

Town of Waynesville

BMP Operation and Maintenance Agreement Forms

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Permit Number:

(to be provided by DWQ)

Drainage Area Number:

Bioretention Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important operation and maintenance procedures:

- Immediately after the bioretention cell is established, the plants will be watered twice weekly if needed until the plants become established (commonly six weeks).
- Snow, mulch or any other material will NEVER be piled on the surface of the bioretention cell.
- Heavy equipment will NEVER be driven over the bioretention cell.
- Special care will be taken to prevent sediment from entering the bioretention cell.
- Once a year, a soil test of the soil media will be conducted.

After the bioretention cell is established, I will inspect it **once a month and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problems:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the bioretention cell	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a
		one-time fertilizer application.
The inlet device: pipe, stone verge or swale	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and clogged stone and replace with clean stone.

BMP element:	Potential problems:	How I will remediate the problem:
The pretreatment area	Flow is bypassing	Regrade if necessary to route all
_	pretreatment area and/or	flow to the pretreatment area.
	gullies have formed.	Restabilize the area after grading.
	Sediment has accumulated to	Search for the source of the
	a depth greater than three	sediment and remedy the problem if
	inches.	possible. Remove the sediment and
		restabilize the pretreatment area.
	Erosion has occurred.	Provide additional erosion
		protection such as reinforced turf
		matting or riprap if needed to
		prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by
		hand.
The bioretention cell:	Best professional practices	Prune according to best professional
vegetation	show that pruning is needed	practices.
	to maintain optimal plant	
	health.	
	Plants are dead, diseased or	Determine the source of the
	dying.	problem: soils, hydrology, disease,
		etc. Remedy the problem and
		replace plants. Provide a one-time
		fertilizer application to establish the
		ground cover if a soil test indicates
		it is necessary.
	Tree stakes/wires are present	Remove tree stake/wires (which
	six months after planting.	can kill the tree if not removed).
The bioretention cell:	Mulch is breaking down or	Spot mulch if there are only random
soils and mulch	has floated away.	void areas. Replace whole mulch
		layer if necessary. Remove the
		remaining much and replace with
		triple shredded hard wood mulch at
		a maximum depth of three inches.
	Soils and/or mulch are	Determine the extent of the clogging
	clogged with sediment.	- remove and replace either just the
		top layers or the entire media as
		needed. Dispose of the spoil in an
		appropriate off-site location. Use
		triple shredded hard wood mulch at
		a maximum depth of three inches. Search for the source of the
		sediment and remedy the problem if
	An annual soil test shows that	possible.
		Dolomitic lime shall be applied as
	pH has dropped or heavy metals have accumulated in	recommended per the soil test and toxic soils shall be removed,
	the soil media.	
		disposed of properly and replaced
		with new planting media.

BMP element:	Potential problems:	How I will remediate the problem:
The underdrain system	Clogging has occurred.	Wash out the underdrain system.
(if applicable)		
The drop inlet	Clogging has occurred.	Clean out the drop inlet. Dispose of
		the sediment off-site.
	The drop inlet is damaged	Repair or replace the drop inlet.
The receiving water	Erosion or other signs of	Contact the NC Division of Water
	damage have occurred at the	Quality 401 Oversight Unit at 919-
	outlet.	733-1786.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing bioretention maintenance requirements. Witness my hand and official seal,
SEAL
My commission expires

Dry Extended Detention Basin Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

The dry extended detention basin system is defined as the dry detention basin, outlet structure, pretreatment including forebays and the vegetated filter if one is provided.

This system (<i>check one</i>):	incorporate a vegetated filter at the outlet.
This system (<i>check one</i>):	incorporate pretreatment other than a forebay.

Important maintenance procedures:

- The drainage area will be managed to reduce the sediment load to the dry extended detention basin.
- Immediately after the dry extended detention basin is established, the vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- No portion of the dry extended detention pond will be fertilized after the first initial fertilization that is required to establish the vegetation.
- I will maintain the vegetation in and around the basin at a height of approximately six inches.
- Once a year, a dam safety expert will inspect the embankment.

After the dry extended detention basin is established, it will be inspected **once a quarter and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the dry	Areas of bare soil and/or	Regrade the soil if necessary to
extended detention	erosive gullies have formed.	remove the gully, and then plant a
basin	_	ground cover and water until it is
		established. Provide lime and a
		one-time fertilizer application.

