TOWN OF FRANKLIN

Stormwater Control Measure (SCM) Inspection & Maintenance Training

May 2024

Presented By: Leyna Tobey, PE & Ross Tsantoulis, PE

What is Stormwater?

Precipitation or snow melt that flows off land and impervious surfaces (driveways, sidewalks, buildings, etc.).

Natural Landscape

Developed Landscape

Why Managing Stormwater is Important

Stormwater runoff, if left untreated/unmanaged, can cause several problems:

Water Quality

Excessive nutrients, like phosphorus, in a waterbody can cause algal blooms which are harmful to humans and wildlife. Lack of treatment can lead to “impaired waters,” which have an accumulation of contaminants.

Erosion

Heavy runoff can cause soils to deteriorate which can lead to property damage and tree destruction. Further erosion can also lead to an increase in sediment transport to waterways.

Flooding

Significant precipitation events can cause runoff to accumulate in roadways and properties instead of discharging to a storage area or waterbody.

Infrastructure Damage

Accumulation of precipitation can find new flow paths with little resistance, which can lead to damage of pavement/roads, bridges, culverts, utilities and buildings.

How Do We Manage Stormwater?

- Stormwater runoff is collected and moved through conveyance infrastructure, including catch basins, manholes, and pipes, and ultimately discharges to waterbodies, such as wetlands, lakes, and rivers. Some stormwater conveyance systems discharge runoff into structures called **Structural Control Measures (SCMs)**.
- SCMs are permanent structures and/or facilities constructed and operated to reduce the pollutants in stormwater.
- The purpose of SCM infrastructure is to capture, convey, and treat runoff via filtration, infiltration, and/or biological processes.

Town Regulations

Franklin stormwater bylaws require owners of SCMs to perform and document routine maintenance activities.

Franklin Bylaws: ecode360. com/10434353#10434382

Contact:

Derek Adams
Stormwater & Environmental Affairs Superintendent
Town of Franklin, MA
dadams@franklinma.gov | 508-553-5500

MS4 General Permit

The Town of Franklin, under the requirements of their United States Environmental Protection Agency's (EPA's) Municipal Separate Storm Sewer System (MS4) General Permit, must reduce its phosphorus loading from stormwater discharges into the Charles River Watershed.

Reduction of ~2,220 lbs of phosphorus required by 2038

Every pound of phosphorus removed from stormwater will save Franklin and its property owners $50,000 - $100,000

Franklin's Participation: https://www.franklinma.gov/stormwater-division

Common Types of Stormwater Control Measures

Dry Detention Basins

Infiltration Basins

Rain Garden

Common Types of Stormwater Control Measures

Wet Ponds

Gravel/Constructed Wetland

Vegetated Swale

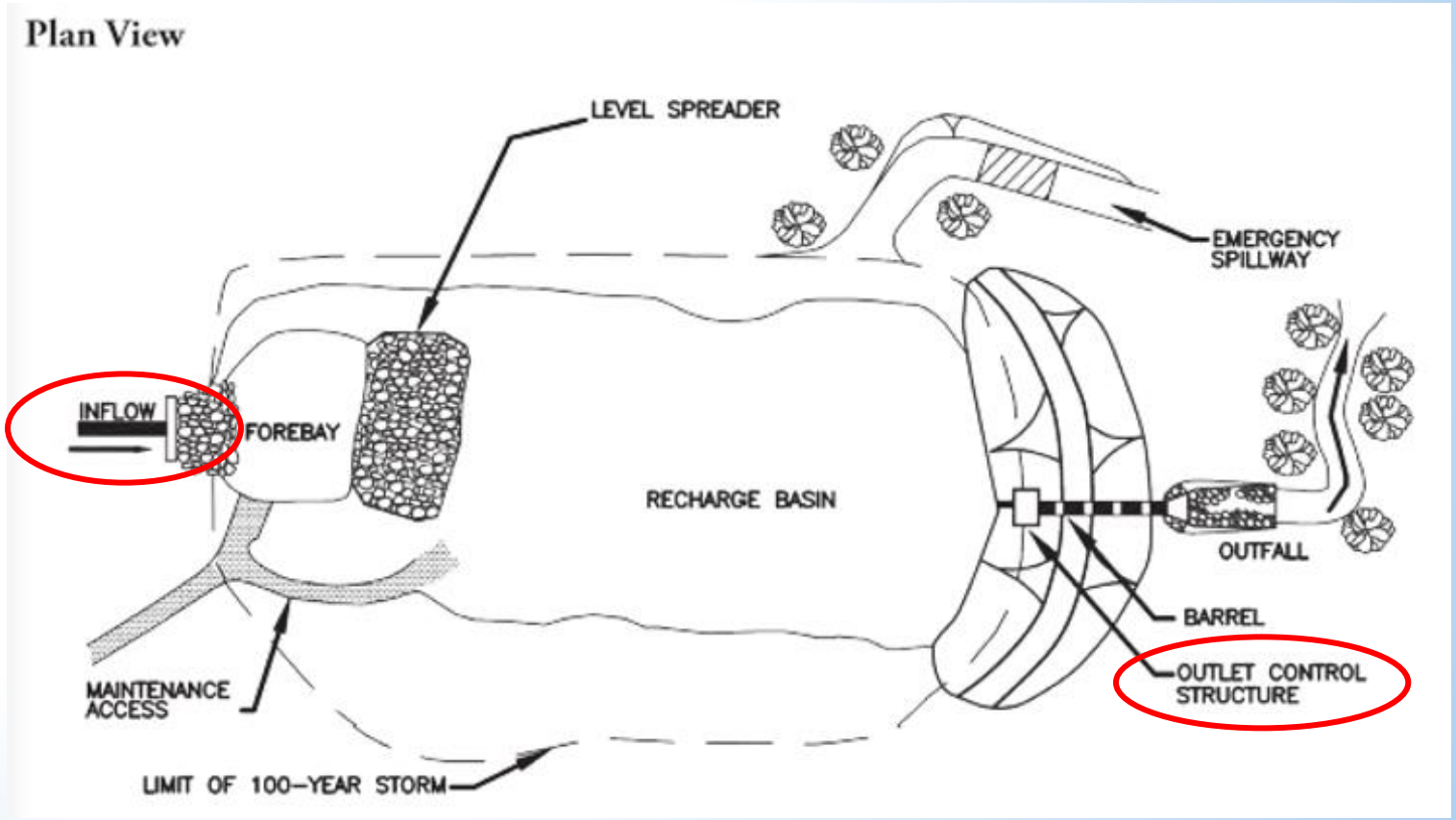
Common SCM Components

- Inlet & Outlet Control Structures/Pipes
- Pretreatment Systems
- Overflow Spillway
- Underdrains & Cleanouts
- Sideslopes & Embankments
- Impoundment Area
- Vegetation
- Safety Features

Inlets & Outlets

SCMs with inlet & outlet control structures:

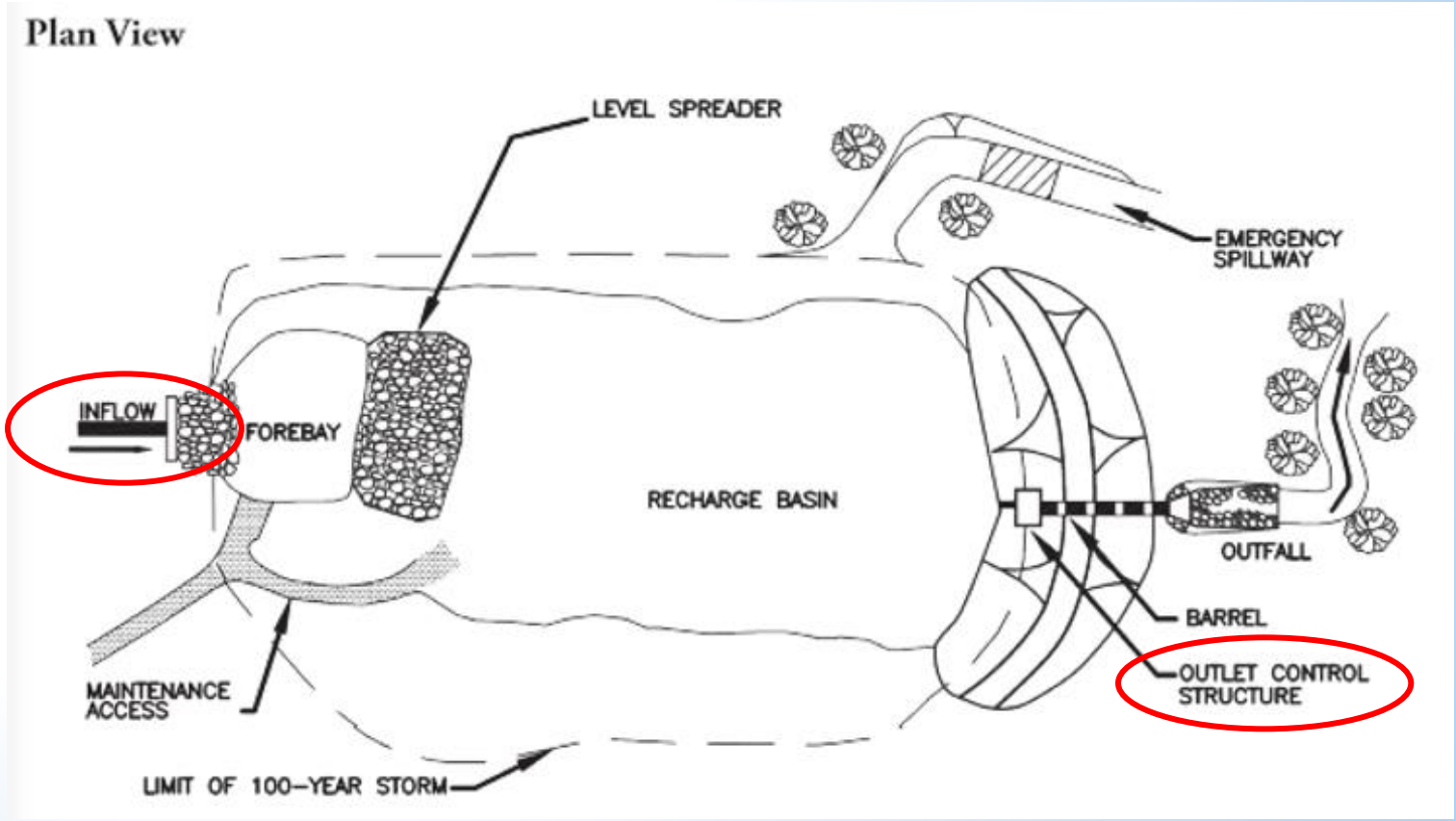
- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Rain Garden
- Gravel/Constructed Wetland
- Vegetated Swale



Inlets & Outlets

Common Problems:

- Control structures can fill with litter/debris, sediment, and overgrown vegetation that prevent the flow of water
- Non-functioning structures can make an area more susceptible to flooding



