



Bureau of Waterways Engineering and Wetlands



Implementation of Act 162 of 2014

Riparian Buffer or Riparian Forest Buffer Equivalency Demonstration and Offsetting

Citizens Advisory Council April 21, 2105

Tom Wolf, Governor

John Quigley, Acting Secretary

Agenda

- **Overview of Act 162** 1.
- Impact and scope of Act 162 2.
- When is equivalency necessary? 3.
- **Application Requirements** 4.
- Demonstrating buffer equivalence 5.
- When is offsetting required? 6.
- **Riparian Buffer or Riparian Forest Buffer Offsetting Policy** 7.
- **Application Process for Offsetting** 8.
- Implementation 9.



What is Act 162 of 2014?

- Introduced as HB 1565
- Amended Pennsylvania Clean Streams Law (CSL)
 - New Section 402(c)
 - NPDES stormwater construction permit applicants may choose either to implement riparian buffers or riparian forest buffers OR to implement equivalent best management practices (BMPs) in certain cases
 - Requires offsetting buffers in certain cases
- Does not eliminate use of riparian buffers as a BMP



Scope of Act 162

- Proposed individual NPDES projects located within 150 feet of certain High Quality or **Exceptional Value waters**
- Does not apply to, nor change process in 25 Pa. Code § 102.14, for non-NPDES permits
 - ESCGP permits for oil and gas activities or
 - ESC permits for road maintenance and timber harvesting
- Does not affect voluntary riparian buffer programs; example CREP



Impacts on NPDES Permitting

- New § 402(c)(1) of CSL provides an alternative to mandatory riparian buffers or riparian forest buffers
- New § 402(c)(2) of CSL provides that when a buffer is not used and if earth disturbance is conducted within 100 feet of a surface water, offsetting is required



Equivalency Demonstration

- New § 402(c)(1)(ii)
- Applicants choosing not to implement the riparian buffer or riparian forest buffer, must make a demonstration that the BMPs that they will implement will be equivalent to the type of buffer required in 102.14(a)(1) and (2)
- Demonstration is both quantitative and qualitative in nature



Offsetting Policy

- New § 402(c)(2) triggered when applicant proceeds under § 402(c)(1)(ii)
- New § 402(c)(2) requires offsetting if a riparian buffer is not used as BMP and earth disturbance will occur within 100 feet of surface waters
- See Riparian Buffer or Riparian Forest Buffer Offsetting(Technical Guidance Document #310-2135-003)



Coordination of Policies

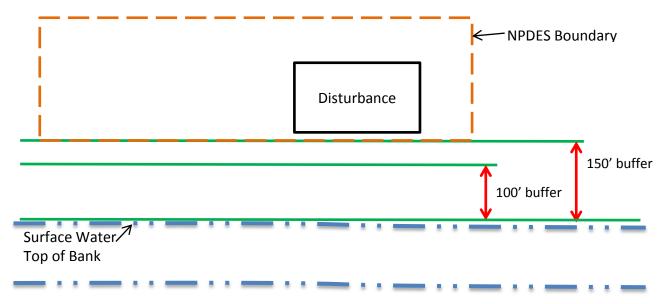
- Policy documents are independent but related
 - Riparian Buffer or Riparian Forest Buffer Equivalency Demonstration (310-2135-002)
 - Riparian Buffer or Riparian Forest Buffer Offsetting (310-2135-003)
- Equivalency may be required when offsetting is not
- Offsets apply to any earth disturbance activities within 100' of surface waters



Applicability – Figure 1

Figure 1. Equivalency demonstration and offsetting not required

- The project involves one acre or more of earth disturbance and requires an ٠ NPDES stormwater construction permit.
- All earth disturbance activities are outside the buffer area.

