

# THE ECONOMIC IMPACT OF GREENVILLE COUNTY'S PROPOSED BUFFER EXPANSION

## EARTH ECONOMICS REEDY RIVER WATERSHED

The proposed buffer ordinance aims to improve water quality in the Reedy River watershed by increasing buffers around streams, rivers, and wetlands. Earth Economics conducted an analysis of the economic impacts of the proposed ordinance across eight different existing, planned, and proposed neighborhood development sites. Seven economic impacts were valued at each site related to environmental and community-based benefits from the expanded buffers and lost economic activities tied to changes to real estate development in buffer areas:



**WATER QUALITY** impacts were measured as the reduction in nitrogen and phosphorus attributed to the proposed buffer. The value of these reductions is derived from the North Carolina Nutrient Offset rate schedule and is based on the actual avoided cost of water quality treatment within the local region.



**HOME VALUE** impacts were estimated using property sales prices history at the zip code level. Home values are estimated to increase for properties within 250 meters of the buffer, due to the desirability of publicly accessible open space.



**ECONOMIC DEVELOPMENT** Economic development impacts were estimated at each case study site according to the number of homes that would be built with and without the proposed buffer ordinance, based on local sales data and research from the Home Builders Association.



**NEIGHBORHOOD DEVELOPMENT** impacts were estimated using average subdivision development costs from research on a North Carolina county, adjusted for local conditions.



**TAX REVENUE** was estimated using local property tax rates. Both positive and negative revenue impacts were estimated. Revenue gains were estimated based on the projected home value increase for homes within 250 meters of the buffer, and revenue losses were estimated when the proposed buffer would decrease the number of homes built on a development site.



**FLOOD PROTECTION VALUE** was calculated as the avoided damage to homes and property from flood events, per square foot of buffer, using an aggregate national average value for flood protection from wetlands.



**RECREATION VALUE** was estimated based on modeled trail usage of trail extensions installed within the proposed buffer, based on adjusted use statistics from existing trails in Greenville County.

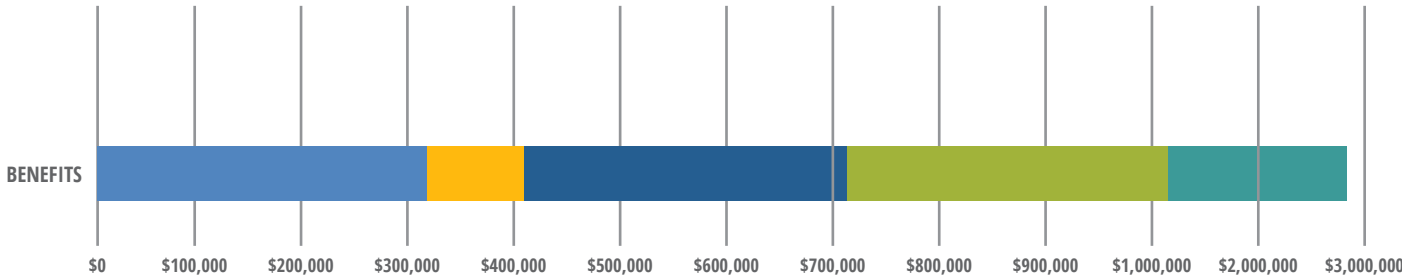
Some of these factors—such as home value increases or lost economic development activity—will be one-time impacts; others—such as property tax revenue, flood protection, and recreation—will occur every year. In order to compare these impacts, all values were estimated over a 30-year time period and presented in net present value, using a 2.5% discount rate.

# RESULTS

## EXISTING DEVELOPMENTS

The proposed buffers are estimated to provide more than \$5.2 million in property value, flood protection, tax revenue, water quality, and recreation benefits for the Lost River and Waterstone Cottages neighborhoods. Development will not be impacted in these existing neighborhoods, thus no economics costs are projected.

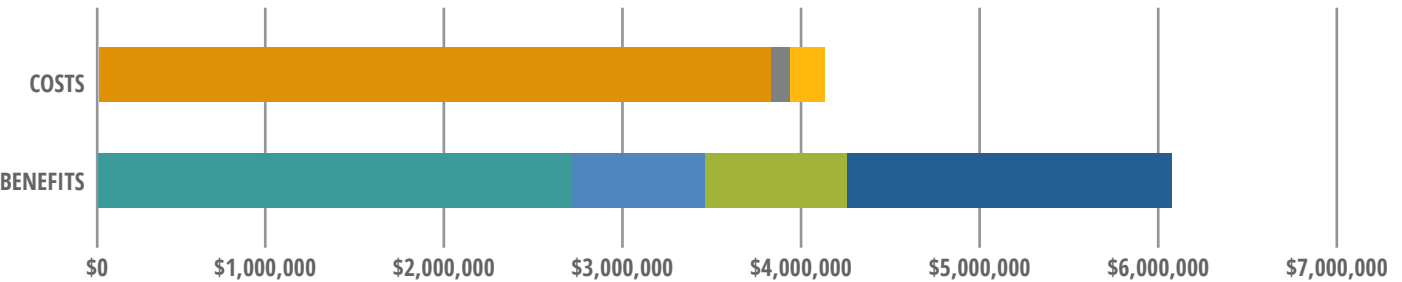
	BENEFITS	COSTS
Property Value	\$2,825,222	-
Property Sales	-	\$0.00
Development	-	\$0.00
Tax Revenue	\$402,069	-
Flood Protection	\$317,204	-
Recreation	\$1,026,111	-
Water Quality	\$709,111	-



## PRELIMINARY PLATS

The proposed ordinance is estimated to incur some economic costs for the planned Willimon, Echo Valley, and Waterford developments and the surrounding community. The most significant of these estimated costs is the lost economic activity associated with home development. Lost activity associated with neighborhood infrastructure and a net loss in sales tax revenue in these neighborhoods is also projected. However, the benefits of the proposed buffer are projected to outweigh the costs for these three neighborhoods, driven by property value increases, flood protection, recreation, and water quality improvements.

