POND CODE 378 CHECKLIST
FOR SMALL POND APPROVAL

See Carroll County SWM Checklist for all other SWM features

To be completed, signed, and certified by responsible professional engineer (design engineer- engineer in charge)

Carroll County File Number _____ Date _____

Small Pond Approval No. _____

Applicant _____

Project Name _____

Design Firm _____

PLEASE NOTE THAT PLANS SUBMITTED WITHOUT A COMPLETED CHECKLIST MAY BE RETURNED WITHOUT REVIEW

Item No.	Design Engineer (check off)			Carroll County Reviewer		Submission Item
	YES	NO	N/A	received (yes/no)	correct (yes/no)	
SUBMISSION DOCUMENTS						
1						Point by point responses to comment letter (if applicable)
2						Pond 378 construction plan set with Professional Engineer's certification, seal, signature, and date
3						Stormwater management design report with Professional Engineer's certification, seal, signature, and date. See Supplement pages 103 a-c
4						Geotechnical report for stormwater management pond with Professional Engineer's certification, seal, signature, and date. See Supplement pages 103 a-c
5						Dam breach analysis for small ponds with Professional Engineer's certification, seal, signature, and date
6						Pond Summary Sheet (PO-1). See website
7						Approved erosion and sediment control plans from local soil conservation district
8						Stormwater Management (SWM) approval from the local approval authority as required. (SWM and Dam Safety approvals are concurrent in Carroll County)

Item No.	Designer (check off)			Carroll County Reviewer		Submission Item	
	YES	NO	N/A	received (yes/no)	correct (yes/no)		
CONSTRUCTION PLANS							
						TITLE SHEET(S)	
9						Project name, street address, zoning, tax map, election district, parcel no., latitude, longitude	
10						Owner/Developer name, address and phone number	
11						Design Professional name, address and phone number	
12						Carroll County Job Number	
13						Vicinity map to scale (1"=2000') with major roads identified and site delineated	
14						Sheet index	
15						Professional Engineer's certification block, seal, signature, and date. Must be engineer in responsible charge of design. See Supplement pages 103 a-c	
16						Seal, signature, and date on preliminary subdivision and final site plans.	
17						Developer's certification block, signature, and date. See Supplement pages 103 a-c	
18						As-built certification block. See Website. Engineer in charge must be the engineer in responsible charge of design.	
						OTHER	
19						Construction specifications per MD Code 378 (Site Prep, Earth Fill, Structural Backfill, Pipe Conduits, Concrete, Stabilization). See Supplement page 130-132	See standard specifications: Supplement Pages 130-132
20						Compaction 95% of AASHTO T-99 or equivalent	
21						Core and cutoff trench GC, SC, CH, or CL material	
22						Concrete meets minimum MD SHA requirements. Mix #6 for precast and mix #3 for cast in place structures.	
23						Fence (if required)	
24						Gabions-PVC coated (if required)	
						GENERAL INFORMATION (ALL SHEETS)	
25						Plan scale range: 1" = 10' to 1" = 50'	
26						Profile scale: 1" - 5' vertical, to 1" = 50' horizontal or larger (match plan scale if possible)	
27						Maximum Drawing Size: 24" x 36"	

