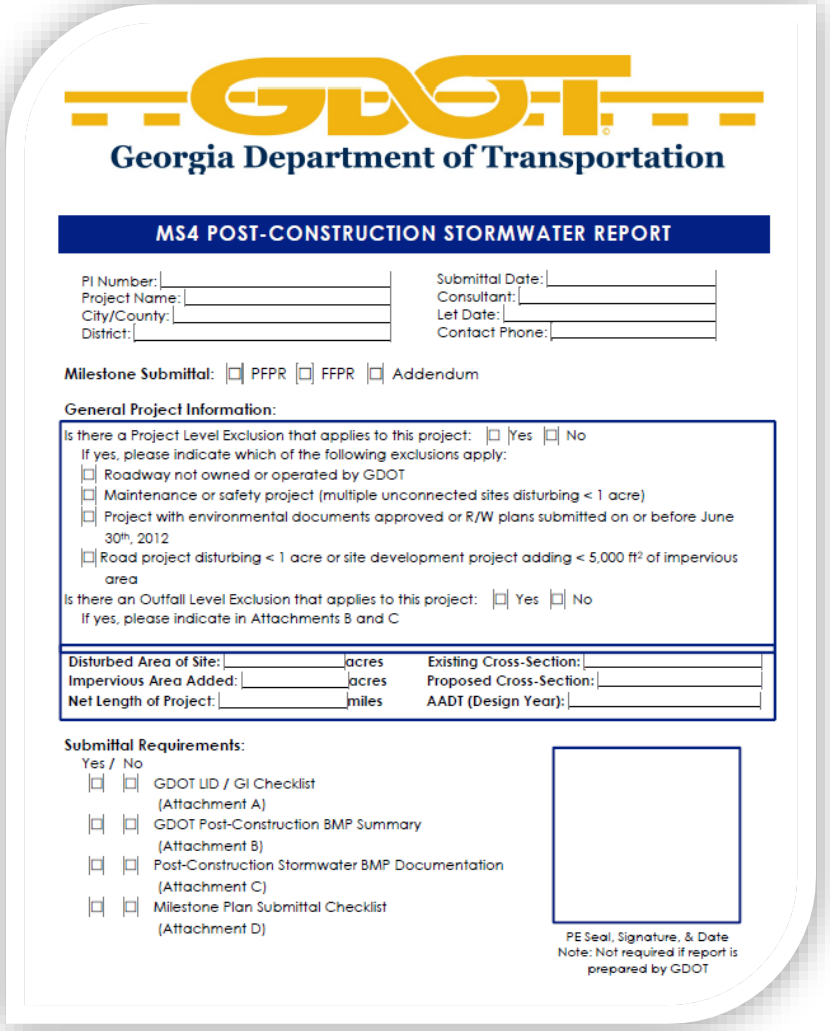
Advanced Design Workshops

GDOT MS4 Post-Construction Stormwater Report



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: _____ Submittal Date: _____
Project Name: _____ Consultant: _____
City/County: _____ Let Date: _____
District: _____ Contact Phone: _____

Milestone Submittal: ☐ PFPR ☐ FFPR ☐ Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate which of the following exclusions apply:
- ☐ Roadway not owned or operated by GDOT
- ☐ Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- ☐ Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	_____ acres	**Existing Cross-Section:**	_____
Impervious Area Added:	_____ acres	**Proposed Cross-Section:**	_____
Net Length of Project:	_____ miles	**AADT (Design Year):**	_____

Submittal Requirements:

Yes / No
- ☐ ☐ GDOT LID / GI Checklist (Attachment A)
- ☐ ☐ GDOT Post-Construction BMP Summary (Attachment B)
- ☐ ☐ Post-Construction Stormwater BMP Documentation (Attachment C)
- ☐ ☐ Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

Note: This course is available as online training on ELMS: https://learning.dot.ga.gov

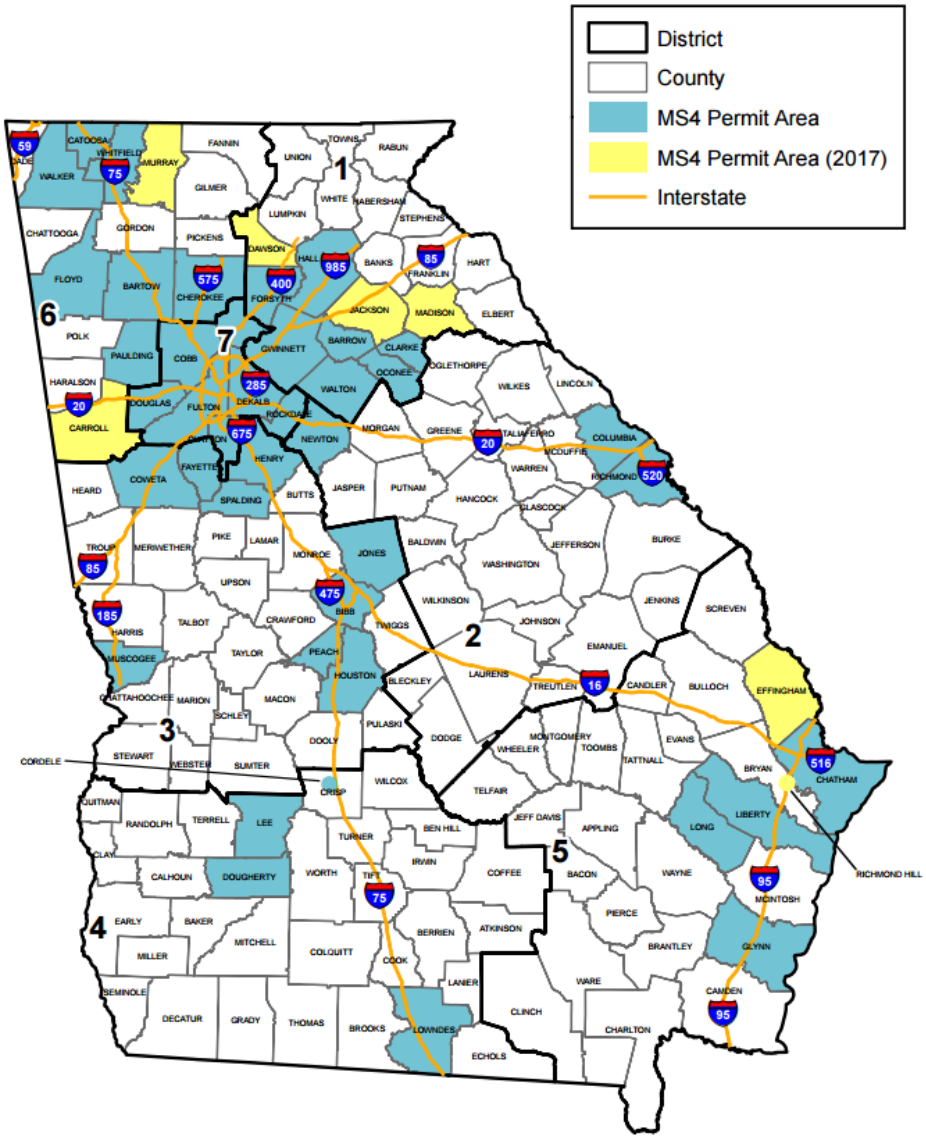
rain check
Georgia DOT's Stormwater Management Program

Points of Discussion

- Why is the report required?
- What is the GDOT MS4 Post-Construction Stormwater Report?
- How is it different from standard stormwater reports?
- What elements are included in the report?
- What documentation is required in those elements?

GDOT's MS4 Permit

GDOT's MS4 Permit applies in municipalities and counties designated by EPD as MS4 (Phase I and Phase II)



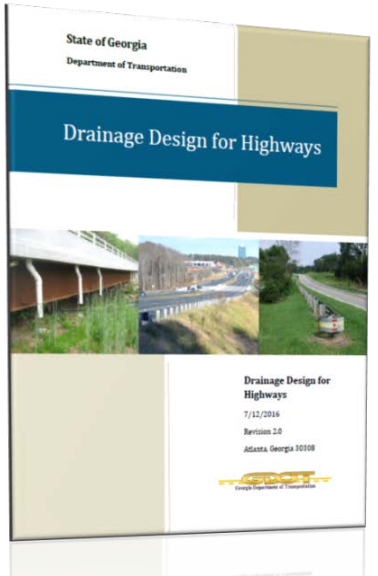
MS4 Post-Construction Stormwater Report

Stormwater Planning

- Documentation of stormwater planning/ management is required at each milestone review

Concept → **PFPR** → **FFPR**

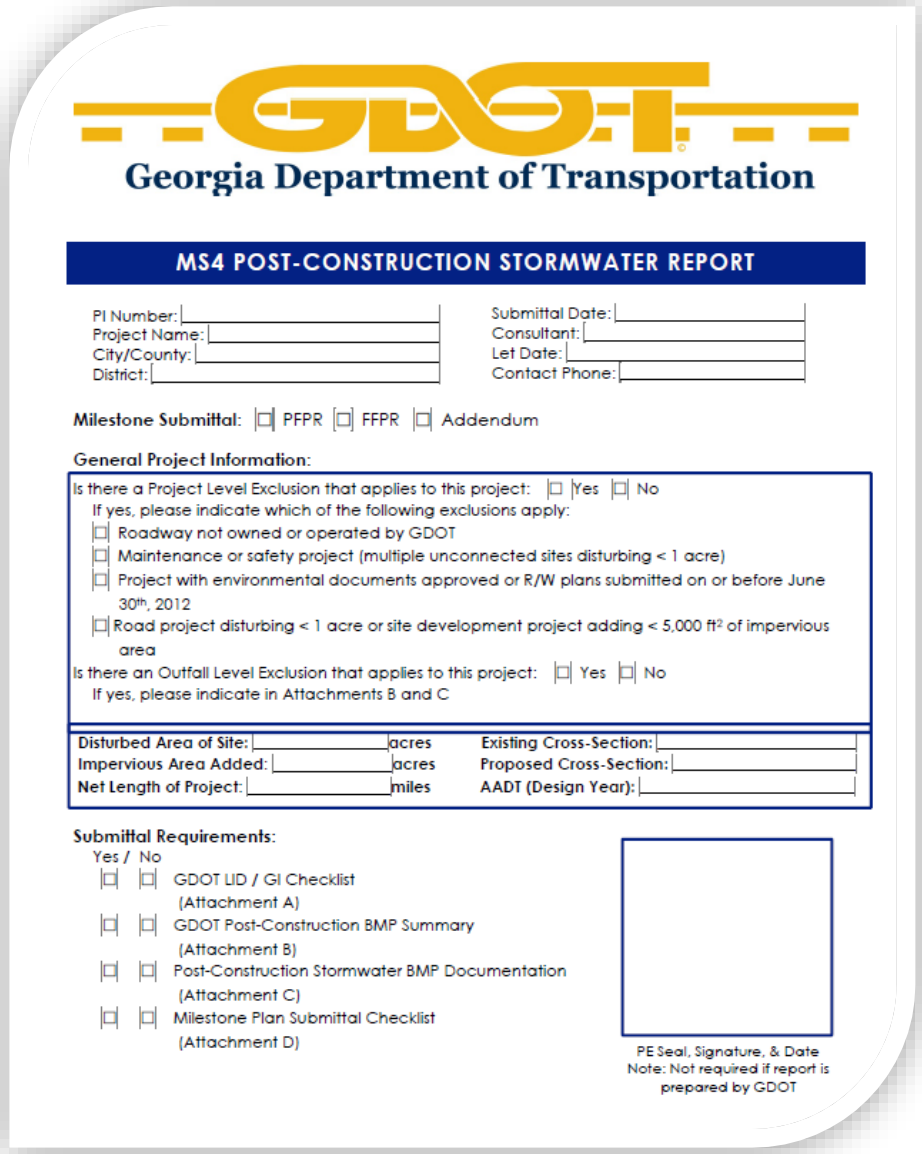
- For detailed information, see Chapter 3 and Chapter 10 of the GDOT Drainage Manual



MS4 Post-Construction Stormwater Report

What is it?

- GDOT's standardized MS4 design report template
- Organizes all post-construction BMP information
- Summarizes post-construction design for project



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

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Project Name: _____ Consultant: _____
City/County: _____ Let Date: _____
District: _____ Contact Phone: _____

Milestone Submittal: ☐ PFPR ☐ FFPR ☐ Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate which of the following exclusions apply:
- ☐ Roadway not owned or operated by GDOT
- ☐ Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- ☐ Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	acres	**Existing Cross-Section:**	
Impervious Area Added:	acres	**Proposed Cross-Section:**	
Net Length of Project:	miles	**AADT (Design Year):**	

Submittal Requirements:

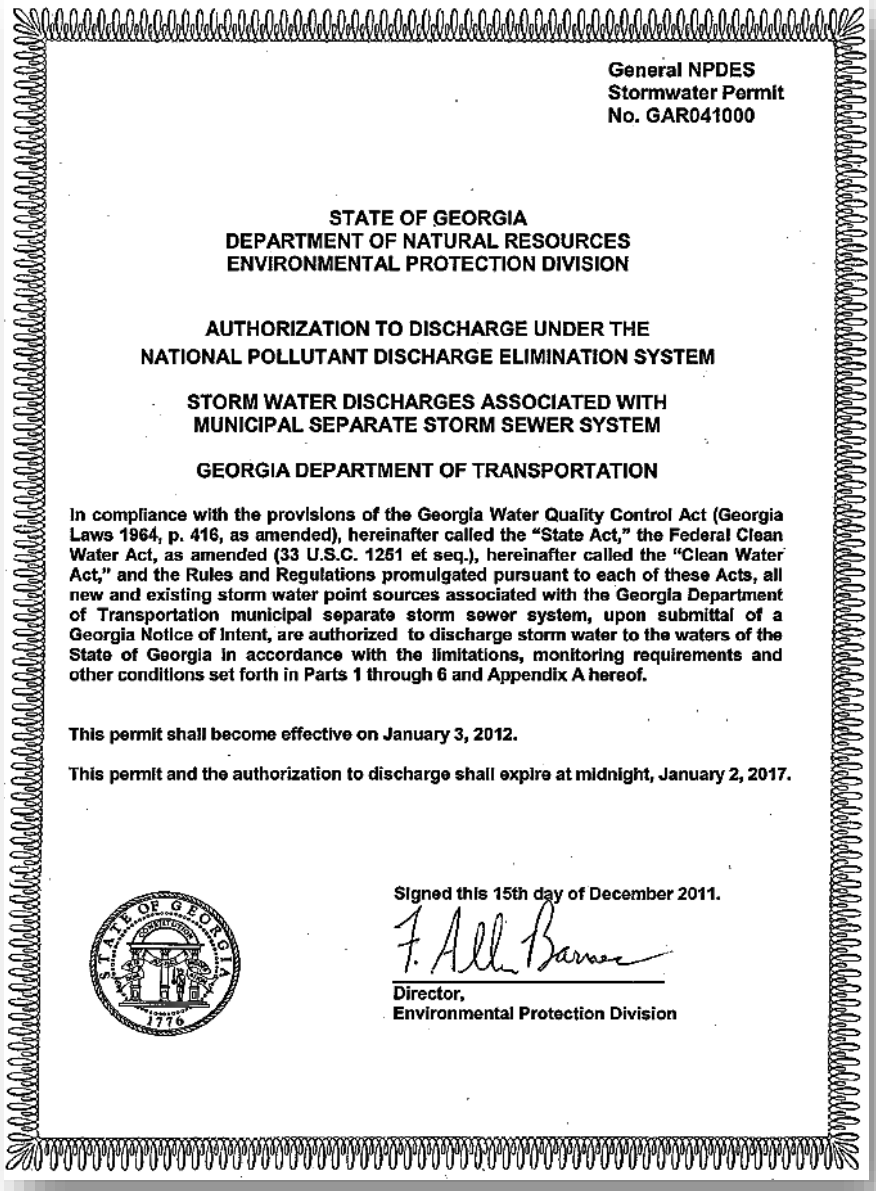
Yes	No	
☐	☐	GDOT LID / GI Checklist (Attachment A)
☐	☐	GDOT Post-Construction BMP Summary (Attachment B)
☐	☐	Post-Construction Stormwater BMP Documentation (Attachment C)
☐	☐	Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

MS4 Post-Construction Stormwater Report

How is it different from other stormwater reports?

- Specific to GDOT's MS4 permit requirements
- Includes exclusions/ infeasibility analysis
- Guides project planning process from beginning



General NPDES
Stormwater Permit
No. GAR041000

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

STORM WATER DISCHARGES ASSOCIATED WITH
MUNICIPAL SEPARATE STORM SEWER SYSTEM

GEORGIA DEPARTMENT OF TRANSPORTATION

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act," the Federal Clean Water Act, as amended (33 U.S.C. 1251 et seq.), hereinafter called the "Clean Water Act," and the Rules and Regulations promulgated pursuant to each of these Acts, all new and existing storm water point sources associated with the Georgia Department of Transportation municipal separate storm sewer system, upon submittal of a Georgia Notice of Intent, are authorized to discharge storm water to the waters of the State of Georgia in accordance with the limitations, monitoring requirements and other conditions set forth in Parts 1 through 6 and Appendix A hereof.

This permit shall become effective on January 3, 2012.

This permit and the authorization to discharge shall expire at midnight, January 2, 2017.

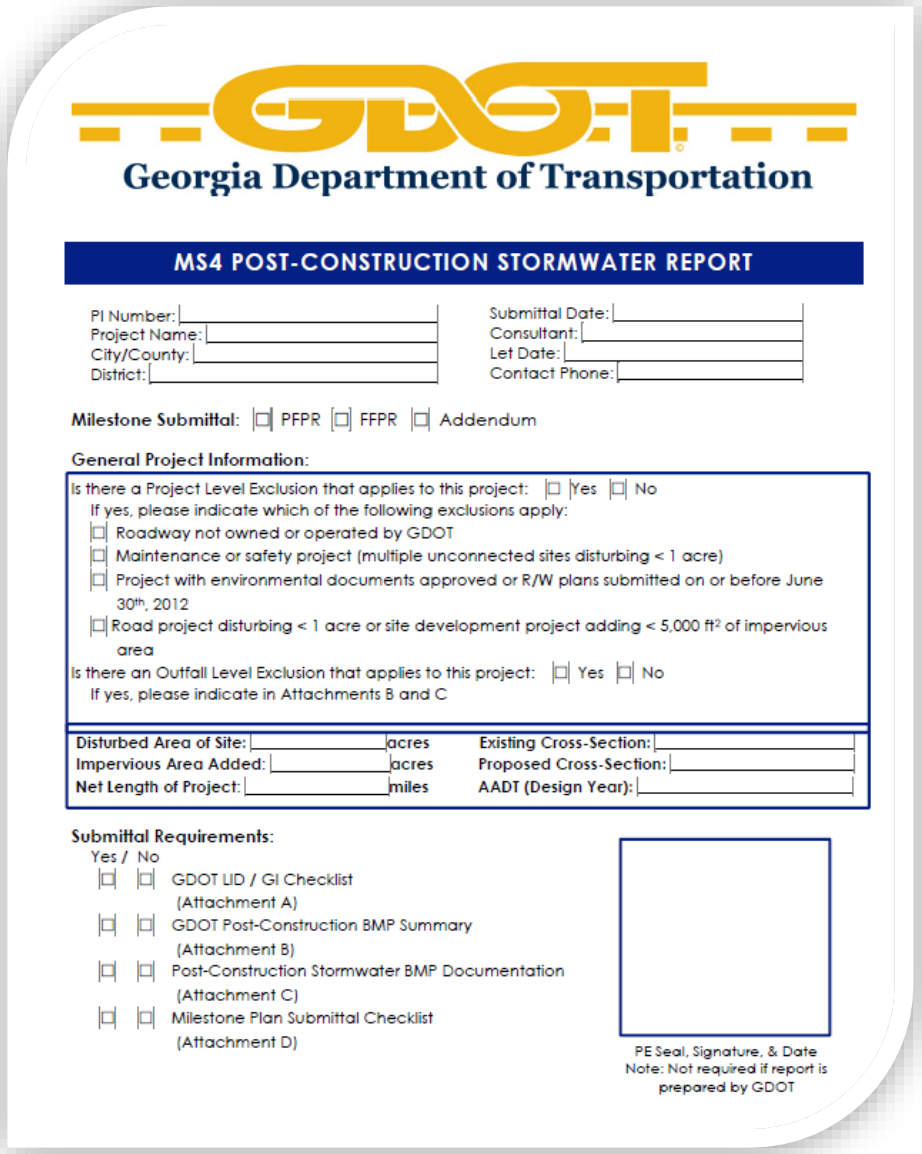
Signed this 15th day of December 2011.

Director,
Environmental Protection Division

MS4 Post-Construction Stormwater Report

Why do we need it?

- Allows for early identification of permit compliance issues
- Required for MS4 permit compliance for ALL projects in MS4 area
- Ensures all necessary documentation is provided
- Provides step-by step process for H&H analysis
- Ensures sufficient right-of-way is acquired for BMPs



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

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Project Name: _____ Consultant: _____
City/County: _____ Let Date: _____
District: _____ Contact Phone: _____

Milestone Submittal: ☐ PFPR ☐ FFPR ☐ Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate which of the following exclusions apply:
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- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	acres	**Existing Cross-Section:**	
Impervious Area Added:	acres	**Proposed Cross-Section:**	
Net Length of Project:	miles	**AADT (Design Year):**	

Submittal Requirements:

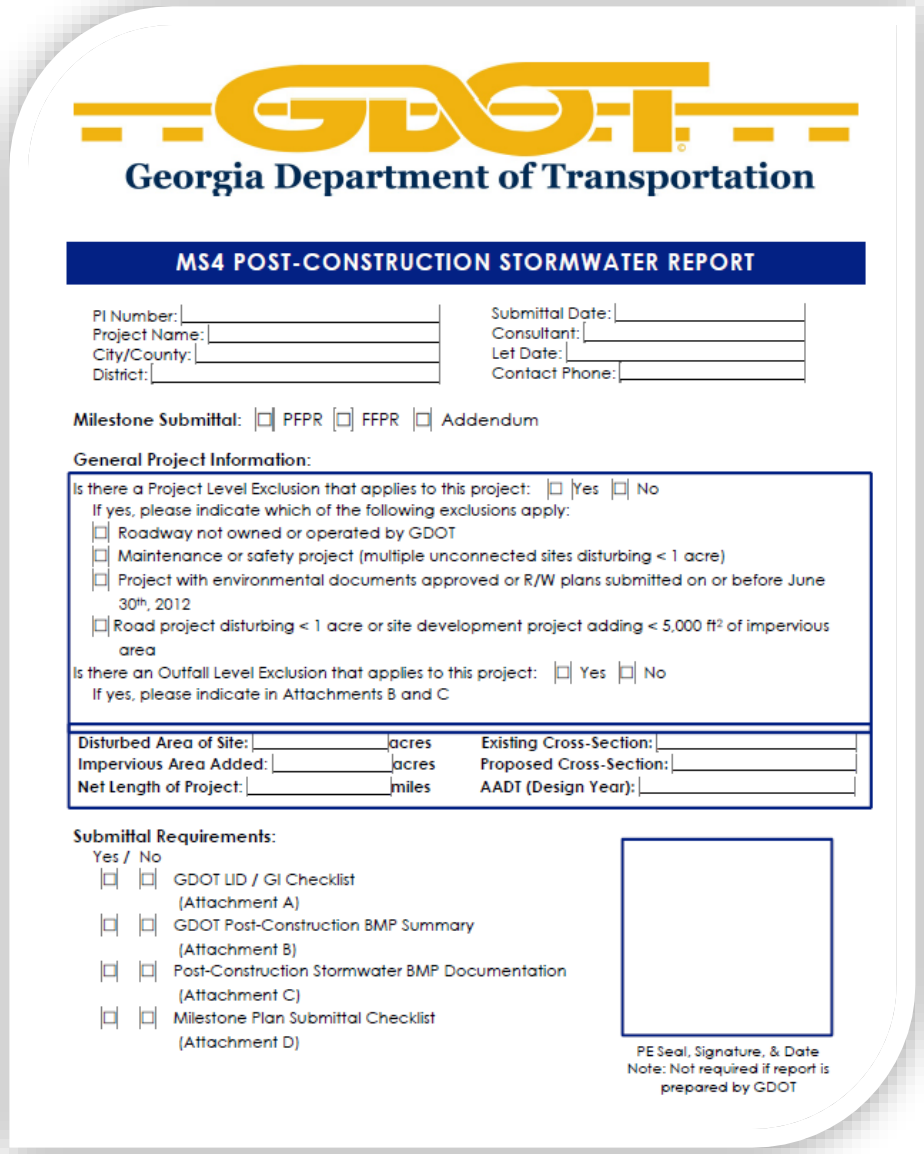
Yes / No
- ☐ ☐ GDOT LID / GI Checklist (Attachment A)
- ☐ ☐ GDOT Post-Construction BMP Summary (Attachment B)
- ☐ ☐ Post-Construction Stormwater BMP Documentation (Attachment C)
- ☐ ☐ Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

MS4 Post-Construction Stormwater Report

What is in it?

- Project information
- Planning-level LID/GI stormwater considerations
- Project basin/BMP design information
- Exclusions/Infeasibility justifications
- Downstream analysis



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: _____ Submittal Date: _____
Project Name: _____ Consultant: _____
City/County: _____ Let Date: _____
District: _____ Contact Phone: _____

Milestone Submittal: ☐ PFPR ☐ FFPR ☐ Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate which of the following exclusions apply:
- ☐ Roadway not owned or operated by GDOT
- ☐ Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- ☐ Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	acres	**Existing Cross-Section:**	
Impervious Area Added:	acres	**Proposed Cross-Section:**	
Net Length of Project:	miles	**AADT (Design Year):**	

Submittal Requirements:

Yes	No	
☐	☐	GDOT LID / GI Checklist (Attachment A)
☐	☐	GDOT Post-Construction BMP Summary (Attachment B)
☐	☐	Post-Construction Stormwater BMP Documentation (Attachment C)
☐	☐	Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

MS4 Post-Construction Stormwater Report

Where can I find it?

