

GAR Review Aid for Projects WITHOUT Stormwater Review

(Required technical items from the stormwater BMP checklists are included.)

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<i>GAR Application Content</i>		Sheet #	Yes/No	Comments
1	Is the project's GAR plan under the transition period? This applies to projects which initiated key steps in the permitting process prior to October 1, 2013. [Chapter 2, page 4 – Subtitle C § 601.4]			
2	Is GAR review required? If not, has the project submitted the GAR Exemption Application for zoning review in ProjectDox? The GAR exemption forms can be downloaded from the GAR forms list at http://ddoe.dc.gov/gar . Zones R-, RF-, USN, STE, HE, WR-1, and WR-6 are exempt from GAR, and do not require the exemption form. Confirm the zone entered in the SGS with PropertyQuest (https://propertyquest.dc.gov/). No additional documents or review is required if the exemption is approved. [Chapter 2, pages 3-4 - Subtitle C § 601.2 and 601.3]			
3	Has the applicant paid their initial filing fee? Is a copy of the paid invoices uploaded to the Surface and Groundwater System (SGS)? If paid online, receipts are not required. [Chapter 4, page 16]			
4	Has GAR intake been confirmed? Intake is complete once the plans and the paid, stamped invoice are uploaded to the SGS. Intake is done automatically if the fees are paid online.			
5	Is the Certified Landscape Expert (CLE), their credentials, and their contact info provided in the SGS? Does the CLE match the CLE Signature template in the plan set?			
6	Is the correct zone entered into the SGS? Projects submitted after September 6, 2016 must follow 2016 zones. Go to http://propertyquest.dc.gov for summary. Confirm with OZA if necessary. [Chapter 2, page 6]			
7	Is the applicant claiming the property zoned PDR-1 or PDR-2, and is the structure to remain a 1-story or 2-story building, respectively? If so, verify with OZA prior to approval. [Chapter 2, page 6]			
8	Has the project area been entered in the GAR database?			
9	Has the building permit number been entered in the SGS?			

<i>GAR Plan Set General Requirements</i>		Sheet #	Yes/No	Comments
Do the GAR plans contain the following items:				
10	<p>A Certified Landscape Expert Signature Template, fully filled out with contact information and signed by a recognized Landscape Expert, as defined below?</p> <ul style="list-style-type: none"> <input type="checkbox"/> DC Licensed Landscape Architect (beginning January 29, 2021) https://design.dcopla.com/Public/MemberSearch/BOAIDLICENSE <input type="checkbox"/> Maryland Licensed Landscape Architect (until September 1, 2021) https://www.dllr.state.md.us/cgi-bin/ElectronicLicensing/OP_search/OP_search.cgi?calling_app=LA::LA_qselect <input type="checkbox"/> Virginia Licensed Landscape Architect (until September 1, 2021) http://www.dpor.virginia.gov/LicenseLookup/ <input type="checkbox"/> International Society of Arboriculture (ISA) Certified Arborist http://www.isa-arbor.com/findanarborist/verify.aspx <input type="checkbox"/> Maryland Professional Horticulturist http://www.mnlga.org/AF_MemberDirectory.asp <input type="checkbox"/> Landscape Contractors Association, DC-MD-VA Landscape Industry Certified Technician http://www.lcamddcva.org/page/certification <p>[Subtitle C § 604.2]</p>			
11	<p>GAR Scoresheet, filled out with the correct lot, square, zone, property size, and minimum score information?</p> <p>[Appendix A-3]</p>			
12	<p>A GAR Worksheet (if the plan expands across more than one sheet)?</p> <p>[Appendix A-2]</p>			
13	<p>A labeled graphic scale and north arrow?</p> <p>[Chapter 4, page 18]</p>			
14	<p>Are the GAR plans consistent with the ESC plans?</p>			