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
28						Minimum 3 grid ticks with lat/long on plan sheets
29						North arrow
30						Match lines labeled and referenced
31						Profiles, details, and cross-sections drawn to scale
32						Sheets numbered, consecutively; revisions noted with date
33						Carroll County File Number
						PLAN VIEW OF POND AT SCALE OF 1" = 50' OR LESS show and label the following:
34						Legend
35						All proposed improvements including locations of buildings, structures, impervious surfaces, storm drainage facilities, and all grading
36						Existing and final contours (2' interval maximum) with index contours clearly labeled. Complete grading for entire pond/ dam
37						Locations of test borings and bench mark (1 in dam centerline (min); 1 in emergency spillway(min)). 2 minimum
38						Inflow channel or pipe; erosion protection. Carroll County Code §151.036(c)(12,13,14,15)
39						Outflow pipe, outlet protection, outfall channel. Carroll County Code §151.036(c)(5)
40						Property lines and easements with owners information. All easements and rights of way (existing and proposed). Publicly maintained facilities must be on separate in-fee parcels
41						Low flow channel (if applicable)
42						Emergency spillway and outlet channel Supplement Page 122
43						Stationing of embankment centerline; location of other section details
44						Site features and existing/proposed grading to 200 ft beyond pond limits beyond toe of dam at outlet and 100-year pool around pond
45						"No woody vegetation" zone delineated
46						Storm drainage system, size, material (existing and proposed) with easements clearly identified
47						Downstream conveyance system (existing and proposed) with easements clearly identified
48						Utilities (existing and proposed) with easements clearly identified
49						Floodplain limits with sections and water surface elevations with easements clearly identified
50						Wetland boundary and wetland buffer labeled with easements clearly identified
51						Waters of the U.S. labeled

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
52						Forest conservation easements labeled
53						Sinkholes, rock outcrops, and karst areas labeled
54						Forebays and internal berms (reference berm detail)
55						Control structure (reference detail)
56						Principal spillway
57						Seepage control (reference detail)
58						Limits of clay core trench
59						Pond maintenance access. Publicly maintained facilities. Access road, in fee, to public road, paved and graded to use -in-common driveway standard 12' wide, 4:1 side slopes, 17% maximum grade. Strip at least 20 ft wide.
60						Fencing (if applicable). 42-inch fence and 12 ft. or greater swing gate (if required)
61						Trash rack/low flow trash rack (reference detail)
62						Limits of pond liner (if applicable)
63						Benching for ponds deeper than 4 feet. (or 4:1 slopes to bottom)
						STORMWATER MAINTENANCE SEQUENCE OF CONSTRUCTION (Referred at proper step but not duplicated in the overall sequence of construction)
64						Give the certifying professional engineer's (engineer in charge) name and telephone number
65						State all steps of construction and when the engineer must be contacted, and inspection performed prior to further work
66						No water is allowed into filter or infiltration facilities until all buildings are constructed, the entire drainage area to the facility is paved or supporting a 2" stand of dense grass, and the certifying engineer has inspected and given his approval.
67						Broken into two phases: sediment control and stormwater management.
						INSPECTION TABLE
68						Give the certifying professional engineer's (engineer in charge) name and telephone number
69						Include all steps that must be inspected in accordance with Chapter 151 of the Code of Public Laws and Ordinances of Carroll County
70						Include specific steps that must be inspected per MDE Dam Safety's As-Built Submission Checklist: 1. Items for the for the engineer-in-charge (EIC) to inspect and for gathering material spec sheets, delivery tickets, shop drawings, etc., photographic and video documentation, and preparing construction inspection reports. 2. Items inspected / tested / certified by the geotechnical engineer (must be contracted by EIC).
71						Include blocks for signature and date at each inspection step
72						Broken into two phases: sediment control and stormwater management

Item No.	Designer (check off)			Carroll County Reviewer		Submission Item
	YES	NO	N/A	received (yes/no)	correct (yes/no)	
						STORMWATER MANAGEMENT TABLE FOR EACH SWM FACILITY:
73						Facility ownership and maintenance responsibility
74						Structure classification, MD-378 dam Type A, B, or C.
75						Drainage area to the structural SWM facility (in acres). Small scale drainage area map (with coordinates) shown next to the table.
76						Impervious area to the structural SWM facility (in acres)
77						Height and top width of any embankment
78						Watershed name and receiving stream classification
79						Levels of stormwater management required and provided along with associated storage volumes and water surface elevations (REv, WQv, CPv, Q_{10}, Q_{100})
80						North and east coordinates of the centroid of the structural SWM facility
81						General Maintenance Agreement Schedule. See Supplement pages 142-155
82						Specific Maintenance Schedule for 378 pond/ dam. See website
						CROSS-SECTION OF DAM ALONG PRINCIPAL SPILLWAY (i.e. profile along riser/barrel or weir) – show and label the following:
83						Existing and proposed ground surface
84						Slope of embankment sides (2:1 max)/(5:1 max combined for top width ≤ 26 ft). Publicly maintained facilities. No slopes steeper than 4:1
85						Emergency spillway- dotted line at crest.
86						Embankment top width (6’ minimum; 10-26’ for road); top elevation noted
87						Cutoff trench (dimensioned); bottom width 4’ minimum; side slopes 1:1 maximum; depth 4’ minimum below concrete cradle
88						Impervious Core (up to 10-year WSEL); side slopes; top width; top elevation
89						Control structure (and reference detail location)
90						Trash rack (all openings in control structure; reference detail)
91						SWM Design WSEL 1-, 2-, 10-, and 100-year WSELs shown
92						Permanent pool WSEL
93						100-yr WSEL
94						Control structure openings: diameter or dimensions
95						Principal spillway pipe (barrel): inside diameter or dimensions; length; slope; invert in and out

