity and project.

## **EDUCATE COMMUNITY ON BENEFITS OF WETLANDS**

Provide information and resources to residents about the economic value of wetlands, and laws to protect wetlands.

97%

*"Ensure property losses are minimized with wider buffers and avoid wetland impacts."  
-Horry County Resident*

RESPONDENTS SUPPORT RIVERBANK AND WETLAND BUFFERS TO PRESERVE NATURAL STORAGE

95%

RESPONDENTS SUPPORT MORE STRINGENT FLOODPLAIN BOUNDARIES TO MINIMIZE DAMAGES

**SURVEY & SUPPORT**

# POLICY VALUES

## PREVENT

the disruption of valuable natural flood storage

## PROTECT

natural resources that are economically and culturally valuable

## ENCOURAGE

development practices where growth support similar uses of the area

## IMPROVE

access to recreational and open space areas

## DISCOURAGE

development in high-risk areas, where damage to life and property can occur

## INCREASE

usefulness and protections of natural flood storage

## AVOID

development where it is inconsistent or incompatible because of constraints and costs

## PROTECT

areas with special commercial, recreational or economic value

# WETLAND POLICY CONSIDERATIONS

*Local governments have the authority to establish regulations that exceed state and federal standards for wetland protections.*

## JURISDICTIONAL WETLANDS

wetland buffer should depend on the size of the drainage basin

## ISOLATED WETLANDS

wetland buffer should depend on the size of the wetland and planned land uses

## FILLING IN WETLANDS

filling in wetlands should depend on purpose and planned land uses

# JURISDICTIONAL WETLAND BUFFER

BUFFER WIDTH DEPENDENT ON SIZE OF DRAINAGE BASIN

Class 1 = Drainage area 99 acres or less

Class 2 = Drainage area 100 acres or greater

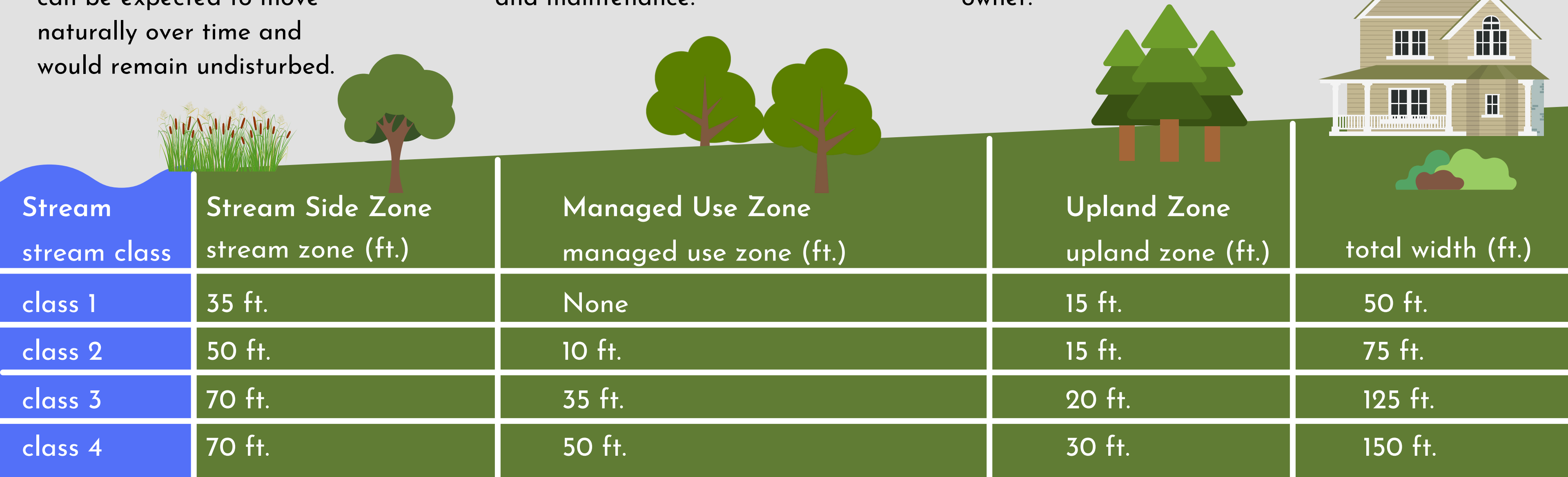
Class 3 = Drainage area 300 acres or greater

Class 4 = Drainage area 500 or greater

Stream side zone is an area in a floodplain where a stream or river channel can be expected to move naturally over time and would remain undisturbed.