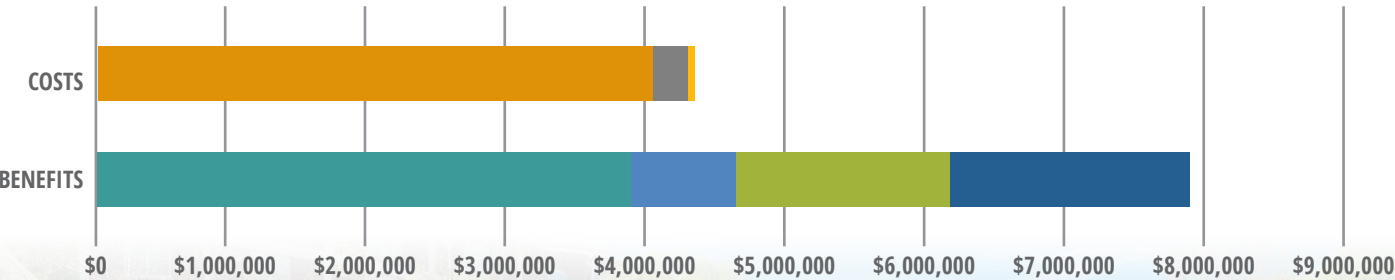
	BENEFITS	COSTS
Property Value	\$2,673,450	-
Property Sales	-	\$3,854,600
Development	-	\$97,539
Tax Revenue	-	\$168,094
Flood Protection	\$788,929	-
Recreation	\$814,729	-
Water Quality	\$1,763,657	-



# PROPOSED DEVELOPMENTS

The benefits provided by the proposed buffer ordinance for proposed developments were projected to exceed the economic costs associated with decreased development. Across the three proposed development sites ("Raw Parcel" 1, 2, and 3), the benefits of the buffer over the next 30 years are projected to exceed \$7.6 million dollars. The economic costs, including lost economic activity from property development, subdivision infrastructure development, and net property tax revenue decreases were approximately \$4.3 million over the same time period.

	BENEFITS	COSTS
Property Value	\$3,852,498	-
Property Sales	-	\$4,030,000
Development	-	\$273,108
Tax Revenue	-	\$25,261
Flood Protection	\$774,449	-
Recreation	\$1,523,624	-
Water Quality	\$1,731,287	-