BMP element:	Potential problem:	How I will remediate the problem:
The inlet device: pipe or	The pipe is clogged (if	Unclog the pipe. Dispose of the
swale	applicable).	sediment off-site.
	The pipe is cracked or	Replace the pipe.
	otherwise damaged (if	
	applicable).	
	Erosion is occurring in the	Regrade the swale if necessary to
	swale (if applicable).	smooth it over and provide erosion
		control devices such as reinforced
		turf matting or riprap to avoid
		future problems with erosion.
The forebay	Sediment has accumulated	Search for the source of the
	and reduced the depth to 75%	sediment and remedy the problem if
	of the original design depth	possible. Remove the sediment and
	(see diagram below).	dispose of it in a location where it
		will not cause impacts to streams or
		the BMP.
	Erosion has occurred or	Provide additional erosion
	riprap is displaced.	protection such as reinforced turf
		matting or riprap if needed to
	Weeds are present.	prevent future erosion problems. Remove the weeds, preferably by
	weeds are present.	hand. If pesticides are used, wipe
		them on the plants rather than
		spraying.
The main treatment area	Sediment has accumulated	Search for the source of the
	and reduced the depth to 75%	sediment and remedy the problem if
	of the original design depth	possible. Remove the sediment and
	(see diagram below).	dispose of it in a location where it
		will not cause impacts to streams or
		the BMP. Revegetate disturbed
		areas immediately with sod
		(preferred) or seed protected with
		securely staked erosion mat.
	Water is standing more than	Check outlet structure for clogging.
	5 days after a storm event.	If it is a design issue, consult an
		appropriate professional.
	Weeds and noxious plants are	Remove the plants by hand or by
	growing in the main	wiping them with pesticide (do not
	treatment area.	spray).

BMP element:	Potential problem:	How I will remediate the problem:
The embankment	Shrubs or trees have started	Remove shrubs or trees
	to grow on the embankment.	immediately.
	Grass cover is unhealthy or	Restore the health of the grass cover
	eroding.	- consult a professional if necessary.
	Signs of seepage on the	Consult a professional.
	downstream face.	
	Evidence of muskrat or	Use traps to remove muskrats and
	beaver activity is present.	consult a professional to remove
		beavers.
	An annual inspection by an	Make all needed repairs.
	appropriate professional	
	shows that the embankment	
	needs repair.	
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of	Contact the NC Division of Water
	damage have occurred at the	Quality 401 Oversight Unit at 919-
	outlet.	733-1786.

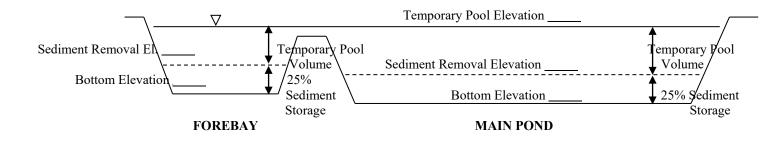
The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.

When the basin depth reads ______ feet in the main pond, the sediment shall be removed.

When the basin depth reads ______ feet in the forebay, the sediment shall be removed.

BASIN DIAGRAM

(fill in the blanks)



Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing dry detention basin maintenance requirements. Witness my hand and official
seal,
SEAL
My commission expires

Filter Strip, Restored Riparian Buffer and Level Spreader Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- Immediately after the filter strip is established, any newly planted vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- Once a year, the filter strip will be reseeded to maintain a dense growth of vegetation
- Stable groundcover will be maintained in the drainage area to reduce the sediment load to the vegetation.
- Two to three times a year, grass filter strips will be mowed and the clippings harvested to promote the growth of thick vegetation with optimum pollutant removal efficiency. Turf grass should not be cut shorter than 3 to 5 inches and may be allowed to grow as tall as 12 inches depending on aesthetic requirements (NIPC, 1993). Forested filter strips do not require this type of maintenance.
- Once a year, the soil will be aerated if necessary.
- Once a year, soil pH will be tested and lime will be added if necessary.

After the filter strip is established, it will be inspected **quarterly and within 24 hours after every storm event greater than 1.0 inch (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
The entire filter strip	Trash/debris is present.	Remove the trash/debris.
system		
The flow splitter device	The flow splitter device is	Unclog the conveyance and dispose
(if applicable)	clogged.	of any sediment off-site.
	The flow splitter device is	Make any necessary repairs or
	damaged.	replace if damage is too large for
		repair.