Managed use zone is an area for passive land use activities such as mowing, vegetation management and maintenance.

Upland zone is an area that is platted within the lot and is managed by the property owner.



Stream stream class	Stream Side Zone stream zone (ft.)	Managed Use Zone managed use zone (ft.)	Upland Zone upland zone (ft.)	total width (ft.)
class 1	35 ft.	None	15 ft.	50 ft.
class 2	50 ft.	10 ft.	15 ft.	75 ft.
class 3	70 ft.	35 ft.	20 ft.	125 ft.
class 4	70 ft.	50 ft.	30 ft.	150 ft.





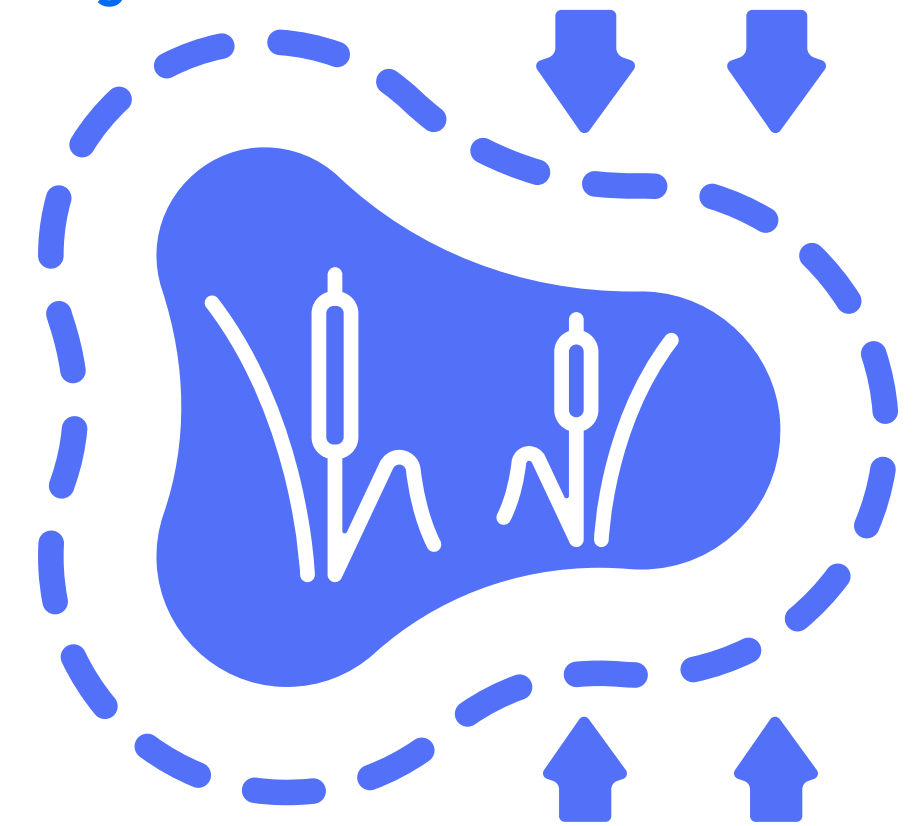
# ISOLATED WETLAND BUFFER

Applies to wetlands acreage greater than or 10,000 sq. ft. and the buffer width could be dependent on different land uses. Heritage parks and protected lands should require a wider buffer given management requirements like prescribed fires.