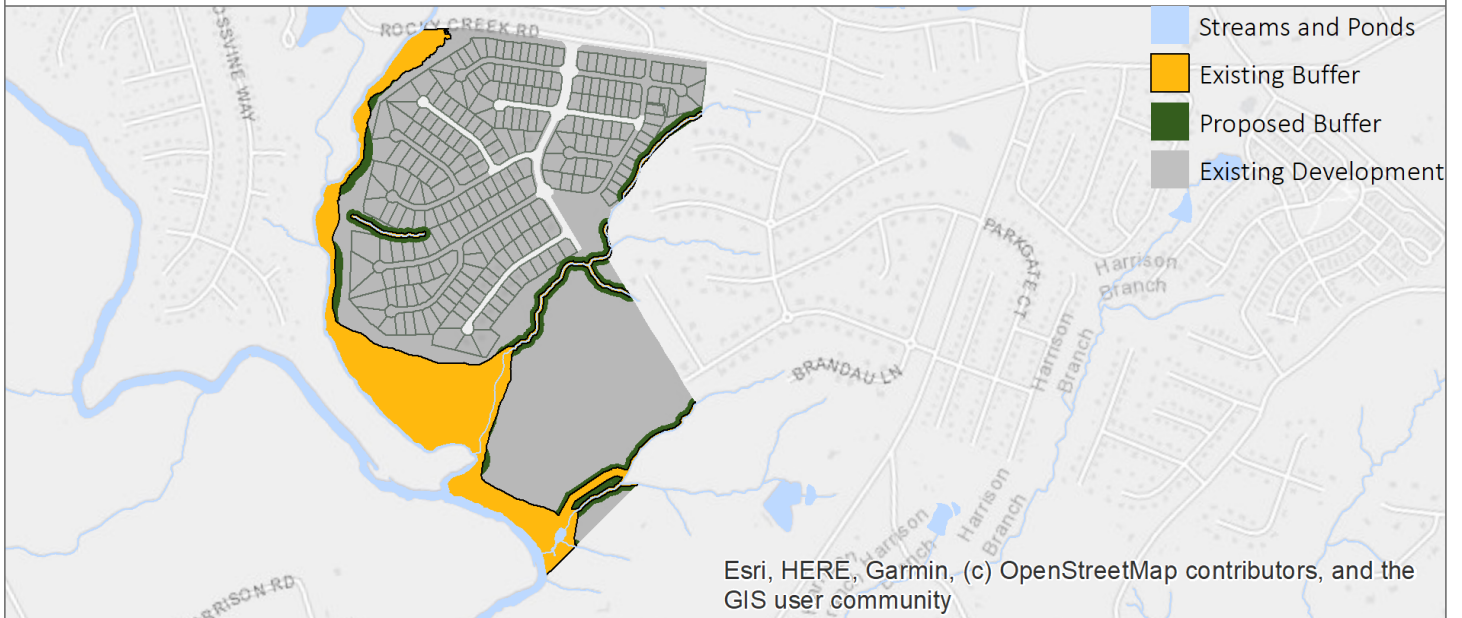




## CASE STUDY LOST RIVER - EXISTING DEVELOPMENT

### Lost River

SOURCES: FEMA, NWI



### Existing and Proposed Buffers for Lost River Neighborhood

© 2019 Earth Economics 

0 0.1 0.2 Miles



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	352	352	0
Buffer Area	Sq. Ft.	1,332,897	1,688,130	355,233
Water Quality	Dollars	\$2,413,808	\$3,057,117	\$643,309
Home Value Impact of Open Space	Dollars	\$0	\$2,460,057	\$2,460,057
Economic Activity of Home Development	Dollars	\$78,848,000	\$78,848,000	\$0
Economic Activity of Neighborhood Development	Dollars	\$6,866,717	\$6,866,717	\$0
Tax Revenue	Dollars	\$11,221,183	\$11,571,284	\$350,100
Flood Protection	Dollars	\$1,104,049	\$1,398,289	\$287,768
Recreation	Dollars	\$0	\$934,055	\$914,835
Total				\$4,656,072

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [earthconomics.org](http://earthconomics.org) | [info@earthconomics.org](mailto:info@earthconomics.org)

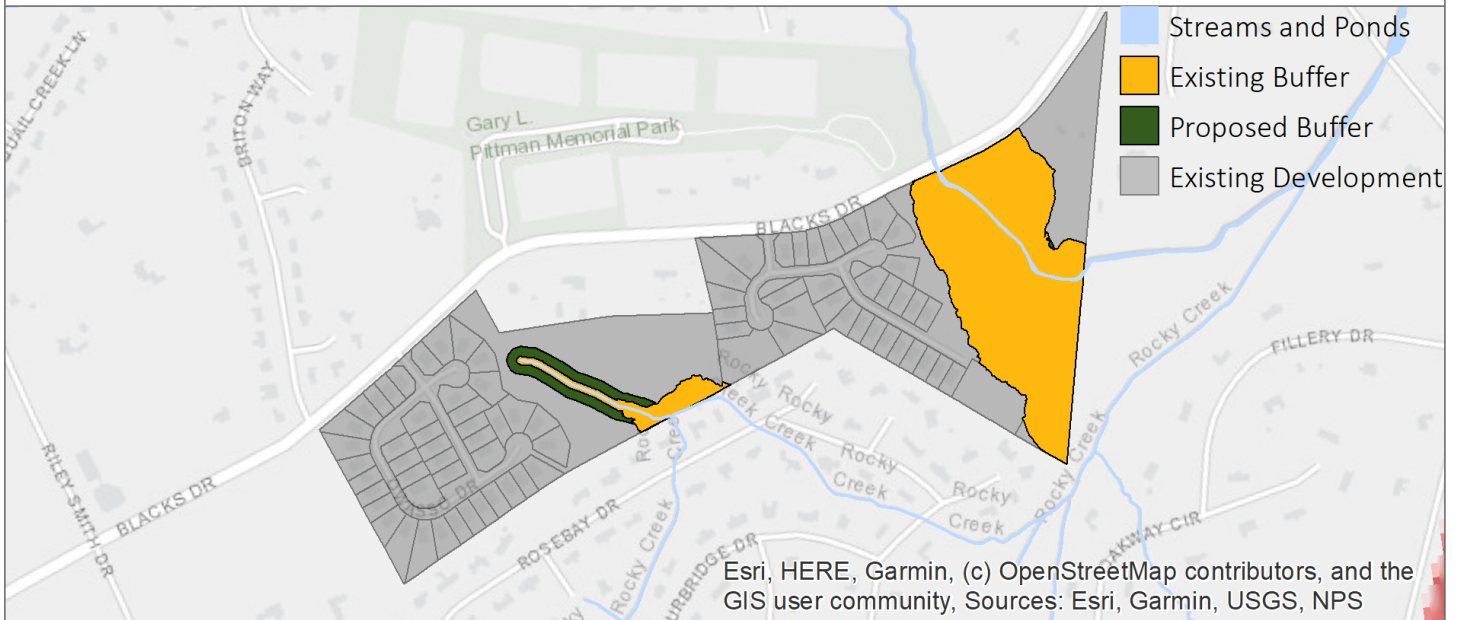
© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS** 


