

Lincoln County

Shoreland Mitigation Guidebook



Mitigation is balancing measures that are designed, implemented, and work to restore natural functions and values that are otherwise lost through development and human activities. Mitigation is required for some shoreland development proposals.

A point system listing when mitigation points are needed and how they can be earned has been developed for Lincoln County. If mitigation points are required, permitted projects are those that result in a zero or positive net balance of points. In no instance can these points be used to offset proposed projects that fall below said minimum state standards.

An affidavit will be drafted by Lincoln County staff outlining any mitigation requirements. The affidavit must be recorded in the Lincoln County Register of Deeds office prior to granting a permit. Landowners have two years from the date an affidavit is signed to complete mitigation requirements.

Proposed Development Condition	Mitigation Required
Impervious surface coverage is greater than 15% but less than 20%	2 points
Impervious surface coverage is from 20% to 30%	3 points
Lateral expansion of nonconforming principal structure within the shoreland setback	3 points
Re-location of nonconforming principal structure within the shoreland setback	1 point

Opportunities for Mitigation	Mitigation Points Earned
1. Removal of a structure within the shoreland setback	Up to 3 points
2. Installation of a rain garden	Up to 3 points
3. Installation of a stormwater infiltration system	3 points
4. Existing compliant shoreland buffer	2 points
5. Active restoration (accelerated recovery) of a compliant shoreland buffer- 21.09(2)	3 points
6. Passive restoration (natural recovery) of a compliant shoreland buffer-21.09(1)	1 point
7. Increasing depth of an existing compliant shoreland buffer	2 points for every 15 foot increase
8. Reducing width of allowable view and access corridor(s)	1 point for every 15 foot reduction
9. Lot size is larger than prescribed minimum	1 point for every 10,000 sq. ft. Increment of lot area which may not be subdivided from remaining parcel
10. Sea wall removal and bank stabilization	3 points
11. Increasing shoreland setback of a proposed structure	1 point for every 15 foot increase beyond required (maximum of 3 points)
12. Removal of an existing artificial sand beach with active restoration (accelerated recovery) of area	1 point

1. Removal of a structure within the shoreland setback

Mitigation Intent: Improve and preserve water quality, natural scenic beauty, and natural shoreline habitat by reducing the amount of development and impervious surfaces near the shoreline.

Standards: A structure meeting the definition of Chapter 21 may be used to meet this mitigation opportunity. The size of the structure shall determine the amount of points earned.

Structure Size	Mitigation Points Earned
0-250 square feet	1 point
250-500 square feet	2 points
Greater than 500 square feet	3 points



Photo courtesy of Robert Korth, UW-Extension Lakes Partnership

2. Installation of a rain garden

A shallow depression landscaped with suitable native vegetation, engineered and designed to capture and infiltrate stormwater.

Mitigation Intent: Improve and preserve water quality by offsetting the impacts associated with surface runoff on a developed shoreland property.

Standards: The rain garden must be located outside of the shoreland buffer, designed to conform to property constraints, and located a reasonable distance to septic systems, building foundations, and lot lines. A rain garden should capture and infiltrate the runoff volume for a minimum of a 10 year, 5 minute rain event. Rain gardens are not suitable on land containing impermeable soil types or steep slopes. The total amount of surface area of impervious surfaces being treated by a rain garden shall determine the amount of points earned.

Treated Impervious Surfaces	Mitigation Points Earned
0-250 square feet	1 point
250-500 square feet	2 points
Greater than 500 square feet	3 points

