U-5 URBAN NUTRIENT MANAGEMENT

PRACTICE AT A GLANCE

Pervious lands comprise nearly 10% of the total watershed area of the Chesapeake Bay, of which about 80% is specifically devoted to home lawns. Better management of fertilizer and turf biomass can help reduce nutrient runoff, especially from high risk lawns.

Two different credits are available to Bay communities.

- The first is a state-specific phosphorus reduction credit that reflects the adoption of state-wide legislation to limit or eliminate phosphorus in fertilizer products sold to the consumer. These recent laws prompted the fertilizer industry to phase phosphorus out of its products, so even states that have not yet passed laws are eligible for phosphorus reduction credit. Local governments do not have to do anything to receive the credit.

- The second is a site-specific credit for properties that employ ten core urban nutrient management practices, as confirmed by a written plan or pledge. Both a nitrogen and phosphorus reduction credit are given, the actual size of which is based on the risk that the lawn will export nutrients to the Bay. Local governments simply report the aggregate acres of urban land that are subject to Urban Nutrient Management (UNM) plans on an annual basis to get the credit.

Every community in the Chesapeake Bay will want to maximize the use of UNM practices on both public and private turf as a major strategy to help meet the Bay pollution diet.

In general, the costs for UNM planning are low in relation to other practices, and reporting and record-keeping requirements for local agencies are fairly modest. UNM plans need to re-confirmed every 3 years to verify practices, and renew the credit for an additional three years.

PRACTICE DESCRIPTION

Urban Nutrient Management is defined as the proper management of major nutrients for turf and landscape plants on a property to best protect water quality. Ten core practices can make lawn's more Bay-friendly and reduce the risk that fertilizers or plant biomass will be exported to the Bay. When combined with much lower phosphorus content in lawn fertilizer due to recent state laws, these practices can greatly reduce the risk that nitrogen and phosphorus will get into stormwater or move through groundwater.

1. Maintain a dense cover of grass or conservation landscaping to reduce runoff, prevent erosion, and retain nutrients

2. Reduce or Eliminate Fertilizer:

    a. Choose not to fertilize, OR
    b. Adopt a Reduce Rate/Monitor Strategy, OR
    c. Apply less than a pound of Nitrogen per 1000 square feet per each individual application.

3. Do not apply fertilizers before spring green up or after the grass becomes dormant

4. Maximize use of slow release N fertilizer

5. Immediately sweep off any fertilizer that lands on a paved surface

6. Never apply fertilizer within 15 to 20 feet of any water feature and manage this zone as a grass, meadow, or forest buffer.

7. Keep clippings and mulched leaves on the lawn and keep them out of streets and storm drains

8. Set mower height at 3 inches or taller

9. Use other practices to increase the porosity and infiltration capability of your lawn to treat stormwater.

10. Consult with your local extension service office or lawn care company to get the best advice on how to have a Bay-friendly lawn, which might involve a soil test analysis.

No credit is given for sediment removal for UNM plans, although it is clearly recognized that dense vegetative cover should reduce the risk of soil erosion.

Some of the benefits associated with urban nutrient management are:

- Can keep pesticides and other toxins out of our streams and rivers
- Prevent erosion and soil loss
- Reduce turf and landscape maintenance costs
- Provide more healthy, attractive and durable ground cover

BEST PRACTICES FOR URBAN NUTRIENT MANAGEMENT

Maintain dense turf cover; avoid bare soils

Sweep fertilizer off of pavement

Keep clippings out of storm drain

Conservation Landscaping instead of turf

- Can create habitat in conservation landscapes

Some communities may allow for a UNM pledge whereby homeowners sign a written agreement to implement the ten core UNM practices on their lawn, after an on-site visit from a trained professional to assess risk factors and test soils. The nutrient reduction credit for homeowner pledges is slightly less than for lawns that have a qualified UNM plan.