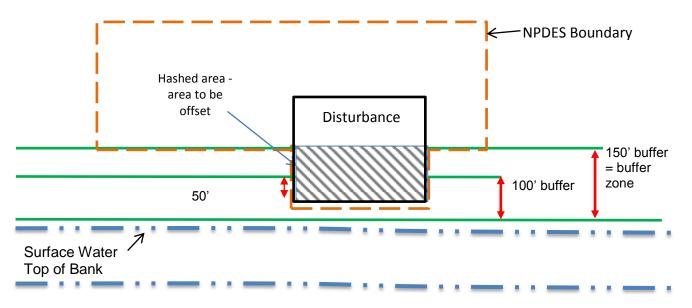




Applicability- Figure 2

Figure 2. Both equivalency demonstration and offsetting required

- The project involves a one acre or more of earth disturbance and requires an • NPDES stormwater construction permit.
- Earth disturbance activities extend 50 feet into the 100 feet buffer area.
- Per Section 402(c)(2) of Act 162, offsetting is required and the replacement buffer • is to be installed at a ratio of 1 to 1, with the minimum replacement buffer width being 100 feet.

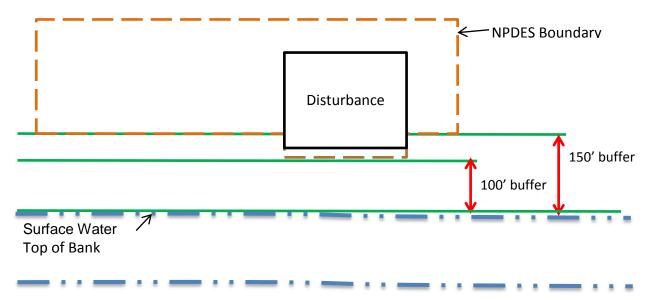




Applicability-Figure 3

Figure 3. Equivalency demonstration required but offsetting not required

- The project involves one acre or more of earth disturbance and requires an ٠ NPDES stormwater construction permit.
- All earth disturbance activities are between 100 feet and 150 feet from the surface • waters.





Application Requirements

- Pre-application meeting
- Complete & Technically Adequate Application
- Demonstration of Equivalency
 - Inclusion of worksheets 12,13,14,15
- Narrative on Buffer Function



Demonstration of Equivalency

- Step 1- Estimate pollutant load from disturbed areas of the site using Worksheet 12.
- Step 2- Calculate the pollutant load reductions for the site area with the proposed structural BMPs using Worksheet 13.
- Step 3- Estimate the increased pollutant load for the disturbed area within the riparian buffer or riparian forest buffer using Worksheet 14.



Demonstration (cont.)

- Step 4- <u>Calculate the pollutant load</u> <u>reductions</u> with the proposed structural BMPs using Worksheet 15.
- Step 5- <u>Complete the narrative</u> to show that BMPs used in the equivalency demonstration will be functionally equivalent to those of a riparian buffer or riparian forest buffer



Demonstration

	Riparian Buffer	Riparian Forest Buffer
Filtration of pollutants in runoff		
Infiltration and maintenance of streamflow		
Water quality maintenance		
Habitat for wildlife and vegetation		
Flood attenuation		
Light control and water temperature moderation		
Travel corridors for migration and dispersal		
Ice damage control		
Stream width		
Food supply		
Wood debris input		
Support of aquatic food chains and webs as they relate to terrestrial food webs		
Channel and shoreline stability/decrease in erosion		
Reduced effects of storm events		
Instream pollutant processing		

Example

Worksheet 14 – Water Quality Analysis of Pollutant Loading from Disturbance in Buffer Area

Total Disturbed Area (AC)	2
Disturbed Area Controlled by	2
BMPs (AC)	

Existing Condition

	Pollutant					Po	ollutant Load		
Land Cover Classification	TSS EMC (mg/l)	TP EMC (mg/l)	Nitrate- Nitrite EMC (mg/I as N)	Cover (Acres)	Runoff Volume (AF)	TSS** (LBS)	TP** (LBS)	NO₃ (LBS)	
Forest	39	0.15	0.17	2	0.1574	16.58	0.07	0.07	
Meadow	47	0.19	0.3						
	TOTAL LOAD						0.07	0.07	