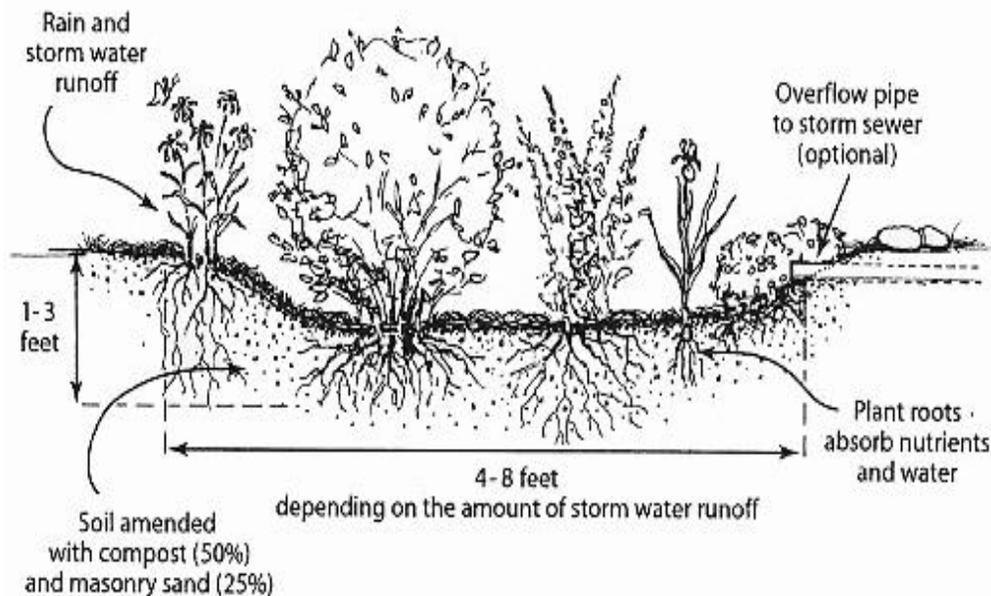


Figure: Cornell University

References:

- Rain Gardens - UW Extension
- Rain Gardens-A how-to for homeowners - WDNR
- Gardens - Applied Ecological Services Inc.
- Build Your Own Rain Garden - WDNR Magazine

3. Installation of a stormwater infiltration system – 3 points

An engineered system designed to absorb the accumulated water from a rainfall event

Mitigation Intent: Improve and preserve water quality by offsetting the impacts of surface runoff associated with a developed shoreland property.

Infiltration Practices: Infiltration trenches, Infiltration chambers, drywells, grass swales, and other comparable practices.

Standards: A stormwater infiltration system must be located outside of the shoreland buffer, designed to conform to property constraints, and located a safe distance to septic systems, building foundations, and lot lines. The design should be consistent with the scale of the proposed project and contain an enforceable maintenance schedule. A stormwater infiltration system may be installed in areas which meet the following criteria:

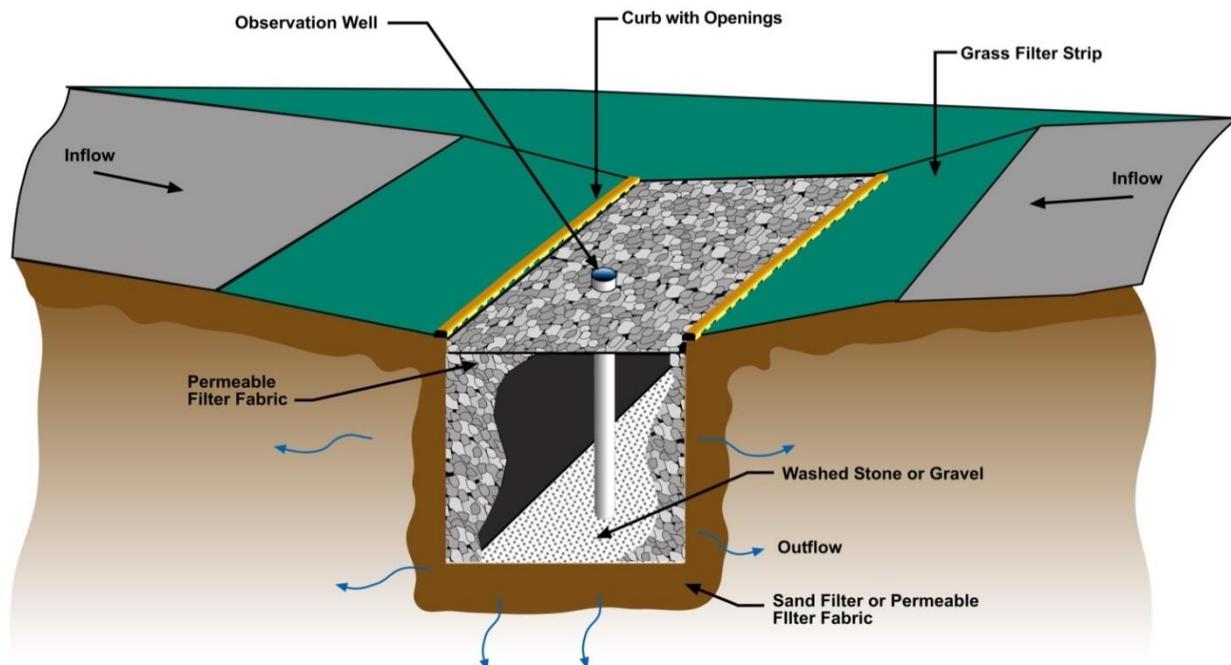
- The native soils must be permeable for the purposes of infiltration.
- The bottom of the stone reservoir should be completely flat so that infiltrated runoff will be able to penetrate through the entire surface.
- Where possible, the bottom of the system should be at least 3 feet above groundwater, and a safe distance from drinking water wells. (The minimum setback is 25 feet).

