Property Owner's Guide Stormwater BMP Maintenance

CITY UTILITIES

NOVEMBER 2023

CITY UTILITIES
WATER THAT WORKS

CATCHING RAIN
BEST MANAGEMENT PRACTICES

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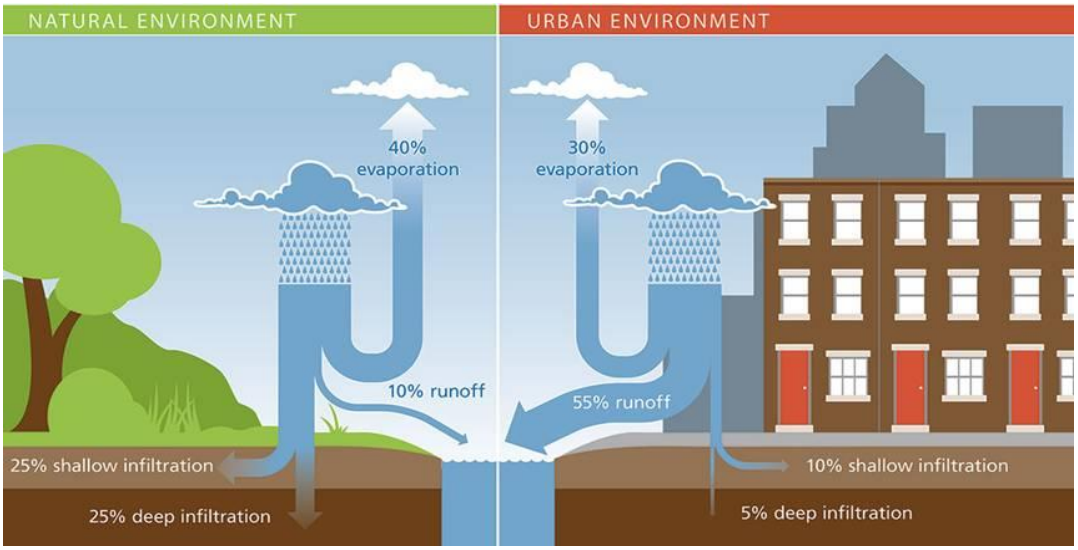
1.0 Introduction

What is Stormwater?

Stormwater (sometimes called stormwater runoff) is created when it rains and the water does not soak into the soil, or when snow melts and flows across the surface of the ground. The amount of runoff depends on how much it rains or snows, how quickly or intensely it falls, how much water is already the soil (saturated soils won't allow water to soak in). Land cover is a particularly important factor in the amount of stormwater created. **As land is developed and natural vegetation and soil are replaced with impervious surfaces (buildings, parking lots, and other hard surfaces), stormwater is generated much more quickly and in larger volumes.** As more development occurs, even more stormwater is produced due to increasing amounts of impervious surfaces. This is why many cities and towns experience more flooding and stream erosion as they grow.

More stormwater also leads to more water pollution. As stormwater runs off rooftops and travels over driveways, parking lots, yards, and roads, it washes away what is on the ground. **This includes dirt (sediment), litter, animal waste, pesticides and herbicides used on lawns and landscaping, oils and greases from cars and industries, dusts, and other substances.** Stormwater carries these pollutants wherever it flows.

Unfortunately, stormwater does not flow to water treatment plants for cleaning. **Instead, stormwater and the pollutants it carries flow along roadways and through ditches and pipes to local streams, rivers, and lakes.** Fort Wayne, like most other cities, has experienced growth and a significant increase in impervious surfaces over time. More impervious surfaces mean more stormwater. **These large quantities of stormwater can have negative effects, like flooding, erosion, and pollution.**



High levels of impervious surfaces in the urban environment increase both the volume of stormwater and pollutant load in local waterways.

Stormwater can cause flooding.

Stormwater can cause erosion.

Stormwater can cause pollution.

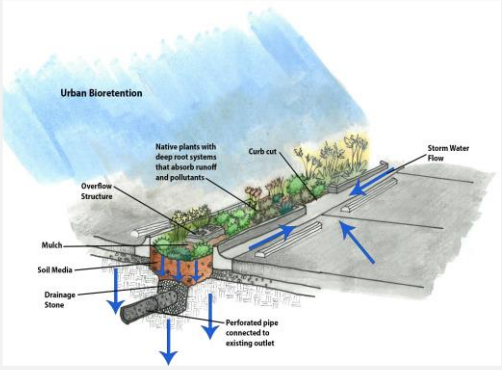
What are Stormwater BMPs?

Stormwater Best Management Practices (usually just called BMPs) are structural and non-structural practices designed to store stormwater permanently (retain) or temporarily (detain). Many BMPs are also designed to treat polluted stormwater. They retain, detain, and treat stormwater to reduce flooding, erosion, and pollution problems caused by the loss of natural landscape and the increase of roads and buildings and other impervious surfaces that result from land development.

There are many types of BMPs. Some are designed to temporarily store (detain) stormwater to allow pollutants to settle, filter, or otherwise be removed before the stormwater is released. BMPs can often be designed to release stormwater very slowly and in small amounts over several days, rather than in a big rush during a storm. A special set of BMPs, called green infrastructure BMPs, use loose soil and plants to mimic a natural landscape. These BMPs allow stormwater to soak into the ground and replenish groundwater rather than run off. Plants can also absorb water and utilize some pollutants as food/fuel. This both reduces the amount of stormwater and prevents pollutants from being washed into to local streams, rivers, and lakes.

BMPs can look like typical landscaping...

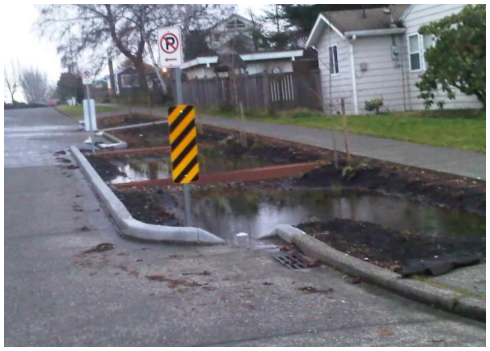
...but they are working to manage stormwater.



Why are BMPs Important to Me?

Stormwater BMPs control the stormwater that is generated by buildings and impervious surfaces. They are a necessary part of any developed property, whether publicly or privately owned, because they prevent or reduce the negative impacts of stormwater-related flooding, erosion, and pollution. As a result, BMPs are critically important to the quality of life of residents and visitors in Fort Wayne and to the economic vitality of local businesses and industries.

Like any piece of infrastructure, BMPs must be maintained so they operate properly whenever it rains. When BMPs are not maintained and begin to fail, they do not protect stormwater quality or the receiving bodies of water, and may even make stormwater problems worse. The property owner, whether public or private, must ensure the BMPs on their property are maintained. It can be quite costly to repair a failing BMP. In contrast, when routinely inspected and maintained, BMPs can continue to function for many years with only minor cleaning and upkeep required.



What are My Responsibilities for the BMPs on My Property?

To ensure BMPs are installed and operated properly, they are regulated by City Utilities (CU). First, BMPs are designed and constructed according to approved plans and specifications. Once constructed, the BMP becomes the responsibility of the property owner. If you have been told there are one or more BMPs on your property, you are required to ensure they are protected and maintained to remain fully functional as designed. You must also ensure the BMPs are inspected on a regular basis and provide the completed inspection to the utility. While these activities can be carried out by others, (e.g., tenant, property management company, lawn/landscape contractor) you, as the property owner, are ultimately responsible for ensuring these activities occur as required by this Manual. Failure to protect, inspect, and maintain a BMP is a violation of Fort Wayne IN Code of Ordinances, Chapter 53: Stormwater Management Department and can result in enforcement actions, such as requirements for corrective actions, penalties, and/or property liens.

BMPS ON PRIVATE PROPERTY

Owner Responsibilities

- Protect your BMP and related components from development, encroachment, and damage
- Maintain and protect access routes so your BMP is accessible from a public roadway
- Conduct and document inspections and maintenance
- Follow guidelines in the *BMP Inspection Forms* found in Section 5 of this Manual
- Submit required information to the City via the 'Catching Rain BMP' app

Utility Responsibilities

- Enforce the provisions for inspection and maintenance
- Provide the *Maintenance Agreement for Stormwater Facilities*
- We are here to help - contact City Utilities with questions about your BMP

stormwater@cityoffortwayne.org

phone: 311 or (260) 427-8311

Homeowner maintaining a bioretention BMP. Source: Chesapeake Stormwater Network

How do I Find the BMPs On My Property?

BMPs are constructed in a wide variety of sizes, shapes, and looks. In some cases, BMPs can be easily spotted (e.g., a fenced detention pond or rain garden). In other cases, they might be less recognizable because they are located underground or on a roof. Others might be mistaken for a part of the parking lot or the landscaping of a property. In fact, BMPs can serve multiple purposes. Beyond stormwater management, some types of BMPs can also provide aesthetic landscaping (e.g., bioretention areas or native vegetation swales), functional space (e.g., permeable pavement in a parking lot), or planned green space (e.g., stream buffers and areas of native tree reforestation). Additionally, a single property can have more than one BMP.

BMPs can be located by typing your property address into the 'Catching Rain BMP' app. More information on how to use the 'Catching Rain BMP' app can be found in Catching Rain BMP App Instructions. If you have questions regarding the app, contact stormwater@cityoffortwayne.org or call 311 or (260) 427-8311.

FINDING YOUR BMPS

1. Download the 'Catching Rain BMP' app on your device.
2. Use the app to locate each BMP on your property. You may have more than one.
3. Match the BMP names on the 'Catching Rain BMP' app to the BMP names and descriptions provided in Section 5 of this Manual.
4. Contact City Utilities if you think you have stormwater BMP(s) on your property but cannot locate or identify them.

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How do I Carry Out My Responsibilities?

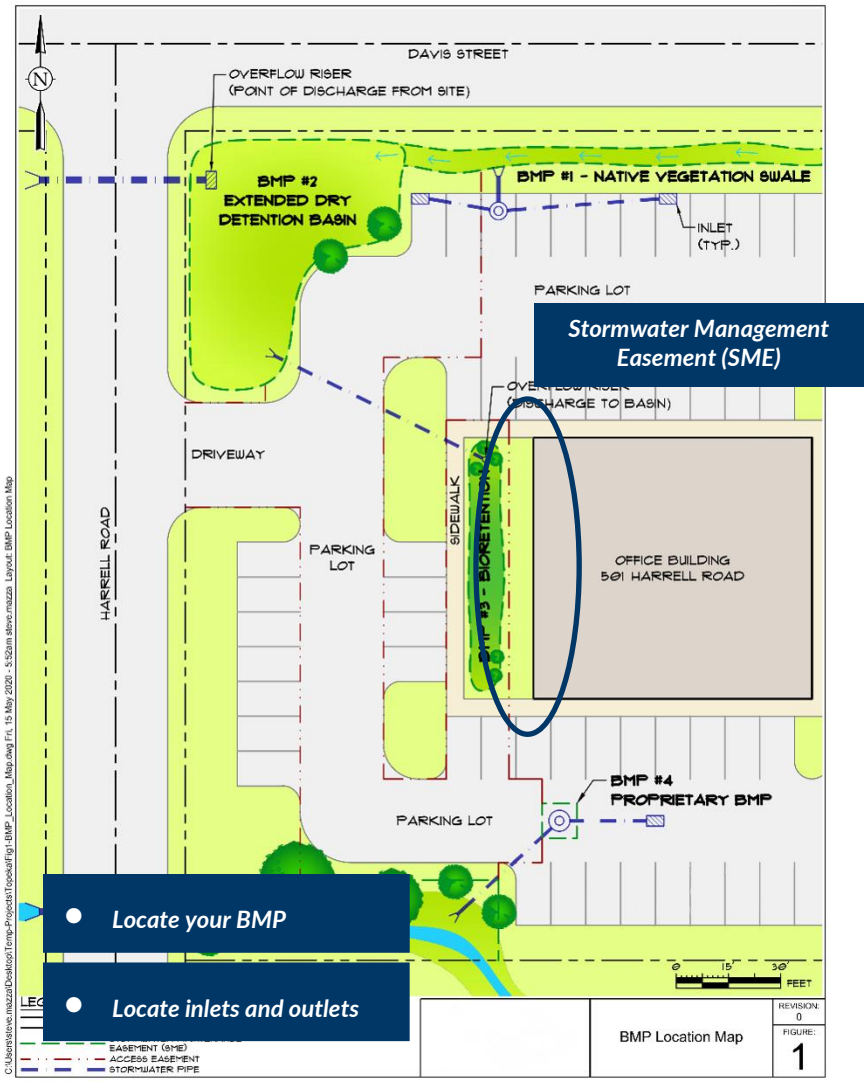
Many BMP owners will need help understanding their responsibilities pertaining to stormwater BMPs and how to carry them out. This Manual was developed to help owners. Authorized and enforceable through the *Fort Wayne IN Code of Ordinances, Chapter 53: Stormwater Management Department*, this Manual establishes the City's requirements and procedures for BMP inspection and maintenance. It also provides guidance to help owners (and those helping them with BMP inspection and maintenance) meet the City's requirements.

You are encouraged to look beyond the information provided here for guidance on BMP maintenance. Numerous links with educational and "how to" guidance on BMP maintenance can be found on the internet, free of cost. Plant nurseries and lawn/landscape companies can provide guidance on plant selection, and soil/plant management. For more significant repair issues, such as damaged outlets and clogged drains, civil engineers and landscape architects may be needed to determine the appropriate fix. Finally, City Utilities can also be contacted to answer questions and evaluate problems, should they arise.

City Utilities regulates stormwater BMPs because they provide important stormwater management functions that benefit both public and private properties. Fort Wayne IN Code of Ordinances, Chapter 53: Stormwater Management Department requires the property owner to protect, inspect, and maintain the stormwater BMPs on their property.

Contact City Utilities at stormwater@cityoffortwayne.org to learn more about your BMP ownership responsibilities.

BMP LOCATION MAP



Using the 'Catching Rain BMP', type in your address to locate your specific BMPs on the BMP Location Map (shown above). They may be called by other names, such as:

- Biofilter or Bioswale
- Constructed Wetland
- Infiltration Trench
- Underground Infiltration Gallery
- Bioretention
- Wet Extended Detention Basin
- Dry Extended Detention Basin
- Proprietary BMPs
- Surface Bed Filter
- Permeable Pavement
- Underground Detention
- Catch Basin
- Vegetated Filter Strip

Can I Make Changes to the BMP on My Property?

Yes and no. **You CAN make changes to the "look" of your BMP within the requirements and guidance provided in Section 5 of this Manual.** For example, if you have a BMP that must have landscaped vegetation, such as a bioretention BMP with managed trees and shrubs or grasses, you can remove and replace plants to change its aesthetic look. However, your new plants must adhere to the requirements for plant types and BMP coverage provided in Section 5.

Outside of BMP appearance**, you CANNOT make any changes to your stormwater BMP that degrade or alter its functionality** as a component of your property's stormwater infrastructure. The BMP was approved by the City as a regulated stormwater management practice. As such, it was designed and constructed to manage the stormwater generated on your (and possibly other's) property. The BMP is meant to lessen flooding, prevent erosion, and filter pollution from the stormwater runoff as it leaves your property. Therefore, changing this critical piece of infrastructure could result in negative impacts on your property, or on public or private properties located upstream or downstream of your BMP.

With this in mind, it is important to understand that **repairs made to your stormwater BMP, when needed, are done solely to return the functionality of the BMP to its "as-designed" condition. When making repairs, you cannot change the as-designed function without prior approval from the City Utilities' Development Services (DVS).** For example, consider an extended detention pond with an 8-inch diameter, corrugated metal pipe in its outlet structure. This is the "as-designed" condition. During a routine inspection, you notice a portion of the pipe is crushed, causing a blockage. The damaged pipe must be replaced with an 8-inch diameter, corrugated metal pipe or another type of pipe that is approved by City Utilities. Replacing the damaged pipe with a larger or a smaller pipe will change the as-designed condition and the functionality of the BMP. This could cause flooding or erosion on your property or on a property upstream or downstream of the BMP. Alternately, using a different pipe material could change the structural integrity of the outlet structure, resulting in further damage or even failure, or could reduce the longevity of the BMP to function as designed.

Pipe Condition BEFORE Damage
(as-designed pipe condition)

Pipe Condition AFTER Repair*
(different diameter, material, installation)

**Note, for a repair of this nature and magnitude, it is best to consult a civil engineer before undertaking the repair.*
Source: Forester Network

Can I Remove a BMP on My Property?

No, you cannot remove or replace a stormwater BMP shown on your property. BMPs are recorded, along with a *Maintenance Agreement for Stormwater Facilities*, as part of your property deed. BMP removal without the obtaining prior approval will result in enforcement actions by the City, which may include penalties, liens, costs associated with correcting any negative impacts resulting from removal of your BMP, and costs for designing and installing one or more replacement BMPs.

City Utilities has laws and procedures in place to allow the utility to approve the removal or replacement of stormwater BMPs in certain circumstances. Largely, BMP removal can occur when a property is redeveloped. From a stormwater management standpoint, redevelopment is the addition, or removal and replacement of all, or a portion of, buildings and pavement. Redevelopment of a property cannot occur without various City permits and approvals. Therefore, DVS will be made aware of any requests for removal or changes to a BMP during this process. In a redevelopment situation, a BMP removal will not be approved unless the stormwater draining to it will be managed by one or more other BMPs after redevelopment is complete, as appropriate for the new configuration of buildings, pavement, and green spaces on the property.

The only other circumstance where DSM may allow BMP removal is if all of the buildings, pavement, and other impervious material on the property are completely removed and the land returned to a natural vegetated condition. This situation is rare, but does occur, such as when the City purchases property to create a new park. Like redevelopment, the City has laws and procedures in place for demolition and removal of property improvements. So, DVS will be made aware of these actions in order to consider allowing BMP removal on such properties.

Well-maintained neighborhood stormwater BMP in Lincoln, NE. Source: City of Lincoln, NE.

Are There Prohibited Uses for a BMP on My Property?

Yes, there are uses that are not allowed for a BMP on your property. There are activities that can inexplicably lead to encroachments and uses that can damage a BMP and lead to flooding, erosion, or pollutant discharges. The table on the following page lists the activities and uses prohibited for stormwater BMPs. Owners should be familiar with this list and take care not to allow a prohibited activity or use in or on their BMP.

PROHIBITED ACTIVITIES AND USES OF STORMWATER BMPS

Prohibited Activities	Prohibited Uses
X Spraying, filling, and dumping of any material, household/commercial waste, or sewage	X Sewage storage or treatment area/system
X Sewage or waste storage or disposal	X Storage of vehicles, equipment, materials, pesticides, herbicides, fertilizers, or wastes
X Use of heavy equipment during maintenance activities (infiltration GI-BMP only)	X Storage of vehicles or equipment under repair (e.g., an auto repair shop) or in disrepair (e.g., a junk yard)
X Foot traffic unrelated to maintenance activities (infiltration GI-BMP only)	X Vehicle traffic or parking (allowed for permeable or porous pavement)
X Incorrectly parked vehicles	X Materials or waste storage areas
X Pet and livestock feeding, relief or play areas	X Dog parks, pet kennels and livestock corrals, even on a limited/temporary basis
X Installation of impervious surfaces unrelated to the BMP	X Home or commercial gardens (beyond plant requirements for vegetated BMPs)
	X Playgrounds and sports fields (unless the stormwater management facility is designed for such use as a multi-purpose stormwater management facility, like an underground detention system beneath a soccer field)

2.0 Keeping Your BMP Working Properly

Why Do I Have to Keep My BMPs Working as Designed?

Stormwater BMPs are used to reduce the negative impacts of the water that runs off of buildings, pavement, and other developed areas during and after rainfall or when snow melts. Negative impacts include property and street flooding, ditch and stream erosion, and pollution. BMPs must work as designed to prevent these negative impacts. When they do not function properly, homes, businesses, and other properties can be damaged, streets can become impassible, streams can erode and widen, aquatic life can be threatened, and, ultimately, human health and safety can be affected.

What Makes a Functional Bmp?

To understand what makes a functional BMP, it is critical to first understand how BMPs function. There are many types of BMPs, some that address all the impacts and some that address only one or two impacts. The impacts addressed depend on the type and design of the BMP. The main categories of stormwater BMPs are listed and described below.

- **Retention BMPs.** This type of BMP (often called a retention pond or basin) prevents flooding, erosion, and pollution by capturing and storing stormwater *permanently*. The stormwater adds to the BMPs permanent pool or water and/or evaporates over time. Depending on the design, retention BMPs can be designed to have a permanent pool of water or be dry when not in use. Regardless, stormwater is retained on the property for most rainfalls and snow melts that occur over the course of a year. It should be recognized that even retention BMPs can be overtopped during very extreme storms or snow events, or when many large storms occur one right after the other.
- **Detention BMPs.** Detention BMPs (often called a detention pond or basin) prevent flooding and soil erosion by *temporarily* storing stormwater then releasing it slowly and safely during and after the rainfall. Some detention BMPs are designed to detain the water for 24 to 48 hours to allow pollutants to either settle to the bottom of the BMP, or filter through grass or other vegetation lining the bottom of the BMP before the water is released. Depending on the design, detention BMPs can have a permanent pool of water or can be dry when not in use. Detention ponds, extended wet detention, and extended dry detention basins are all examples of detention BMPs.
- **Green Infrastructure BMPs.** Green infrastructure BMPs are a special type of BMP designed primarily to manage pollution in stormwater. These BMPs are designed to mimic how a natural landscape full of leafy vegetation and loose soil manages stormwater. Most green infrastructure BMPs allow water to soak into the ground and filter through special, loose soil to remove pollutants. Depending on the design and soil surrounding (outside of) the BMP, the filtered water is either dispersed into the soil surrounding the BMP or is collected in an underdrain located near the bottom of the BMP and carried off the property. Many green infrastructure BMPs can be hard to see because they tend to look like managed landscaped areas. Bioretention, rain gardens, and planted infiltration trenches are all examples of green infrastructure BMPs.
- **Manufactured BMPs.** Manufactured BMPs are designed to remove pollutants from stormwater by filtering or mechanical means (e.g., baffling, centrifugal force) before the water is released. These BMPs are typically located underground, near or at a stormwater inlet, or under a manhole cover. In general, they require significantly more maintenance than other types of BMPs and are often out of sight.

What are Common Components of All BMPs?

There are several components common to all BMPs, shown in the examples to the right. Proper inspection and maintenance of these components will go a long way in making sure your BMP is operating and functioning the way it was designed. Each component must be working properly. Poor maintenance or damage to just one of these components could lead to failure of the BMP.

Regardless of the type of BMP, nearly all BMPs have some variation of the following main components that work together to manage stormwater:

1. Inlet Structure
2. Pretreatment
3. Main Treatment
4. Emergency Overflow[1]
5. Outlet Structure

The main components are shown in Figures 1, 2 and 3, which are general depictions of an extended detention basin (a detention BMP), a bioretention area (a green infrastructure BMP), and a hydrodynamic separator (a manufactured BMP that swirls water, thus using centrifugal force and deflection to separate out pollutants), respectively.

The next section (following the figures) provides descriptions of each common component, and pictures that generally demonstrate what a properly operating component should do/look like versus one that is failing.

Figure 1: Extended Detention Basin - Detention BMP

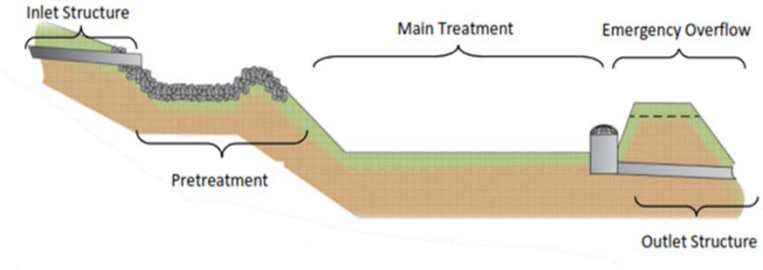


Figure 2: Bioretention – Green BMP

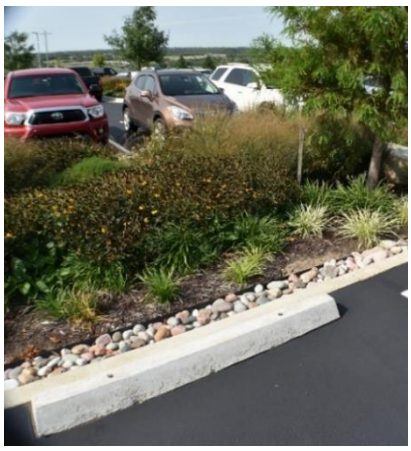
Figure 3: Hydrodynamic Separation – Proprietary BMP

[1] The only exception is retention BMPs, which are designed to permanently store water and therefore may not have an outlet structure. Most retention BMPs are designed with an emergency spillway. Some may have an outlet structure to be used in case the BMP needs to be drained for repair or emergency storage.

What Do the Common Components of BMPs Look Like?

Routine, informal inspections of the common components of a stormwater BMP are very important to keep it working properly. Frequent inspection will also help you catch and repair minor issues before they become major problems. Major problems can result in costly repairs, property damage, stream pollution, and legal issues with property owners impacted by failure of your BMP. For example, inspecting the inlet structure whenever landscape maintenance occurs allows you to notice and clear debris that can block or divert stormwater flow. If you didn't inspect routinely and maintain as needed, debris can build up over time, enough to bury an inlet and divert stormwater away from or around the BMP. In large storms, this diversion can flood or erode your property or others located adjacent to or downstream.

Descriptions of each of the main common components are provided below. The associated pictures provide examples of well-maintained, successful common components compared to failed components.

	What Does Success Look Like?	What Does Failure Look Like?
Inlet Structures allow water into the BMP. They should be free of sediment, trash, and debris. During routine inspections, look for erosion, clogging, and damage. Clear clogs and repair erosion and inlet damage.		Damaged inlet
Pretreatment protects the main treatment area by removing large debris and heavy sediment. This prevents or reduces clogging in the main treatment area. Usually, the pretreatment area can be cleaned more easily than the main treatment area. It should be free of sediment, trash, and debris. Look for signs of erosion, clogging, and damage during routine inspections and repair when noticed.		Heavy sedimentation

	What Does Success Look Like?	What Does Failure Look Like?
Main Treatment is where stormwater is stored temporarily or permanently to prevent pollution, stream erosion, and flooding. Treatment areas may be very large (see pictures) or quite small (e.g., a Manufactured BMP). The type/design of the BMP will determine if the main treatment will have standing water or will be vegetation. Look for areas of bare soil, trash, debris, sediment buildup, and overgrown vegetation. Fix these issues when noticed.		Overgrown vegetation
Emergency Overflow is designed to keep the area surrounding the BMP from flooding during or after a large storm or snow melt event. Spillways need to be kept clear of debris and be kept in good condition. Inspect the overflow for debris or sediment buildup, vegetation overgrowth, areas of erosion, and structural damage. Repair these issues as soon as they are noticed.		Eroded emergency overflow
Outlet Structures allow treated water to exit the BMP. If the outlet structure is clogged, flooding will occur within the BMP and potentially damage the BMP and surrounding property. Outlets should be free of sediment, trash, debris, and clogging. Erosion, scour, and damage should be evaluated and repaired when noticed.		Sediment buildup

What are BMP Success Factors?

City Utilities regulates the design and construction of stormwater BMPs to reduce the risk of flooding, stream erosion, and pollution impacts that can result from unmanaged stormwater. This regulation takes the form of:

- City code requirements *(Fort Wayne IN Code of Ordinances, Ch. 53: Stormwater Management Dept)*
- City Utilities design plan review services provided during the design of a property
- A *Maintenance Agreement for Stormwater Facilities* is recorded as a covenant running with the land. As a recorded covenant, the *Maintenance Agreement for Stormwater Facilities* is the legal documentation of the BMPs on the property.[2]

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As the property owner, it is your responsibility to keep the stormwater BMPs on your property functioning as designed and constructed. This responsibility is highly dependent on your BMPs meeting certain success factors. There are four critical Success Factors that will apply to BMPs, which are described below. The icons associated with each factor will be found throughout this document and in the *BMP Inspection Forms* in Section 5 and on the 'Catching Rain BMP' app.

SUCCESS FACTOR 1: VEGETATION

Vegetation*, if present, should be healthy and maintained. Areas of bare soil or erosion should not be present, nor should vegetation be overgrown or excessively weedy.

**includes trees, grasses, shrubs, plants as approved in the BMP Planting Plan*

SUCCESS FACTOR 2: TWO-DAY DRAIN TIME

2 DAYS

Most BMPs should completely drain stormwater within 48 hours (two days) after a storm. Longer drain times may occur during periods of prolonged or frequent rains. Regardless, frequent and repeated instances of standing water after this two-day time period can indicate a clog or other problem in the BMP.

SUCCESS FACTOR 3: PROTECTION

BMPs must be protected from damage. Pedestrians, vehicles, heavy equipment, and animals can damage BMPs not designed for such encroachments. BMPs cannot be used as play areas; for vehicle, equipment, or waste storage; or for stockpiles of dirt, mulch, or other landscape materials.[3]

SUCCESS FACTOR 4: CLEANLINESS

The area around a BMP needs to be kept clean to reduce the chance that objectionable materials enter the BMP. There should not be sediment, litter, or stored pollutants in the BMP or its drainage area.

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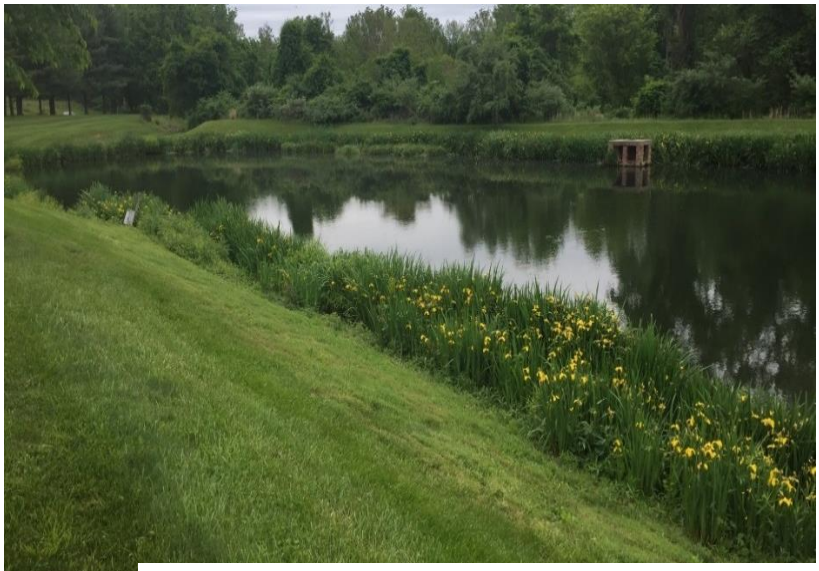
[2] As private property is transferred, the *Maintenance Agreement for Stormwater Facilities* will also transfer to the new owner during a property's title closing. Additionally, an owner can determine if a BMP is located on their property through the 'Catching Rain BMP' app.

[3] More information on the prohibited conditions for a stormwater BMP can be found in the *Fort Wayne IN Code of Ordinances, Ch. 53: Stormwater Management Department.*

BMP owners will use the Success Factors as "performance goals" when they inspect their BMPs and to determine the maintenance needed to keep them functioning as designed. The factors that will guide the inspection of your BMP depends on the type and design of the BMP. Not every BMP will need to meet all four of the Success Factors. Section 5 of this guide will help you determine which Success Factors apply to your BMP.

The following pages provide you with examples of how the Success Factors can influence a BMP's functionality and how they can be used to inspect a BMP. Examples are provided for three very different types of BMPs: A detention BMP (an extended wet detention); a green infrastructure BMP (a bioretention area); and a manufactured BMP (a filtration chamber).

Example 1: Detention BMP Success Factors (extended wet detention, well-maintained)



Street view photo of extended wet detention BMP

Aerial view of extended wet detention BMP

Success Factor 1: Vegetation

Vegetation is healthy and free from weeds. No areas of bare soil or erosion are visible.

Success Factor 2: Two-Day Drain Time

The water level is appropriate for the season and with consideration of the last rainfall. Inlet and outlet structures are visible and clear of debris.

Success Factor 3: Protection

There are no signs of damage by vehicles, equipment, or people. The tall vegetation planted at the water's edge is preventing swimming, fishing, and other unwanted uses.

Success Factor 4: Cleanliness

No signs of litter, erosion, pollution, debris, or burrowing animals. The areas draining to the wet basin are also free of pollution and erosion.

Example 2: Detention BMP Success Factors (extended wet detention, poorly-maintained)

Street view photo of extended wet detention BMP

Aerial view of extended wet detention BMP

Success Factor 1: Vegetation

Vegetation in the main treatment area is not established. Bare soil can erode and cause pollution and BMP failure. Grass and other vegetation are needed immediately.

Success Factor 2: Two-Day Drain Time

The water level is lower than appropriate for the season. While the inlet and outlet structures are visible and clear of debris, the outlet structure or main treatment area may be leaking.

Success Factor 3: Protection

There are no signs of damage by vehicles, equipment, or people. The outlet structure is covered by a safety and trash gate. However, other protective measures are not employed.