# CASE STUDY WATERSTONE COTTAGES - EXISTING DEVELOPMENT

## Waterstone Cottages

SOURCES: FEMA, NWI



### Existing and Proposed Buffer for Waterstone Cottages Neighborhood

© 2019 Earth Economics 

0 0.05 0.1 Miles



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	44	44	0
Buffer Area	Sq. Ft.	469,121	505,457	36,336
Water Quality	Dollars	\$849,554	\$915,357	\$65,802
Home Value Impact of Open Space	Dollars	\$0	\$365,164	\$365,164
Economic Activity of Home Development	Dollars	\$11,704,000	\$11,704,000	\$0
Economic Activity of Neighborhood Development	Dollars	\$858,340	\$858,340	\$0
Tax Revenue	Dollars	\$1,665,644	\$1,717,612	\$51,968
Flood Protection	Dollars	\$380,027	\$409,461	\$29,435
Recreation	Dollars	\$0	\$111,274	\$111,274
Total				\$623,646

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [eartheconomics.org](http://eartheconomics.org) | [info@eartheconomics.org](mailto:info@eartheconomics.org)

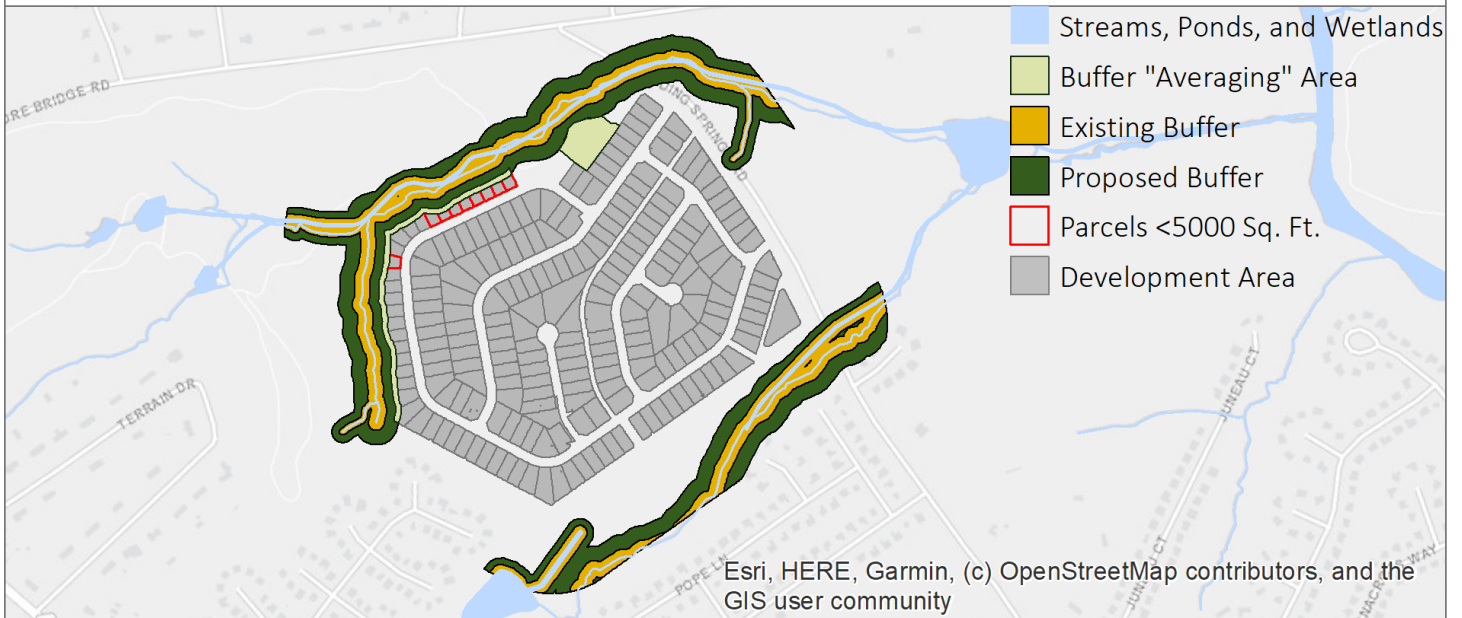
© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS** 

## CASE STUDY WILLIMON - PRELIMINARY PLAT

### Willimon

SOURCES: FEMA, NWI



### Existing and Proposed Buffers for Willimon Neighborhood

© 2019 Earth Economics

0 0.05 0.1 Miles



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	224	215	(9)
Buffer Area	Sq. Ft.	485,457	1,133,739	637,282
Water Quality	Dollars	\$879,138	\$2,033,223	\$1,154,085
Home Value Impact of Open Space	Dollars	\$0	\$1,978,860	\$1,978,860
Economic Activity of Home Development	Dollars	\$66,080,000	\$63,425,000	(\$2,655,000)
Economic Activity of Neighborhood Development	Dollars	\$4,369,729	\$4,194,159	(\$175,569)
Tax Revenue	Dollars	\$9,404,117	\$9,307,892	(\$96,224)
Flood Protection	Dollars	\$393,261	\$909,512	\$516,252
Recreation	Dollars	\$0	\$529,697	\$529,697
<b>Total</b>				<b>\$1,252,100</b>

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [earthconomics.org](http://earthconomics.org) | [info@earthconomics.org](mailto:info@earthconomics.org)