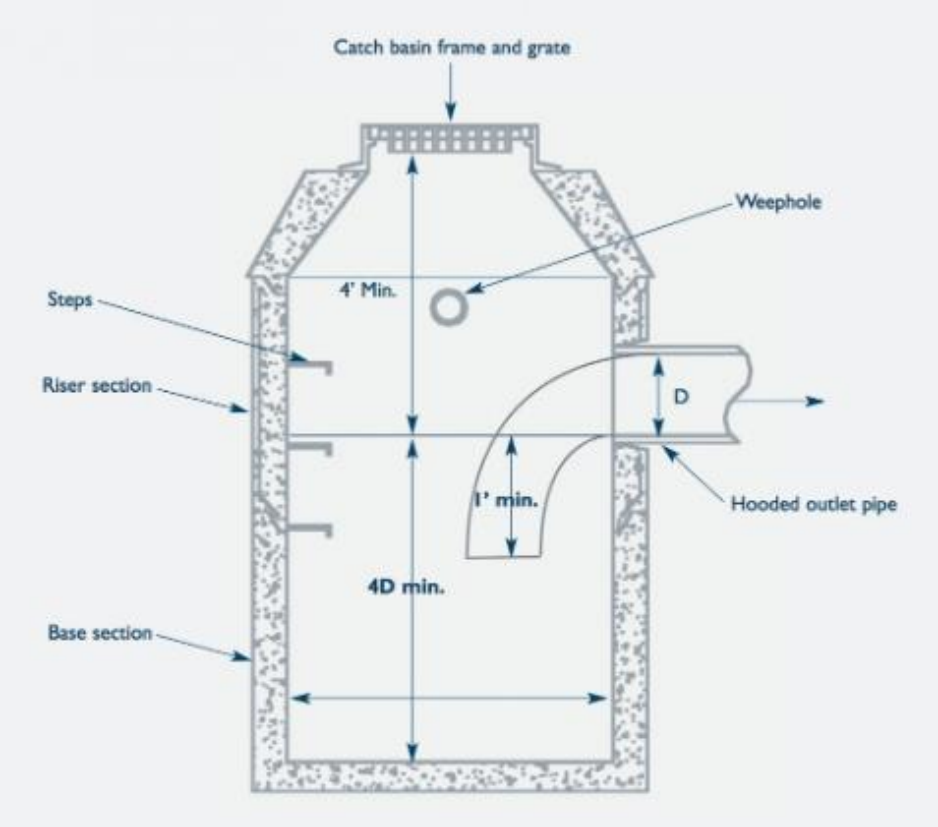
Inlets & Outlets

Inlet

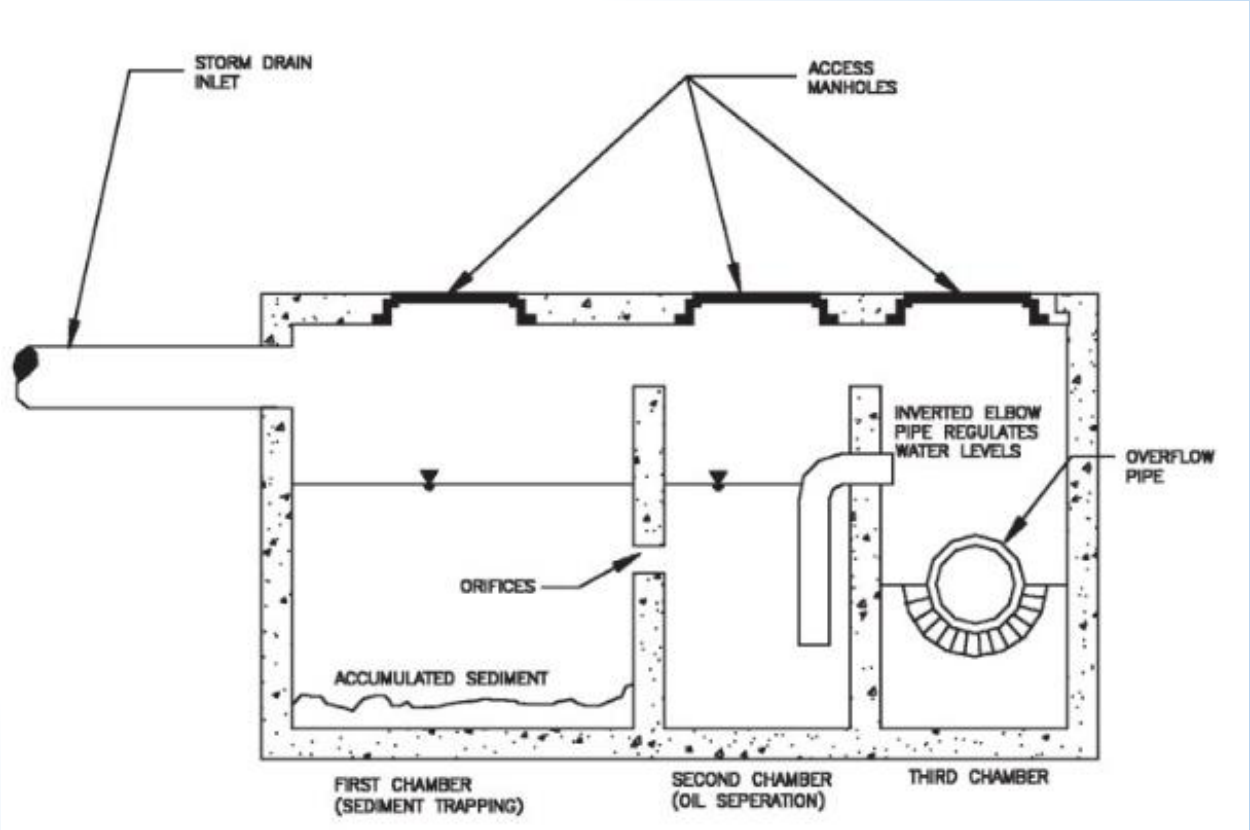
Outlet

Common Pretreatment Systems

Deep Sump Catch Basin

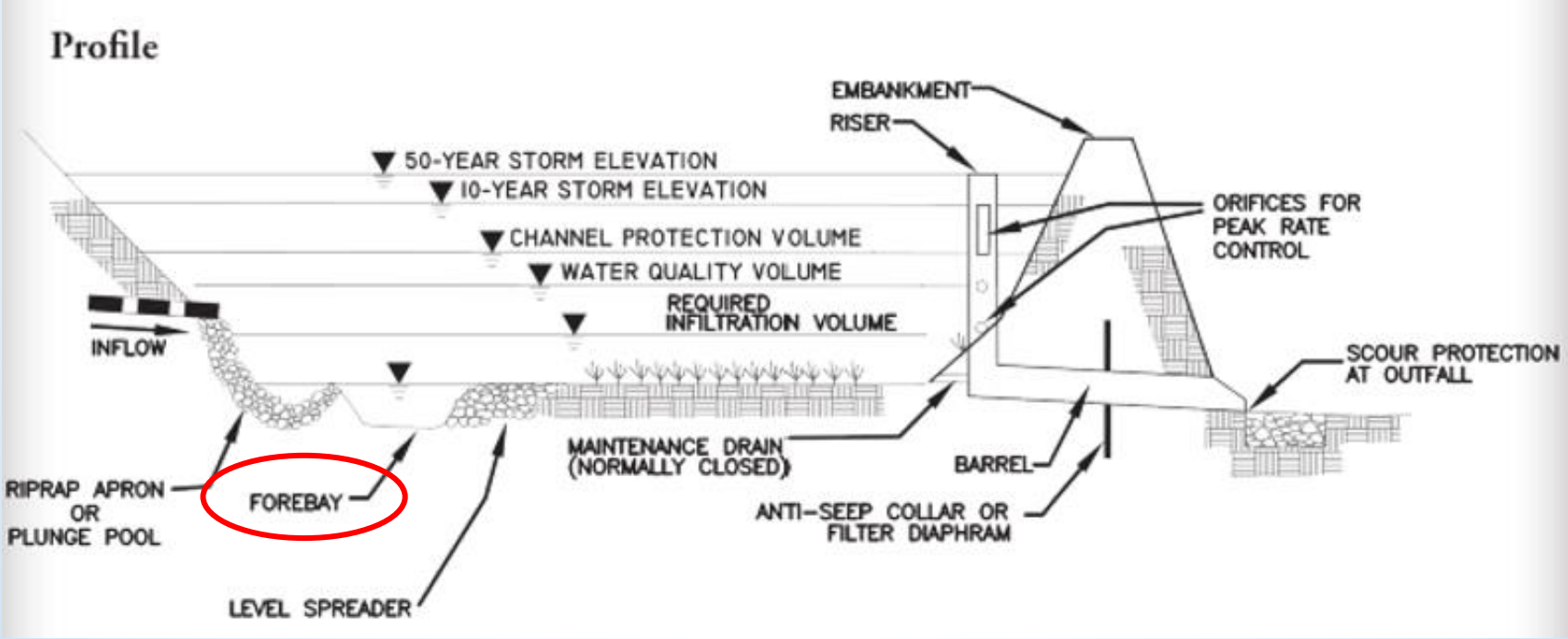


Water Quality Unit



Common Pretreatment Systems

Sediment Forebay



Pretreatment Systems

SCMs with pretreatment systems:

- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Rain Garden
- Gravel/Constructed Wetland
- Vegetated Swale

Common Problems:

- Pretreatment becomes clogged with sediment and debris and no longer functions properly
- Can increase the amount of nutrients/sediment discharged downstream

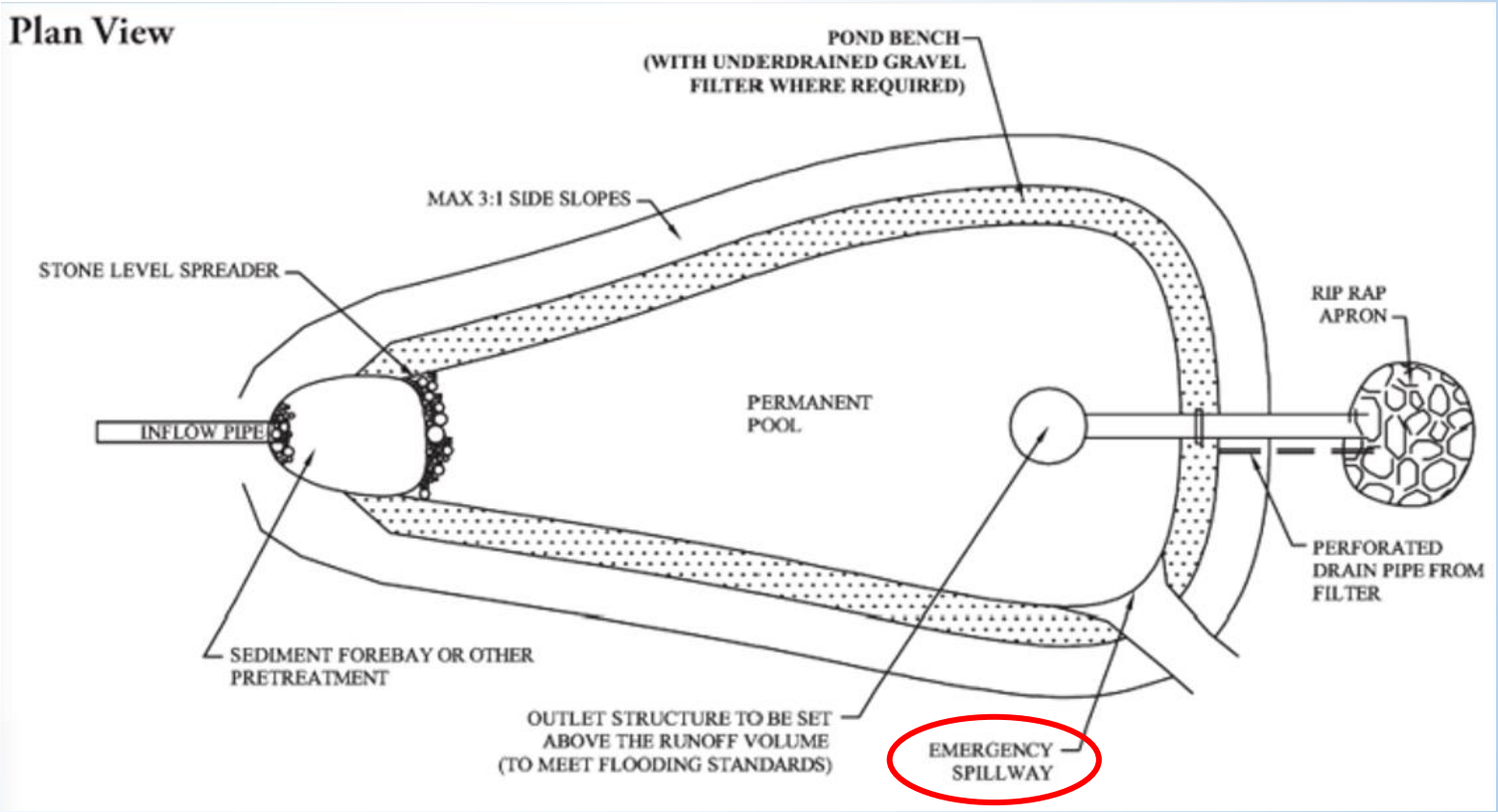
Pretreatment Systems

Overflow Spillway

SCMs with overflow spillways:

- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Rain Garden
- Gravel/Constructed Wetland
- Vegetated Swale

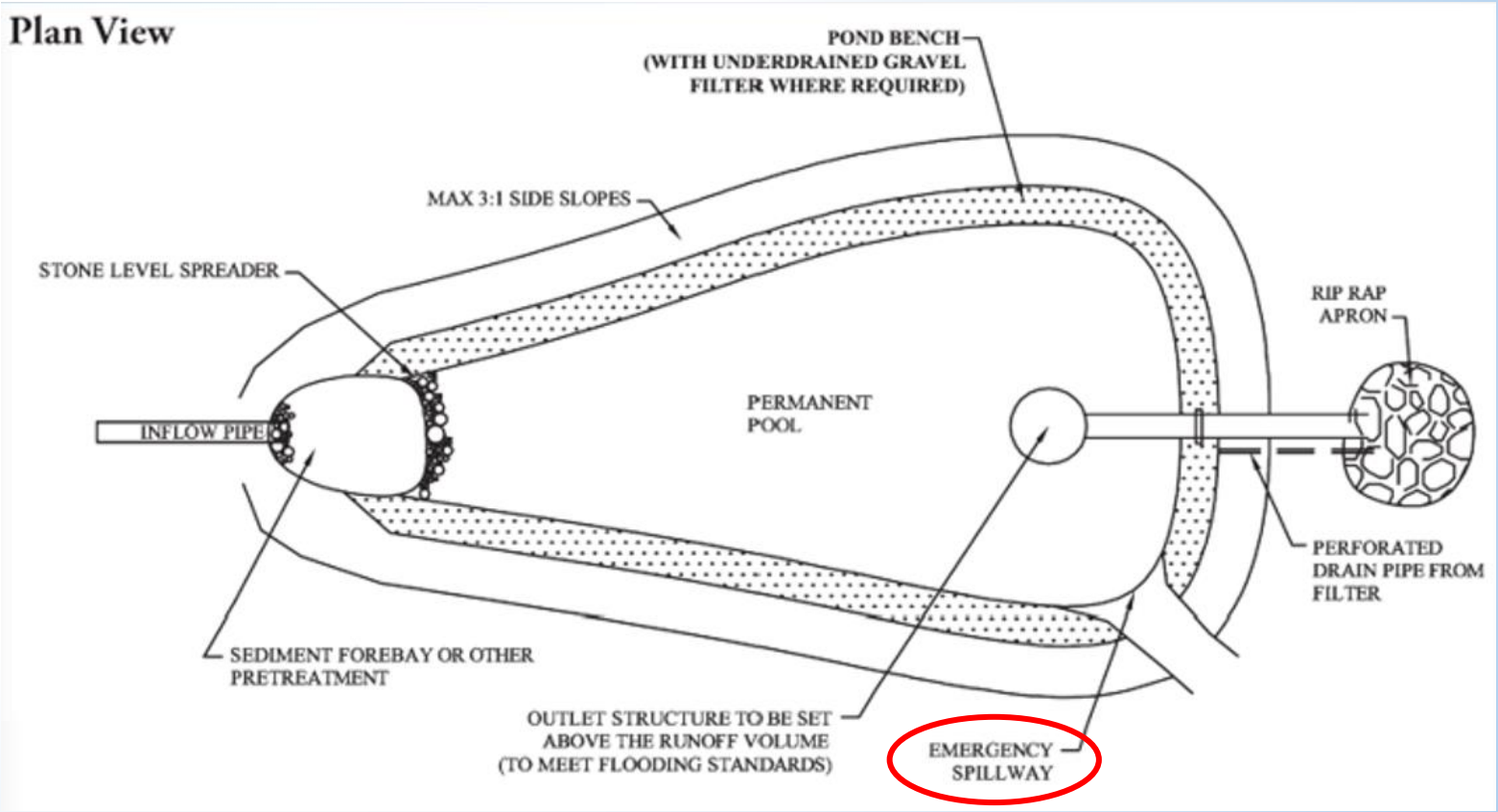
**Also known as an emergency spillway*



Overflow Spillway

Common Problems:

- Erosion of the spillway can expand over time with concentrated flows of runoff
- Extensive erosion can lead to failure of the spillway, which could cause the SCM to fail to store runoff of future storm events
- Excessive vegetative growth

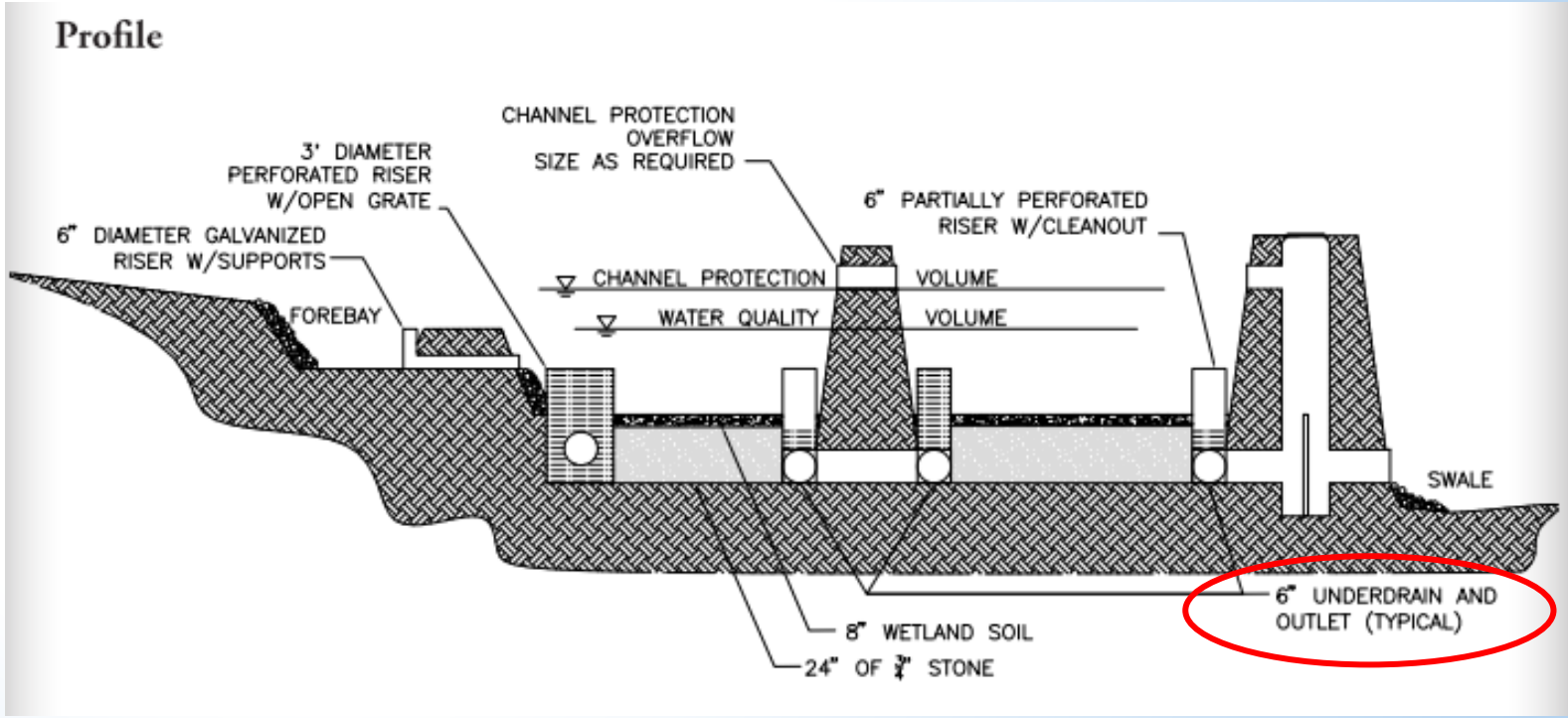


Overflow Spillway

Underdrain & Cleanouts

SCMs with underdrains & cleanouts:

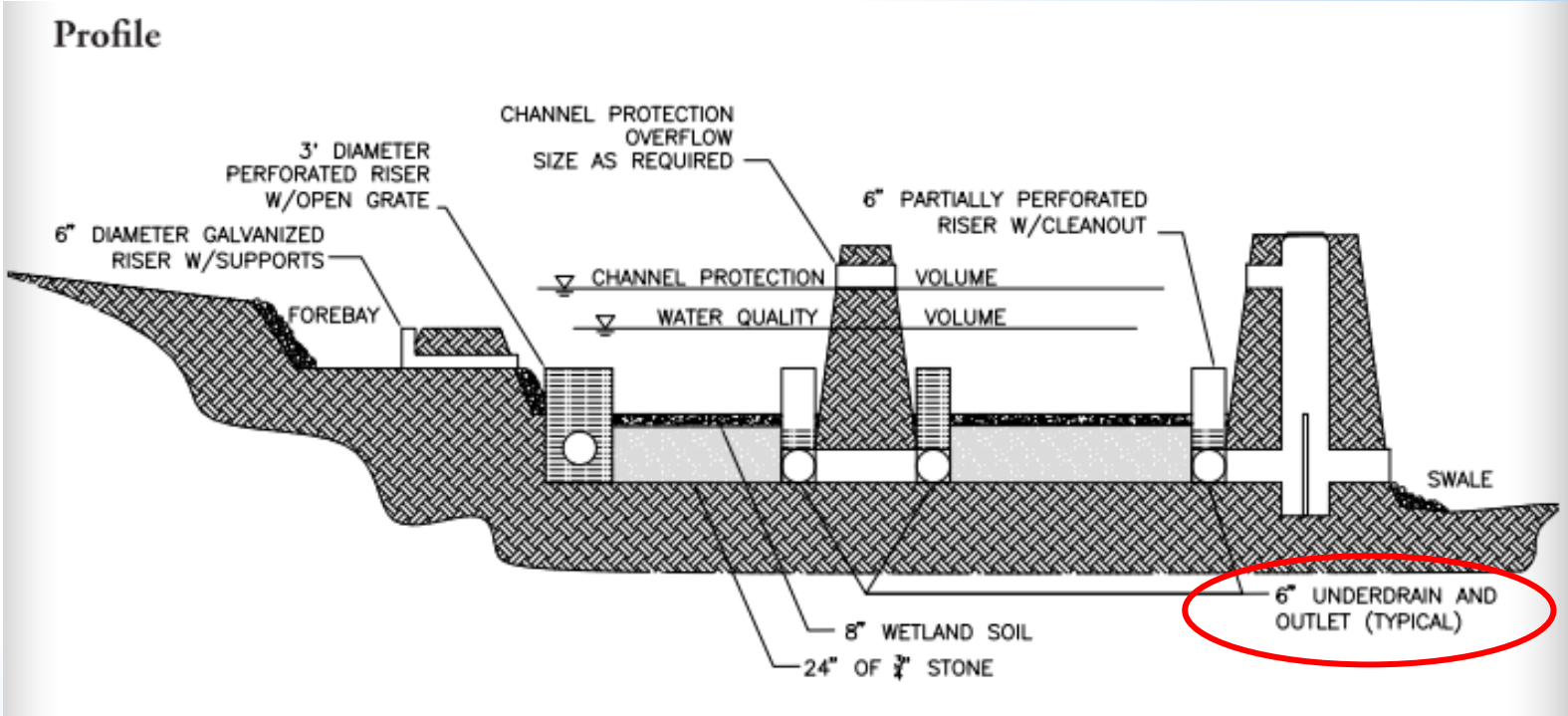
- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Rain Garden
- Gravel/Constructed Wetland
- Porous Pavement



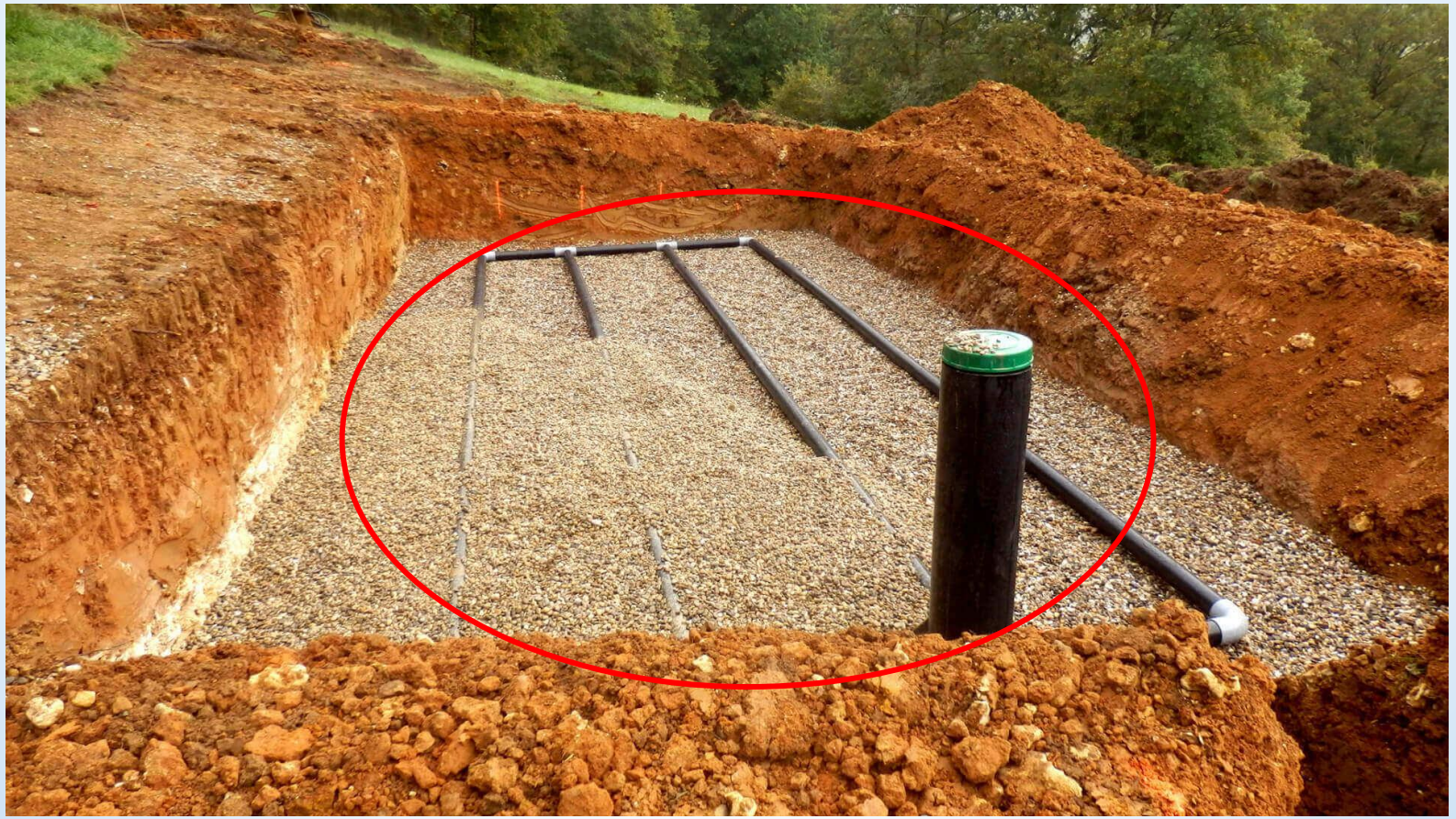
Underdrain & Cleanouts

Common Problems:

- Underdrains can become clogged by organic matter and soils which can lead to standing water and algal blooms
- A clogged underdrain can cause the system to act more like a bypass during large storm events



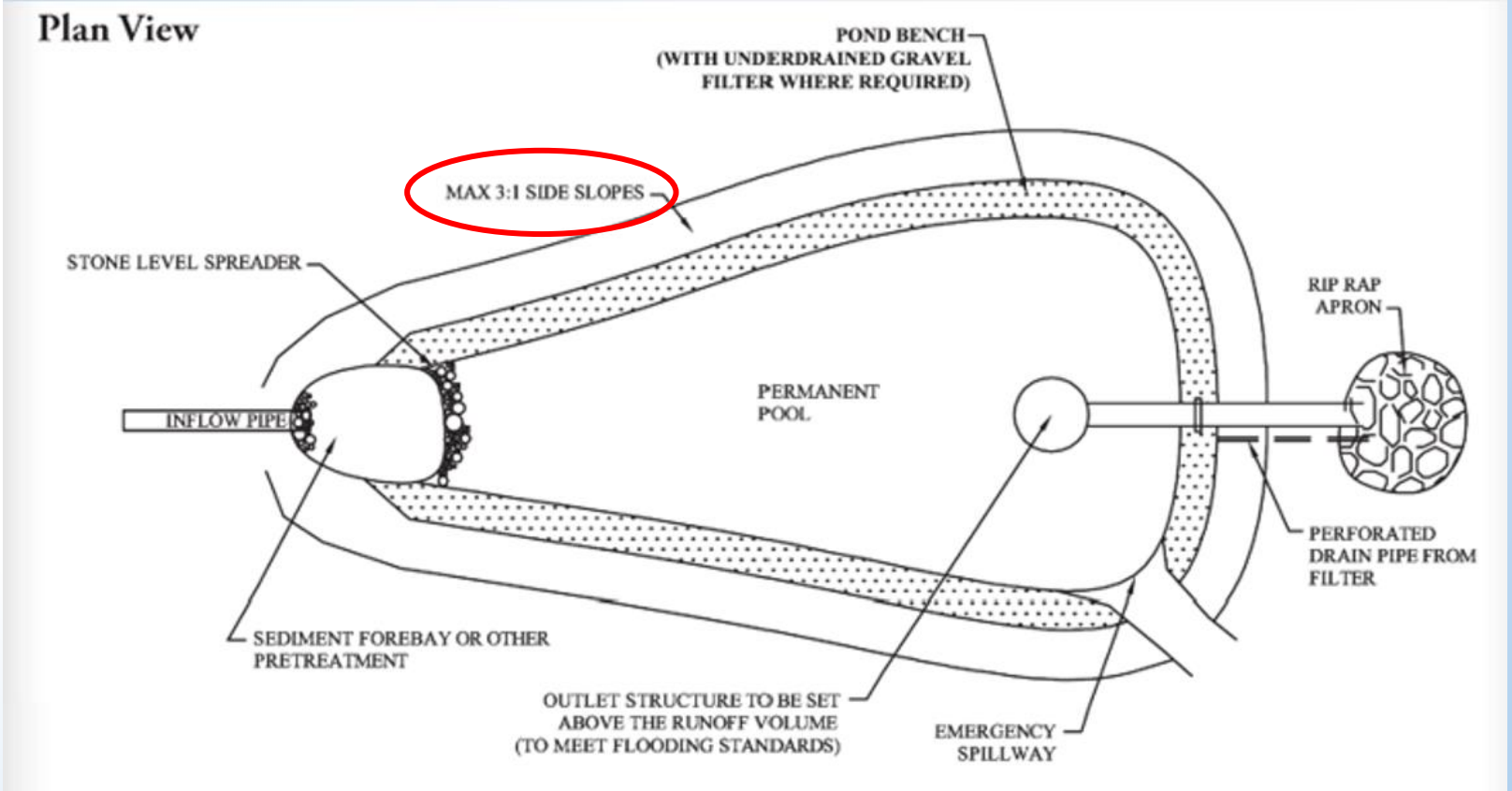
Underdrain & Cleanouts



Sideslope & Embankment

SCMs with sideslopes & embankments:

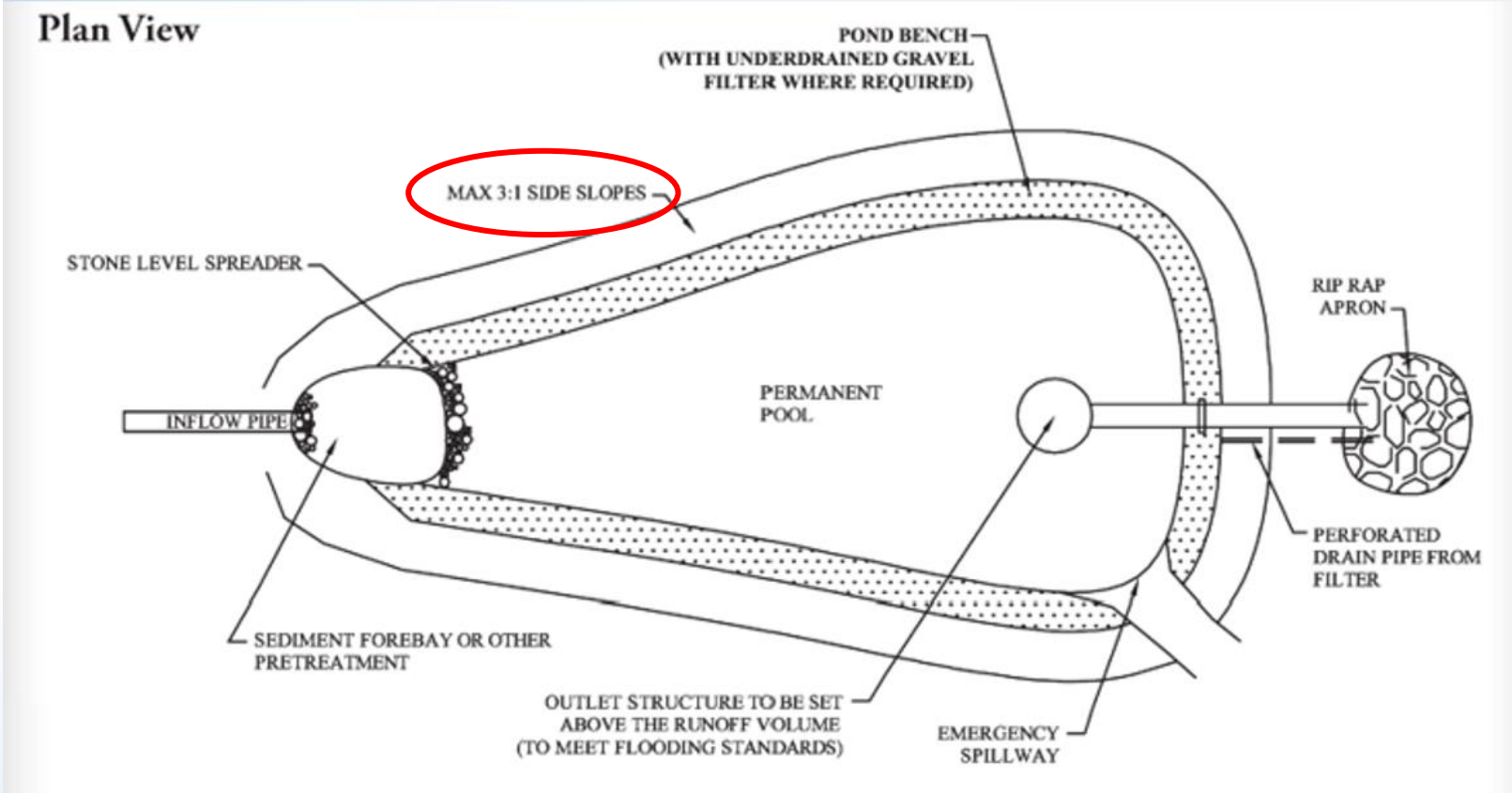
- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Gravel/Constructed Wetland
- Vegetated Swale



Sideslope & Embankment

Common Problems:

- Concentrated flows of runoff can lead to excessive erosion of the sideslopes and can potentially cause embankment failure from lack of vegetation growth
- Failure of sideslopes and embankment can lead to loss of storage capacity during large storm events
- Vegetative growth/woody vegetation

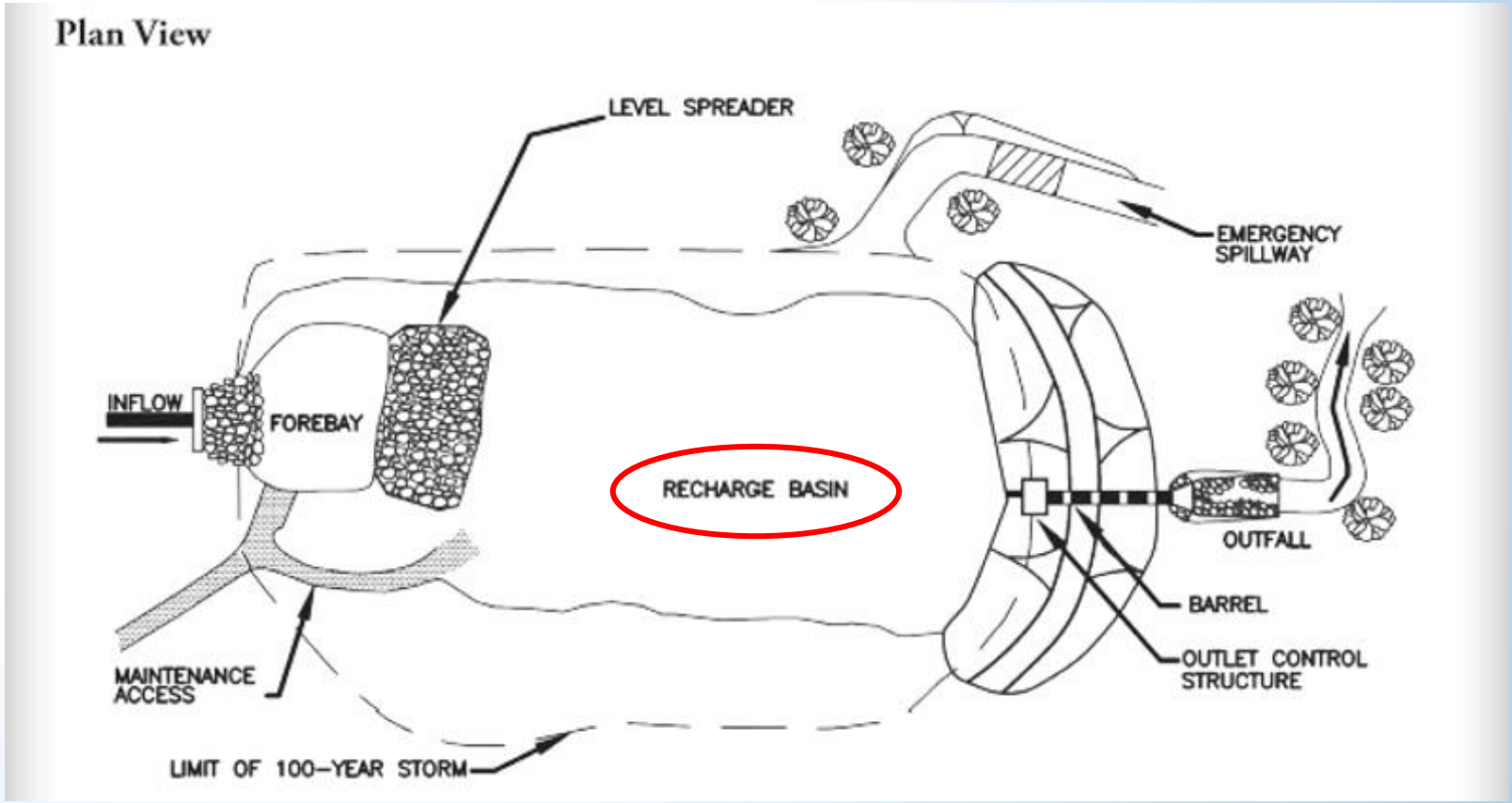


Sideslope & Embankment

Impoundment Area

SCMs with impoundment areas:

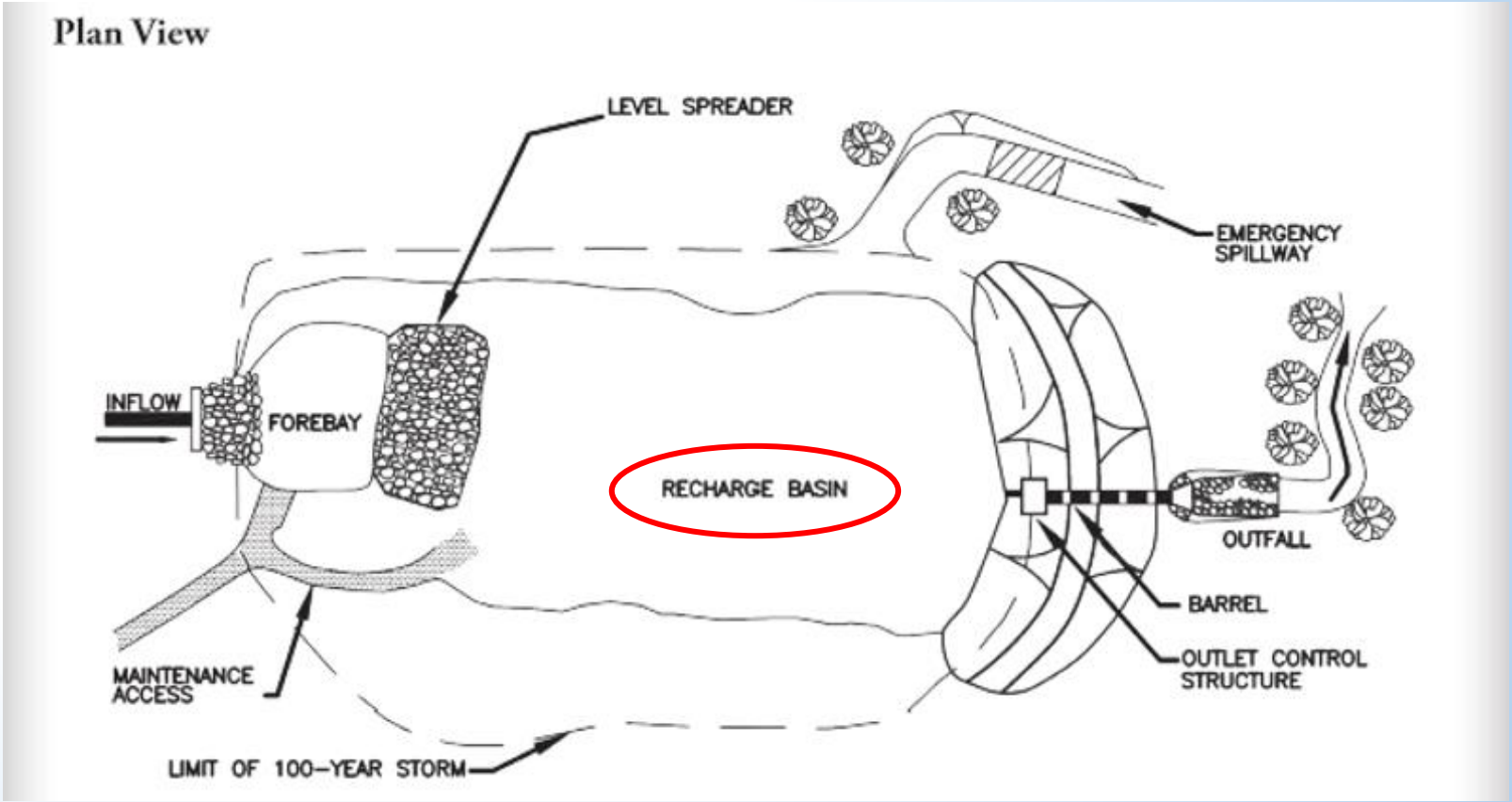
- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Rain Garden
- Gravel/Constructed Wetland
- Water Quality Swale



Impoundment Area

SCMs with impoundment areas:

- Overgrown impoundment areas can prevent adequate drainage of stormwater from the system
- Inadequate drainage could lead to flooding problems and system failure



Impoundment Area

Vegetation

SCMs with vegetation:

- Detention Basin
- Infiltration Basin
- Wet Pond
- Biofiltration/Bioretention
- Rain Garden
- Gravel/Constructed Wetland
- Water Quality Swale

Common Problems:

- Bare spots
- Seepage
- Overgrowth
- Erosion of sideslopes
- Access issues
- Trash/debris accumulation

