



# Stormwater 101

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# What is Stormwater?

Precipitation (rain, snowmelt) that flows over land or impervious surfaces like streets and roofs, picking up pollutants (oil, trash, chemicals) and carrying them into storm drains, rivers, and lakes.



Image: <https://dec.vermont.gov/watershed/stormwater>

# What's the Big Deal?

Inadequate stormwater management can lead to flooding.

Runoff carries pollutants to rivers, lakes, the Chesapeake Bay, and beyond.



# Types of Stormwater Facilities

- Dry Ponds: remain dry between storms, flow control (dry detention)
- ✓ Wet Ponds: always have water, filters water and slows the flow (stormwater pond)
- ✓ Filtration Facilities: temporarily holds stormwater, filtering and slowing the flow (bioretention, rain garden)
- ✓ Infiltration Facilities: allow stormwater to soak into the ground (infiltration trench, basin)
- ✓ Bio-swales: vegetated, shallow, open channels, slow and filter stormwater using plants and soil
- Other: underground detention, porous and permeable pavement, rain barrels



**Example Wet Pond**



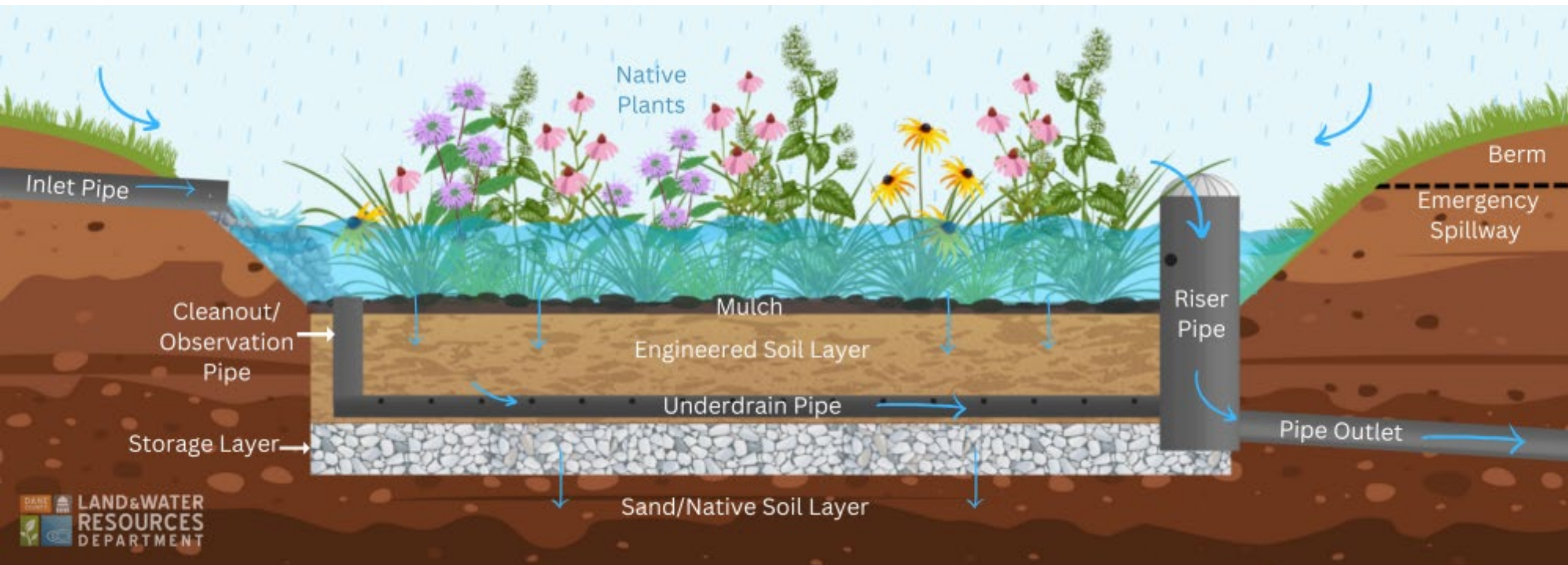
**Example Bio-Swale**



**Example Infiltration Facility**



**Example Filtration Facility**



# Stormwater Permitting

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- Baltimore County requires Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) for all development / redevelopment projects disturbing 5,000+ sq ft.
- Projects must use (ESD) to treat stormwater at the source. Redevelopment must provide 50% impervious reduction or equivalent water-quality treatment.



