



TECHNICAL MEMORANDUM # 16 AS-BUILT SUBMISSIONS

TO: Applicants and Designers for State and Federal Projects

FROM: Sediment and Stormwater Plan Review Division
Water and Science Administration

DATE: April 2, 2021 (Updated May 7, 2021)

SUBJECT: As-Built Submissions and Tolerances

AS-BUILT SUBMISSION REQUIREMENTS

The *Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects* require that when the construction of a best management practice (BMP) for stormwater management is complete, as-built plans certified by a professional engineer, professional land surveyor, or landscape architect licensed in the State of Maryland be submitted to MDE for review and acceptance to ensure that constructed stormwater management practices and conveyance systems comply with the approved plans. This technical memo contains three different checklists for as-built submissions. The applicable checklist is dependent on the type(s) of BMP being certified. The checklists include:

- As-Built Review Checklist for Non-378 BMPs
- As-Built Checklist for Code 378 Small Ponds
- Moderated As-Built Checklist for Code 378 Heritage Ponds

These checklists itemize the submission requirements for as-built review and acceptance for different types of BMPs including Environmental Site Design (ESD) practices, small structural practices, innovative practices, and larger structures (paradoxically called “small ponds”) falling under Maryland Pond Code 378.

The Plan Review Division has broken down the inventory of BMPs into the following groups:

1. **BMPs with as-builts that have already been accepted by MDE.** No further action is required to document construction completion.
2. **BMPs constructed under projects identified by a 2011 “SF” number or more recent (i.e., 11-SF-xxxx, 12-SF-xxxx, 13-SF-xxxx, etc.).** As-built plans for these BMPs need to be submitted to the Plan Review Division for review and acceptance following the As-Built Checklist for Non-378 BMPs or As-Built Checklist for Code 378 Small Ponds, as applicable.

3. **BMPs constructed under projects identified by a 2010 “SF” number or earlier (i.e., 10-SF-xxxx, 09-SF-xxxx, 08-SF-xxxx, etc.)** These older BMPs fall into two groups:
 - a. **Code 378 Heritage Ponds.** To ensure the safe operation of larger stormwater management BMPs, State and federal agencies are required to submit as-builts to the Plan Review Division for all structures falling under MD Pond Code 378, regardless of construction year. However, recognizing the challenges and deficiencies with historical BMP records, the Plan Review Division has developed a moderated checklist for these older 378 ponds.
 - b. **Non-378 BMPs.** As-built plans for these non-378 BMPs are not to be submitted to the Plan Review Division for review and acceptance. Instead, BMP verification and construction completion records should be retained onsite. For applicants subject to a Municipal Separate Storm Sewer System (MS4) permit, a summary of progress toward this effort should be provided in the annual progress report. Please note, however, that when reconciling Water Quality Bank balances, the Plan Review Division will request a copy of the BMP verification data for BMPs that credited the Bank.

AS-BUILT TOLERANCES

The Plan Review Division recognizes that as-built deviations from the grading and elevations shown on the approved stormwater management plans are an expected reality of construction. However, the deviations from the approved site plans must be kept to a minimum to ensure that the BMPs and site stormwater management plan function as designed and approved. Significant construction deviation from the approved plans can result in increased flooding, erosion issues, increased discharge of pollutants, damaged conveyance structures, and breached earth embankments. To ensure that the constructed stormwater BMP will function as designed, the following minimum construction tolerances should be met:

1. All earth work elevations should be within 3 inches (0.25 feet) of the elevations shown on the approved stormwater management and grading plans.
2. The elevations of all drainage structures, including but not limited to low flow orifices, weirs, emergency spillways, storm drain pipes, risers, and/or associated differentials should be within 3 inches (0.25 feet) of the approved stormwater management plans.
3. The dimensions of all the control structure openings should match what is shown on the approved plans.
4. All rip rap outlet protection lengths and widths should be within 6 inches (0.5 feet) of or larger than the dimensions on the approved stormwater management and grading plans.
5. The provided as-built freeboard should be equal to or greater than what is provided in the approved stormwater management plan and for Code 378 small ponds must be equal to or greater Code 378 minimum requirements for freeboard (i.e. 2 feet without emergency spillway and 1 foot with emergency spillway).
6. All applicable as-built storage volumes for ESD_v , WQ_v , CP_v , Qp_2 , Qp_{10} , and Q_f should be at least 90% of that required in the approved stormwater management design computations.