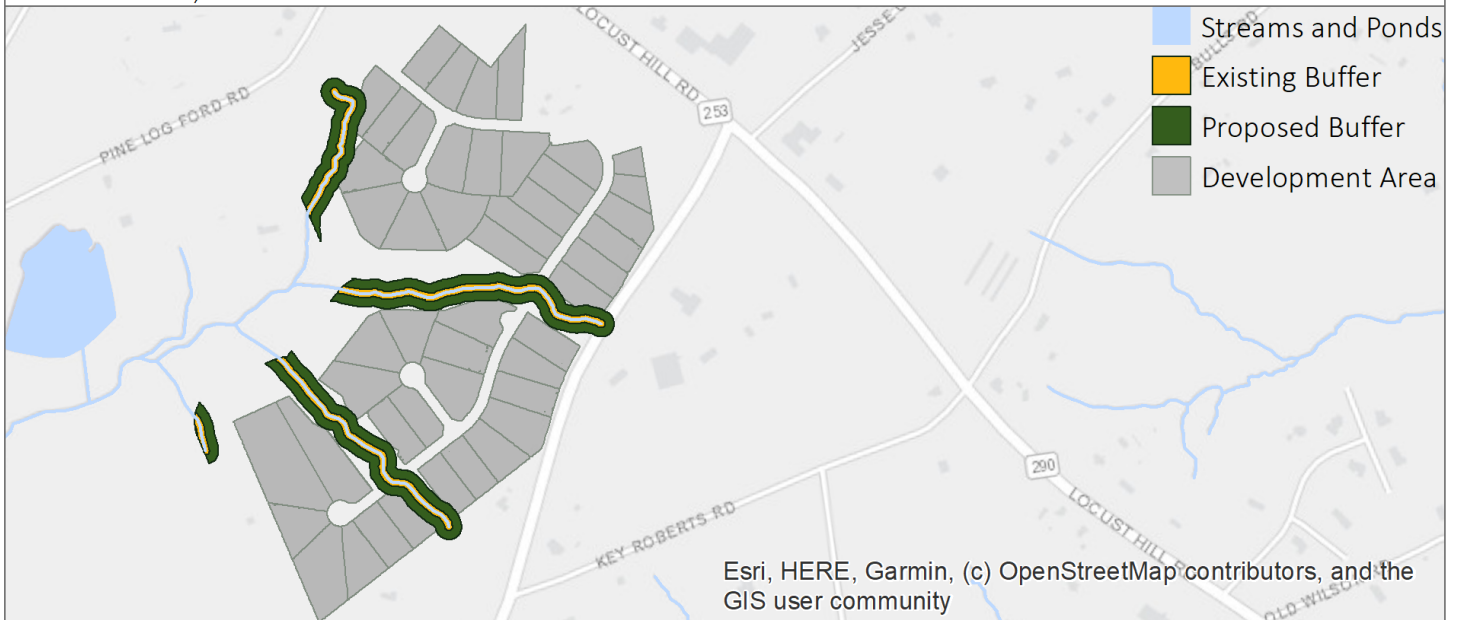
© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS**

## CASE STUDY ECHO VALLEY - PRELIMINARY PLAT

### Echo Valley

SOURCES: FEMA, NWI



### Existing and Proposed Buffers for Echo Valley Neighborhood

© 2019 Earth Economics

0 0.05 0.1 Miles



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	56	56	0
Buffer Area	Sq. Ft.	83,493	284,901	201,408
Water Quality	Dollars	\$151,202	\$515,941	\$364,740
Home Value Impact of Open Space	Dollars	\$0	\$441,954	\$441,954
Economic Activity of Home Development	Dollars	\$14,165,200	\$14,165,200	\$0
Economic Activity of Neighborhood Development	Dollars	\$1,092,432	\$1,092,432	\$0
Tax Revenue	Dollars	\$2,015,908	\$2,078,804	\$62,896
Flood Protection	Dollars	\$67,636	\$230,794	\$163,157
Recreation	Dollars	\$0	\$0	\$0
<b>Total</b>				<b>\$1,032,747</b>

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [eartheconomics.org](http://eartheconomics.org) | [info@eartheconomics.org](mailto:info@eartheconomics.org)

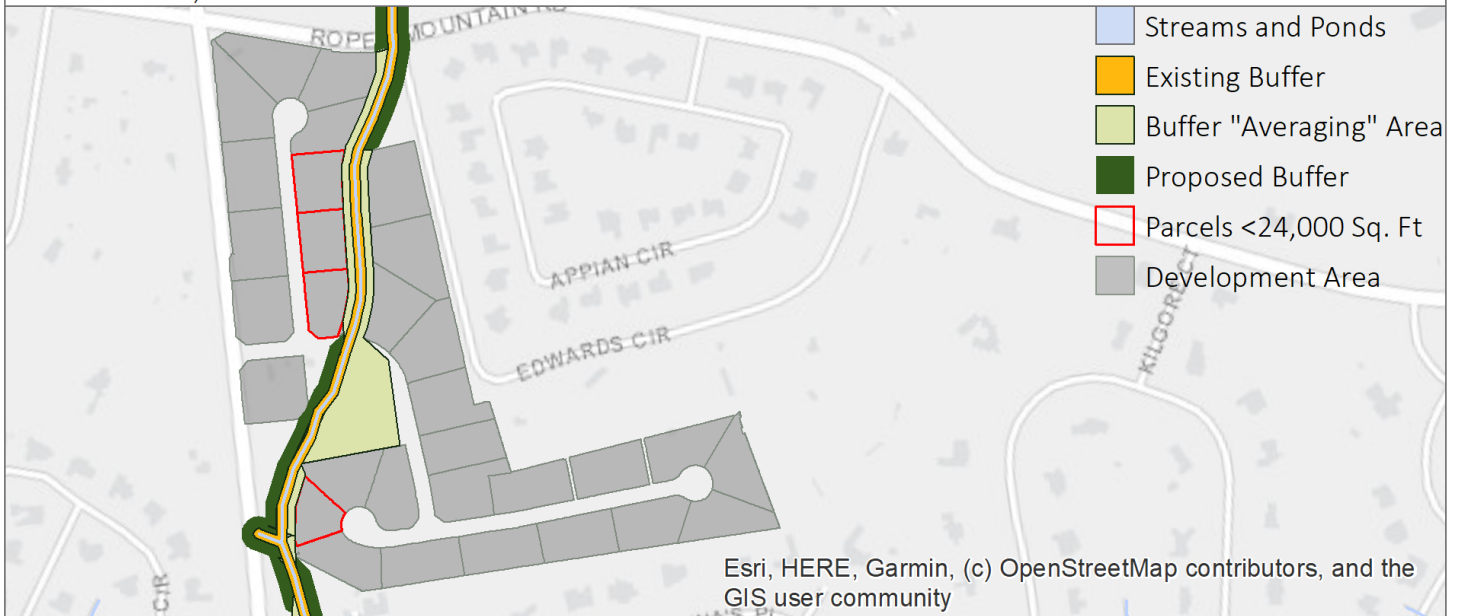
© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS**