15	Is the project in the AWDZ? If the site is in the AWDZ, the maintenance plan must follow Integrated Pest Management per the 2020 SWM Guidebook. [Chapter 4, page 24]			
16	Are all property lines clearly shown? [Chapter 3, page 13]			
17	Is the project spread across multiple record lots? If so, then a GAR score sheet for each lot must be provided, and each lot must meet its designated minimum GAR score. [Chapter 3, page 13]			
18	Are the lots being combined into one record lot? If so, then request a copy of the proposed plat of the new lot. [Chapter 3, page 13]			
19	Is the lot divided into more than one zone? If so, a score sheet must be provided for each zone, and the “lot size” is the surface area of each zone within the lot. If one zone does not require GAR (for example, it is an R-# zone), then the “lot size” is for the zone which does require GAR. Landscape elements do not have to be located within the zone using them for credit. They may be credited from anywhere within the property. However, each landscape element may not be used to meet both scores. For example, if there is one tree to be planted within the property, then it may be used on only one score sheet. If three trees are planted, they may be divided between the two score sheets (i.e., two trees apply to score sheet one, one tree applies to score sheet two).			
20	Is the project a campus plan? If so, the applicant must provide confirmation from the DC Zoning Commission stating that the proposed project limits and minimum score are compliant with the intent of the GAR regulations. [Chapter 2, page 5]			
21	Are there any Zoning Commission decisions, PUDs, or BZA orders on a project that impact the GAR score? If so, upload documentation to the SGS.			
22	Is the project a phased plan? If so, has a master plan been submitted to the SGS?			
23	Are all elements seeking credit located within the property or otherwise designated boundary line? Boundaries may vary for phased or campus projects.			

24	Does the GAR plan contain the following note?: “The property owner is required to maintain the lot’s minimum GAR score through appropriate stewardship and maintenance of landscape elements after the property is granted its Certificate of Occupancy.” [Section 4, page 23]			
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Section A – Landscape Areas, A1-A2: Soils and Amendments		Sheet #	Yes/No	Comments
25	<p>Which soils is the project seeking credits for:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Soils less than 2-feet deep: A1, and/or <input type="checkbox"/> Soils 2-feet or greater: A2 <p>[Section 5.1, page 29]</p>			
26	<p>Are soils calculated appropriately, based on the plants installed?</p>			
	<ul style="list-style-type: none"> <input type="checkbox"/> New plants less than 2 feet tall: A1 (unless within tree soil areas) 			
	<ul style="list-style-type: none"> <input type="checkbox"/> New plants greater than 2 feet tall: A1 (unless within tree soil areas) 			
	<ul style="list-style-type: none"> <input type="checkbox"/> Trees: A2 (when located within a 16 or 27-foot radius of newly planted trees, or within the undisturbed critical root zone of preserved trees) 			
	<ul style="list-style-type: none"> <input type="checkbox"/> Green Facades: A2 			
	<ul style="list-style-type: none"> <input type="checkbox"/> Soils marked for preservation: A2 <p>[Section 5.1, page 29]</p>			
27	<p>Are soils credited for Group A1-A2 called out or otherwise labeled in the plans, including surface area?</p> <p>[Section 5.1, page 29]</p>			
28	<p>Do the soil areas on the plan match those in the score sheet?</p> <p>[Section 5.1, page 29]</p>			
29	<p>If soils are to be preserved, are the following included:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Soil protection measures <input type="checkbox"/> Plant species located on the protected soils have been identified <input type="checkbox"/> Consistent with the ESC plans <p>[Section 5.1, page 31]</p>			