If any of the above allowable tolerances are exceeded, the as-built certifying engineer should submit written justification demonstrating that the stormwater management requirements for the originally approved plan are met by the as-built stormwater management facilities. This justification requires investigation of the as-built and approved storage volumes, discharge rates, detention times, water surface elevations, freeboard, and/or other criteria as required by MDE. At a minimum, the investigation will typically require recreating the originally approved stormwater management calculations using the as-built features to determine the deviation from the approved discharges from the site. Failure to demonstrate that the as-built stormwater management facilities satisfy the stormwater management requirements of the original plan will require that field corrections be made to the stormwater management facility(ies). In situations where a debit or credit to the Water Quality Bank is affected by a deviation in the constructed BMP(s), a revised water quality summary sheet shall be provided, and the banking transaction will be revised.

Questions about this information or other items relating to sediment and stormwater plans can be directed to the Chief of the Sediment and Stormwater Plan Review Division.



MDE SEDIMENT AND STORMWATER PLAN REVIEW DIVISION

AS-BUILT REVIEW CHECKLIST
(378 ponds use a different checklist)

MDE Number _____

Project Name _____

Applicant _____

As-Built Engineer's Name _____ Date: _____

MDE Reviewer's Name _____ Date: _____

(to be completed by MDE)

PLEASE NOTE THAT AS-BUILTS SUBMITTED WITHOUT A COMPLETED CHECKLIST MAY BE RETURNED WITHOUT REVIEW. One or more non 378 BMPs may use the same checklist.

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					SUBMISSION DOCUMENTS
					Completed transmittal form
					Reponses to comment letter (for re-submittals only)
					Narrative
					Computations as necessary to support constructed deviations
					Revised Water Quality Summary Sheet as necessary to support constructed deviations
					As-built certification
					As-built drawings comparing the approved stormwater management BMP(s) with what was constructed
					Construction inspection checklists and/or construction inspection report
					Photographs
					<i>Note that MDE may request a set of original plans if reviewer cannot locate a copy.</i>
					<i>Please do not send material tickets.</i>
					AS-BUILT PLANS
					<i>Note that as-built information does not have to be shown on MDE stamped approved plans, but as-built plans must reflect latest MDE approved plan including all modifications.</i>
					As-built drafting indicated in red, green, or blue
					Drawings labeled as "as-builts" with date
					Drawings showing as-built contours and elevations of entire BMP(s), embankment(s), and immediately adjacent area(s) from site survey of constructed conditions

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					As-built dimensions. BMP plan view, details, cross sections, and profiles with as-built dimensions. A check mark made next to a design dimension that is the same as the constructed dimension. If constructed dimension is different from design dimension, approved dimension stricken through and constructed dimension indicated in a different color next to design dimension
					As-built elevations. BMP plan view, details, cross sections, and profiles with as-built elevations. Constructed elevations indicated in a different color next to design elevation. Elevations provided to the nearest 0.1 ft
					As-built locations/dimensions/elevations for all appurtenances to BMP(s) including, but not limited to, risers, weirs, orifices, spillways, riprap inflow, riprap outlet protection
					As-built locations/dimensions/elevations for flow conveyance systems including pipe sizes, flow direction, manholes, inlets, headwalls, endwalls, end sections, etc.
					Length, width, and depth of storage so that design volume can be verified
					Check marks for affirmation of materials (e.g. pipe type, stone media, bio-soil mix hardware cloth, geotextile, etc.)
					A completed As-Built Schedule (table) from approved plans (when an as-built schedule is printed on plans) with constructed values indicated in as-built column
					A completed and signed MDE Plan Review As-Built Certification by a Professional Engineer or Landscape Architect registered in MD along with seal and professional certification
					SUPPORTING DOCUMENTATION
					Narrative briefly stating purpose of submittal, contents, description of BMP(s), and explanation of any notable deviations from the approved plans that may have affected level of stormwater management
					Revised design computations when as-built dimensions or elevations indicate a significant, unfavorable deviation from the approved design
					Revised Water Quality Summary Sheet if originally approved water quality credit is affected by constructed BMP(s) deviating from design
					Construction inspection checklists for BMP(s) completed by inspector (only for BMPs with construction inspection checklists printed on plans) or construction inspection report
					Field notes and survey logs from 3 rd party inspector or certifying engineer (if helpful)
					Photographs of critical steps during construction, clearly labeled
					Photographs of final construction showing the site and the BMPs, clearly labeled and stabilized with established vegetation as specified on approved landscaping plan