# CASE STUDY WATERFORD - PRELIMINARY PLAT

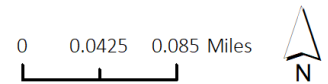
## Waterford

SOURCES: FEMA, NWI



### Proposed and Existing Buffers for Waterford Neighborhood

© 2019 Earth Economics 



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	31	27	(4)
Buffer Area	Sq. Ft.	58,481	193,677	135,196
Water Quality	Dollars	\$105,906	\$350,739	\$244,833
Home Value Impact of Open Space	Dollars	\$0	\$252,636	\$252,636
Economic Activity of Home Development	Dollars	\$9,296,900	\$8,097,300	(\$1,119,600)
Economic Activity of Neighborhood Development	Dollars	\$604,739	\$526,708	(\$78,031)
Tax Revenue	Dollars	\$1,323,080	\$1,188,314	(\$134,766)
Flood Protection	Dollars	\$47,375	\$156,895	\$109,520
Recreation	Dollars	\$0	\$285,032	\$285,032
Total				(\$364,314)

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [earthconomics.org](http://earthconomics.org) | [info@earthconomics.org](mailto:info@earthconomics.org)

© 2019 Earth Economics. All rights reserved.

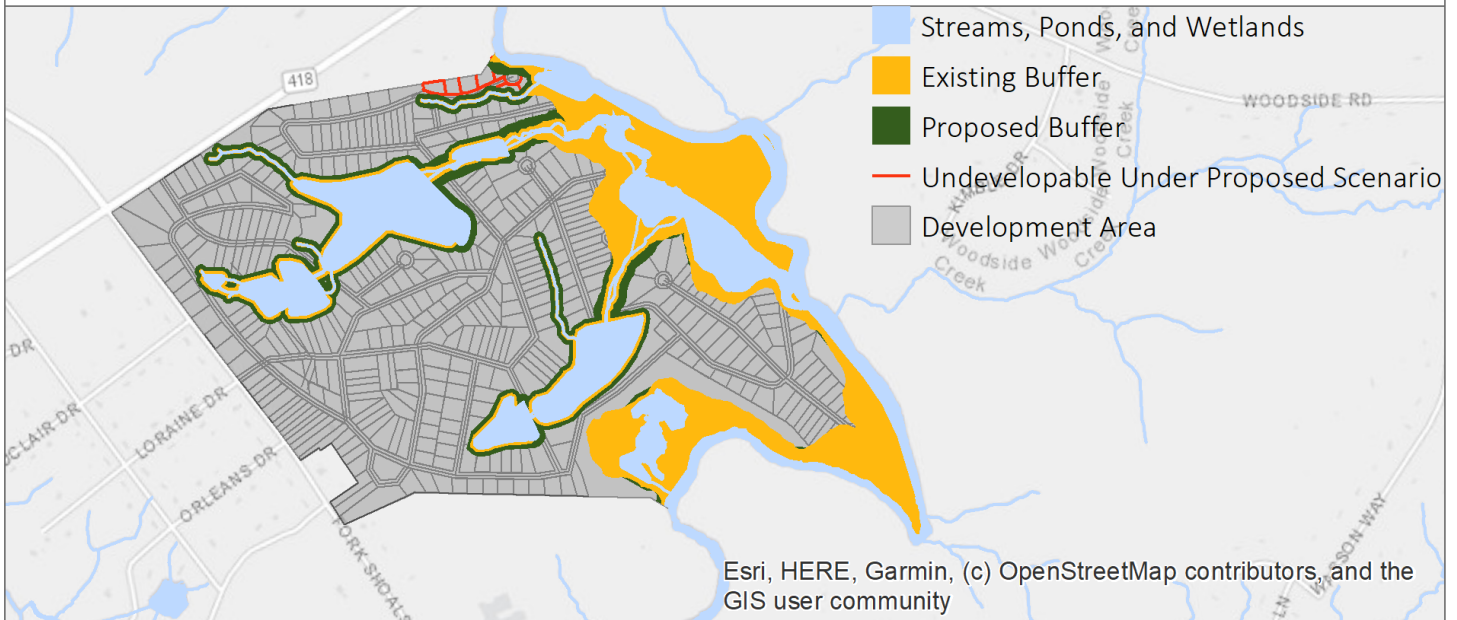
**EARTH  
ECONOMICS** 




## CASE STUDY RAW PARCEL 1 - PROPOSED DEVELOPMENT

### Raw Parcel 1

SOURCES: FEMA, NWI



Existing and Proposed Buffers for Proposed Development Project - "Raw Parcel 1"