30	<p>If preserving soils, is a note included stating that if soils are disturbed a minimum of 5% organic matter (by weight) must be provided to a 12-inch or greater soil depth?</p> <p>[Section 5.1, page 31]</p>			
31	<p>Do the plans include topsoil and/or soil amendment specifications?</p> <p>[Section 5.1, pages 32-36]</p>			
32	<p>Do the topsoil soil improvement physical and chemical specifications meet the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Texture class: loam, silt loam, sandy clay loam, sandy loam, clay loam <input type="checkbox"/> % sand (0.05 mm-2.00 mm): < 70% <input type="checkbox"/> % silt (0.002 mm-0.05 mm): < 70% <input type="checkbox"/> % clay (< 0.002 mm): < 30% <input type="checkbox"/> % organic matter (by weight): <ul style="list-style-type: none"> o Lawn areas, 4%-6% o Planting beds, 5%-7% <input type="checkbox"/> pH: 6.0-7.2 (specific plantings may require alternate values) <input type="checkbox"/> Macronutrients & micronutrients: determined by professional soil scientist <input type="checkbox"/> No herbicides, heavy metals, biological toxins, or hydrocarbons are found <p>[Section 5.1, page 32]</p>			
33	<p>Do the topsoil soil improvement debris content specifications meet the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> No particles and stone greater than 1 inch in the longest dimension are allowed. This includes fragments of brick, concrete, wood, glass, metal, stone, and plastic. <input type="checkbox"/> Total volume < 1-inch long: ≤ 5% of soil volume <input type="checkbox"/> Stones 0.5 inches-1.0 inches (1.25 cm-2.5 cm): ≤ 5% of soil volume <input type="checkbox"/> Gravel 0.25 inches-0.5 inches (0.6 cm-1.25 cm): ≤ 5% of soil volume <p>[Section 5.1, page 32]</p>			

34	<p>If irrigation is to be installed, do the percolation specifications after subgrade preparation meet the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The subgrade has a percolation rate of 1-2 inches per hour <input type="checkbox"/> If the native subsoil has a drainage rate less than 1 inch per hour, a drainage system is installed <p>[Section 5.1, page 34]</p>			
35	<p>Are the following handling, storage, and spreading topsoil specifications provided:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Material shall not be handled or hauled when wet or frozen. Soil shall be handled only when the moisture content is less than at field capacity. Stockpiles shall be covered during wet weather. <input type="checkbox"/> Spread topsoil in no greater than 12-inch lifts, using the lightest possible equipment. Compact the topsoil to the property soil density so that it is suitable for root growth and plant stability. <p>[Section 5.1, page 34]</p>			
36	<p>Does the soil density and compaction of topsoil meet the following specifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Uses a rod penetrometer, which is inserted at a rate of 72 inches per minute, according to ASAE Soil Testing Specifications <input type="checkbox"/> Soils and subsoils: < 260 psi through the depth of credited soil <p>[Section 5.1, page 34]</p>			
37	<p>Do the amendment soil improvement specifications meet the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Derived from plant material as a result of biological degradation and transformation under conditions that promote aerobic decomposition <input type="checkbox"/> Provided by a member of the U.S. Composting Seal of Testing Assurance (STA) program <input type="checkbox"/> The materials shall be well composted, free of viable weed seeds, and stable with regard to oxygen consumption and carbon dioxide generation <input type="checkbox"/> Has no visible free water or dust when handling <p>[Section 5.1, page 35]</p>			

38	<p>Do the amendment soil improvement soil specifications meet the following criteria, as reported by the U.S. Composting Council Seal of Testing Assurance Compost Technical Data Sheet provided by the vendor:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 100% of the material must pass through a 1/2-inch screen <input type="checkbox"/> pH: 6-8 <input type="checkbox"/> Manufactured inert material (plastic, concrete, ceramics, metal, etc.): < 1.0% by weight <input type="checkbox"/> Organic content: 35%-65% <input type="checkbox"/> Soluble salt content: < 6.0 mmhos/cm <input type="checkbox"/> Maturity: > 80% <input type="checkbox"/> Stability: ≤ 7 <input type="checkbox"/> Carbon/nitrogen ratio: < 25:1 <input type="checkbox"/> Trace metal test result = “pass” <input type="checkbox"/> Dry bulk density: 40-50 lb/ft³ <p>[Section 5.1, page 35]</p>			
39	<p>Is the following compost application rate specification (to achieve minimum 5% organic matter content) provided:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Add 1.75 inches of compost per 8 inches of existing topsoil and incorporate by rototilling or mixing prior to respreading stockpiled topsoil. Scarify the subgrade down to a 4-inch depth. <input type="checkbox"/> For deeper soils, such as planting beds, mix compost and topsoil at the same rate. <p>[Section 5.1, page 36]</p>			
40	<p>Do additional amendments meet the following specifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Limestone: dolomitic limestone containing no less than 50% total carbonates and 25% total magnesium with a neutralizing value of at least 100% <input type="checkbox"/> Acidulant: commercial grade sulfur, ferrous sulfate, and aluminum sulfate for horticultural use <input type="checkbox"/> Fertilizer: granular or pelleted slow-release fertilizer consisting of 50% water-insoluble nitrogen, phosphorous, and potassium in a composition recommended by the soil testing laboratory <p>[Section 5.1, page 36]</p>			