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
96						Material: for concrete pipe, ASTM C-36. Concrete barrel. ASTM C-361, specify diameter, class, and pressure head
97						Specify watertight joints
98						Phreatic line (4:1 slope from 10-year WSEL); saturated length along barrel pipe
99						Filter diaphragm (reference detail location);
100						Bedding (if pipe is concrete) (detail required) See NRCS TR-46
101						Outlet protection: Stilling basin with underdrain, see Supplement page 123
102						Design Qs and velocities
103						Specification of construction height and settled height for dam construction elevations
104						Freeboard (min 1ft above 100-year WSEL DHW, or min 2 ft without emergency spillway) to settled top of dam.
105						Liner shown and specified if required. See website (reference detail)
						PROFILE OF EMERGENCY SPILLWAY (Open channel / weir) detail drawn to scale to show and label the following:
106						Existing and proposed ground surface. Locate on natural ground or in cut. Otherwise, use engineer designed weir wall or pass ultimate Q100 through principal spillway with 2 ft freeboard
107						Invert elevations - inlet, control and outlet sections
108						Length of inlet, control, and outlet sections
109						Slopes of inlet, control and outlet sections
110						Design ultimate Q100 and velocity V100 at steepest section. See Supplement page 122. Show 100-year WSELs throughout spillway with 1 ft freeboard
111						Cross-section detail of emergency spillway with invert (crest) elevation, ultimate 100-year WSEL, bottom width, existing and proposed ground surface, side slopes labeled. Armor up to top of embankment
112						Proper protection of spillway. See Supplement page 122. Note: if any water passes through the emergency spillway in the 10-year storm or more frequently armor is required
113						Protection of channel including material type and size see page 122
114						Liner shown and specified if required. See website (reference detail)
						CROSS-SECTION OF DAM ALONG CENTERLINE (Profile) drawn to scale and stationed (matching plan view) to show the following:
115						Top of dam and elevations (constructed and settled)
116						Location of principal spillway with concrete cradle (stationing)
117						Existing ground

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
118						Proposed ground. Top of dam extended to existing ground, both ends. Projected ground line in pond shown
119						Top of core to 10-year WSEL and elevations; limits shaded
120						Bottom of clay core and elevation; limits shaded (under concrete cradle)
121						Location and crest elevation of emergency spillway (shown in cut) (stationing)
122						Ultimate 100 year and design 1-,2-, and 10-year WSELs denoted
						CONTROL STRUCTURE DETAIL
123						Material specified (same as principal spillway pipe); Must be cast in place or precast in one piece
124						Riser or weir crest elevation and invert elevations of all openings
125						All openings dimensioned
126						Dimensions (diameter or width, length, height)
127						Concrete collar shown and labeled
128						Reinforcing steel details. All holes in riser or weir wall to be framed with additional reinforcing steel. Key joint reinforcement and waterstop detail.
129						Adequate outfall required. See Supplement page 122
130						Riser or weir base: material, length, width, thickness
131						Key reinforcement and waterstop joint detail
132						Low flow orifice pipe diameter, type, removable threaded cap with orifice in downstream structure
133						Dewatering device shown and labeled. See Supplement page 125
134						Show and label trash racks – all openings. (reference details)
135						If cast in place. Must have separate engineer's inspection/ certification chart. Must be referenced but not duplicated in the overall inspection chart
						TRASH RACK DETAIL(S)
136						Material specified; galvanized and removable or lockable access provided through trash rack. Manhole rungs under access to bottom of riser
137						Opening sizes dimensioned
138						1:1 Extension required on top opening inlet structures (no flat trash racks)
139						Anti-vortex device (for trash racks) over open top risers that operate in orifice control