Post-Development

	-	Pollutant					Pollutant Load		
	Land Cover Classification	TSS EMC (mg/l)	TP EMC (mg/l)	Nitrate- Nitrite EMC (mg/l as N)	Cover (Acres)	Runoff Volume (AF)	TSS** (LBS)	TP** (LBS)	NO₃ (LBS)
	Forest	39	0.15	0.17					
	Meadow	47	0.19	0.3					
s s	Fertilized Planting Area	55	1.34	0.73					
viou	Native Planting Area	55	0.40	0.33					
Pervious Surfaces	Lawn, Low-Input	180	0.40	0.44					
	Lawn, High-Input	180	2.22	1.46					
	Golf Course Fairway/Green	305	1.07	1.84					
	Grassed Athletic Field	200	1.07	1.01					
	Rooftop	21	0.13	0.32					
Ś	High Traffic Street/Highway	261	0.40	0.83					
ion	Medium Traffic Street	113	0.33	0.58					
Impervious Surfaces	Low Traffic/Residential Street	86	0.36	0.47					
<u>s</u>	Res. Driveway, Play Courts, etc.	60	0.46	0.47					
	High Traffic Parking Lot	120	0.39	0.60					
	Low Traffic Parking Lot	58	0.15	0.39	2	0.48	75.89	0.20	0.51
					тот	AL LOAD	75.89	0.20	0.51
				Pollutant Lo	ad increas	se (LBS) =	59.31	0.13	0.44

Pollutant Load increase (LBS) = Post development load – Pre-development load



Worksheet 15 – Pollutant Reduction Through BMP Applications*

*Fill this worksheet out for each BMP type with different pollutant removal efficiencies. Sum pollutant reduction achieved for all BMP types on final sheet.

BMP Type: Capture & Reuse

Disturbed Area Controlled by this	2
BMPs (AC)	

Disturbed Area Controlled by this BMPs:

		Pollutant		1		Pollutant Lo		ad**	
	Land Cover Classification	TSS EMC (mg/l)	TP EMC (mg/l)	Nitrate- Nitrite EMC (mg/I as N)	Cover (Acres)	Runoff Volume (AF)	TSS** (LBS)	TP** (LBS)	NO₃ (LBS)
	Forest	39	0.15	0.17					
	Meadow	47	0.19	0.3					
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urfa	Low Traffic/Residential Street	86	0.36	0.47					
s III	Res. Driveway, Play Courts, etc.	60	0.46	0.47					
	High Traffic Parking Lot	120	0.39	0.60					
	Low Traffic Parking Lot	58	0.15	0.39	2	0.48	75.89	0.20	0.51
	TOTAL LOAD TO THIS BMP TYPE							0.20	0.51
	POLLUTANT REMOVAL EFFICIENC	IES FROM		DIX A. STORM	WATER MA	ANUAL (%)	100	100	100
	POLLUTAN			HEVED BY TH	IIS BMP T	YPE (LBS)	75.89	0.20	0.51

POLLUTANT REDUCTION ACHIEVED BY ALL BMP TYPES (LBS)	75.89	0.20	0.51
REQUIRED REDUCTION from WS 14 (LBS)	59.31	0.13	0.44

*Pollutant Load = [EMC, mg/l] X [Volume, AF] X [2.7, Unit Conversion]

Monitoring, Inspection and Reporting

- All requirements of Chapter 102 remain
 - Erosion and sedimentation control, post construction stormwater management, deeding restrictions, inspections
- Special conditions, if necessary, will be inserted into the permit in Part C



Monitoring, Inspection and Reporting

Project Contact Person:					_	
Organization:						
Email:			Phone	e #:		
		PROJECT IDEN				
Project Start Date:						
Project Address:						
County:						
Stream Name:						
			Center of Site			
104 Watershed Code:	Latitude:		Longitude	:		
Water Body: Stream		River	Lake	Pond	Dam	
TMDL/Impairment Status of Wate	erbody:					
Water Use Designation: http://ww	ww.pacode.com/se	ecure/data/025/c	hapter93/chap93toc	. <u>html</u>		
	BUFFER POT	ENTIAL TO BE	COME A MATURE I	OREST		
Reason for Buffer:			Buffer Permanent	y Protected: Yes	No	
Riparian Forest Buffer Protection	<u> </u>		Protection Status:			
Condition of Stream Bank: Laid			Forested	Needs Work	Other	
Health of Buffer: Poor State After Project Completion:	Average	Good E	xcellent			
			Existing			
% Canopy Cover (Total Ground A						
% of Ground Cover in Buffer – To			-			
BUFFER CHARACTERISTICS						
Adjacent Land Use: Herbaceous		Farm	Development			
Buffer Type: Forest Tre			Fencing Only	Fencing ar	nd Trees	
Buffer Length 1 st Side (Facing Do	Buffer Length 1 st Side (Facing Downstream): Buffer Width 1 st Side:					
Buffer Length 2 nd Side (Facing Do	ownstream):		Buffer Width 2	nd Side:		
Funding Source:						