AS-BUILT CERTIFICATION

I hereby certify that the below referenced stormwater management facility shown on the plans has been constructed in accordance with the plans approved by the Maryland Department of the Environment, except as noted in red on the "AS-BUILT" drawings. "Certify" means to state or declare a professional opinion based on sufficient and appropriate onsite inspections, surveys, and material tests conducted during construction.

Name

Signature

Maryland Registration Number (PE or LS)

Date

MDE No.

ID number for BMP/378 pond being certified



SMALL POND CODE 378 AS-BUILT CHECKLIST

(This checklist is for all “small ponds”, including bioretention, infiltration, sand filters, wetlands, submerged gravel wetlands, etc., that fall under MD Pond Code 378.)

MDE Number _____

Project Name _____

Pond Name/BMP No. _____

Applicant _____

As-Built Engineer’s Name _____ Date: _____

MDE Reviewer’s Name _____ Date: _____
 (to be completed by MDE)

PLEASE NOTE THAT AN AS-BUILT SUBMITTED WITHOUT A COMPLETED CHECKLIST MAY BE RETURNED WITHOUT REVIEW. Each pond needs its own checklist.

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					SUBMISSION DOCUMENTS FOR COMPLETENESS
					Completed transmittal form
					Reponses to comment letter (for re-submittals only)
					Narrative
					Drainage area map to pond (if design records are not available or there are constructed deviations)
					Computations as necessary to support constructed deviations
					Revised Water Quality Summary Sheet as necessary to support constructed deviations
					Signed As-Built Certification
					As-built drawings comparing the approved stormwater management pond with what was constructed
					Completed Construction Inspection Certification Checklist (see attached) and/or construction inspection report
					Geotechnical testing results and certification
					Photographs
					MD Dam Inspection Checklist (if pond was constructed more than three years prior to as-built submission)
					Dam breach analysis (if a DBA/DB screening is not on file or pond was approved more than ten years prior to as-built submission)
					Completed Pond Summary Sheet (a.k.a. MD 14 form)
					<i>Note that MDE may request a set of original plans if reviewer cannot locate a copy.</i>

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					AS-BUILT PLANS
					<i>Note that as-built information does not have to be shown on MDE stamped approved plans, but as-built plans must reflect latest MDE approved plan including all modifications.</i>
					CERTIFICATION
					A completed and signed MDE Plan Review As-Built Certification by a licensed Professional Engineer registered in MD, sealed with professional certification
					GENERAL
					As-built survey extending at least 100 feet downstream of the embankment fill or to the end of outfall
					As-built drafting indicated in red, green, or blue
					Drawings labeled as “as-builts” with date
					As-built dimensions. Pond plan view, details, cross sections, and profiles with as-built dimensions. A check mark made next to a design dimension that is the same as the constructed dimension. If constructed dimension is different from design dimension, approved dimension stricken through and constructed dimension indicated in a different color next to design dimension
					As-built elevations. Pond plan view, details, cross sections, and profiles with as-built elevations. Constructed elevations indicated in a different color next to design elevation. Elevations provided to the nearest 0.1 ft
					Check marks for affirmation of materials (e.g. pipe type, stone media, bio-soil mix, hardware cloth, geotextile, etc.)
					As-built locations/dimensions/elevations for all appurtenances to pond including, but not limited to, risers, weirs, orifices, spillways, riprap inflow, riprap outlet protection
					As-built locations/dimensions/elevations for flow conveyance systems including pipe sizes, flow direction, manholes, inlets, headwalls, endwalls, end sections, etc.
					A completed As-Built Schedule (table) from approved plans (when an as-built schedule is printed on plans) with constructed values indicated in as-built column
					PLAN VIEW
					Drawings showing as-built contours and elevations of entire pond, embankment, and immediately adjacent area from site survey of constructed conditions
					Length, width, and depth of storage so that design volume can be verified
					PROFILE ALONG CENTER LINE OF EMBANKMENT
					Top elevation of embankment
					Top elevation of the impervious core embankment
					Bottom elevation of the cut-off trench
					Principle spillway location, station, and elevation