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	YES	NO	N/A	received (yes/no)	correct (yes/no)		
						Rebar Trash Rack	
140						Minimum #4 rebar 6" on center	
141						Five-foot span or greater – provide double #4 Center bars or #6 rebar throughout	
142						Welding detail and specifications	
143						Hot dipped galvanized after fabrication and prior to installation (No cutting and painting after galvanization)	
144						Trash racks anchored to riser	
						FILTER DIAPHRAGM DETAIL	
145						Drain material noted; ASTM C-33 (natural sand)	
146						Extend to normal pool WSEL (wet pond) Extend to 10-year WSEL (dry pond)	
147						Dimensions – width (minimum 3D from outer principal spillway pipe); height (minimum 3D above outer diameter of pipe and 18 inches below outer diameter of pipe); thickness (2 feet min.)	
148						Minimum 2 ft. cover	
149						Pressure relief drainpipe diameter, material, (slots)	
150						Separate items in the engineer's inspection chart. (Can be inspected by geotechnical engineer)	
						GATE VALVE DETAIL	**OR POND DRAIN DETAIL**
151						Valve stem to top of structure and accessible	Manufactured threaded cap
152						Valve stem anchored	Accessible inside riser
153						Specify material	Specify Material
						STORM DRAINAGE PROFILES (inflow systems, systems through pond, systems adjacent to pond)	
154						Structures numbered and stationed	
155						Size and inverts of all pipes at the structure	
156						Structure inverts labeled upstream and downstream at each structure	
157						10-year hydraulic grade line shown and labeled	
158						All flows enter stormwater management ponds through drop structures and pipes. (See Supplement pages 69-78 & 120-125)	
159						Storm drain pipes entering ponds must be rigid with sealed joints up to the elevation of the higher of the emergency spillway or top of riser. (See Supplement pages 69-78 & 120-125)	
160						Pipes outfall at bottom of stilling basin, plunge pool, or forebay. End treatment is concrete headwalls (DPW Roads and Storm Drains 6-13). (See Supplement pages 69-78 & 120-125)	

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
161						Underdrained plunge pools/ forebays at all pipe outfalls that meet the pretreatment volume requirements of the 2000 Maryland Stormwater Design Manual (See Supplement pages 69-78 & 120-125)
162						Conveyance channels designed with minimum 4:1 side slopes, profiles, and cross sections shown (DPW Road and Storm Drains 6-16, 17)
163						Label limits of road, pavement, right-of-way above profile
164						Existing and finished ground line at centerline of storm drain shown
165						Structure and pipe schedules
166						Include plant material, number, spacing, location, and size.
167						"No woody vegetation" zone delineated
REPORTS AND CALCULATIONS						
						SOILS INVESTIGATION REPORT
168						Borings along centerline of dam in the borrow area, and in the pond.
169						Minimum of (1) soil test in the centerline of the embankment. The test must extend to the bottom of the proposed core trench at the deepest point (usually where the concrete cradle will be placed).
170						Minimum of (1) soil test in borrow area. Testing of shell and core material.
171						Minimum of (1) soil test in pond area at point of deepest excavation. Must always test for constructability
172						If infiltration is proposed, structural infiltration testing is required in the pond. Allowable tests and requirements are documented in the Supplement, pages 43&44
173						Use of sieve / gradation analysis and Unified Soil Classification System to classify soils (all borings and tests)
174						Determination of seepage potential
175						Determination of bearing strength, if soil is an unstable clay or for weir wall design. Determination of soil/ concrete friction coefficient for weir wall design.
176						Soil logs on dam profile and plan view
177						Blow counts, elevations, location of bedrock, ground water, and indications of seasonal high water
						DESIGN OF FILTER DIAPHRAM
178						Based on soils information for core and shell material
179						Calculations per USDA, NRCS, Part 633, Chapter 26, National Engineering Handbook