Vegetation

Bare Spots

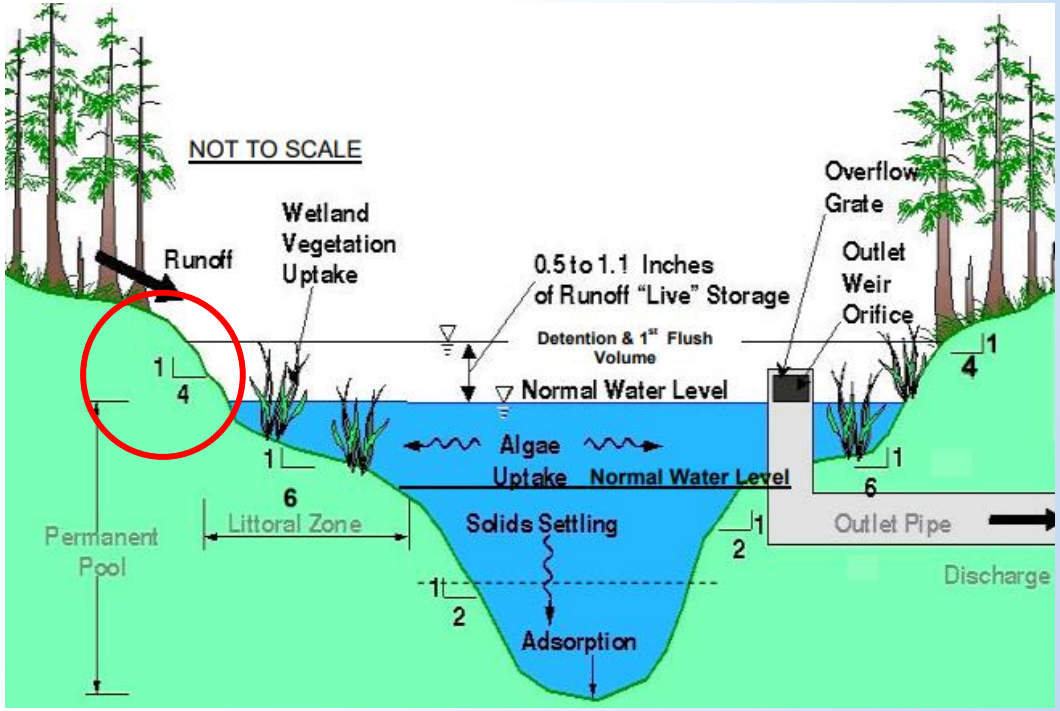
Erosion of Sideslopes

Overgrowth/Access

Safety Features

Chain Link Fence

Minimum 3:1 Sideslopes



Maintenance

Mowing, Landscaping, & Vegetation Management:

- Objective: Minimize the establishment/takeover of non-intentional woody vegetation
- Frequency: At least twice per year and remove clippings/material

Debris & Litter Removal:

- Objective: Mitigate contribution of downstream floatables
- Frequency: Monthly

Sediment Removal:

- Objective: Maintain flow capacity
- Frequency: Quarterly for 1st year then adjust based on buildup

Maintenance

Structural Integrity Inspection:

- Objective: Minimize erosion and channelization of stormwater
- Frequency: At least twice per year and after large storm events (>2.5 inches of rainfall)

Water Level Inspection:

- Objective: System should be drained completely within 72 hours of storm event
- Frequency: At least twice per year 72 hours after large storm events (>2.5 inches of rainfall)

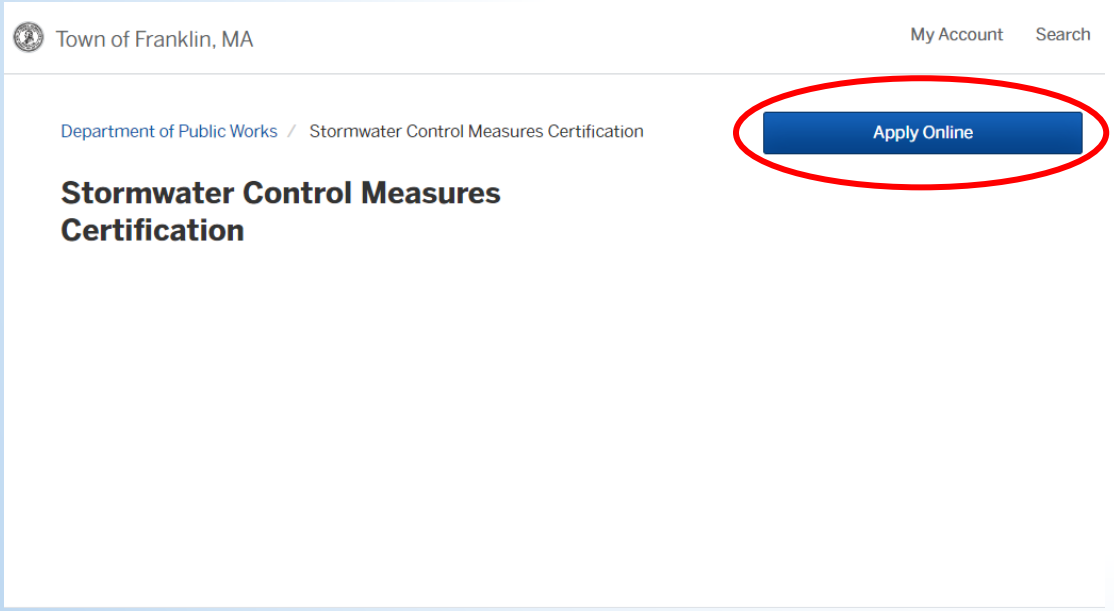
Where To Find Inspection Forms

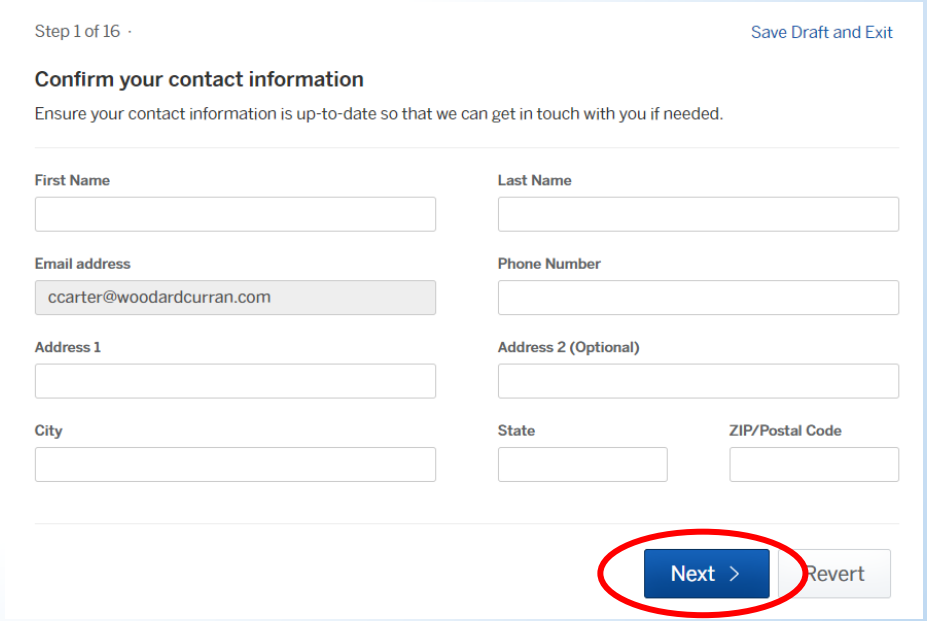
Follow the link provided below and create a user account to access the SCM inspection forms

Submission Portal:
https://franklinma.portal.opengov.com/categories/1078/record-types/6627

Inspection Schedule & Submission Demo

Please submit annual inspection and maintenance reports to the Franklin Department of Public Works by **July 15th** each year





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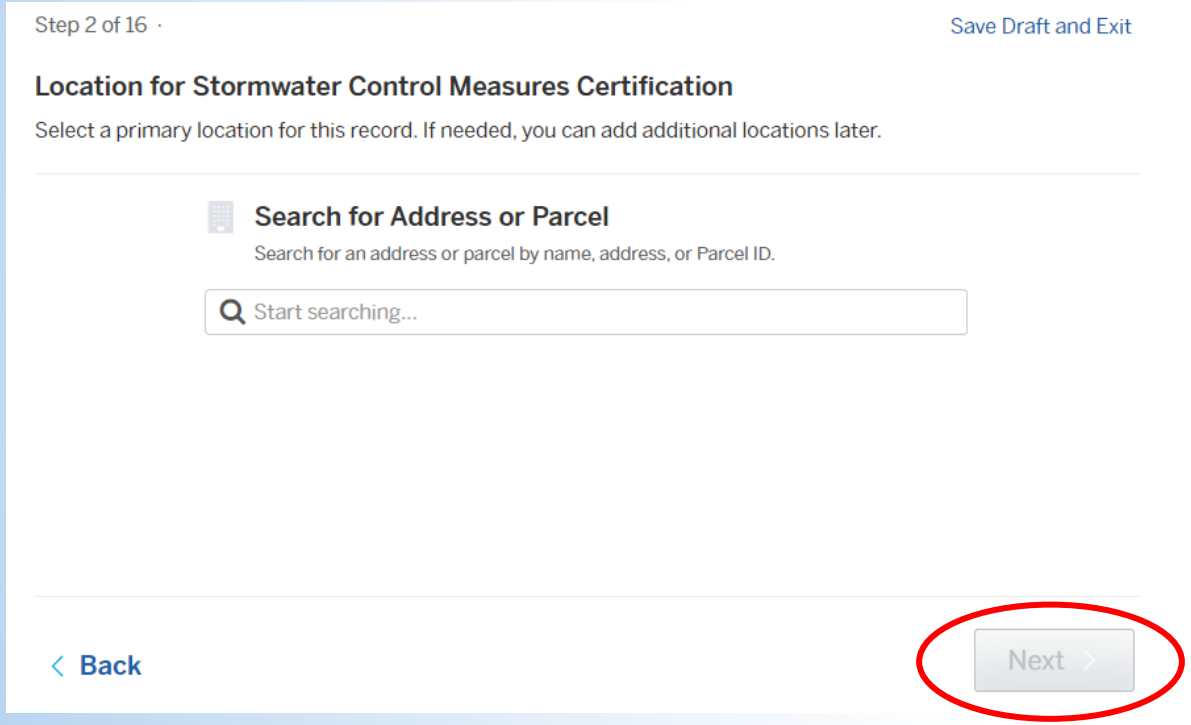

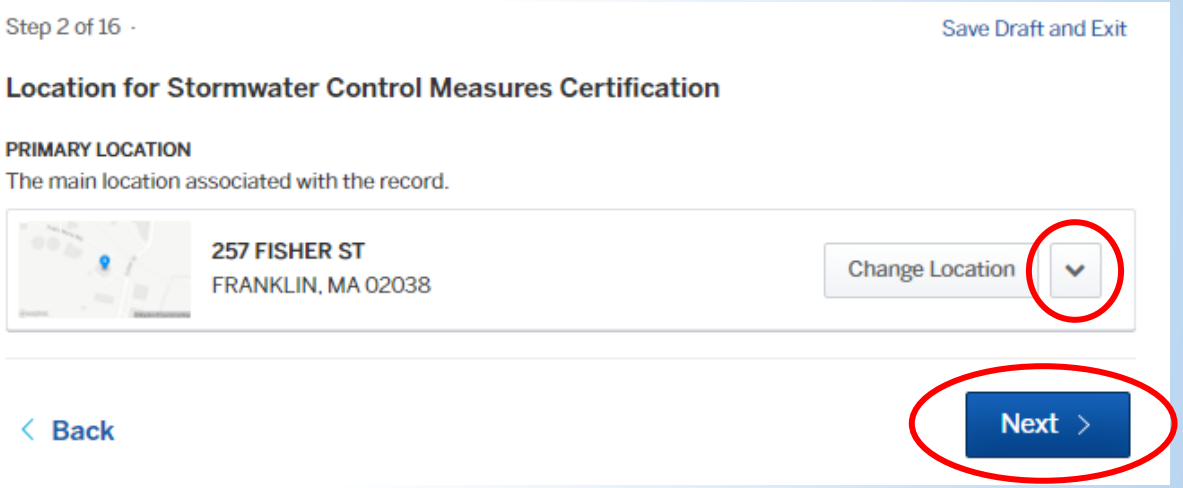

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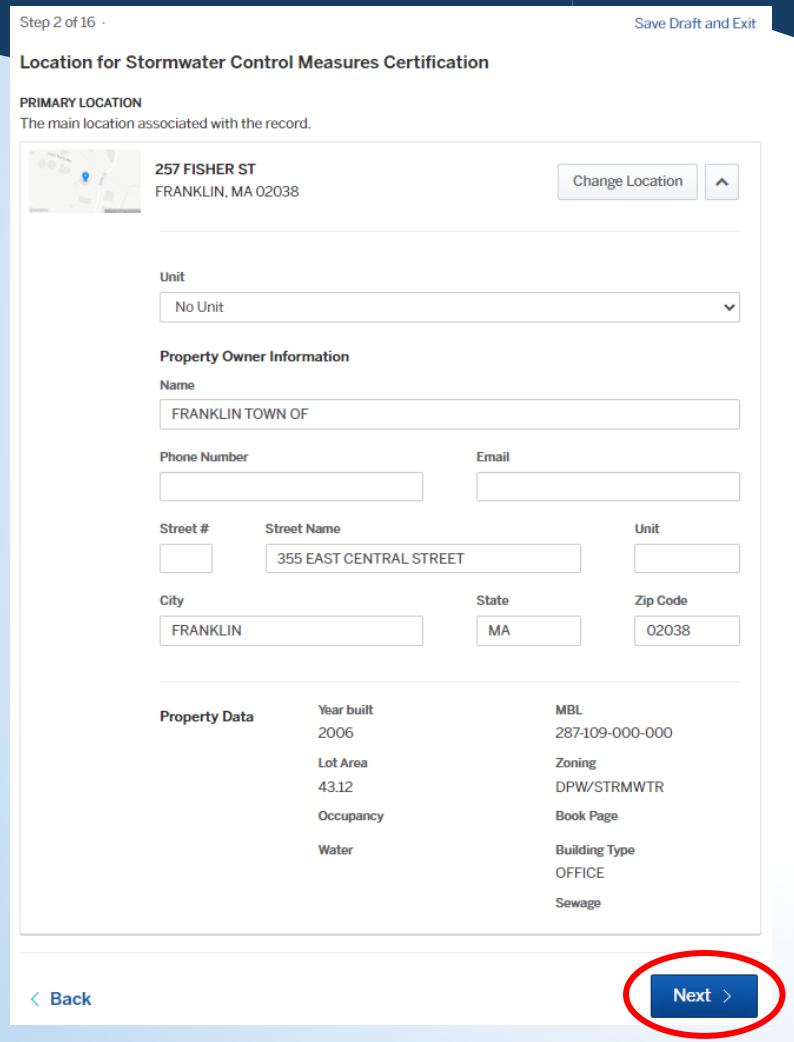