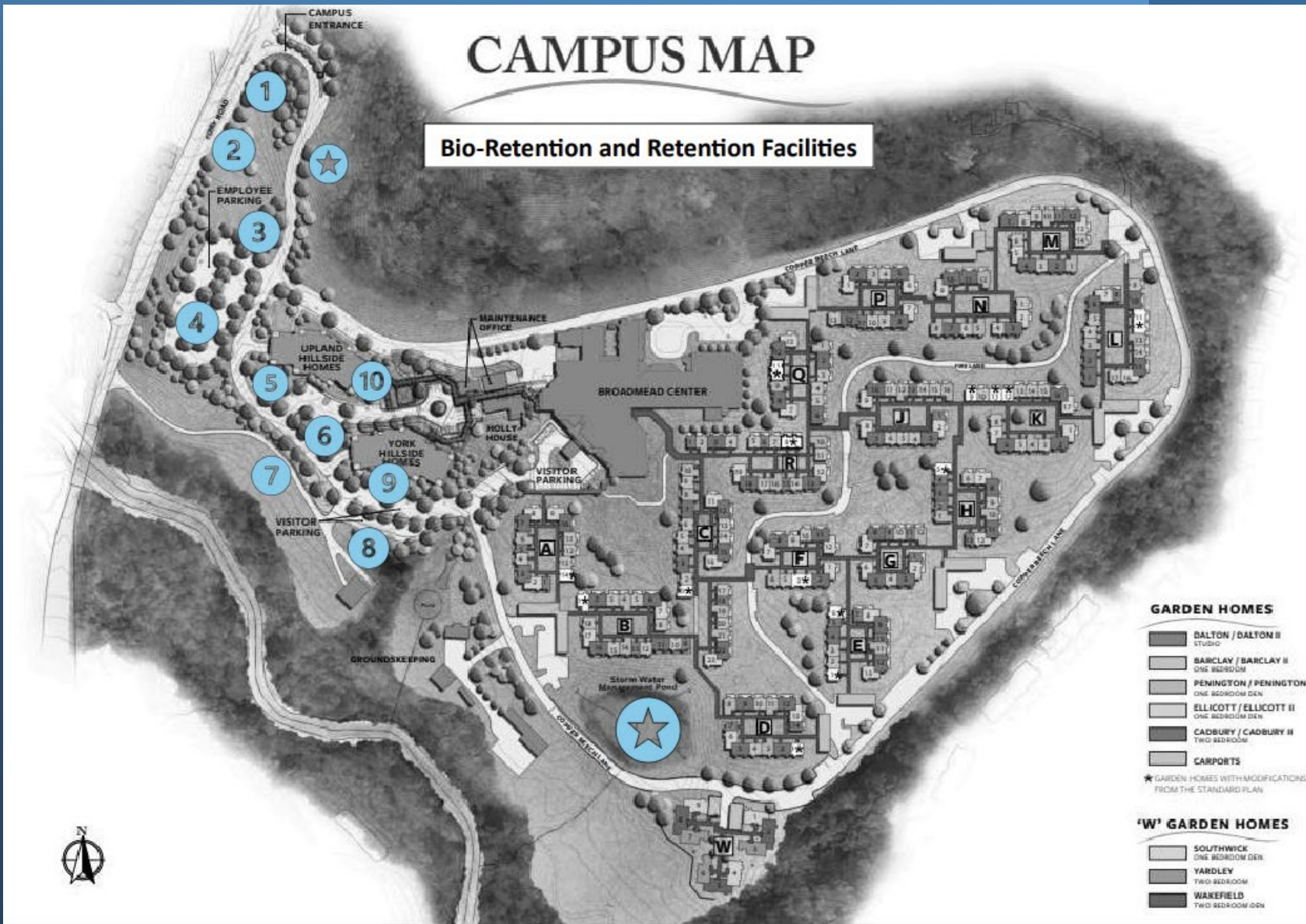


## **Wildlife Benefits of Stormwater Management Facilities**

- **Habitat Creation**
- **Biodiversity**
- **Breeding and Feeding Grounds**
- **Water Source**
- **Food Web Support**
- **Wildlife Corridors**
- **Temporary Carbon Sequestration**
- **Reduce heat-island effect in urban areas**
- **Bonus: can be quite beautiful**

# CAMPUS MAP

## Bio-Retention and Retention Facilities



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13801 York Road, Cockeysville, MD 21030  
 visit [broadmead.org](http://broadmead.org) or call 443.578.8008

# Maintenance

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- County inspections every 3 years
- Routine maintenance scheduled spring & fall
- As needed - remove litter and debris, replant, stabilize
- Follow Best Management Practices from available manuals