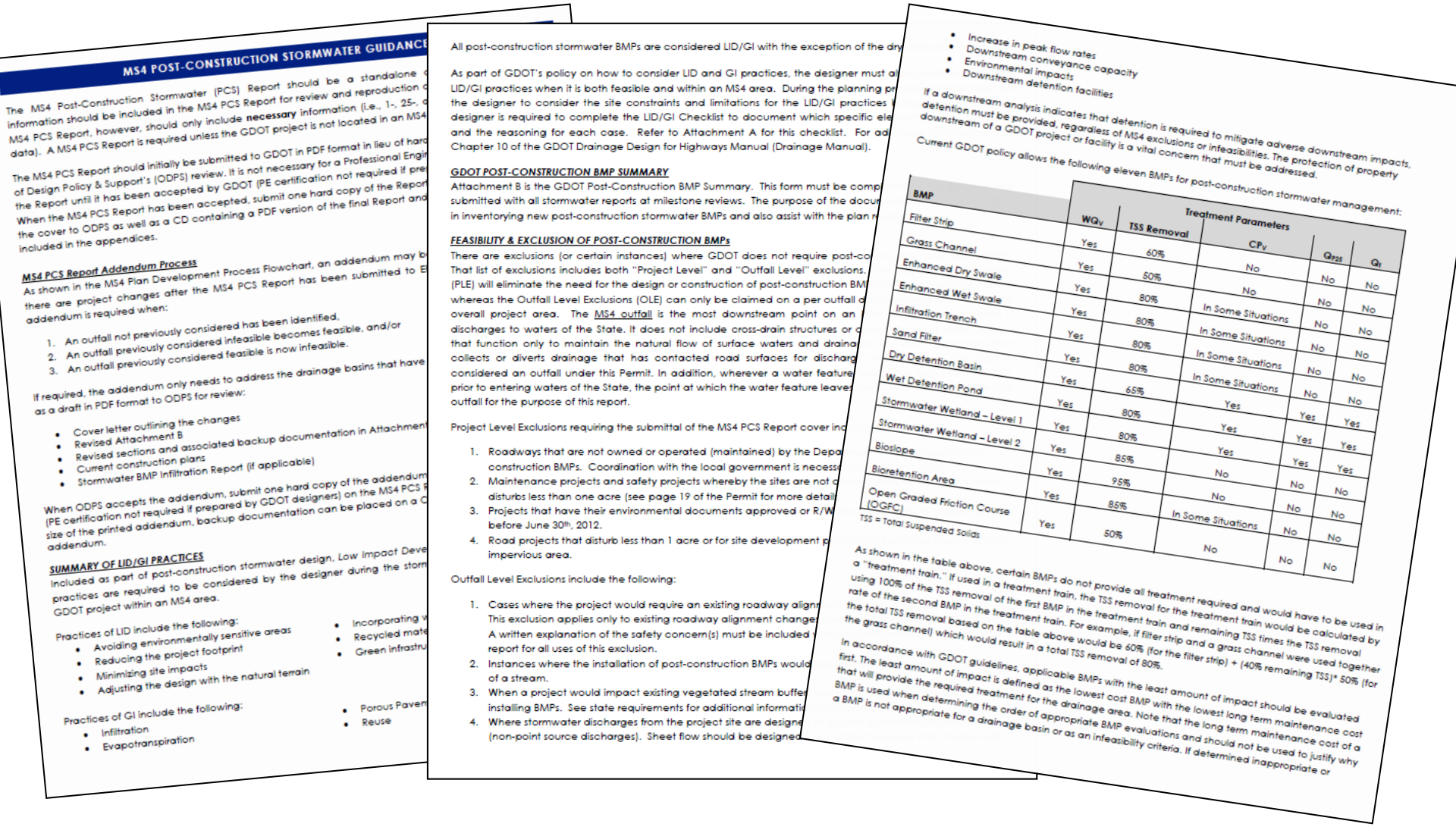
- http://www.dot.ga.gov/PS/DesignManuals/DesignGuides

Roadway

Title	Revised	Contact
Category : Construction Stormwater (Erosion Control)		
Category : Design Policy		
Category : Drainage		
Category : Fish Passage		
Category : Stormwater Permit (MS4)		
Chief Engineer - Letter 01-20-12	1/20/2012	Brad McManus
Georgia's MS4 Areas Map		Brad McManus
MS4 Concept Level Design Spreadsheet	3/9/2016	Brad McManus
MS4 Concept Report Summary	12/30/2016	Brad McManus
MS4 Preconstruction PDP Process	3/8/2017	Brad McManus
Post-Construction Stormwater Report Attachment B	12/30/2016	Brad McManus
Post-Construction Stormwater Report Help File	12/30/2016	Brad McManus
Post-Construction Stormwater Report Template	12/30/2016	Brad McManus
TMDL stream locator and Drainage structure inventory map service	5/11/2016	Brad McManus
Worksheet J-1_Phase 1 Screening Assessment of Stormwater Infiltration	12/30/2016	Brad McManus

MS4 Post-Construction Stormwater Report

Guidance



MS4 POST-CONSTRUCTION STORMWATER GUIDANCE

The MS4 Post-Construction Stormwater (PCS) Report should be a standalone
information should be included in the MS4 PCS Report for review and reproduction
MS4 PCS Report, however, should only include **necessary** information (i.e., 1-, 25-,
data). A MS4 PCS Report is required unless the GDOT project is not located in an MS4

The MS4 PCS Report should initially be submitted to GDOT in PDF format in lieu of hard
of Design Policy & Support's (ODPS) review. It is not necessary for a Professional Engi
the Report until it has been accepted by GDOT (PE certification not required if pre
When the MS4 PCS Report has been accepted, submit one hard copy of the Report
the cover to ODPS as well as a CD containing a PDF version of the final Report and
included in the appendices.

MS4 PCS Report Addendum Process

As shown in the MS4 Plan Development Process Flowchart, an addendum may b
there are project changes after the MS4 PCS Report has been submitted to E
addendum is required when:

1. An outfall not previously considered has been identified,
2. An outfall previously considered infeasible becomes feasible, and/or
3. An outfall previously considered feasible is now infeasible.

If required, the addendum only needs to address the drainage basins that have
as a draft in PDF format to ODPS for review:

- Cover letter outlining the changes
- Revised Attachment B
- Revised sections and associated backup documentation in Attachment
- Current construction plans
- Stormwater BMP Infiltration Report (if applicable)

When ODPS accepts the addendum, submit one hard copy of the addendum
(PE certification not required if prepared by GDOT designers) on the MS4 PCS R
size of the printed addendum, backup documentation can be placed on a C
addendum.

SUMMARY OF LID/GI PRACTICES

Included as part of post-construction stormwater design, Low Impact Deve
practices are required to be considered by the designer during the storm
GDOT project within an MS4 area.

Practices of LID include the following:
- Avoiding environmentally sensitive areas
- Reducing the project footprint
- Minimizing site impacts
- Adjusting the design with the natural terrain
- Incorporating v
- Recycled mate
- Green infrastru

Practices of GI include the following:
- Infiltration
- Evapotranspiration
- Porous Paven
- Reuse

All post-construction stormwater BMPs are considered LID/GI with the exception of the dry

As part of GDOT's policy on how to consider LID and GI practices, the designer must a
LID/GI practices when it is both feasible and within an MS4 area. During the planning pr
the designer to consider the site constraints and limitations for the LID/GI practices
designer is required to complete the LID/GI Checklist to document which specific ele
and the reasoning for each case. Refer to Attachment A for this checklist. For ad
Chapter 10 of the GDOT Drainage Design for Highways Manual (Drainage Manual).

GDOT POST-CONSTRUCTION BMP SUMMARY

Attachment B is the GDOT Post-Construction BMP Summary. This form must be comp
submitted with all stormwater reports at milestone reviews. The purpose of the docu
in inventorying new post-construction stormwater BMPs and also assist with the plan r

FEASIBILITY & EXCLUSION OF POST-CONSTRUCTION BMPs

There are exclusions (or certain instances) where GDOT does not require post-co
That list of exclusions includes both "Project Level" and "Outfall Level" exclusions.
(PLE) will eliminate the need for the design or construction of post-construction BM
whereas the Outfall Level Exclusions (OLE) can only be claimed on a per outfall
overall project area. The MS4 outfall is the most downstream point on an
discharges to waters of the State. It does not include cross-drain structures or
that function only to maintain the natural flow of surface waters and draina
collects or diverts drainage that has contacted road surfaces for discharg
considered an outfall under this Permit. In addition, wherever a water feature
prior to entering waters of the State, the point at which the water feature leave
outfall for the purpose of this report.

Project Level Exclusions requiring the submittal of the MS4 PCS Report cover inc

1. Roadways that are not owned or operated (maintained) by the Depa
construction BMPs. Coordination with the local government is necess
2. Maintenance projects and safety projects whereby the sites are not
disturbs less than one acre (see page 19 of the Permit for more detail
3. Projects that have their environmental documents approved or R/W
before June 30th, 2012.
4. Road projects that disturb less than 1 acre or for site development p
impervious area.

Outfall Level Exclusions include the following:

1. Cases where the project would require an existing roadway align
This exclusion applies only to existing roadway alignment change
A written explanation of the safety concern(s) must be included
report for all uses of this exclusion.
2. Instances where the installation of post-construction BMPs would
of a stream.
3. When a project would impact existing vegetated stream buffe
installing BMPs. See state requirements for additional informati
4. Where stormwater discharges from the project site are designe
(non-point source discharges). Sheet flow should be designed

- Increase in peak flow rates
- Downstream conveyance capacity
- Environmental impacts
- Downstream detention facilities

If a downstream analysis indicates that detention is required to mitigate adverse downstream impacts, detention must be provided, regardless of MS4 exclusions or infeasibilities. The protection of property downstream of a GDOT project or facility is a vital concern that must be addressed.

Current GDOT policy allows the following eleven BMPs for post-construction stormwater management:

BMP	Treatment Parameters				
	WQv	TSS Removal	CPv	Q_{PSS}	Q_f
Filter Strip	Yes	60%	No	No	No
Grass Channel	Yes	50%	No	No	No
Enhanced Dry Swale	Yes	80%	In Some Situations	No	No
Enhanced Wet Swale	Yes	80%	In Some Situations	No	No
Infiltration Trench	Yes	80%	In Some Situations	No	No
Sand Filter	Yes	80%	In Some Situations	No	No
Dry Detention Basin	Yes	65%	Yes	Yes	Yes
Wet Detention Pond	Yes	80%	Yes	Yes	Yes
Stormwater Wetland – Level 1	Yes	80%	Yes	Yes	Yes
Stormwater Wetland – Level 2	Yes	85%	No	No	No
Biostope	Yes	95%	No	No	No
Bioretention Area	Yes	85%	In Some Situations	No	No
Open Graded Friction Course (OGFC)	Yes	50%	No	No	No

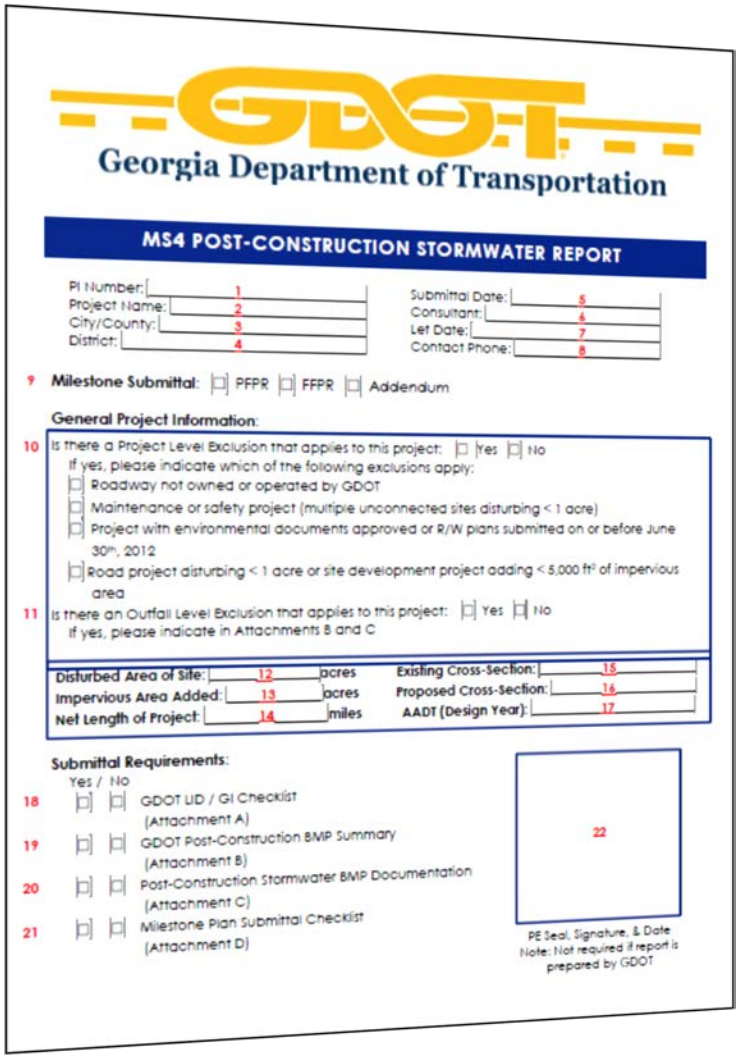
TSS = Total Suspended Solids

As shown in the table above, certain BMPs do not provide all treatment required and would have to be used in a "treatment train." If used in a treatment train, the TSS removal for the treatment train would be calculated by using 100% of the TSS removal of the first BMP in the treatment train and remaining TSS times the TSS removal rate of the second BMP in the treatment train. For example, if filter strip and a grass channel were used together the total TSS removal based on the table above would be 60% (for the filter strip) + (40% remaining TSS)* 50% (for the grass channel) which would result in a total TSS removal of 80%.

In accordance with GDOT guidelines, applicable BMPs with the least amount of impact should be evaluated first. The least amount of impact is defined as the lowest cost BMP with the lowest long term maintenance cost that will provide the required treatment for the drainage area. Note that the long term maintenance cost of a BMP is used when determining the order of appropriate BMP evaluations and should not be used to justify why a BMP is not appropriate for a drainage basin or as an infeasibility criteria. If determined inappropriate or

MS4 Post-Construction Stormwater Report

Help File



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: 1
Project Name: 2
City/County: 3
District: 4

Submittal Date: 5
Consultant: 6
Let Date: 7
Contact Phone: 8

9 **Milestone Submittal:** ☐ PFPR ☐ FFPR ☐ Addendum

General Project Information:

10 Is there a Project Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate which of the following exclusions apply:
- ☐ Roadway not owned or operated by GDOT
- ☐ Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- ☐ Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

11 Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

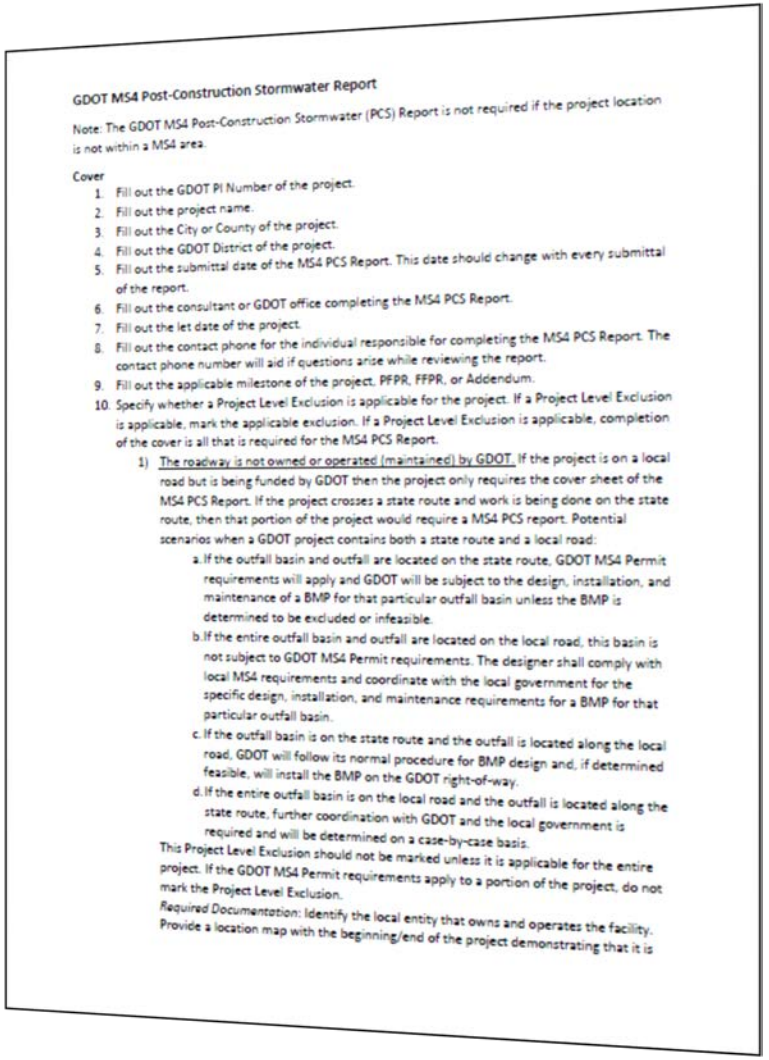
Disturbed Area of Site: 12 acres
Impervious Area Added: 13 acres
Net Length of Project: 14 miles
Existing Cross-Section: 15
Proposed Cross-Section: 16
AADT (Design Year): 17

Submittal Requirements:

	Yes	No	
18	☐	☐	GDOT LID / GI Checklist (Attachment A)
19	☐	☐	GDOT Post-Construction BMP Summary (Attachment B)
20	☐	☐	Post-Construction Stormwater BMP Documentation (Attachment C)
21	☐	☐	Milestone Plan Submittal Checklist (Attachment D)

22

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT



GDOT MS4 Post-Construction Stormwater Report

Note: The GDOT MS4 Post-Construction Stormwater (PCS) Report is not required if the project location is not within a MS4 area.

Cover

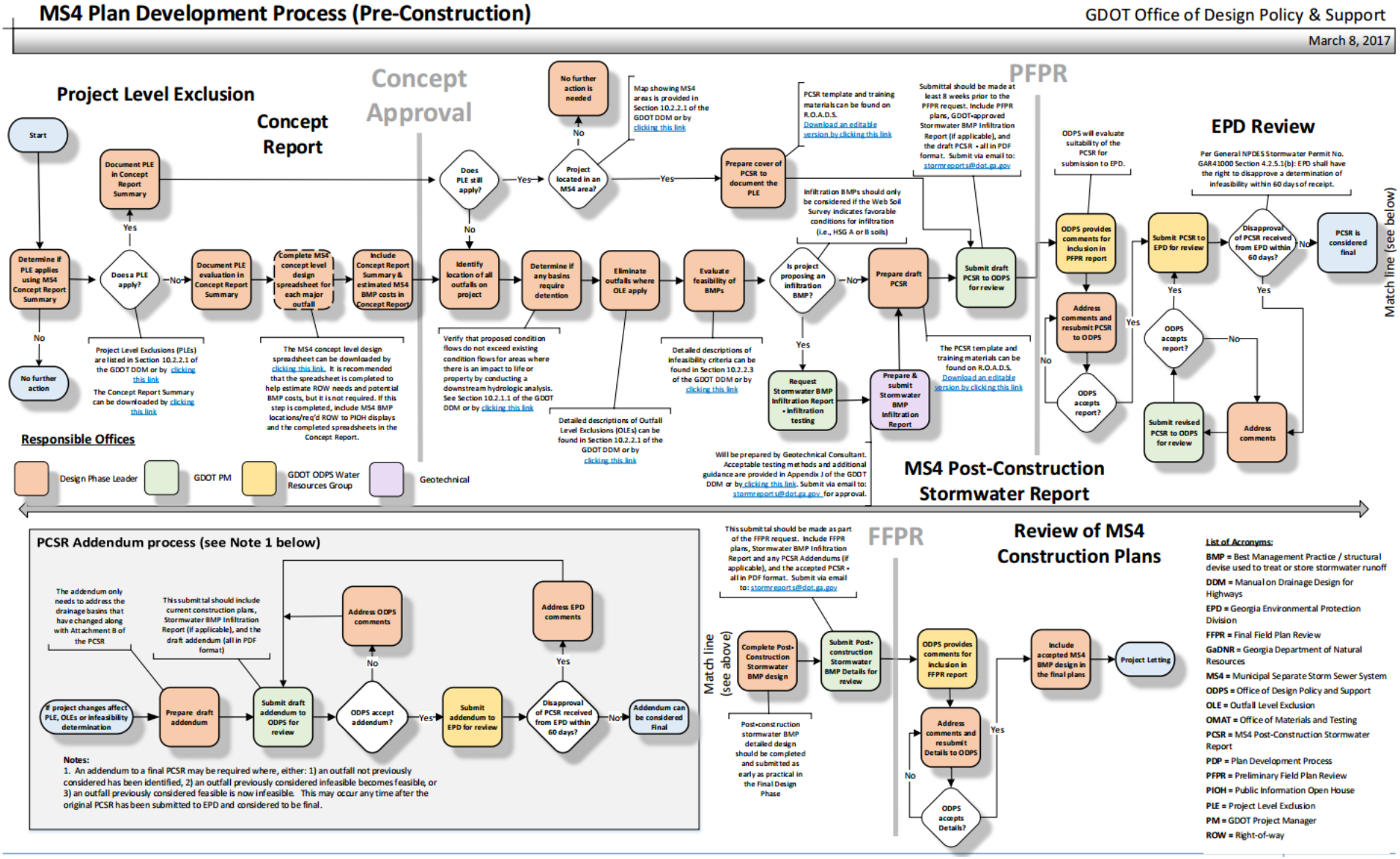
1. Fill out the GDOT PI Number of the project.
2. Fill out the project name.
3. Fill out the City or County of the project.
4. Fill out the GDOT District of the project.
5. Fill out the submittal date of the MS4 PCS Report. This date should change with every submittal of the report.
6. Fill out the consultant or GDOT office completing the MS4 PCS Report.
7. Fill out the let date of the project.
8. Fill out the contact phone for the individual responsible for completing the MS4 PCS Report. The contact phone number will aid if questions arise while reviewing the report.
9. Fill out the applicable milestone of the project, PFPR, FFPR, or Addendum.
10. Specify whether a Project Level Exclusion is applicable for the project. If a Project Level Exclusion is applicable, mark the applicable exclusion. If a Project Level Exclusion is applicable, completion of the cover is all that is required for the MS4 PCS Report.
    1) <u>The roadway is not owned or operated (maintained) by GDOT.</u> If the project is on a local road but is being funded by GDOT then the project only requires the cover sheet of the MS4 PCS Report. If the project crosses a state route and work is being done on the state route, then that portion of the project would require a MS4 PCS report. Potential scenarios when a GDOT project contains both a state route and a local road:
        a. If the outfall basin and outfall are located on the state route, GDOT MS4 Permit requirements will apply and GDOT will be subject to the design, installation, and maintenance of a BMP for that particular outfall basin unless the BMP is determined to be excluded or infeasible.
        b. If the entire outfall basin and outfall are located on the local road, this basin is not subject to GDOT MS4 Permit requirements. The designer shall comply with local MS4 requirements and coordinate with the local government for the specific design, installation, and maintenance requirements for a BMP for that particular outfall basin.
        c. If the outfall basin is on the state route and the outfall is located along the local road, GDOT will follow its normal procedure for BMP design and, if determined feasible, will install the BMP on the GDOT right-of-way.
        d. If the entire outfall basin is on the local road and the outfall is located along the state route, further coordination with GDOT and the local government is required and will be determined on a case-by-case basis.

    This Project Level Exclusion should not be marked unless it is applicable for the entire project. If the GDOT MS4 Permit requirements apply to a portion of the project, do not mark the Project Level Exclusion.