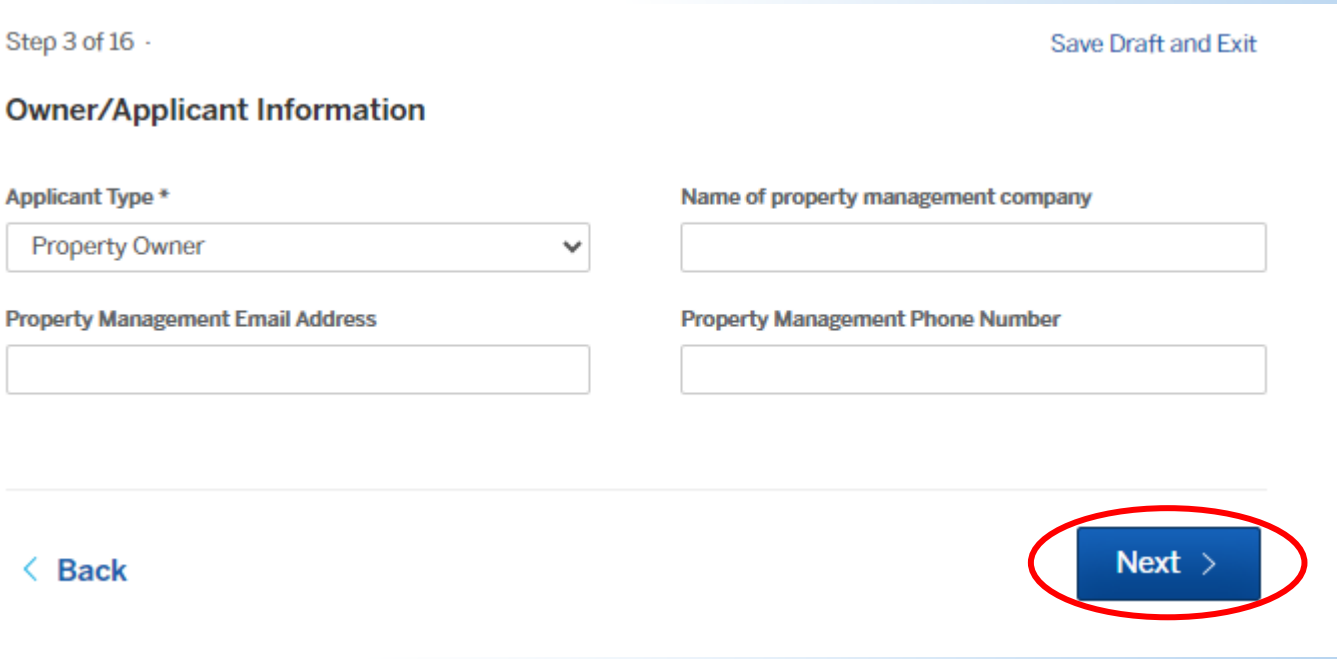

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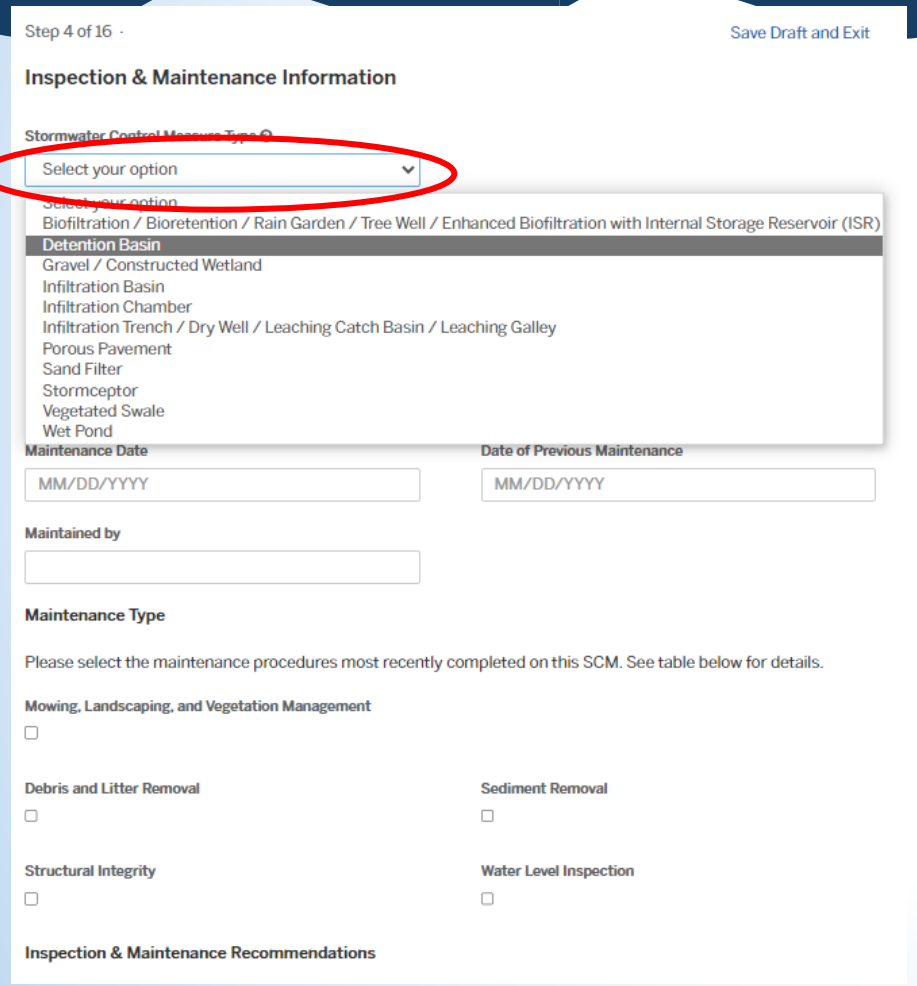

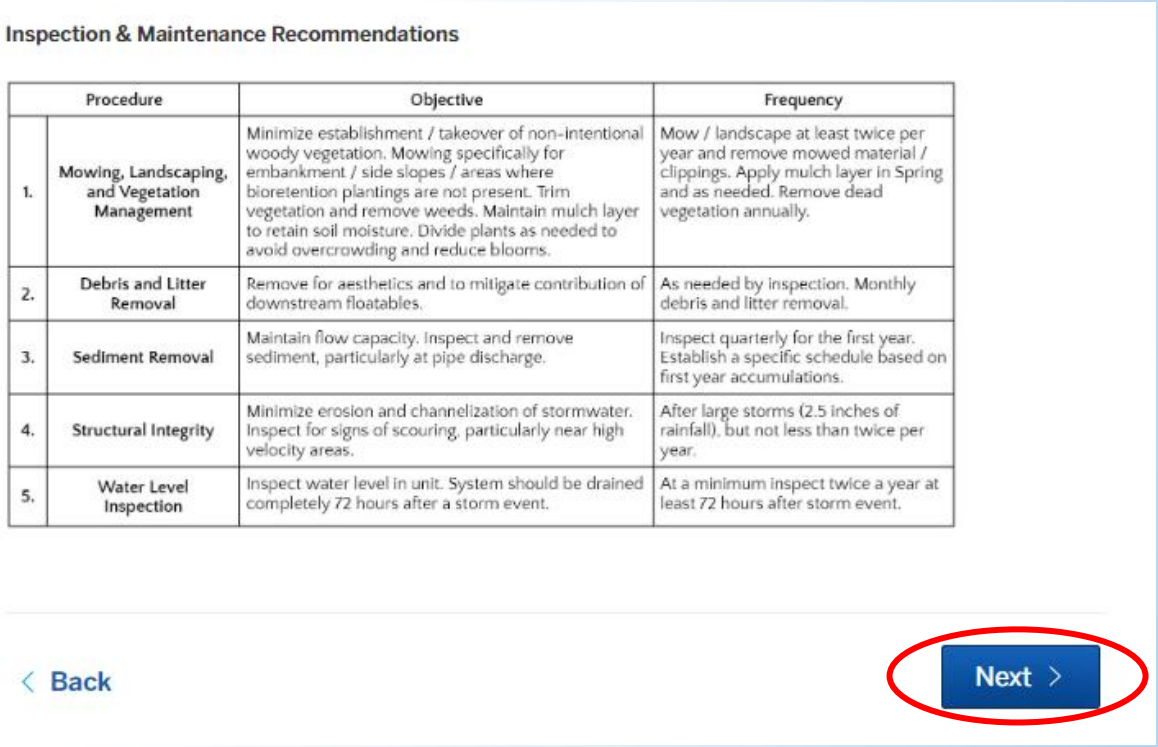

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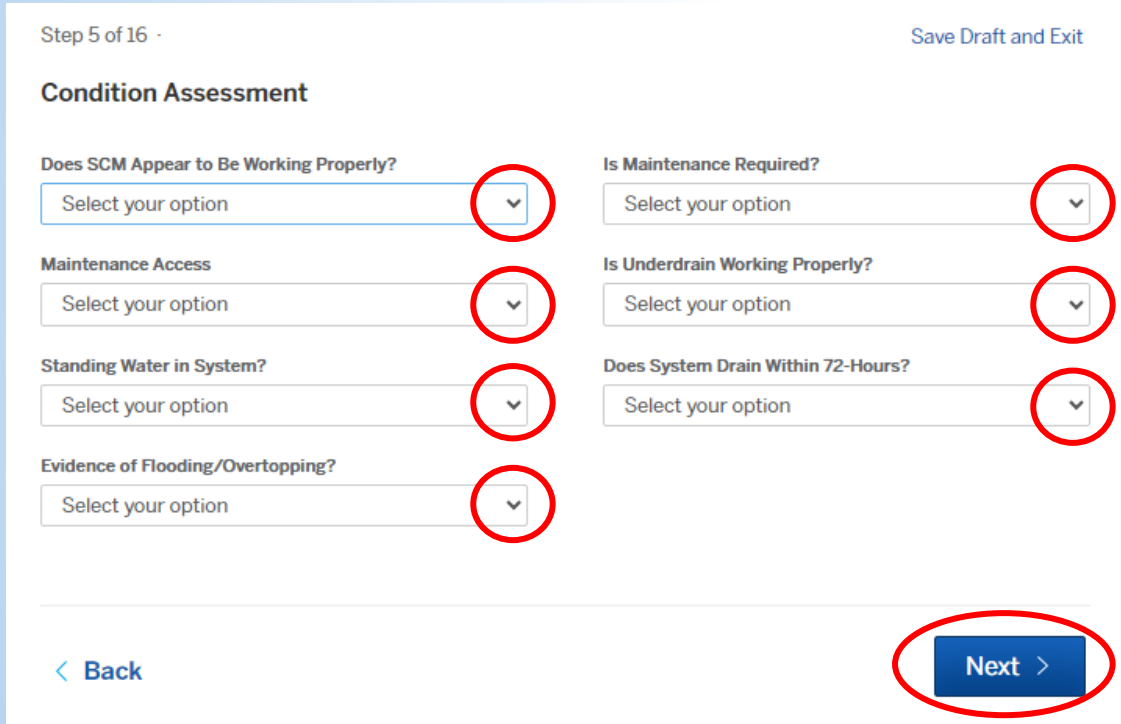