Success Factor 4: Cleanliness

There are signs of erosion and sediment in all the common components. Requires sediment removal and clean up before vegetation is planted.

Example 3: Detention BMP Success Factors (extended wet detention, maintenance needed)

Success Factor 1: Vegetation

Top Picture: No signs of erosion or bare soil. However, the overgrowth of cattails in the main treatment area could cause problems such as muskrat burrowing. Reduce or remove and control cattails to allow a large open water area.

Bottom Picture: There are signs of erosion and bare soil around the perimeter of the Detention BMP. This is also causing the inlet failure. Revegetation needs to occur.

Success Factor 2: Two-Day Drain Time

Top Picture: The water level is appropriate for the season and rainfall conditions. Inlet structures are visible and in good condition, but the outlet structure cannot be inspected due to cattails.

Bottom Picture: The water level is appropriate for the season.

Success Factor 3: Protection

Top and Bottom Picture: There are no signs of damage by vehicles, equipment, or people.

Success Factor 4: Cleanliness

Top Picture: Cattail overgrowth is a problem and can lead to clogging. Possible animal issues can lead to damage in the main treatment area.

Bottom Picture: There is evidence of algae in water, this should be further investigated.

Example 4: Green Infrastructure BMP Success Factors (bioretention, well-maintained)

Success Factor 1: Vegetation

Top and Bottom Picture: Vegetation is healthy and largely free of weeds. No areas of bare soil or erosion.

Success Factor 2: Two-Day Drain Time

Top and Bottom Picture: There is never standing water two days after a storm.

Success Factor 3: Protection

Top and Bottom Picture: No signs of vehicle, equipment, or pedestrian damage.

Success Factor 4: Cleanliness

Top and Bottom Picture: No signs of litter, erosion, pollution, or debris.

Example 5: Green Infrastructure BMP Success Factors (bioretention, poorly-maintained)

Success Factor 1: Vegetation

Top Picture: Vegetation is dead or unhealthy and does not cover enough of the BMP. Areas of exposed soil exist. Plants must be rehabilitated or replaced, and mulch is needed to cover the bare soil.

Bottom Picture: Vegetation is overgrown by weeds. The area needs to be weeded and replanted with appropriate vegetation.

Success Factor 2: Two-Day Drain Time

Top Picture: BMP is flooded more than 48 hours after an average rain event. Requires maintenance to unclog the outlet structure.

Bottom Picture: No signs of flooding more than 48 hours after an average rain event.

Success Factor 3: Protection

Top and Bottom Picture: No signs of vehicle, equipment, or pedestrian damage.

Success Factor 4: Cleanliness

Top and Bottom Picture: No signs of litter, pollution, or debris. Any sediment accumulating at the inlet must be removed.

Example 6: Green Infrastructure BMP Success Factors (bioretention, maintenance-needed)

Success Factor 1: Vegetation

Top Picture: Vegetation looks healthy and growing. Mulch covers unvegetated areas.

Bottom Picture: Vegetation is overgrown with weeds. Weeds need to be removed, and the BMP needs to be replanted with appropriate plants.

Success Factor 2: Two-Day Drain Time

Top Picture: Standing water is routinely seen more than two days after a storm. Check the outlet structure for blockage.

Bottom Picture: Standing water is not observed after 48 hours, however outlet structure is overgrown by weeds and needs to be maintained.

Success Factor 3: Protection

Top and Bottom Picture: No signs of vehicle, equipment, or pedestrian damage.

Success Factor 4: Cleanliness

Top Picture: No signs of litter, pollution, or debris.

Bottom Picture: Signs of litter around the perimeter of the BMP. Litter needs to be removed.

Example 7: Proprietary BMP Success Factors (filtration chamber, well-maintained)

Success Factor 1: Vegetation

Does not apply.

Success Factor 2: Two-Day Drain Time

The BMP is drained within two days of a storm.

Success Factor 3: Protection

No signs of damage or forced entry. All components are present.

Success Factor 4: Cleanliness

No signs of litter, erosion, pollution, or debris in the main treatment area.

Top picture: Filter cartridges are clean and ready for use.

Bottom picture: Filter cartridges (different make of filtration BMP) were not replaced per manufacturers specifications and are overwhelmed with sediment. In this case, not only do the filter cartridges need to be replaced, but the entire BMP will need to be cleaned as well.

Example 8: Proprietary BMP Success Factors (filtration chamber, maintenance-needed)

Success Factor 1: Vegetation

Does not apply.

Success Factor 2: Two-Day Drain Time

Standing water is frequently noted around the BMP's inlet structure. Check the inlet and outlet structures and the main treatment area to determine the cause of the clog. Repair immediately.

Success Factor 3: Protection

No signs of forced entry. All components are present. Check for damage caused by clogging or flooding.

Success Factor 4: Cleanliness

Standing water and mud in the inlet structure indicates either significant amounts of sediment are draining to the BMP or the inlet, outlet, or main treatment area is clogged. Determine the cause of excessive sediment and mud and repair immediately. Clean the BMP.

3.0 Inspection

Why Inspect?

Stormwater BMPs are used to control stormwater from developed property. They prevent the flooding, erosion, and pollution that can result from the increased stormwater runoff that occurs after a property is developed. BMPs are used anytime there is a enough rain or snowmelt to cause runoff. So, they must always be kept ready for the next storm or snow. If not, they can cause more problems than they are intended to alleviate. BMPs that are clogged with sediment or trash, damaged by mowers or inappropriate uses, or lack enough healthy vegetation can result in flooding, erosion, and pollution.

In Fort Wayne, property owners are responsible for the operation and maintenance of the BMPs located on their property.[4] This requirement pertains not only to the BMPs themselves but also to the related components and access routes to the BMPs from a public roadway.

Regular, informal stormwater BMP inspections are the first step in ensuring the BMPs on your property are in good working order. These inspections should be done as frequently as possible. **City Utilities recommends looking at the condition and maintenance needs of the common components of BMPs whenever the lawn and landscape are managed and after storms and periods of snowmelt.** These regular inspections will allow you to determine and address routine maintenance needs and prevent future problems with the BMP.

CATCHING RAIN

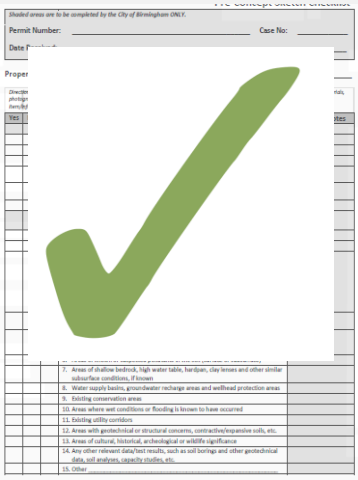
BEST MANAGEMENT PRACTICES

City Utilities requires a formal, documented inspection of each BMP once per year using the *BMP Guidance Sheets* provided in this manual, and *BMP Inspection Forms* found both in this manual and on the utilities' Post Construction BMP Inspection App called the **'Catching Rain BMP' app**. This formal inspection is also the responsibility of the property owner. Inspections must be performed by October 1st of each year, and submitted through the 'Catching Rain BMP' app. **Additionally, once every five years, the inspection needs to be conducted by a professional engineer (PE), landscape architect (PLA), or other qualified professional.** This Section provides detailed inspection requirements and guidance to support property owners in meeting this requirement.

Inspection keeps BMPs in good working order…

Bioretention Area After a Rain

…and keeps you in compliance.



The key to the long-term success of a BMP is routine inspection and maintenance.

[4] Fort Wayne Code of Ordinances, Chapter 53: Stormwater Management Department

How do I Inspect My BMPs?

In Section 2 of this Manual, the different categories of stormwater BMPs were described. These BMP categories differ in how they address flooding, stream erosion, and pollution. Within each category, there are many specific types of BMPs. For example, the Green Infrastructure BMP category includes bioretention BMPs, infiltration trench BMPs, permeable pavement BMPs, and many others. Ultimately, there are many different types of BMPs that are accepted and used for stormwater management in Fort Wayne. Different types of BMPs have different inspection needs. Some BMPs include vegetation, while others don't. Some BMPs retain and soak in stormwater, while others release it after cleaning. Some BMPs are underground, while others are readily visible. As a BMP owner, you don't need to know all the differences between different BMPs. Rather, you need to know what the common components of your BMPs look like and how to inspect and maintain them. This specific information is available in Section 5.

To inspect your BMPs, you also need to be familiar with their Success Factors and what success or failure within the common components might look like. This is illustrated in the following example, which generally shows how to inspect the common components in terms of the Success Factors that apply to that BMP. It is important to keep in mind that these pictures do not apply to all the different types and variations of BMPs. Specific instructions on how to inspect and maintain each type of BMP commonly accepted by City Utilities is provided in the individual *BMP Guidance Sheets* and *BMP Inspection Forms* in Section 5 of this Manual.

EXAMPLE: ROUTINE INSPECTION OF A BIORETENTION BMP

A medical office park has a bioretention BMP that manages stormwater runoff from a portion of the parking lot. A landscape company working for the property owner does a visual inspection of the BMP when they come out to mow and tend to the landscape, and they perform routine maintenance when needed.

They use the *Bioretention Area Guidance Sheet* provided in Section 5.5 to guide their inspection, as follows:

- Page 1 shows that all five common components are found in a bioretention BMP: Inlet structure, pretreatment, main treatment, emergency overflow, and outlet structure.
- Page 2 shows that all four Success Factors (Vegetation, Two-Day Drain Time, Protection, and Cleanliness) are relevant to a bioretention BMP. Page 2 also describes how each Success Factor is defined for a Bioretention BMP and what to look for when inspecting the BMP.

They can also use the *Bioretention Inspection Form* provided in Section 5.5 as an inspection guide. Since this is a routine, informal inspection, the property owner is not required to submit a BMP Inspection Form to the City. The landscape company can use it simply to guide their visual inspection of the BMP.

The "Inspecting the Common Components" graphic on the next page demonstrates the findings of the inspection of the bioretention BMP. It shows each of the common components and the application of the Success Factors for those components.

Examples of routine inspection results for several different types of BMPs are presented after the example graphic (on pages 3-4, 3-5, and 3-6). Success Factors are indicated by their logos. Examples are provided for both well-maintained (i.e., successful) BMPs and poorly-maintained (i.e., unsuccessful) BMPs.

1. Inlet Structure: Check for trash, debris, and sediment build-up.

Success Factor:

- Cleanliness
- Two-Day Drain Time
- ✗ *A lot of sediment build-up in the inlet. Remove to improve water flow. Determine the cause of sediment and correct the problem.*

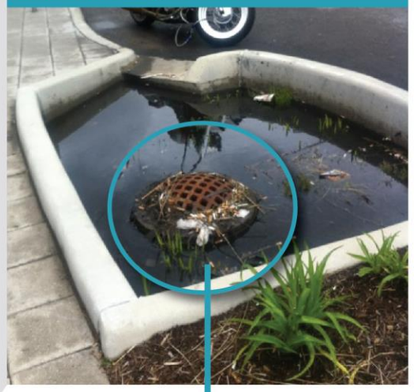
3. Main Treatment: Check for trash, debris, weeds, appropriate and healthy vegetation, mulch, erosion, and standing water.

Success Factor:

- Vegetation
- ✗ *Vegetation appears sparse. Determine cause. Ensure appropriate vegetation is planted to obtain 75% coverage.*

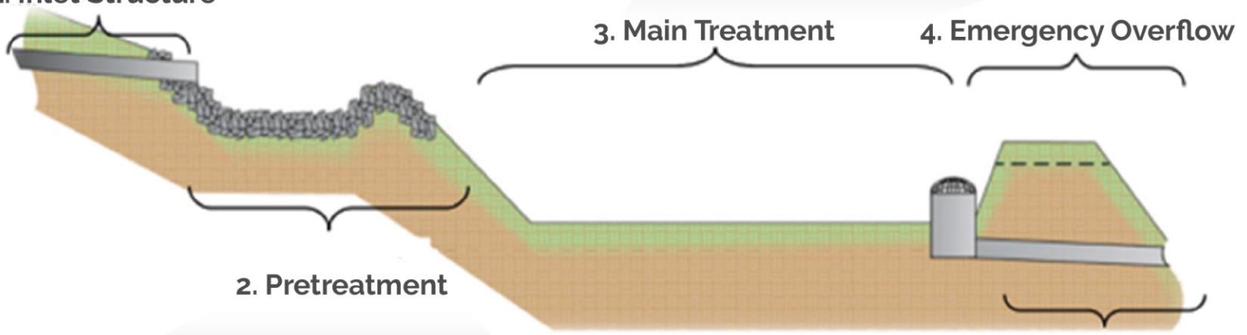
4. Emergency Overflow
5. Outlet Structure

In some BMPs, the emergency overflow and outlet structure are the same thing. Check for debris and sediment buildup, drainage, and standing water.



Success Factor:

- Cleanliness
- Two-Day Drain Time
- ✗ *Trash needs to be removed from overflow structure. Determine if this is the cause of the standing water. Ensure BMP drains in two days.*



2. Pretreatment: Check for build-up, trash and debris

Success Factor:

- Cleanliness
- ✗ *The pre treatment area needs to have the sediment removed.*

INSPECTING THE COMMON COMPONENTS OF A BIORETENTION BMP

Example of a Successful Bioretention BMP

Well-maintained bioretention area in a pervious paver parking lot

Example of an Unsuccessful Bioretention BMP

Poorly-maintained bioretention area in an asphalt parking lot

Example of a Successful Dry Detention Basin BMP

Example of an Unsuccessful Dry Detention Basin BMP

Example of a Successful Permeable Pavement BMP

Examples of Unsuccessful Permeable Pavement BMPs

Top left photo source: EPA Region V All others: Bill Hunt, North Carolina State University

How are Inspections Documented?

Regular inspections of your stormwater BMPs are critical to their long-term function. While most of your BMP inspections will be done informally and on a routine basis, a formal BMP inspection must be documented every year and submitted to City Utilities (via the 'Catching Rain BMP' app) by October 1st. *Note: If you are conducting your required inspections, complete the BMP Inspection Form for each BMP located on your property. Beyond that, you are encouraged to make quick, routine inspections of your BMPs whenever the lawn and landscaping on your property is maintained, and after every storm and snowmelt event. The 'Catching Rain BMP' app includes the BMP Location Map to help you locate the BMP, as well as the BMP Inspection Forms found in Section 5 of this Manual. Contact City Utilities if you need additional guidance.

See the table below for suggested inspection frequencies and documentation policies.

INSPECTION STEPS

1. Review your *Maintenance Agreement for Stormwater Facilities.*
2. Know the locations and types of your BMPs and find the common components for each.
3. Inspect all the BMPs on your property. Use the information provided in Section 5 of this Manual to guide you.
4. Address any maintenance needs identified during the inspection.
5. Submit a formal inspection via the 'Catching Rain BMP' app each year.

INSPECTION TYPE	INSPECTION GUIDANCE	DOCUMENTATION PROCEDURES
Routine Operational Inspections	• Often, and generally when landscaping activities are being performed at the property and after storms and snowmelt events	• Documentation of these inspections is not required, however, it is a good idea to document larger-scale maintenance activities to keep track of what has been done and the costs (keep receipts if possible)
Utility-Required Formal Inspections	• Submit annually by October 1st • Performed by the owner (or person designated by the owner) who is familiar with the purpose and basic function of the BMP • Once every five years, the inspection needs to be conducted by either a PE, PLA, or other qualifed professional	• Must use the *BMP Guidance Sheets* and *BMP Inspection Forms* associated with your type of BMP (located in Section 5 of this Manual and on the 'Catching Rain BMP' app) • The completed inspection forms and indication of maintenance performed must be submitted via the 'Catching Rain BMP' app by October 1st

Detailed guidance on inspections and inspection frequency for specific BMPs is included in Section 5. In general, all inspections should check for evidence of the following:

- Accumulation of sediment or debris in infiltration areas and at inlet and outlet structures
- Erosion, settlement, or slope failures
- BMP clogging, as evidenced by long standing water after rain events
- Lack of adequate protection as evidenced by signs of disturbance, encroachment, or soil compaction
- Vegetation damage, poor vegetative health, or inadequate vegetation coverage

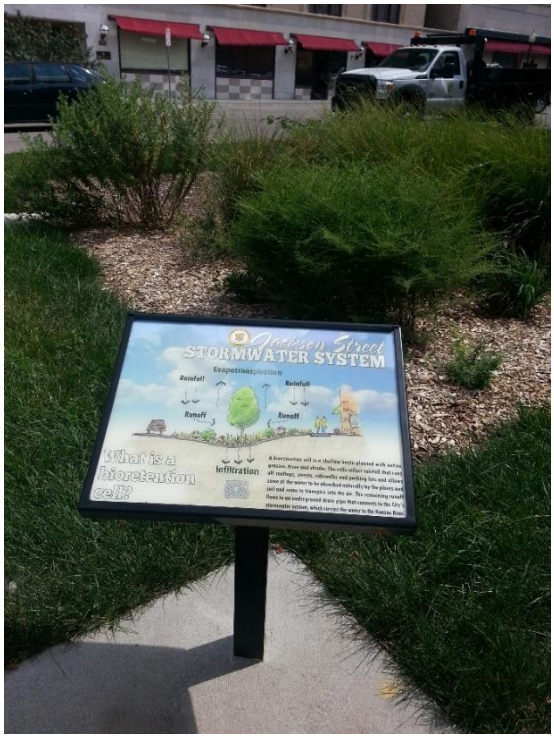
What Happens after the Inspection?

If your inspection identified any maintenance issues, you need to address them. This may involve cleaning up debris or sediment manually, or hiring someone to do a more extensive clean-out or repair. Refer to the next Section of this Manual and your *Maintenance Agreement for Stormwater Facilities* for more guidance. After receiving your forms, City Utilities will track your BMP inspections. If you have questions, it is your responsibility to contact a professional or ask City Utilities for more information.

We are here to help! City Utilities can answer questions about your BMP Inspections!

stormwater@cityoffortwayne.org

311 or (260) 427-8311



4.0 Best Management Practice (BMP) Maintenance

How do I get Ready to Maintain My BMP?

Regular inspection and maintenance of your BMP is critical to its success. Your property may only have one BMP, such as a detention pond, or you might have several BMPs on your property as depicated in the picture below. Inspection and maintenance guidance for most types of BMPs is provided in Section 5. From that information, you will see that most maintenance needs are fairly easy to determine if you are regularly inspecting your BMP and performing the most standard maintenance, like eliminating bare soil in the area draining to the BMP and removing sediment deposits, litter, and debris from the BMP itself. However, when typical maintenance does not correct a problem, it can be difficult to assess what is needed, especially if you are new to BMP maintenance. Cost, safety, and effectiveness are also key factors in determining what is needed and who will carry out maintenance activities.

If you have difficulty finding information about your property or BMP, or if you have questions about maintenance problems, contact City Utilities at stormwater@cityoffortwayne.org or call 311 or (260) 427-8311.

BMP Maintenance Basics

Open the 'Catching Rain BMP' app to find the locations and types of the BMPs on your property.

See Section 5 of this Manual to determine the specific Success Factors, inspection, and maintenance requirements for your type of BMP.

Perform routine maintenance often. This will reduce or eliminate the need for more involved and costly repairs.

Contact City Utilities if you have questions.

Some properties have multiple BMPs, which all require maintenance. This building has cisterns, green roofs, porous pavers, and a small bioretention area.

All BMPs require maintenance, both routinely and in response to problems.

What is Routine Maintenance of a BMP?

If a BMP were an automobile, routine maintenance would equate to an oil change. **Routine maintenance refers to the typical cleaning and light repair activities that are performed on a repetitive and frequent basis to sustain the on-going proper operational performance of the BMP.** For some BMPs, like detention BMPs and bioretention BMPs, landscaping (lawn mowing or plant watering and care) is a standard part of BMP maintenance. For others, sweeping, blowing leaves, and clearing debris is typical. Consult Section 5 for specific and detailed maintenance information for your BMP.

While an inspection may identify the need for a particular routine maintenance activity, property owners should not always rely on inspections to identify maintenance needs. Instead, routine maintenance should be considered an ongoing activity that is done on a regular basis, ideally whenever general property and landscape maintenance occurs.

The activities performed may vary depending on the type of BMP, the season (e.g., leaf removal from BMP inlets may be a frequent activity in the fall), and the land use and condition of the area draining to the BMP (e.g., a fast-food restaurant parking lot may require frequent trash removal).

Examples of routine maintenance include:

- Trash, debris, leaf litter, and minor sediment removal (sweeping, shoveling, vacuuming) within the BMP and in the area that drains to the BMP
- Inlet and outlet cleaning
- Mowing and pruning vegetation
- Removal and replacement of dead or unhealthy vegetation
- Erosion prevention and sediment control for bare soil or eroding surfaces
- Repair or replacement of BMP signage and other physical protection measures

Litter pickup is an example of routine maintenance.

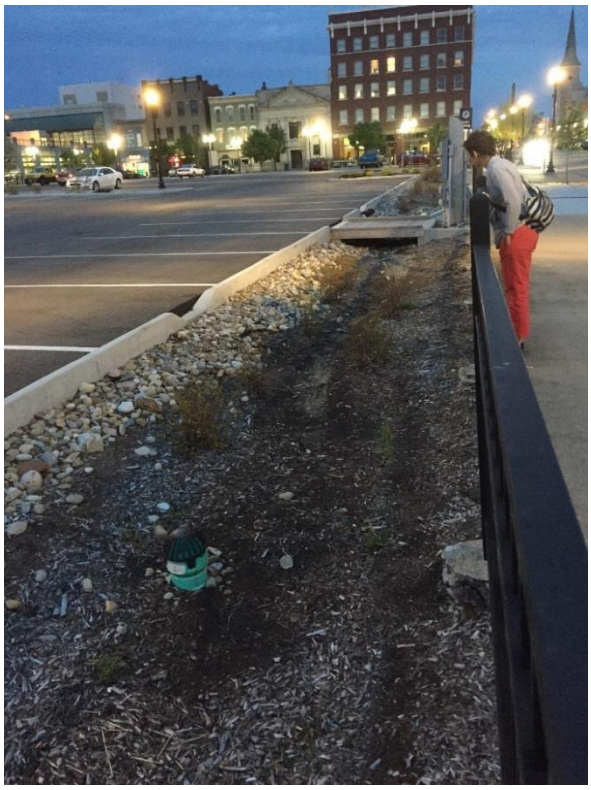
Routine maintenance can generally be done by the property owner, a tenant, a landscape company, or other person generally knowledgeable in landscape and property maintenance. Hiring a professional landscaping company or consulting plant nursery staff knowledgeable in BMP maintenance is encouraged for some of the more significant routine maintenance activities, such as selecting appropriate new plants, replacing or amending soil, repairing large areas of soil erosion, and installing large plants. To perform these activities properly and to avoid damaging the BMP, special equipment and knowledge may be required. Trained professionals can also identify problems early on that might save you from costly repairs later.

What do I do When My BMP Needs More Significant Repair or Rehabilitation?

Problems with your stormwater BMP or the need for a repair more significant than routine maintenance can occur, even in well-maintained BMPs. These issues usually occur after a heavy storm or large snowmelt, or as the result of an unexpected disturbance to the BMP. In any case, **problems noticed must be corrected as soon as possible to prevent damage to the BMP, your property, and the properties around yours**. Significant repairs may require the services of a licensed contractor, professional engineer, landscape architect, or soil scientist. Because it may be costly, creating a long-term fund for large maintenance items is highly recommended.

Examples of large maintenance tasks include:

- Repairs to structural components (e.g., curbing, outlets, underdrain, observation wells, etc.)
- Major sediment removal
- Addressing areas where soil has been compacted by heavy equipment
- Removal and replacement of BMP filters or filter media
- Large-scale removal and replacement of dead, damaged, or unhealthy vegetation



This bioretention area is being completely replanted as part of a large-scale maintenance effort.

How do I Remove and Dispose of Soil Media, Sand, or Accumulated Sediment from My BMP?

Many BMPs clean sediment out of stormwater and will therefore accumulate sediment deposits over time. Sediment must be removed periodically so the BMP continues to work as designed. Some BMPs also use filters or a special media to remove pollutants from stormwater. Media must be periodically replaced so that fresh media can continue to remove pollutants.

In most cases, filters, media, sand, soil, and sediment removed from a BMP can be disposed of properly as trash and accumulated sediment can even be used elsewhere on your property as fill dirt. However, in some cases, the disposal of these materials can be a concern because pollutants may be present. For example, a BMP that receives discharges from a commercial trucking fueling/parking area may have significant amounts of petroleum substances (e.g., gasoline, oils and greases) or metals within sand or other filter media. If the BMP receives runoff from a commercial or industrial setting, the sediment may be hazardous and will need to be tested. Before disposing of potentially contaminated or hazardous sediment or materials, Indiana Department of Environmental Management (IDEM) should be contacted for guidance associated with the requirements for waste determination and disposal procedures.

The bioretention area in this parking lot island has accumulated sediment which requires removal.

What do I Need to Consider for Vegetated BMPs?

Plants and soils are critical elements for proper function in many BMPs. BMPs like bioretention and rain gardens manage stormwater by using plants and soil to soak up or filter stormwater, sending it back into the atmosphere through plants' leaves, or replenishing groundwater through filtration. Soil has numerous open spaces that store and transmit water beneath the soil's surface and distribute the water downward. Strong and vigorous root growth from healthy plants is an important part of this process. For other BMPs, plants provide a stabilizing cover for soil, preventing it from washing away during a rainfall and creating pollution in the form of sediment.

The success of vegetated BMPs as effective stormwater management elements is highly dependent on the health and adequate coverage of the plants within the BMP. As a result, inspection and maintenance activities will incorporate vegetation and soil considerations. Strong, growing plants and their relationship to healthy, loose soils are essential components of vegetated BMPs. Properly planting and maintaining vegetation and protecting the soil are critical to ensuring that a vegetated BMP performs most effectively for many years.

Vegetated BMPs can look like mowed grass, such as this vegetated swale on the left, or like landscaping, such as this urban bioretention area on the right.

What do I Need to Consider for Non-Vegetated BMPs?

Some BMPs don't require any plants to operate. These non-vegetated BMPs can range from cisterns that capture and re-use rainwater to underground detention areas under parking lots. Non-vegetated BMPs generally do not have specific requirements for vegetation health and coverage. As a result, they will typically not have significant soil or vegetation aspects to inspection and maintenance. Regardless of the design, non-vegetated BMPs have specific inspection and maintenance requirements that need to be met to ensure that they function as originally designed.

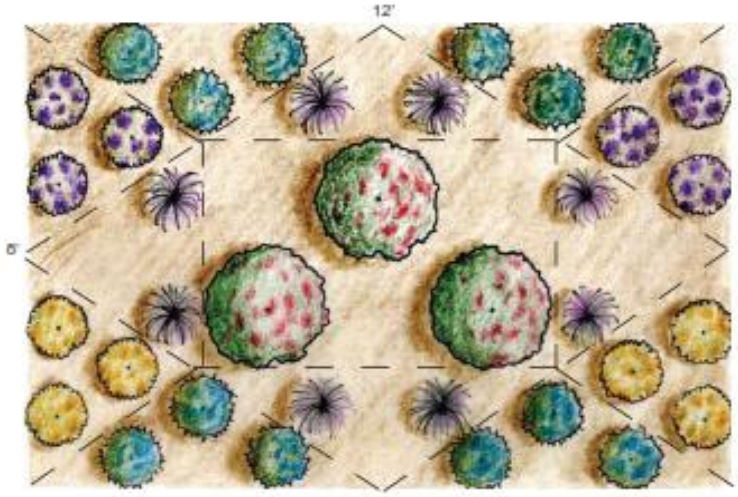
The pervious paver parking lot (left) and the cistern (right) are examples of non-vegetated BMPs.

How Can I Use the Four Success Criteria to Guide Maintenance of My BMP?

Success Criteria 1: Vegetation

- Look for bare soil: this could indicate dead vegetation
- Look for overgrown vegetation - this could indicate weeds and invasive species or necessitate mowing or pruning
- Fertilizers and pesticides should be avoided within and near BMPs
- Vegetation may need watering to establish new plants or if weather is very dry

If you have questions about what vegetation should be present, the property's BMP Planting Plan should show the planting plan, the type of plants, and the location of the plants.



Plant List

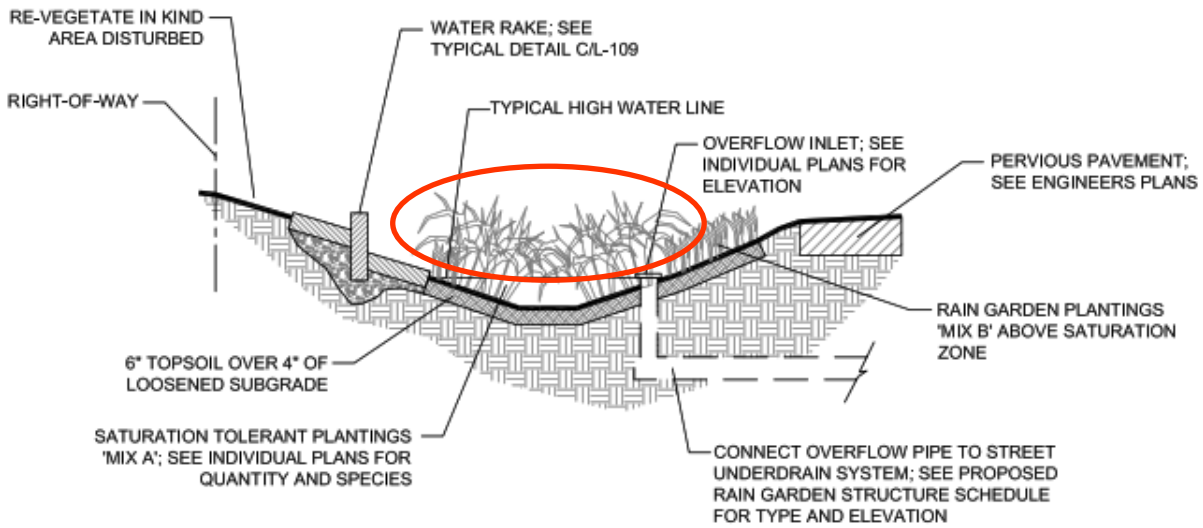
Plant Common Name	Spacing (ft)	Area (ft²)	ft²/plant	Quantity
crimsoneyed rose mallow	3	24	7.8	3
muhly grass	2	6	3.4	2
muhly grass	2	6	3.4	2
muhly grass	2	6	3.4	2
muhly grass	2	6	3.4	2
purple coneflower	1.5	6	2	3
purple coneflower	1.5	6	2	3
orange coneflower	1.5	6	2	3
orange coneflower	1.5	6	2	3
Stoke's aster	1.5	6	2	3
Stoke's aster	1.5	6	2	3
Stoke's aster	1.5	6	2	3
Stoke's aster	1.5	6	2	3

The BMP Planting Plan, found in your Maintenance Agreement for Stormwater Facilities for your property, will tell you where plants should be, their species, and spacing. This is helpful information if you need to replace plants.

Success Criteria 2: Two-Day Drain Time

- Look for ponded water: After a rainfall, stormwater should generally recede within 48 hours, but could be longer depending on how wet the soil already is.
- Look for sediment and debris that may be causing clogging or high-water levels.
- Check observation wells and cleanouts if you suspect problems with drainage are beneath the ground surface.

If applicable to your BMP (like an extended wet retention), the *Maintenance Agreement for Stormwater Facilities* should show the "normal pool", or water level, that is appropriate for the BMP.



Your Maintenance Agreement for Stormwater Facilities should show the typical high-water line or mark for some BMPs. This will help determine if there is too much water ponding, which can indicate a clog within the BMP or its outlet.

Success Criteria 3: Protection

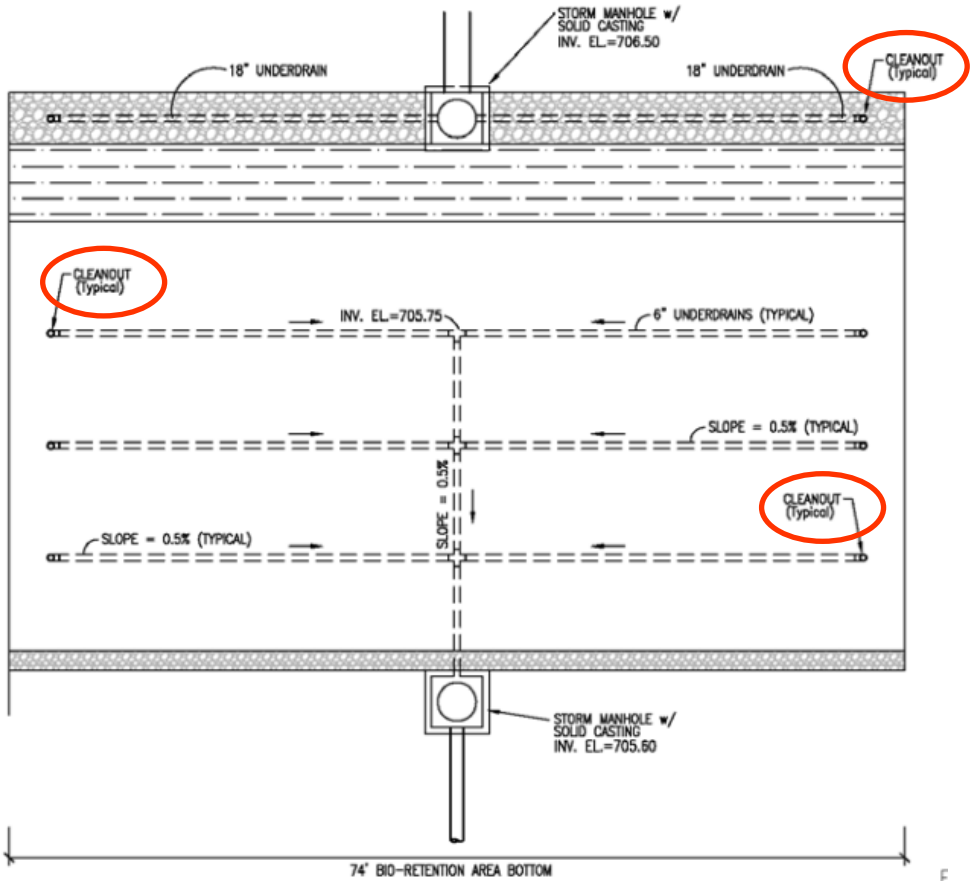
- Look for signs of encroachment, such as compacted soil, pet waste or crushed vegetation.
- Look for damage to signage, berms, and other barriers.