## buffer width dependent on wetland size and land uses

*"Without the preservation of natural (wetlands) features, catastrophic flooding could continue to worsen."*

-Horry County's Comprehensive Plan  
Imagine 2020

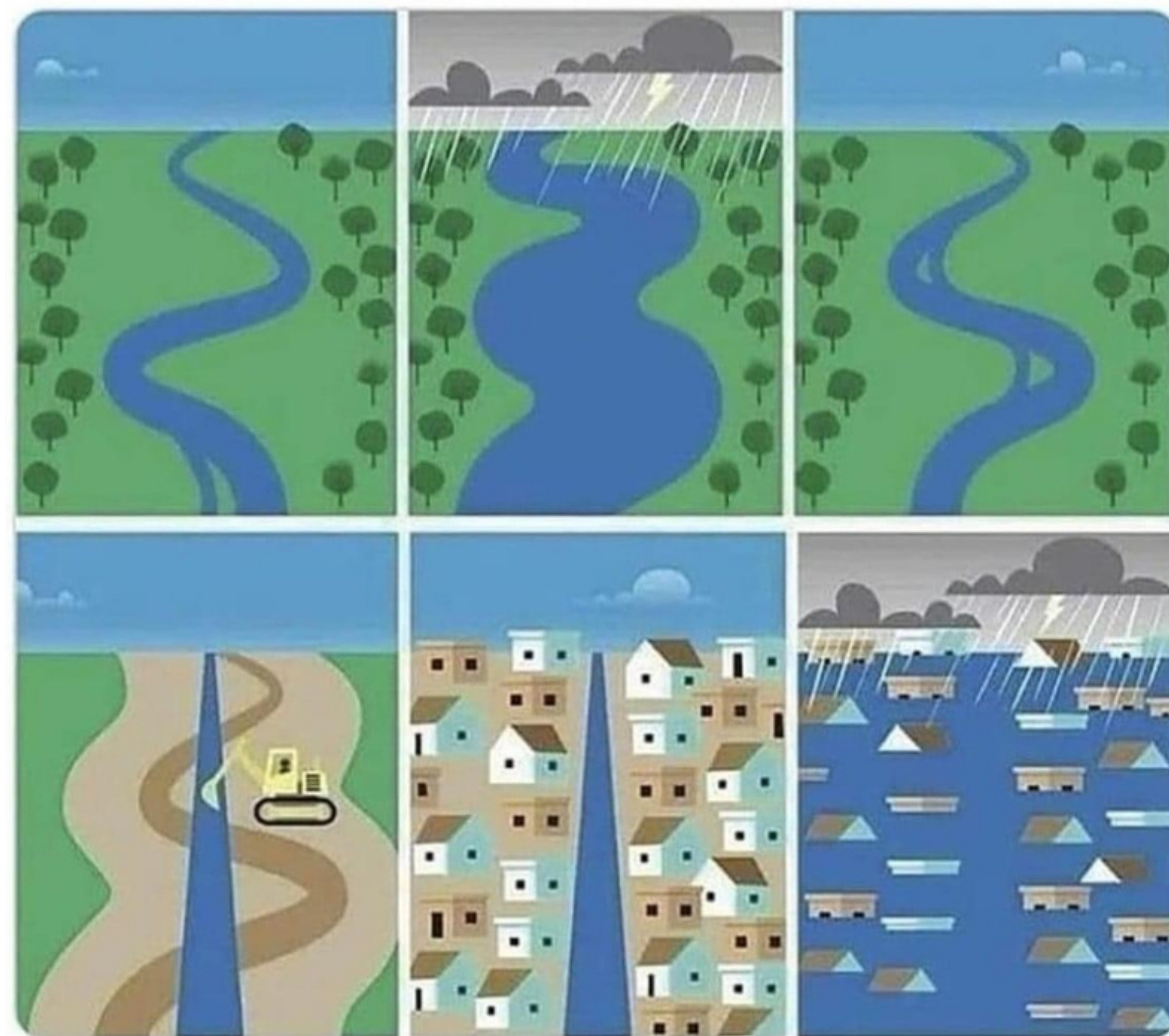


Land use zones	Total buffer width (ft.)	Land use zone	Total buffer width (ft.)
Low density residential	25 ft.	High density residential	50 ft.
Light commercial	25 ft.	Heavy commercial	75 ft.
Light industrial	35 ft.	Heavy industrial	100 ft.