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					Emergency Spillway (normal to flow)
					Location and elevation of emergency spillway
					Width of level weir crest of emergency spillway
					Side slopes of emergency spillway
					EMERGENCY SPILLWAY PROFILE (parallel to flow)
					Elevation
					Length of level section (minimum 25 feet)
					Slope of spillway
					Slope protection type, material size, filter cloth
					EMBANKMENT SECTION/ PROFILE ALONG PRINCIPAL SPILLWAY
					Top elevation and width of embankment
					Embankment side slopes (equal to or flatter than approved design)
					Bottom elevation, width, and slopes of cut-off trench
					Top elevation, width, and slopes of impervious core
					Riser material, size, type, and weir opening elevation(s)
					Size and type of anti-vortex device and trash rack
					Low flow stage orifice(s) size, materials, and invert elevation
					Low flow stage trash rack size, material, and dimensions
					Low flow device drain pipe size, type, length, invert elevation
					Pond drain pipe size, length, invert elevation, valve type
					Principle spillway - barrel size, pipe type, corrugation size, gauge, concrete pipe class (ASTM C-361), inlet and outlet invert elevations, length, slope
					Concrete cradle dimensions
					Phreatic line (drawn from the as-built 10-year water surface elevation)
					Filter diaphragm and drains or anti-seep collars, number, size, spacing, and material
					Outfall protection type, material size, dimensions, filter fabric
					As-built water surface elevations for the WQv, Cpv, and 2-yr or 10-yr, 100-yr storm events, and 100-year for ultimate development
					Freeboard from WSEL for 100-year for ultimate development to top of embankment (min 1 ft with ES and min 2 ft without ES)
					SUPPORTING DOCUMENTATION
					Narrative briefly stating purpose of submittal, contents, description of pond, and explanation of any notable deviations from the approved plans that may have affected level of stormwater management
					Revised design computations when as-built dimensions or elevations indicate a significant, unfavorable deviation from the approved design
					Revised Water Quality Summary Sheet if originally approved water quality credit is affected by constructed pond deviating from design

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					CONSTRUCTION INSPECTION REPORT
					Completed Construction Inspection Certification Checklist (attached)
					Field notes and survey logs from 3 rd party inspector or certifying engineer (if helpful)
					GEOTECHNICAL REPORT
					Geotechnical Certification signed and sealed by a licensed <u>geotechnical</u> Professional Engineer registered in MD
					Gradation and/or unified soil classification of cutoff trench material
					Gradation and/or unified soil classification of impervious core
					Gradation and/or unified soil classif. of embankment shell material
					Compaction density and moisture content
					Lift thickness
					Structural backfill
					Gradation of filter diaphragm material
					Confirmation that embankment material is non-dolomitic
					PHOTOGRAPHS
					Photographs of critical steps during construction, clearly labeled
					• completion of excavation to sub-foundation and trenching
					• installation of cutoff trench
					• installation of filter diaphragm and drain pipe
					• placement of structural fill and concrete cradle
					• installation of spillway pipe and anti-seep collars
					• installation of riser
					• installation of other piping including blanket or toe drains
					• backfill of foundations and trenches
					• construction of impervious core
					• completion of final grading
					Clearly labeled photographs of final construction/current conditions showing the site and the pond stabilized with at least 95% vegetative coverage and as specified on approved landscaping plan
					VEGETATION
					Photos indicating no trees, shrubs, or woody vegetation within 25 ft. of riser structure, on fill embankment, or within 15 ft. of fill embankment