    Required Documentation: Identify the local entity that owns and operates the facility. Provide a location map with the beginning/end of the project demonstrating that it is

Georgia Department of Transportation

MS4 Post-Construction Stormwater Report

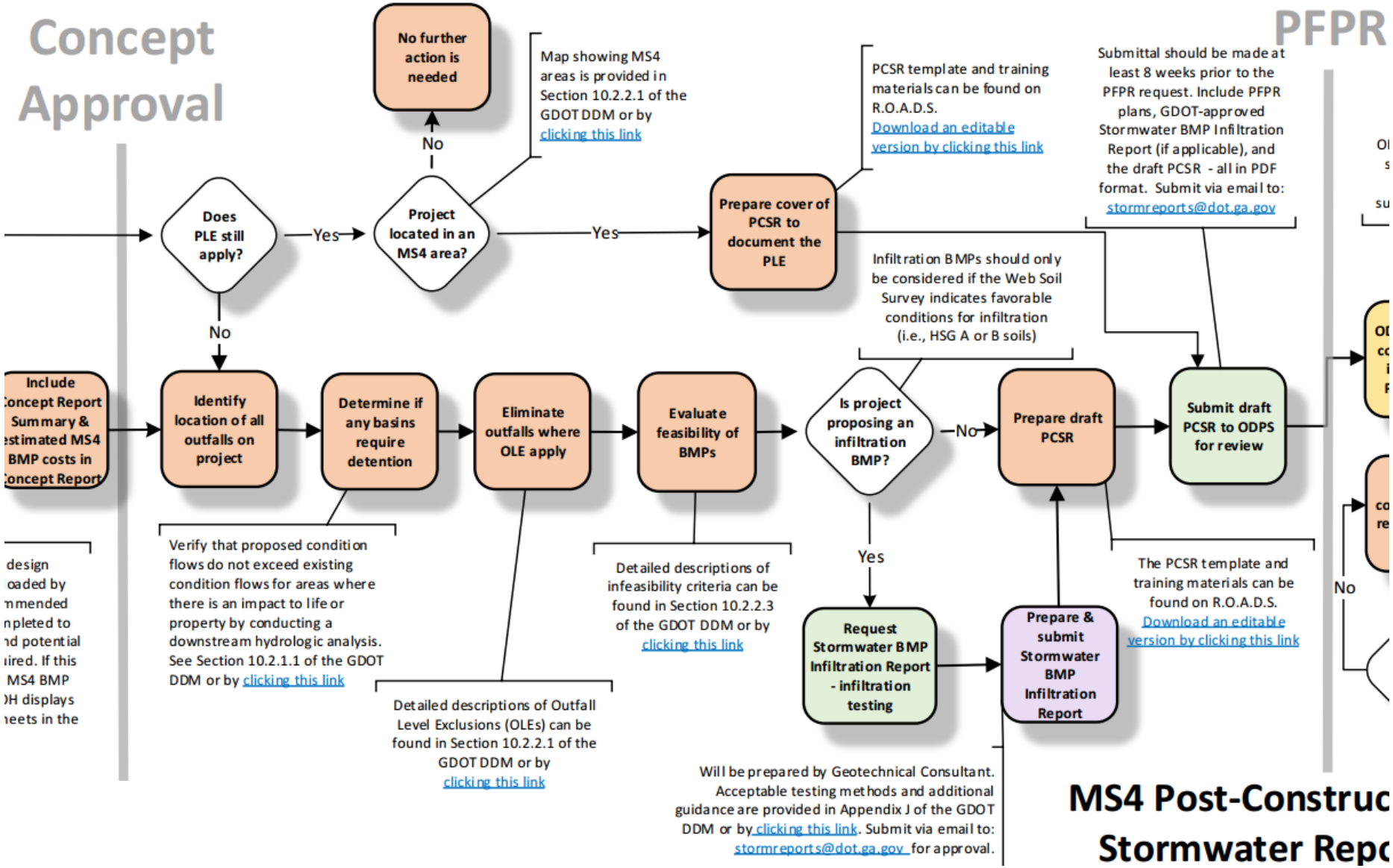


List of Acronyms:

BMP = Best Management Practice / structural devise used to treat or store stormwater runoff
DDM = Manual on Drainage Design for Highways
EPD = Georgia Environmental Protection Division
FFPR = Final Field Plan Review
GaDNR = Georgia Department of Natural Resources
MS4 = Municipal Separate Storm Sewer System
ODPS = Office of Design Policy and Support
OLE = Outfall Level Exclusion
OMAT = Office of Materials and Testing
PCSR = MS4 Post-Construction Stormwater Report
PDP = Plan Development Process
PFPR = Preliminary Field Plan Review
PIOH = Public Information Open House
PLE = Project Level Exclusion
PM = GDOT Project Manager
ROW = Right-of-way

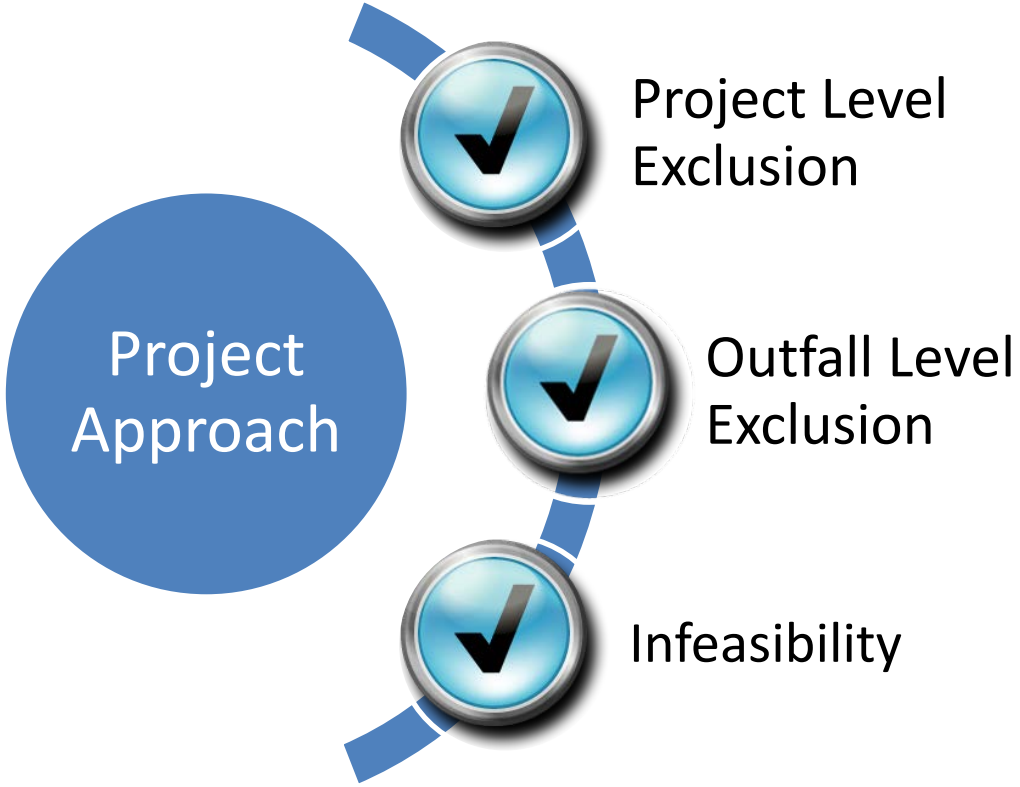
Georgia Department of Transportation

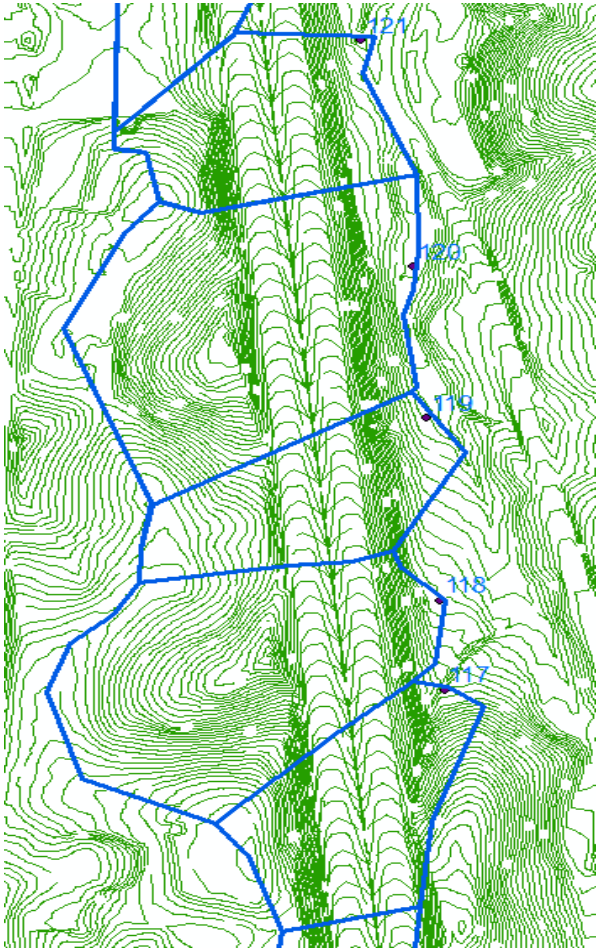
MS4 Post-Construction Stormwater Report



MS4 Post-Construction Stormwater Report

Three tiered screening process:





Project Level Exclusions

Project-Level Exclusions (PLE) remove post-construction BMP requirements for entire project and include:

1. Facility not GDOT-owned
2. Project not within MS4 boundaries
3. Maintenance/safety project (disturbs less than 1 acre)
4. Environmental documents approved before 6/30/12
5. The project is a roadway project that disturbs < 1 acre or a site project that adds < 5,000 ft^2 of impervious area

Project Level Exclusions

What if…

the project is primarily on a local road, but it crosses a state route and work is being done on the state route?

The portion of the project on the state route would require a MS4 PCS report.

Project Level Exclusions

What if…

an outfall basin is on the state route but the outfall is located along the local road?

GDOT will follow its normal procedure for BMP design and, if determined feasible, will install the BMP on the GDOT right-of-way.

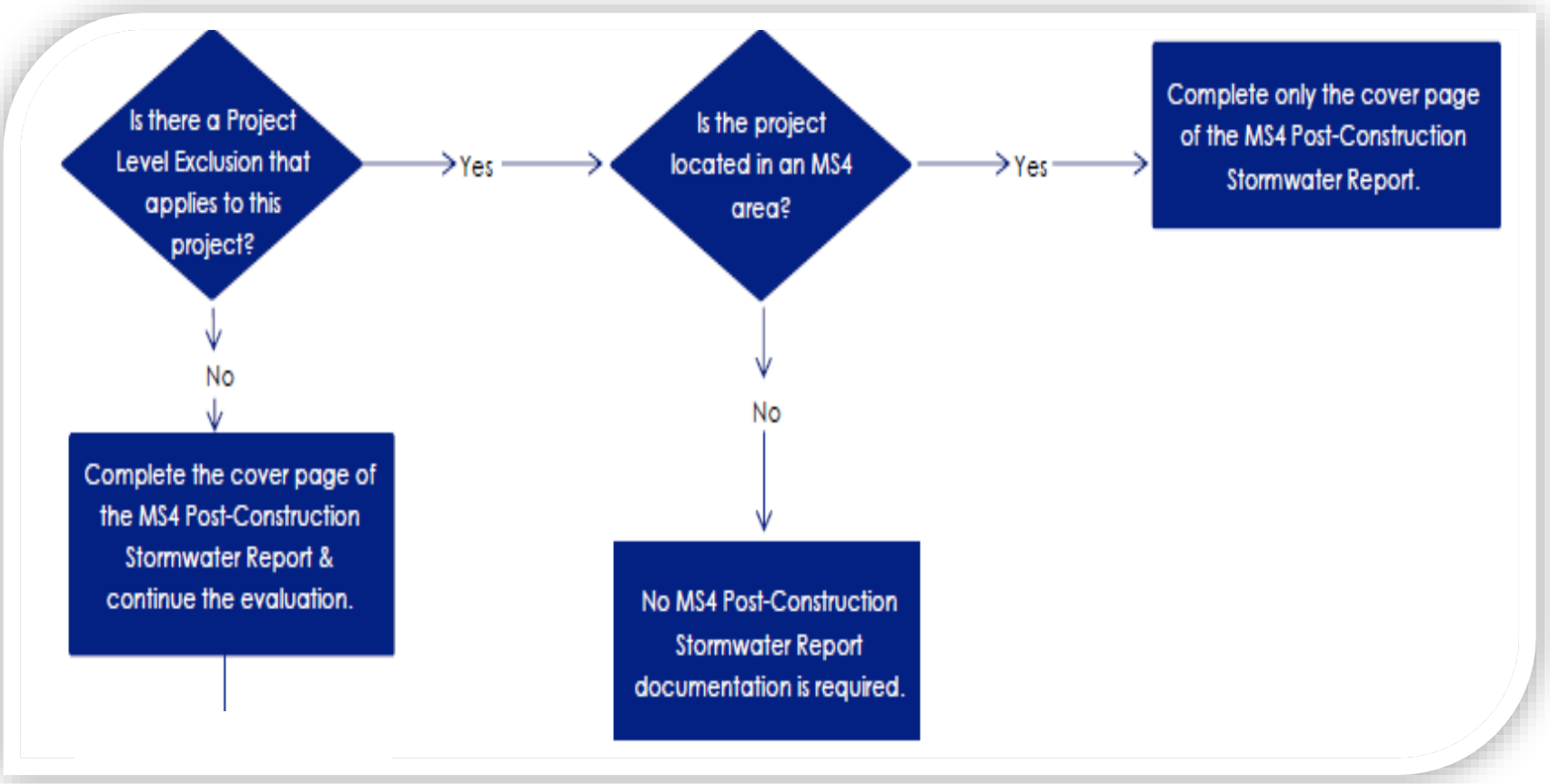
Project Level Exclusions

What if…

an entire outfall basin is on the local road and the outfall is located along the state route?

Further coordination with GDOT and the local government is required and will be determined on a case-by-case basis.

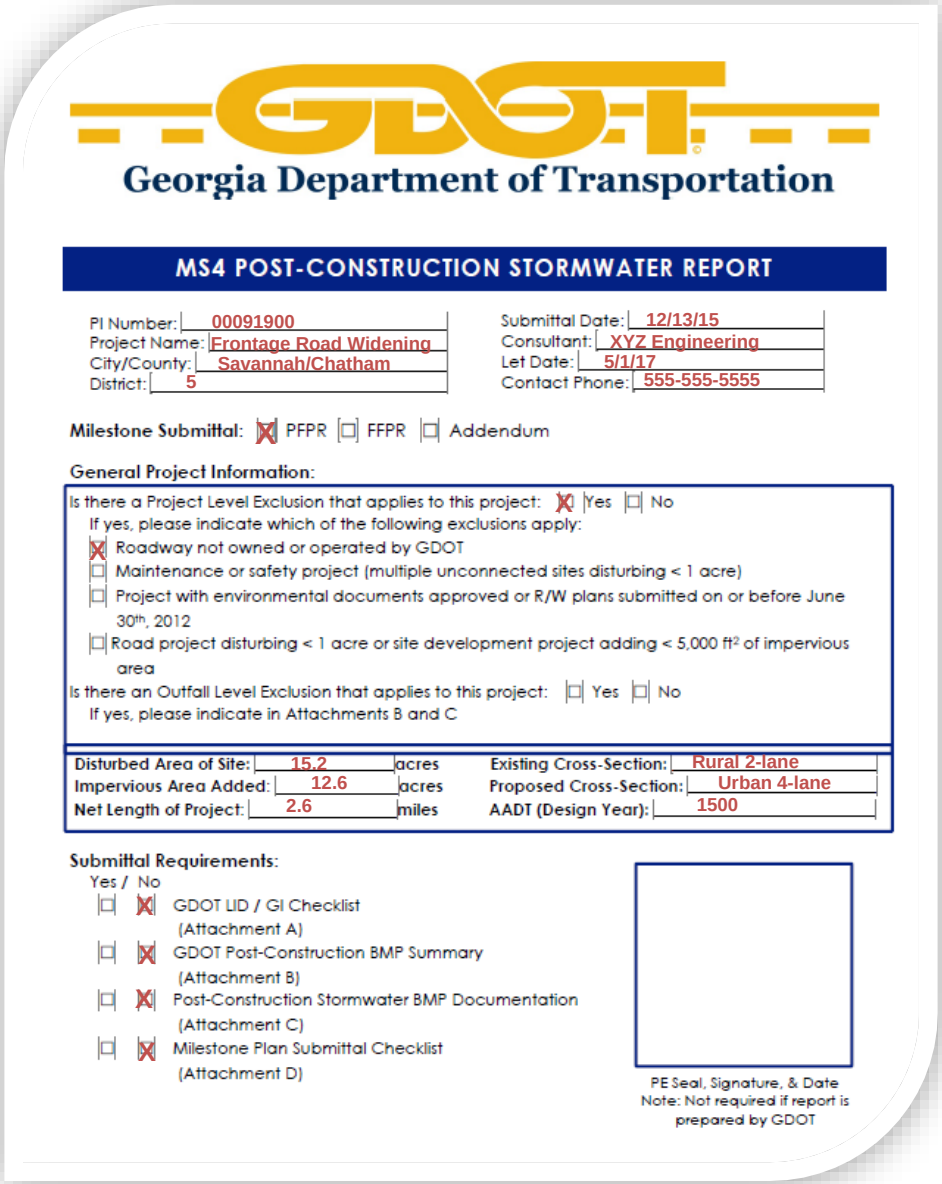
Project Level Exclusions



Project Level Exclusions

If you have a **Project-Level Exclusion (PLE):**

- **Complete Stormwater Report Cover Page ONLY**
- The PLE must be applicable for the entire project.
- Review and (if required) revise at project milestone submittals



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: 00091900
Project Name: Frontage Road Widening
City/County: Savannah/Chatham
District: 5

Submittal Date: 12/13/15
Consultant: XYZ Engineering
Let Date: 5/1/17
Contact Phone: 555-555-5555

Milestone Submittal: [X] PFPR [ ] FFPR [ ] Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: [X] Yes [ ] No
If yes, please indicate which of the following exclusions apply:
- [X] Roadway not owned or operated by GDOT
- [ ] Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- [ ] Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- [ ] Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: [ ] Yes [ ] No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	15.2	acres	Existing Cross-Section:	Rural 2-lane
Impervious Area Added:	12.6	acres	Proposed Cross-Section:	Urban 4-lane
Net Length of Project:	2.6	miles	AADT (Design Year):	1500

Submittal Requirements:

Yes / No
- [ ] [X] GDOT LID / GI Checklist (Attachment A)
- [ ] [X] GDOT Post-Construction BMP Summary (Attachment B)
- [ ] [X] Post-Construction Stormwater BMP Documentation (Attachment C)
- [ ] [X] Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

Outfall Level Exclusions

Outfall-Level Exclusions (OLE) remove post-construction BMP requirements for a specific outfall's drainage area and include:

* 1. Change in existing roadway alignment that creates safety concern
* 2. Installation of BMP causes realignment or piping of a stream
* 3. Installation of BMP impacts a stream buffer or wetland
4. Discharges exit R/W as sheet flow
5. Flows that originate offsite
6. Reduction (or negligible increase) in impervious area

** Note: OLE 1, 2 and 3 must be solely due to installation of the BMP*

Infeasibility Criteria

Infeasibility criteria make compliance with post-construction requirements for a specific outfall's drainage area infeasible and include:

1. Cost (BMP cost is greater than 10% project/roadway segment cost in BMP basin)
2. Schedule delay (> 90 days)
3. Impact to endangered/threatened species
4. Damage to cultural/community resource (historical/ archeological sites, cemetery, park, wildlife refuge, nature trail, school)
5. Residence or business displacement

Infeasibility Criteria

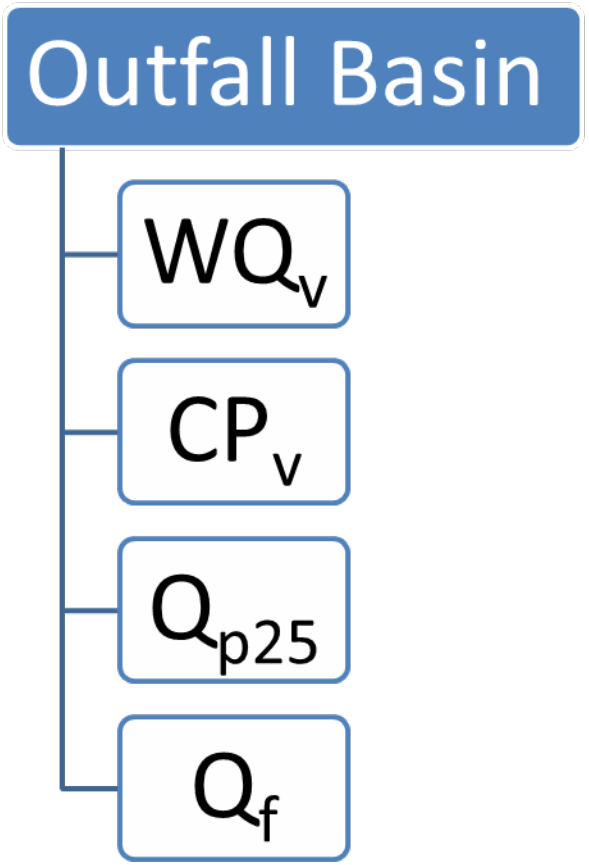
Infeasibility criteria make compliance with post-construction requirements for a specific outfall's drainage area infeasible and include:

6. Violation of a federal or state law or regulation
7. Shallow bedrock, contaminated soils, high groundwater, utilities/other underground facilities
8. Limited soil infiltration capacity
9. Site too small to infiltrate significant volume
10. Site does not allow for gravity flow to BMP

Infeasibility Criteria

Remember, the MS4 Permit Requires

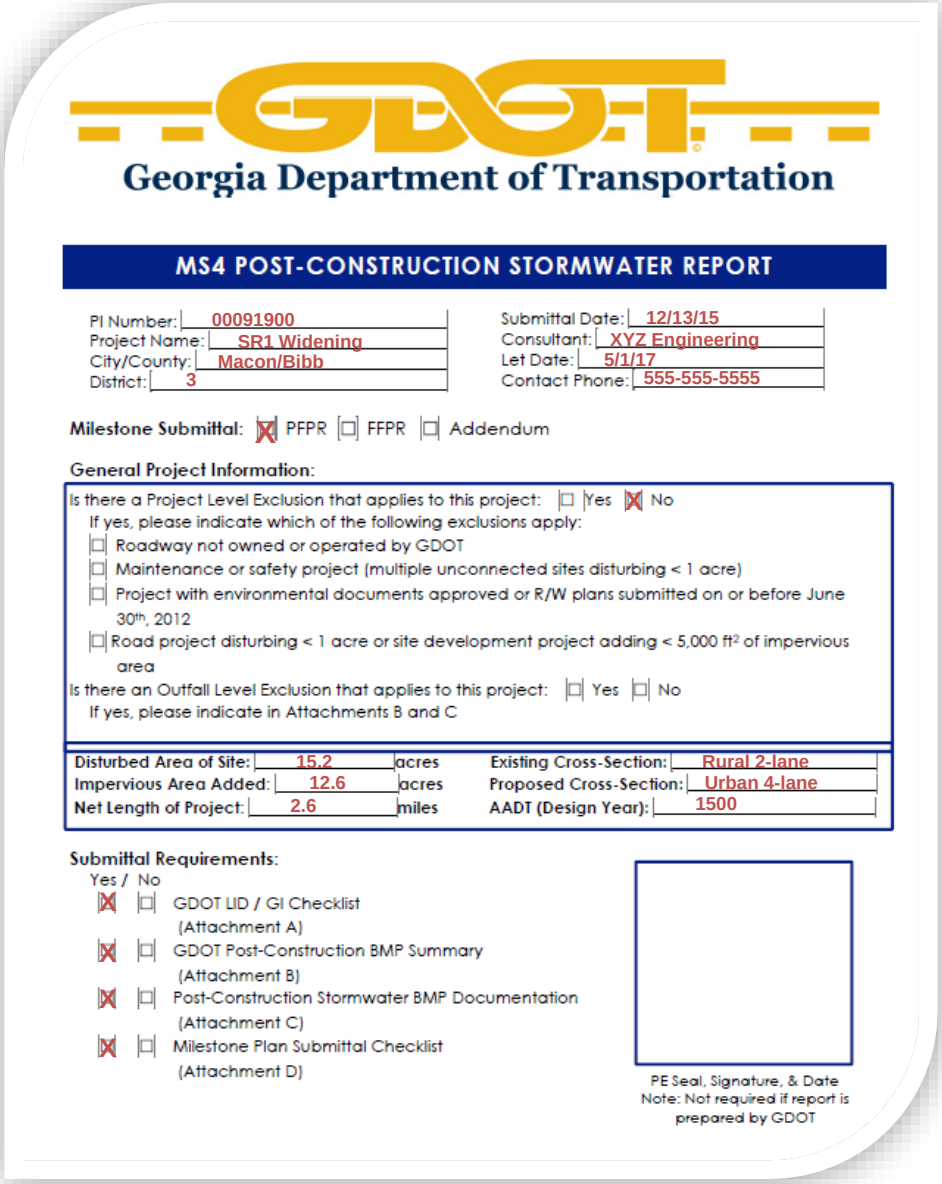
- Stormwater runoff treatment to the maximum extent practicable
- Infeasibility determined individually:
  - For each design requirement (WQ_v, CP_v, Q_{p25}, Q_f)
  - Per outfall basin within the project limits
- Does not remove the requirement for stormwater quantity assessment to check for adverse impacts downstream of the project.