Application Requirements for Offsetting

- Pre-application meeting strongly suggested
- If necessary, offsetting must be part of application to be considered complete.
- Elements of an Application Package
 - Riparian Forest Buffer Planting Plan
 - Riparian Forest Buffer Maintenance and **Monitoring Plan**
 - Riparian Forest Buffer Monitoring Form
 - PA Stream Buffer Tracking Form



- Step 1: Choose site for riparian forest buffer establishment
- Along special protection waters
 - Designated Use

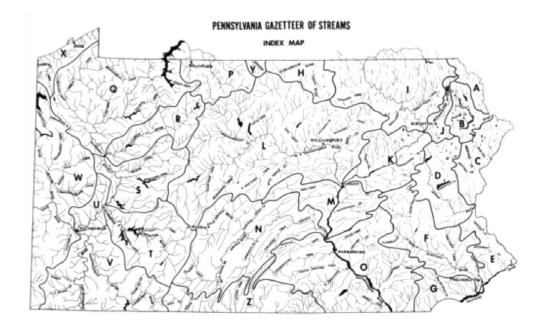
www.pacode.com/secure/data/025/chapter93/s93.9.htm

- Existing Use

www.portal.state.pa.us/portal/server.pt/community/existing_use/10557.

- •On same stream segment as area of disturbance
- •Along special protection waters
 - Riparian area where no riparian forest buffer exists

•For further guidance on site selection, **See Bipacitation** Forest Buffer Guidance Document # 394-5600-001





Additional location criteria – in decreasing order of preference:

- Site runoff characteristics similar to project area ${\color{black}\bullet}$
- Pennsylvania Natural Heritage Program, Western Pennsylvania Conservancy www.naturalheritage.state.pa.us/docs/aquatics/ACC <u>User'sManual-TitlePage,TOC,Ch.1-3.pdf</u>.
- On waters in need of a riparian forest buffer, regardless of runoff characteristics



Step 2: Determine size of replacement riparian forest buffer

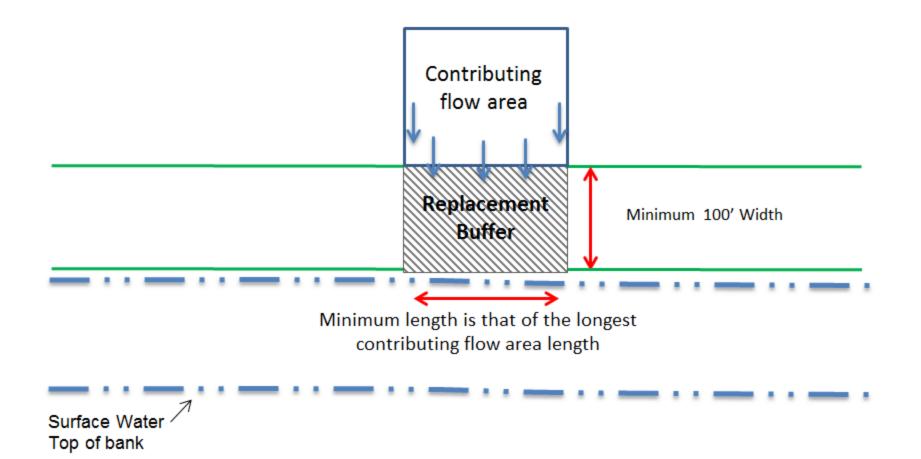
- Ratio of one to one per unit area (square foot) of buffer impact back to 150 feet from surface waters
- Replacement riparian forest buffer is at least 100 feet in width