Typical Design: The system should capture and release the collected stormwater from a 1.5 inch rain event within a 48 hour period and safely pass through or bypass the flows produced by the 24 hour, 100-year storm.

Infiltration trench

Typical elements:

- Native soils suitable for infiltration
- Design overflow to minimize impacts to lakes and streams
- Maintain safe separation from groundwater and bedrock



Example

Image: www.keneulie.wordpress.com

Infiltration chamber or drywell

Typical elements:

- Prefabricated or stone stormwater storage device with direct subsurface infiltration to native soils, similar to how a septic system functions
- Native soils suitable for infiltration
- Maintain safe separation from groundwater and bedrock



Example

Image: tetoomey.com

References:

[Site Evaluation for Stormwater Infiltration - WDNR](#)

[Vegetated Swale Technical Standard - WDNR](#)

[Infiltration\Storm Water Basins UWEX Sheboygan County Stormwater Manual](#)

[Grassed Swales - EPA](#)

[Infiltration Basin - EPA](#)

[Infiltration Trench - EPA](#)

[Wisconsin Stormwater Manual - WDNR](#)

[www.stormwatercenter.net](#)

Grass swale

Typical elements:

- Grass surface
- Stone subsurface similar to infiltration trench
- Native soils suitable for infiltration
- Design overflow to minimize impacts to lakes and streams
- Maintain safe separation from groundwater and bedrock



Example

Image: WDNR



Example

Image: www.fairfaxcounty.gov

4. Existing compliant shoreland buffer- 2 Points

A shoreland buffer is the area of protected vegetation located between the ordinary high water mark and a point that is located at least 35 feet inland. An existing compliant shoreland buffer should contain three distinct layers including a native tree canopy, shrub layer, and groundcover layer, except for closed canopy forest types such as pine and hemlock. Shoreland buffers may include a cleared view and access corridor meeting the requirements of 21.09(2) of the Lincoln County Shoreland Ordinance.

Mitigation Intent: Shoreland buffers prevent erosion, limit sedimentation and provide filtering so as to protect and enhance water quality and to provide a diverse shoreland habitat area.

Standards: See 21.09(2) of the Lincoln County Shoreland Ordinance.

5. Active restoration (accelerated recovery) of a shoreland buffer- 3 points

The active restoration of a shoreland buffer involves planting native vegetation at suitable densities and restricting mowing, trimming, and raking from the ordinary high water mark to a point that is at least 35 feet inland. A compliant shoreland buffer should contain three distinct layers including a native tree canopy, shrub layer, and groundcover layer, except for closed canopy forest types such as pine and hemlock. Shoreland buffers may include a cleared view and access corridor meeting the requirements of 21.08(2) of the Lincoln County Shoreland Ordinance.