OLEs and Infeasibilities

If you have an **OLE or Infeasibility:**

- **Complete Cover Page**
- Complete Attachment A
- Complete for all basins:
  - ✓ Attachment B
  - ✓ Attachment C
- Complete Attachment D at milestone reviews



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: 00091900
Project Name: SR1 Widening
City/County: Macon/Bibb
District: 3

Submittal Date: 12/13/15
Consultant: XYZ Engineering
Let Date: 5/1/17
Contact Phone: 555-555-5555

Milestone Submittal: ☒ PFPR ☐ FFPR ☐ Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: ☐ Yes ☒ No
If yes, please indicate which of the following exclusions apply:
- ☐ Roadway not owned or operated by GDOT
- ☐ Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- ☐ Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	15.2	acres	Existing Cross-Section:	Rural 2-lane	
Impervious Area Added:	12.6	acres	Proposed Cross-Section:	Urban 4-lane	
Net Length of Project:	2.6	miles	AADT (Design Year):	1500	

Submittal Requirements:

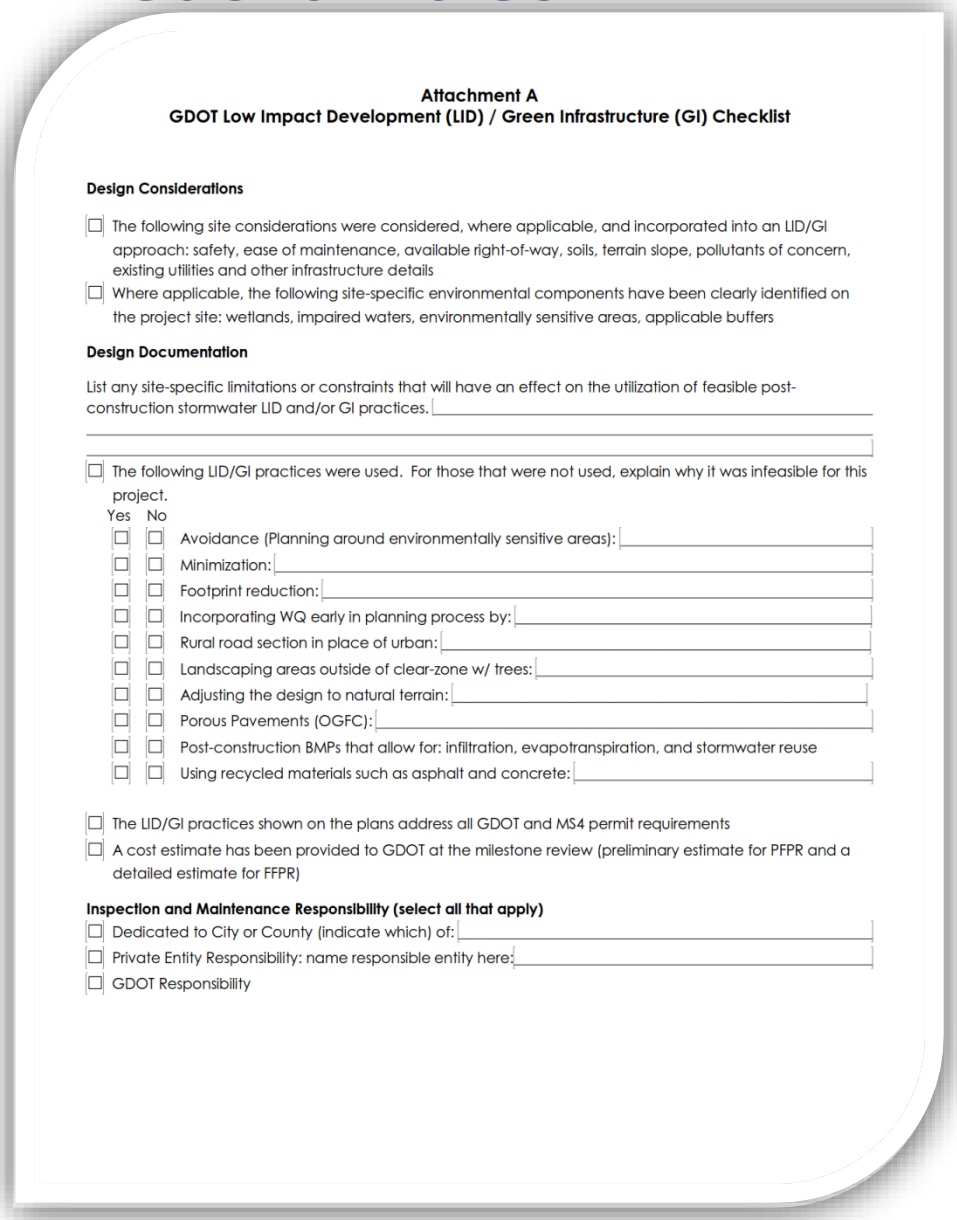
Yes / No
- ☒ ☐ GDOT LID / GI Checklist (Attachment A)
- ☒ ☐ GDOT Post-Construction BMP Summary (Attachment B)
- ☒ ☐ Post-Construction Stormwater BMP Documentation (Attachment C)
- ☒ ☐ Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

OLEs and Infeasibilities

If you have an **OLE or Infeasibility:**

- Complete Cover Page
- **Complete Attachment A**
- Complete for all basins:
  - ✓ Attachment B
  - ✓ Attachment C
- Complete Attachment D at milestone reviews



Attachment A
GDOT Low Impact Development (LID) / Green Infrastructure (GI) Checklist

Design Considerations

☐ The following site considerations were considered, where applicable, and incorporated into an LID/GI approach: safety, ease of maintenance, available right-of-way, soils, terrain slope, pollutants of concern, existing utilities and other infrastructure details

☐ Where applicable, the following site-specific environmental components have been clearly identified on the project site: wetlands, impaired waters, environmentally sensitive areas, applicable buffers

Design Documentation

List any site-specific limitations or constraints that will have an effect on the utilization of feasible post-construction stormwater LID and/or GI practices. _____

_____

☐ The following LID/GI practices were used. For those that were not used, explain why it was infeasible for this project.

Yes	No	
☐	☐	Avoidance (Planning around environmentally sensitive areas): _____
☐	☐	Minimization: _____
☐	☐	Footprint reduction: _____
☐	☐	Incorporating WQ early in planning process by: _____
☐	☐	Rural road section in place of urban: _____
☐	☐	Landscaping areas outside of clear-zone w/ trees: _____
☐	☐	Adjusting the design to natural terrain: _____
☐	☐	Porous Pavements (OGFC): _____
☐	☐	Post-construction BMPs that allow for: infiltration, evapotranspiration, and stormwater reuse
☐	☐	Using recycled materials such as asphalt and concrete: _____

☐ The LID/GI practices shown on the plans address all GDOT and MS4 permit requirements

☐ A cost estimate has been provided to GDOT at the milestone review (preliminary estimate for PFPR and a detailed estimate for FFPR)

Inspection and Maintenance Responsibility (select all that apply)

☐ Dedicated to City or County (indicate which) of: _____

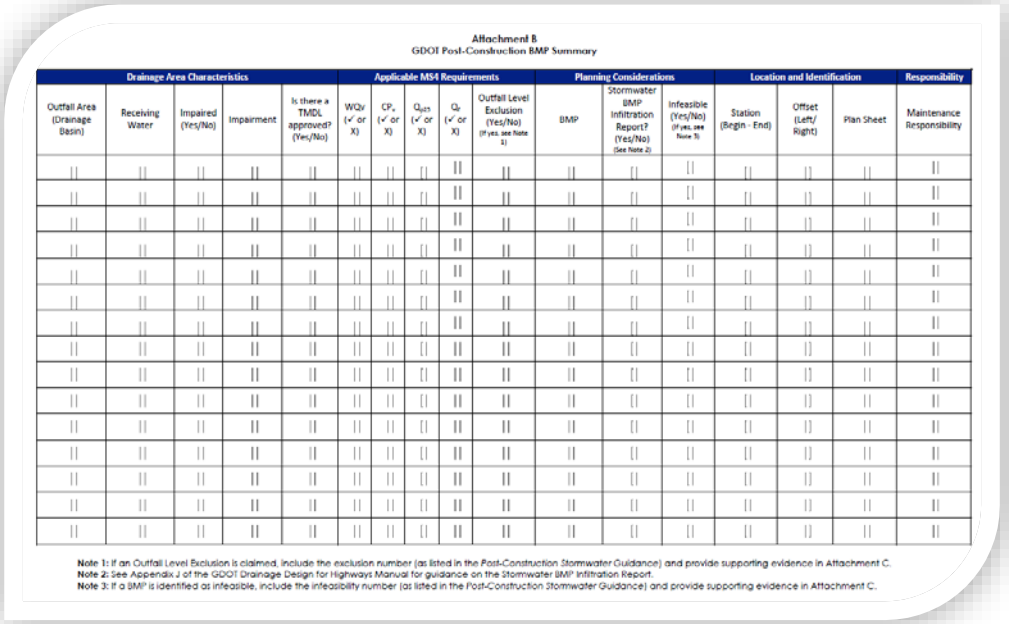
☐ Private Entity Responsibility: name responsible entity here: _____

☐ GDOT Responsibility

OLEs and Infeasibilities

If you have an **OLE or Infeasibility:**

- Complete Cover Page
- Complete Attachment A
- **Complete for all basins:**
  - ✓ **Attachment B**



Attachment B
GDOT Post-Construction BMP Summary

Drainage Area Characteristics					Applicable MS4 Requirements					Planning Considerations			Location and Identification			Responsibility
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved? (Yes/No)	WQv (✓ or X)	CP_v (✓ or X)	Q_{p25} (✓ or X)	Q_f (✓ or X)	Outfall Level Exclusion (Yes/No) (If yes, see Note 1)	BMP	Stormwater BMP Infiltration Report? (Yes/No) (See Note 2)	Infeasible (Yes/No) (If yes, see Note 3)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	Maintenance Responsibility

Note 1: If an Outfall Level Exclusion is claimed, include the exclusion number (as listed in the *Post-Construction Stormwater Guidance*) and provide supporting evidence in Attachment C.
Note 2: See Appendix J of the GDOT Drainage Design for Highways Manual for guidance on the Stormwater BMP Infiltration Report.
Note 3: If a BMP is identified as infeasible, include the infeasibility number (as listed in the *Post-Construction Stormwater Guidance*) and provide supporting evidence in Attachment C.

Attachment B
GDOT Post-Construction BMP Summary

Drainage Area Characteristics					Applicable MS4 Requirements					Planning Considerations			Location and Identification			Responsibility
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved? (Yes/No)	WQv (✓ or X)	CP_v (✓ or X)	Q_{p25} (✓ or X)	Q_f (✓ or X)	Outfall Level Exclusion (Yes/No) (If yes, see Note 1)	BMP	Stormwater BMP Infiltration Report? (Yes/No) (See Note 2)	Infeasible (Yes/No) (If yes, see Note 3)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	Maintenance Responsibility

Complete for all basins

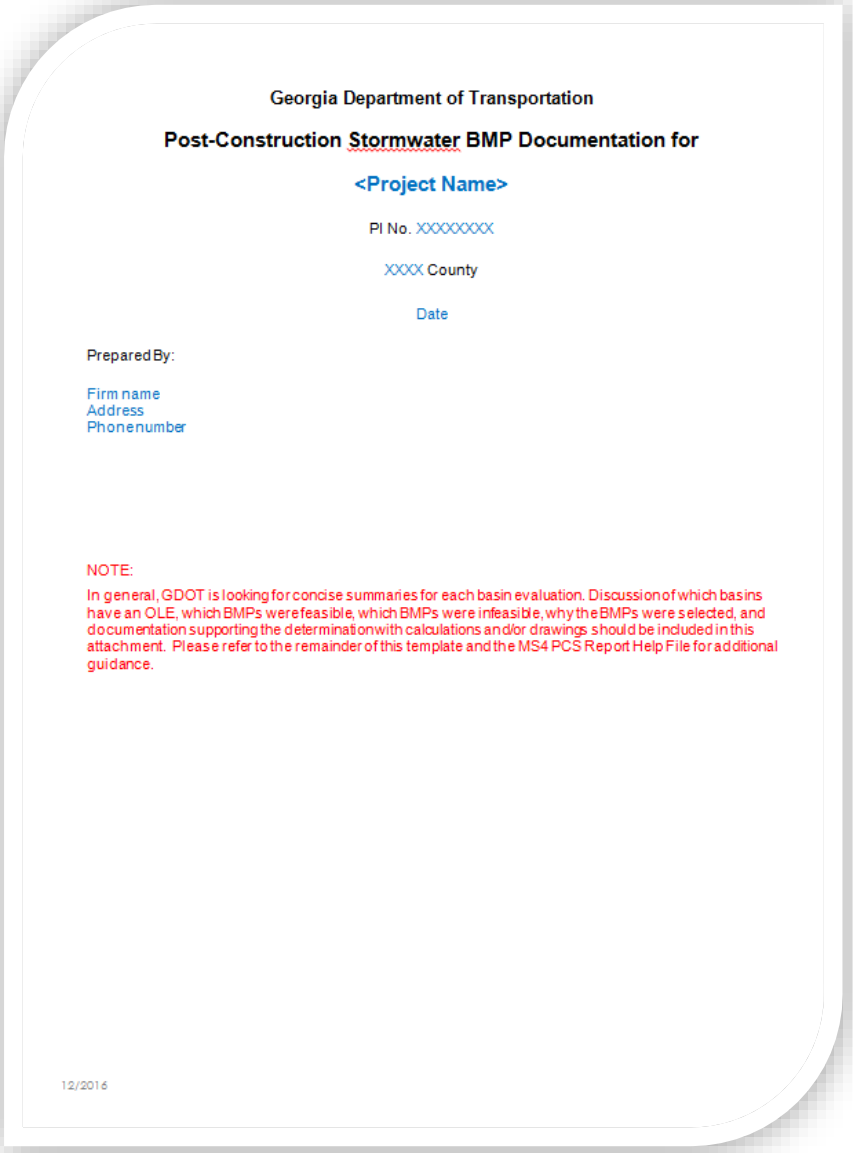
Complete for all basins without OLE and/or with required detention

Complete for all basins with feasible BMP

OLEs and Infeasibilities

If you have an **OLE or Infeasibility:**

- Complete Cover Page
- Complete Attachment A
- Complete for all basins:
  - ✓ Attachment B
  - ✓ **Attachment C**
- Complete Attachment D at milestone reviews



Georgia Department of Transportation

Post-Construction Stormwater BMP Documentation for

<Project Name>

PI No. XXXXXXXX

XXXX County

Date

Prepared By:

Firm name
Address
Phonenumber

NOTE:

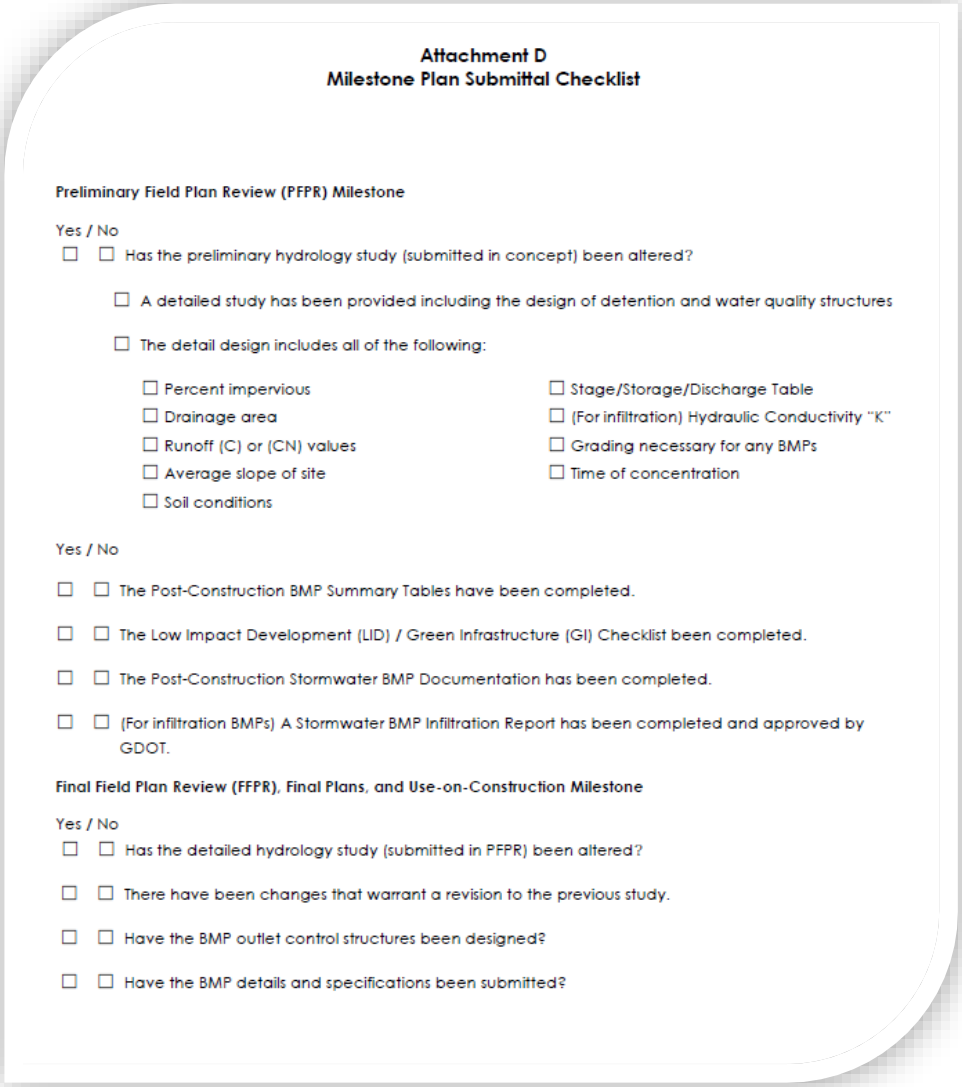
In general, GDOT is looking for concise summaries for each basin evaluation. Discussion of which basins have an OLE, which BMPs were feasible, which BMPs were infeasible, why the BMPs were selected, and documentation supporting the determination with calculations and/or drawings should be included in this attachment. Please refer to the remainder of this template and the MS4 PCS Report Help File for additional guidance.

12/2016

OLEs and Infeasibilities

If you have an **OLE or Infeasibility:**

- Complete Cover Page
- Complete Attachment A
- Complete for all basins:
  - ✓ Attachment B
  - ✓ Attachment C
- **Complete Attachment D at milestone reviews**



Attachment D
Milestone Plan Submittal Checklist

Preliminary Field Plan Review (PFPR) Milestone

Yes / No

☐ ☐ Has the preliminary hydrology study (submitted in concept) been altered?

☐ A detailed study has been provided including the design of detention and water quality structures

☐ The detail design includes all of the following:

- ☐ Percent impervious
- ☐ Drainage area
- ☐ Runoff (C) or (CN) values
- ☐ Average slope of site
- ☐ Soil conditions
- ☐ Stage/Storage/Discharge Table
- ☐ (For infiltration) Hydraulic Conductivity "K"
- ☐ Grading necessary for any BMPs
- ☐ Time of concentration

Yes / No

☐ ☐ The Post-Construction BMP Summary Tables have been completed.

☐ ☐ The Low Impact Development (LID) / Green Infrastructure (GI) Checklist been completed.

☐ ☐ The Post-Construction Stormwater BMP Documentation has been completed.

☐ ☐ (For infiltration BMPs) A Stormwater BMP Infiltration Report has been completed and approved by GDOT.

Final Field Plan Review (FFPR), Final Plans, and Use-on-Construction Milestone

Yes / No

☐ ☐ Has the detailed hydrology study (submitted in PFPR) been altered?

☐ ☐ There have been changes that warrant a revision to the previous study.

☐ ☐ Have the BMP outlet control structures been designed?

☐ ☐ Have the BMP details and specifications been submitted?

MS4 Post-Construction Stormwater Report

Cover Sheet (Required for ALL projects in a MS4 area)

Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: 00091900
Project Name: SR1 Widening
City/County: Fayetteville/Fayette
District: 3

Submittal Date: 12/13/16
Consultant: XYZ Engineering
Let Date: 5/1/18
Contact Phone: 555-555-5555

GDOT Project Information

Milestone Submittal: [X] PFPR [ ] FFPR [ ] Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: [ ] Yes [X] No

If yes, please indicate which of the following exclusions apply:

- [ ] Roadway not owned or operated by GDOT
- [ ] Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- [ ] Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- [ ] Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Project Level Exclusion Information

MS4 Post-Construction Stormwater Report

Cover Sheet (Required for ALL projects in a MS4 area)

Disturbed Area of Site:	15.2	acres	Existing Cross-Section:	Rural 2-lane	
Impervious Area Added:	12.6	acres	Proposed Cross-Section:	Urban 4-lane	
Net Length of Project:	2.6	miles	AADT (Design Year):	1500	

Project Design Information

Submittal Requirements:

Yes	No	
X	☐	GDOT LID / GI Checklist (Attachment A)
X	☐	GDOT Post-Construction BMP Summary (Attachment B)
X	☐	Post-Construction Stormwater BMP Documentation (Attachment C)
X	☐	Milestone Plan Submittal Checklist (Attachment D)

Required Attachments

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

Reports not prepared by GDOT must be sealed by Professional Engineer

MS4 Post-Construction Stormwater Report

Attachment A: Low Impact Development/Green Infrastructure Checklist **(Required for ALL MS4 projects without PLE)**

Attachment A
GDOT Low Impact Development (LID) / Green Infrastructure (GI) Checklist

Design Considerations

☐ The following site considerations were considered, where applicable, and incorporated into an LID/GI approach: safety, ease of maintenance, available right-of-way, soils, terrain slope, pollutants of concern, existing utilities and other infrastructure details

☐ Where applicable, the following site-specific environmental components have been clearly identified on the project site: wetlands, impaired waters, environmentally sensitive areas, applicable buffers

Document planning-level stormwater considerations

Design Documentation

List any site-specific limitations or constraints that will have an effect on the utilization of feasible post-construction stormwater LID and/or GI practices. _____

_____

_____

Identify soil issues, wetlands, high groundwater table, ESAs, etc.

MS4 Post-Construction Stormwater Report

Attachment A: Low Impact Development/Green Infrastructure Checklist **(Required for ALL MS4 projects without PLE)**

☐ The following LID/GI practices were used. For those that were not used, explain why it was infeasible for this project.

Yes	No		
X	☐	Avoidance (Planning around environmentally sensitive areas):	ESAs avoided
X	☐	Minimization:	Project impacts minimized where possible
X	☐	Footprint reduction:	Project minimizes pavement
X	☐	Incorporating WQ early in planning process by:	Conceptual planning
X	☐	Rural road section in place of urban:	
X	☐	Landscaping areas outside of clear-zone w/ trees:	
X	☐	Adjusting the design to natural terrain:	
☐	X	Porous Pavements (OGFC):	Pavement design committee did not approve use
X	☐	Post-construction BMPs that allow for: infiltration, evapotranspiration, and stormwater reuse	
X	☐	Using recycled materials such as asphalt and concrete:	

If not used, concisely explain conditions & issues preventing each LID/GI practice

If used, can explain how

X The LID/GI practices shown on the plans address all GDOT and MS4 permit requirements

X A cost estimate has been provided to GDOT at the milestone review (preliminary estimate for PFPR and a detailed estimate for FFPR)

Document cost/permit compliance needs for milestone review

Inspection and Maintenance Responsibility (select all that apply)

☐ Dedicated to City or County (indicate which) of:

☐ Private Entity Responsibility: name responsible entity here:

X GDOT Responsibility

Identify maintenance responsibility

MS4 Post-Construction Stormwater Report

Attachment B: GDOT Post-Construction BMP Summary

(Required for ALL MS4 projects without PLE)

Attachment B
GDOT Post-Construction BMP Summary

Drainage Area Characteristics					Applicable MS4 Requirements					Planning Considerations			Location and Identification			Responsibility
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved? (Yes/No)	WQv (✓ or X)	CP_v (✓ or X)	Q_{p25} (✓ or X)	Q_f (✓ or X)	Outfall Level Exclusion (Yes/No) (If yes, see Note 1)	BMP	Stormwater BMP Infiltration Report? (Yes/No) (See Note 2)	Infeasible (Yes/No) (If yes, see Note 3)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	Maintenance Responsibility

Complete for all basins

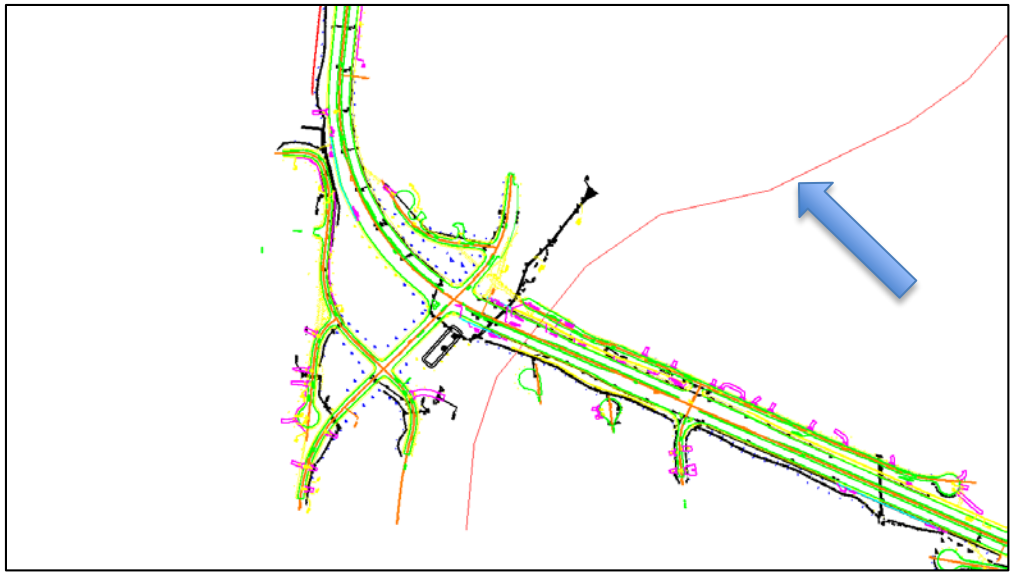
Complete for all basins without OLE and/or with required detention

Complete for all basins with feasible BMP

MS4 Post-Construction Stormwater Report

Drainage Area Characteristics				
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved? (Yes/No)

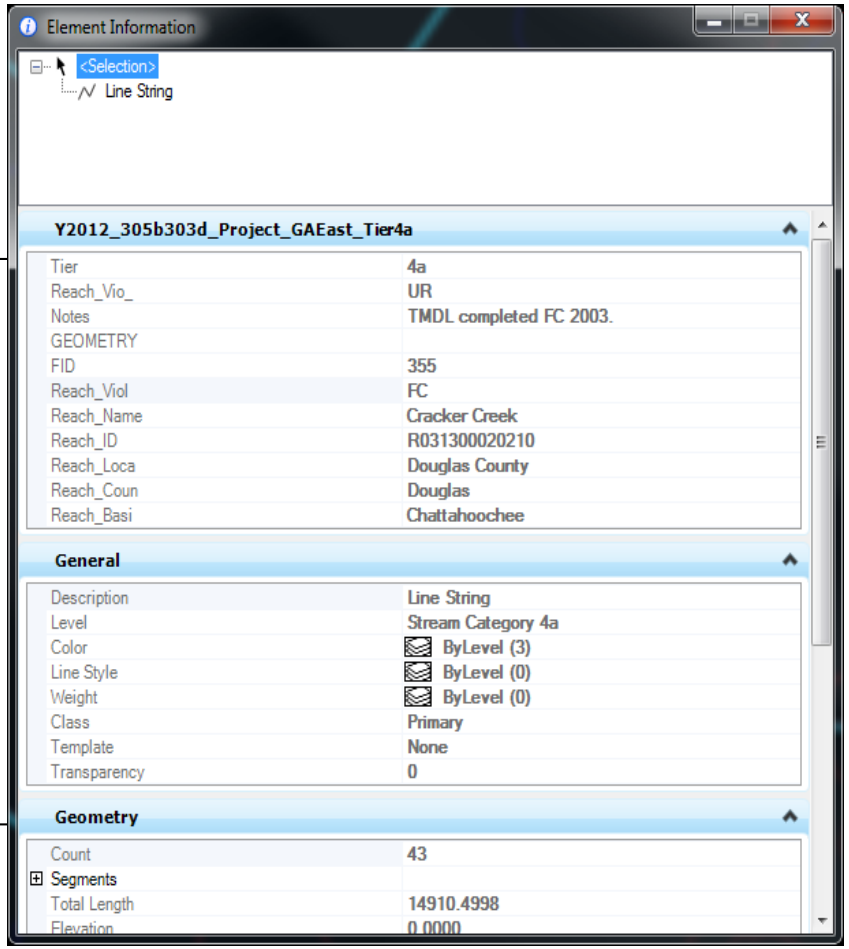
GDOT has also developed a TMDL Tool which is a MicroStation file of the GA EPD shape file: http://www.dot.ga.gov/PS/DesignManuals/DesignGuides



MS4 Post-Construction Stormwater Report

Drainage Area Characteristics				
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved? (Yes/No)

GDOT has also developed a TMDL Tool which is a MicroStation file of the GA EPD shape file: http://www.dot.ga.gov/PS/DesignManuals/DesignGuides



MS4 Post-Construction Stormwater Report

WQ_v

Water Quality Volume should be applicable unless:

- An Outfall Level Exclusion is applicable for the basin

CP_v

Channel Protection Volume should be applicable unless:

- An Outfall Level Exclusion is applicable for the basin
- The basin discharges to a waterbody that has a drainage area larger than 5 square miles
- The proposed 1-year discharge is less than 2 cfs

Applicable MS4 Requirements				
WQv (✓ or X)	CP_v (✓ or X)	Q_{p25} (✓ or X)	Q_f (✓ or X)	Outfall Level Exclusion (Yes/No) (If yes, see Note 1)

MS4 Post-Construction Stormwater Report

Q_{p25}

Overbank Flood Protection should be applicable unless:

- The basin discharges to a waterbody that has a drainage area larger than 5 square miles
- The analysis showed an insignificant flow increase for the basin

Q_f

Extreme Flood Protection should be applicable unless:

- The basin discharges to a waterbody that has a drainage area larger than 5 square miles
- The analysis showed an insignificant flow increase for the basin.