41	<p>Depending on the type of plantings, credited soils should comply with required soil depths. Do credited soils comply with the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Turfgrass: at least 6", but less than 12" <input type="checkbox"/> Perennials, groundcovers, and ornamental grasses: at least 12", but less than 18" <input type="checkbox"/> Shrubs: at least 18", but less than 24" <input type="checkbox"/> Trees: at least 24". Maximum credited depth is 36" <p>[Section 5.1, page 31]</p>			
42	<p>Soil Volume Requirements: Depending on the type of plantings, credited soils should comply with required soil volumes. Do credited soils comply with the following (volumes are calculated within the maximum allowable depth of 36-inches):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Volumes are calculated within the maximum allowable depth of 36" <input type="checkbox"/> New trees with mature canopy spread of less than 40-ft: minimum of 400 cf to 600 cf of soil (no maximum), accessible within a 16-ft radius <input type="checkbox"/> New trees with mature canopy spread of 40-ft or greater: minimum of 1,000 cf to 1,500 cf of soil (no maximum), accessible within a 27-ft radius <input type="checkbox"/> Vegetated walls: 1 cf of soil per 10 sf of credited growth <p>[Section 5.1, page 32]</p>			
43	<p>Are Soils and Amendments included in the maintenance plan, per GAR guidelines?</p> <p>[Chapter 6, page 100]</p>			

Section A – Landscape Areas, A3: Bioretention		Sheet #	Yes/No	Comments
44	<p>Is the project seeking credits for:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bioretention: A3 <p>[Section 5.2, page 39]</p>			
45	<p>If soils are credited under A3 – Bioretention, do they qualify as a traditional bioretention, stormwater planter, residential rain garden, dry swale, grass channel, or wet swale?</p> <p>[Section 5.2, page 39]</p>			
46	<p>Are soils seeking A3 credit called out or otherwise labeled in the plans, including surface area?</p> <p>[Section 5.2, page 39]</p>			
47	<p>Do the area calculations include only the base of the bioretention, and do not include the side slopes? Side slopes are credited as A1 or A2 (see credits A1-A2 checklist).</p> <p>[Section 5.2, page 39]</p>			
48	<p>Do the bioretention surface areas on the plan match those in the score sheet?</p> <p>[Section 5.2, page 39]</p>			
<p>Confirm that the plans meet the feasibility, pretreatment, and design criteria for bioretention in the Stormwater Management Guidebook (see below):</p>				
49	<p>What type of bioretention or open channel practice is utilized?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Traditional bioretention <input type="checkbox"/> Stormwater planters <input type="checkbox"/> Residential rain gardens <input type="checkbox"/> Dry swale <input type="checkbox"/> Grass channel <input type="checkbox"/> Wet swale <p>[SWGB 3.6 Bioretention, page 104]</p>			