BMP ID:				
PROJECT NAME:			MDE#	
CONSTRUCTION INSPECTION CERTIFICATION CHECKLIST FOR CODE 378 EMBANKMENTS				
ACTIVITY	TEST RESULTS	✓ = yes X = no N/A = not applicable	INSPECTION DATE	CERTIFYING INSPECTOR'S INITIALS
1 SITE PREPARATION				
Pre-construction meeting conducted with inspector, contractor, and certifying engineer.				
Sediment controls and/or flow diversions in place				
Protection areas flagged				
Grading accurately staked out				
Objectionable material removed from immediate area				
2 CUT-OFF TRENCH EXCAVATION				
Located at centerline of embankment				
Cut-off trench extended down to impervious soil				
Length, depth, width, side slopes correct				
Subgrade dry and stable				
Area beneath embankment stripped of all vegetation, topsoil, and organic matter				
3 CUT-OFF TRENCH BACKFILL				
Material free of large stones, roots, etc.				
Layers placed in 8 inch lifts continuous for entire trench length				
Compaction and moisture content tested every 50 feet				
Cut-off trench Unified Soil Classification:				
4 PRINCIPAL SPILLWAY CONSTRUCTION AND BACKFILLING				
Pipe spillway:				
Pipe placed prior to construction of embankment				
Pipe size, material, and class correct				
Soil compaction under and adjacent to pipe				
No gravel under spillway				
Full concrete cradle provided				
Watertight joints (joint separation OK) gap:				
Anti-seep collar location and size correct				
Anti-seep collar and cradle installed with monolithic pour				
Structural backfill specification followed				
Soil compaction under and adjacent to pipe				
Riser:				
Overall dimensions and openings correctly located				
Base dimensions correct				
Concrete strength and bearing capacity acceptable				
Watertight joints				
Drain				
For weir spillway:				
Footing excavated on stable subgrade				
5 EMBANKMENT CONSTRUCTION				
Impervious core length, depth, width, side slopes correct				
Material free of large stones, roots, etc.				
Layers placed in 8 inch lifts continuous for entire core length				
Compaction and moisture content tested every 50 feet along core				
Impervious Core Unified Soil Classification:				
Filter diaphragm dimensions and placement				
Seepage drain pipe, perforation size, and spacing				
No geotextile in filter diaphragm or seepage drain				
Filter diaphragm materials gradation:				
Filter diaphragm compaction				
Embankment soils Unified Soil Classification:				

Compacted in 8-inch lifts				
Emankment compaction tested every 5000 sf				
Elevation correct				
Top width and side slopes correct				
No equipment driven within 4 ft of spillway				
6 EMERGENCY SPILLWAY				
Constructed in natural ground				
Elevation correct				
Width and side slopes correct				
Level section length correct				
Exit slope				
7 POND EXCAVATION				
Elevation and topography of pond bottom graded to plan				
Pond side slopes correct				
Bench widths and locations correct				
Maintenance access location, width, and slope acceptable				
8 SPILLWAY OUTFALL PROTECTION				
Outfall protection channel excavated to design cross section				
Filter fabric in place				
Stone size correct				
9 STABILIZATION AND LANDSCAPING				
Topsoil, seed, and mulch applied to site				
Topsoil, seed, and mulch applied to embankment				
Landscaping consistent with plan				
No trees/woody growth planted within 15 ft of embankment or 25 ft of riser				
Inspector's name: _____ Company or agency: _____ Certifying Engineer's name: _____				