Applicable MS4 Requirements				
WQv (✓ or X)	CP_v (✓ or X)	Q_{p25} (✓ or X)	Q_f (✓ or X)	Outfall Level Exclusion (Yes/No) (If yes, see Note 1)

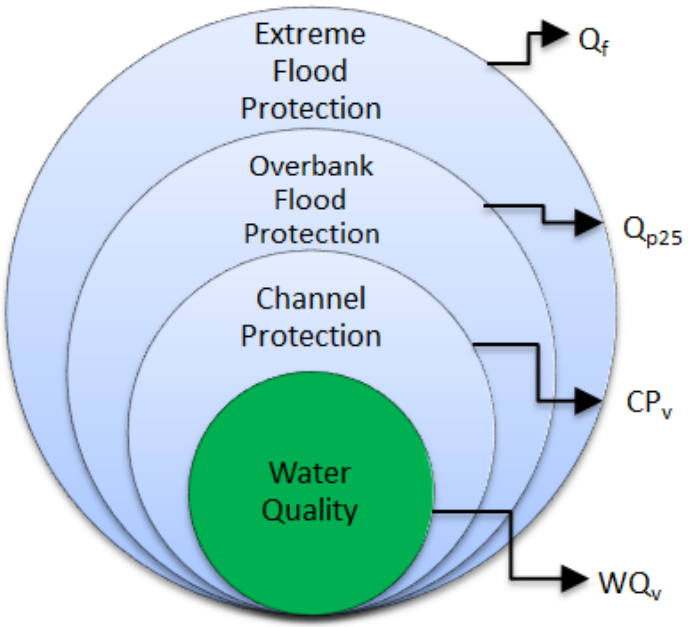
MS4 Post-Construction Stormwater Report

Planning Considerations		
BMP	Stormwater BMP Infiltration Report? (Yes/No) (See Note 2)	Infeasible (Yes/No) (If yes, see Note 3)

- Specify the BMP(s) that was found to be appropriate for the drainage basin and was carried forward to the infeasibility assessment stage OR the BMP that was determined to be feasible
- Infiltration testing required only for infiltration BMPs
- Guidance on the Stormwater BMP Infiltration Report is in Appendix J of the GDOT Drainage Manual

MS4 Post-Construction Stormwater Report

Planning Considerations		
BMP	Stormwater BMP Infiltration Report? (Yes/No) (See Note 2)	Infeasible (Yes/No) (If yes, see Note 3)



Infeasibility:

- Each criteria (WQ_v, CP_v, Q_{p25}, Q_f) is evaluated individually
- Meet as many of the criteria as feasible
- A BMP is feasible only if you can meet all requirements of at least one criteria

MS4 Post-Construction Stormwater Report

Location and Identification			Responsibility
Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	Maintenance Responsibility

Complete for all basins with feasible BMP

- Include a set of construction plan sheets in Attachment C as an appendix

- GDOT will usually have maintenance responsibility for BMPs within their right-of-way
- Maintenance responsibility can be shared among multiple entities

MS4 Post-Construction Stormwater Report

Attachment B: GDOT Post-Construction BMP Summary

(Required for ALL MS4 projects without PLE)

Drainage Area Characteristics					Applicable MS4 Requirements					Planning Considerations			Location and Identification			Responsibility
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved? (Yes/No)	WQv (✓ or X)	CP_v (✓ or X)	Q_{p25} (✓ or X)	Q_f (✓ or X)	Outfall Level Exclusion (Yes/No) (If yes, see Note 1)	BMP	Stormwater BMP Infiltration Report? (Yes/No) (See Note 2)	Infeasible (Yes/No) (If yes, see Note 3)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	Maintenance Responsibility
Basin 1	Lovely Creek	Yes	FC	No	✓	✓	✓	✓	No	Enhanced Dry Swale	No	Yes, #3	--	--	--	--
Basin 2	Lovely Creek	Yes	FC	No	X	X	X	X	Yes, #1	--	--	--	--	--	--	--
Basin 3	Right Creek	No	N/A	N/A	X	X	✓	✓	Yes, #2	Dry Detention	No	No	103+65 – 118+10	Rt 30’	13-001	GDOT
Basin 4	Right Creek	No	N/A	N/A	✓	✓	X	X	No	Infiltration Trench	Yes	No	120+85 – 121+10	Rt 15’	13-002	GDOT
Basin 5	Jones Creek	Yes	TP	Yes	✓	✓	✓	✓	No	Bioretention	No	Yes, #5	--	--	--	--
Basin 6	Curvy Creek	No	N/A	N/A	✓	✓	✓	✓	No	GC + Dry Detention	No	No	123+40 – 125+05	Lt 25’	13-006	GDOT
Basin 7	Curvy Creek	No	N/A	N/A	X	X	X	X	Yes #6	--	--	--	--	--	--	--

Note 1: If an Outfall Level Exclusion is claimed, include the exclusion number (as listed in the Post-Construction Stormwater Guidance) and provide supporting evidence in Attachment C.

Note 2: See Appendix J of the GDOT Drainage Design for Highways Manual for guidance on the Stormwater BMP Infiltration Report.

Note 3: If a BMP is identified as infeasible, include the infeasibility number (as listed in the Post-Construction Stormwater Guidance) and provide supporting evidence in Attachment C.

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation **(Required for ALL MS4 projects without a PLE)**

Contents:

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C. Soils Map
D. Environmental Resource Impact Table
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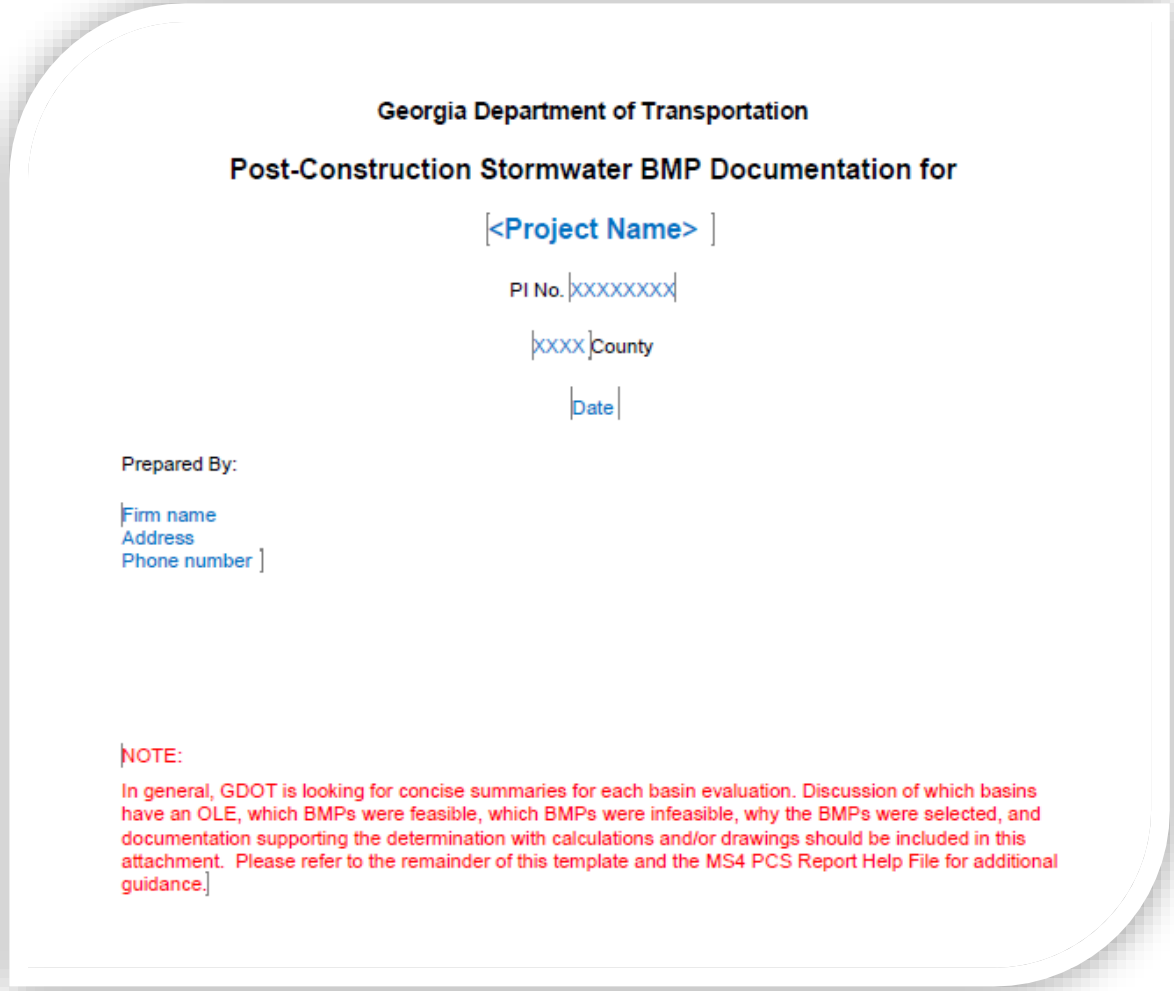

Georgia Department of Transportation

Post-Construction Stormwater BMP Documentation for

[<Project Name>]

PI No. xxxxxxxx

xxxx County

Date

Prepared By:

Firm name
Address
Phone number]

NOTE:

In general, GDOT is looking for concise summaries for each basin evaluation. Discussion of which basins have an OLE, which BMPs were feasible, which BMPs were infeasible, why the BMPs were selected, and documentation supporting the determination with calculations and/or drawings should be included in this attachment. Please refer to the remainder of this template and the MS4 PCS Report Help File for additional guidance.]

MS4 Post-Construction Stormwater Report

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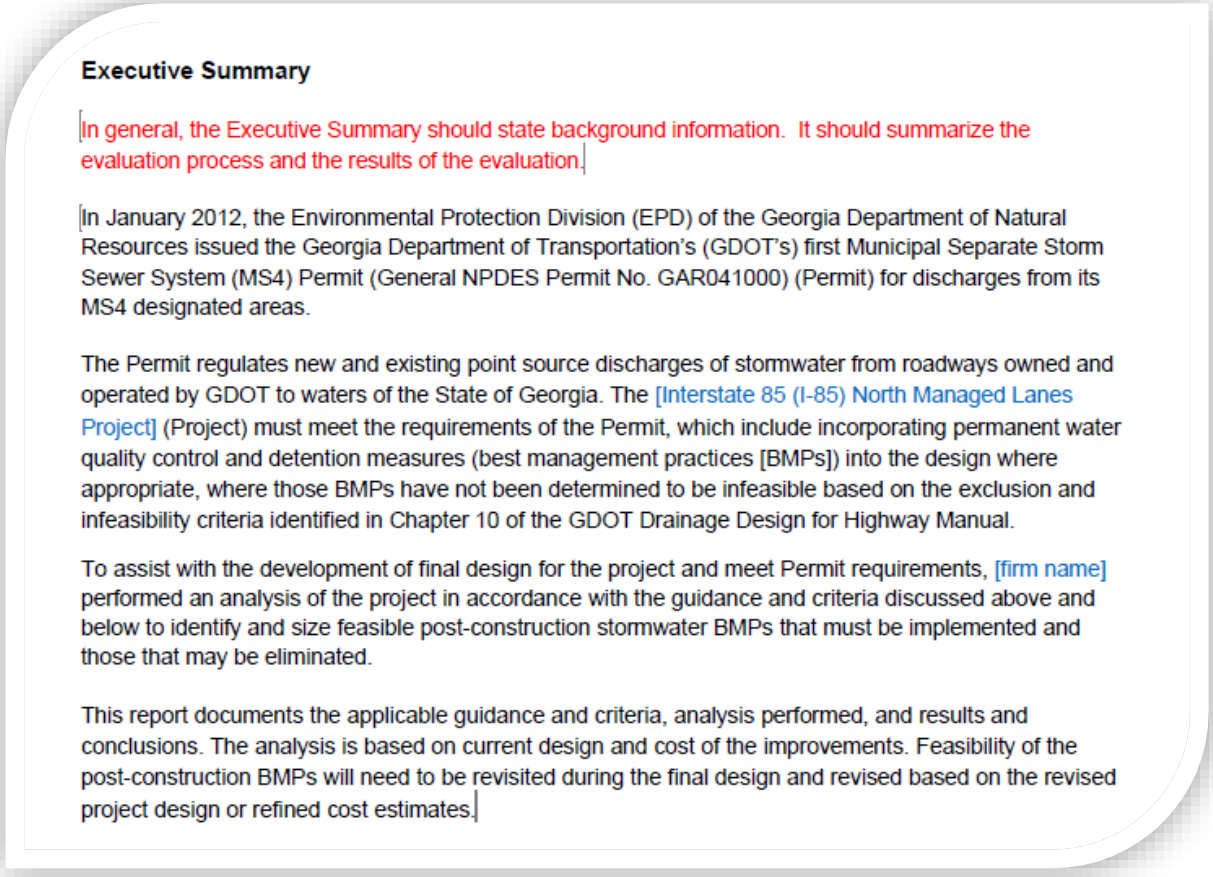

Executive Summary

In general, the Executive Summary should state background information. It should summarize the evaluation process and the results of the evaluation.

In January 2012, the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources issued the Georgia Department of Transportation's (GDOT's) first Municipal Separate Storm Sewer System (MS4) Permit (General NPDES Permit No. GAR041000) (Permit) for discharges from its MS4 designated areas.

The Permit regulates new and existing point source discharges of stormwater from roadways owned and operated by GDOT to waters of the State of Georgia. The [Interstate 85 (I-85) North Managed Lanes Project] (Project) must meet the requirements of the Permit, which include incorporating permanent water quality control and detention measures (best management practices [BMPs]) into the design where appropriate, where those BMPs have not been determined to be infeasible based on the exclusion and infeasibility criteria identified in Chapter 10 of the GDOT Drainage Design for Highway Manual.

To assist with the development of final design for the project and meet Permit requirements, [firm name] performed an analysis of the project in accordance with the guidance and criteria discussed above and below to identify and size feasible post-construction stormwater BMPs that must be implemented and those that may be eliminated.

This report documents the applicable guidance and criteria, analysis performed, and results and conclusions. The analysis is based on current design and cost of the improvements. Feasibility of the post-construction BMPs will need to be revisited during the final design and revised based on the revised project design or refined cost estimates.

MS4 Post-Construction Stormwater Report

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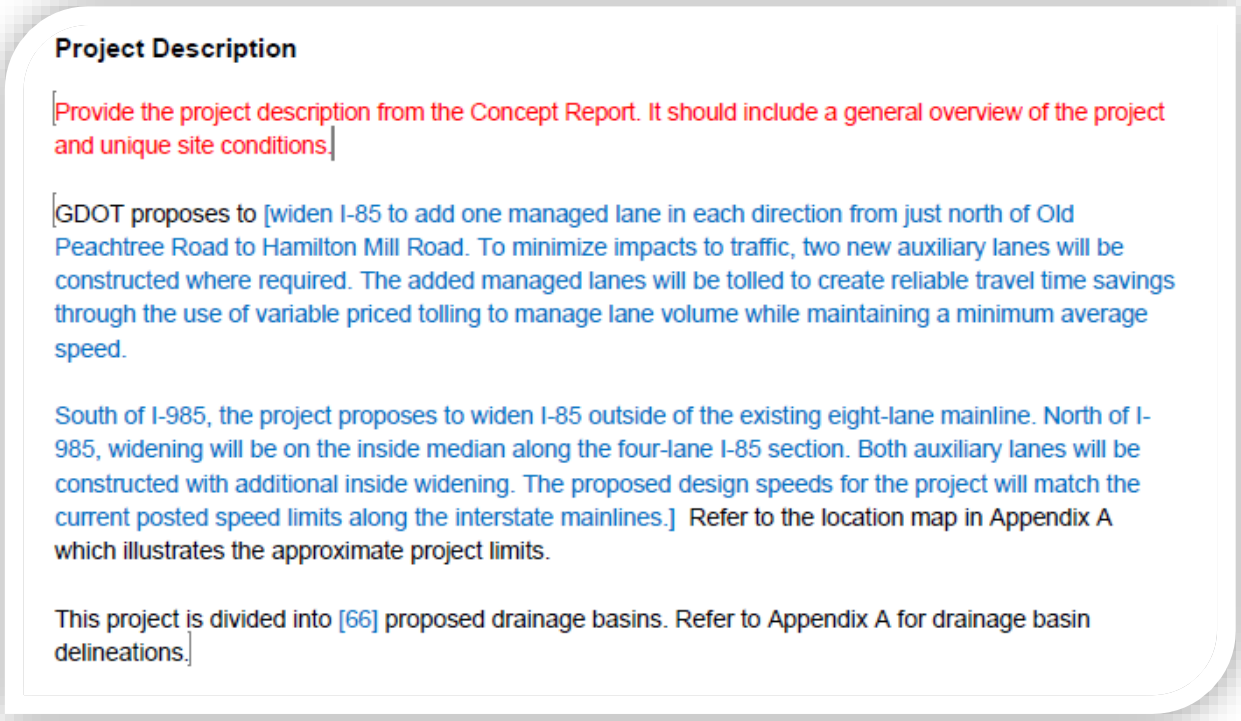

Project Description

Provide the project description from the Concept Report. It should include a general overview of the project and unique site conditions.

GDOT proposes to [widen I-85 to add one managed lane in each direction from just north of Old Peachtree Road to Hamilton Mill Road. To minimize impacts to traffic, two new auxiliary lanes will be constructed where required. The added managed lanes will be tolled to create reliable travel time savings through the use of variable priced tolling to manage lane volume while maintaining a minimum average speed.

South of I-985, the project proposes to widen I-85 outside of the existing eight-lane mainline. North of I-985, widening will be on the inside median along the four-lane I-85 section. Both auxiliary lanes will be constructed with additional inside widening. The proposed design speeds for the project will match the current posted speed limits along the interstate mainlines.] Refer to the location map in Appendix A which illustrates the approximate project limits.

This project is divided into [66] proposed drainage basins. Refer to Appendix A for drainage basin delineations.

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation

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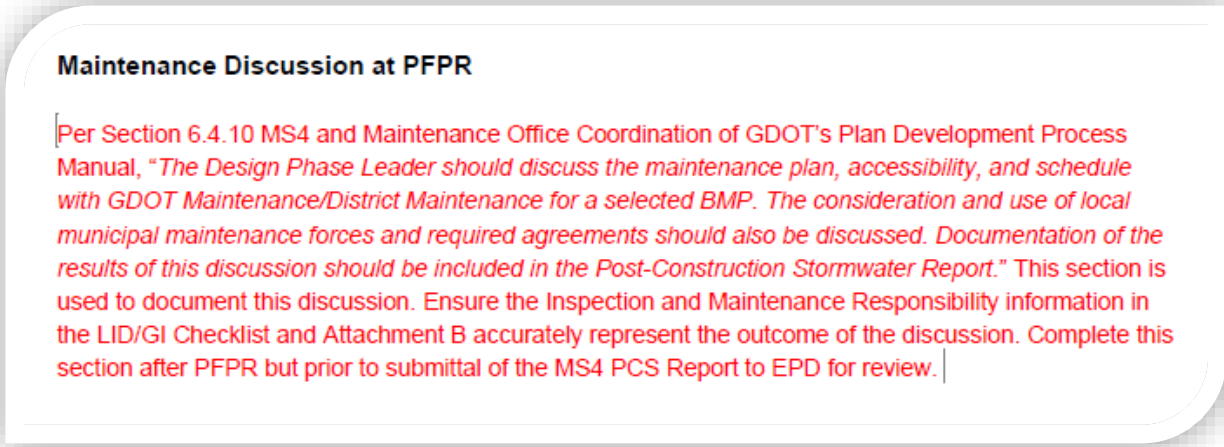

Maintenance Discussion at PFPR

Per Section 6.4.10 MS4 and Maintenance Office Coordination of GDOT's Plan Development Process Manual, "*The Design Phase Leader should discuss the maintenance plan, accessibility, and schedule with GDOT Maintenance/District Maintenance for a selected BMP. The consideration and use of local municipal maintenance forces and required agreements should also be discussed. Documentation of the results of this discussion should be included in the Post-Construction Stormwater Report.*" This section is used to document this discussion. Ensure the Inspection and Maintenance Responsibility information in the LID/GI Checklist and Attachment B accurately represent the outcome of the discussion. Complete this section after PFPR but prior to submittal of the MS4 PCS Report to EPD for review.

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation

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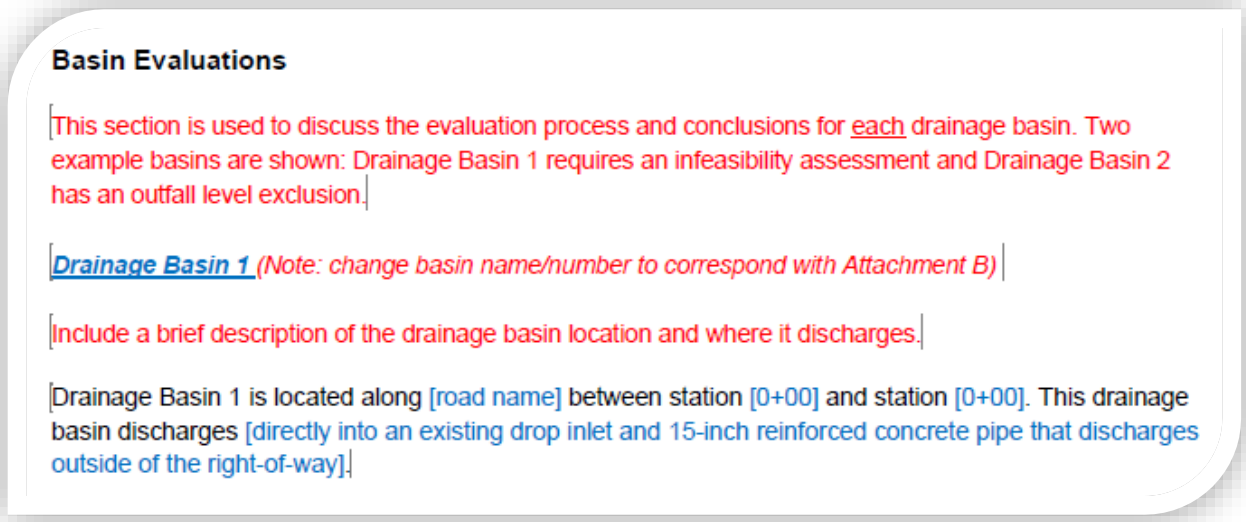

Basin Evaluations

This section is used to discuss the evaluation process and conclusions for each drainage basin. Two example basins are shown: Drainage Basin 1 requires an infeasibility assessment and Drainage Basin 2 has an outfall level exclusion.

Drainage Basin 1 *(Note: change basin name/number to correspond with Attachment B)*

Include a brief description of the drainage basin location and where it discharges.

Drainage Basin 1 is located along [road name] between station [0+00] and station [0+00]. This drainage basin discharges [directly into an existing drop inlet and 15-inch reinforced concrete pipe that discharges outside of the right-of-way].