Mitigation Intent: Shoreland buffers prevent erosion, limit sedimentation and provide filtering so as to protect and enhance water quality and to provide a diverse shoreland habitat area.

Standards: See 21.09(2) of the Lincoln County Shoreland Ordinance.



6. Passive restoration (natural recovery) of a shoreland buffer- 1 point

Passive restoration of a shoreland buffer involves restricting mowing, raking, and trimming and allowing natural regeneration of the landscape to occur from the ordinary high water mark to a point that is at least 35 feet inland. A passive shoreland buffer may only serve as the restoration if tree, shrub and ground cover layers are already present in acceptable densities and the site is suited for natural regeneration. A compliant shoreland buffer should contain three distinct layers including a native tree canopy, shrub layer, and groundcover layer, except for closed canopy forest types such as pine and hemlock. Shoreland buffers may include a cleared view and access corridor meeting the requirements of 21.08(2) of the Lincoln County Shoreland Ordinance..

Mitigation Intent: Shoreland buffers prevent erosion, limit sedimentation and provide filtering so as to protect and enhance water quality and to provide a diverse shoreland habitat area.

Standards: See 21.09(1) of the Lincoln County Shoreland Ordinance. Passive restoration is not applicable on landscapes containing large concentrations of invasive species or in areas mainly vegetated with turf grass.



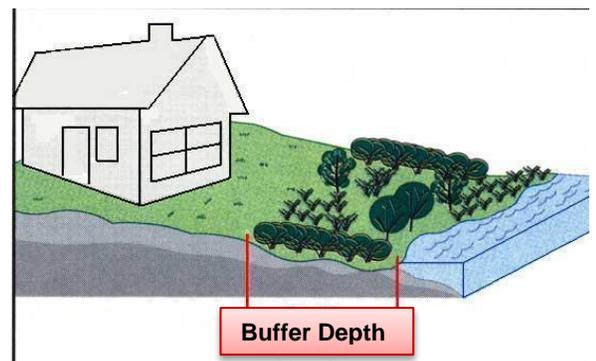
Image: WDNR

7. Increasing depth of an existing compliant shoreland buffer- 2 points for every 15 foot increase

The depth of an existing shoreland buffer may be increased beyond 35 feet through active restoration, passive restoration, or by maintaining existing vegetation already present in acceptable densities. Shoreland buffers may include a cleared view and access corridor meeting the requirements of 21.08(2).

Mitigation Intent: Shoreland buffers prevent erosion, limit sedimentation and provide filtering so as to protect and enhance water quality and to provide a diverse shoreland habitat area. Deeper shoreland buffers have more capacity to provide stormwater filtering, shoreland erosion control, and fish and wildlife habitat.

Standards: see 21.09(1) of the Lincoln County Shoreland Ordinance if passive restoration is used to increase the depth of an existing shoreland buffer. See 21.09(2) of the Lincoln County Shoreland Ordinance if active restoration is used to increase the depth of the existing shoreland buffer. A compliant shoreland buffer should contain three distinct layers including a native tree canopy, shrub layer, and groundcover layer, except for closed canopy forest types such as pine and hemlock.



8. Reducing width of view and access corridor(s) - 1 point for every 15 foot reduction

The width of a view and access corridor located within an existing compliant shoreland buffer may be reduced through active restoration, passive restoration, or by maintaining existing vegetation already present in acceptable densities. The allowable width for cleared view and access corridor(s) is listed in 21.08(2) of the Lincoln County Shoreland Ordinance.

Mitigation Intent: Shoreland buffers prevent erosion, limit sedimentation and provide filtering so as to protect and enhance water quality and to provide a diverse shoreland habitat area. The additional vegetation within a shoreland buffer by reducing an opening to the water will provide for more fish and wildlife habitat, stormwater filtering, and erosion control.