Dam : _____ Weather: _____ Date: _____

Inspectors: _____ Pool Level: _____

MARYLAND DAM INSPECTION CHECKLIST	Y	N	Monitor Repair
1. CREST			
Settlement Cracking Misalignment			
2. UPSTREAM SLOPE			
Ground cover in good condition			
Riprap in good condition			
Erosion Animal Burrows Trees Shrubs			
Settlements Depressions Bulges Cracks			
3. DOWNSTREAM SLOPE			
Ground cover in good condition			
Erosion Animal Burrows Trees Shrubs			
Settlements Depressions Bulges Cracks			
Seepage _____ gpm			
4. INTERNAL DRAINAGE SYSTEM			
Seepage/drain flow: Left _____ gpm Right _____ gpm Other _____ gpm			
Does seepage contain fines?			
5. ABUTMENT CONTACTS			
Trees Shrubs Erosion			
Seepage _____ gpm			
6. SPILLWAY/RISER STRUCTURE Concrete or Metal Pipe			
Spalling Cracking Corrosion Erosion Scaling Exposed Reinforcement			
Joints: Displacement Leakage Loss of joint material			
Trash racks: Operational Broken Bent Rusted Debris Obstructed			
Sluice/Drain gates: Operational Broken Bent Corroded Leaking			
7. SPILLWAY CONDUIT Concrete or Metal Pipe			
Debris Cracking Leakage Spalling Exposed reinforcement			
Joints: Displacement Leakage Loss of joint material			
8. STILLING POOL/BASIN Riprap or Concrete			
Spalling Cracking Erosion Scaling Exposed Reinforcement Joint Deterioration			
Undercutting Eroding			
Outlet channel condition:			
Tailwater elevation and flow condition:			
9. EMERGENCY SPILLWAY			
Ground cover in good condition			
Erosion Trees Shrubs Obstructions			
OVERALL CONDITION: Excellent Good Fair Poor Unsafe			

Notes:

GEOTECHNICAL CERTIFICATION
CODE 378 POND

I hereby certify that the soils tests for the embankment of the below referenced stormwater management facility have been performed in accordance with and meet the requirements of Maryland Pond Code 378. "Certify" means to state or declare a professional opinion based on sufficient and appropriate testing and onsite inspections.

Name

Signature

Maryland Registration Number (PE or LS)

Date

MDE No.

ID number for BMP/378 pond being certified

AS-BUILT CERTIFICATION

I hereby certify that the below referenced stormwater management facility shown on the plans has been constructed in accordance with the plans approved by the Maryland Department of the Environment, except as noted in red on the "AS-BUILT" drawings. "Certify" means to state or declare a professional opinion based on sufficient and appropriate onsite inspections, surveys, and material tests conducted during construction.

Name

Signature

Maryland Registration Number (PE or LS)

Date

MDE No.

ID number for BMP/378 pond being certified



**MODERATED AS-BUILT CHECKLIST
for
CODE 378 HERITAGE PONDS
NOT HAVING DESIGN RECORDS AND/OR CONSTRUCTION RECORDS**

(This checklist is intended for “heritage small ponds” dating prior to FY2011 (i.e. 10-SF-xxxx and earlier) including bioretention, infiltration, sand filters, wetlands, submerged gravel wetlands, etc. that fall under MD Pond Code 378.)

MDE Number _____

Project Name _____

Pond Name/BMP No. _____

Applicant _____

As-Built Engineer’s Name _____ Date: _____

MDE Reviewer’s Name _____ Date: _____
(to be completed by MDE)

PLEASE NOTE THAT AN AS-BUILT SUBMITTED WITHOUT A COMPLETED CHECKLIST MAY BE RETURNED WITHOUT REVIEW. Each pond needs its own checklist.

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					SUBMISSION DOCUMENTS FOR COMPLETENESS
					Completed transmittal form
					Reponses to comment letter (for re-submittals only)
					Narrative. Was pond recognized as 378 when designed and approved?
					Drainage area map to pond (if design records are not available or there are constructed deviations)
					Computations as necessary to support constructed deviations
					H&H Analysis for 10-yr storm for design conditions and 100-yr storm for ultimate conditions (if design records are not available)
					Revised Water Quality Summary Sheet as necessary to support constructed deviations
					Signed Code 378 Heritage Pond Moderated As-Built Certification
					As-built drawings of ALL VISUAL COMPONENTS of pond, comparing the approved stormwater management pond design (if available) with what was constructed
					Copy of original plans and design documents if available
					Construction information if available
					Photographs
					MD Dam Inspection Checklist
					Dam breach analysis (if a DBA/DB screening is not on file or pond was approved more than ten years prior to as-built submission)
					Completed Pond Summary Sheet (a.k.a. MD 14 form)