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation

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Drainage Basin 1 (Pre)	Area (ac)	CN
Open space - Good condition (grass cover > 75%) (Soil Group B)	0.25	61
Open space - Good condition (grass cover > 75%) (Soil Group C)	0.13	74
Impervious	1.35	98
Woods - Good condition (Soil Group B)	0.42	55
Total	**2.15**	**84**

Drainage Basin 1 (Post)	Area (ac)	CN
Open space - Good condition (grass cover > 75%) (Soil Group B)	0.02	61
Impervious	1.71	98
Woods - Good condition (Soil Group B)	0.42	55
Total	**2.15**	**89**

	1-Year (cfs)	25-Year (cfs)	100-Year (cfs)
Pre-Development	4.84	14.69	17.69
Post-Development	5.99	15.93	18.89
Change (Post - Pre)	1.15	1.24	1.20
Percent Change	23.76%	8.44%	6.78%

MS4 Post-Construction Stormwater Report

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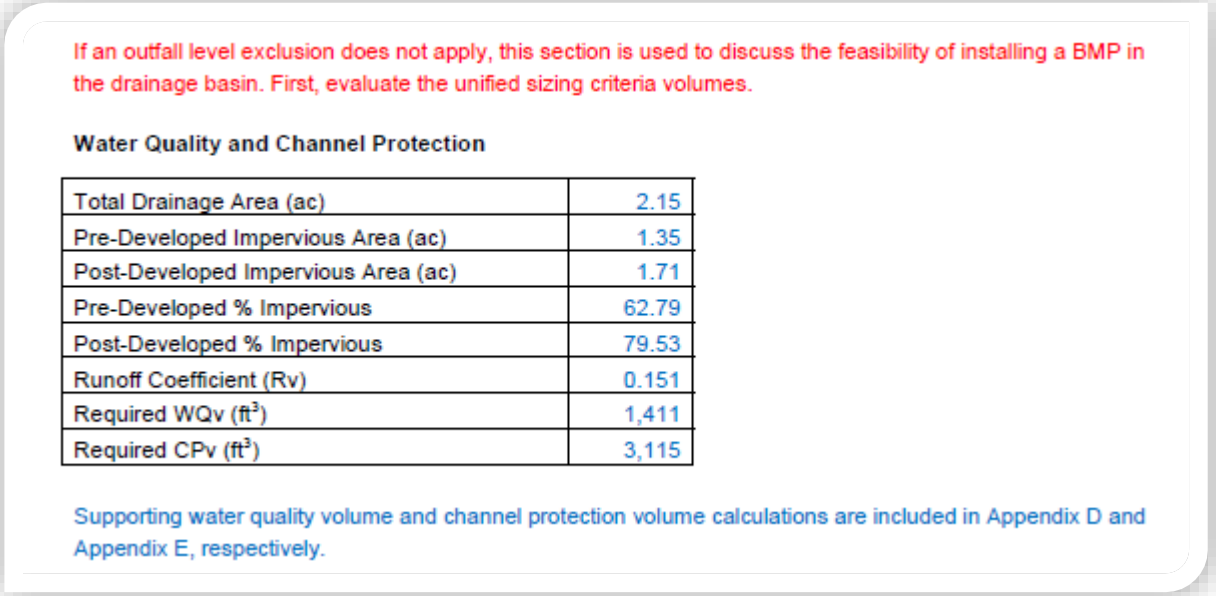

If an outfall level exclusion does not apply, this section is used to discuss the feasibility of installing a BMP in the drainage basin. First, evaluate the unified sizing criteria volumes.

Water Quality and Channel Protection

Total Drainage Area (ac)	2.15
Pre-Developed Impervious Area (ac)	1.35
Post-Developed Impervious Area (ac)	1.71
Pre-Developed % Impervious	62.79
Post-Developed % Impervious	79.53
Runoff Coefficient (Rv)	0.151
Required WQv (ft^3)	1,411
Required CPv (ft^3)	3,115

Supporting water quality volume and channel protection volume calculations are included in Appendix D and Appendix E, respectively.

MS4 Post-Construction Stormwater Report

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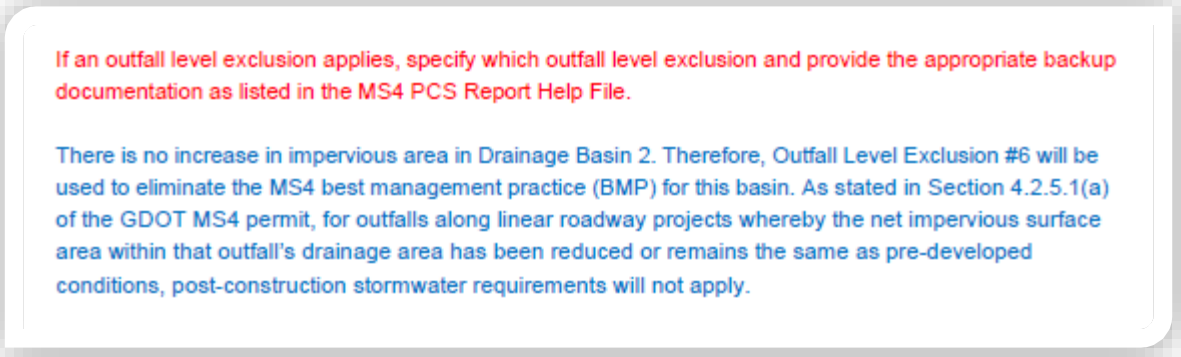

If an outfall level exclusion applies, specify which outfall level exclusion and provide the appropriate backup documentation as listed in the MS4 PCS Report Help File.

There is no increase in impervious area in Drainage Basin 2. Therefore, Outfall Level Exclusion #6 will be used to eliminate the MS4 best management practice (BMP) for this basin. As stated in Section 4.2.5.1(a) of the GDOT MS4 permit, for outfalls along linear roadway projects whereby the net impervious surface area within that outfall's drainage area has been reduced or remains the same as pre-developed conditions, post-construction stormwater requirements will not apply.

MS4 Post-Construction Stormwater Report

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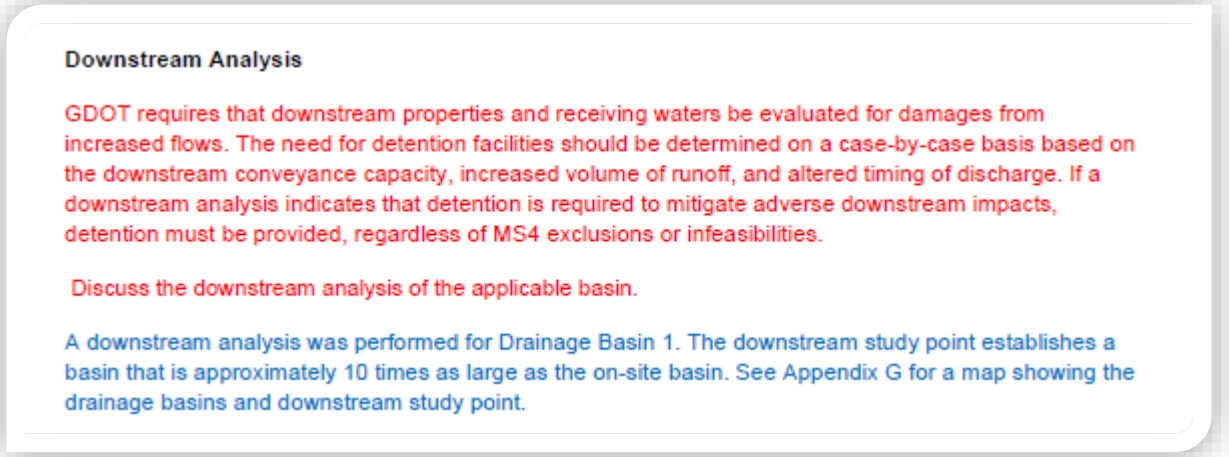


Downstream Analysis

GDOT requires that downstream properties and receiving waters be evaluated for damages from increased flows. The need for detention facilities should be determined on a case-by-case basis based on the downstream conveyance capacity, increased volume of runoff, and altered timing of discharge. If a downstream analysis indicates that detention is required to mitigate adverse downstream impacts, detention must be provided, regardless of MS4 exclusions or infeasibilities.

Discuss the downstream analysis of the applicable basin.

A downstream analysis was performed for Drainage Basin 1. The downstream study point establishes a basin that is approximately 10 times as large as the on-site basin. See Appendix G for a map showing the drainage basins and downstream study point.

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation – Downstream Analysis

Discuss methodology for completing the downstream analysis. Provide basin characteristics used to perform the analysis.

The USGS StreamStats website was used to determine the downstream analysis drainage basin along with the land use present in the basin. The following table shows the physical parameters of the downstream analysis basin, not including the on-site basin. As the on-site basin is not included, the physical parameters will be the same for pre- and post-developed conditions.

Drainage Basin 1 Downstream Analysis (Minus On-site)	Area (ac)	CN
Commercial and business (Soil Group B)	17.22	92
Woods - grass combination - Good condition (Soil Group B)	3.96	58
Total	21.18	86

The longest flow path and the average basin slope were obtained from the USGS topographic map and used to determine the time of concentration using the lag method.

Drainage Basin 1 Downstream Analysis		
L	1486.3	Flow Length (ft)
CN	86	
Y	9.8	Watershed Slope (%)
S	1.63	Maximum Retention (in)
Tc	0.19	Hours
Tc	11.4	Minutes

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation – Downstream Analysis

If there is an increase in flows from the 25-year, 24-hour and 100-year, 24-hour storms, either detention is required or the engineer of record needs to state that the receiving system has sufficient capacity to handle the increased flows without causing adverse impacts. If detention is required, model the timing of the hydrographs with and without the detention BMP. Due to peak flow timing and runoff volume effects, some structural practices fail to reduce discharge peaks to pre-development levels downstream from the development site and in certain cases may actually exacerbate flooding problems. A downstream peak flow analysis shall be provided to the point in the watershed downstream of the site or the stormwater management system where the area of the site comprises approximately 10% of the total drainage area. This is to help ensure that there are minimal downstream impacts from the developed site. The downstream analysis may result in the need to resize BMPs, or may allow the waiving of some peak flow controls altogether.

The channel routing function in Hydraflow Hydrographs was then used to model the timing of the hydrographs. See Appendix G for copies of the hydrographs.

	25-Year (cfs) with BMP	25-Year (cfs) without BMP	100-Year (cfs) with BMP	100-Year (cfs) without BMP
Pre-Development	118.78	N/A	154.58	N/A
Post-Development	121.56	N/A	157.70	N/A
Change (Post - Pre)	2.78	N/A	3.12	N/A
Percent Change	2.34%	N/A	2.02%	N/A

There is not a significant increase in flow rates at the downstream analysis study point between pre- and post-development conditions. The existing drainage system has enough capacity to handle the small increase in flow rates. Therefore, no detention is required for overbank or extreme flood protection for Drainage Basin 1.

MS4 Post-Construction Stormwater Report

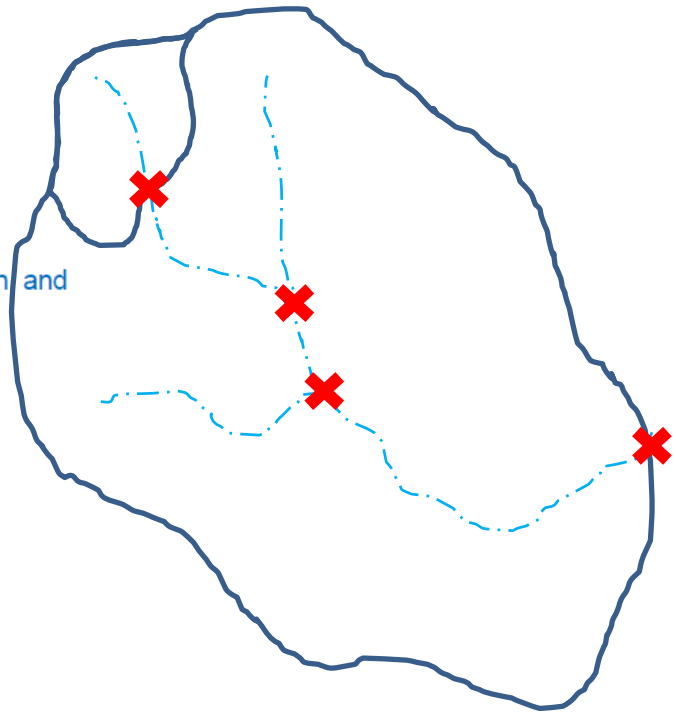
Attachment C: Post-Construction Stormwater BMP Documentation – Downstream Analysis

Downstream Analysis

GDOT requires that downstream properties and receiving waters be evaluated for damages from increased flows. The need for detention facilities should be determined on a case-by-case basis based on the downstream conveyance capacity, increased volume of runoff, and altered timing of discharge. If a downstream analysis indicates that detention is required to mitigate adverse downstream impacts, detention must be provided, regardless of MS4 exclusions or infeasibilities.

Discuss the downstream analysis of the applicable basin.

Because the post-developed flows were not increased, a downstream analysis was not performed for Drainage Basin 2. Flows, however, are included in the downstream analysis for Drainage Basin 4. The downstream study point establishes a basin that is approximately 10 times as large as the on-site basin and includes the outfall from Drainage Basins 2, 3 and 4.



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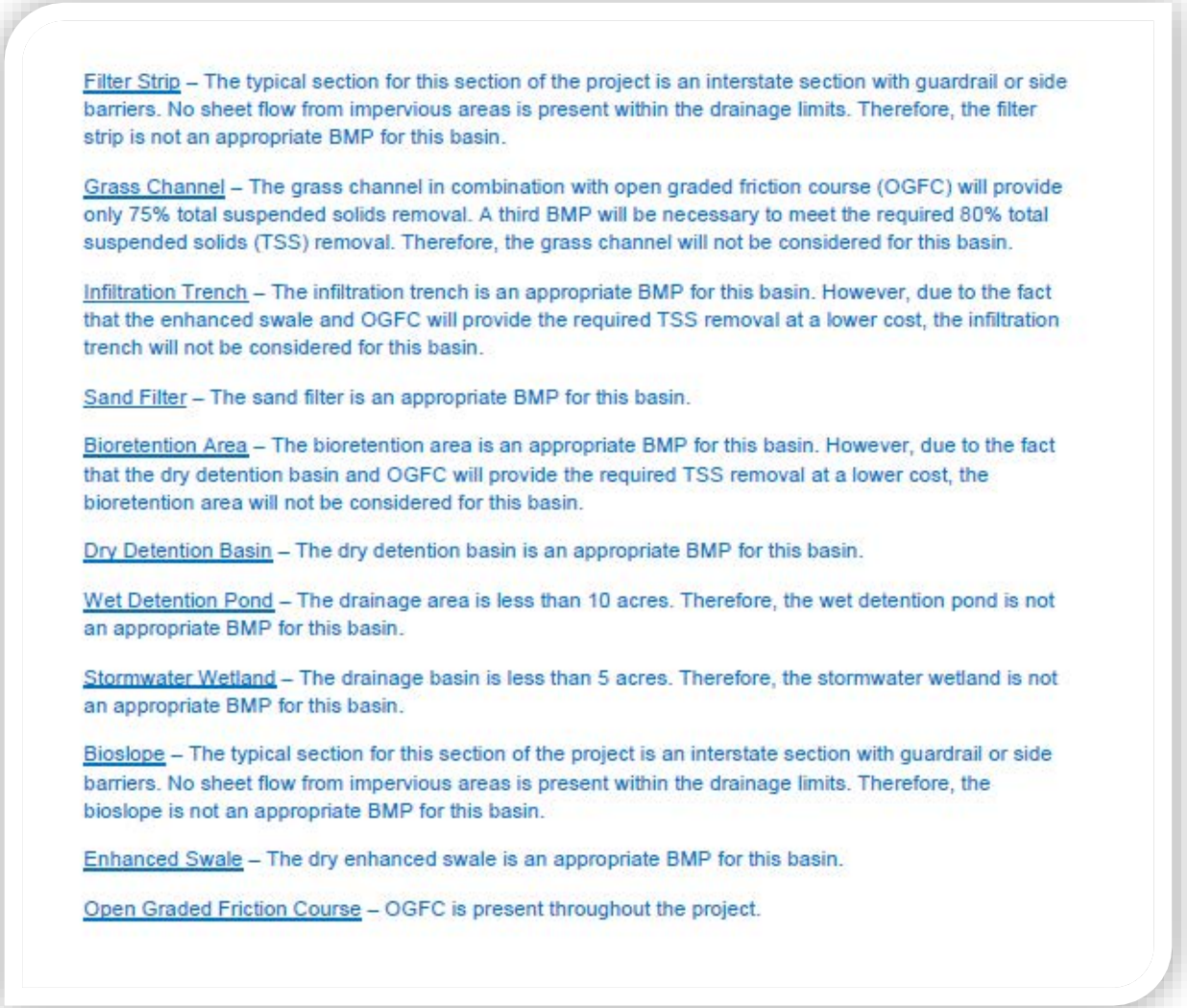

Filter Strip – The typical section for this section of the project is an interstate section with guardrail or side barriers. No sheet flow from impervious areas is present within the drainage limits. Therefore, the filter strip is not an appropriate BMP for this basin.

Grass Channel – The grass channel in combination with open graded friction course (OGFC) will provide only 75% total suspended solids removal. A third BMP will be necessary to meet the required 80% total suspended solids (TSS) removal. Therefore, the grass channel will not be considered for this basin.

Infiltration Trench – The infiltration trench is an appropriate BMP for this basin. However, due to the fact that the enhanced swale and OGFC will provide the required TSS removal at a lower cost, the infiltration trench will not be considered for this basin.

Sand Filter – The sand filter is an appropriate BMP for this basin.

Bioretention Area – The bioretention area is an appropriate BMP for this basin. However, due to the fact that the dry detention basin and OGFC will provide the required TSS removal at a lower cost, the bioretention area will not be considered for this basin.

Dry Detention Basin – The dry detention basin is an appropriate BMP for this basin.

Wet Detention Pond – The drainage area is less than 10 acres. Therefore, the wet detention pond is not an appropriate BMP for this basin.

Stormwater Wetland – The drainage basin is less than 5 acres. Therefore, the stormwater wetland is not an appropriate BMP for this basin.

Bioslope – The typical section for this section of the project is an interstate section with guardrail or side barriers. No sheet flow from impervious areas is present within the drainage limits. Therefore, the bioslope is not an appropriate BMP for this basin.

Enhanced Swale – The dry enhanced swale is an appropriate BMP for this basin.

Open Graded Friction Course – OGFC is present throughout the project.

MS4 Post-Construction Stormwater Report

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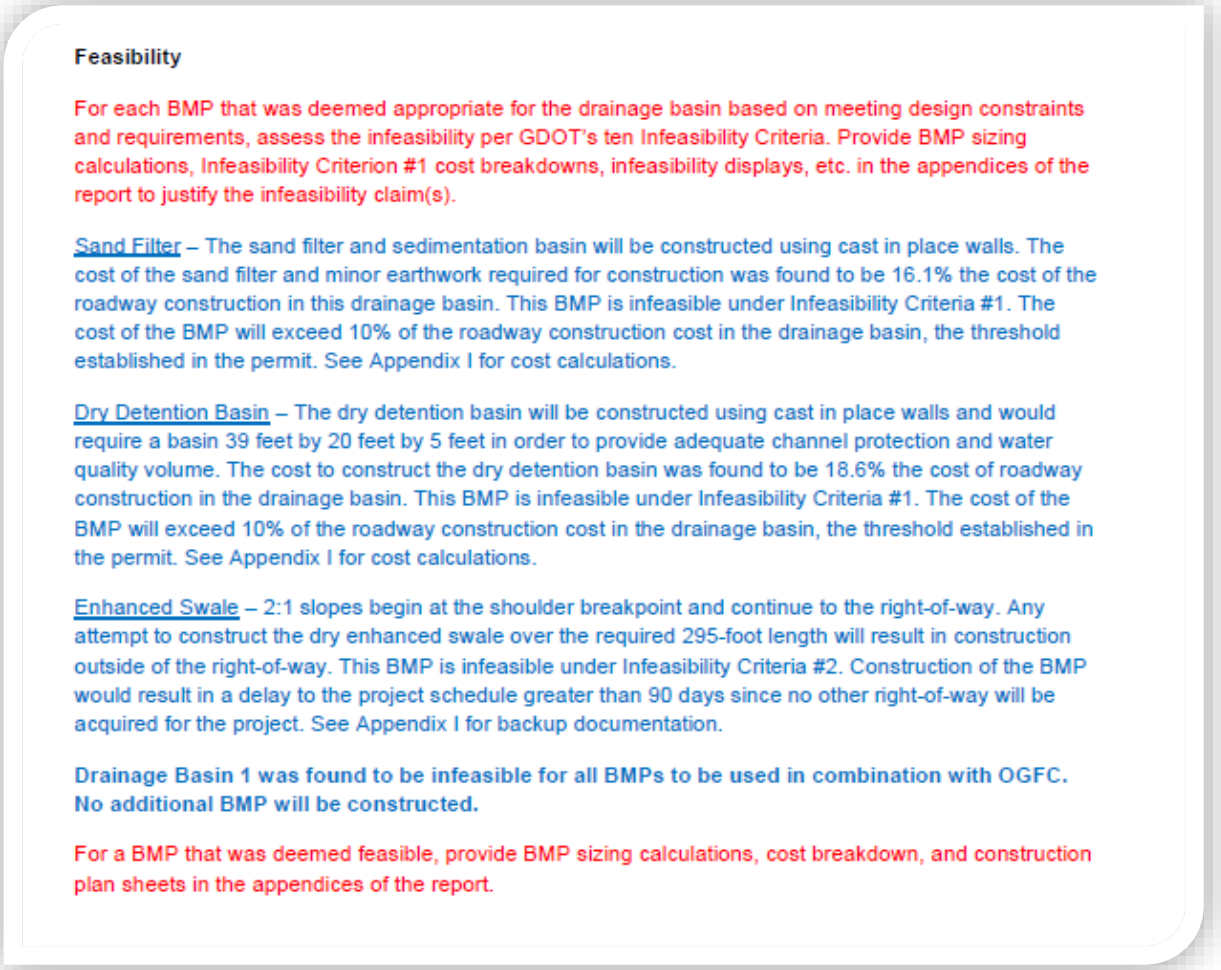


Feasibility

For each BMP that was deemed appropriate for the drainage basin based on meeting design constraints and requirements, assess the infeasibility per GDOT's ten Infeasibility Criteria. Provide BMP sizing calculations, Infeasibility Criterion #1 cost breakdowns, infeasibility displays, etc. in the appendices of the report to justify the infeasibility claim(s).

Sand Filter – The sand filter and sedimentation basin will be constructed using cast in place walls. The cost of the sand filter and minor earthwork required for construction was found to be 16.1% the cost of the roadway construction in this drainage basin. This BMP is infeasible under Infeasibility Criteria #1. The cost of the BMP will exceed 10% of the roadway construction cost in the drainage basin, the threshold established in the permit. See Appendix I for cost calculations.

Dry Detention Basin – The dry detention basin will be constructed using cast in place walls and would require a basin 39 feet by 20 feet by 5 feet in order to provide adequate channel protection and water quality volume. The cost to construct the dry detention basin was found to be 18.6% the cost of roadway construction in the drainage basin. This BMP is infeasible under Infeasibility Criteria #1. The cost of the BMP will exceed 10% of the roadway construction cost in the drainage basin, the threshold established in the permit. See Appendix I for cost calculations.

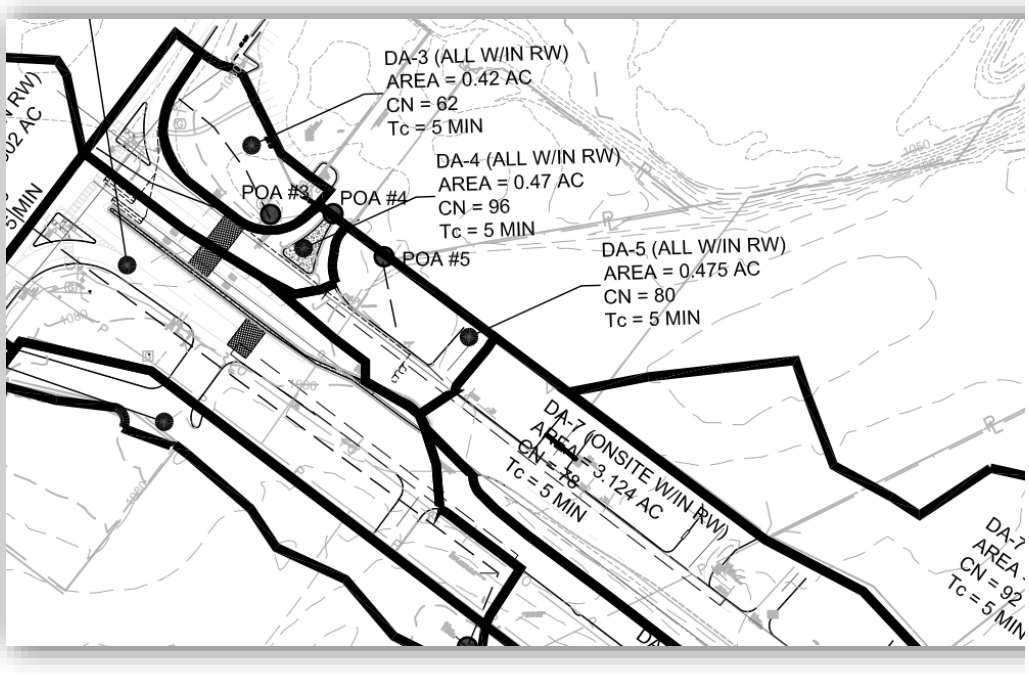
Enhanced Swale – 2:1 slopes begin at the shoulder breakpoint and continue to the right-of-way. Any attempt to construct the dry enhanced swale over the required 295-foot length will result in construction outside of the right-of-way. This BMP is infeasible under Infeasibility Criteria #2. Construction of the BMP would result in a delay to the project schedule greater than 90 days since no other right-of-way will be acquired for the project. See Appendix I for backup documentation.

Drainage Basin 1 was found to be infeasible for all BMPs to be used in combination with OGFC. No additional BMP will be constructed.

For a BMP that was deemed feasible, provide BMP sizing calculations, cost breakdown, and construction plan sheets in the appendices of the report.