The *Maintenance Agreement for Stormwater Facilities* should show the types and locations of signs and barriers.

Your Maintenance Agreement for Stormwater Facilities should show the types and locations of signage. It's important to maintain signage to keep vehicles, equipment, people, and/or chemicals from damaging your BMP.

Success Criteria 4: Cleanliness

- Look for sediment, which needs to be removed periodically and can also indicate erosion nearby.
- Look for litter and leaf litter, which can cause clogging of structures and prevent proper draining times. It needs to be removed.
- Look for signs of pollutants, such as leaking vehicles/equipment or stockpiles of salt, soil, etc.
- Check for visibly dirty water and oil sheens.
- Check observation wells and cleanouts for signs of clogging.



Your Maintenance Agreement for Stormwater Facilities should show the locations of cleanouts and observation wells. Make sure these are kept clear and monitor them for clogs and signs of pollution.

What are Some Examples of Common Maintenance Tasks?

Common maintenance problems and solutions are shown on the following pages. For more information, refer to your *Maintenance Agreement for Stormwater Facilities* or contact City Utilities.

Grass has grown over this inlet and should be cut back to allow water to enter the inlet.

Debris and leaf litter are blocking this inlet. Remove this material to allow water to enter the inlet.

The erosion around this outlet has been stabilized with rock and erosion control blanket.

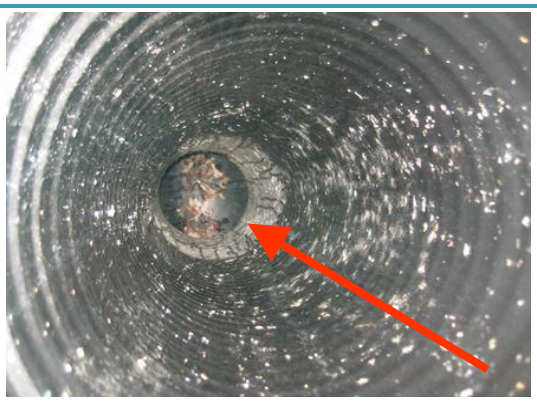
This outlet is clogged with sediment and overgrown vegetation and should be removed to allow water to flow out of the inlet.

This pretreatment area has been mowed to an appropriate length, and litter has been removed to prevent clogging.

This pretreatment area is full of sediment that should be removed. Look for a source, like an eroded area. Larger jobs may require a contractor and/or special equipment.

Water on this pervious pavement is not draining, which can indicate clogging. Some sediment and debris can be removed manually. Fine sediment that causes clogs at the surface or in the media below requires maintenance with a vacuum truck.

This infiltration area is full of sediment. Sediment should be removed, and the property should be checked for the source of the sediment, such as a nearby soil pile. Larger jobs may require a contractor and/or special equipment.



Look down observation wells to investigate clogs in underdrains. If a clog is found, underdrains may require special equipment or excavation to clean or repair.

This rain garden was not draining 48 hours after a rain. The outlet should be cleaned out and the garden should be inspected for signs of damage.

Vegetation has grown over this outlet, which blocks the flow of water. The plants should be trimmed back to allow water drain from the BMP.

This bioretention area has bare soil and dead plants and needs to be replanted. Check the Planting Plan to find out what plants are needed.

Algae needs to be controlled so it doesn't take over storage areas and harm aquatic life. Check the function of fountains and aeration devices. Fertilizer use around the pond should be limited. Maintaining healthy native plants and limiting mowing around the pond can also help.

Overgrown vegetation, especially invasive plants like cattails, should be removed and replaced with the correct plantings. Larger jobs may require a contractor and/or special equipment.

Steep slopes need to be vegetated to prevent erosion of sediment. Hydroseeding sprays seed and a sticky mulch that adheres to soil. It can be an effective way to quickly prevent erosion and establish vegetation.

This slope has failed, allowing soil to enter the detention pond's storage area and erosion to continue to occur. New vegetation, additional soil, erosion control matting and/or other measures should be installed.

Steep spillways can cause extensive erosion. Check the Maintenance Agreement for the correct slope. Regrading and slope protection with rock may be required.

The slope has failed, causing erosion. New vegetation needs to be established. Installation of additional soil, rock outlet protection, or other measures is required.

Stockpiles of soil will send sediment to your BMP, causing problems with clogging. Move stockpiles away from inlets and protect them with barriers, such as silt fencing.

Tire tracks and signs of encroachment can indicate problems, such as bare soil and BMP damage. Ensure vehicles, equipment, and pedestrians stay out of your BMP by maintaining signage, fencing, and other barriers. Repair damage and vegetate bare areas.

Pollutants may be visible at inlets and outlets or within your BMP. If oil or other hazardous materials are present, a specialized clean-up crew may be required.

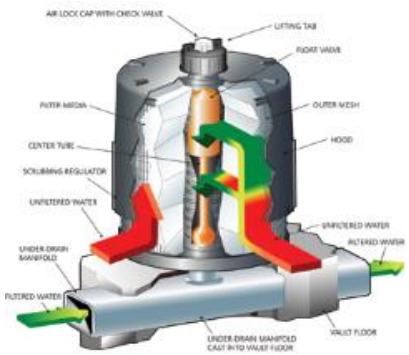
Litter around your property can travel to your BMP and clog it. Conduct regular litter pick up and make sure adequate trash collection is conducted.

5.0 Best Management Practice (BMP) Guidance & Inspection Form

Stormwater Best Management Practices, or BMPs, are non-structural and structural practices designed to store stormwater permanently (retain) or temporarily (detain). While Section 1 of this Manual focuses on the purpose and importance of incorporating BMPs in stormwater management plans, this Section details inspection requirements for the BMP owner to fulfill based on the BMP on their property. The table below gives a brief overview of each BMP that City Utilities has defined as appropriate, depending on the site conditions. The pages following the table provide *BMP Guidance Sheets* and *BMP Inspection Forms*.

BMP	BASIC DEFINITION	PHOTO
Biofilter or Bioswale (5.1)	Biofilters or bioswales clean pollutants from runoff by letting the water soak into the ground. They can be broad and shallow with thick, native grass. They can also have an engineered soil mix that allows for infiltration. The bottom acts as a natural pipe that guides water from a road, parking lot, or other properties.	
Constructed Wetland (5.2)	Constructed wetlands catch stormwater runoff and allow pollutants to settle out of the water. Plants in the wetland remove pollution from runoff by filtering the water through their roots. A constructed wetland differs from a wet extended detention basin because it isn't as deep and requires native plants.	
Infiltration Trench (5.3)	Infiltration trenches capture stormwater and let it soak into the soil. These trenches are excavated and filled with stone. The stormwater gathers in the trench, flows through the stone, and pollutants are filtered out. Infiltration trenches are configured or shaped differently than infiltration basins.	

Underground Infiltration Gallery **(5.4)**	**Underground infiltration galleries (UIGs)** catch and hold stormwater runoff in a structure made of rock, stone, or clay. There, the stormwater soaks into the ground over a couple of days. **UIGs** are configured or shaped differently than infiltration trenches.	
Bioretention **(5.5)**	**Bioretention** areas are built as shallow, sunken areas that utilize native plants and soil to catch stormwater from surrounding property. The water soaks into the soil of the bioretention area. Bioretention areas can have an underdrain or no underdrain & can sometimes be categorized as rain gardens.	
Wet Extended Detention Basin **(5.6)**	**Wet extended detention basins** remove pollutants from stormwater by storing it in a basin for a short amount of time. The basin lets the sediment (dirt) settle out of the water before it is released. Plants in a wet extended detention basin remove pollutants through their roots and leaves.	
Dry Extended Detention Basin **(5.7)**	**Dry extended detention basins** collect and store stormwater. The basins remove pollution and control flooding. A dry extended detention basin will manage about 1-inch of stormwater and drain completely about 40 hours after a storm.	

Proprietary BMPs **(5.8)**	**Proprietary BMPS** are structural BMPs that are pre-fabricated, manufactured, and/or patented to mimic a natural system, like bioretention. Examples of BMPs included in this group are hydrodynamic separators, baffle boxes, and modular manufactured filtration systems.	
Surface Bed Filter **(5.9)**	**Surface bed filters** clean stormwater by filtering it through a sand bed. The water collected, cleaned through filtration, and released to a stormwater system.	
Permeable Pavement **(5.10)**	**Permeable pavement** lets stormwater flow into the holes in the pavement surface. From there, the water soaks into the soil below. Permeable pavement can have modular pavers, concrete grids, pervious concrete, porous asphalt, and cellular confinement systems.	
Underground Detention **(5.11)**	**Underground detention** provides detention storage in vaults or pipes. The underground basins are designed to release water after a specific period of time, and after pollution has settled out of the water.	

Catch Basin **(5.12)**	**Catch basins** are Best Management Practices (BMPs) that remove trash, debris, and sediment from runoff directly at the storm drain. Some catch basins can be built to absorb oils.	
Vegetated Filter Strip **(5.13)**	**Vegetated Filter Strips** are gently sloping Best Management Practices (BMPs) with densely vegetated areas. They slow down stormwater runoff and filter out pollutants by letting the water soak into the ground.	

5.1 Biofilter or Bioswale Basics

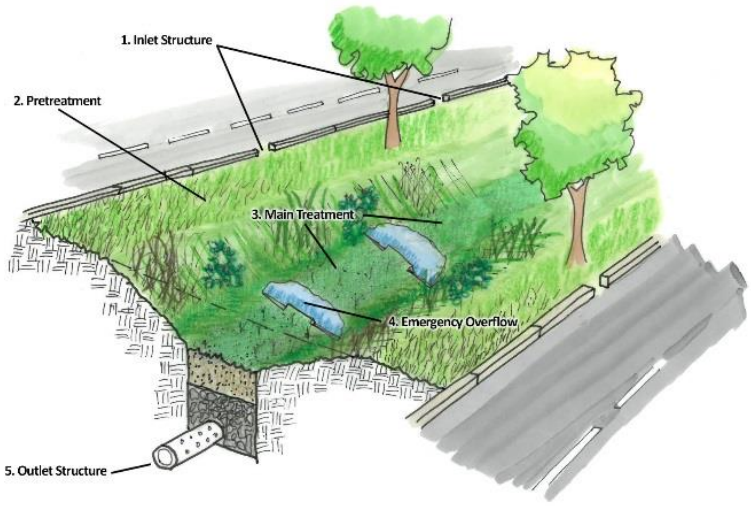
Biofilters or bioswales are Best Management Practices (BMPs) that clean pollutants from stormwater by letting the water soak into the ground. These BMPs are broad and shallow with thick, native grass. The bottom acts as a natural pipe that guides water from a road, parking lot, or other properties. When the water is in the swale, it can soak into the ground and pollutants can filter out. A biofilter or bioswale will manage about 1-inch of stormwater and should drain completely about 24 hours after a storm. Biofilters or bioswales will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Biofilters or Bioswales

- Easier to maintain than underground pipes
- Water is cleaned by soaking into the ground
- Reduce runoff
- Slow water down, reducing erosion
- Create an interesting landscape

Most biofilters or bioswales will have five common components (see the figure below):

1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

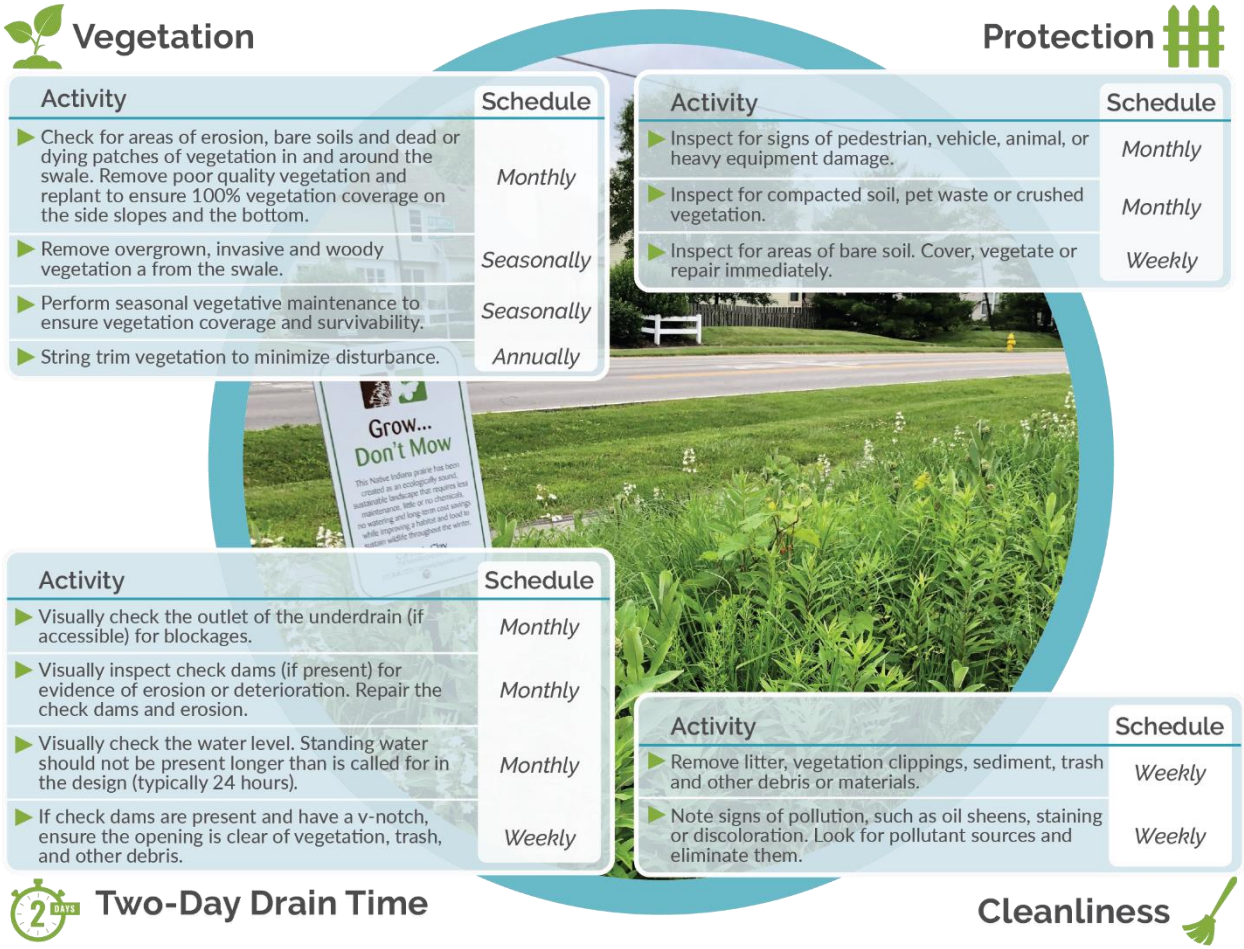


What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your biofilter or bioswale will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working biofilter or bioswale. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Check the property often for bare soil, litter, plant health, and soil compaction. • Get rid of weeds and invasive plants. Restock with healthy plants and make sure that basic needs for plant health are met. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems.	• Don't use too much salt and sand around the biofilter or bioswale in the winter. • Don't use too much fertilizer, herbicides, or pesticides in the BMP. Contact a local nursery or landscape company if your plants aren't doing well. • Don't let heavy equipment in the biofilter or bioswale or use it for storage, even for landscape items (leaves, snow, soil mulch, etc.)

BIOFILTER/BIOSWALE INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The biofilter or bioswale name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Biofilter 1" or "Bioswale A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			Reason for Follow Up?

BIOFILTER/BIOSWALE INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment & Main Treatment (Components 2 & 3) Success Factors: Vegetation, Protection	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Is the biofilter/bioswale hard to access for inspection and maintenance?				
	Guidance: Any obstacles blocking access and/or maintenance should be removed. If access is blocked by a permanent fixture (e.g., fence), note this on inspection form. **Schedule:** Monthly				
	2. Is the biofilter/bioswale holding water for longer than it was designed (typically 24 hours after a storm)?				
	Guidance: Water should drain out of the biofilter/bioswale per its design, which is usually about 24 hours after any rain event. If it stays in the BMP longer, native vegetation could be killed, or wetland plants could begin to grow. Check for and remove any blockages from the BMP. If no blockages are found and standing water is common during dry periods, more extensive maintenance, such as regrading or repair of the underdrain, may be required. **Schedule:** Monthly				
	3. Is there sediment, bare soil, eroding areas in the biofilter/bioswale or pretreatment area? Is there any unhealthy vegetation?				
	Guidance: The biofilter/bioswale and its pretreatment area should have a thick stand of grass and/or native vegetation. Eroded and bare areas should be repaired and covered with sufficient vegetation. If high water velocity is the cause of the erosion issues, check dams may be needed to slow the water. Sediment should be removed from the pretreatment structure(s) and any forebay or check dams each year. **Schedule:** Monthly. Annual sediment removal.				
	4. Notice another problem? Describe in comments.	Your Comments:			

BIOFILTER/BIOSWALE INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure & Emergency Overflow (Components 1 & 4) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Do the inlets or emergency overflow components of the biofilter/bioswale show evidence of erosion, bare spots, or scour?				
	Guidance: Inlet structures should have stable soils covered by dense, healthy vegetation and/or a stabilizing material (e.g., rock, concrete, asphalt, or paver lining) to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and stabilize bare soil immediately with the appropriate vegetation or material cover. At the emergency overflow location, install a rock lining that extends at least 5 feet beyond the area of erosion. Consult an experienced professional if you have questions on the size and type of rock. **Schedule:** Monthly				
	6. Does the inlet or emergency overflow contain trash, sediment, debris, grass clippings or other materials that can obstruct stormwater flow?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the biofilter/bioswale or damage the vegetation. **Schedule:** Monthly				
	7. Is there visual evidence of pollutants in the biofilter/bioswale (e.g., oil sheen odd discoloration, stains, etc.)?				
	Guidance: Visually check the biofilter/bioswale for discolored or stained grass or significant stands of unhealthy vegetation. Examine surrounding areas for a potential source and contact the City of Fort Wayne for assistance if needed. **Schedule:** Monthly				
	8. Notice another problem? Describe in comments.	Your Comments:			

BIOFILTER/BIOSWALE INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	9. Is the vegetation overgrown or in need of cutting? Is there woody vegetation that requires removal?				
	Guidance: String-trim native vegetation annually, or as needed, to minimize disturbance. Remove woody and invasive vegetation. Do not dispose of clippings or other waste in the biofilter/bioswale. **Schedule:** Annually				
	10. Is the vegetation dead, dying, or in need of replacement? Does it cover less than 100% of the biofilter/bioswale as per the BMP O&M plan?				
	Guidance: The biofilter/bioswale should have a healthy, thick cover of native vegetation on the sides and in the bottom of the BMP. If vegetative cover needs to be added, consider aerating and over-seeding in the fall, or planting new vegetation in the spring. **Schedule:** Seasonally				
	11. Are there signs of blockage in the biofilter/bioswale? Signs include frequent standing water, hard-packed soil, etc.				
	Guidance: If the biofilter/bioswale is clogged, contact the City of Fort Wayne. If the soil is compacted, the entire planting layer may need repair to restore percolation. **Schedule:** Monthly				
	12. Are there signs of pedestrian, vehicle, animal, or heavy equipment damage? Is fencing or signage damaged?				
	Guidance: Erect appropriate barriers and/or signage to reduce entry of vehicle and pedestrian traffic into the biofilter/bioswale. Repair damaged areas, backfill with appropriate soil, and replace vegetation as needed. **Schedule:** Annually				
	13. Notice another problem? Describe in comments.	Your Comments:			

BIOFILTER/BIOSWALE INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Property Draining to Biofilter or Bioswale Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	14. Is there evidence of litter, grass clippings, trash, debris, or other materials that could enter the biofilter/bioswale via stormwater or wind?				
	Guidance: Trash and other materials can be carried into the biofilter/bioswale, causing blockages. Remove undesirable materials and keep the property clean. **Schedule:** Monthly				
	15. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the biofilter/bioswale during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule:** Monthly				
	16. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the biofilter/bioswale during a storm?				
	Guidance: Too much sediment washing into a biofilter/bioswale can reduce the water storage and conveyance in the BMP. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. If soils are present on pavement surfaces nearby, sweeping parking lots or impervious surfaces to remove sand and silt may be necessary. **Schedule:** Weekly				
	17. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the biofilter/bioswale?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Implement policies to prevent these activities from occurring or take steps to prevent the pollutants from reaching the BMP, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule:** Monthly				
	18. Notice another problem? Describe in comments.	Your Comments:			

BIOFILTER/BIOSWALE INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

BIOFILTER/BIOSWALE INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

BIOFILTER/BIOSWALE INSPECTION FORM

Common Components of a Biofilter or Bioswale

5.2 Constructed Wetland Basics

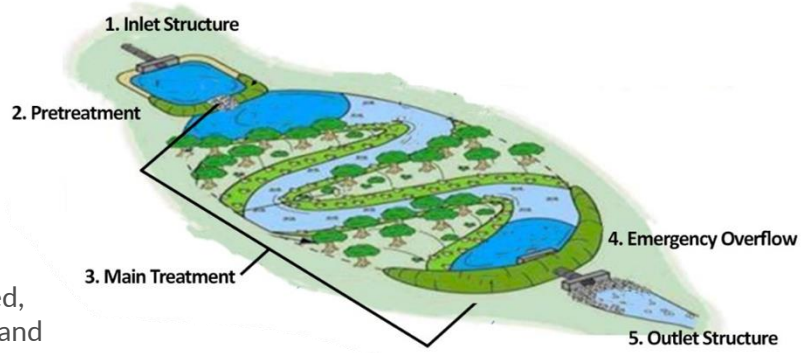
Constructed wetlands can act as Best Management Practices (BMPs) that catch stormwater runoff and let it go over about 40 hours. Wetlands should be at least 18-inches deep and hold water. Constructed wetlands differ from a wet extended detention basin because it isn't as deep. Plants in the wetland remove pollution from runoff by filtering the water through their roots. Wetlands let the stormwater settle, along with any pollution. This means that polluted water doesn't make it to the storm drain or stream. Constructed wetlands will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Constructed Wetlands

- Remove pollutants from stormwater
- Control erosion
- Recharge groundwater
- Protect water downstream
- Provide habitat for butterflies & birds
- Create an interesting landscape

Most constructed wetlands will have five basic parts (see the figure below):

1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.



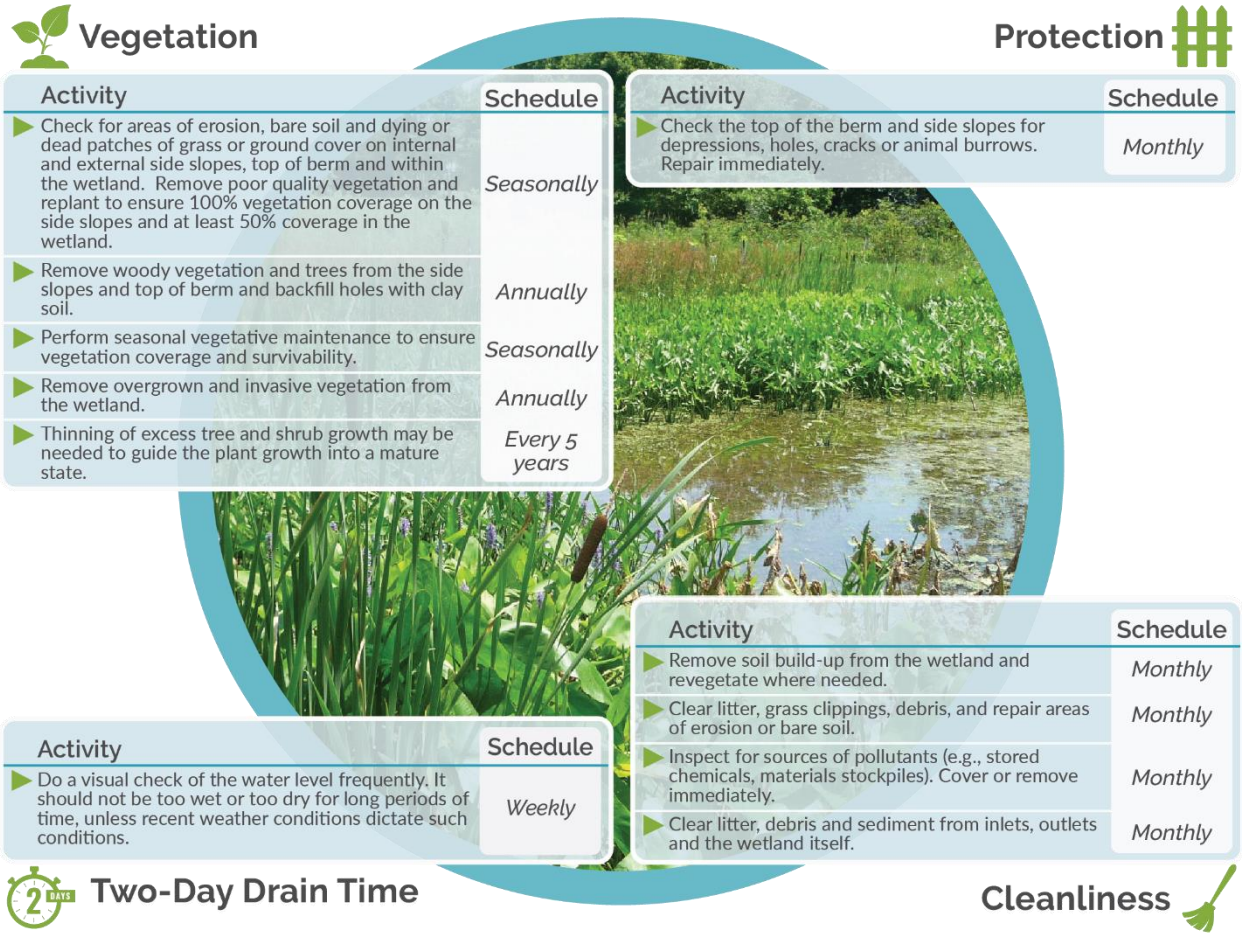
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your constructed wetland will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working constructed wetland. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Remove trash, debris, and dirt that is left in the constructed wetland to make sure stormwater will slow down and spread out before flowing to the grass. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems.	• Don't use too much salt and sand around the wetland in the winter. • Don't use too much fertilizer, herbicides, or pesticides. Contact a local nursery or landscape company if your plants aren't doing well. • Don't let heavy equipment in the wetland or use it as storage, even for landscape items (leaves, snow, soil mulch, etc.)

CONSTRUCTED WETLAND INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The constructed wetland name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Constructed Wetland 1" or "Constructed Wetland A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number			
Name of Staff Approving this Inspection Report:	Date of Inspection Approval:	Has the City Entered and Approved this Inspection? Yes No	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

CONSTRUCTED WETLAND INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Inlet Structure, Emergency Overflow, & Outlet (Components 1, 4 & 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	1. Are the inlets, outlets, treatment cells, valves, and other mechanical/structural components difficult to access for operation, inspection, and maintenance?				
	Guidance: Any obstacles blocking access to, or maintenance of, these components should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule:** Monthly				
	2. Are trash, sediment, debris, grass clippings, or other materials that can obstruct stormwater flow present in the inlet or outlet areas?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the constructed wetland. **Schedule:** Monthly				
	3. Is water flowing from the outlet when it is not expected?				
	Guidance: Constructed wetlands are designed to hold water, but when it rains, some water will flow through the BMP and out the outlet. If water is still flowing from the outlet 24 hours after a rainfall, note that in the inspection report and look for the cause. During dry periods, an outlet that is discharging water or water that is backed up at the inlet may be an indication of a clog or blockage, or even cracked or damaged structural components, like pipes or concrete components. Determine the cause and correct it. If the cause cannot be determined, you might require the services of a civil engineer. **Schedule:** Weekly				
	4. Is there bare soil or evidence of erosion or scour at the inlet or outlet?				
	Guidance: Outlets and the areas below them should be covered with enough vegetation, pavement, or other material (e.g., rock lining, concrete, asphalt, pavers or even dense vegetation) to slow the water and prevent erosion. If signs of erosion are visible at the outlet, install a rock lining that extends at least 10 feet beyond the area of erosion. Consult an experienced professional if you have questions on the size and type of rock. **Schedule:** Seasonally				
	5. Is there evidence of erosion, bare soil, broken pipes, or broken concrete at the inlets?				
	Guidance: Inlet areas collecting stormwater from pervious or impervious surfaces should have dense healthy vegetation or a material (e.g., rock, concrete, asphalt, or paver lining) to prevent erosion. Repair eroded areas and cover bare soil immediately with the appropriate vegetation or material cover. **Schedule:** Monthly				

CONSTRUCTED WETLAND INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet (Components 1, 4 & 5
Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness

INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
	Y	N	NA	
6. Is there visual evidence of pollutants at the inlets, outlets, or on the surface of the BMP (sheens, oil, odd discoloration, stains, etc.)?				
Guidance: Inspect areas draining to the constructed wetland and remove potential pollutant sources. Many pollutants can negatively impact the vegetation growing in the treatment cell(s). **Schedule:** Monthly				
7. Notice another problem? Describe in comments.	Your Comments:			

CONSTRUCTED WETLAND INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Main Treatment (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	8. Is the constructed wetland holding water? Is it clogged?				
	Guidance: Water should be present but should not permanently inundate the vegetation. Check for signs of debris, soil, sludge, and other materials that can cause clogs or cause odors. If the wetland is clogged and not draining, contact an experienced professional. Replant any unhealthy or dying vegetation. **Schedule:** Weekly				
	9. Does the constructed wetland vegetation appear yellow, diseased, or dead? Does vegetation (not including weeds) cover less than 75% of the planting area?				
	Guidance: Healthy wetland vegetation must cover at least 75% of the treatment cell(s). Unhealthy vegetation should be removed and replaced to maintain a density of 75%. Do not apply fertilizer or pesticides to the vegetation, as these materials could cause an imbalance in the wetland water. During establishment (years 1 through 3), watering may be necessary. **Schedule:** Annually, as needed				
	10. Is the wetland vegetation overgrown in the treatment cells? Is non-wetland vegetation (e.g., woody plants) present in the treatment cells?				
	Guidance: Under the right conditions, wetland vegetation can quickly become overgrown. If the treatment cell has 100% coverage with wetland vegetation, remove the overgrowth so that the surface coverage density is 75%. During establishment (years 1 through 3) weed control (flail-mow, string-trim, and/or selective/preemergent herbicides) may be necessary. No trees or deep-rooted woody vegetation should be growing in the treatment cells, as deep-rooted plants can harm the liner. Any plant material pruned or cut should be removed from the wetland and disposed of offsite. **Schedule:** Annually				
	11. Is there excessive silt building up in the main treatment area? Survey the pool depth with a probing rod. Does silt reach 10-15% of permanent pool depth?				
	Guidance: Dredging is required if silt reaches 10-15% of permanent pool depth. **Schedule:** Every 3 years				
	12. Notice another problem? Describe in comments.	Your Comments:			

CONSTRUCTED WETLAND INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Property Draining to Constructed Wetland Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	13. Are there animal burrows, trees, or woody vegetation growing immediately adjacent to the wetland? Are there pavement or soil cracks, holes, or depressions immediately adjacent to the BMP?				
	Guidance: The area around the wetland should be paved, vegetated (with grass or other non-woody vegetation), or both. Cracks, depressions, and holes in or adjacent to the BMP can indicate a subsurface issue with the treatment cell or piping system. Measure and log the length, width, and depth of each of these problem on the inspection form and note the location of each issue. Check the treatment cell(s) and piping system for signs of structural damage if you can do so safely. Call a civil engineer for assistance if these problems appear to be getting worse. **Schedule:** Monthly				
	14. Are litter, trash, debris, sediment, grass clippings, or other materials present in the area?				
	Guidance: Trash & other materials carried into the BMP can block the inlets, outlets, or treatment cells. Remove undesirable materials & keep the property clean. **Schedule:** Monthly				
	15. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the BMP during a storm?				
	Guidance: Too much sediment washing into the treatment cells can clog the wetland. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. **Schedule:** Seasonally				
	16. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the wetland?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the BMP, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule:** Monthly				
	17. Notice another problem? Describe in comments.	Your Comments:			