# FILLING IN & ALTERING WETLANDS

Someone: "hey, why are wetlands important?"

Wetlands:



*Meme that went viral in October 2021,  
shared by approx. 1.5 million Facebook and Twitter users*

Residential development which would require filling or other permanent alteration of all salt, brackish or freshwater wetlands will be prohibited, unless no feasible alternatives exist or an overriding public interest can be demonstrated. Potential exemptions can include farming, forestry and mining activities; maintenance of flood control devices, bridges, farm ponds, irrigation ditches; and construction and maintenance of farm roads, forest roads, and access roads for utilities. Before development that impacts wetlands can occur, an applicant must demonstrate through the rezoning and permit process that they have taken steps to avoid wetland impacts. Potential impacts on wetlands must be minimized and only allowed to provide connectivity. Bottomless culverts should be encouraged for crossings.

Wetlands must also contain hydrologic buffers, providing for absorption of stormwater runoff and aquifer recharge. Lots should not be platted in wetlands and buffers should begin at the stream. Exemptions could include access for maintenance. Wider buffers for wildlife refuges and nature preserves should be at least 600 feet to allow for prescribed fires, maintenance and to decrease wildlife intrusions and preserve the character of nature preserves and wild parks.

# WETLAND EDUCATION CONSIDERATIONS

A critical component to implementing a successful ordinance is educating the public about benefits. With thoughtful outreach and educational efforts, land owners and developers may realize how wetland protections actually add to the value of a home rather than detract from it.

# 2022

## SIGNS

Buffer areas must be plainly marked to ensure that no encroachment occurs. Permanent signs saying "Protected Natural Area" are preferred.

## SOCIAL MEDIA

Wetland protections should be communicated through the county's social networks to promote their value and discourage encroachments.

## MAILINGS & RACK CARDS

Annual mailing and rack cards should be made available to residents that refer to the law and provide resources for reporting violations.

## NEIGHBORHOOD OUTREACH

Educate neighborhood associations and even include the ordinance in the neighborhood's covenants.

## OCRM ENCOURAGES THESE POLICY CONSIDERATIONS

South Carolina Department of Health and Environmental Control Ocean and Coastal Resource Management (SC DHEC-OCRM) encourages the development and implementation of wetland buffer ordinances (also known as vegetative and riparian buffers).

## OCRM STATES BUFFERS ARE THE MOST COST-EFFECTIVE METHOD

South Carolina Department of Health and Environmental Control Ocean and Coastal Resource Management found vegetative buffers are the most effective and cost-efficient way to protect wetlands and other water bodies (SC DHEC-OCRM, 2002a).

## FRESHWATER WETLANDS ARE EXCLUDED FROM CRITICAL LINE

The concept of the "critical line" is commonly associated with coastal wetland regulations in S.C. Freshwater wetlands in the coastal zone are not included in the South Carolina Department of Health and Environmental Control Ocean and Coastal Resource Management critical area.

# SCDHEC's OCRM encourages enhancing local wetland protections

**"Wetland buffers can benefit a land owner or developer in many ways, such as reducing erosion, reducing heating of waterways, creating privacy, reducing flooding and flood damage, preserving natural habitat, and saving money for homeowners through reduced maintenance costs."**

-SC DHEC-OCRM, 2002

## ECONOMIC VALUE OF PROTECTING WETLANDS. INCREASE PROPERTY VALUES

Wetlands influence the value of residential property, increasing the distance to the nearest wetland by 1,000 feet increased the value by \$436.

Lets Ecosystem Services Study, 2004

Lots in conservation subdivisions, which are residential projects designed to protect wetlands, cost an average of \$7,400 less to produce and sold in about half the time.

Conservation Subdivision handbook, Mohamed

One study determined residents would be willing to pay up to \$2,000 more for homes with proximity to open space, but incorporates preserved wetlands into the design.

Bowman & Thompson, 2009

The costs associated with construction of retention ponds are much higher at \$2.03 per cubic foot compared to projects designed that mimic natural flood processes.