BMP element:	Potential problem:	How I will remediate the problem:
The swale and the level	The swale is clogged with	Remove the sediment and dispose
lip	sediment.	of it off-site.
-	The level lip is cracked,	Repair or replace lip.
	settled, undercut, eroded or	
	otherwise damaged.	
	There is erosion around the	Regrade the soil to create a berm
	end of the level spreader that	that is higher than the level lip, and
	shows stormwater has	then plant a ground cover and
	bypassed it.	water until it is established. Provide
		lime and a one-time fertilizer
		application.
	Trees or shrubs have begun	Remove them.
	to grow on the swale or just	
	downslope of the level lip.	
The bypass channel	Areas of bare soil and/or	Regrade the soil if necessary to
	erosive gullies have formed.	remove the gully, and then
		reestablish proper erosion control.
	Turf reinforcement is	Study the site to see if a larger
	damaged or ripap is rolling	bypass channel is needed (enlarge if
	downhill.	necessary). After this, reestablish
The filter strip	Crass is too short or too long	the erosion control material.
The filter strip	Grass is too short or too long (if applicable).	Maintain grass at a height of approximately three to six inches.
	Areas of bare soil and/or	Regrade the soil if necessary to
	erosive gullies have formed.	remove the gully, and then plant a
	crosive games nave formea.	ground cover and water until it is
		established. Provide lime and a
		one-time fertilizer application.
	Sediment is building up on	Remove the sediment and
	the filter strip.	restabilize the soil with vegetation if
		necessary. Provide lime and a one-
		time fertilizer application.
	Plants are desiccated.	Provide additional irrigation and
		fertilizer as needed.
	Plants are dead, diseased or	Determine the source of the
	dying.	problem: soils, hydrology, disease,
		etc. Remedy the problem and
		replace plants. Provide a one-time
	Nuissan ann an t-ti-ti	fertilizer application.
	Nuisance vegetation is	Remove vegetation by hand if
	choking out desirable species.	possible. If pesticide is used, do not
		allow it to get into the receiving water.
The receiving water	Erosion or other signs of	Contact the NC Division of Water
The receiving water	damage have occurred at the	Quality local Regional Office, or the
	outlet.	401 Oversight Unit at 919-733-1786.
	ounci.	101 Overbigin Olin at 717-755-1700.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing filter strip, riparian buffer, and/or level spreader maintenance requirements.
Witness my hand and official seal,
SEAL
SEAL
My commission expires

Grassed Swale Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- The drainage area of the grassed swale will be carefully managed to reduce the sediment load to the grassed swale.
- After the first-time fertilization to establish the grass in the swale, fertilizer will not be applied to the grassed swale.

The grassed swale will be inspected **once a quarter**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
The entire length of the	Trash/debris is present.	Remove the trash/debris.
swale		
	Areas of bare soil and/or	Regrade the soil if necessary to
	erosive gullies have formed.	remove the gully, and then re-sod
		(or plant with other appropriate
		species) and water until established.
		Provide lime and a one-time
		fertilizer application.
	Sediment covers the grass at	Remove sediment and dispose in an
	the bottom of the swale.	area that will not impact streams or
		BMPs. Re-sod if necessary.
	Vegetation is too short or too	Maintain vegetation at a height of
	long.	approximately six inches.
The receiving water	Erosion or other signs of	Contact the NC Division of Water
	damage have occurred at the	Quality 401 Oversight Unit at 919-
	outlet.	733-1786.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing grassed swale maintenance requirements. Witness my hand and official seal,
SEAL
My commission expires

Infiltration Basin Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- The drainage area will be carefully managed to reduce the sediment load to the infiltration basin.
- Immediately after the infiltration basin is established, the vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- No portion of the infiltration basin will be fertilized after the initial fertilization that is required to establish the vegetation.
- The vegetation in and around the basin will be maintained at a height of approximately six inches.

After the infiltration basin is established, it will be inspected **once a quarter and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the infiltration basin	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
The inlet device: pipe or swale	The pipe is clogged (if applicable). The pipe is cracked or otherwise damaged (if	Unclog the pipe. Dispose of the sediment off-site. Replace the pipe.
	applicable). Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.

BMP element:	Potential problem:	How I will remediate the problem:
The forebay	Sediment has accumulated and reduced the depth to 75% of the original design depth. Erosion has occurred or	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP. Provide additional erosion
	riprap is displaced.	protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticides are used, wipe them on the plants rather than spraying.
The main treatment area	A visible layer of sediment has accumulated.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP. Replace any media that was removed in the process. Revegetate disturbed areas immediately.
	Water is standing more than 5 days after a storm event.	Replace the top few inches of filter media and see if this corrects the standing water problem. If so, revegetate immediately. If not, consult an appropriate professional for a more extensive repair.
	Weeds and noxious plants are growing in the main treatment area.	Remove the plants by hand or by wiping them with pesticide (do not spray).
The embankment	Shrubs or trees have started to grow on the embankment. An annual inspection by an appropriate professional shows that the embankment needs repair.	Remove shrubs or trees immediately. Make all needed repairs.
The outlet device	Clogging has occurred. The outlet device is damaged	Clean out the outlet device. Dispose of the sediment off-site.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Repair or replace the outlet device. Contact the NC Division of Water Quality 401 Oversight Unit at 919- 733-1786.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing infiltration basin maintenance requirements. Witness my hand and official seal,
SEAL
My commission expires