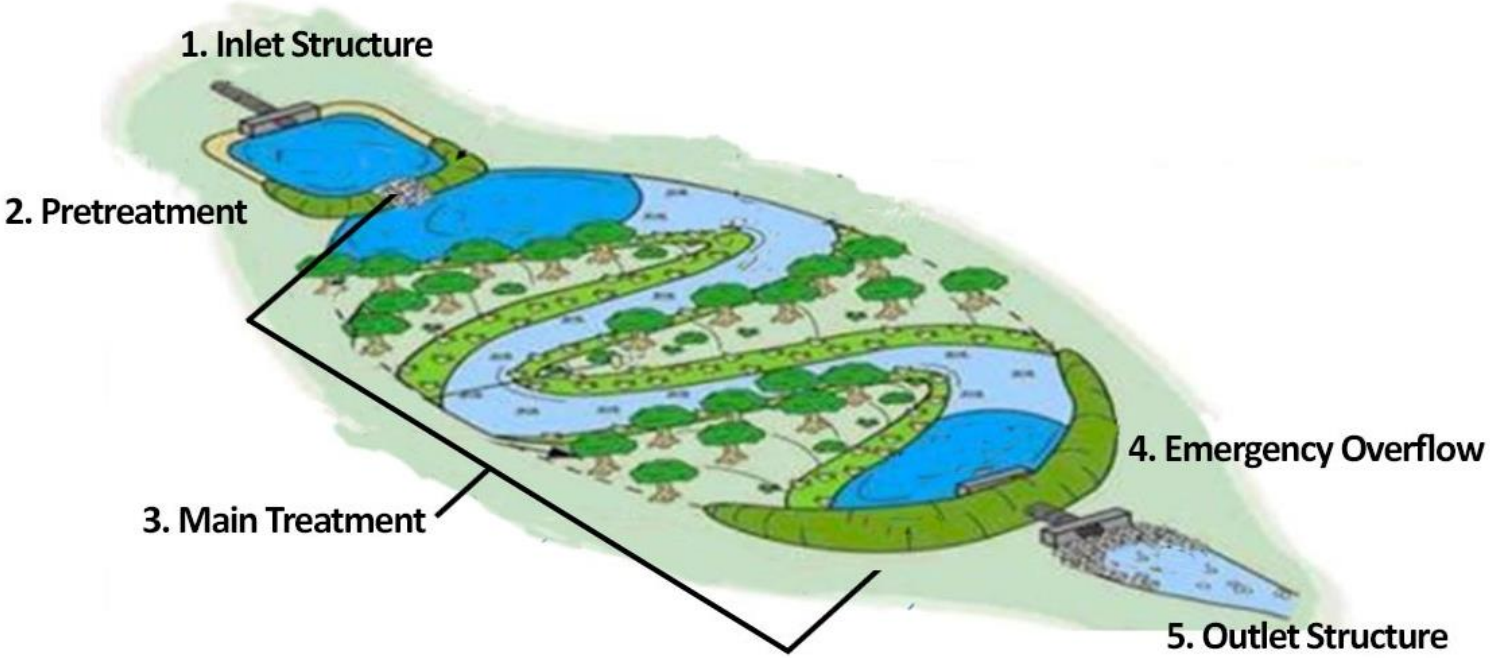
CONSTRUCTED WETLAND INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

CONSTRUCTED WETLAND INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Constructed Wetland



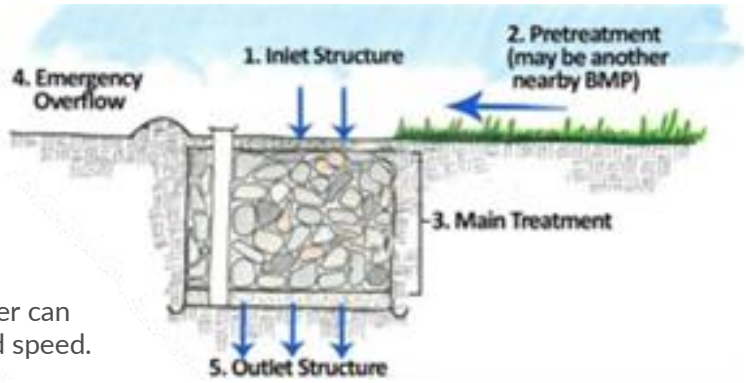
5.3 Infiltration Trench Basics

Infiltration trenches are Best Management Practices (BMPs) that capture stormwater and let it soak into the soil. These trenches are excavated and filled with stone. The stormwater gathers in the trench, flows through the stone, and pollutants are filtered out. Once filtered, the water goes back into the local stream or into the stormwater system. Some infiltration trenches are covered with topsoil and planted with grass. Infiltration trenches will manage about 1-inch of stormwater. They should drain completely about 6 to 72 hours after a storm. Infiltration trenches will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Infiltration Trenches

- Reduce stormwater runoff
- Remove dirt, trace metals, nutrients, bacteria & organic matter from water
- Allow infiltration upstream which may lower downstream stormwater control costs
- Recharge groundwater
- Reduce flooding
- They don't use too much space

Most infiltration trenches will have five basic parts (see the figure below):



1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform City-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your infiltration trench will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working infiltration trench. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.

Vegetation

Activity	Schedule
Check for stressed, dying or dead grass and for areas of bare soil and erosion in the infiltration trench. If the infiltration trench itself is grassed, do the same, taking care to avoid compaction of the topsoil on the surface of the trench.	*Monthly*
Mow grass to an approximate 4-inch grass height. Dispose of grass clippings.	*Monthly*
Perform seasonal grass maintenance to ensure 100% grass coverage of dense healthy grass in the infiltration trench at all times.	*Monthly*
Clear weeds, tree sprouts and invasive vegetation.	*Seasonally*

Protection

Activity	Schedule
Clear weeds, tree sprouts and invasive vegetation.	*Monthly*
Inspect for signs of disturbance or compaction of the trench's surface layer. Remove and refresh the top layer if needed.	*Monthly*
Inspect protective measures. Repair fencing, curbing, grates, signage and other measures quickly to prevent future BMP damage.	*Monthly*

Two-Day Drain Time

Activity	Schedule
Take notice if water regularly ponds in the infiltration trench for more than 24 hours after a rainfall.	*Monthly*
Clear litter, debris and sediment from inlets and overflow areas to prevent blockage and allow proper drainage.	*Weekly*
Inspect underdrain observation wells for sediment buildup or stagnant water. Remove blockages.	*Monthly*
Inspect for signs of disturbance or compaction of the trench surface. Remove and refresh the top layer if needed.	*Monthly*
When ponding occurs at the surface or in the trench, undertake corrective actions immediately. Remove grass clippings, leaves, and accumulated sediment routinely from the surface of the trench.	*Monthly*
Ponded water inside the trench (visible from the observation well) after 24 hours or several days following a storm event indicates the bottom of the trench is clogged. Remove and replace all of the stone aggregate and filter fabric.	*Biannually*

Cleanliness

Activity	Schedule
Clear litter, grass clippings, debris and repair areas of erosion or bare soil in the area draining to the infiltration trench.	*Monthly*
Clear pet waste. If frequent and excessive pet waste is a problem, consider adding signage to alert pet owners.	*Monthly*
Inspect for sources of pollutants (e.g., stored chemicals, materials stockpiles). Cover or remove built up sediment and dispose of properly.	*Monthly*
Inspect and clean pre-treatment devices associated with the trench.	*Weekly*

Do

- Pick up trash, debris, and leaves around the infiltration trench. Keep it clean.
- To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP.
- Do regular inspections and maintenance, often. Make repairs as soon as you notice problems.
- Keep an eye out for ponded water in the trench. If the trench isn't draining after several days, the bottom of the trench is clogged.

Don't

- Don't allow dirt to gather on the top layer of the infiltration trench.
- Don't neglect the maintenance needs of the trench. Hire a professional, if necessary.
- Don't allow weeds, trees or shrubs to grow on the top layer of the trench.
- Don't store uncovered mulch, sand, salt, soil or yard waste on your property. It could drain into the infiltration trench.

INFILTRATION TRENCH INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				**Today's Date:**
	Note: The infiltration trench name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Infiltration Trench 1" or "Infiltration Trench A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			Reason for Follow Up?

INFILTRATION TRENCH INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment, Inlet, & Outlet Structures (Components 1, 2, and 5) **Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness**	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Have the inlet structures been damaged or altered in any way that disrupts the flow of stormwater into the infiltration trench?				
	Guidance: Repair damage or alterations before the next rainfall if possible. If components have been intentionally altered to resolve a drainage or flooding issue, consult the City of Fort Wayne for further guidance. BMP components cannot be altered without approval. **Schedule:** Monthly				
	2. Is there visual evidence of pollutants in the infiltration trench (e.g., oil sheen, odd discoloration, stains, odors, etc.)?				
	Guidance: If signs of pollution are present, attempt to determine the cause and eliminate it. If a persistent or frequent pollution issue occurs, contact the City of Fort Wayne. This could be a sign that pollutants are routinely being introduced into the trench. **Schedule:** Monthly				
	3. Is the underdrain clogged or blocked?				
	Guidance: The underdrain can be checked by looking into the observation well(s) following 3 days of dry weather. If water is present, then the underdrain could be clogged. If the seasonal conditions have been overly wet, check again each day for several more days and document the result. Use the same method to check again after several more rain events. The underdrain must not be blocked or clogged for the infiltration trench to function properly. If the problem cannot be resolved by accessing the blockage through the underdrain pipe, then both the trench's surface layer and subbase may need to be removed to fix the underdrain, and then restored. In this case, consult a professional civil engineer or landscape architect to ensure that the underdrain and trench are restored in keeping with City of Fort Wayne requirements. **Schedule:** Monthly (dependent on dry weather events)				
	4. Notice another problem? Describe in comments.	Your Comments:			

INFILTRATION TRENCH INSPECTION FORM

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Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Do grassed areas (the trench surface, if grassed, and filter strip) have areas of bare soil or erosion? Is the grass thin, stressed, diseased or dead?				
	Guidance: The filter strip and trench (if grassed) must be 100% vegetated with a dense stand of healthy grass. Areas of bare soil and erosion are prohibited. Repair erosion and revegetate bare soil as soon as they are noticed. Determine the cause for thinning, unhealthy or dead grass, correct and re-sod or over-seed. **Schedule**: Monthly				
	6. Is the grass in need of maintenance?				
	Guidance: Watering and mowing are essential to maintain a healthy stand of grass. Provide water during prolonged dry periods and mow grass periodically to a height of 4 inches. If the top layer of the trench is pea gravel, REMOVE GRASS CLIPPINGS AS THESE CAN CLOG THE TRENCH. Aerate and over seed as needed. Avoid the use of herbicides to control weeds and use fertilizer sparingly and only when intense rains will not wash fertilizers into the trench before they can soak into the soil. **Schedule**: Monthly				
	7. Are trash, sediment, debris, grass clippings or other materials that can obstruct stormwater flow into, or clog, the infiltration trench present?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow and infiltration in the trench. Replace top layer (pea gravel or grass) and top surface filter fabric when clogged. **Schedule**: Weekly				
	8. Is the infiltration trench difficult to access for inspection and maintenance?				
	Guidance: Any obstacles blocking access to or maintenance of the infiltration trench should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule**: Monthly				

INFILTRATION TRENCH INSPECTION FORM

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Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	9. Are there signs of human or pet encroachment in the filter strip or the trench, such as compacted or displaced rocks, tire tracks, pet waste, etc.?				
	Guidance: Repair or replace protection measures if damaged (e.g., fences, hedges, signs, etc.). Increase protection measures if this is a frequent problem. Repair damage to the filter strip by reestablishing grass. Repair damage to the trench by replacing pea gravel or topsoil /grass and filter fabric (when clogged). A sign specifically addressing pet waste can reduce dog waste. Also consider installation of a pet waste station (sign, pet waste bag dispenser and trash can) if the infiltration trench is in an area where dog walking is popular. **Schedule**: Monthly				
	10. Is there any visual evidence of long-term ponding or standing water (stains, odors, etc.)?				
	Guidance: Ponded water inside the trench (as visible from the observation well or on the surface) longer than 24 hours or several days after a storm event is an indication that the trench is clogged. Remove and replace all the stone aggregate and filter fabric or media. **Schedule**: Monthly				
	11. Notice another problem? Describe in comments.	Your Comments:			

INFILTRATION TRENCH INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to Infiltration Trench Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	12. Are litter, trash, debris, sediment, grass clippings, or other materials present in the area?				
	Guidance: Trash and other materials can be carried into, and potentially clog, the infiltration trench. Remove undesirable materials and keep the property clean. **Schedule**: Monthly				
	13. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants entering the infiltration trench during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
	14. Are there areas of erosion or exposed soil/bare earth that could be a source of soil washing into the infiltration trench during a rainfall?				
	Guidance: Too much sediment washing into an infiltration trench can clog the pea gravel/topsoil layer and the filter fabric. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent erosion. Repair sediment damage to the infiltration trench by replacing pea gravel or topsoil and top surface filter fabric (when clogged). **Schedule**: Monthly				
	15. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the infiltration trench?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the infiltration trench, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule**: Monthly				
	16. Notice another problem? Describe in comments.	Your Comments:			

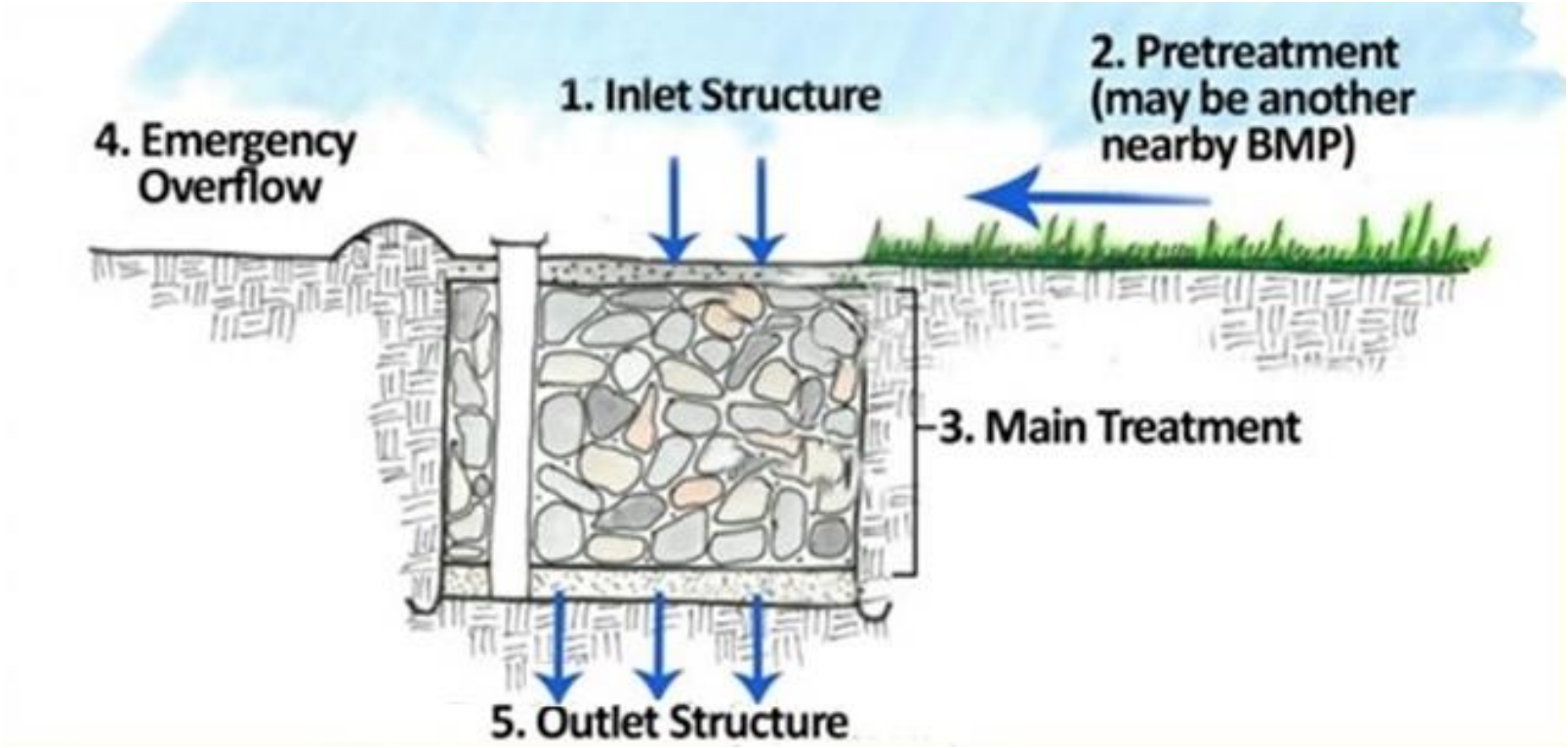
INFILTRATION TRENCH INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

INFILTRATION TRENCH INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of an Infiltration Trench



5.4 Underground Infiltration Gallery

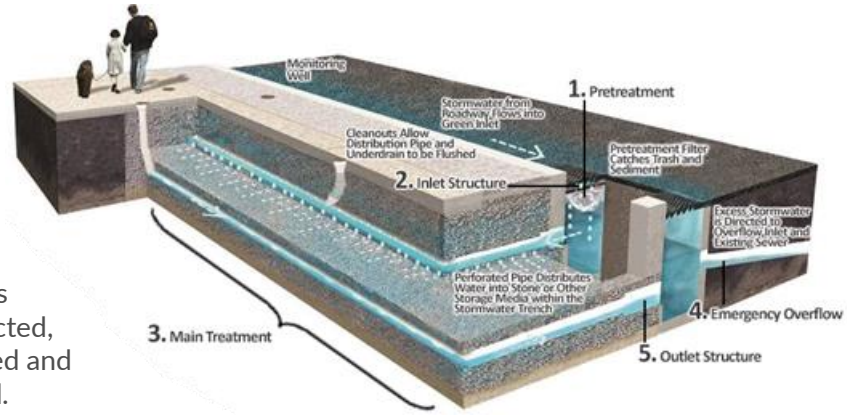
Underground infiltration galleries (UIGs) are Best Management Practices (BMPs) that catch and hold stormwater runoff in a structure made of rock, stone, or clay. There, the stormwater soaks into the ground over a couple of days. Infiltration galleries will manage about 1-inch of stormwater and should drain completely about 24 to 48 hours after a storm. Underground infiltration galleries will be located in stormwater management easements (SMEs) and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Underground Infiltration Galleries

- Reduces amount of stormwater runoff
- Removes dirt, trace metals, nutrients, bacteria & organic matter from water
- Allows infiltration upstream which may lower downstream stormwater control costs
- Recharges groundwater supply
- May decrease flooding
- Create an interesting landscape

Most underground infiltration galleries will have five basic parts (see the figure below):

1. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
2. **Inlet structures** let water flow into the BMP.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.



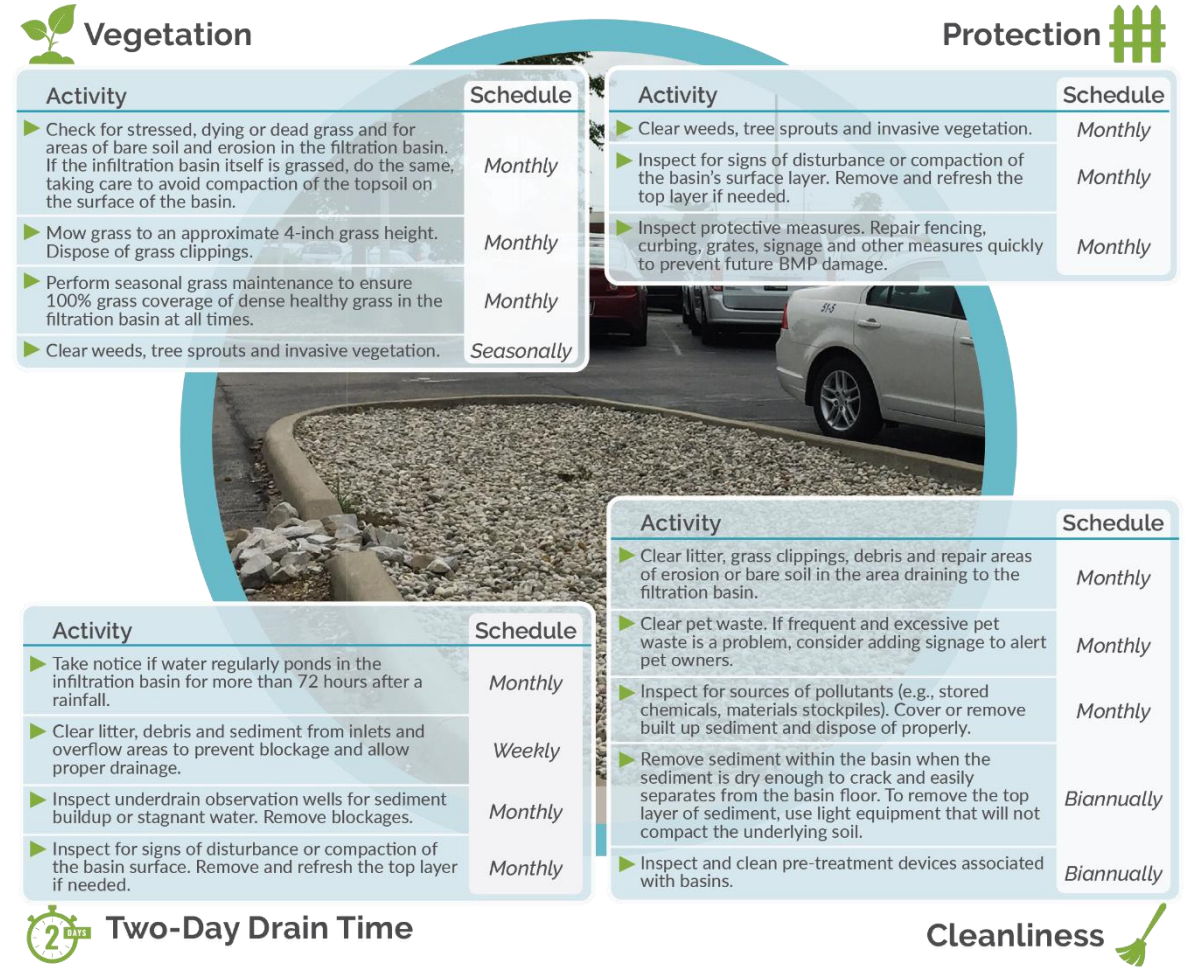
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your underground infiltration gallery will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working underground infiltration gallery. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Pick up trash, debris, and leaves around your underground infiltration gallery. Keep it clean. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems.	• Don't store uncovered mulch, sand, salt, soil or yard waste on your property. It could drain into the BMP. • Don't neglect the maintenance needs of your BMP. Hire a professional, if needed. • Don't allow weeds, trees or shrubs to grow on the top layer of the infiltration gallery. • Don't allow dirt to gather on the top layer of the infiltration gallery.

UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				**Today's Date:**
	Note: The underground infiltration gallery (UIG) name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "UIG 1" or "UIG A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number			
Has the City Entered and Approved this Inspection? Yes No			
Name of Staff Approving this Inspection Report:	Date of Inspection Approval:		
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment, Inlet, & Outlet Structures (Components 1, 2, and 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Have the inlet structures been damaged or altered in any way that disrupts the flow of stormwater into the UIG?				
	Guidance: Repair damage or alterations before the next rainfall if possible. If components have been intentionally altered to resolve a drainage or flooding issue, consult the City of Fort Wayne for further guidance. BMP components cannot be altered without approval. **Schedule**: Monthly				
	2. Has sediment accumulated in the UIG?				
	Guidance: Remove sediment when it is dry enough to crack and separate from the basin floor. To remove, use light equipment that will not compact the underlying soil. **Schedule**: Biannually				
	3. Is there visual evidence of pollutants in the UIG (e.g., oil sheen, odd discoloration, stains, odors, etc.)?				
	Guidance: If signs of pollution are present, attempt to determine the cause and eliminate it. If a persistent or frequent pollution issue occurs, contact the City of Fort Wayne. This could be a sign that pollutants are routinely being introduced into the UIG. **Schedule**: Monthly				
	4. Is the underdrain clogged or blocked?				
	Guidance: Water should not be present in the underdrain observation well(s) after 3 days of dry weather. If the seasonal conditions have been overly wet, check the observation well again each day for several more days and document whether water is present or not. Use the same method to check again after several more rain events. The underdrain must not be blocked or clogged for the UIG to function properly. If the problem cannot be resolved by accessing the blockage through the underdrain pipe, then both the surface layer and subbase may need to be removed to fix the underdrain. In this case, consult a professional civil engineer or landscape architect to ensure that the repairs and restoration are in keeping with City of For Wayne requirements. **Schedule**: Monthly (dependent on weather)				
	5. Notice another problem? Describe in comments.	Your Comments:			

UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	6. Do grassed areas (the UIG surface, if grassed) have areas of bare soil or erosion? Is the grass thin, stressed, diseased or dead?				
	Guidance: The UIG (if grassed) must be 100% vegetated with a dense stand of healthy grass. Areas of bare soil and erosion are prohibited. Repair erosion and revegetate bare soil as soon as they are noticed. Determine the cause for thinning, unhealthy or dead grass, correct and re-sod or over-seed. **Schedule**: Monthly				
	7. Is the grass in need of maintenance?				
	Guidance: Watering and mowing are essential to maintain a healthy stand of grass. Provide water during prolonged dry periods and mow grass periodically to a height of 4 inches. If the top layer of the UIG is pea gravel, REMOVE GRASS CLIPPINGS AS THESE CAN CLOG THE UIG. Aerate and over-seed as needed. Avoid the use of herbicides to control weeds and use fertilizer sparingly and only when intense rains will not wash fertilizers into the UIG before they can soak into the soil. **Schedule**: Monthly				
	8. Are trash, sediment, debris, grass clippings or other materials that can obstruct stormwater flow into, or clog, the UIG present?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow and infiltration in the UIG. Replace top layer when clogged. **Schedule**: Monthly				
	9. Is the UIG difficult to access for inspection and maintenance?				
	Guidance: Any obstacles blocking access to or maintenance of the UIG should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule**: Monthly				

UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	10. Are there signs of human or pet encroachment in the UIG, such as compacted or displaced rocks, tire tracks, pet waste, etc.?				
	Guidance: Repair or replace protection measures if damaged (e.g., fences, hedges, signs, etc.). Increase protection measures if this is a frequent problem. Repair damage to the UIG by replacing pea gravel or topsoil /grass and filter fabric (when clogged). A sign specifically addressing pet waste can reduce dog waste. Also consider installation of a pet waste station (sign, pet waste bag dispenser and trash can) if the UIG is in an area where dog walking is popular. **Schedule**: Monthly				
	11. Is there any visual evidence of long-term ponding or standing water (stains, odors, etc.)?				
	Guidance: Ponded water inside the UIG (as visible from the observation well or on the surface) longer than 72 hours after a storm indicates the infiltration capacity may have been overestimated. Repair factors responsible for clogging (such as upland sediment erosion and excessive compaction of soils) immediately. **Schedule**: Monthly				
	12. Notice another problem? Describe in comments.	Your Comments:			

UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to UIG Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	13. Are litter, trash, debris, sediment, grass clippings, or other materials present in the area?				
	Guidance: Trash and other materials can be carried into, and potentially clog, the UIG. Remove undesirable materials and keep the property clean. **Schedule**: Monthly				
	14. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants entering the UIG during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
	15. Are there areas of erosion or exposed soil/bare earth that could be a source of soil washing into the UIG during a rainfall?				
	Guidance: Too much sediment washing into a UIG can clog the pea gravel/topsoil layer and the filter fabric. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent erosion. Repair sediment damage to the UIG by replacing pea gravel or topsoil and top surface filter fabric (when clogged). **Schedule**: Monthly				
	16. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the UIG?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the UIG, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule**: Monthly				
	17. Notice another problem? Describe in comments.	Your Comments:			

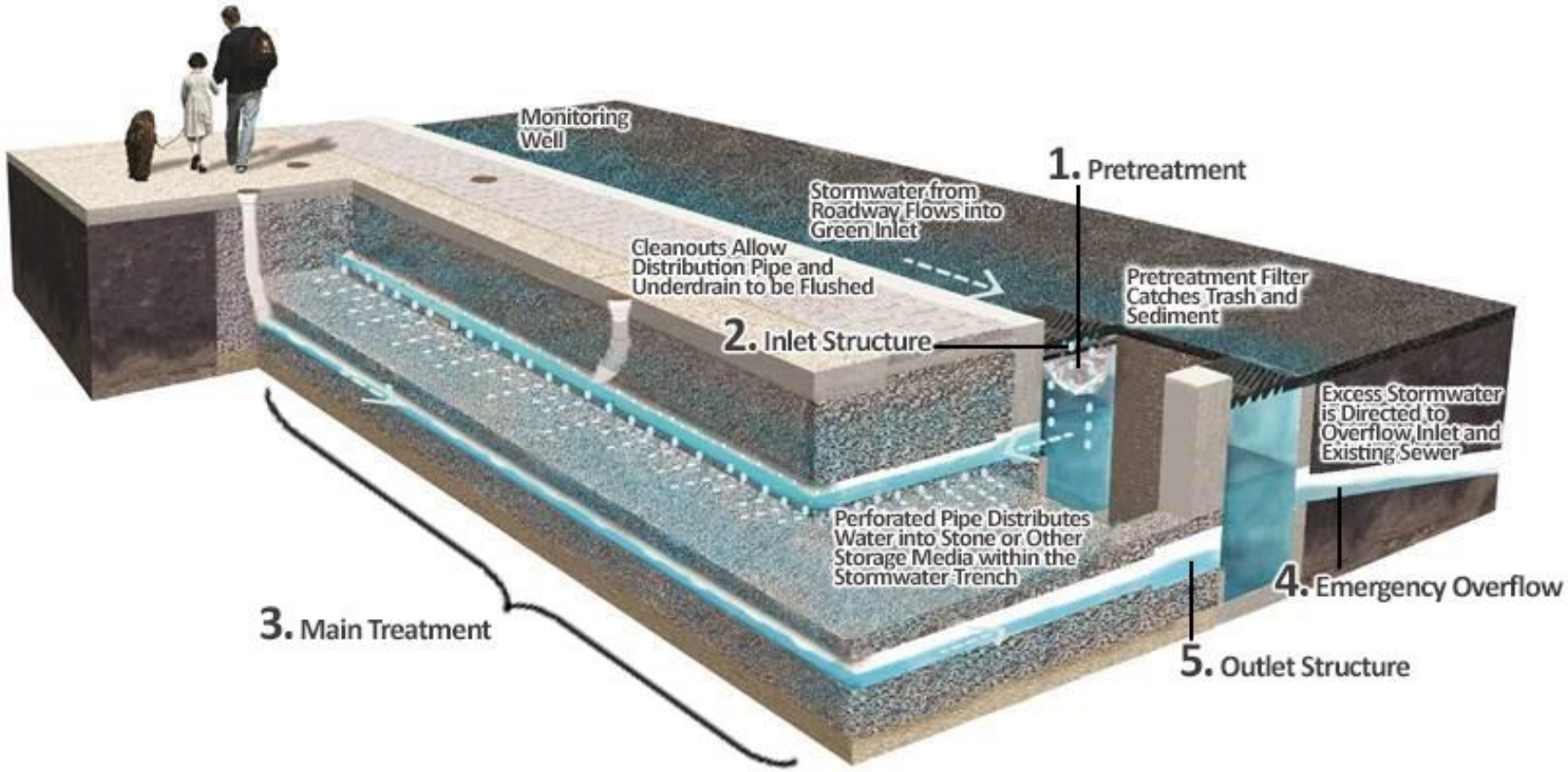
UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

UNDERGROUND INFILTRATION GALLERY (UIG) INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of an Underground Infiltration Gallery BMP



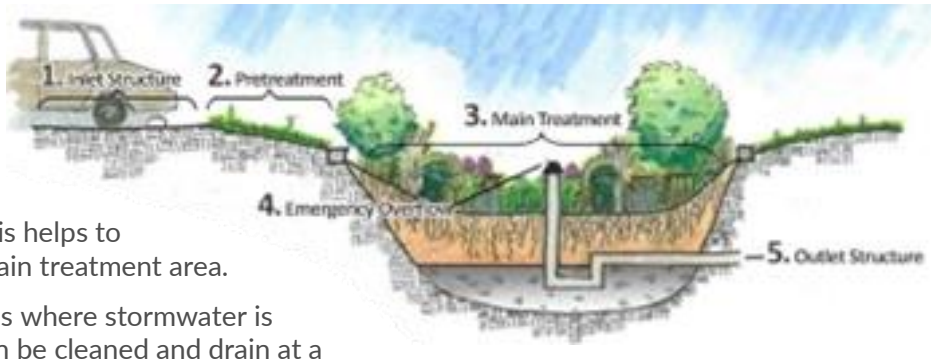
5.5 Bioretention Basics

Bioretention is a Best Management Practice (BMP) that cleans pollution from stormwater. Bioretention areas are built as shallow, sunken areas that catch stormwater from surrounding property. The water soaks into the soil of the bioretention area. A common bioretention area will easily handle rainfall from small storms, and should drain completely 24-48 hours after a storm. Bioretention is a great BMP to be used in median strips, parking lot islands, and landscaped swales. Bioretention areas will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Bioretention

- Removes pollutants from stormwater
- May reduce erosion in nearby streams
- May decrease flooding
- Provides habitat for butterflies & birds
- Creates an interesting landscape

Most bioretention areas will have five basic parts (see the figure below):



1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

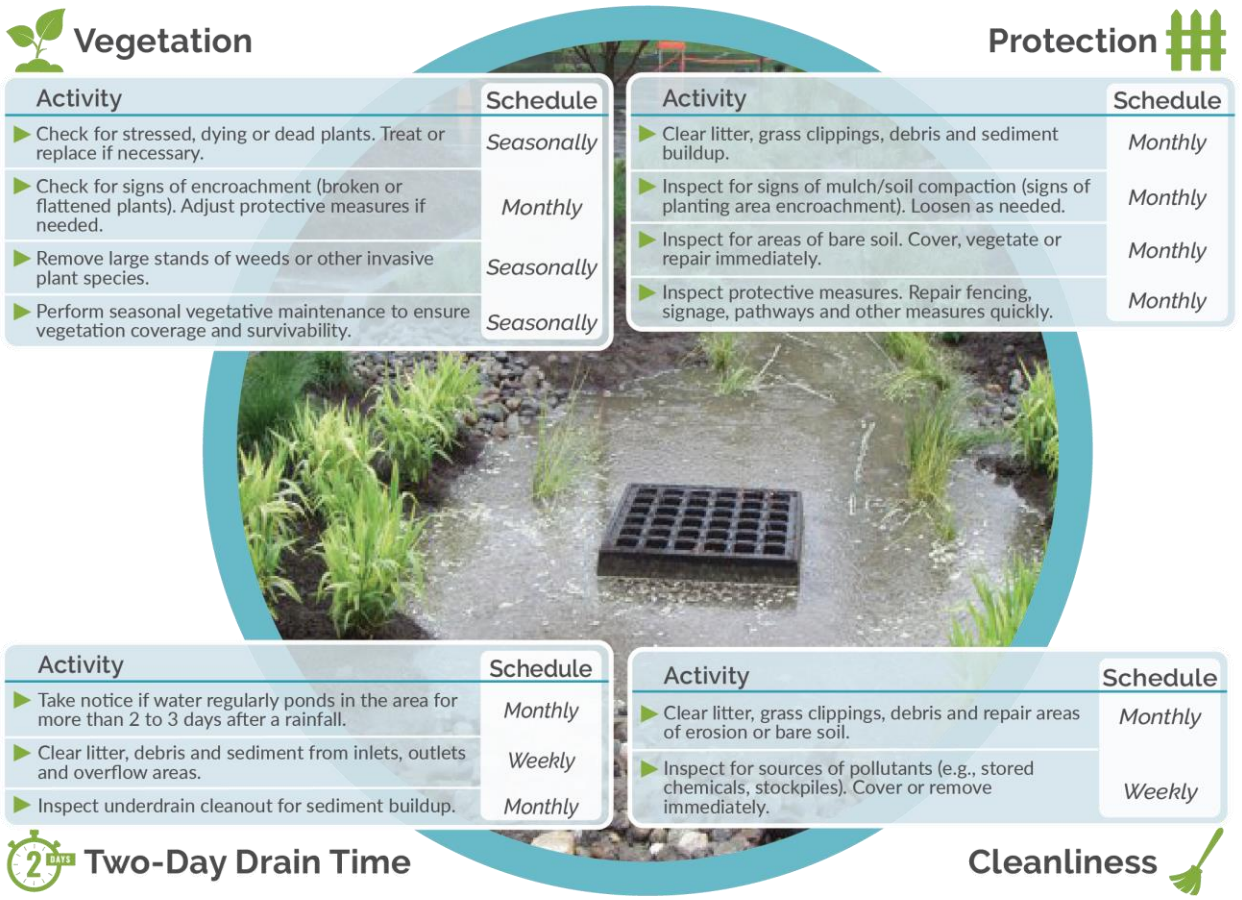
What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your bioretention area will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working bioretention area. Remember

that your ***BMP Inspection Form*** **must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Check your property often for bare soil, trash, plant health, and soil compaction. • Get rid of weeds and invasive plants. Restock with healthy plants and make sure that basic needs for plant health are met. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems.	• Don't use too much salt and sand around the bioretention area in the winter. • Don't use too much fertilizer, herbicides, or pesticides. Contact a local nursery or landscape company if your plants aren't doing well. • Don't let heavy equipment in the bioretention areas or use it as storage, even for landscape items (leaves, snow, soil mulch, etc.)

BIORETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The bioretention BMP name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Bioretention 1" or "Bioretention A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

BIORETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet, Pretreatment, & Outlet Structures (Components 1, 2, and 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Are trash, sediment, debris, leaves, grass clippings, or other similar materials in the inlet or pretreatment structures?				
	Guidance: Remove unwanted materials and correct any other problems that clog the mulch and soil or block the water flow into or out of the BMP. **Schedule**: Weekly				
	2. Have curbs, gutters, grates, area inlets or other similar components been damaged or altered in any way that disrupts the flow of stormwater into or out of the BMP?				
	Guidance: Repair damage or alterations before the next storm, if possible. If components have been intentionally altered to resolve a drainage or flooding issue, consult the City of Fort Wayne for further guidance. Bioretention components cannot be altered without approval. **Schedule**: Weekly				
	3. Are there shrubs and/or trees (not called out in the BMP O&M plan), unhealthy vegetation, exposed soil, or evidence of soil erosion in the pretreatment structure?				
	Guidance: Trees/shrubs can block water flow. Healthy vegetation should cover pretreatment structures with no signs of erosion or bare soil. Remove woody vegetation and stabilize exposed soil with appropriate, non-woody vegetation. Replace any dead or unhealthy vegetation. Repair areas of erosion and reseed or re-sod. Native species are preferred. **Schedule**: Weekly for bare soil. Monthly for vegetation concerns.				
	4. Notice another problem? Describe in comments.	Your Comments:			

BIORETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Are there materials in the main treatment area (e.g., trash, sediment, debris, leaves, grass clippings, etc.) that may cause clogging or underdrain blockage?				
	Guidance: Signs include frequent standing water, hard-packed planting layer, etc. Remove unwanted materials and correct any other problems that can cause clogging or otherwise prevent percolation of stormwater into the soil. If the underdrain is clogged, contact the City of Fort Wayne. If the soil is compacted, the entire planting layer may need repair to restore percolation. **Schedule**: Weekly				
	6. Are there signs of human encroachment in the main treatment area unrelated to maintenance, such as compacted or displaced mulch, damaged plants, tire tracks, etc.?				
	Guidance: Repair or replace protection measures if damaged (e.g., fences, hedges, signs, etc.). Increase protection measures if this is a frequent problem. Rake and refresh mulch and soil layers to loosen compacted areas. If standing water has become a problem, see #5 above. **Schedule**: Monthly				
	7. Is there evidence of soil erosion or are there patches of exposed soil?				
	Guidance: Repair the erosion or bare soil areas with vegetation and/or mulch. Identify the cause of erosion and take steps to prevent future occurrences. **Schedule**: Monthly				
	8. Notice another problem? Describe in comments.	Your Comments:			

BIORETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment Area (Component 3, vegetated area) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	9. Is vegetation overgrown or in need of weeding, pruning, or clipping?				
	Guidance: Remove overgrown vegetation, complete any weeding/pruning/clipping. Stabilize soils following weeding. Do not dispose of clippings and other waste in the bioretention BMP. **Schedule**: Seasonally				
	10. Do plantings (not including weeds) cover less than 75% of the planting area?				
	Guidance: Supplement vegetation as needed to achieve at least 75% planting area coverage requirement. **Schedule**: Seasonally				
	11. Are diseased, dying, or dead plants present? Of the plants called out in the BMP O&M plan, at least 85% of shrubs & grasses and 100% of trees must be healthy and growing.				
	Guidance: Remove and replace unhealthy or dead vegetation. Native species are preferred. Determine and correct the cause of vegetation health problems. **Schedule**: Seasonally				
	12. Notice another problem? Describe in comments.	Your Comments:			

BIORETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to Bioretention BMP Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	13. Are litter, trash, debris, sediment, grass clippings, or other materials present in the BMP?				
	Guidance: Trash and other materials can wash into the bioretention BMP during a storm, potentially clogging the inflow or outflow areas, the planting area, and the underdrain. Remove these materials and keep the property clean. **Schedule**: Weekly				
	14. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the bioretention BMP during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful to plants or that can otherwise be hazardous. Remove or cover these materials, fully preventing their exposure to rainfall or stormwater runoff. **Schedule**: Weekly				
	15. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the bioretention BMP during a storm?				
	Guidance: Too much sediment washing into a bioretention BMP can clog the planting area. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for those areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent erosion and sediment build up. **Schedule**: Weekly				
	16. Do activities occur nearby that may cause unusual or substantial amounts of pollutants to be discharged to the bioretention BMP?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the bioretention BMP, such as washing cars in areas that drain to the wastewater system, conducting street or parking lot sweeping, installation of pet waste pickup stations, etc. **Schedule**: Weekly				
	17. Notice another problem? Describe in comments.	Your Comments:			

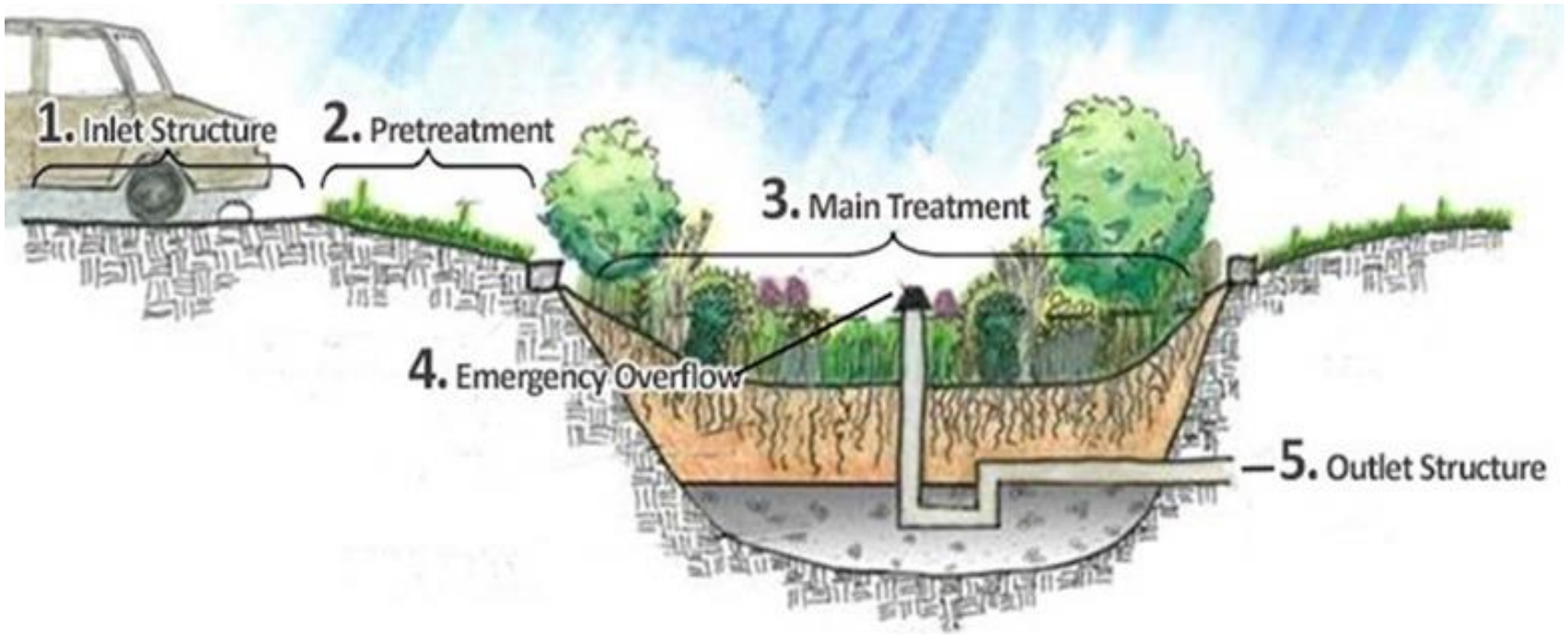
BIORETENTION INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

BIORETENTION INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Bioretention BMP



5.6 Wet Extended Detention Basin Basics

Benefits of Wet Extended Detention Basins

- Cleans pollutants from stormwater
- Reduces erosion
- Provides habitat for butterflies & birds
- Creates an interesting landscape
- Good for large stream areas

Wet extended detention basins are Best Management Practices (BMPs) that removes pollutants from stormwater by storing it in a basin for a short amount of time. The detention basin lets the sediment (dirt) settle out of the water before it is released. Plants in a wet extended detention basin remove pollutants through their roots and leaves. This BMP is also good for flood control. Wet extended detention basins will have a permanent pool of water. Wet extended detention basins will manage about 1-inch of stormwater and store water for up to 48 hours. Wet extended detention basins will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Most wet extended detention basins will have five basic parts (see the figure below):

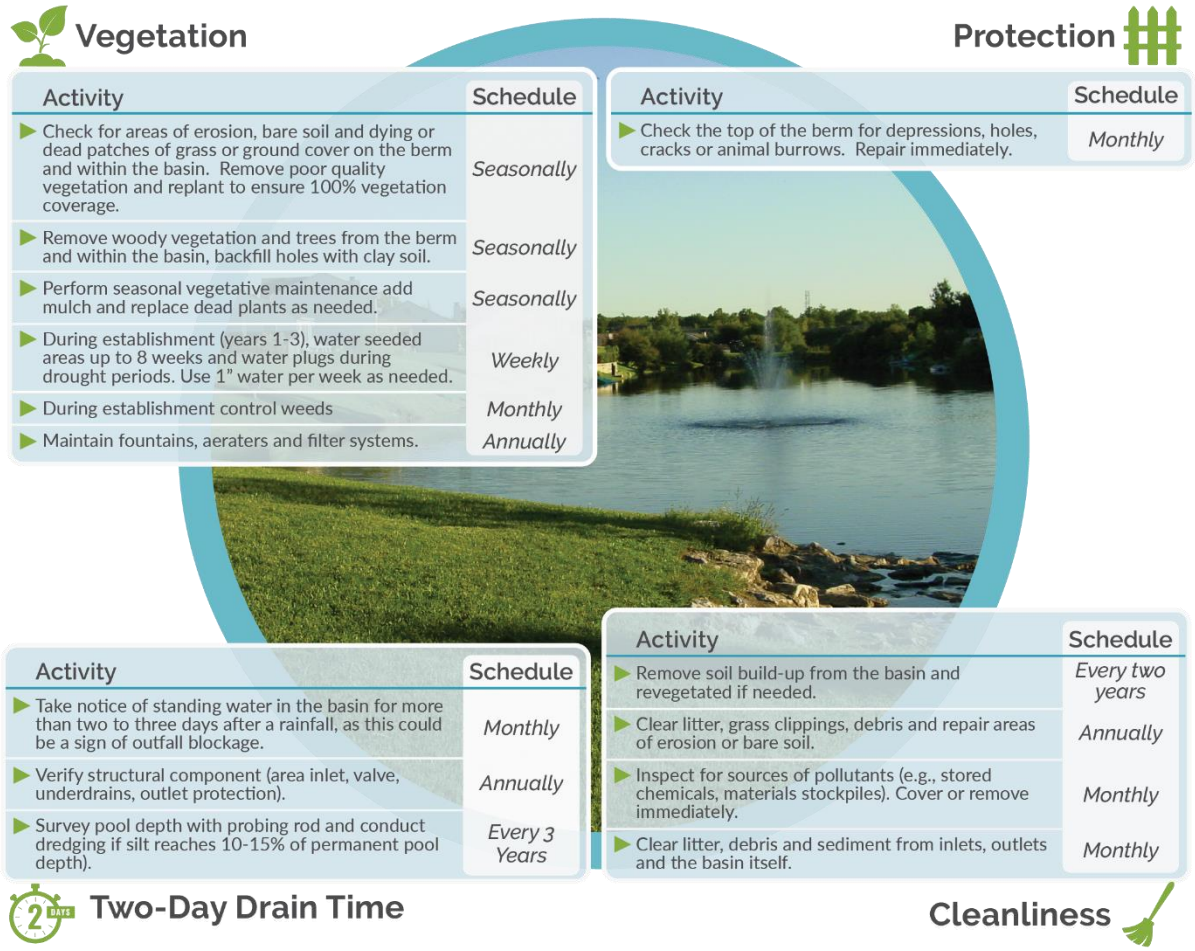
1. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
2. **Inlet structures** let water flow into the BMP.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your wet extended detention basin will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working wet extended detention basin. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Mow grass 3-4 inches high and remove trash and debris regularly. • Keep your property clean. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP.	• Don't use too much salt or sand around the basin in the winter. • Don't use too much fertilizer, • herbicides, or pesticides. Contact a local nursery or landscape company if your plants aren't doing well. • Don't let heavy equipment in the detention basin or use it as storage, even for landscape items (leaves, snow, soil mulch, etc.). • Don't let pollutants (trash, pet waste, pesticides, oils, etc.) wash into the basin.

WET EXTENDED DETENTION BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The wet extended detention basin name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Wet Ext Detention Basin 1" or "Wet Ext Detention Basin A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

WET EXTENDED DETENTION BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Is it difficult to access the wet extended detention basin for inspection and maintenance?				
	Guidance: Remove any obstacles blocking access and/or maintenance. If access is blocked by a permanent fixture (i.e., fence), contact the City of Fort Wayne. **Schedule**: Monthly				
	2. Is the top of the earthen berm unlevel or uneven? Are there cracks or animal burrows in the berm?				
	Guidance: Potholes, depressions, animal burrows and significant cracks on the top or sides of the berm can be a sign that the berm has structural or seepage problems, especially if worsen over time. Keep a log of these issues during each inspection by noting the location of each issue on the inspection figure and recording the length, width and depth of the problem on the inspection form. For animal burrows, call animal control for removal and fill the holes with clay soil. Call the City of Fort Wayne if these problems appear to be getting worse. **Schedule**: Monthly				
	3. Is vegetation on the berm dying, diseased, or unhealthy?				
	Guidance: The berm should have a healthy, thick stand of non-woody vegetation on all sides of the berm. Patches of bare soil should not be present. Ground cover vegetation should compose of native plants that maintain the structural integrity of the berm, discourage animal burrowing, allow for adequate inspection of the berm and requires only intermittent mowing. If vegetation appears unhealthy or thin, determine the cause of the issue take corrective action. More frequent watering, fertilizer, plant species replacement, or additional seed or sod may be needed to establish fuller, healthier coverage. **Schedule**: Seasonally.				
	4. Are trees present on the berm of the basin?				
	Guidance: Woody vegetation should be removed right away as they can reduce the structural integrity of the berm. Trees and woody vegetation can also interfere with the ability to fully inspect the berm surfaces. Remove woody vegetation and stumps from the berm, backfill the stump areas with clay soil, and cover with suitable native vegetation. **Schedule**: Seasonally				

WET EXTENDED DETENTION BASIN INSPECTION FORM

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Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Is the water level in the wet extended detention basin high during dry weather?				
	Guidance: The wet extended detention basin should generally follow what would be expected under the seasonal or current climatic conditions (slower to drain during wet weather and very dry during a drought). Water should drain out and the wet extended detention basin should be at its normal water elevation 24-48 hours after most rain events. If the water level rises and doesn't lower in this time period, the outlet structure may be blocked. If there is no water after a large rainfall, the water could be leaking through the berm. Contact an experienced professional if the water level is frequently too low or too high. **Schedule**: Monthly				
	6. Are there visible areas of bare soil or deposits of soil in or around the wet extended detention basin?				
	Guidance: Bare or eroding areas should be vegetated or lined with rock or other material. Visible deposits of soil should be removed, as these deposits can decrease the amount of water storage provided by the wet extended detention basin. **Schedule**: Annually				
	7. Are cattails or other invasive plants growing in the wet extended detention basin?				
	Guidance: The depth of the water in the wet extended detention basin should be too deep for cattails and other invasive plants to grow. Growth of invasives around the edge of the pond may be normal but should be removed. However, if they extend beyond the edge, it can mean that the correct water depth is not being maintained. The basin should be checked for dirt buildup and may need to be dredged (see #10). Also check the outflow for flow when there has been no rain, which could indicate a leak in the outflow system. **Schedule**: Seasonally				
	8. Is the wet extended detention basin water discolored? Does it have a foul smell or bubbles? Are there signs of a fish kill?				
	Guidance: The wet extended detention basin water can naturally be tea-colored or can have a reddish tint or blue-green tint. However, other discoloration, a lot of foam or bubbles, fish kills, or a foul odor could mean that pollutants have been introduced into the wet extended basin. Visually check the area surrounding the wet extended detention basin to see if there are indicators of spills or pollutants, such as stains on grass or paved surfaces, burnt-looking or dead vegetation, and dead aquatic life. If found, eliminate the cause of the problem. Contact the City of Fort Wayne if the problem cannot be eliminated or is persistent and the source of the problem cannot be determined. **Schedule**: Monthly				

WET EXTENDED DETENTION BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	9. Are aerators, filters, and bubblers functioning poorly?				
	Guidance: Aeration and turbidity in the water column needs to be sustained through maintenance of fountains, cascades, or bubbler systems. Air tubes, electrical conduit, pumps, and other components need to be serviced early in spring and inspected throughout the growing season to prevent late summer algae blooms. **Schedule**: Annually (early spring)				
	10. Is there excessive silt building up in the main treatment area?				
	Guidance: Survey the pool depth with a probing rod. Dredging is required if silt reaches 10-15% of permanent pool depth. **Schedule**: Every 3 years				
	11. Notice another problem? Describe in comments.	Your Comments:			

WET EXTENDED DETENTION BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment, Inlet, & Outlet Structures (Components 1, 2, & 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	12. Do the areas where stormwater enters the wet extended detention basin have unhealthy vegetation, sparse rock, broken concrete, or other damaged materials?				
	Guidance: Inlet structures should have dense, healthy vegetation or a rock, concrete, asphalt, or paver lining to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and cover bare soil immediately with the appropriate vegetation or material cover. **Schedule**: Monthly				
	13. Are trash, sediment, debris, grass clippings, or other materials that can obstruct stormwater flow present in the inlet or outlet structures?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow in or out of the wet extended detention basin. Remove sediment 18" from outlet and when pretreatment structures are 50% full. **Schedule**: Monthly. Annually for sediment removal from outlet and pretreatment structure(s).				
	14. Is there bare soil or evidence of erosion or scour at the outlet structure?				
	Guidance: Outlets and the areas below them should not have any signs of erosion and should be covered with sufficient vegetation, pavement, or other material (e.g., rock lining, concrete, asphalt, pavers, or even dense vegetation) to slow the water and prevent erosion. Typically, this is a rock lining, but can be concrete, asphalt, pavers, or even dense vegetation. If signs of erosion are visible at the outlet, install a rock lining that extends at least 10' beyond the area of erosion. Consult an experienced professional if you have questions on the size and type of rock. **Schedule**: Seasonally				
	15. Is there visual evidence of pollutants at the outlet structure (oil, odd colorations, stains, etc.)?				
	Guidance: Visually check the outlet structure location(s) and look for discolored/stained grass or rocks or unhealthy vegetation. This could be a sign that the wet extended detention basin is not operating properly or that pollutants have been introduced. If you suspect a pollutant source, contact the City of Fort Wayne. **Schedule**: Monthly				
	16. Notice another problem? Describe in comments.	Your Comments:			

WET EXTENDED DETENTION BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to Wet Extended Detention Basin Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	17. Are litter, trash, debris, sediment, grass clippings, or other materials present in the area?				
	Guidance: Trash and other materials can wash into the basin during a storm and block the inlet and outlet structures as well as fill up the main treatment area. Remove undesirable materials and keep the property clean. **Schedule**: Monthly				
	18. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the wet extended detention basin during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful to plants or that can otherwise be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater runoff. **Schedule**: Monthly				
	19. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing wet extended detention basin during a storm?				
	Guidance: Too much sediment washing into basin can reduce the wet extended detention storage and water depth. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for those areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. **Schedule**: Monthly				
	20. Do activities occur nearby that may cause unusual or substantial amounts of pollutants to be discharged to the wet extended detention basin?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the basin, such as washing cars in areas that drain to the wastewater system, conducting street or parking lot sweeping, installation of pet waste pickup stations, etc. **Schedule**: Weekly				
	21. Notice another problem? Describe in comments.	Your Comments:			

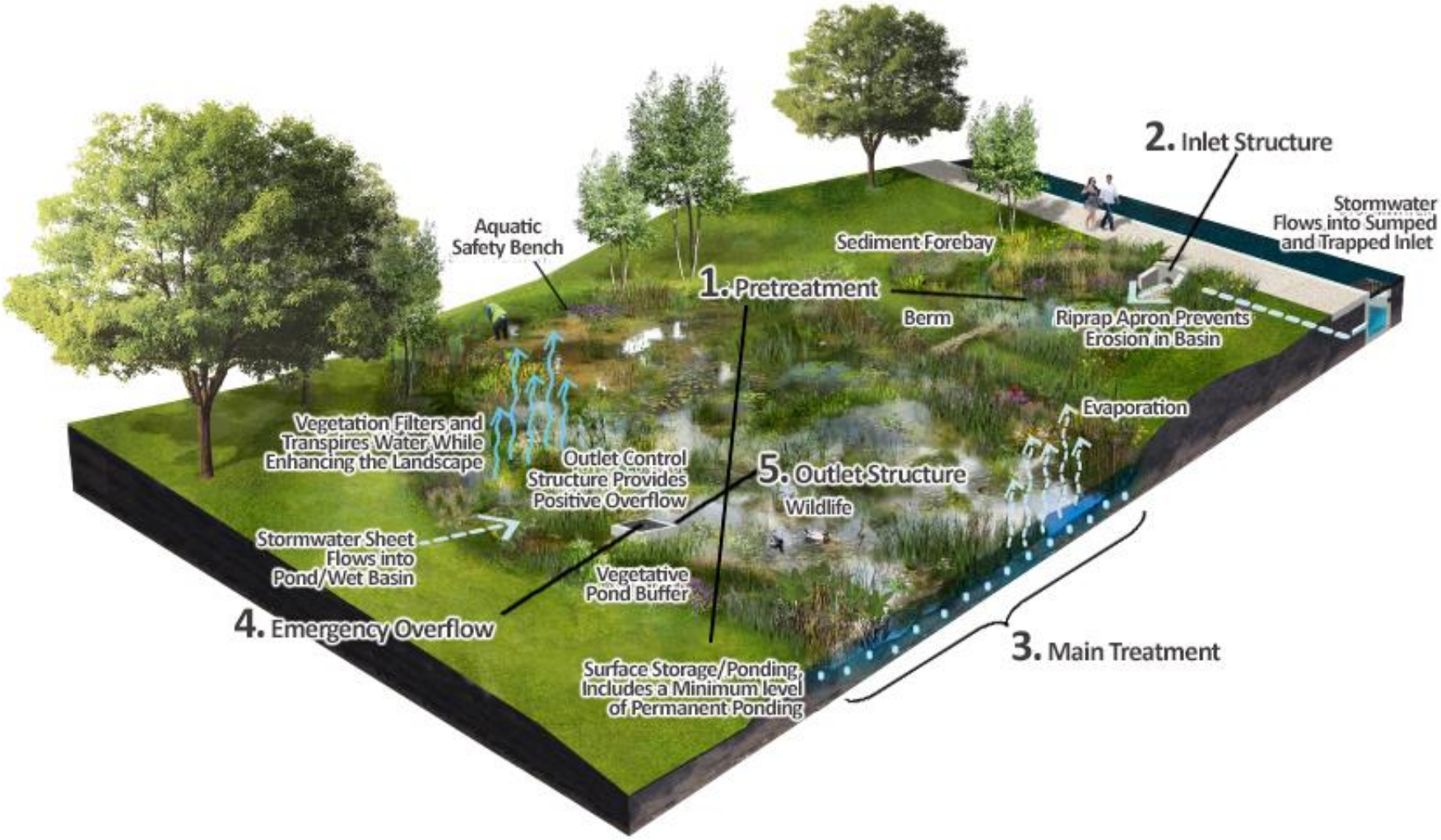
WET EXTENDED DETENTION BASIN INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

WET EXTENDED DETENTION BASIN INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Wet Extended Detention Basin



5.7 Dry Extended Detention Basin Basics

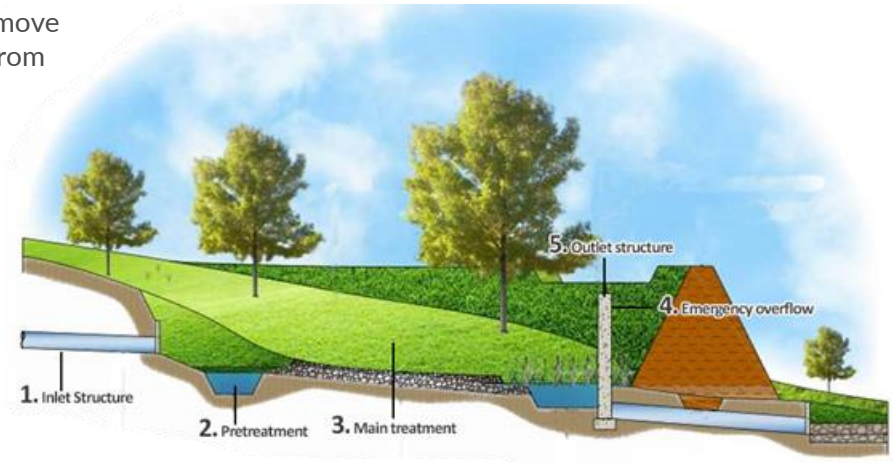
Dry extended detention basins are Best Management Practices (BMPs) that collect and store stormwater. The basins remove pollution and control flooding. A dry extended detention basin will manage about 1-inch of stormwater and drain completely about 40 hours after a storm. Dry extended detention basins will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Dry Extended Detention

- Easy and inexpensive to use
- Great at capturing pollutants
- Reduce erosion
- Can be used as an area for recreation or open space

Most dry extended detention basins will have five basic parts (see the figure below):

1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.



4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. **The outlet structure** lets the cleaner water exit the BMP.

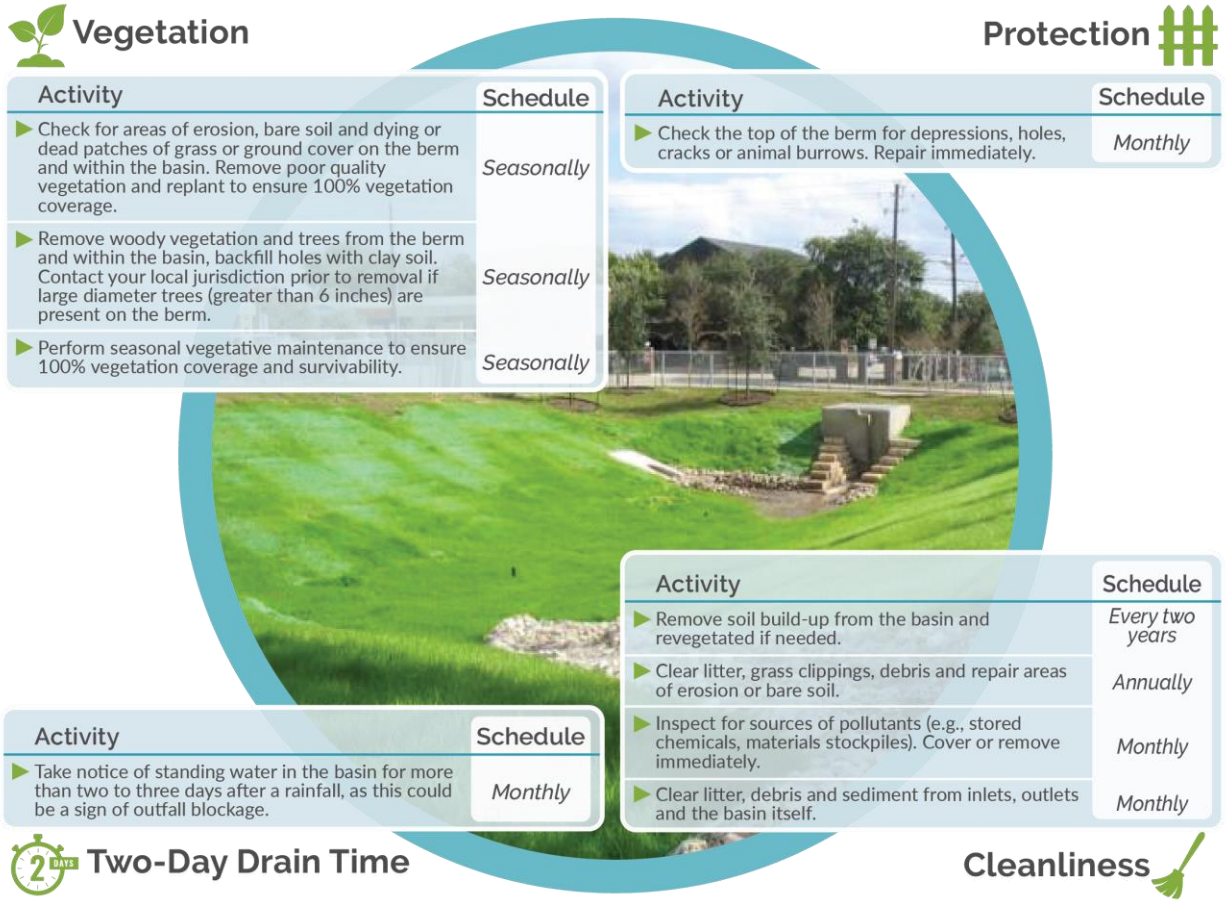
What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your dry extended detention basin will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working dry extended

detention basin. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Mow grass 3-4 inches high and remove trash and debris regularly. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • Keep your property clean.	• Don't use too much salt and sand around the dry extended detention basin in the winter. • Don't use too much fertilizer, herbicides, or pesticides. Contact a local nursery or landscape company if your plants aren't doing well. • Don't let heavy equipment in the detention basin or use it as storage, even for landscape items (leaves, snow, soil mulch, etc.) • Don't let pollutants (trash, pet waste, pesticides, oils, etc.) wash into the basin.