Delaware, 2018

*This report does not capture a full list of the economic value of protecting wetlands but provides a list of talking points for decision makers to utilize when addressing their constituents.*

# RESEARCH

## ECONOMIC VALUE OF PROTECTING WETLANDS. PREVENT STORM DAMAGES

One study found the value of wetlands from avoided storm damages protection is \$925.25 (2010 USD) per acre.

Boutwell Factor Analysis of Wetlands Protection

Another study estimated the value of wetlands protections from avoided storm damages per storm is \$374, per 2 1/2 acres.

Boutwell Factor Analysis of Wetlands Protection

Texas study found wetlands provide an estimated \$105/acre/year of flood protection that otherwise would have to be performed by engineered stormwater facilities.

Houston, Galveston report

Louisiana study found wetlands provide \$452 acre/year in storm reduction benefits, leading to a massive state initiative aimed at preserving the state's wetlands.

ERG, 2013

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## ECONOMIC VALUE OF PROTECTING WETLANDS. PREVENT STORM DAMAGES

Wetlands are especially effective at absorbing stormwater, reducing flood damages almost \$8,000/acre/year by one estimate.

Houston, Galveston report

Nationwide, coastal wetlands reduce hurricane damage in the U.S. by over \$3,800/acre/year, and this number will probably grow.

Houston, Galveston report

Wetland protection is a low cost, effective alternative to barrier construction which can require a lengthy permitting process and excessive costs.

Walton et al., 2006; Halpern et al., 2007

Wetlands in the U.S. are estimated to provide \$23.2 billion in storm protection services, they are the most cost-effective flood defense resource for municipal governments.

NBI Lit Review

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## ECONOMIC VALUE OF PROTECTING WETLANDS. PREVENT STORM DAMAGES

Wetlands lower residential property flood damages by \$592,000 to \$792,100 for the average single family unit.

Barbier - valuing eco services for wetland protection

Protecting or restoring one acre of forested river bank buffer could save \$540 to \$1,898 per year.

Delaware, 2018

If a 1-mile band of wetlands on a 250-mile strip of coast were to disappear, the net present value of expected damages would range from \$2.82 million to \$9.22 million.

Pendelton, 2007

Wetlands in South Carolina are estimated to provide coastal protection benefits of over \$3.9 billion per year.

Sun and Carson, 2020

*This report does not capture a full list of the economic value of protecting wetlands but provides a list of talking points for decision makers to utilize when addressing their constituents.*



## ECONOMIC VALUE OF PROTECTING WETLANDS. SAVINGS IN STORMWATER

The use of natural flood processes for engineered elements can reduce the cost for stormwater management on the site by 72%.

EPA, 2007

The use of natural flood processes for engineered elements can produce a \$3,000 annual savings in the stormwater utility bill.

EPA, 2007

EPA proved significant capital cost savings when engineers mimic natural flood processes approaches compared to grey infrastructure.

EPA, 2013

Conservation subdivision design can cut grading costs by 83%, from \$300,000 to \$500,000, compared to conventional engineered plans.

Randall Arendt, Conservation Subdivision Handbook

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## ECONOMIC VALUE OF PROTECTING WETLANDS. TOURISM, FARMING & FISHERIES

The economic benefits of carbon sequestration provided by South Carolina's wetlands are valued over \$41 million per year with a value of about \$20-\$220 per acre, per year.

Assessing South Carolina's Ocean Economy, 2020

According to S.C. Parks and Recreation, coastal tourism accounted for \$8 billion in domestic expenditures and supported 83,000 jobs in 2015.

SC, 2015

Buffers on agricultural land in an 8,155-acre watershed could produce water quality benefits worth more than \$36,000.

Fox et al., 1995

Wetlands also provide multiple benefits for local coastal fisheries, supporting 6,000 jobs and generating \$500 million in retail sales in 2012.