Infiltration Trench Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- The drainage area of the infiltration trench will be carefully managed to reduce the sediment load to the sand filter.
- The water level in the monitoring wells will be recorded once a month and after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County).

The infiltration trench will be inspected **once a quarter and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The grass filter strip or	Areas of bare soil and/or	Regrade the soil if necessary to
other pretreatment area	erosive gullies have formed.	remove the gully, and then plant a
		ground cover and water until it is
		established. Provide lime and a
		one-time fertilizer application.
	Sediment has accumulated to	Search for the source of the
	a depth of greater than six	sediment and remedy the problem if
	inches.	possible. Remove the sediment and
		dispose of it in a location where it
		will not cause impacts to streams or
		the BMP.
The flow diversion	The structure is clogged.	Unclog the conveyance and dispose
structure (if applicable)		of any sediment off-site.
	The structure is damaged.	Make any necessary repairs or
	_	replace if damage is too large for
		repair.

BMP element:	Potential problem:	How I will remediate the problem:
The trench	Water is ponding on the	Remove the accumulated sediment
	surface for more than 24	from the infiltration system and
	hours after a storm.	dispose in a location that will not
		impact a stream or the BMP.
	The depth in the trench is	Remove the accumulated sediment
	reduced to 75% of the original	from the infiltration system and
	design depth.	dispose in a location that will not
		impact a stream or the BMP.
	Grass or other plants are	Remove the plants, preferably by
	growing on the surface of the	hand. If pesticide is used, wipe it on
	trench.	the plants rather than spraying.
The observation well(s)	The water table is within one	Contact the DWQ Stormwater Unit
	foot of the bottom of the	immediately at 919-733-5083.
	system for a period of three	
	consecutive months.	
	The outflow pipe is clogged.	Provide additional erosion
		protection such as reinforced turf
		matting or riprap if needed to
		prevent future erosion problems.
	The outflow pipe is damaged.	Repair or replace the pipe.
The emergency overflow	Erosion or other signs of	The emergency overflow berm will
berm	damage have occurred at the	be repaired or replaced if beyond
	outlet.	repair.
The receiving water	Erosion or other signs of	Contact the NC Division of Water
	damage have occurred at the	Quality 401 Oversight Unit at 919-
	outlet.	733-1786.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing infiltration trench maintenance requirements. Witness my hand and official
seal,
SEAL
My commission expires

Permeable Pavement Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

At all times, the pavement shall be kept free of:

- Debris and particulate matter through frequent blowing that removes such debris, particularly during the fall and spring.
- Piles of soil, sand, mulch, building materials or other materials that could deposit particulates on the pavement.
- Piles of snow and ice.
- Chemicals of all kinds, including deicers.

The permeable pavement will be inspected **once a quarter**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How to remediate the problem:
The perimeter of the permeable pavement	Areas of bare soil and/or erosive gullies	Regrade the soil if necessary to remove the gully, then plant ground cover and water until established.
	A vegetated area drains toward the pavement.	Regrade the area so that it drains away from the pavement, then plant ground cover and water until established.
The surface of the permeable pavement	Trash/debris present	Remove the trash/debris.
	Weeds	Do not pull the weeds (may pull out media as well). Spray them with a systemic herbicide such as glyphosate and then return within the week to remove them by hand. (Another option is to pour boiling water on them or steam them.)
	Sediment	Vacuum sweep the pavement.
	Rutting, cracking or slumping or damaged structure	Consult an appropriate professional.
Observation well	Water present more than five days after a storm event	Clean out clogged underdrain pipes. Consult an appropriate professional for clogged soil subgrade.
Educational sign	Missing or is damaged.	Replace the sign.