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
						HYDROLOGY
180						Existing and **ultimate conditions** drainage area map (1" = 200' scale or less)
181						Existing and proposed ultimate drainage area (DA) limits delineated In all cases "ultimate" means the combination of densest off site land use based on current zoning or current land use: whichever produces the largest design storm peak flow. (See Carroll County website)
182						Existing and proposed ultimate land uses delineated
183						Existing and proposed ultimate time of concentration paths shown
184						USDA Soils map (site and DA delineated)
185						Runoff computations
186						Hydrologic Soil Groups (See Carroll County website)
187						Existing RCN and ultimate RCN
188						Time of concentration (existing and ultimate)
189						Existing and proposed ultimate development hydrographs for 1, 2, 10 and ultimate 100-year storms respectively
						STORM DRAIN DESIGN
190						100% capture and conveyance of the design storm peak flow (usually 10-year) demonstrated. See Supplement pages 53 & 54.
						POND HYDRAULICS/ROUTINGS
191						Basin routing using storage indication Win TR-20
192						Stage - storage table and curve for pond to top of embankment
193						HY8 or culvert capacity analysis. No proprietary programs
194						Stage (elevation) - discharge table for pond with equation and balancing. No proprietary programs
195						Inflow hydrograph NOAA Atlas 14. Type "C" distribution
196						Routed discharges for existing, proposed 1, 2, 10-yr and ultimate 100-yr storms
197						Channel protection (if required) 1-year storm
198						Class I waters, extended detention 24 hours Class III and IV waters, extended detention 12 hours. Determine detention time using WinTR-20 output within 1 hour of target detention time.
199						Discharge velocities and outfall channel protection sizing (10-yr storm)
200						Anti-flotation computations for riser, FOS ≥ 1.2
201						Overturning and sliding calculations for weir wall. Assume full to top with water on upstream side and all fill washed away on downstream side. Friction coefficient and bearing capacity based on soils testing/ geotechnical report

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	YES	NO	N/A	received (yes/no)	correct (yes/no)	
						EMERGENCY SPILLWAY
202						Capacity of principal spillway and emergency spillway sized by Code 378
203						Reference ESC handbook Design by Engineering Field Manual, pps 11-34.1 through 11-54.1. See Carroll County spreadsheet for non-standard geometries.
						OUTFALL STUDY
204						Existing vegetation and condition
205						Flow rates and velocities, after development, for 2-, 10-, and 100-yr storms
206						Pre and post construction flow rates and velocities and determination that adequate outfall exists $V_{10} \leq 2$ ft/sec
207						Elevation at end of outlet protection
208						Property lines, easements, utility crossings, floodplain limits, waters of US, wetlands and wetland buffers, location and first floor elevation of critical structures.
						DAM BREACH ANALYSIS
209						Danger reach study per the following guidance: https://mde.maryland.gov/programs/water/DamSafety/Documents /Dam-Breach-Analysis/2018-05-15-Breach-Analysis- Guidance.pdf See Carroll County Website
210						Cross sections at critical points (in improved and existing channel)
211						Check mapping for additional ponds or embankments in flow path and hazard creep
212						Is dam breach inundation area protected from development by easement?
213						Will dam hazard classification remain the same if downstream development occurs?

ADDITIONAL NOTES:

Signature and date by responsible professional engineer (Engineer in Charge (E.I.C.))

Modified from MDE Dam Safety Permits Division Pond Code 378
Checklist for Small Pond Approval
Chad Wasileski, P.E.
Environmental Engineer, Stormwater Management
November 2025