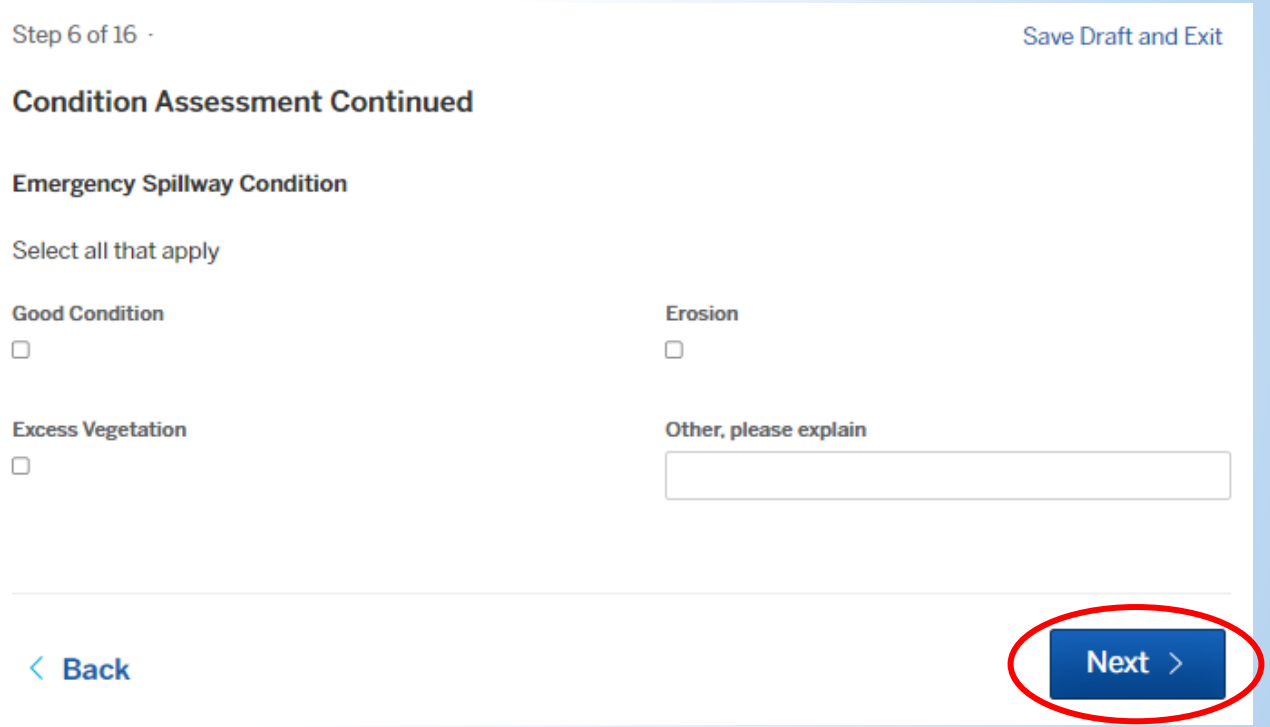

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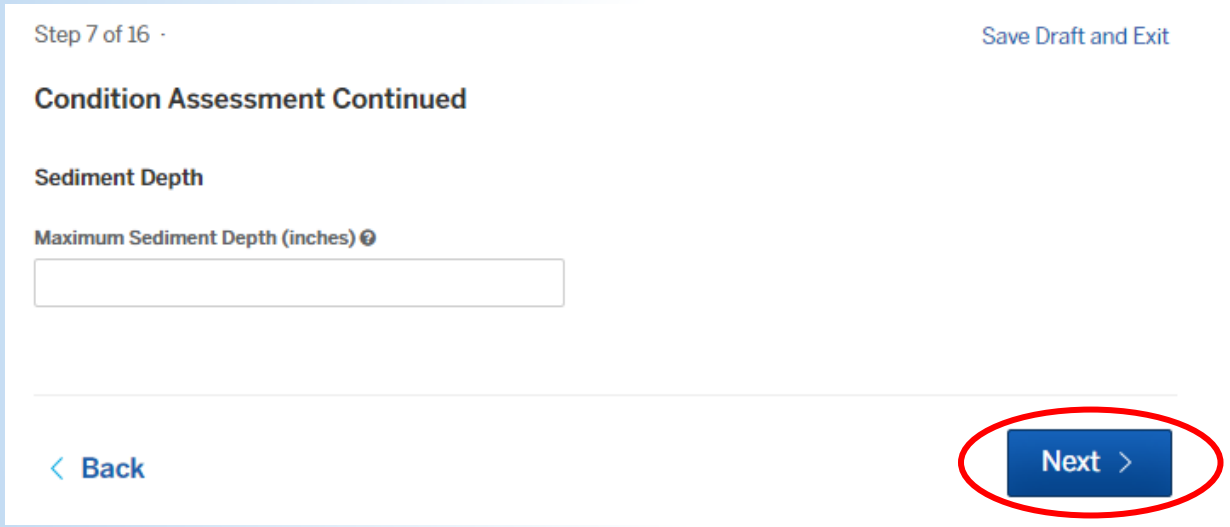

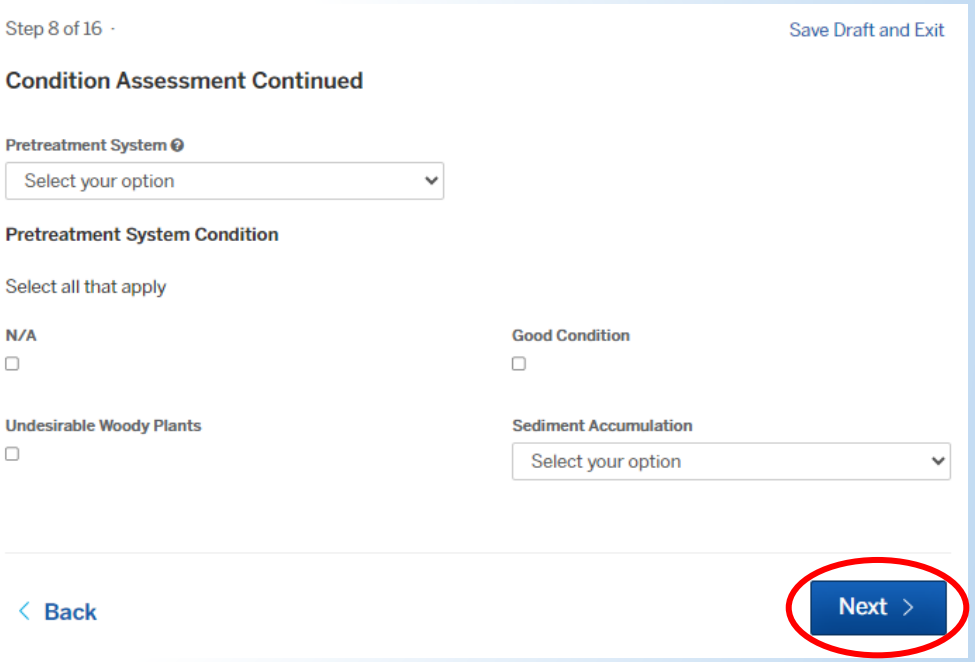

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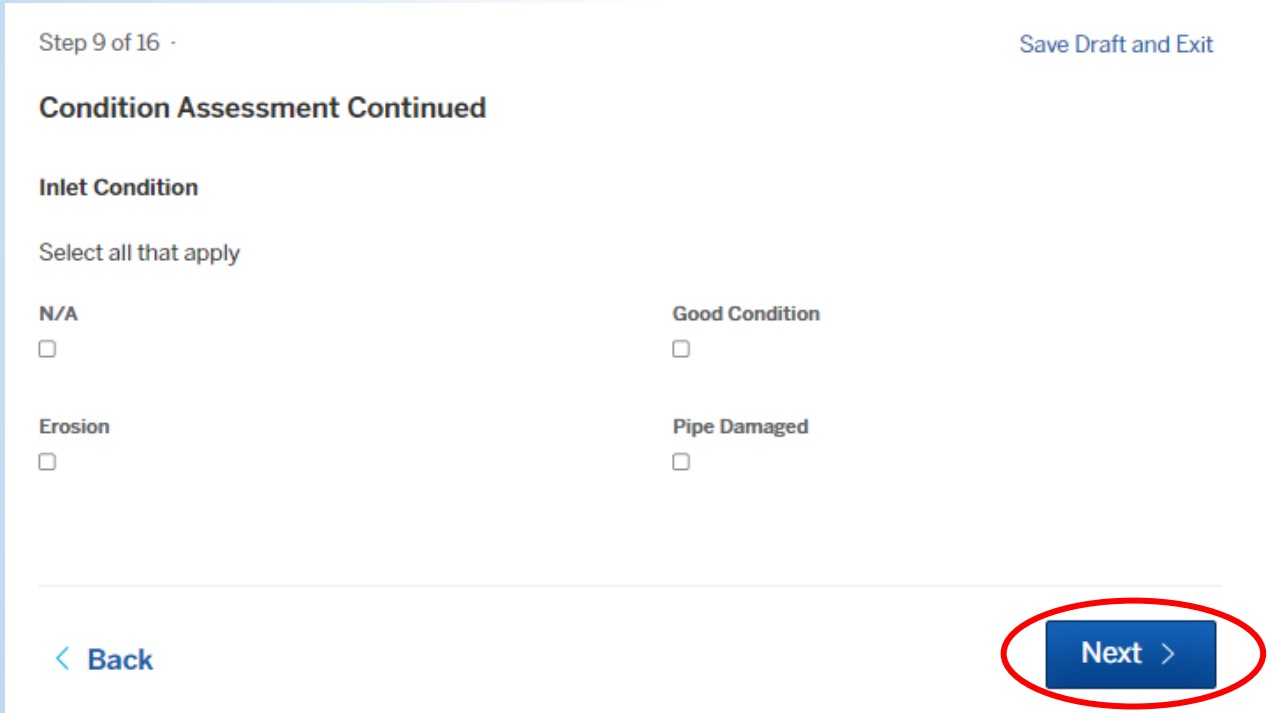

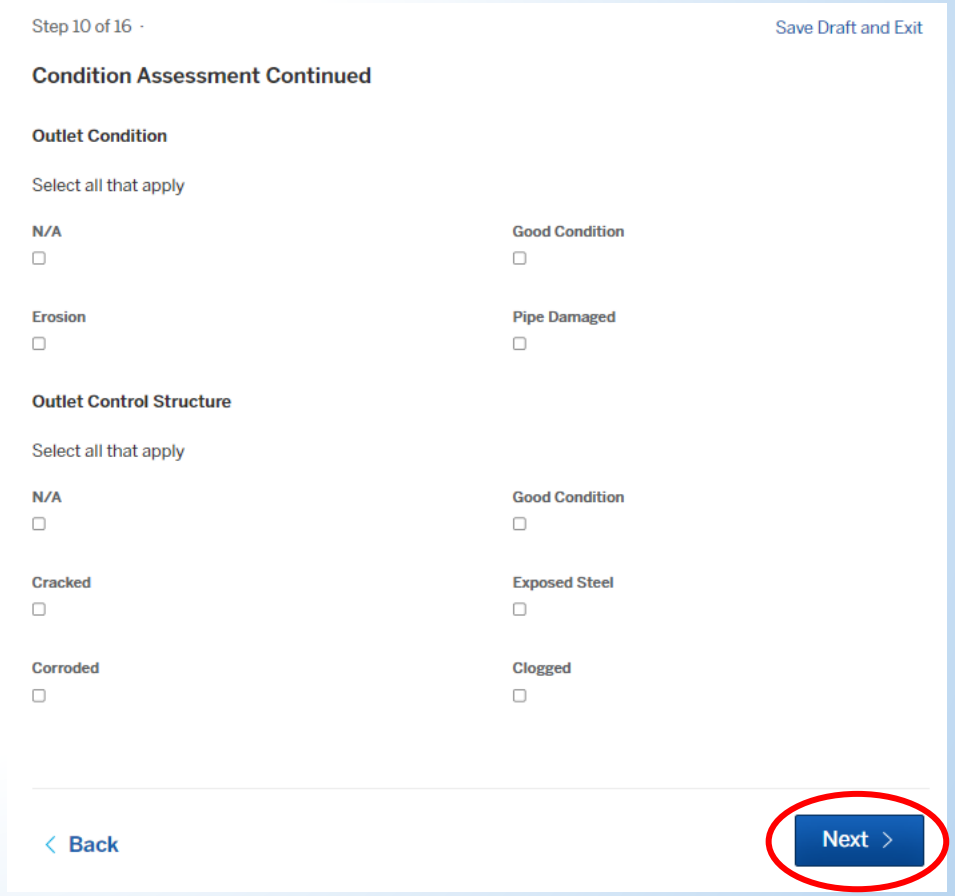

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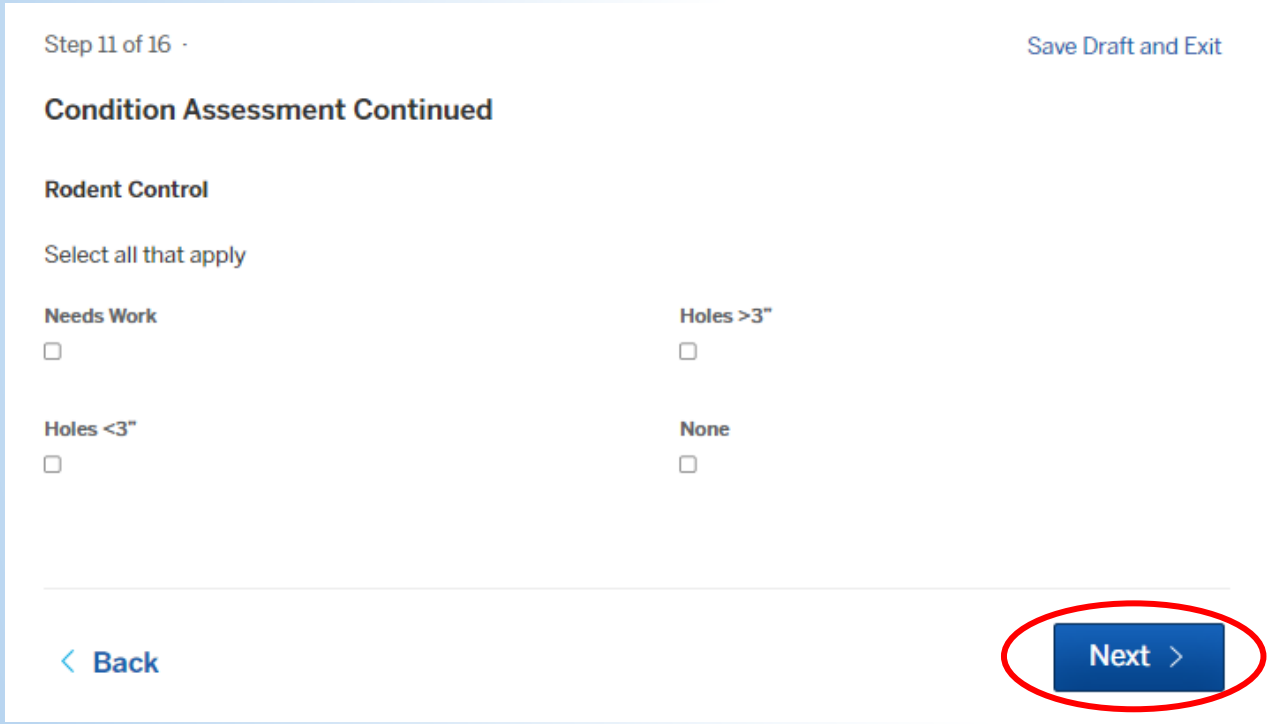