© 2019 Earth Economics 

0 0.1 0.2 Miles



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	377	370	(7)
Buffer Area	Sq. Ft.	3,563,073	4,145,136	582,063
Water Quality	Dollars	\$6,452,541	\$7,506,628	\$1,054,086
Home Value Impact of Open Space	Dollars	\$0	\$ 3,347,760	\$3,347,760
Economic Activity of Home Development	Dollars	\$ 109,330,000	\$ 107,300,000	(\$2,030,000)
Economic Activity of Neighborhood Development	Dollars	\$7,354,139	\$7,217,855	(\$136,554)
Tax Revenue	Dollars	\$ 15,559,202	\$ 15,746,738	\$ 187,536
Flood Protection	Dollars	\$2,886,387	\$3,357,906	\$ 471,520
Recreation	Dollars	\$0	\$1,196,118	\$1,196,118
Total				\$4,090,466

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [eartheconomics.org](http://eartheconomics.org) | [info@eartheconomics.org](mailto:info@eartheconomics.org)

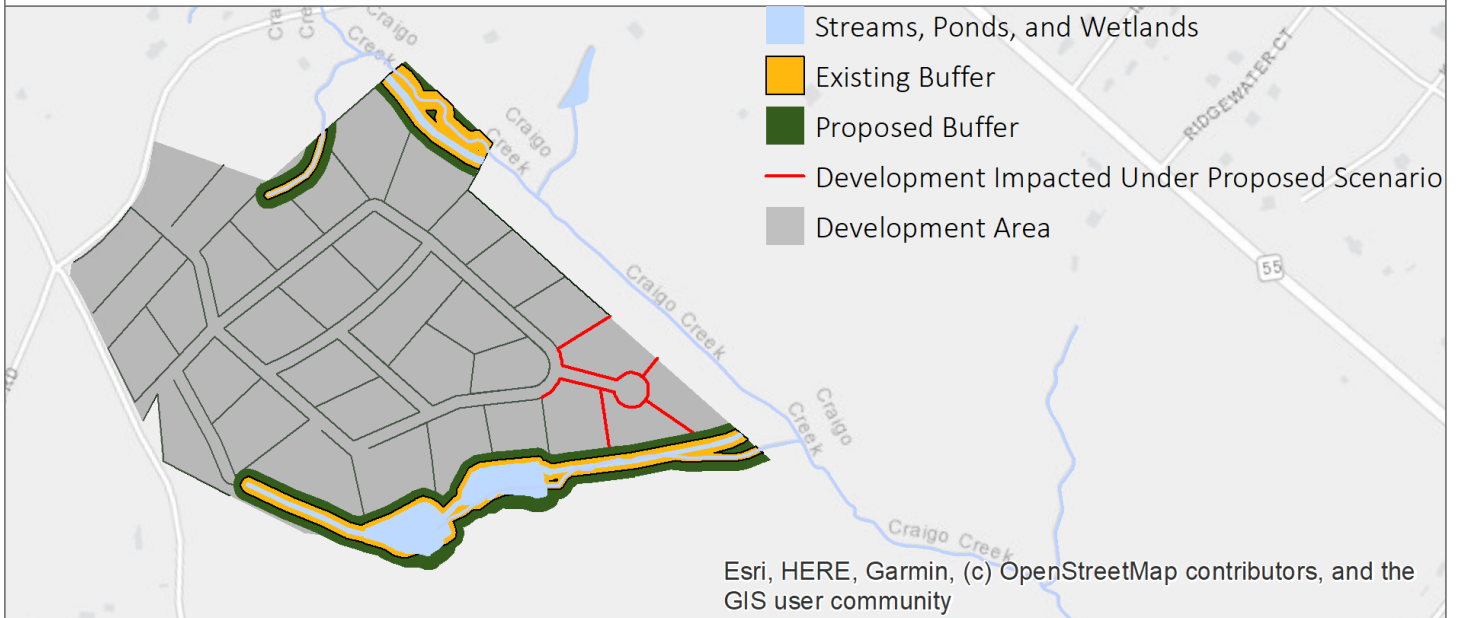
© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS** 


## CASE STUDY RAW PARCEL 2 - PROPOSED DEVELOPMENT

### Raw Parcel 2

SOURCES: FEMA, NWI



Existing and Proposed Buffers for Proposed Development Project - "Raw Parcel 2"