Project name:	
BMP drainage area or lot number: <u></u>	
Print name:	
Phone:	
Signature:	
Date:	
	Id not be a homeowners association unless more than 50% of lent of the subdivision has been named the president.
I,	, a Notary Public for the State of
, County of	f, do hereby certify that
	personally appeared before me this
	, and acknowledge the due execution of the
forgoing permeable pavement main	tenance requirements. Witness my hand and official
seal,	
SEAL]
	-
My commission expires	

Rainwater Harvesting System Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- The roof area will be maintained to reduce the debris and sediment load to the system. Excess debris can clog the system and lead to bypass of the design storm, and reduced reuse volume.
- To ensure proper operation as designed, a licensed Professional Engineer, Landscape Architect, or other qualified professional will inspect the system annually.
- The system components will be repaired or replaced whenever they fail to function properly.
- If the outlet is metered, use must be recorded at a minimum of monthly. These records shall be kept on site for inspection by DWQ.

The system will be inspected by the owner/operator at least **monthly and within 24 hours after each rain event**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problems:	How to remediate the problem:
The entire system	A component of the system is	Make any necessary repairs or replace if
	damaged or leaking.	damage is too large for repair.
	Water is flowing out of the	Check system for clogging and damage. Repair
	overflow pipe during a	as needed so the design volume is stored
	design rainfall or smaller	properly without discharging during a design
	(usually a $1''$ or $1.5''$ rainfall).	storm.
		Check that the pump is operating properly and
		that the water is actually being used at the
		volume designed.
		If it is still not operating properly, then consult
		an expert.
The captured roof area	Excess debris or sediment is	Remove the debris or sediment as soon as
	present on the rooftop.	possible.
The gutter system	Gutters are clogged, or water	Unclog and remove debris. May need to install
	is backing up out of the	gutter screens to prevent future clogging.
	gutter system.	
	Rooftop runoff not making it	Correct the positioning or installation of gutters.
	into gutter system.	Replace if necessary to capture the roof runoff.

BMP element:	Potential problems:	How to remediate the problem:
The pump	Pump is not operating properly.	Check to see if the system is clogged and flush if necessary. If it is still not operating, then consult an expert.
The overflow pipe	Erosion is evident at the overflow discharge point.	Stabilize immediately.
	The overflow pipe is clogged. The outflow pipe is damaged.	Unclog or replace if it cannot be unclogged. Repair or replace the pipe.
The secondary water supply	Not operating properly.	Consult an expert.
The cistern	Sediment accumulation of 5% or more of the design volume.	Remove sediment.
	Algae growth is present inside the cistern.	Do not allow sunlight to penetrate the cistern. Treat the water to remove/prevent algae.
	Mosquitoes in the cistern.	Check screens for damage and repair/replace. Treat with 'mosquito dunks' if necessary.
The screens and filters	Debris and/or sediment has accumulated. Screens and filters are clogged.	Search for the source of the debris/sediment and remedy the problem if possible. Clean/clear debris/sediment from screen or filter. Replace if it cannot be cleaned.

Permit Number:

(to be provided by DWQ) Drainage Area Number:

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this
day of,, and acknowledge the due execution of the
forgoing rooftop management maintenance requirements. Witness my hand and official
seal,
SEAL
My commission expires

Drainage Area Number:

Sand Filter Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- The drainage area will be carefully managed to reduce the sediment load to the sand filter.
- The sedimentation chamber or forebay will be cleaned out whenever sediment depth exceeds six inches.
- Once a year, sand media will be skimmed.
- The sand filter media will be replaced whenever it fails to function properly after maintenance.

The sand filter will be inspected **quarterly and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
Entire BMP	Trash/debris is present.	Remove the trash/debris.
Adjacent pavement (if	Sediment is present on the	Sweep or vacuum the sediment as soon as
applicable)	pavement surface.	possible.
Perimeter of sand filter	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
	Vegetation is too short or too long.	Maintain vegetation at an appropriate height.
Flow diversion structure	The structure is clogged.	Unclog the conveyance and dispose of any sediment offsite.
	The structure is damaged.	Make any necessary repairs or replace if damage is too large for repair.
Forebay or pretreatment area	Sediment has accumulated to a depth of greater than six inches.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and stabilize or dispose of it in a location where it will not cause impacts to streams or the BMP.
	Erosion has occurred.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If a pesticide is used, wipe it on the plants rather than spraying.

BMP element:	Potential problem:	How I will remediate the problem:
Filter bed and underdrain	Water is ponding on the surface for	Check to see if the collector system is
collection system	more than 24 hours after a storm.	clogged and flush if necessary. If water
		still ponds, remove the top few inches of
		filter bed media and replace. If water still
		ponds, then consult an expert.
Outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the
		sediment offsite.
	The outlet device is damaged	Repair or replace the outlet device.
Receiving water	Erosion or other signs of damage	Contact the NC Division of Water Quality
	have occurred at the outlet.	401 Oversight Unit at 919-733-1786.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this day of
,, and acknowledge the due execution of the forgoing sand filter
maintenance requirements. Witness my hand and official seal,
SEAL

My commission expires_____

Proprietary Devices (StormFilter) Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

– The drainage area will be carefully managed to reduce the sediment load.