Standards: see 21.09(1) of the Lincoln County Shoreland Ordinance if passive restoration is used to reduce the width of a view and access corridor. See 21.09(2) of the Lincoln County Shoreland Ordinance if active restoration is used to reduce the width of a view and access corridor. A compliant shoreland buffer should contain three distinct layers including a native tree canopy, shrub layer, and groundcover layer, except for closed canopy forest types such as pine and hemlock.



Image: University of Wisconsin- Extension

9. Lot size is larger than the prescribed minimum – 1 point for every 10,000 square foot increment of lot area which may not be subdivided from remaining parcel

Minimum prescribed lot area is listed in 21.07(1) of the Lincoln County Shoreland Ordinance or Chapter 17 if there is an underlying zoning district. The underlying zoning district lot size requirements shall only apply when they impose greater restrictions than listed in the Shoreland Ordinance.

Mitigation Intent: Larger lot sizes afford more protection against pollution of the adjacent body of water by reducing the overall amount of impervious surfaces, structures, and intensity of use of the shoreland area.

Standards: Refer to the minimum prescribed lot area listed in 21.07(1) of the Lincoln County Shoreland Ordinance for townships without comprehensive zoning. Refer to the minimum lot size for the applicable zoning district listed in Chapter 17 of the Lincoln County Ordinances for properties in townships with comprehensive zoning. For example: a parcel of land is zoned rural residential 1 (RR-1) and the minimum lot size required is 30,000 square feet. One mitigation point may be earned if the lot area measures at least 40,000 square feet and an affidavit is recorded in the register of deeds restricting any subdivision of the parcel of land.

10. Sea wall removal and bank stabilization – 3 points

Removal of a sea wall followed with stabilization of the bank using rock rip-rap, bio-logs, native vegetation, or other suitable stabilization practices. A sea wall is a vertical shoreline stabilization structure usually constructed of railroad ties, wood beams, or concrete block, located at the OHWM, and constructed to deflect wave-action and armor the bank.

Mitigation Intent: Re-establish the connection between the water’s edge and the land for nearshore insects, animals, birds, reptiles, and amphibians. Reduce the velocity and impact of wave action on the adjacent shoreline. Restore natural shoreline vegetation to promote natural landscapes and improved erosion control.

Standards: The removal of a sea wall followed with stabilization of the bank using an approved method. This mitigation choice is subject to DNR approval/concurrence of the proposed project. Rock rip-rap may be required to effectively stabilize a bank which is highly prone to erosion and undercutting from wave action. All components of an existing sea wall must be removed to meet the intent of this mitigation choice.



Before



After

11. Increasing the required shoreland setback for structures— 1 point for every 15 foot increase beyond required (maximum of 3)

Increase the required shoreland setback for structures on a property. The minimum setbacks for structures are listed in 21.07(4) or, if applicable, 21.07(5) of the Lincoln County shoreland ordinance.

Mitigation Intent: Reduce impacts to a waterway associated with development activities by locating structures further from the shoreline.

Standards: All structures on the property must meet the increased setback, except for those exempt in 21.07(6). The required setback for a structure is listed in 21.07(4) or, if applicable, 21.07(5) of the Lincoln County shoreland ordinance. Exempt structures listed in 21.07(6) are not subject to the increased setback requirements placed on a parcel.

12. Removal of an existing artificial sand beach at least 200 sq. ft. in size within 35 feet of the OHWM with active restoration (accelerated recovery) of area - 1 point

The removal of an existing sand beach which is not naturally occurring, within 35 feet of the ordinary high water mark, followed with active restoration of the area where the beach was removed.

Mitigation Intent: Reduce bank recession, restore diverse fish and wildlife habitat, and stabilize the ground in near shore areas.

Standards: An existing beach must have been artificially created and be located within 35 feet of the OHWM of the waterway to qualify for this mitigation choice. Complete removal of all artificial components of the beach including sand, decorative elements, and edging or border materials is required. The ground in the area where the beach is removed must be amended with top soil or compost prior to establishing native vegetation. The density of plants required to actively restore the area where the beach is removed is subject to 21.09(2) of the Lincoln County shoreland ordinance.



Existing 25' x 10' beach with wooden retaining walls