DRY EXTENDED DETENTION BASIN INSPECTION FORM

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BMP NAME(S)				Today's Date:
	Note: The dry extended detention basin name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Dry Ext Detention Basin 1" or "Dry Ext Detention Basin A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

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Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

DRY EXTENDED DETENTION BASIN INSPECTION FORM

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Main Treatment (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Is it difficult to access the basin for inspection and maintenance?				
	Guidance: Any obstacles blocking access and/or maintenance to the basin should be removed. If access is blocked by a permanent fixture (i.e., fence), contact the City of Fort Wayne. **Schedule**: Monthly				
	2. Is the top of the earthen berm unlevel or uneven? Are there cracks or animal burrows in the berm?				
	Guidance: Potholes, depressions, animal burrows and significant cracks on the top or sides of the berm can be a sign that the berm has structural or seepage problems, these worsen over time. Keep a log of these issues during each inspection by noting the location of each issue on the inspection figure and recording and recording the length, width, and depth of the problem on the inspection form. For animal burrows, call animal control for removal and fill the holes with clay. Contact the City of Fort Wayne if these problems appear to be getting worse. **Schedule**: Monthly				
	3. Is vegetation on the berm dying, diseased, or unhealthy on the front, back, or top of the berm?				
	Guidance: The berm should have a healthy, thick stand of non-woody vegetation on all sides of the berm. Patches of bare soil should not be present. Ground cover vegetation should be composed of native plants that that maintain the structural integrity of the berm, discourage animal burrowing, allow for adequate inspection of the berm, and require only intermittent mowing to maintain its health. If vegetation appears unhealthy or thin, determine the cause of the issue take corrective action. More frequent watering, or fertilizer, plant species replacement, or additional seed or sod may be needed to establish fuller, healthier coverage. **Schedule**: Seasonally				
	4. Are trees present on the berm of the basin?				
	Guidance: Woody vegetation should be removed right away as they can reduce the structural integrity of the berm. Trees and woody vegetation can also interfere with the ability to fully inspect the berm surfaces. Remove woody vegetation and stumps from the berm, backfill the stump areas with clay soil, and cover with suitable native vegetation. **Schedule**: Seasonally				

DRY EXTENDED DETENTION BASIN INSPECTION FORM

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Main Treatment (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Is the basin holding water during dry weather?				
	Guidance: The dry extended detention basin should follow what would be expected under the seasonal or current climatic conditions (slower to drain during wet weather and very dry during a drought). Ninety percent of the water should drain out of the dry extended detention basin 40 hours after rain events. If the water level rises and doesn't lower in this time period, the outlet structure may be blocked. If there is no water after a large rainfall, the water could be leaking through the berm. Contact an experienced professional if the water level is frequently too low or too high. **Schedule**: Monthly				
	6. Are there visible areas of bare soil in the basin, water flow paths, or on the basin slopes?				
	Guidance: Bare or eroding areas should be vegetated or lined with rock or other material. Visible deposits of soil should be removed, as these deposits can decrease the amount of water storage provided by the dry extended detention basin. **Schedule**: Annually				
	7. Are cattails or other invasive plants growing in the basin?				
	Guidance: Cattails and other invasive plants have the potential to completely take over the basin area. The basin area should be checked for sediment buildup and may need to be cleaned out. Invasive plants shall be removed. Evaluate any issues of standing water in the basin 40 hours after a rain event and correct as discussed in #5. **Schedule**: Seasonally				
	8. Are check dams, weirs, and other components of the basin in poor condition?				
	Guidance: Structural components should be checked for proper operation and repaired as needed. **Schedule**: Annually				
	9. Notice another problem? Describe in comments.	Your Comments:			

DRY EXTENDED DETENTION BASIN INSPECTION FORM

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Inlet, Pretreatment, & Outlet Structures (Components 1, 2, & 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	10. Do the inlets where stormwater enters the basin have unhealthy vegetation, sparse rock, broken concrete, or other damaged materials?				
	Guidance: Inlet structures should have dense, healthy vegetation or a rock, concrete, asphalt, or paver lining to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and cover bare soil immediately with the appropriate vegetation or material cover. **Schedule**: Monthly				
	11. Are trash, sediment, debris, grass clippings, or other materials that can obstruct stormwater flow present in the inlet, forebay, or outlet structures?				
	Guidance: A sediment forebay shall be incorporated into the basin design to trap sediment and trash at all basin inlets, where the sediment and trash can be more easily removed than from the permanent pool. Remove unwanted materials and correct any other problems that block the water flow in or out of the basin. **Schedule**: Monthly				
	12. Is there bare soil or evidence of erosion or scour at the outlet structure?				
	Guidance: Outlet structures should not have any signs of erosion and should be covered with enough vegetation or material to slow the water and prevent erosion. Typically, this is a rock lining, but can be concrete, asphalt, pavers, or even dense vegetation. If signs of erosion are visible at the outlet, install a rock lining that extends at least 10' beyond the area of erosion. Contact a qualified professional if you have questions on the size and type of rock. **Schedule**: Seasonally				
	13. Notice another problem? Describe in comments.	Your Comments:			

DRY EXTENDED DETENTION BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to Dry Extended Detention Basin Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	14. Are litter, trash, debris, sediment, grass clippings, or other materials present in the area?				
	Guidance: Trash and other materials can wash into the basin during a storm and can block the inlet, forebay, and outlet structures and fill up the basin storage area. Remove undesirable materials and keep the property clean. **Schedule**: Monthly				
	15. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the basin during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful to plants or that can otherwise be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater runoff. **Schedule**: Monthly				
	16. Are there areas of erosion or exposed soil or bare earth that could be a source of sediment washing into the basin during a storm?				
	Guidance: Too much sediment washing into a dry extended detention basin can reduce the basin storage. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for those areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. **Schedule**: Monthly				
	17. Do activities occur nearby that may cause unusual or substantial amounts of pollutants to be discharged to the dry extended detention basin?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the basin, such as washing cars in areas that drain to the wastewater system, conducting street or parking lot sweeping, installation of pet waste pickup stations, etc. **Schedule**: Weekly				
	18. Notice another problem? Describe in comments.	Your Comments:			

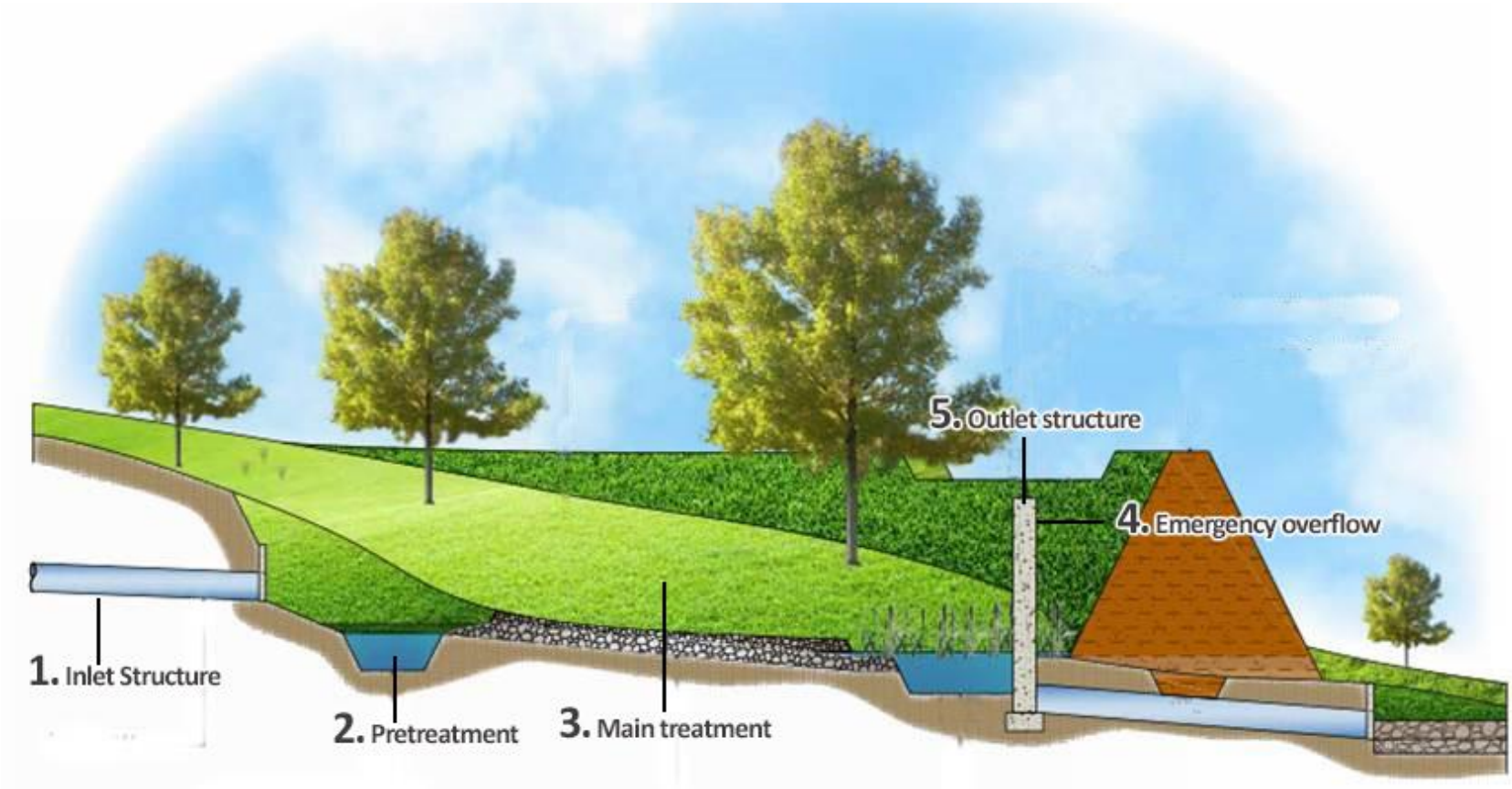
DRY EXTENDED DETENTION BASIN INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

DRY EXTENDED DETENTION BASIN INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Dry Extended Detention Basin



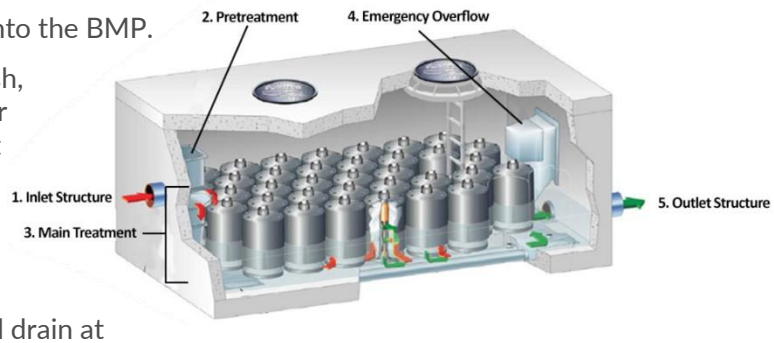
5.8 Proprietary BMP Basics

Proprietary Best Management Practices (BMPs) remove pollutants from stormwater by guiding the runoff through a bed of media like sand, compost, or organic material. These BMPs are "proprietary" because they can be designed to remove *specific* pollutant(s). They can target suspended solids and particles, or they can aim to remove dissolved pollutants. The details of your proprietary BMP should be provided by the manufacturer. Proprietary BMPs will manage about 1-inch of stormwater and drain quickly after a storm. Proprietary BMPs will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Proprietary BMPs

- Remove specific pollutants
- Take up less space than some other BMPs
- Can fit into underground vaults
- Can be added to other BMPs

Most proprietary BMPs will have five basic parts (see the figure below). Most of these parts will be underground or contained within a vault. This requires access through a manhole, observation well, or inlet/outlet structure. Because there are different types of proprietary BMPs, inspection and maintenance will require the use of an owner's manual and specific information from the manufacturer.



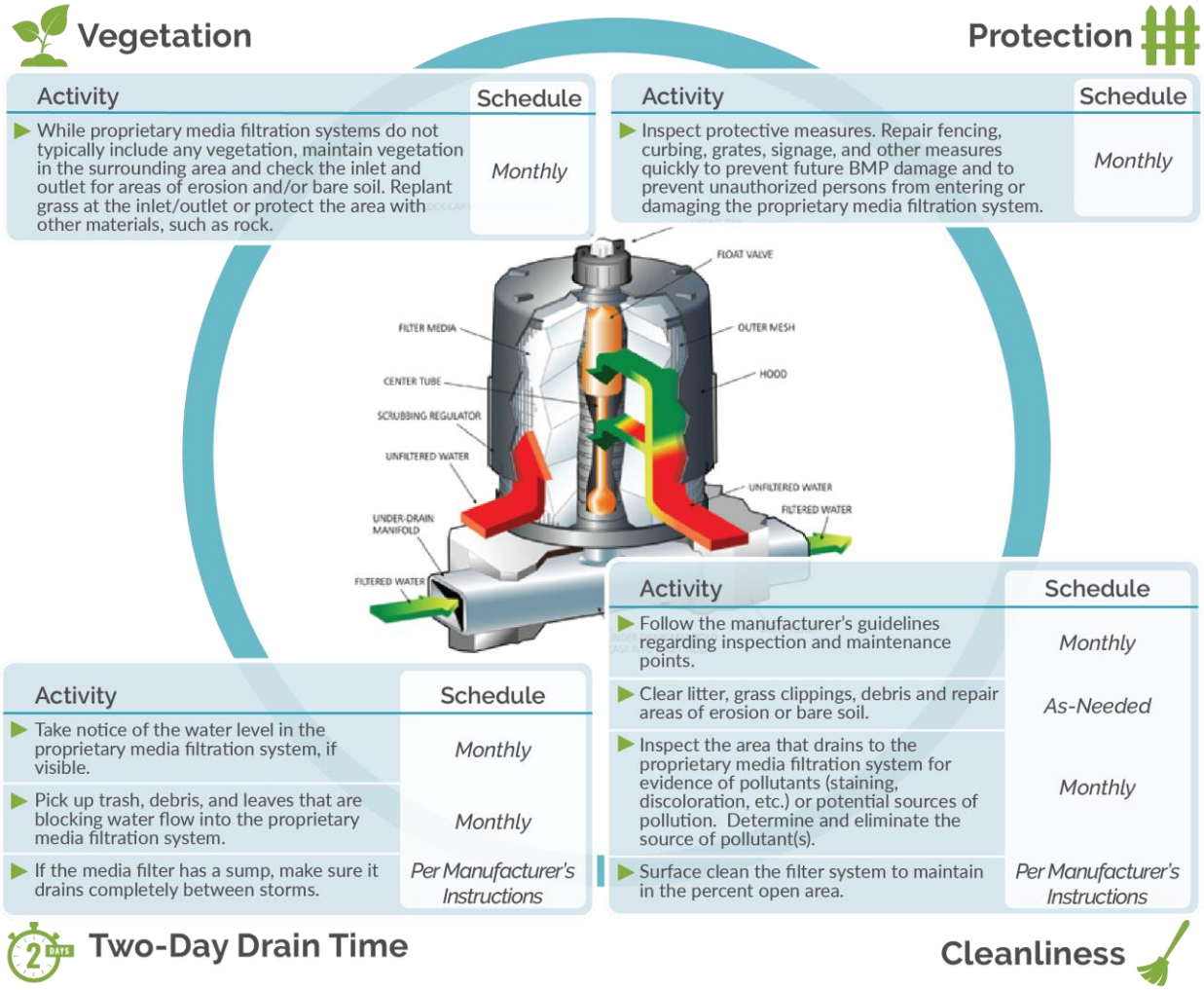
1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your proprietary BMP will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working BMP. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Check the BMP after storms to make sure it is functioning properly. Remove leaves and debris from surfaces. • Mark the inlets and outlets of the proprietary BMP. This could help prevent damage from heavy equipment or vehicles. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP.	• Don't wash your car or change fluids in an area that drains to the proprietary BMP. • Don't neglect the maintenance needs of the BMP. Hire a professional, if needed. • Don't store mulch, sand, salt, soil or yard waste or pile snow that contains sand or salt in the area draining to your proprietary BMP. • Don't enter the BMP for inspection or maintenance unless you are a professional with confined entry certifications.

PROPRIETARY BMP INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The proprietary BMP name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Proprietary BMP 1" or "Proprietary BMP A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only			
Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

PROPRIETARY BMP INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 1, 4, and 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Are the inlets, outlets, grates, chambers, or mechanical components of the system difficult to access?				
	Guidance: Any obstacles blocking access to, or maintenance of, these components should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. Don't enter the system for inspection or maintenance unless you are a professional with confined entry certifications. **Schedule**: Monthly				
	2. Are trash, sediment, debris, grass clippings, or other materials that can obstruct stormwater flow in the inlet or outlet areas?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the system. **Schedule**: Monthly				
	3. Is water flowing from the outlet when it is not expected?				
	Guidance: Proprietary BMPs are usually designed to drain quickly after a rainfall. This may take longer during especially wet periods. During dry periods, an outlet that is discharging water or water backed into the system's inlet may indicate a clog or blockage, or even a cracked vault or pipe that is allowing landscape water or ground water to enter the vault. Determine the cause and correct it. If the cause cannot be determined, call a civil engineer or the vendor of the system for assistance. **Schedule**: Monthly				
	4. Is there bare soil or evidence of erosion or scour at the outlets?				
	Guidance: Outlets and the areas surrounding them should be covered with sufficient vegetation, pavement, or other stabilizing material to slow the water and prevent erosion. Typically, this is a rock lining, but can be concrete, asphalt, pavers, or even dense vegetation. If signs of erosion are visible at the outlet, install a rock lining that extends at least 10 feet beyond the area of erosion. **Schedule**: Monthly				

PROPRIETARY BMP INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 1, 4, and 5)
Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness

INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
	Y	N	NA	
5. Is there evidence of erosion, bare soil, broken pipes, or broken concrete at the inlet(s) to the system?				
Guidance: Most proprietary BMPs are directly connected to the stormwater system through stormwater pipes. Where inlet areas collect stormwater from pervious or impervious surfaces, these areas should have dense healthy vegetation or a rock, concrete, asphalt, or paver lining to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and cover bare soil immediately with the appropriate vegetation or material cover. **Schedule**: Monthly				
6. Is there visual evidence of pollutants at the inlet(s), outlet(s), or on the surface of the media (e.g., oil sheen, odd discoloration, stains, etc.)?				
Guidance: Inspect the area for stockpiled materials or other sources of pollutants, as these may contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
7. Notice another problem? Describe in comments.	Your Comments:			

PROPRIETARY BMP INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment & Main Treatment (Components 2 & 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	8. Is the BMP's filter media draining slowly or not at all? Is there a clogged filter or other component? If the system has as sump, is it failing to drain completely between storms?				
	Guidance: Visually check any filters and other components for clogs. Debris, sludge, or other material can cause the system to not function properly. Follow the manufacturer's recommendations for cleaning and replacing filters or other components. If the system still does not drain properly, contact the manufacturer or another qualified professional. **Schedule**: Monthly				
	9. Notice another problem? Describe in comments.	Your Comments:			

PROPRIETARY BMP INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to BMP Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	10. Are there litter, grass clippings, trash, debris, or other materials that could enter the system?				
	Guidance: Trash and other materials can be carried into the BMP and block the inlets, outlets, or media, and fill up the chambers in the system. Remove undesirable materials and keep the property clean. **Schedule**: Weekly				
	11. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the system during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful to plants or that can otherwise be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
	12. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the system during a storm?				
	Guidance: Too much sediment washing into a system can clog the filter media very quickly or fill in the settling chamber. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. **Schedule**: Monthly				
	13. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the proprietary BMP?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the BMP, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule**: Monthly				
	14. Notice another problem? Describe in comments.	Your Comments:			

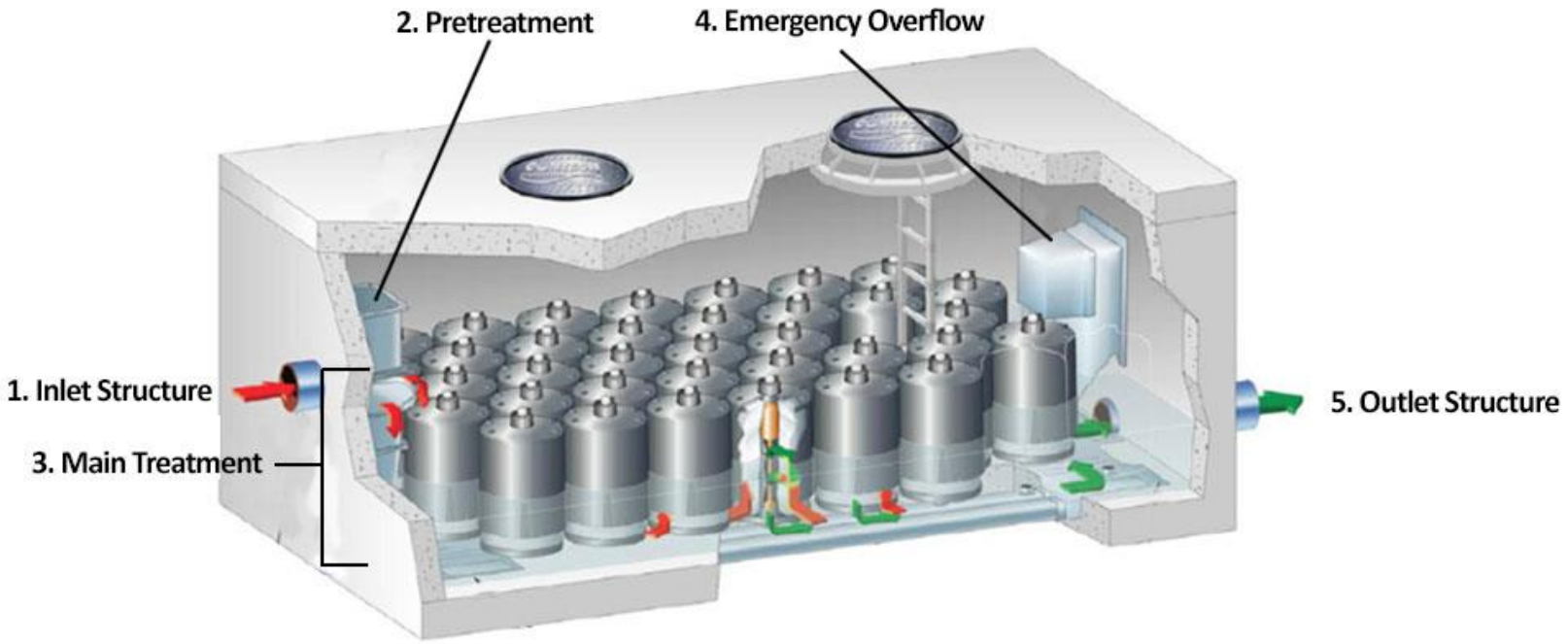
PROPRIETARY BMP INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

PROPRIETARY BMP INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Proprietary BMP



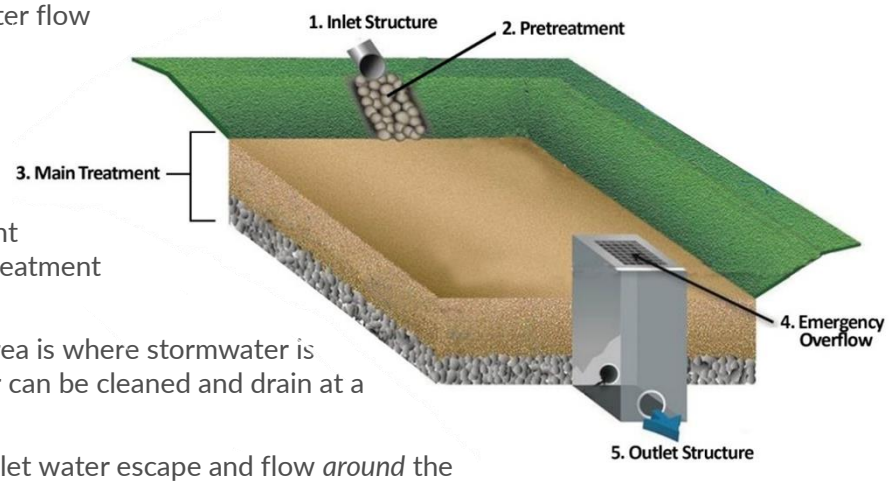
5.9 Surface Bed Filter Basics

Benefits of Surface Bed Filters

- Reduce pollution in stormwater runoff
- Let some stormwater soak into the ground
- Reduce stormwater runoff
- A good option for steep slopes

Surface bed filters are Best Management Practices (BMPs) that clean stormwater by filtering it through a sand bed. Runoff is guided into a bed of sand where it is collected and cleaned. The water is collected, filtered through the sand where it is cleaned, and released to a stream or stormwater system. There are three types of surface bed filters; 1) Underground sand filters that use several chambers, 2) sand filters installed on the edge of an impervious surface, like a parking lot, and 3) pocket sand filters used specifically for small site projects (for these, stormwater is pretreated by a sediment basin or filter strip before entering a pocket sand filter). Surface bed filters will manage about 1-inch of stormwater and drain 1 to 2 days after a storm. Surface bed filters will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Most surface bed filters will have five basic parts (see the figure below):



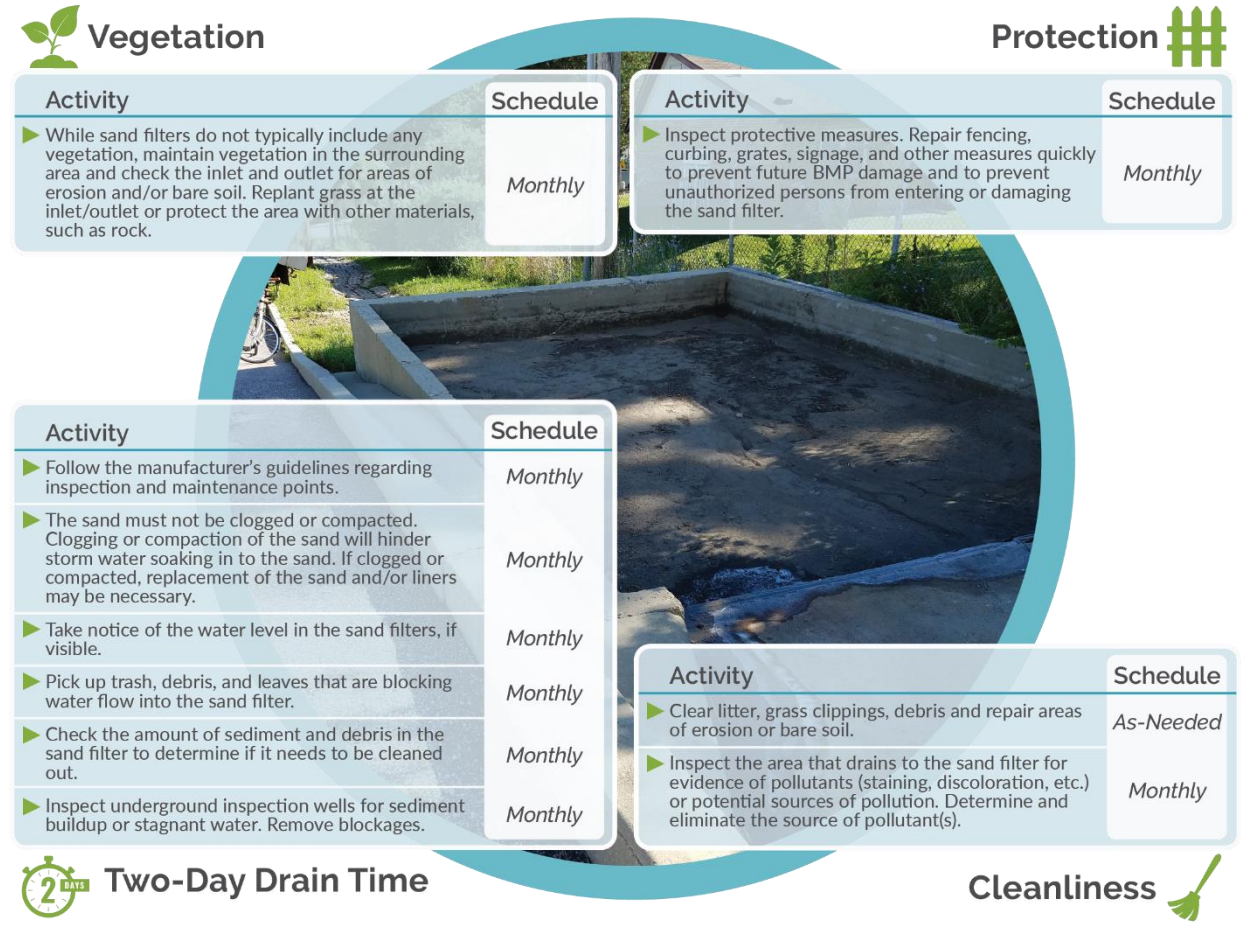
1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your surface bed filter will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working surface bed filter. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Check the filter after a storm to make sure it is draining correctly. Remove leaves and debris from surfaces. • Look for signs of clogging, which can mean the filter or liner below needs to be replaced. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP.	• Don't store mulch, sand, salt, soil or yard waste near or on the surface bed filter. • Don't neglect the maintenance needs of your surface bed filter. Hire a professional, if needed. • Don't pile snow that has salt in an area that drains to your surface bed filter. • Don't wash your car or change fluids in an area that drains to your surface bed filter.