SC, 2015

# POTENTIAL INCENTIVES TO PROPEL DESIGN COMMUNITY

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**BUFFER WIDTH REDUCTION**

**STORMWATER CREDITS**

**DENSITY**

**REDUCED IMPACT FEE**

**INSURANCE DISCOUNTS**

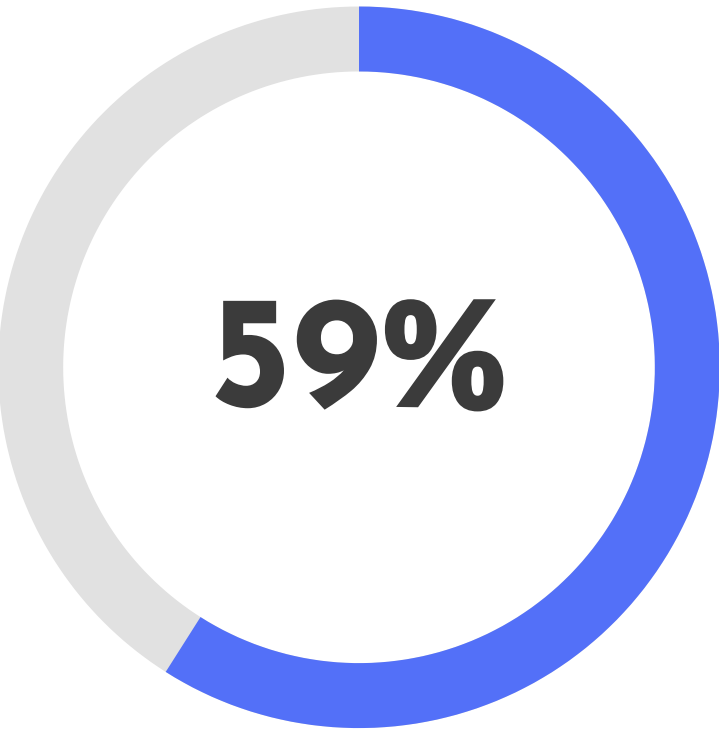
**EXPEDITED REVIEW**

*Most popular exemptions identified by the design community include: variable buffer width requirements based on land area; allowance of buffer alternatives that are equally effective at curbing runoff (such as drainage ponds and swales); and methods of compensating land owners and developers for meeting buffer requirements. Waiver will be required if the buffer makes the parcel undevelopable.*