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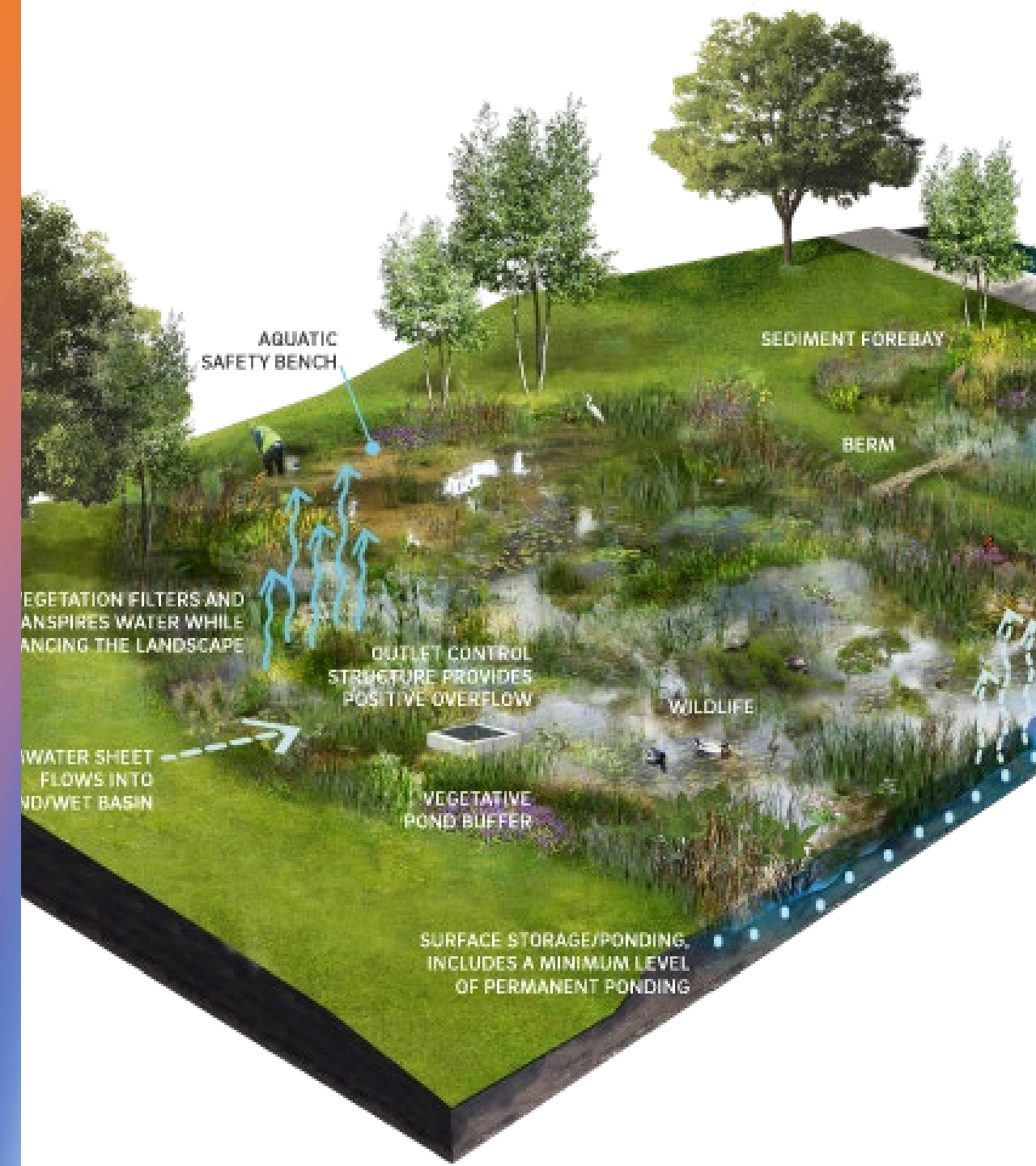
## Topics of Interest at Broadmead – Lake Maybe

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- Aquatic plantings
- Sediment accumulation
- Wildlife habitat management

## Aquatic Plantings – State Manual Considerations

- Maryland State Stormwater manual: “Wherever possible, wetland plants should be encouraged in a pond design.”
- “Annual mowing of the pond buffer is only required along maintenance rights-of-way and the embankment. The remaining buffer can be managed as a meadow... or forest.”
- “Natural vegetation should be retained in an undisturbed state wherever possible.”
- The manual does not recommend removing vegetation unless it is impeding function.



# Sediment accumulation

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- Stormwater ponds fill in through the accumulation of sediment, which is carried by surface level stormwater from upland erosion.
- Lake Maybe is surrounded by grass, which controls erosion, and impedes sedimentation.
- The manual does not recommend removing aquatic vegetation to prevent sedimentation.