WHERE TO FIND THE BEST OPPORTUNITIES IN YOUR COMMUNITY

The best opportunities to target urban nutrient management are to identify areas of turfgrass that have the greatest potential for nutrient export. High risk areas may have one or more of the following characteristics:

- Owners are currently over-fertilizing beyond state or extension recommendations
- Soils are phosphorus--saturated soils as determined by soil analysis
- Newly established turf
- Steep slopes (more than 15%)
- 5% or more of the soil is exposed soil for managed turf or more than 15% of the soil is exposed for unmanaged turf
- Water table within 3 feet of soil surface
- Over-irrigated lawns
- Soils that are shallow, compacted or have low water holding capacity
- High use areas
- Sandy soils, or soils with infiltration rates more than 2 inches per hour
- Within 300 feet of a stream, river, or Bay
- Located on karst terrain
- Active construction sites

The first place to start in your community are the turf found on public lands, which can represent as much as 15% of all the pervious land in a community. These lands include parks, schools, road right of ways, athletic fields and municipal open space. It makes sense to make sure all of them are covered by an updated urban nutrient management plan, regardless of whether they are currently fertilized or not.

The next step is to work with residents, businesses and institutions to apply UNM practices on private lands, usually in partnership with a local UNM plan provider. Some counties have contracted directly with cooperative extension or other qualified agency to provide direct technical assistance on UNM plans to local land owners.

Most local planning agencies have good GIS systems that can map key land use and data layers that are at the highest risk for nutrient export. By mapping the dozen factors linked to high nutrient export, communities can identify which parts of their jurisdiction should be targeted for more intensive outreach.

Some of the highest risk for fertilizer wash off occurs at active construction sites, so it makes sense to require developers to prepare UNM plans as part of their overall plan for erosion and sediment control during construction.

GENERAL COST INFORMATION

In general, the costs to write UNM plans are low in relation to other urban practices, although they need to be renewed every three years. Most of the cost for UNM is incurred to assess properties, train staff and prepare plans or pledges. Over time, additional costs are incurred to report, track and verify individual UNM plans, and to communicate with individual landowners.

TIPS FOR GETTING STARTED IN YOUR COMMUNITY

Urban nutrient management ranks as the most state-specific restoration practice used for the Bay pollution diet. So you will need check with the appropriate agency in your state to figure out how the two UNM credits are actually applied in your community.

It is a good idea to review your procurement contracts for routine landscape maintenance on public lands to ensure these crews are trained and qualified to implement UNM plans.

If municipal lands are maintained by public employees, you should make sure that supervisors and other crew receive proper UNM training to reduce fertilizer washoff.

Work with a good UNM partner, such as master gardeners, soil conservation district, cooperative extension or a local watershed group to act as the retail provider to the general public.

Some degree of public outreach is critical to get residents engaged in UNM plans and other stewardship practices (See U-3). If your community has a MS4 stormwater permit, you are already required to educate the public about stormwater. Therefore, it is a great idea to leverage these existing outreach programs to get the message out about urban nutrient management in your community.

WHAT DEGREE OF TECHNICAL SUPPORT IS NEEDED

The technical support and qualifications needed to write a UNM plan varies in each Bay State. Even the voluntary adoption of a homeowner pledge requires a site visit by a trained professional to assess risk factors at a site and conduct a soil test to determine the nutrient requirements for turfgrass. Localities should consult with State agencies to determine information requirements for UNM plans which are presented in the resources section.

COMPUTING THE POLLUTANT REMOVAL CREDIT

The statewide credit for UNM is based on the adoption of fertilizer legislation that restricts phosphorus application of fertilizers. The specific phosphorus reduction for urban land is shown in **Table 1**. The credits for applying UNM practices on an individual property are shown in **Table 2**.

There are three levels of risk: high, low and blended. High risk lawns exhibit one or more of the 'risk factors' listed above, while low risk lawns do not. A blended risk level may be considered a 'default' if a locality does not have data to characterize the acreages of pervious land as either high or low risk. **Table 2** provides an example unit load reduction based on a residential homeowner pledge and credit for a UNM plan for the same area.