50	<p>Is the bioretention a standard or enhanced design configuration?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Standard Design- practices with a standard underdrain design and at least 18 inches of filter media depth. <input type="checkbox"/> Enhanced Design- practices with underdrains that contain at least 24 inches of filter media depth and an infiltration sump/storage layer or practices that can infiltrate the design storm volume in 72 hours. <p>[SWGB 3.6 Bioretention, page 105]</p>			
51	<p>Is the groundwater table and/or bedrock layer at least 2 feet from the bottom of the bioretention installation? A geotechnical report must be provided to confirm.</p> <p>[SWGB 3.6.1 Bioretention Feasibility Criteria- Water Table, page 107]</p>			
52	<p>Is the CDA to a traditionally sized bioretention practice no more than 2.5 acres (up to 100% impervious)? Is the maximum CDA to a smaller bioretention 1.0 acre?</p> <p>[SWGB 3.6.1 Bioretention Feasibility Criteria- CDA, page 108]</p>			
53	<p>Is there a minimum setback of 10 feet from a structure and waterproofing protection for foundation and basement? If setback not achieved, is an impermeable liner or equivalent material of an appropriate thickness (follow manufacturer’s instructions for installation) used along the sides of the practice?</p> <p>[SWGB 3.6.1 Bioretention Feasibility Criteria- Setbacks, page 108]</p>			
54	<p>If installing an Enhanced Bioretention, has the designer verified the soil permeability by completing the geotechnical requirements outlined in Appendix P? The saturated hydraulic conductivity for the native soil must exceed 0.1 feet/day to qualify for enhanced bioretention. Otherwise, an underdrain is required.</p> <p>[SWGB 3.6.1 Bioretention Feasibility Criteria- Soils and Underdrains, page 108; 3.6.4 Bioretention Design Criteria- BMP Sizing, page 126]</p>			
55	<p>If the bioretention is within 3 feet horizontally of a sewer/ lateral and the distance from the bottom of the bioretention to the sewer/lateral is less than 5 feet, is an impermeable membrane and underdrain provided for the full perimeter of the bioretention facility?</p> <p>[DC Water Green Infrastructure Utility Protection Guidelines]</p>			

56	<p>Is there a minimum of 12 inches between the bioretention bottom and a water main? Does the design acknowledge the following?</p> <ul style="list-style-type: none"> <input type="checkbox"/> There is no minimum setback for water laterals <input type="checkbox"/> Any water service pipe greater than 2-inches in diameter is considered a water main <input type="checkbox"/> Water service laterals should have a minimum of 18 inches of soil cover <p>[DC Water Green Infrastructure Utility Protection Guidelines]</p>			
57	<p>Does the design include a utility surface structure? If so, does the utility surface structure meet the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A minimum 8-inch thick concrete collar <input type="checkbox"/> Structure top matches the top of the roadside curb elevation <input type="checkbox"/> Top elevation higher than the design ponding depth <p>[DC Water Green Infrastructure Utility Protection Guidelines]</p>			
58	<p>If the bioretention is designed as an off-line system, does the practice divert overflow from entering the bioretention cell? [3.6.2 Bioretention Conveyance Criteria- Off-line Bioretention, page 110]</p>			
59	<p>If the bioretention is designed as an on-line system, does the practice incorporate an overflow structure that addresses the following?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Passes storms greater than the design storm storage to a stabilized pathway <input type="checkbox"/> Conveys runoff to a storm sewer, stream, or existing stormwater conveyance infrastructure <p>[3.6.2 Bioretention Conveyance Criteria- On-line Bioretention, page 110]</p>			
60	<p>Does the bioretention have a pretreatment system? [3.6.3 Bioretention Pretreatment Criteria, page 111]</p>			