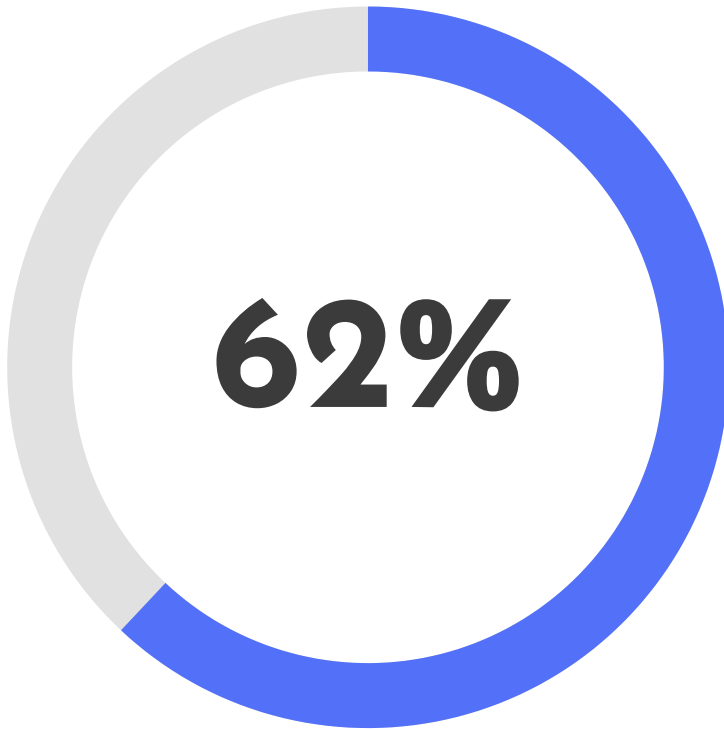


# MAJOR CHANGES IN LAND USE- HORRY COUNTY

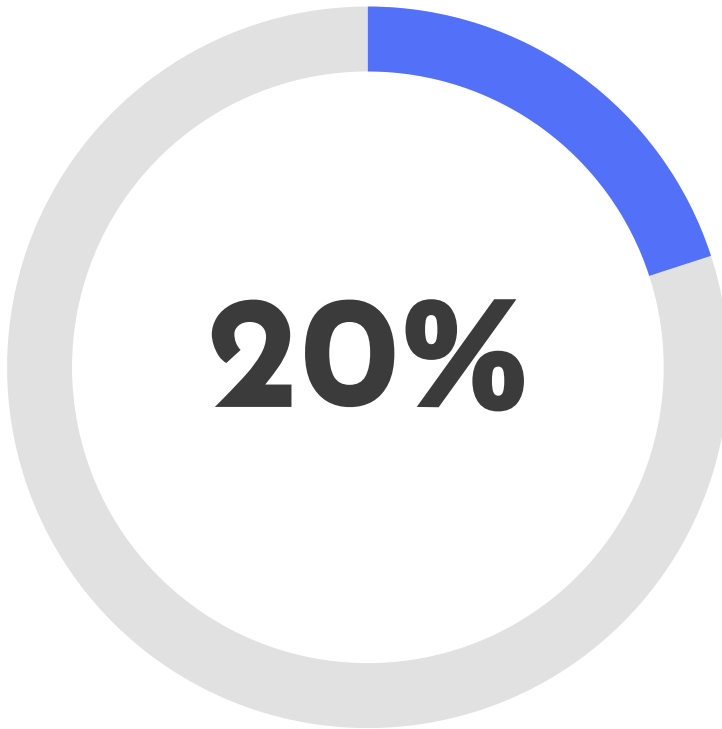
Despite growing efforts to preserve wetlands, they continue to be lost at a rapid rate, both from direct conversion and degradation (Horry County Comprehensive Plan *Imagine 2020*).



**INCREASE IN LAND  
DEVELOPED**



**INCREASE IN  
IMPERVIOUS  
SURFACE**



**DECREASE IN  
FORESTED  
WETLANDS**

**Land use changes over the past 25 years**

*NOAA, Land Use Atlas*



# WETLANDS & WATER RESOURCES- HORRY COUNTY



Horry County lies within the Pee Dee River Basin, which incorporates 45 watersheds and 5 million square miles within the state of South Carolina, North Carolina and Virginia (USGS).

One of the major components of flood resilience is discouraging development within the floodplain and along river corridors (Horry County's comprehensive plan *Imagine 2020*).

Horry County comes in second to Charleston, with the highest number of impaired waterbody's in the state, 75 waterbodies in Horry county are listed on the 2014 303(d) list (SCDHEC, 2016)

Forested wetlands suffered the biggest losses across the state, declining 5.1 percent over a 7-year period compared to coastal communities and estuarine wetlands, wetland losses are minimal and mostly caused by coastal erosion (U.S. Fish & Wildlife Services).

# THE PAST **YEAR** & FUTURE OPPORTUNITIES

HORRY COUNTY RISING

## WORDS FROM HORRY COUNTY RISING FOUNDER

Horry County Council enacted several new flood protections in 2021. The new regulations aim to prevent flood damages for new homes built after November 15th, 2021.

The council increased the base flood elevation, mapped and regulated a supplemental flood zone, adopted the FEMA flood zone, increased the freeboard height to mitigate damages based on the county's most historical flood (2018), applied a no net fill standard for the regulatory flood zones, and required minor subdivisions to adhere to stormwater regulations.

In addition to these priorities, Horry County Rising is eager to enhance the county's flood resilience plan, and provide better wetland protections. We kick-off 2022 by propelling the county to consider protecting forested wetlands to ensure we protect natural flood storage and prevent property damages.

We hope you will take advantage of this opportunity to increase property values, provide stormwater savings, reduce storm damages, decrease economic disruption, preserve our tourism and agriculture industry and enhance the quality of life for residents and visitors in Horry County.



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