- The sedimentation chamber or forebay will be cleaned out whenever sediment depth exceeds

six inches.

The system will be inspected **quarterly.** Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
Entire BMP	Trash/debris is present.	Remove the trash/debris.
Adjacent pavement (if applicable)	Sediment is present on the pavement surface.	Sweep or vacuum the sediment as soon as possible.
Flow diversion structure	The structure is clogged.	Unclog the conveyance and dispose of any sediment offsite.
	The structure is damaged.	Make any necessary repairs or replace if damage is too large for repair.
StormFilter Cartridges	Cartridges not performing as designed – see Contech I&M document to determine if cartridge maintenance is required.	Replace cartridges per manufacturer's recommendations.
Outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment offsite.
	The outlet device is damaged	Repair or replace the outlet device.
Receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733- 1786.

All other operation and maintenance activities should be in accordance with **the Manufacturer's Inspection and Maintenance Procedures** document. Any problems that are found shall be repaired immediately. I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above and have received and understand **the Manufacturer's Inspection and Maintenance Procedures** document. I agree to notify DWQ of any problems with the system or prior to any changes to the system or responsible party.

Project name:			
BMP drainage area number:			
Print name:			
Title:			
Address:			
Phone:			
Signature:			
Date:			
Note: The legally responsible party she have been sold and a resident of		association unless more than 50% of the lots named the president.	
I,	, a Notary Public	for the State of,	
County of, do	hereby certify that		
personally appeared before me this	day of	,, and acknowledge the c	lue
execution of the forgoing sand filter ma	intenance requirements. V	Vitness my hand and official seal,	
SEAL			

My commission expires

Drainage Area Number:__

Stormwater Wetland Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- Immediately following construction of the stormwater wetland, bi-weekly inspections will be conducted and wetland plants will be watered bi-weekly until vegetation becomes established (commonly six weeks).
- No portion of the stormwater wetland will be fertilized after the first initial fertilization that is required to establish the wetland plants.
- Stable groundcover will be maintained in the drainage area to reduce the sediment load to the wetland.
- Once a year, a dam safety expert should inspect the embankment.

After the stormwater wetland is established, I will inspect it **monthly and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
Entire BMP	Trash/debris is present.	Remove the trash/debris.
Perimeter of wetland	Areas of bare soil and/or erosive	Regrade the soil if necessary to remove the
	gullies have formed.	gully, and then plant a ground cover and
		water until it is established. Provide lime
		and a one-time fertilizer application.
	Vegetation is too short or too long.	Maintain vegetation at an appropriate
		height.
Inlet device: pipe or	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment
swale		offsite.
	The pipe is cracked or otherwise	Replace the pipe.
	damaged (if applicable).	
	Erosion is occurring in the swale (if	Regrade the swale if necessary to smooth
	applicable).	it over and provide erosion control
		devices such as reinforced turf matting or
		riprap to avoid future problems with
		erosion.

BMP element:	Potential problem:	How I will remediate the problem:
Forebay	Sediment has accumulated in the	Search for the source of the sediment and
	forebay to a depth that inhibits the	remedy the problem if possible. Remove
	forebay from functioning well.	the sediment and dispose of it in a location
		where it will not cause impacts to streams
		or the BMP.
	Erosion has occurred.	Provide additional erosion protection such
		as reinforced turf matting or riprap if
		needed to prevent future erosion
		problems.
	Weeds are present.	Remove the weeds, preferably by hand. If
	1	a pesticide is used, wipe it on the plants
		rather than spraying.
Deep pool, shallow water	Algal growth covers over 50% of the	Consult a professional to remove and
and shallow land areas	deep pool and shallow water areas.	control the algal growth.
and shanow fand areas	Cattails, phragmites or other invasive	Remove invasives by physical removal or
	plants cover 50% of the deep pool and	by wiping them with pesticide (do not
	shallow water areas.	
	Shallow land remains flooded more	spray) – consult a professional.
		Unclog the outlet device immediately.
	than 5 days after a storm event.	
	Plants are dead, diseased or dying.	Determine the source of the problem:
		soils, hydrology, disease, etc. Remedy the
		problem and replace plants. Provide a
		one-time fertilizer application to establish
		the ground cover if necessary.
	Best professional practices show that	Prune according to best professional
	pruning is needed to maintain optimal	practices.
	plant health.	
	Sediment has accumulated and	Search for the source of the sediment and
	reduced the depth to 75% of the	remedy the problem if possible. Remove
	original design depth of the deep	the sediment and dispose of it in a location
	pools.	where it will not cause impacts to streams
		or the BMP.
Embankment	A tree has started to grow on the	Consult a dam safety specialist to remove
	embankment.	the tree.
	An annual inspection by appropriate	Make all needed repairs.
	professional shows that the	
	embankment needs repair.	
	Evidence of muskrat or beaver activity	Consult a professional to remove muskrats
	is present.	or beavers.
Micropool	Sediment has accumulated and	Search for the source of the sediment and
MICIOPOOI		
	reduced the depth to 75% of the	remedy the problem if possible. Remove
	original design depth.	the sediment and dispose of it in a location
		where it will not cause impacts to streams
0 11 1 1		or the BMP.
Outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the
		sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
Receiving water	Erosion or other signs of damage have	Contact the NC Division of Water Quality
	occurred at the outlet.	401 Oversight Unit at 919-733-1786.