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					AS-BUILT PLANS
					<i>Note that as-built information does not have to be shown on MDE stamped approved plans, but as-built plans should reflect latest MDE approved plan including all modifications, when available.</i>
					CERTIFICATION
					A completed and signed MDE Plan Review Code 378 Heritage Pond Moderated As-Built Certification by a licensed Professional Engineer registered in MD, sealed with professional certification
					GENERAL
					As-built survey extending at least 100 feet downstream of the embankment fill or to the end of outfall
					As-built drafting indicated in red, green, or blue
					Drawings labeled as “as-builts” with date
					As-built dimensions. Pond plan view, details, cross sections, and profiles with as-built dimensions. A check mark made next to a design dimension that is the same as the constructed dimension. If constructed dimension is different from design dimension, approved dimension stricken through and constructed dimension indicated in a different color next to design dimension
					As-built elevations. Pond plan view, details, cross sections, and profiles with as-built elevations. Constructed elevations indicated in a different color next to design elevation. Elevations provided to the nearest 0.1 ft
					Check marks for affirmation of materials (e.g. pipe type, stone media, BSM, hardware cloth, geotextile, etc.)
					As-built locations/dimensions/elevations for all appurtenances to pond including, but not limited to, risers, weirs, orifices, spillways, riprap inflow, riprap outlet protection
					As-built locations/dimensions/elevations for flow conveyance systems including pipe sizes, flow direction, manholes, inlets, headwalls, endwalls, end sections, etc.
					A completed As-Built Schedule (table) from approved plans (when an as-built schedule is printed on plans) with constructed values indicated in as-built column
					PLAN VIEW
					Drawings showing as-built contours and elevations of entire pond, embankment, and immediately adjacent area from site survey of constructed conditions
					Length, width, and depth of storage so that design volume can be verified
					PROFILE ALONG CENTER LINE OF EMBANKMENT
					Top elevation of embankment
					Top elevation of impervious core embankment (interior component)
					Bottom elevation of the cut-off trench (interior component)
					Principle spillway location, station, and elevation

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					Emergency Spillway (normal to flow)
					Location and elevation of emergency spillway
					Width of level weir crest of emergency spillway
					Side slopes of emergency spillway
					EMERGENCY SPILLWAY PROFILE (parallel to flow)
					Elevation
					Length of level section (minimum 25 feet)
					Slope of spillway
					Slope protection type, material size, filter cloth
					EMBANKMENT SECTION/ PROFILE ALONG PRINCIPAL SPILLWAY
					Top elevation and width of embankment
					Embankment side slopes (equal to or flatter than approved design)
					Bottom elevation, width, and slopes of cut-off trench (interior component)
					Top elevation, width, and slopes of impervious core (interior component)
					Riser material, size, type, and weir opening elevation(s)
					Size and type of anti-vortex device and trash rack
					Low flow stage orifice(s) size, materials, and invert elevation
					Low flow stage trash rack size, material, and dimensions
					Low flow device drain pipe size, type, length, invert elevation
					Pond drain pipe size, length, invert elevation, valve type (provide as much info as possible)
					Principle spillway - barrel size, pipe type, corrugation size, gauge, concrete pipe class (ASTM C-361), inlet and outlet invert elevations, length, slope
					Concrete cradle dimensions Confirm, is there a concrete cradle?
					Phreatic line (drawn from the as-built 10-year water surface elevation)
					Filter diaphragm and drains or anti-seep collars, number, size, spacing, and material Confirm, is there a filter diaphragm?
					Outfall protection type, material size, dimensions, filter fabric
					As-built water surface elevations for the WQv, Cpv, and 2-yr or 10-yr, 100-yr storm events, and 100-year for ultimate development
					FREEBOARD from WSEL for 100-year for ultimate development to top of embankment (min 1 ft with ES and min 2 ft without ES)
					SUPPORTING DOCUMENTATION
					Narrative stating the purpose of submittal, contents, description of pond, available records, history, explanation of any deviations from the approved plans, alterations, or modifications, previous or proposed that have affected or propose to affect the level of management
					Drainage area map to pond (if design records are not available or there are constructed deviations altering DA)