MS4 Post-Construction Stormwater Report

Attachment C: Post-Construction Stormwater BMP Documentation



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Attachment C: Post-Construction Stormwater BMP Documentation

PF tabular

PDS-based point precipitation frequency estimates with 90% confiden							
Duration	Average recurrence interval (years)						
	1	2	5	10	25	50	100
5-min	0.407 (0.326-0.510)	0.468 (0.375-0.586)	0.568 (0.455-0.713)	0.652 (0.520-0.820)	0.769 (0.600-0.981)	0.860 (0.660-1.10)	0.952 (0.714-1.23)
10-min	0.596 (0.478-0.746)	0.685 (0.549-0.858)	0.832 (0.666-1.04)	0.955 (0.761-1.20)	1.13 (0.878-1.44)	1.26 (0.966-1.61)	1.39 (1.04-1.80)
15-min	0.727 (0.583-0.910)	0.836 (0.670-1.05)	1.01 (0.812-1.27)	1.17 (0.928-1.46)	1.37 (1.07-1.75)	1.54 (1.18-1.97)	1.70 (1.27-2.20)
30-min	1.03 (0.829-1.29)	1.19 (0.955-1.49)	1.45 (1.16-1.82)	1.67 (1.33-2.09)	1.96 (1.53-2.50)	2.19 (1.68-2.81)	2.43 (1.82-3.14)
60-min	1.33 (1.07-1.66)	1.53 (1.22-1.91)	1.86 (1.49-2.33)	2.14 (1.71-2.69)	2.54 (1.99-3.25)	2.86 (2.20-3.68)	3.19 (2.39-4.14)
2-hr	1.62 (1.32-2.01)	1.86 (1.51-2.30)	2.27 (1.84-2.81)	2.62 (2.11-3.25)	3.13 (2.48-3.96)	3.53 (2.75-4.49)	3.95 (3.01-5.08)
3-hr	1.81 (1.48-2.23)	2.07 (1.69-2.54)	2.52 (2.05-3.09)	2.91 (2.37-3.58)	3.49 (2.79-4.39)	3.96 (3.11-5.00)	4.45 (3.41-5.69)
6-hr	2.21 (1.83-2.68)	2.51 (2.08-3.04)	3.03 (2.50-3.68)	3.50 (2.88-4.25)	4.19 (3.39-5.22)	4.76 (3.79-5.95)	5.36 (4.17-6.79)
12-hr	2.73 (2.29-3.26)	3.09 (2.59-3.69)	3.70 (3.09-4.43)	4.24 (3.53-5.08)	5.03 (4.13-6.18)	5.68 (4.58-7.01)	6.36 (5.00-7.96)
24-hr	3.27 (2.78-3.85)	3.71 (3.15-4.38)	4.47 (3.79-5.28)	5.12 (4.32-6.05)	6.05 (5.01-7.31)	6.79 (5.53-8.26)	7.56 (6.01-9.32)

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MS4 Post-Construction Stormwater Report

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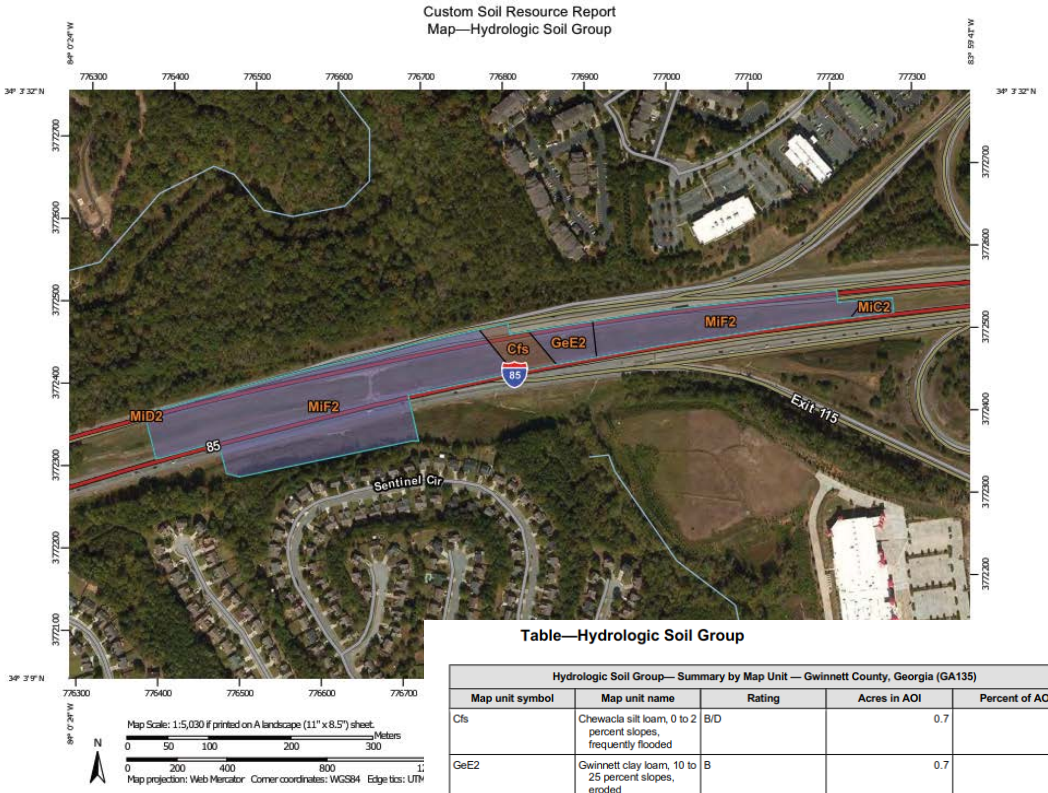

Table—Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Gwinnett County, Georgia (GA135)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Cfs	Chewacla silt loam, 0 to 2 percent slopes, frequently flooded	B/D	0.7	5.1%
GeE2	Gwinnett clay loam, 10 to 25 percent slopes, eroded	B	0.7	5.1%
MiC2	Madison sandy clay loam, 6 to 10 percent slopes, eroded	B	0.2	1.5%
MiD2	Madison sandy clay loam, 10 to 15 percent slopes, eroded	B	0.0	0.0%
MiF2	Madison sandy clay loam, 15 to 45 percent slopes, eroded	B	12.3	88.3%
Totals for Area of Interest			**14.0**	**100.0%**

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ENVIRONMENTAL RESOURCES IMPACT TABLE

	RESOURCE NAME/TYPE	LOCATION BEGIN	LOCATION END	LOCATION SIDE	PERMITTED ACTIVITY (FROM SECTION A OF THE ETC)	SPECIAL PROVISION (FROM SECTION B OF THE ETC)	Name and Date of Report or Transmittal
A-1	Wetland (WL) 1	1962+94	1990+12	LT	1.39 ac of temporary impact and 0.54 ac of permanent impact.	C-1, B-1	Addendum III to Ecology Assessment/Description of Jurisdictional Wetlands, Non-Wetland Waters of the US, and Protected Species Survey – October 2016
A-2	WL 1A1	1960+60	1961+00	RT	No Activity	-	"
A-3	Open Water (OW) 1A2	1960+30	1968+30	RT	No Activity	B-1	"
A-4	OW 1A2 Buffer	1960+25	1968+55	RT	No Activity	-	"
A-5	WL 1A3	1966+25	1968+30	RT	No Activity	-	"
A-6	WL 1A4	1969+40	1971+00	RT	No Activity	-	"
A-7	WL 1A5	1974+60	1985+78	RT	0.35 ac of temporary impact and 0.03 ac of permanent impact.	C-1	"
A-8	OW 1A6	1978+75	1983+71	LT	No Activity	B-1	"
A-9	OW 1A6 Buffer	1978+50	1984+00	LT	No Activity	-	"
A-10	WL 1C	1988+54	1987+43	RT	0.07 ac of permanent impact.	-	"
A-11	WL 2	1988+36	1996+10	RT	0.52 ac of temporary impact and 0.01 ac of permanent impact.	C-1, B-1	"
A-12	OW 2A	1989+70	1990+37	LT	0.02 ac of permanent impact.	-	"
A-13	OW 2A Buffer	1989+45	1990+62	LT	Buffer impacts from clearing for a utility line crossing.	C-1	"
A-14	WL 2B	2030+05	2040+30	RT	0.26 ac of temporary impact and 0.51 ac of permanent impact.	C-1, B-1	"
A-15	WL 4	2005+20	2019+87	LT	0.39 ac of permanent impact.	-	"
A-16	WL 5	2005+55	2017+30	RT	0.38 ac of permanent impact.	-	"
A-17	OW 6	2012+49	2013+60	LT	No Activity	B-1	"
A-18	OW 6 Buffer	2012+20	2013+93	LT	No Activity	-	"
A-19	WL 7	2020+72	2024+25	LT	No Activity	-	"
A-20	OW 8	2022+25	2031+70	LT	No Activity	B-1	"
A-21	OW 8 Buffer	2022+00	2031+95	LT	No Activity	-	"
A-22	WL 9	2024+87	2040+30	LT	No Activity	B-1	"
A-23	WL 10	2023+62	2029+25	RT	0.29 ac of temporary impact and 0.07 ac of permanent impact.	C-1	"
A-24	OW 11	2032+09	2038+80	LT	No Activity	B-1	"
A-25	OW 11 Buffer	2031+69	2039+08	LT	No Activity	-	"
A-27	Parcel 0229 008 (Haz Mat/UST Site-Facility 1)	107+00	110+50	LT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)
A-28	Parcel 0229 011 (Haz Mat/UST Site-Facility 2)	105+60	113+20	RT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)
A-29	Parcel 0229 010 (Haz Mat/UST Site-Facility 7)	103+00	105+00	RT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)
A-30	Parcel 0229 014 (Haz Mat/UST Site-Facility 8)	121+50	129+80	RT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)
A-31	Parcel 0229 004 (Haz Mat/UST Site-Facility 9)	121+00	123+50	LT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)
A-32	Parcel 0229 005 (Haz Mat/UST Site-Facility 9)	121+00	123+50	LT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)
A-33	Parcel 0229 007 (Haz Mat/UST Site-Facility 10)	111+00	113+00	LT	Any activity following Haz Mat protection measures	C-2	Phase I/ESA Report (2012)

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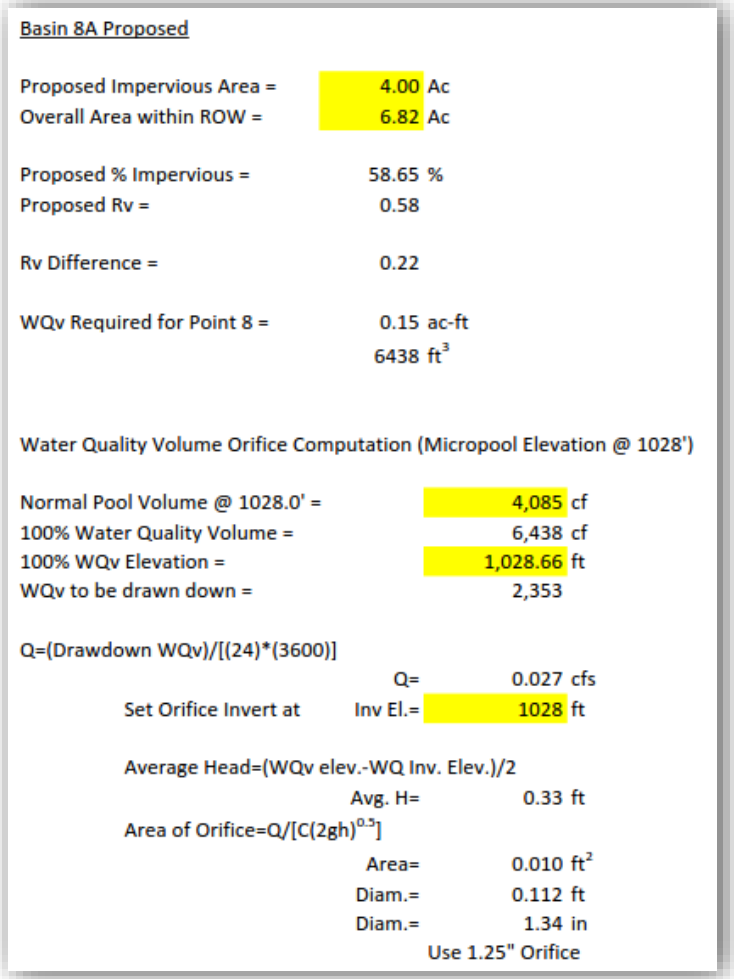

Basin 8A Proposed

Proposed Impervious Area =	4.00	Ac
Overall Area within ROW =	6.82	Ac
Proposed % Impervious =	58.65	%
Proposed Rv =	0.58	
Rv Difference =	0.22	
WQv Required for Point 8 =	0.15	ac-ft
	6438	ft^3

Water Quality Volume Orifice Computation (Micropool Elevation @ 1028')

Normal Pool Volume @ 1028.0' =	4,085	cf
100% Water Quality Volume =	6,438	cf
100% WQv Elevation =	1,028.66	ft
WQv to be drawn down =	2,353	

Q=(Drawdown WQv)/[(24)*(3600)]

	Q=	0.027 cfs
Set Orifice Invert at	Inv El.=	1028 ft

Average Head=(WQv elev.-WQ Inv. Elev.)/2

	Avg. H=	0.33 ft

Area of Orifice=Q/[C(2gh)$^{0.5}$]

	Area=	0.010 ft^2
	Diam.=	0.112 ft
	Diam.=	1.34 in
		Use 1.25" Orifice

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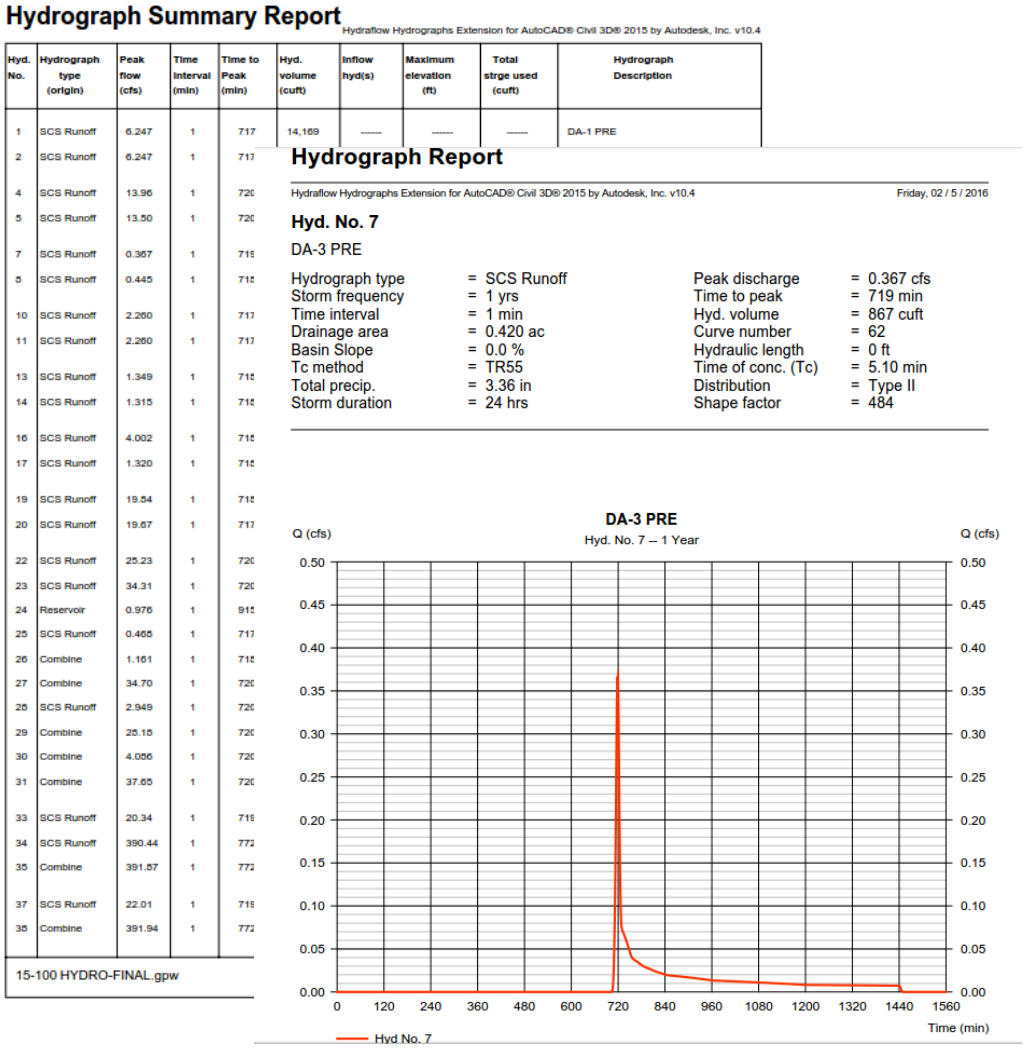

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	6.247	1	717	14,169	------	------	------	DA-1 PRE
2	SCS Runoff	6.247	1	717					
4	SCS Runoff	13.96	1	720					
5	SCS Runoff	13.50	1	720					
7	SCS Runoff	0.367	1	719					
8	SCS Runoff	0.445	1	719					
10	SCS Runoff	2.260	1	717					
11	SCS Runoff	2.260	1	717					
13	SCS Runoff	1.349	1	719					
14	SCS Runoff	1.315	1	719					
16	SCS Runoff	4.002	1	719					
17	SCS Runoff	1.320	1	719					
19	SCS Runoff	19.54	1	719					
20	SCS Runoff	19.67	1	717					
22	SCS Runoff	25.23	1	720					
23	SCS Runoff	34.31	1	720					
24	Reservoir	0.976	1	915					
25	SCS Runoff	0.468	1	717					
26	Combine	1.161	1	719					
27	Combine	34.70	1	720					
28	SCS Runoff	2.949	1	720					
29	Combine	25.15	1	720					
30	Combine	4.056	1	720					
31	Combine	37.65	1	720					
33	SCS Runoff	20.34	1	719					
34	SCS Runoff	390.44	1	772					
35	Combine	391.57	1	772					
37	SCS Runoff	22.01	1	719					
38	Combine	391.94	1	772					

15-100 HYDRO-FINAL.gpw

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Friday, 02 / 5 / 2016

Hyd. No. 7

DA-3 PRE

Hydrograph type	= SCS Runoff	Peak discharge	= 0.367 cfs
Storm frequency	= 1 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 867 cuft
Drainage area	= 0.420 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.10 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

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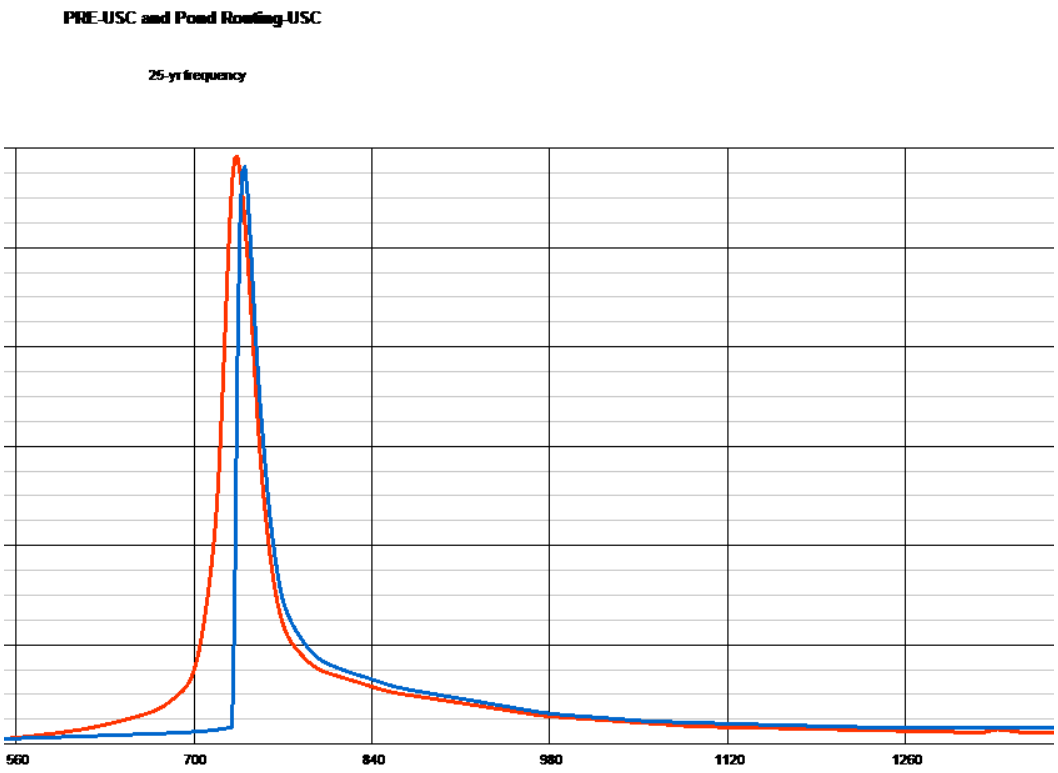

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Refer to Help Files & ADW #3 Post-Construction BMP Exclusions and Infeasibilities.

Example documentation includes:

- Roadway exhibits showing BMP causing OLE/infeasibility
- Applicable sections of Ecology Resources Survey Report, Protected Species Survey Report, Historical and Archeological Resources Survey Report, Environmental Site Assessment Report, etc.

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- In-situ testing to verify feasibility of infiltration
  - Double-Ring Infiltrometer Test
  - Single-Ring Infiltrometer Test
  - Borehole Infiltration Test
  - Percolation Test
- See Appendix J of the Drainage Manual

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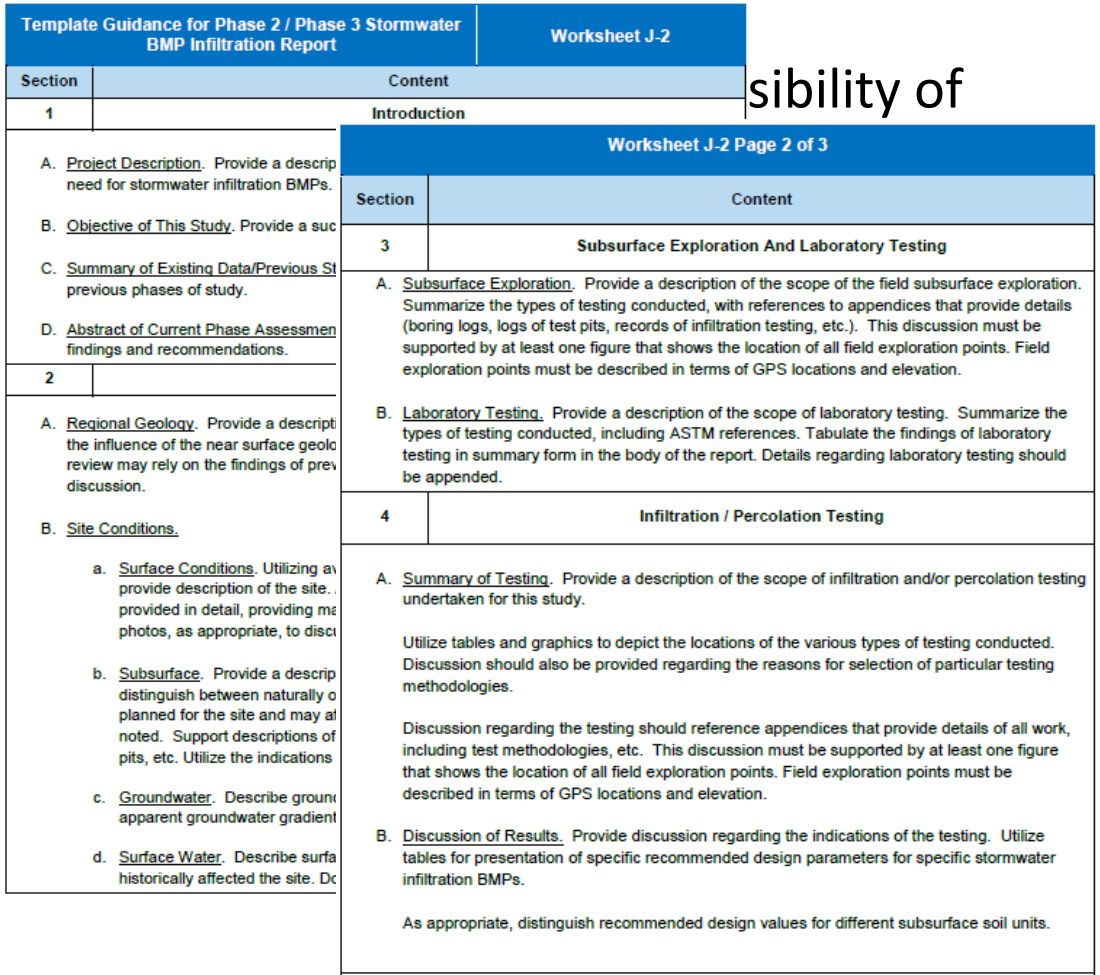

Template Guidance for Phase 2 / Phase 3 Stormwater BMP Infiltration Report	Worksheet J-2

Section	Content
1	Introduction

A. Project Description. Provide a descrip need for stormwater infiltration BMPs.

B. Objective of This Study. Provide a suc

C. Summary of Existing Data/Previous St previous phases of study.

D. Abstract of Current Phase Assessmen findings and recommendations.

2	

A. Regional Geology. Provide a descripti the influence of the near surface geolo review may rely on the findings of prev discussion.

B. Site Conditions.

a. Surface Conditions. Utilizing av provide description of the site. provided in detail, providing ma photos, as appropriate, to disc

b. Subsurface. Provide a descrip distinguish between naturally o planned for the site and may a noted. Support descriptions of pits, etc. Utilize the indications

c. Groundwater. Describe groun apparent groundwater gradient

d. Surface Water. Describe surfa historically affected the site. D

sibility of

Worksheet J-2 Page 2 of 3

Section	Content
3	Subsurface Exploration And Laboratory Testing

A. Subsurface Exploration. Provide a description of the scope of the field subsurface exploration. Summarize the types of testing conducted, with references to appendices that provide details (boring logs, logs of test pits, records of infiltration testing, etc.). This discussion must be supported by at least one figure that shows the location of all field exploration points. Field exploration points must be described in terms of GPS locations and elevation.

B. Laboratory Testing. Provide a description of the scope of laboratory testing. Summarize the types of testing conducted, including ASTM references. Tabulate the findings of laboratory testing in summary form in the body of the report. Details regarding laboratory testing should be appended.

4	Infiltration / Percolation Testing

A. Summary of Testing. Provide a description of the scope of infiltration and/or percolation testing undertaken for this study.

Utilize tables and graphics to depict the locations of the various types of testing conducted. Discussion should also be provided regarding the reasons for selection of particular testing methodologies.

Discussion regarding the testing should reference appendices that provide details of all work, including test methodologies, etc. This discussion must be supported by at least one figure that shows the location of all field exploration points. Field exploration points must be described in terms of GPS locations and elevation.