Project name:
BMP drainage area number:
Print name:
Title:
Address:
Phone:
Signature:
Date:
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.
I,, a Notary Public for the State of
, County of, do hereby certify that
personally appeared before me this day of
,, and acknowledge the due execution of the forgoing stormwater wetland
maintenance requirements. Witness my hand and official seal,
SEAL
My commission expires

Underground Detention Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- The drainage area will be carefully managed to reduce the sediment load to the underground facility.
- Once a year the underground facility will be thoroughly inspected for structural issues.
- Sediment must be removed from the pipe/vault system when the sediment accumulation depth is 6 inches or greater at any point within the storage pipe/vault.

The underground detention system will be inspected **quarterly and within 24 hours after every storm event greater than 1.0 inches**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
Entire BMP	Trash/debris is present.	Remove the trash/debris.
The inlet device	The inlet pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	The structure is damaged.	Make any necessary repairs or replace if damage is too large for repair.
The underground vaults/pipes	Sediment accumulation of 6 inches or more at any point within the storage pipe/vault.	Remove sediment.
	Significant seepage or settlement accompanied by cracking within a small area of the vault/pipe system.	Retain assistance of a civil or geotechnical engineer qualified in the design or underground detention systems.
	Interior wall of the pipe/vault shows signs of improper joint alignment (sagging), elongation and displacement of joints, cracks, leaks, surface water, surface wear, loss of protective coating, corrosion or blocking.	Retain assistance of a civil or geotechnical engineer qualified in the design or underground detention systems.

BMP element:	Potential problem:	How I will remediate the problem:
The receiving water	Erosion or other signs or damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.
The outlet device	Clogging has occurred.	Cleanout the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged.	Repair or replace the outlet device.
	The outflow pipe is clogged.	Provide additional erosion protection such as reinforced turf matting or riprap if
		needed to prevent future erosion problems.
	The outflow pipe is damaged.	Repair or replace the pipe.

Project name:	
BMP drainage area number:	
Print name:	
Phone:	
Signature:	
Date:	
	I not be a homeowners association unless more than 50% of the lots subdivision has been named the president.
I,	, a Notary Public for the State of
, County of _	, do hereby certify that
	personally appeared before me this day of
,, and a	acknowledge the due execution of the forgoing sand filter
maintenance requirements. Witness i	my hand and official seal,
SEAL	
SEAL	
My commission expires	

Permit Number:

Drainage Area Number:

Wet Detention Basin Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

The wet detention basin system is defined as the wet detention basin, pretreatment including forebays and the vegetated filter if one is provided.

This system (check one):

does does not incorporate a vegetated filter at the outlet.

This system (check one):

does does not incorporate pretreatment other than a forebay.

Important maintenance procedures:

- Immediately after the wet detention basin is established, the plants on the vegetated shelf and perimeter of the basin should be watered twice weekly if needed, until the plants become established (commonly six weeks).
- No portion of the wet detention pond should be fertilized after the first initial fertilization that is required to establish the plants on the vegetated shelf.
- Stable groundcover should be maintained in the drainage area to reduce the sediment load to the wet detention basin.
- If the basin must be drained for an emergency or to perform maintenance, the flushing of sediment through the emergency drain should be minimized to the maximum extent practical.
- Once a year, a dam safety expert should inspect the embankment.