SURFACE BED FILTER INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The surface bed filter name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Surface Bed Filter 1" or "Surface Bed Filter A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

SURFACE BED FILTER INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 1, 4, and 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Are the inlets, outlets, grates, chambers, overflow systems, or mechanical components difficult to access?				
	Guidance: Any obstacles blocking access to, or maintenance of, these components should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule**: Monthly				
	2. Are trash, sediment, debris, grass clippings, or other materials that can obstruct stormwater flow present in the inlet or outlet areas?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the surface bed filter. See #8 for situations where the surface bed filter has become clogged. **Schedule**: Monthly				
	3. Is water flowing from the outlet when it is not expected?				
	Guidance: While surface and perimeter sand filters have chambers that hold water permanently, other chambers and the surface sand filter are designed to drain within 1 to 2 days after a rainfall. This may take longer during especially wet periods. During dry periods, an outlet that is discharging water or water backed into the sand filter inlet may indicate a clog or blockage, or even a cracked vault or pipe that is allowing landscape water or ground water to enter the vault. Determine the cause and correct it. If the cause cannot be determined, call a civil engineer or the vendor of the sand filter system for assistance. **Schedule**: Monthly				
	4. Is there bare soil or evidence of erosion or scour at the outlet structure?				
	Guidance: Outlets and the areas nearby should not have any signs of erosion, and should be covered with sufficient vegetation, pavement, or other material to slow the water and prevent erosion. Typically, this is a rock lining, but can be concrete, asphalt, pavers, or even dense vegetation. If signs of erosion are present, install a rock lining that extends at least 10 feet beyond the area of erosion. **Schedule**: Monthly				

SURFACE BED FILTER INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 1, 4, and 5)
Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness

INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
	Y	N	NA	
5. Is there evidence of erosion, bare soil, broken pipes, or broken concrete at the inlets?				
Guidance: Most surface bed filters are directly connected to the stormwater system through stormwater pipes. Where inlet areas collect stormwater from pervious or impervious surfaces, these areas should have dense healthy vegetation or a rock, concrete, asphalt, or paver lining to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and cover bare soil immediately with the appropriate vegetation or material cover. **Schedule**: Monthly				
6. Is there visual evidence of pollutants at the inlets, outlets, or on the surface of the surface bed filter media (oil sheen, odd discoloration, stains, etc.)?				
Guidance: Stockpiled materials can contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
7. Notice another problem? Describe in comments.	Your Comments:			

SURFACE BED FILTER INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment & Main Treatment (Components 2 & 3)
Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness

INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
	Y	N	NA	
8. Is the surface bed filter media draining slowly or not at all? Is it clogged or "crusted over"?				
Guidance: Visually check the filter for standing water, debris, sludge, or other material on the surface of the filter media. This material can cause the surface bed filter to not function properly. Rake the surface bed filter and remove the debris and the top 2-4 inches of sand media. Replace the filter media with the type of sand recommended by the manufacturer. If the filter media still does not drain properly, contact a professional engineer or the surface bed filter manufacturer. **Schedule**: Monthly				
9. Are there animal burrows, or woody vegetation on top of the vault or pipe system or in the filter media? Are there pavement or soil cracks, holes, or depressions in or around the vault?				
Guidance: The area around surface bed filters should be paved, vegetated, or both. Vegetation on top of the surface bed filter(s) should be removed. Cracks, depressions, and holes in or adjacent to surface bed filters can indicate structural problems. Measure and log the length, width, and depth of each of these problems on the inspection form and note the location of each issue. Check the vault and piping system for signs of structural damage if you can do so safely. Call a civil engineer or the vendor for assistance if these problems appear to be getting worse. **Schedule**: Seasonally				
10. Notice another problem? Describe in comments.	Your Comments:			

SURFACE BED FILTER INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Property Draining to Surface Bed Filter Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	11. Are litter, trash, debris, sediment, grass clippings, or other materials present in the area?				
	Guidance: Trash and other materials can be carried into the surface bed filter and block the inlets, outlets, or filter media, and fill up the chambers. Remove undesirable materials and keep the property clean. See #8 for situations where the surface bed filter has become clogged. **Schedule**: Weekly				
	12. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the BMP during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful to plants or that can otherwise be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
	13. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the surface bed filter during a storm?				
	Guidance: Too much sediment washing into a surface bed filter can clog the filter media very quickly or fill in the settling chamber. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent erosion. **Schedule**: Monthly				
	14. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the surface bed filter?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the surface bed filter, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule**: Monthly				
	15. Is upstream vegetation dead, unhealthy, or neglected?				
	Guidance: Maintain vegetation in the surrounding area and check the inlet and outlet for areas of erosion and/or bare soil. Replant grass at the inlet/outlet or protect with other materials, such as rock. Vegetation should be kept to less than 18 inches with frequent mowing. **Schedule**: Monthly				
	16. Notice another problem? Describe in comments.	Your Comments:			

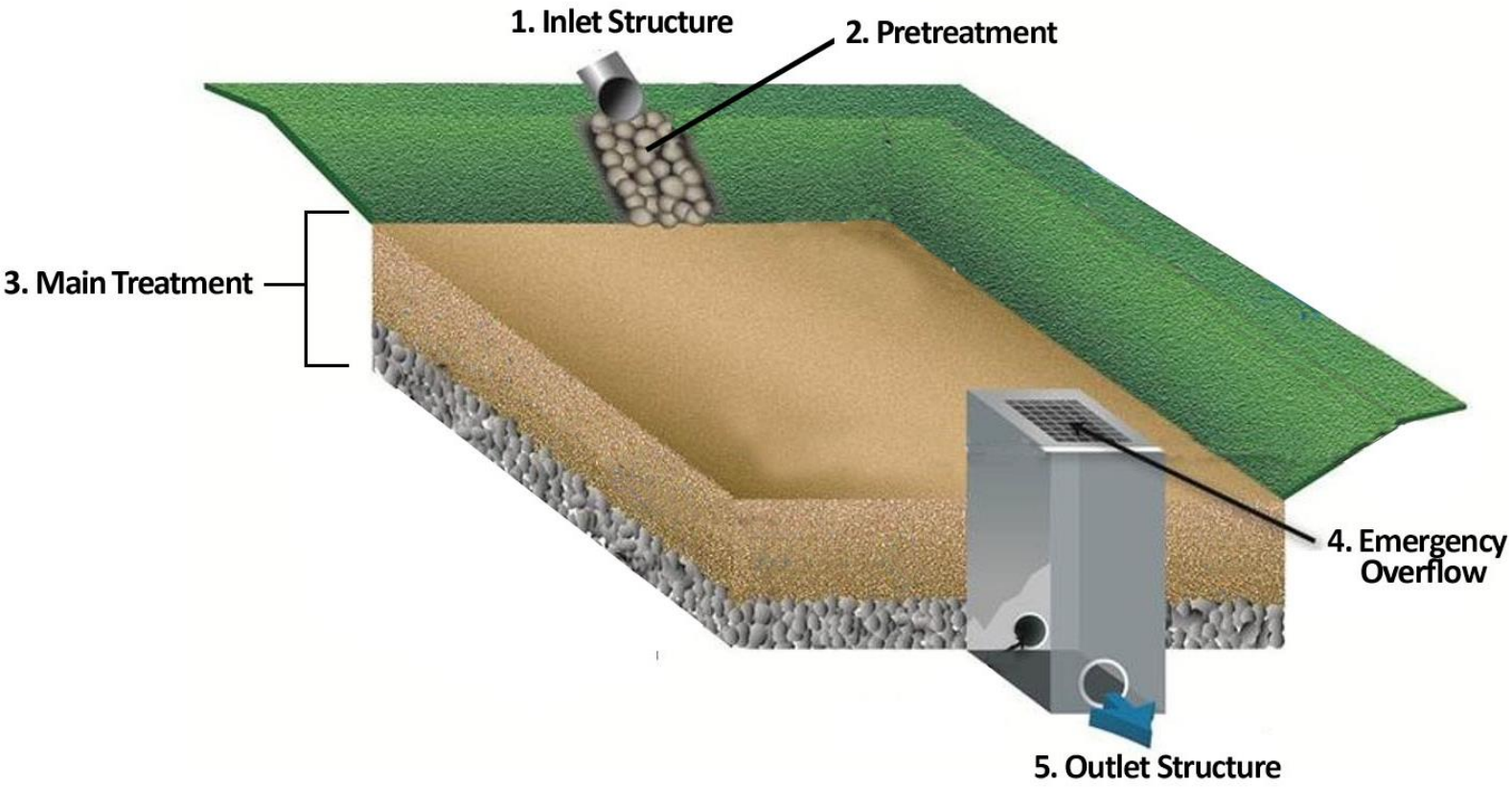
SURFACE BED FILTER INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

SURFACE BED FILTER INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Surface Bed Filter



5.10 Permeable Pavement Basics

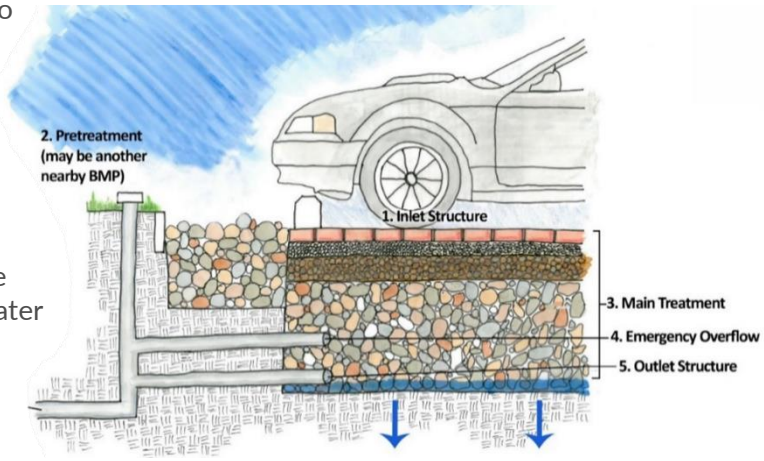
Permeable surfaces are Best Management Practices (BMPs) that let stormwater flow into the holes in the pavement surface. From there, the water soaks into the soil below. Permeable surfaces can consist of modular pavers, concrete grids, pervious concrete, porous asphalt, and cellular confinement systems. Permeable surfaces usually manage about 1-inch of stormwater. The permeable surface should be dry about 2 hours after a storm. Permeable surface areas will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Permeable Pavement

- Reduces and cleans stormwater runoff
- Recharges groundwater
- Can use in cold climates, even below freezing, which can reduce black ice
- Lasts longer than traditional pavement by reducing effects of freeze-thaw cycles
- Better traction when wet
- Reduces spray from moving vehicles and roadway noise

Most permeable surfaces will have five basic parts (see the figure below):

1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

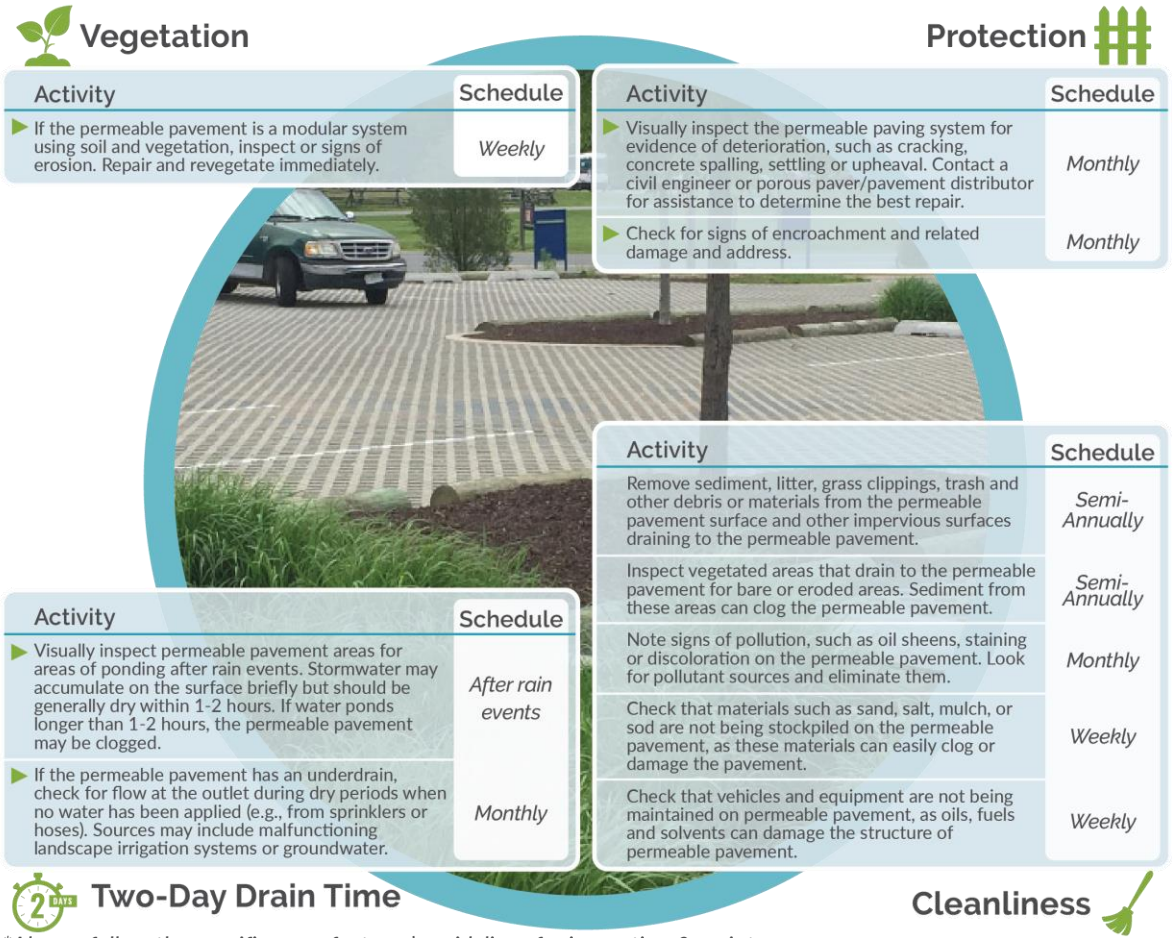


What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your permeable surface will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working permeable surface. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



**Always follow the specific manufacturer's guidelines for inspection & maintenance*

Do	Don't
• Check the pavement after a storm to make sure it is draining right. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • Remove dirt/debris that could wash into the BMP. Use a leaf blower for gravel or grass areas. Use a vacuum sweeper for concrete or asphalt areas. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP.	• Don't store mulch, sand, salt, soil or yard waste on the pavement. • Don't neglect the maintenance • needs of your pavement. Hire a professional, if needed. • Don't use sand or salt for snow removal on your pavement. Don't pile snow that has sand or salt on your pavement. • Don't put sealants on permeable pavement or repave the area with materials that do not let water drain through.

PERMEABLE PAVEMENT INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The permeable pavement name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Permeable Pavement 1" or "Permeable Pavement A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			Reason for Follow Up?

PERMEABLE PAVEMENT INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Is the permeable pavement difficult to access for inspection and maintenance?				
	Guidance: Any obstacles blocking access to, or maintenance of, the permeable pavement should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule**: Monthly				
	2. Are trash, sediment, debris, grass clippings, or other materials that can obstruct stormwater flow on or adjacent to the permeable pavement?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow. **Schedule**: Monthly				
	3. Do activities occur in the area that may cause unusual or substantial amounts of pollutants (especially oil and grease, fertilizers, and deicing chemicals) to be discharged through the permeable pavement?				
	Guidance: Activities in the drainage area should minimize oil, grease, sediment, and chemicals from reaching the draining surface. Remove or contain these materials to the extent possible. Note that salt should not be used on pervious concrete during the first winter. **Schedule**: Weekly				
	4. Is there evidence of deterioration or cracking of the permeable? Is there any damage or erosion to the inlets or outlets?				
	Guidance: There should be no signs of cracking or erosion. If these are found, repair or replace any damaged material. **Schedule**: Monthly				

PERMEABLE PAVEMENT INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
Main Treatment Area (Component 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	5. Is stormwater bypassing the permeable pavement?				
	Guidance: Stormwater should be drained 1-2 hours after a storm and should not be flowing off the pavement into adjacent areas. If stormwater is bypassing the permeable pavement, perform maintenance to improve infiltration. Sections that have become plugged should be cleaned by a combination of pressure washing and vacuuming the compacted debris. **Schedule**: Monthly				
	6. Is there any visual evidence of long-term ponding or standing water (e.g., stains, odors, etc.)?				
	Guidance: Remove unwanted materials and correct any other problems that can cause clogging or otherwise prevent percolation of stormwater into the permeable pavement BMP. **Schedule**: Monthly				
	7. Does the area surrounding the permeable pavement contain exposed soil or bare earth?				
	Guidance: The area surrounding the permeable pavement should be maintained regularly. Conduct maintenance activities regularly (e.g., mowing grass, replacing aggregates or materials in areas near the draining surface, etc.) and replace vegetation and/or materials as needed so that no exposed soils are present. **Schedule**: Semi-annually				
	8. Are any cleanout caps missing?				
	Guidance: Visually inspect for missing or damaged components in the permeable pavement area and repair or replace as needed. **Schedule**: Monthly				
	9. Is the underdrain flushing improperly, causing clogging?				
	Guidance: The draining system should be flushed annually (or sooner if needed) and no clogs should be present in the draining system. **Schedule**: Annually				
	10. Notice another problem? Describe in comments.	Your Comments:			

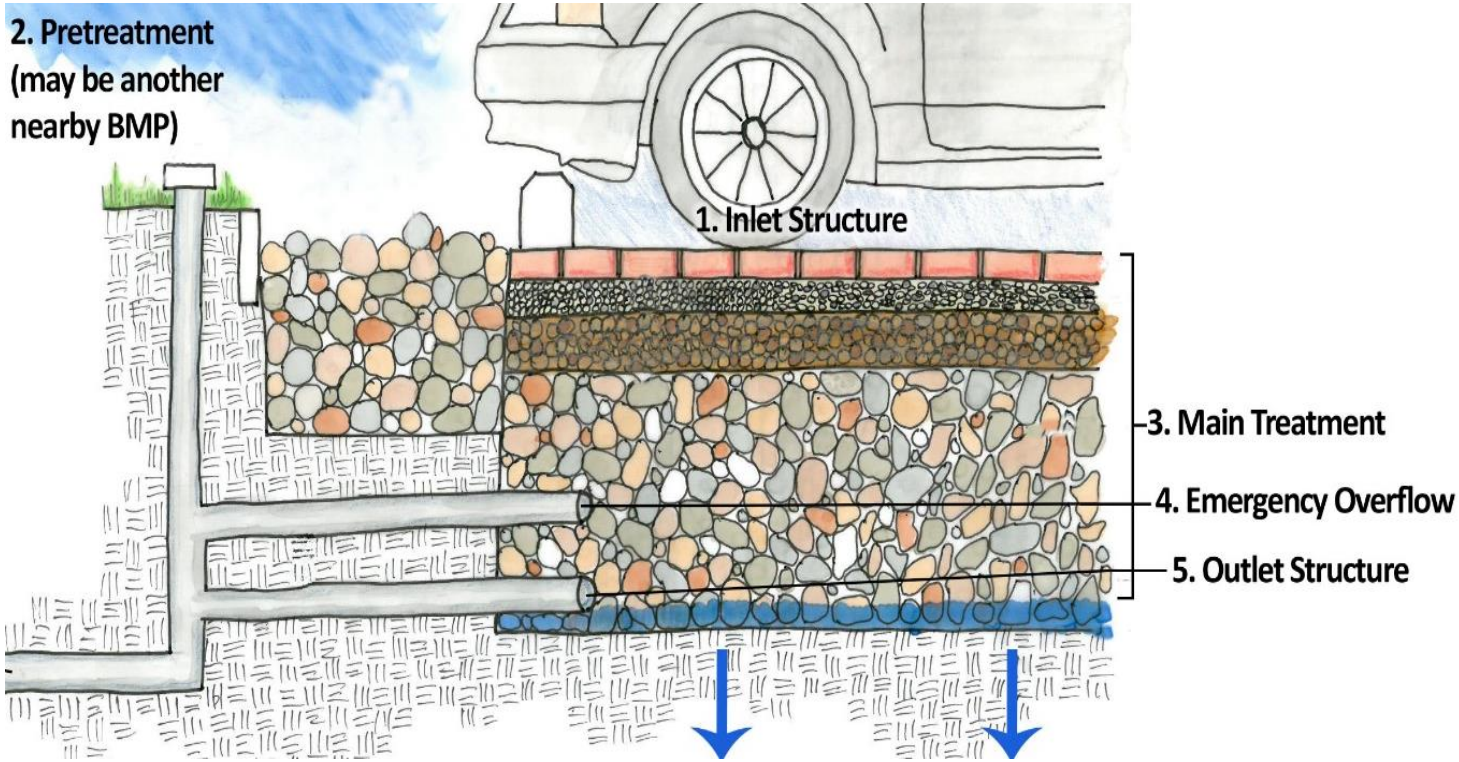
PERMEABLE PAVEMENT INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

PERMEABLE PAVEMENT INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of Permeable Pavement



5.11 Underground Detention Basics

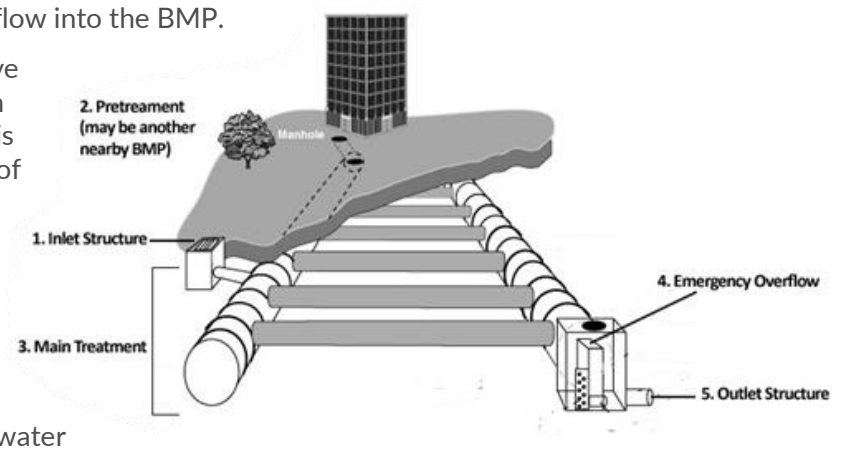
Benefits of Underground Detention

- Cleans pollutants from stormwater
- Can be used with other BMPs
- Good for sites with little space to spare

Underground detention is a Best Management Practice (BMP) made of pipes and vaults that remove pollutants from stormwater by storing it underground for a short amount of time. The BMP lets the sediment (dirt) settle out of the water before it is slowly released. Underground detention is a good BMP to use when space is tight, and are commonly used under parking lots or under grassed areas in common spaces. This BMP is also good for flood control. Underground detention BMPs will manage about 1-inch of stormwater and store water for up to 48 hours. Underground detention BMPs will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Most underground detention BMP will have five basic parts (see the figure below). Most of these parts will be underground or contained within a vault, requiring access through a manhole.

1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

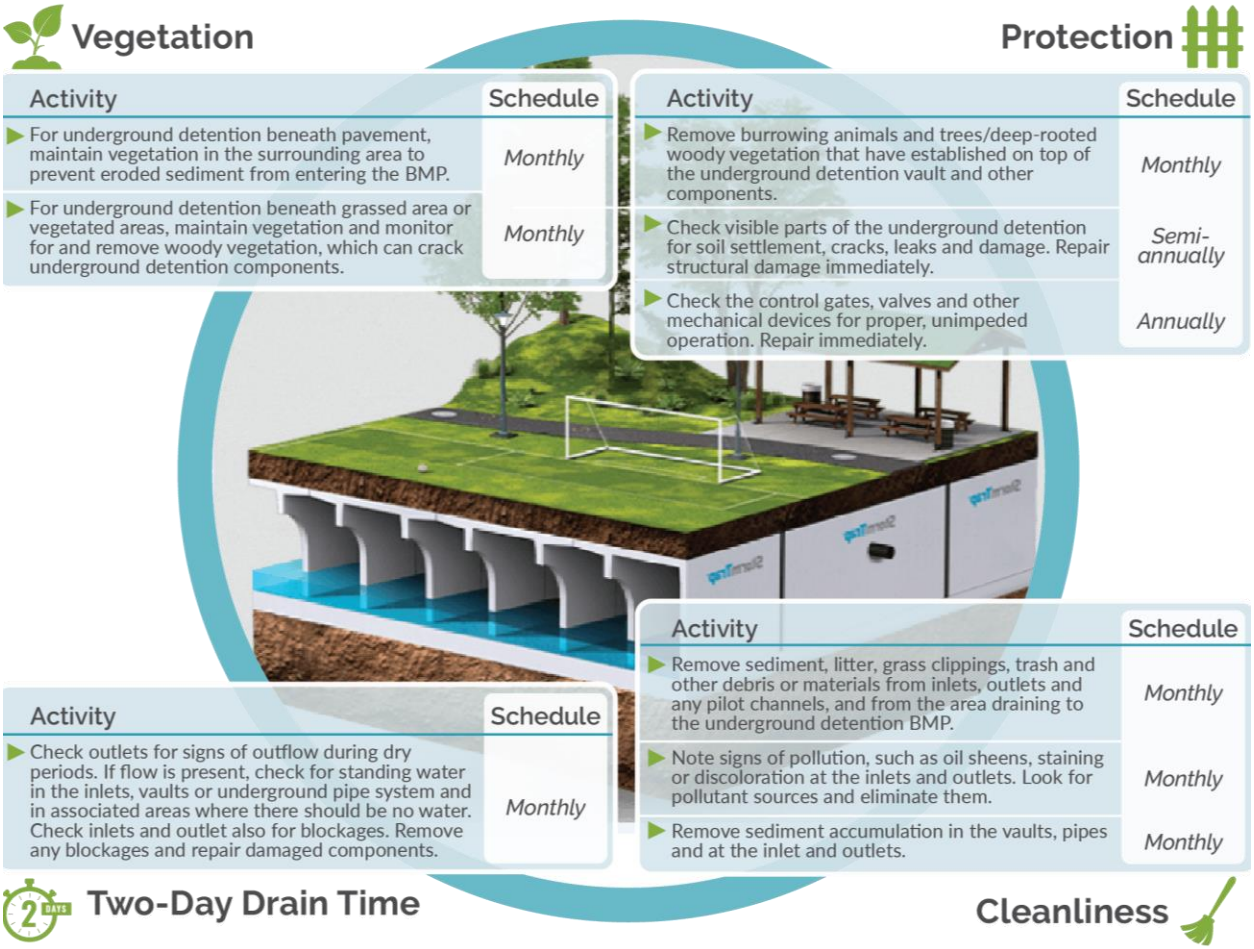


What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your underground detention BMP will last longer and you'll save money if you protect the plants and soil around the BMP, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working underground detention BMP. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Mow grass 3-4 inches high and remove trash and debris regularly. • Keep your property clean. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP.	• Don't use too much salt or sand around the BMP in the winter. • Don't let pollutants (trash, pet waste, pesticides, oils, etc.) wash into the BMP.

UNDERGROUND DETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The underground detention BMP name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Underground Detention 1" or "Underground Detention A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			Reason for Follow Up?

UNDERGROUND DETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 1, 4, & 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Are the inlets, outlets, gates, valves, and other mechanical components difficult to access for operation, inspection, and maintenance?				
	Guidance: Any obstacles blocking access to, or maintenance of, these components should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule**: Monthly				
	2. Are trash, sediment, debris, grass clippings, or other materials that can obstruct storm water flow present in the inlet or outlet?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the area. **Schedule**: Monthly				
	3. Is water flowing from the outlet when it is not expected?				
	Guidance: Under normal rainfall conditions, the underground detention BMP is designed to drain 1 day after a rainfall. This may take longer during especially wet periods. During dry periods, an outlet that is discharging water or standing water in BMP components may indicate a clog or blockage, or even a cracked vault or pipe that is allowing landscape water or ground water to enter the system. Determine the cause and correct it. If the cause cannot be determined, call a civil engineer or the vendor of the underground detention system for assistance. **Schedule**: Monthly				
	4. Is the outlet NOT flowing after a significant rain event? Or is water backing up into other parts of the stormwater system?				
	Guidance: Some flow should be visible at the structure outlet after most large storm events. If no flow is observed, the outlet may be clogged. If the clog is visible and accessible, remove it. If not, you may need the help of a qualified professional. **Schedule**: Monthly				

UNDERGROUND DETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 1, 4, & 5)
Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness

INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
	Y	N	NA	
5. Is there bare soil or evidence of erosion or scour at the outlets?				
Guidance: Outlets and the areas below them should not have any signs of erosion, and should be covered with sufficient vegetation, pavement, or other material to slow the water and prevent erosion. Typically, this is a rock lining, but can be concrete, asphalt, pavers, or even dense vegetation. If signs of erosion are visible at the outlet, install a rock lining that extends at least 10' beyond the area of erosion. Contact a qualified professional if you have questions on the size and type of rock. **Schedule**: Monthly				
6. Do the inlets have unhealthy vegetation, sparse rock, broken concrete/pavement, or other damaged material?				
Guidance: Inflow areas should have dense healthy vegetation or a rock, concrete, asphalt, or paver lining to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and cover bare soil immediately with the appropriate vegetation or material cover. **Schedule**: Monthly				
7. Is there visual evidence of pollutants at the inlets or outlets (e.g., oil, odd discoloration, stains, etc.)?				
Guidance: Visually check inlets and outlets for discolored or stained grass, pavement or rocks, or significant stands of unhealthy vegetation. If a persistent or frequent discoloration occurs, contact your local jurisdiction. This could be a sign that the underground detention BMP is not operating properly or that pollutants have been introduced into it. **Schedule**: Monthly				
8. Notice another problem? Describe in comments.	Your Comments:			

UNDERGROUND DETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment & Main Treatment (Components 2 & 3)
Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness

INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
	Y	N	NA	
9. Are there cracks, holes, depressions, animal burrows, trees, or woody vegetation on top of the vault, on the pavement, or on the pipe system?				
Guidance: The area above the storage components (vault or pipe systems) should be paved, vegetated (with grass or other non-woody vegetation), or both. Animal burrows, trees and woody vegetation should be removed as soon as they are noticed. Cracks, depressions, and holes can indicate a structural problem with the storage components. Measure and log the length, width, and depth of each of these problem on the inspection form and note the location of each issue on the inspection figure. Check the vault and piping system for signs of structural damage if you can do so safely. For animal burrows, call animal control for removal. Call a civil engineer or the vendor of the underground detention BMP for assistance if these problems appear to be getting worse. **Schedule:** Semi-annually				
10. Notice another problem? Describe in comments.	Your Comments:			

UNDERGROUND DETENTION INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to Underground Detention Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	11. Are there litter, grass clippings, trash, debris, or other materials that could enter the underground detention BMP?				
	Guidance: Trash and other materials can be carried into the BMP and block the inlets or outlets and fill up the detention storage area. Remove undesirable materials and keep the property clean. **Schedule**: Monthly				
	12. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the BMP during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or storm water. **Schedule**: Monthly				
	13. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the BMP during a storm?				
	Guidance: Too much sediment washing into an underground detention BMP can reduce the water storage. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. **Schedule**: Seasonally				
	14. Do activities (car washing, pet walking, construction vehicle traffic, etc.) occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the underground detention BMP?				
	Guidance: Prevent these activities from occurring or take steps to prevent the pollutants from reaching the BMP, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule**: Monthly				
	15. Notice another problem? Describe in comments.	Your Comments:			

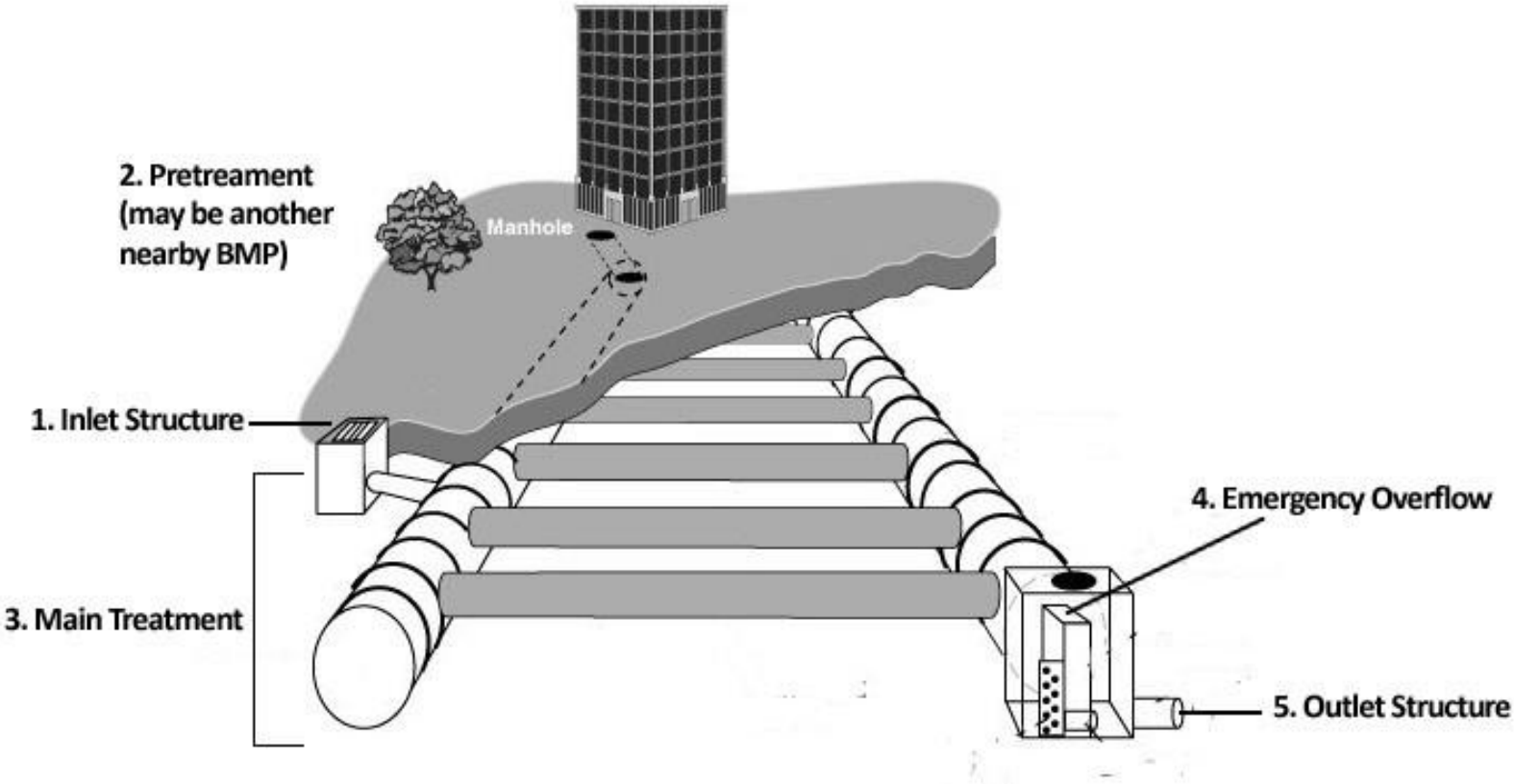
UNDERGROUND DETENTION INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

UNDERGROUND DETENTION INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of Underground Detention



5.12 Catch Basin Basics

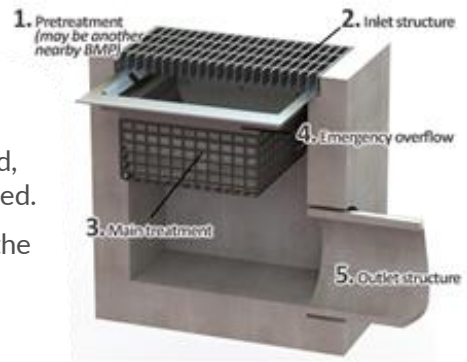
Catch basins are Best Management Practices (BMPs) that remove trash, debris, and sediment from runoff directly at the storm drain. Some catch basins can be built to absorb oils. These catch basins are usually installed underground or in a vault. They are best used in combination with other BMPs because they can reduce pollution before runoff gets downstream. A catch basin can have an insert installed in it to remove pollutants. Some catch basin inserts are designed to remove specific pollutants, like activated carbon, porous polymer, or treated cellulose. The details of your structure should be provided by the manufacturer. Sumped structures will manage about 1-inch of stormwater and drain quickly after a storm. Sumped structures will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Catch Basins

- Low cost
- No additional space required - goes directly in existing storm drain
- Easy to inspect and maintain
- Prevent organic and plant debris from entering the storm drain

Most sumped structures will have five basic parts (see the figure below). Most of these parts will be underground or contained within a vault. This requires access through a manhole, observation well, or inlet/outlet structure. Because there are different types of sumped structures, inspection and maintenance will require the use of an owner's manual and specific information from the manufacturer.

1. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
2. **Inlet structures** let water flow into the BMP.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

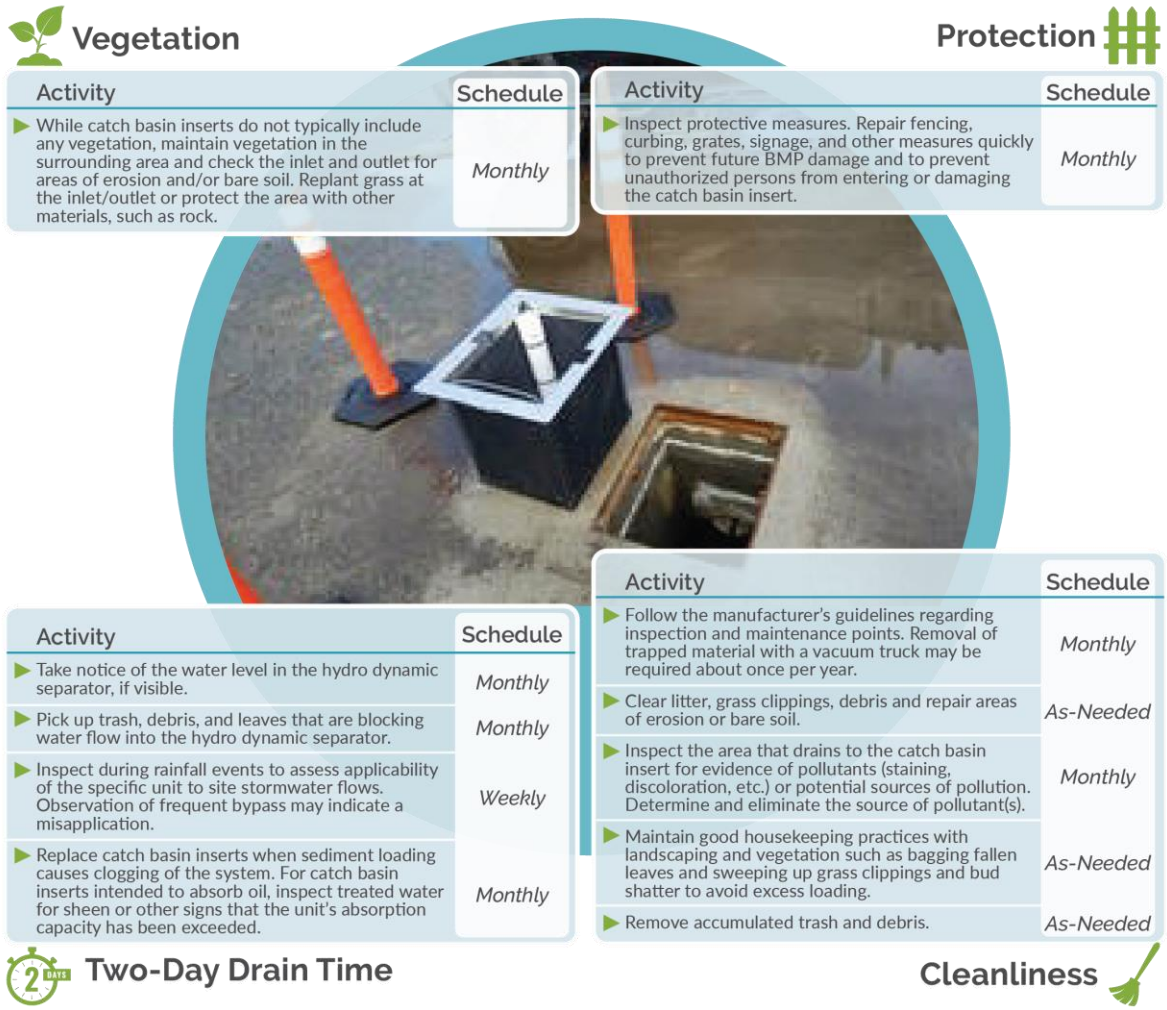


What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your sumped structure will last longer and you'll save money if you protect nearby plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working sumped structure. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Check the catch basin after storms to make sure it is draining properly. Remove leaves and debris from surfaces. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems. • Mark the inlets of the sumped structure. This could help prevent damage from heavy equipment or vehicles.	• Don't neglect the maintenance needs of your catch basin. Hire a professional, if needed. • Don't store mulch, sand, salt, soil or yard waste or pile snow that contains sand or salt in the area draining to your sumped structure. • Don't wash your car or change fluids in an area that drains to the structure. • Don't enter the structure for inspection or maintenance unless you are a professional with confined entry certifications.

CATCH BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The catch basin name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Catch Basin 1" or "Catch Basin A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

CATCH BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 2, 4, and 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Are the inlets, outlets, grates, chambers, or mechanical components difficult to access?				
	Guidance: Any obstacles blocking access to, or maintenance of, these components should be removed. Put a note in this form if access is blocked by a permanent fixture (e.g., fence) that is not easily removed. **Schedule**: Monthly				
	2. Are trash, sediment, debris, leaves, grass clippings, or other materials that can obstruct storm water flow present in the inlet or outlet areas?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the catch basin BMP. **Schedule**: Monthly				
	3. Is the catch basin holding water or is water flowing from the outlet when it is not expected?				
	Guidance: In general, catch basin BMPs are designed to drain quickly after a rainfall. This may take longer during especially wet periods. During dry periods, an outlet that is discharging water or water backed into the catch basin BMP inlet may indicate a clog or blockage. Determine the cause and correct it. If the cause cannot be determined, call a civil engineer or the vendor of the catch basin BMP for assistance. **Schedule**: Weekly				
	4. Is there bare soil or evidence of erosion or scour at the overflow or outlet?				
	Guidance: Outlets, overflows, and the areas around them should not have any signs of erosion, and should be covered with sufficient vegetation, pavement, or other material to slow the water and prevent erosion. Typically, this is a rock lining, but can be concrete, asphalt, pavers, or even dense vegetation. If signs of erosion are visible, install a rock lining that extends at least 10 feet beyond the area of erosion. **Schedule**: Monthly				

CATCH BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Inlet Structure, Emergency Overflow, & Outlet Structure (Components 2, 4, and 5) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Is there evidence of erosion, bare soil, or broken components at the inlets?				
	Guidance: Most catch basin BMPs are directly connected to the storm water system. In cases where inlet areas collect stormwater from surfaces, pervious areas should be stabilized by dense vegetation, rock, or similar coverings, and impervious surfaces should be covered by concrete, asphalt, or paver lining to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and cover bare soil immediately with the appropriate cover. **Schedule**: Monthly				
	6. Is there visual evidence of pollutants at the inlets, outlets, or on the surface of the catch basin BMP media (e.g., oil sheen, odd discoloration, stains, etc.)?				
	Guidance: Catch basin BMPs need to be cleaned and/or replaced when sediment loading causes clogging of the system. For catch basin BMPs intended to absorb oil, inspect treated water for sheen or other signs that the unit's absorption capacity has been exceeded. Clean the BMP as needed (see # 8). **Schedule**: Monthly				
	7. Notice another problem? Describe in comments.	Your Comments:			

CATCH BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Pretreatment & Main Treatment (Components 1 & 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	8. Is the catch basin BMP media draining slowly or not at all? Is there a clogged filter or other component?				
	Guidance: Visually check any filters and other components for clogging. Debris, sludge, or other material can cause the catch basin BMP to not function properly. Follow the manufacturer's recommendations for cleaning and replacing inserts or other components. If the catch basin BMP still does not drain properly, contact the manufacturer or another qualified professional. **Schedule**: Monthly				
	9. Notice another problem? Describe in comments.	Your Comments:			

CATCH BASIN INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

Property Draining to Catch Basin BMP Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	10. Are there litter, grass clippings, trash, debris, or other materials that could enter the catch basin BMP?				
	Guidance: Trash and other materials can be carried into the catch basin BMP and cause blockages. Remove undesirable materials and keep the property clean. **Schedule:** Weekly				
	11. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the BMP during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful and hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule:** Monthly				
	12. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the BMP during a storm?				
	Guidance: Too much sediment washing into a catch basin BMP can cause clogging very quickly. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. Refer to #8 if maintenance of the catch basin BMP is needed. **Schedule:** Monthly				
	13. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the catch basin BMP?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Prevent these activities from occurring or take steps to prevent the pollutants from reaching the BMP, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule:** Monthly				
	14. Notice another problem? Describe in comments.	Your Comments:			

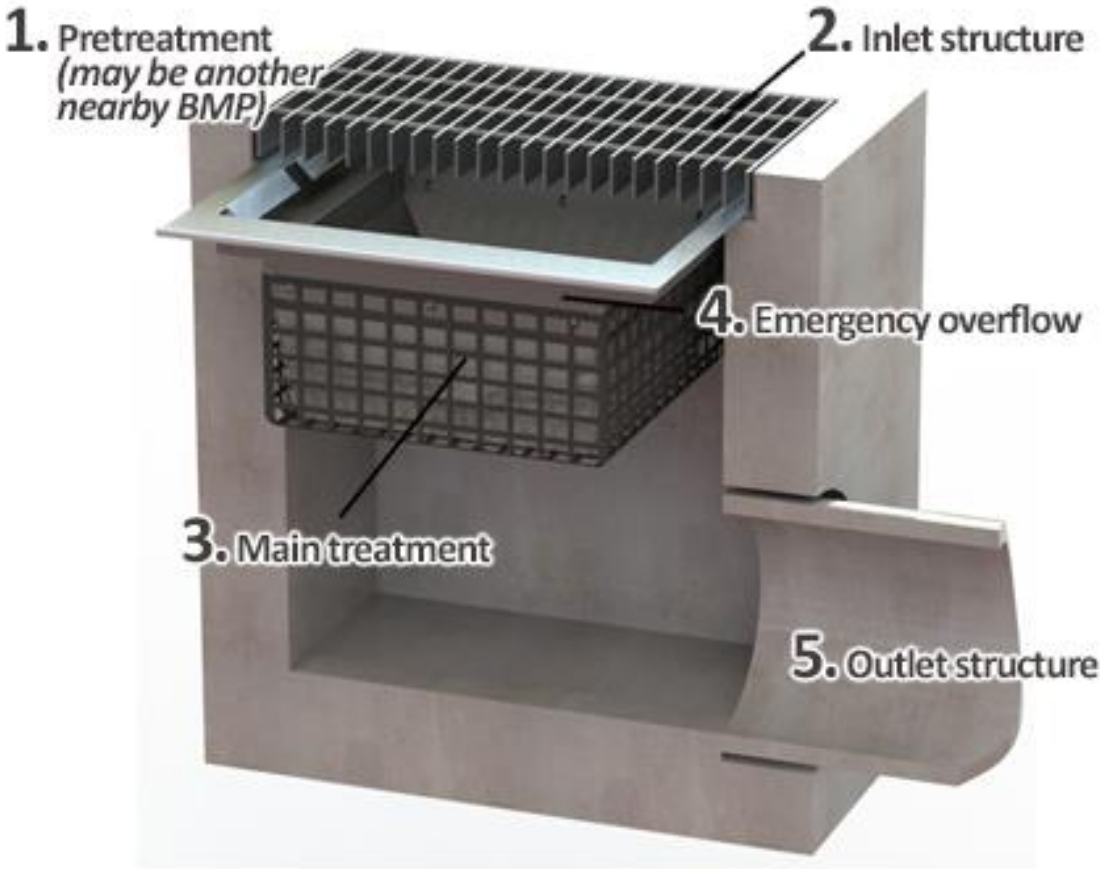
CATCH BASIN INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

CATCH BASIN INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

Common Components of a Catch Basin BMP



5.13 Vegetated Filter Strip Basics

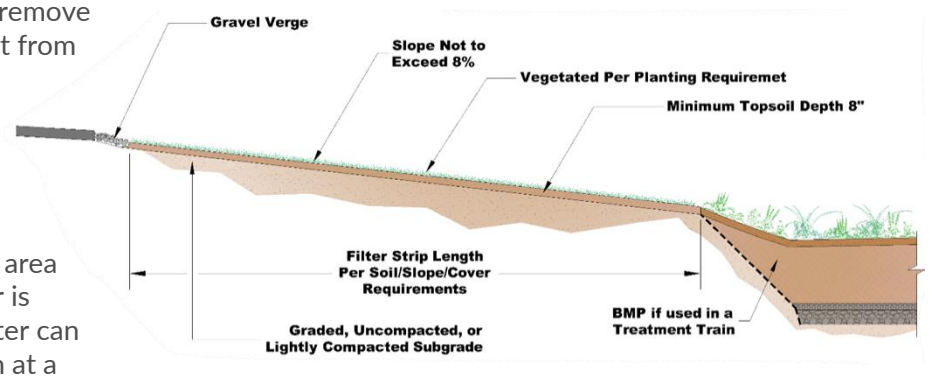
Vegetated Filter Strips are gently sloping Best Management Practices (BMPs) with densely vegetated areas of native plants. They slow down stormwater runoff and filter out pollutants by letting the water soak into the ground. They are usually installed as a pretreatment for another BMP. A vegetated filter strip will manage about 1-inch of stormwater and should drain completely about 24 hours after a storm. Vegetated filter strips will be located in stormwater management easements (SMEs), and will be easy to find using the 'Catching Rain BMP' app and typing in your property address.

Benefits of Vegetated Filter Strips

- Can be used as pretreatment for other BMPs
- Easier to maintain than underground pipes
- Water is cleaned by soaking into the ground
- Reduce runoff volume
- Slow water down, reducing erosion

Most vegetated filter strips will have five common components (see the figure below):

1. **Inlet structures** let water flow into the BMP.
2. **Pretreatment** areas remove trash, debris, and dirt from stormwater flowing in. This helps to prevent clogging of the main treatment area.
3. The **main treatment** area is where stormwater is collected, so the water can be cleaned and drain at a controlled speed.



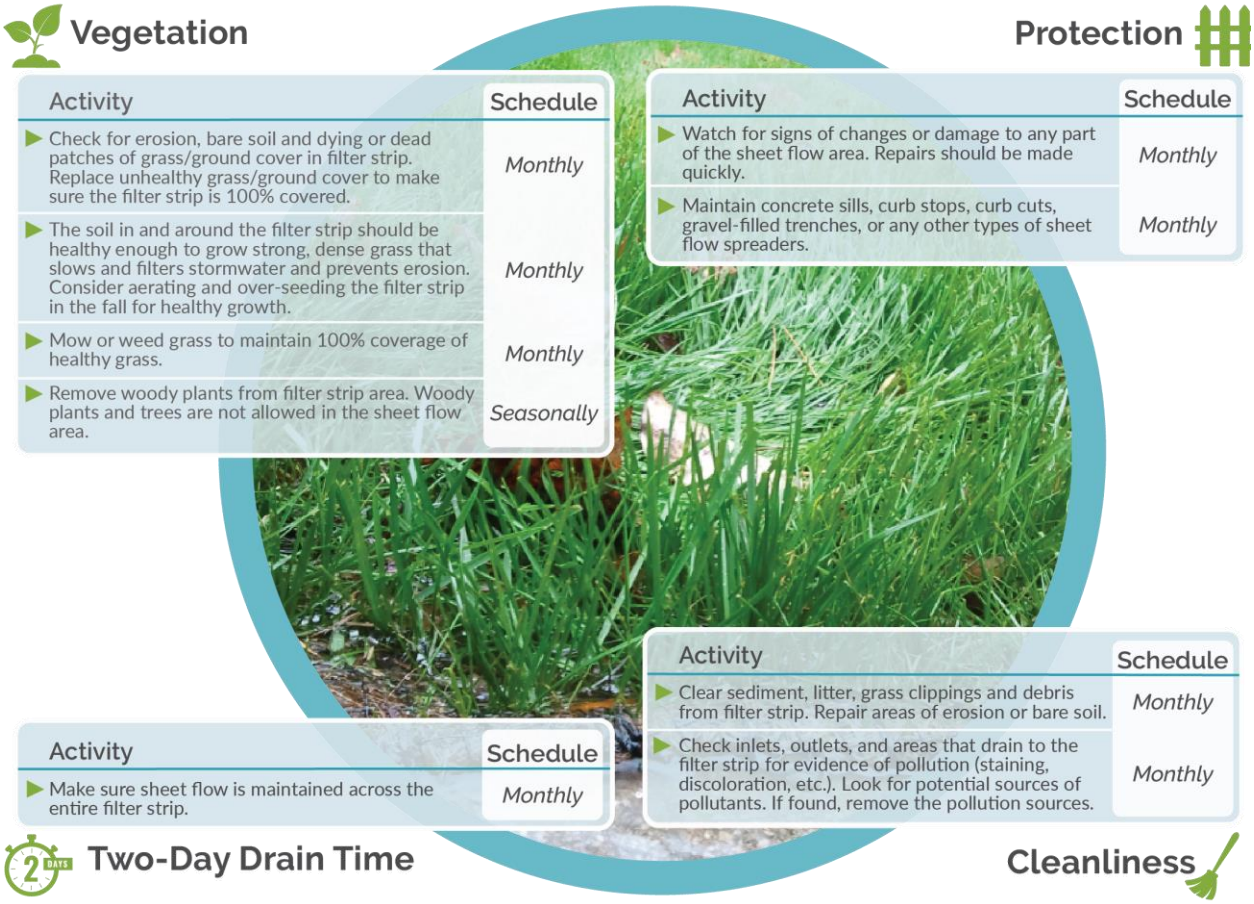
4. **Emergency overflows** let water escape and flow *around* the BMP during intense or long storms, without flooding the surrounding area.
5. The **outlet structure** lets the cleaner water exit the BMP.

What Are My Responsibilities?

Ongoing protection, inspection, and maintenance is important to the function of your BMP. Here are a few things to keep in mind:

- BMPs located on your property according to the 'Catching Rain BMP' app must be inspected and cared for by *you*, the property owner. The requirements for inspection and maintenance presented in this document are supported by the City's Ordinance in *Chapter 53: Stormwater Management Department*.
- You can choose to hire others (like a landscape company) to perform inspection and maintenance activities, but you are ultimately responsible for inspection and maintenance.
- City Utilities keeps track of your inspection and maintenance reports and may perform utility-led inspections when they see fit. If you don't inspect and maintain your BMP, this violates the City's Stormwater Ordinance and can result in fines, penalties, and requirements to fix your BMP.

Your vegetated filter strip will last longer and you'll save money if you protect the plants and soil, keep your property clean, and do regular inspections and maintenance. The image below shows the four Success Factors needed to make sure you have an attractive, working vegetated filter strip. Remember that your ***BMP Inspection Form* must be submitted once per year through the 'Catching Rain BMP' app**. Use this BMP Guidance Sheet as a reference.



Do	Don't
• Check the property often for bare soil, litter, vegetation health, and soil compaction. • Maintain vegetation at a minimum height of 12 inches. Water grass, especially during the first year after installation. • To prevent damage, tell landscapers and contractors working on the property about the location and purpose of the BMP. • Do regular inspections and maintenance, often. Make repairs as soon as you notice problems.	• Don't use too much salt and sand around the vegetated filter strip in the winter. • Don't use too much fertilizer, herbicides, or pesticides in the BMP. Contact a local nursery or landscape company if your plants aren't doing well. • Don't let heavy equipment in the biofilter or bioswale or use it for storage, even for landscape items (leaves, snow, soil mulch, etc.) • Don't mow grass immediately after it rains. This could damage the filter strip.

VEGETATED FILTER STRIP INSPECTION FORM

All items listed must be inspected unless not applicable (NA). Answering "Yes" indicates a need for maintenance. Please include an approximate repair date for items that require maintenance. **The maintenance and inspection frequency shall be done in accordance with the BMP Maintenance Agreement for Stormwater Facilities. This form details these frequency periods, and submittal of the form (once per year) is a certification that you have met these requirements. This inspection shall be done once every five years by a PE, PLA, or other qualified professional.** See the last page for an illustration of the BMP's Common Components.

BMP NAME(S)				Today's Date:
	Note: The vegetated filter strip name will be shown on the BMP location map on the 'Catching Rain BMP' app for this property. A typical name would be "Vegetated Filter Strip 1" or "Vegetated Filter Strip A". If this inspection form is being submitted for multiple BMPs of the same type, please list all applicable names.			Date of Last Inspection:
PROPERTY INFO	Street Address:	City:	State:	Zip:
WHO IS INSPECTING THE BMP?	Name (Owner, Tenant, Property Manager or Landscape Company):		Contact Name (If Different):	
	Street Address (If conducted by a company, use company address):	City:	State:	Zip:
	Phone #:	Email:	Check one: ☐ PE ☐ PLA ☐ Other: ☐ NA License #:	
WHO OWNS THE BMP?	Name (Person(s) or Company):	Contact Name (If Different):		
	Street Address:	City:	State:	Zip:
	Phone #:	Email:		

This Section is for City of Fort Wayne Use Only

Identification Number		Has the City Entered and Approved this Inspection? Yes No	
Name of Staff Approving this Inspection Report:	Approval:	Date of Inspection	
Is a Follow Up Inspection by Staff Required? Check One: Yes No			
Reason for Follow Up?			

VEGETATED FILTER STRIP INSPECTION FORM

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Pretreatment & Main Treatment (Components 2 & 3) Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	1. Is the vegetated filter strip hard to access for inspection and maintenance?				
	Guidance: Any obstacles blocking access and/or maintenance should be removed. If access is blocked by a permanent fixture (e.g., fence), note this on inspection form. **Schedule**: Monthly				
	2. Is the vegetated filter strip holding water for longer than it was designed (typically 24 hours after a storm)?				
	Guidance: Water should drain out of the vegetated filter strip per its design, which is usually about 24 hours after any rain event. If it stays in the BMP longer, native vegetation could be killed, or wetland plants could begin to grow. Check for and remove any blockages from the BMP. If no blockages are found and standing water is common during dry periods, more extensive maintenance, such as regrading or repair of the underdrain, may be required. **Schedule**: Monthly				
	3. Is there sediment, bare soil, eroding areas in the vegetated filter strip or pretreatment area? Is there any unhealthy vegetation or bare grass spots?				
	Guidance: The vegetated filter strip and its pretreatment area should have a thick stand of grass and/or native vegetation. Eroded and bare areas should be repaired and covered with sufficient vegetation. If high water velocity is the cause of the erosion issues, check dams may be needed to slow the water. Sediment should be removed from the pretreatment structure(s) and any forebay or check dams each year. **Schedule**: Monthly. Annual sediment removal.				
	4. Notice another problem? Describe in comments.	Your Comments:			

VEGETATED FILTER STRIP INSPECTION FORM

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Inlet Structure & Emergency Overflow (Components 1 & 4) **Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness**	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	5. Do the inlets or emergency overflow components of the vegetated filter strip show evidence of erosion, bare spots, or scour?				
	Guidance: Inlet structures should have stable soils covered by dense, healthy vegetation and/or a stabilizing material (e.g., rock, concrete, asphalt, or paver lining) to prevent erosion. Bare soil or signs of erosion should NOT be present. Repair eroded areas and stabilize bare soil immediately with the appropriate vegetation or material cover. At the emergency overflow location, install a rock lining that extends at least 5 feet beyond the area of erosion. Consult an experienced professional if you have questions on the size and type of rock. **Schedule**: Monthly				
	6. Does the inlet or emergency overflow contain trash, sediment, debris, grass clippings or other materials that can obstruct stormwater flow?				
	Guidance: Remove unwanted materials and correct any other problems that block the water flow into or out of the vegetated filter strip or damage the vegetation. **Schedule**: Monthly				
	7. Is there visual evidence of pollutants in the vegetated filter strip (e.g., oil sheen odd discoloration, stains, etc.)?				
	Guidance: Visually check the biofilter/bioswale for discolored or stained grass or significant stands of unhealthy vegetation. Examine surrounding areas for a potential source and contact the City of Fort Wayne for assistance if needed. **Schedule**: Monthly				
	8. Notice another problem? Describe in comments.	Your Comments:			

VEGETATED FILTER STRIP INSPECTION FORM

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Main Treatment (Component 3) **Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness**	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	9. Is the vegetation overgrown or in need of cutting? Is there woody vegetation that requires removal?				
	Guidance: String-trim native vegetation annually, or as needed, to minimize disturbance. Remove woody and invasive vegetation. Do not dispose of clippings or other waste in the vegetated filter strip. **Schedule**: Annually				
	10. Is the vegetation dead, dying, or in need of replacement? Does it cover *less than* 100% of the vegetated filter strip as per the BMP O&M plan?				
	Guidance: The vegetated filter strip should have a healthy, thick cover of native grass on the sides and in the bottom of the BMP. If vegetative cover needs to be added, consider aerating and over-seeding in the fall, or planting new vegetation in the spring. **Schedule**: Seasonally				
	11. Are there signs of blockage in the vegetated filter strip? Signs include frequent standing water, hard-packed soil, etc.				
	Guidance: If the vegetated filter strip is clogged, contact the City of Fort Wayne. If the soil is compacted, the entire planting layer may need repair to restore percolation. **Schedule**: Monthly				
	12. Are there signs of pedestrian, vehicle, animal, or heavy equipment damage? Is fencing or signage damaged?				
	Guidance: Erect appropriate barriers and/or signage to reduce entry of vehicle and pedestrian traffic into the vegetated filter strip. Repair damaged areas, backfill with appropriate soil, and replace vegetation as needed. **Schedule**: Annually				
	13. Notice another problem? Describe in comments.	Your Comments:			

VEGETATED FILTER STRIP INSPECTION FORM

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Property Draining to Vegetated Filter Strip **Success Factors: Vegetation, Protection, Two-Day Drain Time, and Cleanliness**	INSPECTION QUESTION	ANSWER			DESCRIBE PROBLEM(S) AND SOLUTION(S)
		Y	N	NA	
	14. Is there evidence of litter, grass clippings, trash, debris, or other materials that could enter the vegetated filter strip via stormwater or wind?				
	Guidance: Trash and other materials can be carried into the vegetated filter strip, causing blockages. Remove undesirable materials and keep the property clean. **Schedule**: Monthly				
	15. Are there stockpiles of soil, chemicals, equipment, or other materials that could be a source of pollutants washing into the vegetated filter strip during a storm?				
	Guidance: Stockpiled materials can contain pollutants that are harmful or that can be hazardous. Remove or cover undesirable materials, fully preventing their exposure to rainfall or stormwater. **Schedule**: Monthly				
	16. Are there areas of erosion or exposed soil/bare earth that could be a source of sediment washing into the vegetated filter strip during a storm?				
	Guidance: Too much sediment washing into a vegetated filter stirp can reduce the water storage and conveyance in the BMP. Repair and revegetate all areas of erosion or exposed soil. If vegetation is not intended for these areas, cover them with mulch, wood chips, pavement, or another hard surface to prevent sediment erosion. If soils are present on pavement surfaces nearby, sweeping parking lots or impervious surfaces to remove sand and silt may be necessary. **Schedule**: Weekly				
	17. Do activities occur in the area that may cause unusual or substantial amounts of pollutants to be discharged to the vegetated filter strip?				
	Guidance: Activities include car or equipment washing, pet walking, construction vehicle traffic, etc. Implement policies to prevent these activities from occurring or take steps to prevent the pollutants from reaching the BMP, such as washing cars in areas that drain to the wastewater system, street or parking lot sweeping, pet waste pickup stations, etc. **Schedule**: Monthly				
	18. Notice another problem? Describe in comments.	Your Comments:			

VEGETATED FILTER STRIP INSPECTION FORM

Use this page for any notes, comments, or questions generated by your inspection. If you are using this page to continue your notes from a previous section, please include the section name and section number. You may also use this page to address issues not covered on the inspection form.

VEGETATED FILTER STRIP INSPECTION FORM

Provide a photograph(s) of your BMP to document the compliance inspection to be submitted once per year via the 'Catching Rain BMP' app.	
Photograph Description:	Photograph Description:
Date Photograph Taken:	Date Photograph Taken:

6.0 Additional Resources

Getting Additional Help with BMPs

Whether you are an individual residential property owner, a homeowners' association representative, a non-residential property owner, a property manager, or part of a landscape or property maintenance staff, this Manual is intended to provide guidance for the protection, inspection, maintenance, and planning needed to keep your BMP functioning properly.

Sometimes, BMPs will require maintenance that requires more technical or specialized expertise. This Section is designed to guide you to additional resources.

Need help with your BMP?

- More technical questions may require the assistance of a **professional engineer** or **landscape architect**.
- **Landscape firms** can help you maintain your BMP's soil and vegetation.
- **Master Gardeners** are volunteers with valuable plant knowledge.
- **Native plant nurseries** can provide plants and information on keeping them healthy.
- Additional, **online resources** are also included in this Section.

City Utilities can answer administrative questions about your BMP or refer you to additional resources. They can be reached at stormwater@cityoffortwayne.org or call 311 or (260) 427-8311

Engineers and Landscape Architects

BMPs are used to meet flooding, erosion, and pollution control requirements. Engineers and landscape architects are specially trained to conduct the calculations required to meet these requirements and design BMPs accordingly. If your BMP is experiencing problems despite regular maintenance and upkeep, or if it is damaged and its components need repairs, then it may be time to obtain the services of a technical specialist.

The following websites may provide additional information on finding an engineer or landscape architect:

- Indiana Chapter of the American Society of Landscape Architects: https://www.inasla.org/
- Indiana Society of Professional Engineers: https://www.indspe.org/

Landscape Firms

Vegetated areas may require the use of a professional landscape firm to maintain healthy vegetation, manage weeds, replant problem areas, and maintain optimal soil and drainage conditions. Before hiring a landscape firm or having one work on your property, make sure they will be working with a BMP designed to manage stormwater runoff, and provide them the BMP plan for your property. They need to be aware that maintenance of your BMP is required by code in Chapter 53: Stormwater Management Department and that special care will be needed to protect the BMP components. Communicate the following to any landscape firms working on your property:

- Higher mowing heights and less frequent mowing may be required than conventional landscaping.
- Use of fertilizers, herbicides, and pesticides may be more limited than conventional landscaping.
- Heavy equipment should be avoided in vegetated areas and areas where infiltration occurs.
- The BMP area should be kept clear of grass clippings, leaf piles, and other plant trimmings.
- Any other requirements of your maintenance agreement or planting plan.

Master Gardeners

Master Gardeners are gardeners that have been specially trained and sponsored by the Purdue University Allen County Extension Office. Master Gardeners volunteer their expertise and services to the community, providing reliable, gardening information and education opportunities. Purdue University and Allen County have a Master Gardener group that may have resources and gardeners available to answer questions and help with the vegetation, soil, and media in your BMP. They can be reached through the following website:

- Master Gardeners of Allen County https://extension.purdue.edu/allen/article/3605

Native Plant Nurseries

Even with careful management, vegetated BMPs will need additional planting to replace dead or unhealthy plants. Plants in a BMP serve very specific purposes, and the BMP may not function well if the wrong plants are used. If you are not sure what plants were planted in your BMP, your record drawings/civil plans should have the original planting plan. Due to their deep roots and ability to withstand local conditions, native plants are most often used in BMPs. Commercial nurseries may not have the specific plants you need. Native plant nurseries will have the inventory and the expertise you need to maintain your vegetation. If you choose to contact a nursery, make sure they are familiar with your type of BMP by sharing the relevant Section of this Manual and your BMP Planting Plan.

Additional Online Resources

Across the country, cities and private landowners are working to reduce negative impacts of stormwater through the use of BMPs. Below are some recommended websites that may be able to provide additional information on BMPs. As you conduct your own research, keep in mind that some BMPs and recommendations you find may not be applicable to local conditions or your specific BMP.

- Design Standards Manual utilities.cityoffortwayne.org/contractors-engineers-developers/design-standards-manual
- Green Design Standards utilities.cityoffortwayne.org/contractors-engineers-developers/green-design-standards
- Plant List utilities.cityoffortwayne.org/wp-content/uploads/2023/02/Plant-List.pdf
- Catching Rain Fort Wayne (Green Infrastructure Initiative) www.catchingrainfw.org/
- Indiana Native Plant Society indiananativeplants.org/

- Allen County Soil and Water Conservation District allenswcd.org/
- Riverview Native Nursery www.riverviewnativenursery.com/