B. Discussion of Results. Provide discussion regarding the indications of the testing. Utilize tables for presentation of specific recommended design parameters for specific stormwater infiltration BMPs.

As appropriate, distinguish recommended design values for different subsurface soil units.

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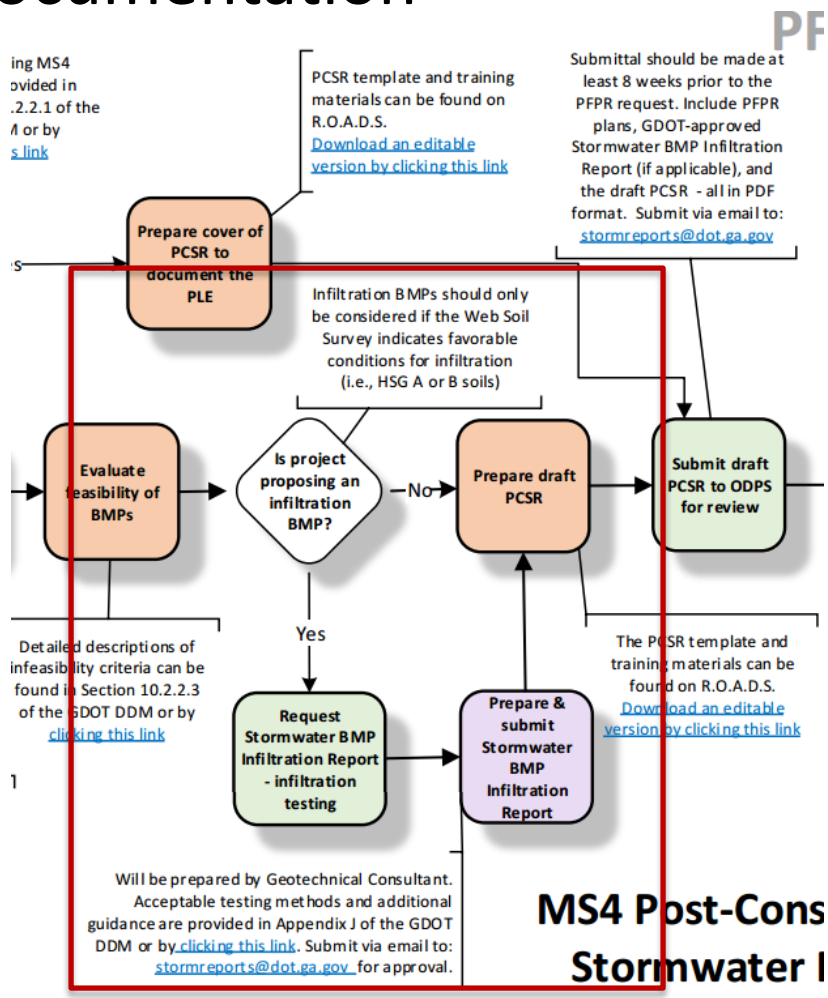

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DA1 Enhanced Dry Swale 1	
Water Quality Volume (WQ_v):	1104 cu. ft
Filter Media Depth (d_f):	2.5 ft
Coefficient of permeability of filter media (k):	1.5 ft/day
Average height above filter bed (h_f)	0.75 ft
Design filter bed drain time (t_f):	2 days
Calculated Swale Length Req'd (4 ft wide):	71 ft
Surface area of filter media (A_f):	283 sf
Swale Length Provided (4 ft wide):	71 ft
Forebay Volume:	231 cf

DA1 Enhanced Dry Swale2	
Water Quality Volume (WQ_v):	1019 cu. ft
Filter Media Depth (d_f):	2.5 ft
t of permeability of filter media (k):	1.5 ft/day
Average height above filter bed (h_f)	0.75 ft
Design filter bed drain time (t_f):	2 days
ted Swale Length Req'd (4 ft wide):	65 ft
Surface area of filter media (A_f):	261 sf
Swale Length Provided (4 ft wide):	65 ft
Forebay Volume:	185 cf

DA4 Enhanced Dry Swale	
Water Quality Volume (WQ_v):	2690 cu. ft
Filter Media Depth (d_f):	2.5 ft
Coefficient of permeability of filter media (k):	1.5 ft/day
Average height above filter bed (h_f)	0.75 ft
Design filter bed drain time (t_f):	2 days
Calculated Swale Length Req'd (7 ft wide):	99 ft
Surface area of filter media (A_f):	690 sf
Swale Length Provided (7 ft wide):	107 ft
Forebay Volume:	236 cf

Formulas:

$$A_f = \frac{WQ_v * D_f}{k(h_f + d_f)t_f}$$

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Item	Proposed Roadway Cost	Additional BMP Cost
	Subtotal	Subtotal
Right-of-way	$5,000	$0
Utilities	$5,000	$0
Grading/Misc.	$13,500	$4,500
Paving & Roadwork	$155,000	$0
Concrete/Walls/etc.	$10,000	$0
Erosion Control	$5,000	$1,000
BMP components	$0	$6,250
Signage/ Marking	$3,500	$0
Guardrail	$0	$0
TOTAL	**$197,000**	**$11,750**
As a percentage of the Total Roadway Cost		**6%**

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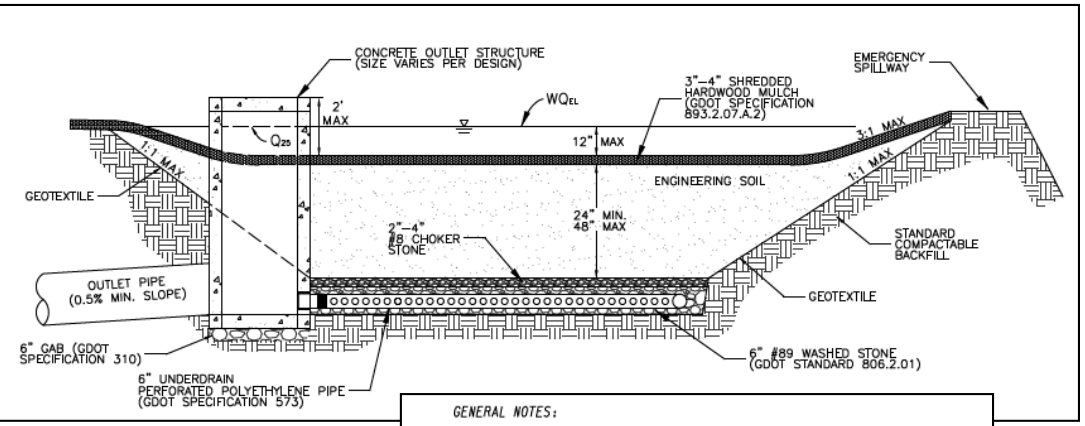

GENERAL NOTES:

1) IF POST-CONSTRUCTION BMP CANNOT BE BUILT WITHIN THE TOLERANCES ALLOWED, THE CONSTRUCTION PROJECT MANAGER SHALL NOTIFY THE OFFICE OF PROGRAM DELIVERY PROJECT MANAGER AND AREA ENGINEER. MODIFICATIONS MUST BE APPROVED BY DESIGN PRIOR TO INSTALLATION.

2) TABLE SHOWN BELOW SHALL BE FILLED OUT AND SHOWN ON THE SPECIAL GRADING PLANS.

Design Data						
X	Y	H	Event	ORIFICE / WEIR INV ELEV.	ORIFICE DIA. (IN)	WEIR LEN. (FT)
			a			
			b			
OUTLET PIPE LENGTH =			OUTLET PIPE SLOPE =			

As Built Data						
X	Y	H	Event	ORIFICE / WEIR INV ELEV.	ORIFICE DIA. (IN)	WEIR LEN. (FT)
			a			
			b			
OUTLET PIPE LENGTH =			OUTLET PIPE SLOPE =			

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Attachment D: Milestone Plan Submittal Checklist

Attachment D
Milestone Plan Submittal Checklist

Preliminary Field Plan Review (PFPR) Milestone

Yes / No

- ☐ ☐ Has the preliminary hydrology study (submitted in concept) been altered?
  - ☐ A detailed study has been provided including the design of detention and water quality structures
  - ☐ The detail design includes all of the following:
    - ☐ Percent impervious
    - ☐ Drainage area
    - ☐ Runoff (C) or (CN) values
    - ☐ Average slope of site
    - ☐ Soil conditions
    - ☐ Stage/Storage/Discharge Table
    - ☐ (For infiltration) Hydraulic Conductivity "K"
    - ☐ Grading necessary for any BMPs
    - ☐ Time of concentration

Yes / No

- ☐ ☐ The Post-Construction BMP Summary Tables have been completed.
- ☐ ☐ The Low Impact Development (LID) / Green Infrastructure (GI) Checklist been completed.
- ☐ ☐ The Post-Construction Stormwater BMP Documentation has been completed.
- ☐ ☐ (For infiltration BMPs) A Stormwater BMP Infiltration Report has been completed and approved by GDOT.

Verify all necessary information is included in the Report

MS4 Post-Construction Stormwater Report

How do I submit the PCSR?

1. Initial submittal for ODPS review should be in PDF format
2. GDOT PM needs to upload to Email to ProjectWise at least 8 weeks prior to PFPR Request
3. Notification of the upload should be emailed to stormreports@dot.ga.gov
4. Once accepted by GDOT, submit one hard copy of the report to ODPS as well as a CD containing a PDF version and supporting documentation
5. PE certification on cover is only necessary for consultant reports after the report has been accepted by GDOT

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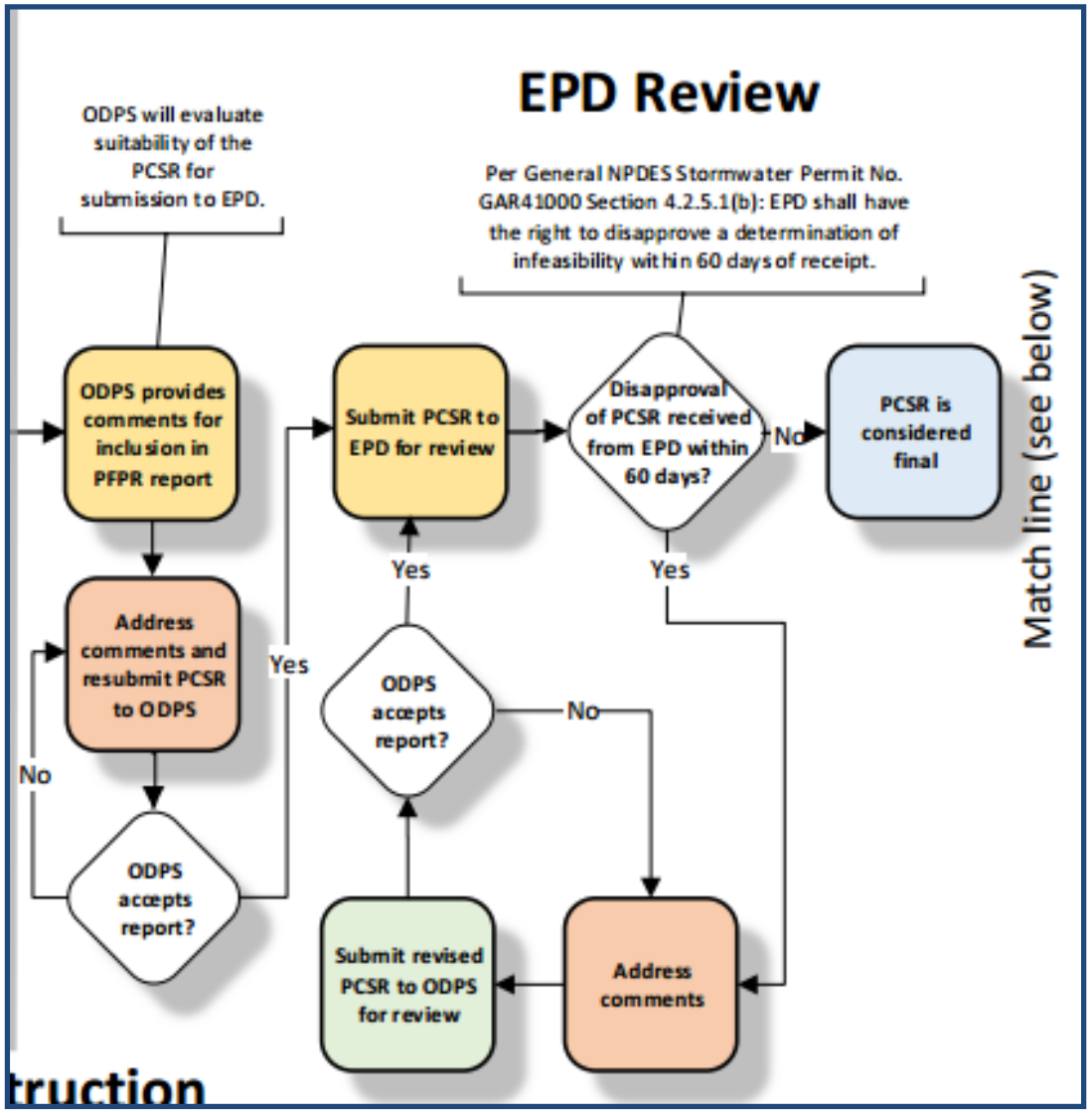


EPD has 60 days to comment on the MS4 PCSR

MS4 Post-Construction Stormwater Report

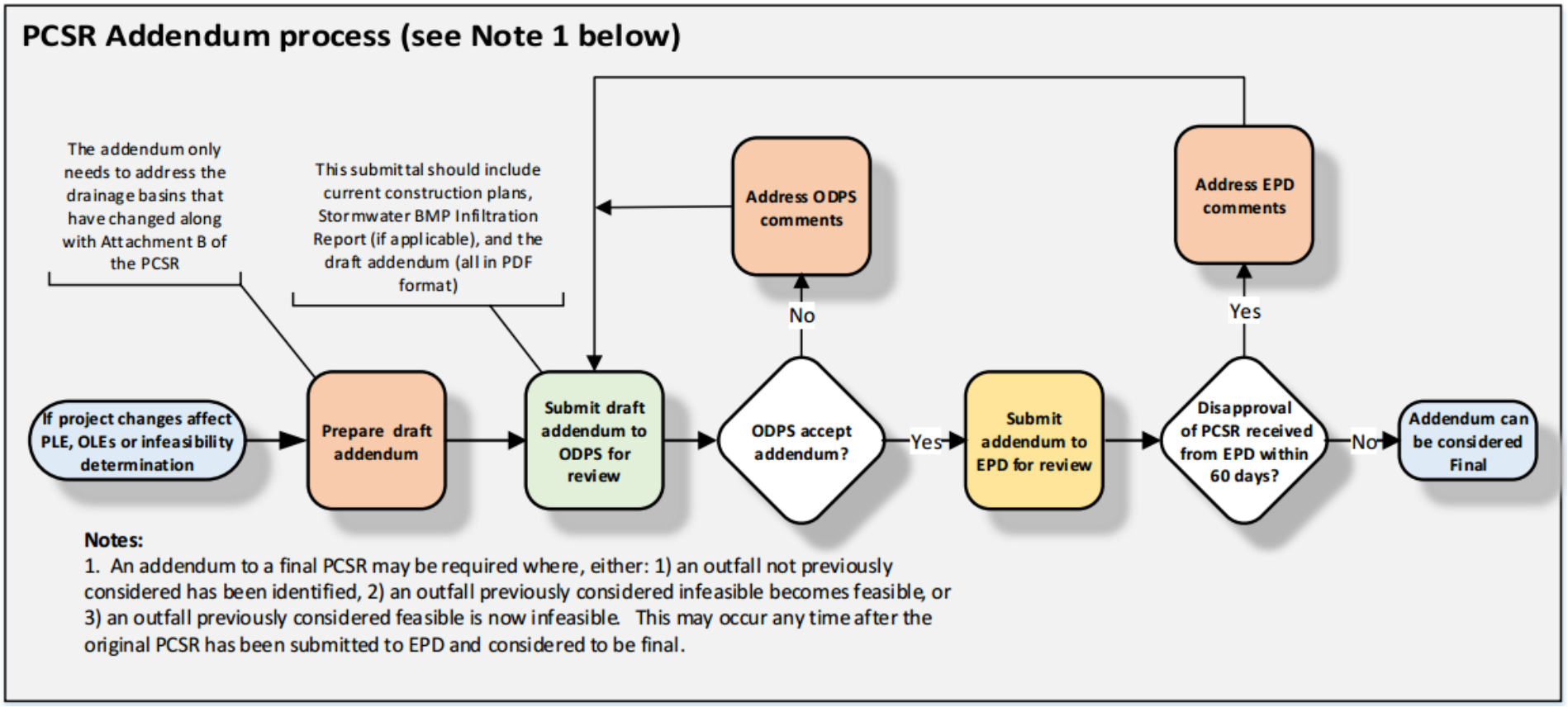
Addendum Process

An addendum may be required if there are project changes after the MS4 PCS Report has been submitted to EPD and considered final:

- An outfall not previously considered has been identified
- An outfall previously considered infeasible becomes feasible, and/or
- An outfall previously considered feasible is now infeasible

MS4 Post-Construction Stormwater Report

Addendum Process



MS4 Post-Construction Stormwater Report

Addendum Process

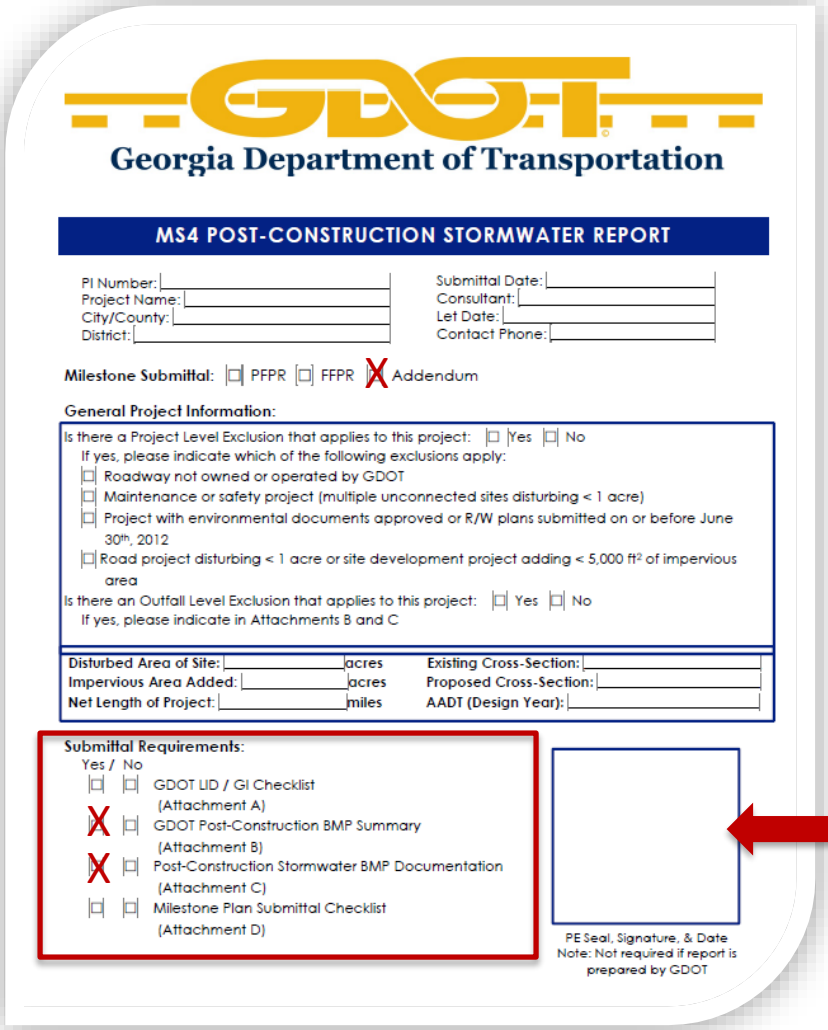
<u>If required, the addendum only needs to address the drainage basins that have changed.</u>

GDOT PM should upload the following for review to ProjectWise in PDF format and notify ODPS of the upload by email to stormreports@dot.ga.gov:

- Cover letter outlining the changes
- Revised PCSR cover
- Revised Attachment B
- Revised sections and associated documentation in Attachment C
- Current construction plans
- Stormwater BMP Infiltration Report (if applicable)

MS4 Post-Construction Stormwater Report

Addendum Process



Georgia Department of Transportation

MS4 POST-CONSTRUCTION STORMWATER REPORT

PI Number: _____ Submittal Date: _____
Project Name: _____ Consultant: _____
City/County: _____ Let Date: _____
District: _____ Contact Phone: _____

Milestone Submittal: ☐ PFPR ☐ FFPR ☒ Addendum

General Project Information:

Is there a Project Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate which of the following exclusions apply:
- ☐ Roadway not owned or operated by GDOT
- ☐ Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- ☐ Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- ☐ Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Is there an Outfall Level Exclusion that applies to this project: ☐ Yes ☐ No
If yes, please indicate in Attachments B and C

Disturbed Area of Site:	acres	Existing Cross-Section:	
Impervious Area Added:	acres	Proposed Cross-Section:	
Net Length of Project:	miles	AADT (Design Year):	

Submittal Requirements:

Yes	No	
☐	☐	GDOT LID / GI Checklist (Attachment A)
☒	☐	GDOT Post-Construction BMP Summary (Attachment B)
☒	☐	Post-Construction Stormwater BMP Documentation (Attachment C)
☐	☐	Milestone Plan Submittal Checklist (Attachment D)

PE Seal, Signature, & Date
Note: Not required if report is prepared by GDOT

When ODPS accepts the addendum, submit one hard copy of the addendum including a new PE certification (PE certification not required if prepared by GDOT designers) on the MS4 PCS Report cover to ODPS. Backup documentation can be placed on a CD.

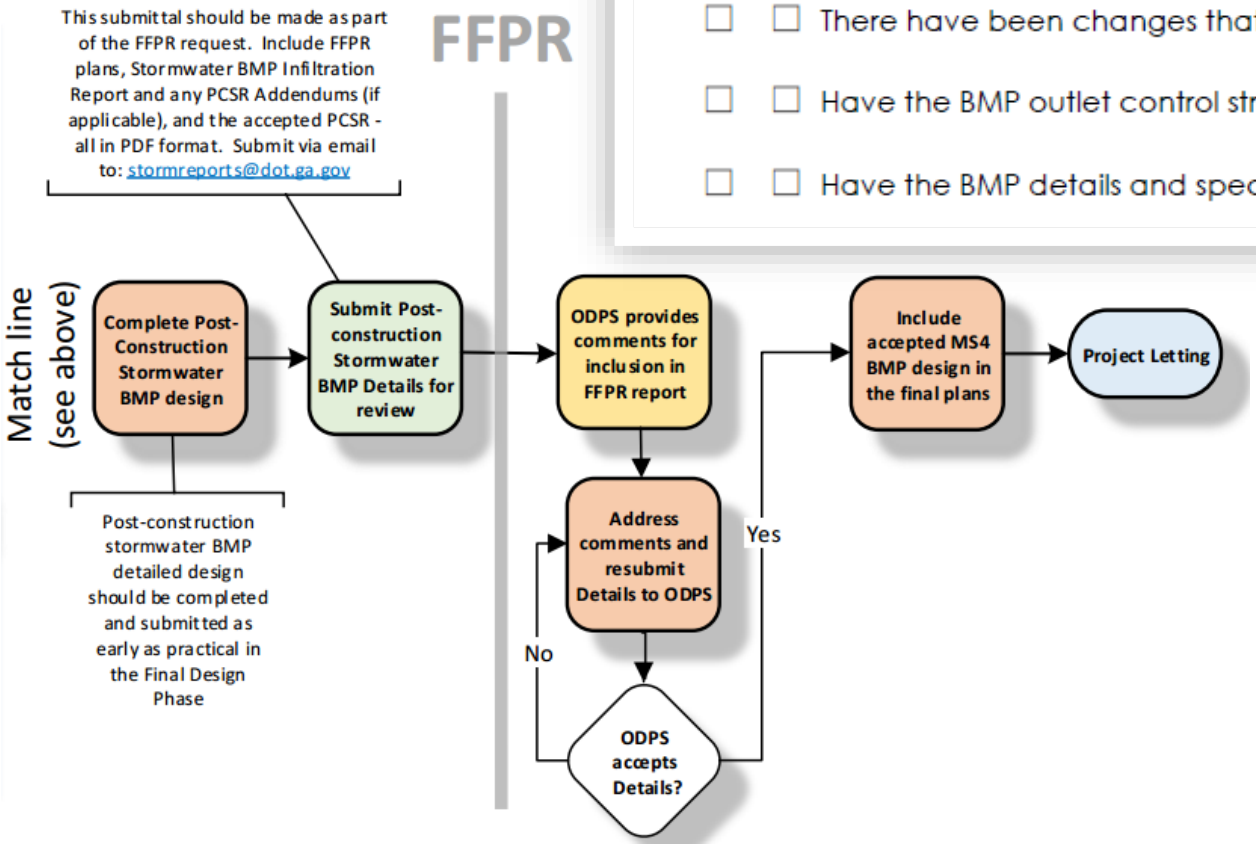
MS4 Post-Construction Stormwater Report

MS4 Plan Development Process – FFPR

Final Field Plan Review (FFPR), Final Plans, and Use-on-Construction Milestone

Yes / No

- ☐ ☐ Has the detailed hydrology study (submitted in PFPR) been altered?
- ☐ ☐ There have been changes that warrant a revision to the previous study.
- ☐ ☐ Have the BMP outlet control structures been designed?
- ☐ ☐ Have the BMP details and specifications been submitted?



MS4 Post-Construction Stormwater Report

Important things to remember when preparing your MS4 PCS Report:

- This is a stand-alone document – ensure plans, documentation, etc. are included in submittal to facilitate GDOT review
- Include discussion of stormwater design process for all basins in Attachment C, not just those deemed infeasible
- A complete submittal with thorough backup data and clear explanation will streamline the MS4 PCS Report approval process

Questions

Brad McManus, PE

MS4 Program Manager

Office of Design Policy and Support

bmcmanus@dot.ga.gov