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# Wildlife habitat management

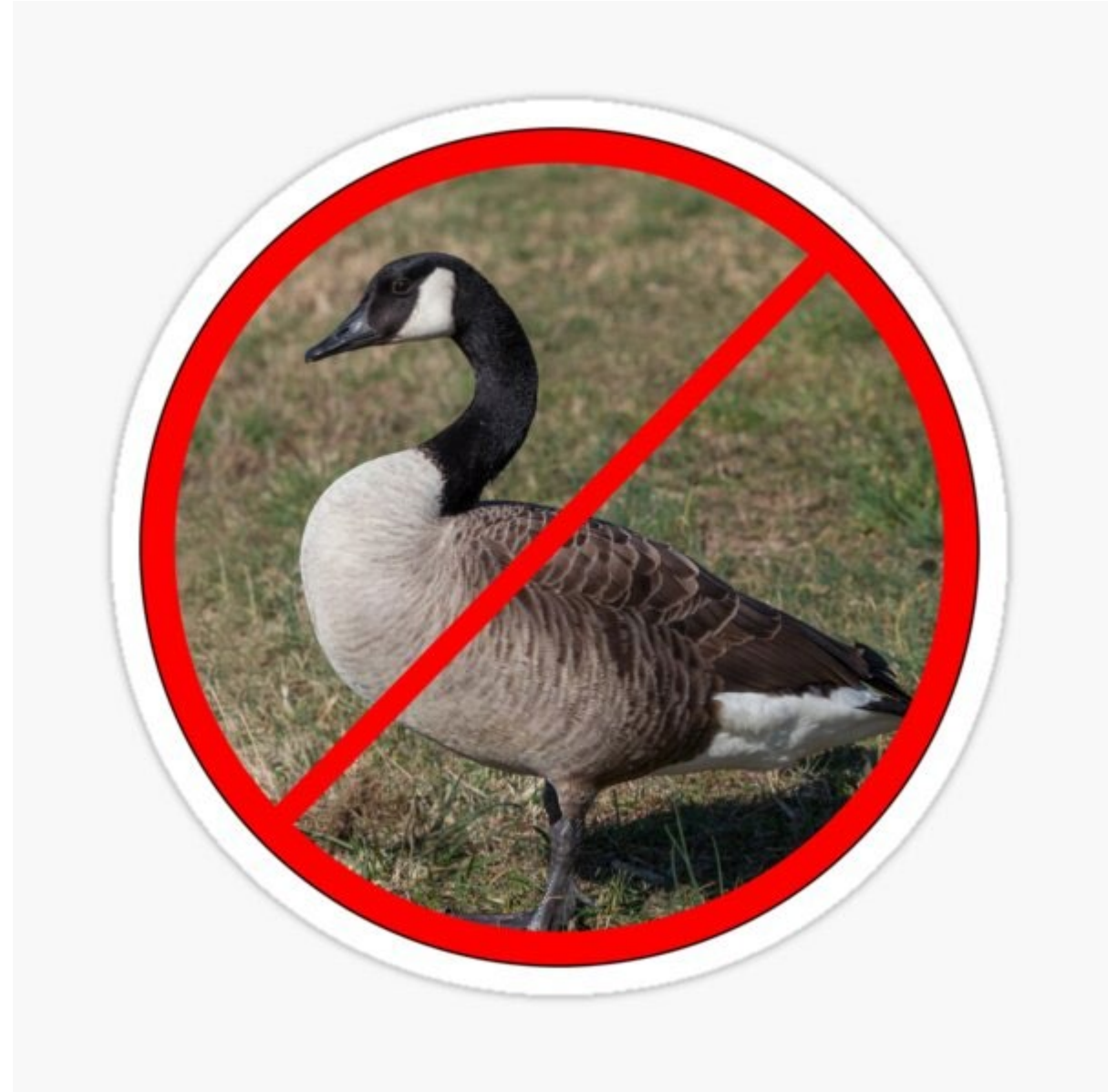
- It is illegal to disturb migratory bird nests and otter dens.
- Red-winged Blackbirds arrive as early as late February.
- Ducks may be migratory or resident.
- If we want to enjoy a variety of species, they need nesting habitat when they arrive.
- Otters are active year-round and their dens should not be disturbed if found in Lake Maybe.



Otter Den Example

# Wildlife habitat management

- Canada Geese can be a nuisance in large numbers due to high-volume waste, aggressive behavior, damage to turf and plantings, and pose a hazard to drivers.
- Geese prefer open, short-grass habitats.
- The State Manual suggests a variety of vegetation to deter Canada Geese.



## Management of Lake Maybe

- Formal inspection and permitting every 3 years
- Manage vegetation as needed for function
- Remove invasive species
- Protect wildlife as required by law





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