After the wet detention pond is established, it should be inspected **once a month and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance should be kept in a known set location and must be available upon request.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the wet	Areas of bare soil and/or	Regrade the soil if necessary to
detention basin	erosive gullies have formed.	remove the gully, and then plant a
	_	ground cover and water until it is
		established. Provide lime and a
		one-time fertilizer application.
	Vegetation is too short or too	Maintain vegetation at a height of
	long.	approximately six inches.

Permit Number:______

(to be provided by DWQ) Drainage Area Number:

BMP element:	Potential problem:	How I will remediate the problem:
The inlet device: pipe or	The pipe is clogged.	Unclog the pipe. Dispose of the
swale		sediment off-site.
	The pipe is cracked or otherwise damaged.	Replace the pipe.
	Erosion is occurring in the	Regrade the swale if necessary to
	swale.	smooth it over and provide erosion
		control devices such as reinforced
		turf matting or riprap to avoid
		future problems with erosion.
The forebay	Sediment has accumulated to	Search for the source of the
	a depth greater than the	sediment and remedy the problem if
	original design depth for	possible. Remove the sediment and
	sediment storage.	dispose of it in a location where it
		will not cause impacts to streams or
		the BMP.
	Erosion has occurred.	Provide additional erosion
		protection such as reinforced turf
		matting or riprap if needed to
	Woods are present	prevent future erosion problems. Remove the weeds, preferably by
	Weeds are present.	hand. If pesticide is used, wipe it on
		the plants rather than spraying.
The vegetated shelf	Best professional practices	Prune according to best professional
	show that pruning is needed	practices
	to maintain optimal plant	r · · · · · ·
	health.	
	Plants are dead, diseased or	Determine the source of the
	dying.	problem: soils, hydrology, disease,
		etc. Remedy the problem and
		replace plants. Provide a one-time
		fertilizer application to establish the
		ground cover if a soil test indicates
	TA7 1 (it is necessary.
	Weeds are present.	Remove the weeds, preferably by
		hand. If pesticide is used, wipe it on
The main treatment area	Sediment has accumulated to	the plants rather than spraying. Search for the source of the
The main treatment area	a depth greater than the	sediment and remedy the problem if
	original design sediment	possible. Remove the sediment and
	storage depth.	dispose of it in a location where it
	storage dep an	will not cause impacts to streams or
		the BMP.
	Algal growth covers over	Consult a professional to remove
	50% of the area.	and control the algal growth.
	Cattails, phragmites or other	Remove the plants by wiping them
	invasive plants cover 50% of	with pesticide (do not spray).
	the basin surface.	

Permit Number:

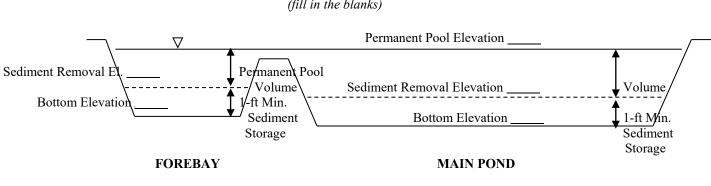
(to be provided by DWQ) Drainage Area Number:

BMP element:	Potential problem:	How I will remediate the problem:
The embankment	Shrubs have started to grow on the embankment.	Remove shrubs immediately.
	Evidence of muskrat or beaver activity is present.	Use traps to remove muskrats and consult a professional to remove beavers.
	A tree has started to grow on the embankment.	Consult a dam safety specialist to remove the tree.
	An annual inspection by an appropriate professional shows that the embankment needs repair. (if applicable)	Make all needed repairs.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the local NC Division of Water Quality Regional Office, or the 401 Oversight Unit at 919-733- 1786.

The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.

When the permanent pool depth reads ______ feet in the main pond, the sediment shall be removed.

When the permanent pool depth reads _____ feet in the forebay, the sediment shall be removed.



BASIN DIAGRAM

(fill in the blanks)

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify DWQ of any problems with the system or prior to any changes to the system or responsible party.

BMP drainage area number:	Project name:	
Fitle:	BMP drainage are	ea number:
Fitle:		
Address:		
Phone:		
Signature:	Address:	
Date:	Phone:	
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.	Signature:	
the lots have been sold and a resident of the subdivision has been named the president.	Date:	
, County of, do hereby certify that personally appeared before me this lay of,, and acknowledge the due execution of the corgoing wet detention basin maintenance requirements. Witness my hand and official seal,	the lots have	been sold and a resident of the subdivision has been named the president.
personally appeared before me this day of,, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal,		
day of,, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal,		
seal,		
	forgoing wet deter	ntion basin maintenance requirements. Witness my hand and official
	seal,	

My commission expires