Table 1. Statewide Credit for Phosphorus Fertilizer	
Management Action	**Phosphorus Reduction**
Statewide Fertilizer Legislation	25%
No Statewide Fertilizer Legislation	20%
Special UNM Notes: • Due to the nature of its law, Maryland is also eligible for a modest statewide nitrogen reduction	

Table 2. Credit for Urban Nutrient Management Plans		
Management Action	**Nitrogen Reduction**	**Phosphorus Reduction**
Low Risk	6%	3%
High Risk	20%	10%
Blended	9%	4.5%

HOW TO REPORT THE PRACTICE TO THE STATE

Initial text provided for review and input requested from States and DC

For the most part each State tracks pervious acres under urban nutrient management plans. More specifically UNM is reported in the following manner:

- Maryland: As a result of statewide fertilization that impacts both nitrogen and phosphorus applications, the State takes credit for the acreage of pervious land serviced by commercial applicators and a smaller nitrogen credit for the acreage of home lawns managed by do-it-yourselfers. Localities **CAN NOT** take credit for Urban Nutrient Management plans.

- Virginia: Virginia's Urban Nutrient Management Program utilizes Certified Urban Nutrient Management Planners who develop nutrient management plans for home lawns, turf areas, landscape areas, and golf courses. These plans must conform to the States' Standards and Criteria and are submitted to DCR for approval. Plans are valid for 3 years and include acres, location, and watershed. MS4 jurisdictions are required to develop Urban Nutrient Management plans for municipal lands over 1 acre receiving nutrient inputs, which they **CAN NOT** take credit for outside of meeting their permit requirement. Localities **CAN** take partial credit for Urban Nutrient Management plans on private land

- District of Columbia:

- Delaware, Pennsylvania, and West Virginia: These states do not have fertilizer legislation or well developed Urban Nutrient Management Programs. However, due to the industry phase-out of phosphorus in lawn fertilizer, these states still receive a nutrient reduction credit for TP which varies by state._Localities **CAN** take credit for Urban Nutrient Management plans which address the UNM criteria and include acres, location, date, lifespan of plan, and risk type (High; Low; Blended).

- New York:

WHAT IS REQUIRED TO VERIFY THE PRACTICE OVER TIME

Initial text provided for review and input requested from States and DC

The verification procedures for UNM plans are handled differently by each State, as shown below.

- Maryland: The State is responsible for verifying the credit through the use of surveys, reports from applicators, and fertilizer sales.
- Virginia: The state keeps UNM plans on record and periodically audits a sub-sample of certified applicators and certified planners to verify compliance with the UNM plan.
- District of Columbia:
- Delaware, Pennsylvania, West Virginia: There are no statewide programs and therefore individual localities will need to work with the state agency to determine verification standards. Verification at a minimum involves an affirmation by the plan writer, property owner or operator that the UNM plan is still valid, and is still being implemented. An audit of a sub-sample of plan writers or property owners to verify compliance with the UNM plan will also need to occur.
- New York:

RESOURCES

The following resources are available for help with all aspects of this practice:

Type of Resource	Title of Resource	Web link
Expert Panel Report	Recommendations of the Expert Panel to Define Removal Rates for Urban Nutrient Management (2013)	http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2015/03/CBP-APPROVED-FINAL-UNM-EXPERT-PANEL-REPORT-032514_SHORT.pdf
Archived webcast	Urban Nutrient Management to Help Restore the Chesapeake Bay (2014)	http://chesapeakestormwater.net/events/webcast-urban-nutrient-management/
Expert Panel Appendix B	Appendix B: Public Lands Literature Review	http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2015/03/Appendix-B-Public-Lands-Literature-Review.pdf
Expert Panel Appendix C	Appendix C: Sample Urban Nutrient Management Plan	http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2015/03/Appendix-C-Sample-Urban-Nutrient-Management-Plan.pdf
'FAQ' document	Technical Requirements for Entering the UNM Practice into Scenario Builder (2013)	http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Appendix-F-Tech-Requirements-to-Enter-UNM-Practices-in-Scenario-Builder.pdf
Do It Yourself Guide	Homeowner Guide For a More Bay-Friendly Property (2014)	http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/04/Homeowner-Guide.pdf
Paper	New England Regional Nitrogen and Phosphorus Fertilizer and Associated Management Practice Recommendations for Lawns Based on Water Quality Considerations (2008)	http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/05/NE_WQ_Fert_Rec_Guillard2008.pdf
More Tools & Resources		http://chesapeakestormwater.net/training-library/urban-restoration-techniques/urban-nutrient-management/