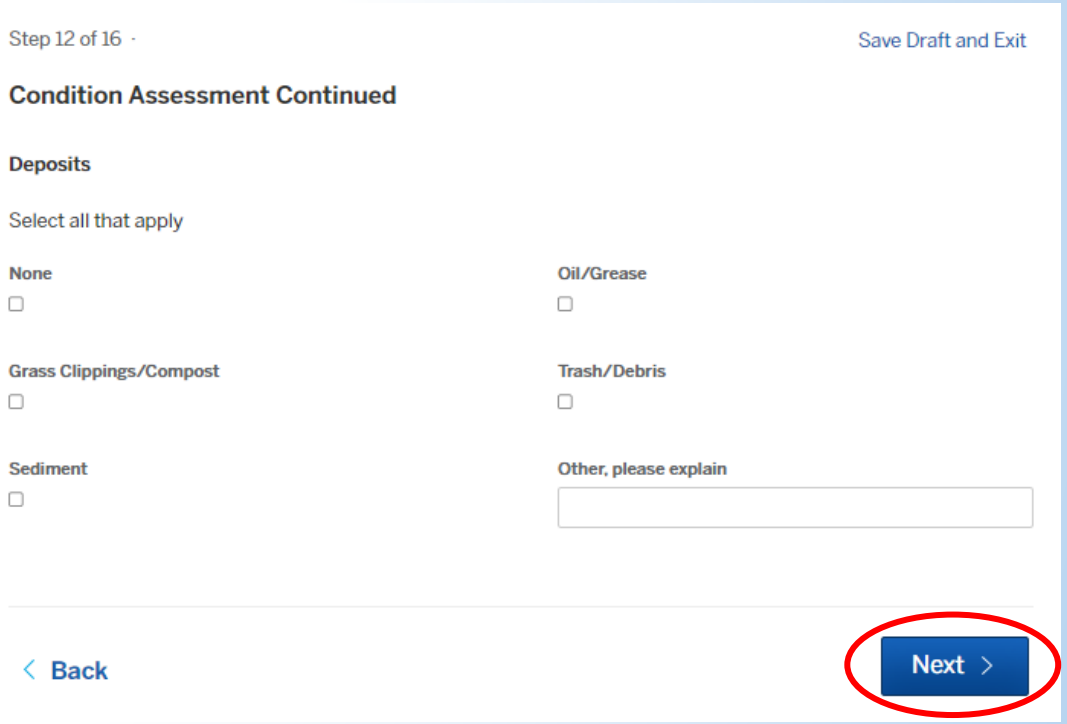

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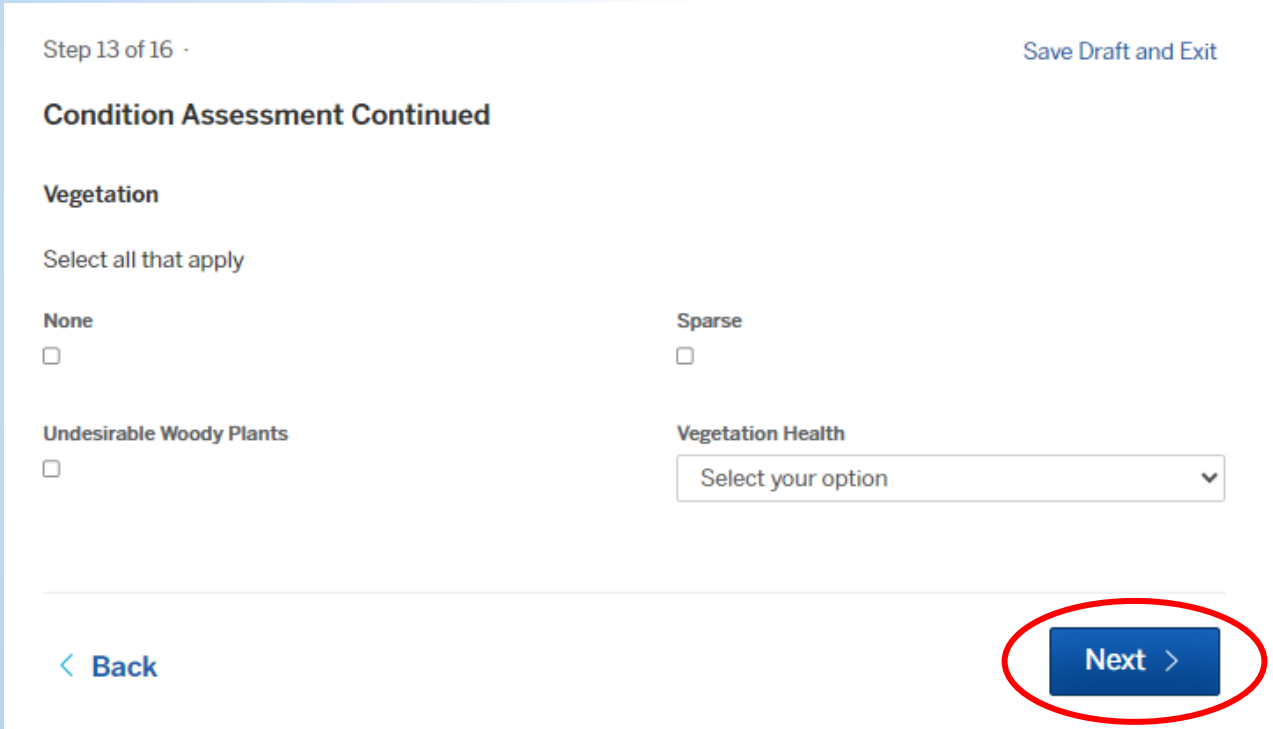

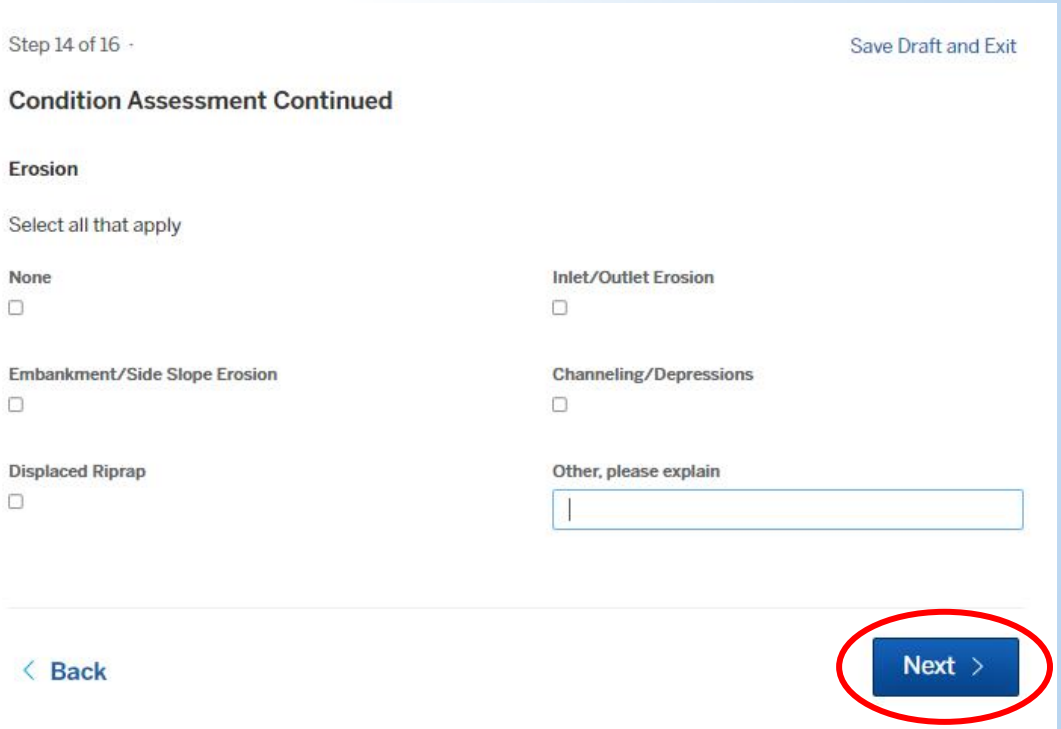

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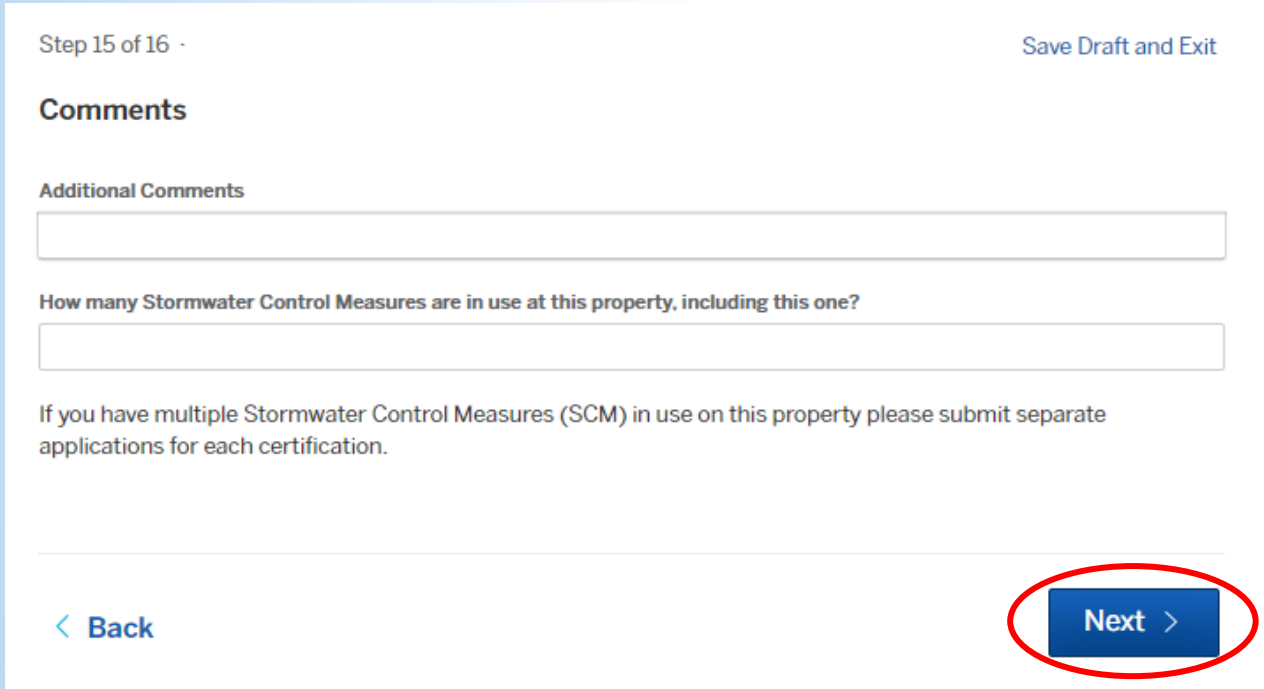

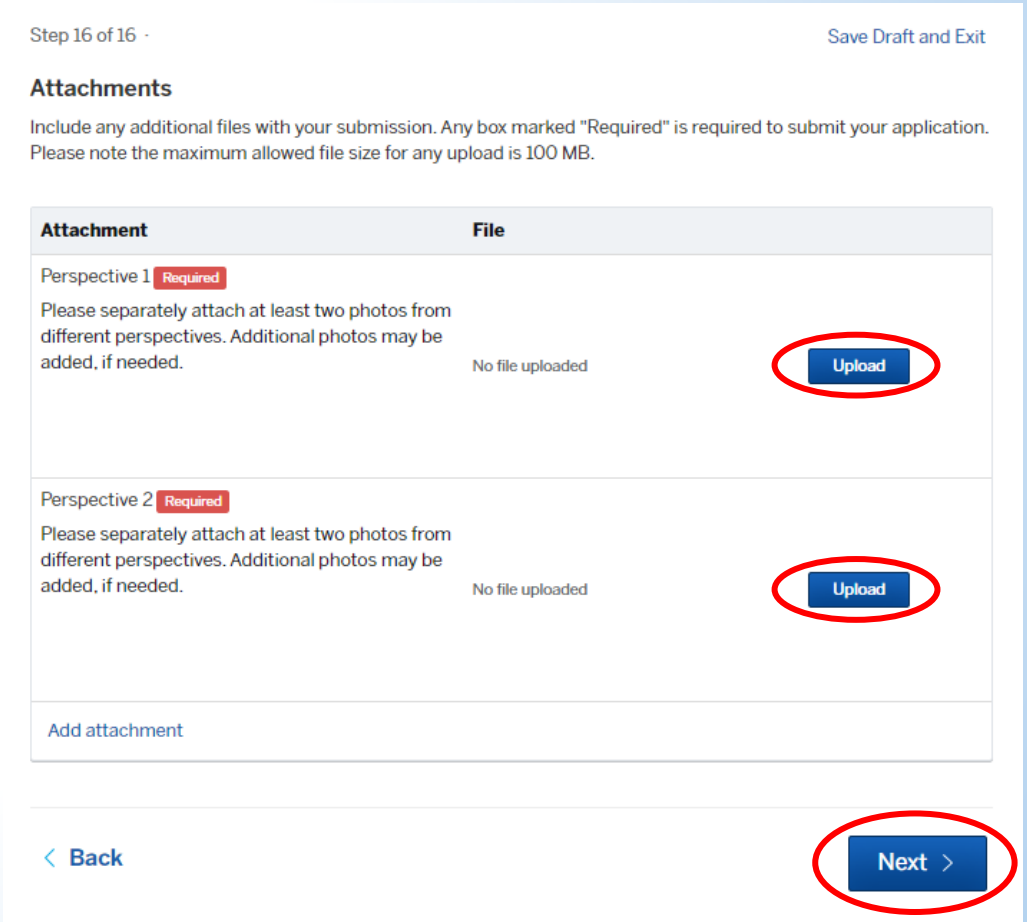

Stormwater Utility Fee Credit

The Town of Franklin has a stormwater utility fee, which is billed quarterly with water and sewer bills. The Town's stormwater utility fee credit program provides financial incentives for private SCM owners to inspect and maintain their system. Through your participation, a credit towards your stormwater utility fee may be applied.

Stormwater Utility Fee Credit Application:

https://franklinma.viewpointcloud.com/categories/1078/record-types/6620

25-50% credit potential

Questions/Website References

Questions?

Please visit the Town of Franklin's website for more frequently asked questions related to stormwater:

https://www.franklinma.gov/node/27/faq

Submission Portal

Frequently Asked Questions

Stormwater Utility Fee Credit Application

Franklin Bylaws

MS4 General Permit