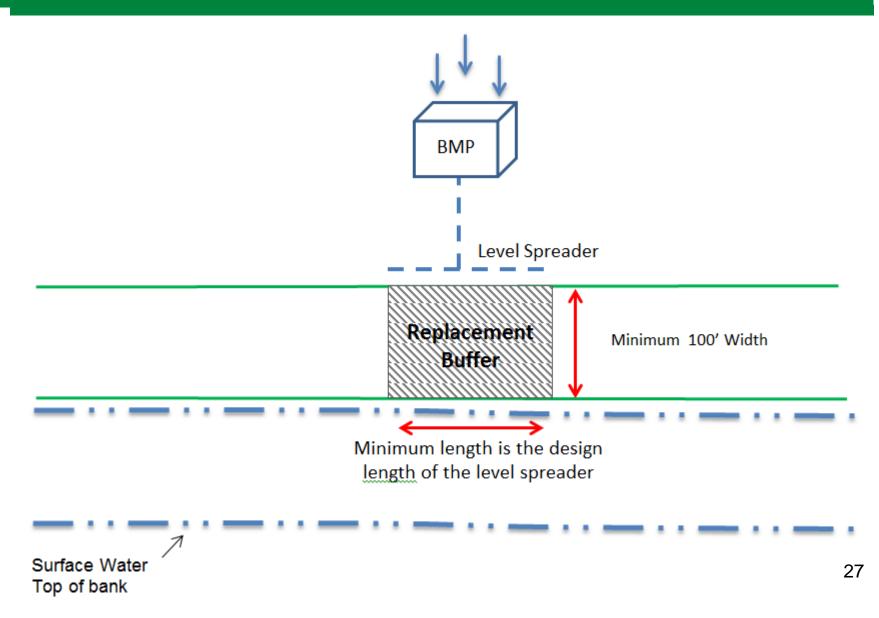
Additional sizing criteria include:

- For offsetting sites utilizing a level spreader
 - Length should be greater than or equal to the length of spreader
- For sites not utilizing a level spreader
 - Length should be greater than or equal to length of contributing flow area









Step 3: Create a riparian forest buffer planting plan

- Use diverse species of trees and shrubs
- Use native species of trees and shrubs
- Use larger (minimum caliper 2 inches for trees) more robust plantings to ensure success
- For further guidance on species composition, see *Riparian Forest Buffer Guidance Document* # 394-5600-001



Step 4: Prepare a replacement riparian forest buffer management plan as part of the post construction stormwater management plan:

- Planting plan
- Maintenance plan
- Monitoring plan
- PA Stream Buffer Tracking Form
- Long-term protection from future disturbance via an instrument (deed restriction, easement, etc.)



Appendix A - Sample Replacement Riparian Forest Buffer Planting Plan

See DEP's Riparian Forest Buffer Guidance for additional information on site assessment, native tree/shrub selection, planting, planting density, maintenance and protection (pages 28-101) at URL: www.elibrary.dep.state.pa.us/dsweb/Get/Document-82308/394-5600-001.pdf

Contact: _____ Phone Number: _____

Site Plan

Location:

Ŧ							-	
	Species	Latin Name	Size		Quantity	Pattern/Spacing		
	Equipment/Tools:	:		Site Prepara	ation:		Ľ	
	Maintenance Responsibilities:			Directions to site:				
	-							

Appendix B - Sample Replacement Riparian Forest Buffer Maintenance and Monitoring Plan

The following is a sample maintenance schedule to optimize survival of a newly planted riparian forest buffer. Keep in mind tasks are the same for each riparian forest buffer but there may be site variations, therefore, add to the schedule additional tasks that are site specific. See DEP's Riparian Forest Buffer Guidance for additional information (pages 28-101) at URL:

http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-82308/394-5600-001.pdf

Maintenance Tasks for Riparian Forest Buffers	1	2	3	4	5
Year					
Check tree shelters (March-April) <u>Suggested activities</u> : straighten and re-drive any loose stakes, replace damaged/rotten stakes; check ties and tighten or replace if needed; remove large wasp nest (before they come active); remove bird nets if tree has reached the top of the shelter.	x	x	x	x	х
Remove shelters (Spring) It is recommended to remove when trees that are at least 2 inches in diameter at top of tube; leave stake in place to deter buck rub; if tree is droopy, secure to stake with biodegradable material.			X	X	x
Herbicide application (April-May) Apply broad-spectrum herbicide to protect trees from rodents and reduce competition by other plants (add a pre-emergent herbicide advisable); ideally spray 3' strips along shelters or 4' circle spots (if not mowing the site).	X	x	x	x	
Mowing (Summer and Fall) Mow between rows at least twice between June and late September to prevent weeds going to seed, and reduce existing vegetation competition. If rodent population is high, reduce habitat by mowing additional three years in the fall only (see herbicide application above). If not mowing, spot spraying for invasive plants if needed.	X	X			
Herbicide application (mid-August-early October) Apply broad-spectrum herbicide only to control perennial noxious or invasive weeds, reduce existing vegetation competition, and protect trees from rodents (ideally spray 3' strips along shelters, but could be 4' circles)	x	X	X	X	

Appendix C - Replacement Riparian Forest Buffer Site Monitoring Form

Site Name	_Date Collected	_Collected by
Total Area (acres)	Area Sampled	Number of Plots
	Original Planti	ng Density (Trees or Shrubs per Acre)
Original Planting Density		
B&B/Containerized Saplings _	Sheltered Seed	llings
Seedlings w/o Shelters	Other	

Trees and Shrubs Counted During Monitoring

		Number of Each Plant Type					Condition*		
				B&B/					
Tree or Shrub Species	Number Counted	Planted Seedling	Sheltered Seedling	Container	Natural Regen.	Other	1	2	
TOTALS:									

*1=Healthy and free to grow, not significantly impaired or damaged. Likely to survive and grow.

*2=Damaged or impaired by some problem.

Number of Species Counted: _____

Plant Condition Summary: Percent Healthy _____% Percent Damaged _____%



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF CONSERVATION AND RESTORATION

PA STREAM BUFFER TRACKING FORM

Project Contact Person:									
Organization:									
Email: Phone #:									
PROJECT IDENTIFICATIONS									
Project Start Date:									
Project Name:									
Project Address:									
County:									
Stream Name:									
	Center of Site								
104 Watershed Code:	Latitude:		Longitud	le:					
Water Body: 🗌 Stream	U Wetland	River	Lake	Pond	🗌 Dam				
TMDL/Impairment Status of	Waterbody:								
Water Use Designation: http://www.pacode.com/secure/data/025/chapter93/chap93toc.html									
BUFFER POTENTIAL TO BECOME A MATURE FOREST									
Reason for Buffer:	ason for Buffer: Buffer Permanently Protected: Yes								
Riparian Forest Buffer Protect	ction Agreement:	Yes 🗌 No	Protection Status	S:					
Condition of Stream Bank:	🗌 Laid Back 🛛 🗌 L	Jndercut 🗌 Bare	Forested	Needs Work	Other				
Health of Buffer: 🗌 Poor	Average	Good E	xcellent						
State After Project Completion									
% Canopy Cover (Total Grou	und Area Shaded by	Woody Vegetation):							
% of Ground Cover in Buffer – Total Area Covered by Non-Woody Vegetation:									
BUFFER CHARACTERISTICS									
Adjacent Land Use: 🗌 Hert	aceous/Shrubs	🗌 Farm	Developmer	nt 🗌 Forest					

Monitoring, Inspection, and Reporting

- Monitoring, inspection and reporting requirements remain as found in Chapter 102
- Monitoring, inspection and reporting requirements will also be found in the conditions of the approved NPDES Permit, Part A - Effluent Limitations, Monitoring, and Reporting Requirements and Part C - Other Conditions
- Reporting Use PA Stream Buffer Tracking Form (#3720-FM-BCR0100)

Implementation

- Published as Interim Final in PA Bulletin

 Publication March 21st 2015
- Department's website: <u>www.dep.state.pa.us</u>
 - "Public Participation Center" → Public Comments
 → Technical Guidance"
- 60-day public comment period
 - Began March 21st 2015
 - Closes May 20th 2015
- Potential Future Rulemaking









Questions?

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