Preparer (check off)			MDE Reviewer		Submission Item
YES	NO	N/A	received (yes/no)	correct (yes/no)	
					Revised design computations when as-built dimensions or elevations indicate a significant, unfavorable change from the approved design. If design computations are not available, H&H Analysis for 10-yr storm for design conditions and 100-yr storm for ultimate conditions
					Revised Water Quality Summary Sheet if originally approved water quality credit is affected by constructed pond deviating from design
					CONSTRUCTION INSPECTION REPORT
					Any available information from construction including photographs, inspection checklists, and logs
					GEOTECHNICAL REPORT
					Note that depending on the results of the dam inspection, subsurface soils investigation may be required.
					A signed Geotechnical Certification by a licensed geotechnical Professional Engineer registered in MD, sealed with professional certification
					Gradation and/or unified soil classification of cutoff trench material
					Gradation and/or unified soil classification of impervious core
					Gradation and/or unified soil classification of embankment material
					Gradation of filter diaphragm material
					Confirmation that embankment material is non-dolomitic
					PHOTOGRAPHS
					Any photographs taken during construction, clearly labeled
					• completion of excavation to sub foundation and trenching
					• installation of cutoff trench
					• installation of filter diaphragm and drain pipe
					• placement of structural fill and concrete cradle
					• installation of spillway pipe and anti seep collars
					• installation of riser
					• installation of other piping including blanket or toe drains
					• backfill of foundations and trenches
					• construction of impervious core
					• completion of final grading
					Clearly labeled photographs of final construction/current conditions showing the site and the pond stabilized with at least 95% vegetative coverage and as specified on approved landscaping plan
					VEGETATION
					Photos indicating no trees, shrubs, or woody vegetation within 25 ft. of riser structure, on fill embankment, or within 15 ft. of fill embankment

Dam : _____ Weather: _____ Date: _____

Inspectors: _____ Pool Level: _____

MARYLAND DAM INSPECTION CHECKLIST	Y	N	Monitor Repair
1. CREST			
Settlement Cracking Misalignment			
2. UPSTREAM SLOPE			
Ground cover in good condition			
Riprap in good condition			
Erosion Animal Burrows Trees Shrubs			
Settlements Depressions Bulges Cracks			
3. DOWNSTREAM SLOPE			
Ground cover in good condition			
Erosion Animal Burrows Trees Shrubs			
Settlements Depressions Bulges Cracks			
Seepage _____ gpm			
4. INTERNAL DRAINAGE SYSTEM			
Seepage/drain flow: Left _____ gpm Right _____ gpm Other _____ gpm			
Does seepage contain fines?			
5. ABUTMENT CONTACTS			
Trees Shrubs Erosion			
Seepage _____ gpm			
6. SPILLWAY/RISER STRUCTURE Concrete or Metal Pipe			
Spalling Cracking Corrosion Erosion Scaling Exposed Reinforcement			
Joints: Displacement Leakage Loss of joint material			
Trash racks: Operational Broken Bent Rusted Debris Obstructed			
Sluice/Drain gates: Operational Broken Bent Corroded Leaking			
7. SPILLWAY CONDUIT Concrete or Metal Pipe			
Debris Cracking Leakage Spalling Exposed reinforcement			
Joints: Displacement Leakage Loss of joint material			
8. STILLING POOL/BASIN Riprap or Concrete			
Spalling Cracking Erosion Scaling Exposed Reinforcement Joint Deterioration			
Undercutting Eroding			
Outlet channel condition:			
Tailwater elevation and flow condition:			
9. EMERGENCY SPILLWAY			
Ground cover in good condition			
Erosion Trees Shrubs Obstructions			
OVERALL CONDITION: Excellent Good Fair Poor Unsafe			

Notes:

CODE 378 "HERITAGE" POND
MODERATED AS-BUILT CERTIFICATION

I hereby certify that all visual elements of the below referenced stormwater management facility shown on the plans have been constructed in accordance with the plans approved by the Maryland Department of the Environment, except as noted in red on the "AS-BUILT" drawings. Where approved plans are not available, I certify that the "AS-BUILT" drawings are an accurate representation of the constructed stormwater management facility. "Certify" means to state or declare a professional opinion based on sufficient and appropriate onsite inspections and surveys.

Name Signature

Maryland Registration Number (PE or LS) Date

MDE No. ID number for BMP/378 pond being certified