© 2019 Earth Economics 

0 0.05 0.1 Miles



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	33	31	(2)
Buffer Area	Sq. Ft.	246,637	434,468	187,831
Water Quality	Dollars	\$446,647	\$786,800	\$340,152
Home Value Impact of Open Space	Dollars	\$0	\$374,790	\$374,790
Economic Activity of Home Development	Dollars	\$12,787,500	\$12,012,500	(\$775,000)
Economic Activity of Neighborhood Development	Dollars	\$643,755	\$604,739	(\$39,015)
Tax Revenue	Dollars	\$1,819,842	\$1,762,886	(\$56,956)
Flood Protection	Dollars	\$199,797	\$351,955	\$152,159
Recreation	Dollars	\$0	\$163,753	\$163,753
<b>Total</b>				<b>\$159,883</b>

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [earthconomics.org](http://earthconomics.org) | [info@earthconomics.org](mailto:info@earthconomics.org)

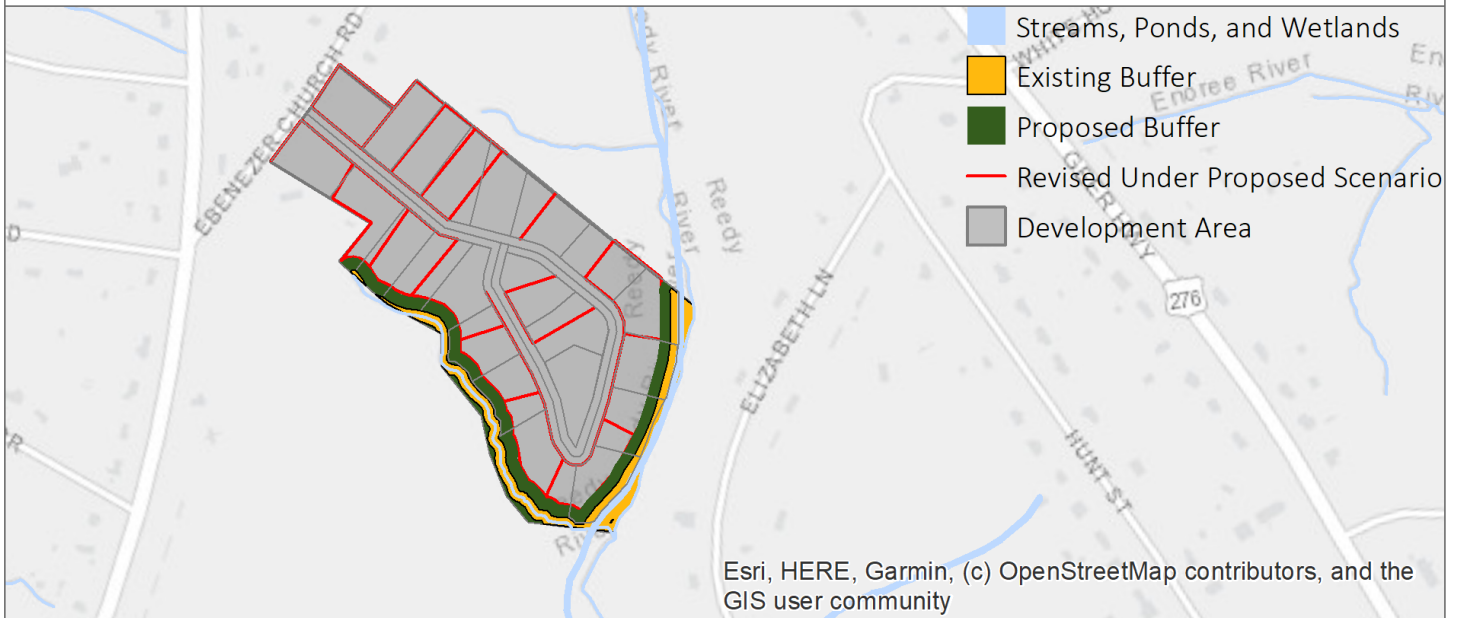
© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS** 

## CASE STUDY RAW PARCEL 3 - PROPOSED DEVELOPMENT

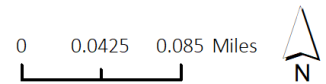
### Raw Parcel 3

SOURCES: FEMA, NWI



### Existing and Proposed Buffers for Proposed Development Project - "Raw Parcel 3"

© 2019 Earth Economics 



METRICS	UNITS	CURRENT BUFFER SCENARIO (OVER 30 YEARS)	PROPOSED BUFFER SCENARIO (OVER 30 YEARS)	NET CHANGE
Number of Residential Lots	Count	22	17	(5)
Buffer Area	Sq. Ft	59,610	124,021	64,411
Water Quality	Dollars	\$107,951	\$224,596	\$116,645
Home Value Impact of Open Space	Dollars	\$0	\$129,948	\$129,948
Economic Activity of Home Development	Dollars	\$5,390,000	\$4,165,000	(\$1,225,000)
Economic Activity of Neighborhood Development	Dollars	\$429,170	\$331,631	(\$97,539)
Tax Revenue	Dollars	\$767,073	\$611,232	(\$155,841)
Flood Protection	Dollars	\$48,289	\$100,467	\$52,178
Recreation	Dollars	\$0	\$163,753	\$163,753
<b>Total</b>				<b>(\$1,015,855)</b>

Earth Economics works to quantify and value the benefits nature provides - our work drives effective decisions and systemic change through a combination of education, natural capital analysis, and policy recommendations. [earthconomics.org](http://earthconomics.org) | [info@earthconomics.org](mailto:info@earthconomics.org)

© 2019 Earth Economics. All rights reserved.

**EARTH  
ECONOMICS** 