61	<p>If required, does the bioretention include inlet energy dissipation, such as:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Downspouts to stone energy dissipaters or splash blocks <input type="checkbox"/> Sheet flow over a depressed curb with a 3-inch drop <input type="checkbox"/> Curb cuts allowing runoff into the bioretention area <input type="checkbox"/> Covered drains that convey flows across sidewalks from the curb or downspouts <input type="checkbox"/> Grates or trench drains that capture runoff from a sidewalk or plaza area <input type="checkbox"/> Drop structures that appropriately dissipate water energy <p>[3.6.4 Bioretention Design Criteria- Inlets and Energy Dissipation, page 113]</p>			
62	<p>Is the inlet designed with sufficient width and slope to avoid unintended bypass into the practice? [3.6.4 Bioretention Design Criteria- Inlets and Energy Dissipation, page 112]</p>			
63	<p>Is the ponding depth no less than 3 inches and no more than 18 inches? [3.6.4 Bioretention Design Criteria- Ponding Depth, page 113]</p>			
64	<p>Does the filter media meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> 80-90% sand <input type="checkbox"/> 10-20% silt and clay <input type="checkbox"/> 10% maximum clay <input type="checkbox"/> 3-5% organic content <input type="checkbox"/> pH between 6.0-7.5 <input type="checkbox"/> Cation exchange capacity (CEC) minimum of 5meq/100g or cmol+/kg <input type="checkbox"/> Phosphorus content shall meet one of the following: <ul style="list-style-type: none"> <input type="checkbox"/> P-Index between 10 and 30; <input type="checkbox"/> 5 to 15mg/kg Mehlich I Extraction; <input type="checkbox"/> 18 to 40mg/kg Mehlich III Extraction; and <input type="checkbox"/> Soluble salts shall be less than 500 ppm or less than 0.5 mmhos/cm. <p>[3.6.4 Bioretention Design Criteria- Filter Media, page 114]</p>			
65	<p>Does the filter media meet the final media grain size distribution in Table 3-18 or have a saturated hydraulic conductivity of 2-6 inches per hour according to the test procedure ASTM D2434 when compacted (at 60% to 80% optimum moisture content) to a minimum of 86% of the maximum density as determined by AASHTO T 99 (ASTM, 2006)? [3.6.4 Bioretention Design Criteria- Complete Filter Media, page 115]</p>			

66	<p>If included along the sides of the bioretention, does the geotextile fabric meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Comply with AASHTO M-288 Class 2 <input type="checkbox"/> Permeability at least 10 times higher than the soil subgrade permeability <p>[3.6.4 Bioretention Design Criteria- Geotextile, page 119]</p>			
67	<p>Is the underdrain a 4- or 6-inch perforated schedule 40 PVC pipe? Is the outlet sized so that the bioretention fully drains within 72 hours or less? See Appendix H - Design of Flow Control Structures - H.1 Circular Orifices for the circular orifice equation.</p> <p>[3.6.4 Bioretention Design Criteria- Underdrains, page 119]</p>			
68	<p>Is the underdrain encased in a layer of No. 57 or smaller (No. 68, 8, or 89) stone? Is the depth of the underdrain stone layer combined with the choking layer no more than 12 inches, and does not extend beyond the surface dimensions of the bioretention filter media?</p> <p>[3.6.4 Bioretention Design Criteria- Underdrains, page 119]</p>			
69	<p>Does the bioretention practice include at least one observation well consisting of a well-anchored, 4- to 6-inch diameter PVC pipe that extends to the bottom of the practice and/or connects to the underdrain pipe network?</p> <p>[3.6.4 Bioretention Design Criteria- Observation Wells, page 119]</p>			
70	<p>If the system includes an underground storage layer for the Enhanced Design, does it infiltrate within 72 hours? [3.6.4 Bioretention Design Criteria- Underground Storage Layer, page 120]</p>			
71	<p>If the system utilizes an impermeable liner, does it meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> PVC geomembrane liner or equivalent of an appropriate thickness <input type="checkbox"/> Field seams sealed with a minimum 6-inch overlap of material at all seams <p>[3.6.4 Bioretention Design Criteria- Impermeable Liner, page 120]</p>			
72	<p>Do the choking layer and underdrain stone meet the specifications outlined in Table 3-21 for washed clean stone free of fines (no more than 2% passing the No.200 sieve)?</p> <p>[3.6.4 Bioretention Design Criteria- Material Specifications, page 121]</p>			
73	<p>For non-underdrained designs, does the design use Equation 3.7 Bioretention Infiltration Rate Check to confirm the entire storage volume will infiltrate in 72 hours?</p> <p>[3.6.4 Bioretention Design Criteria- BMP Sizing, page 127]</p>			

74	<p>Are all bioretention areas intended for infiltration located outside of the Limits of Disturbance during construction to prevent soil compaction? If not, does the design meet one of the following criteria?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The in-situ soils are not disturbed any deeper than 2 feet above final design excavation of the bottom of the bioretention. The impacted area is excavated and tilled to a depth of 12-inches below the bottom of the bioretention. <input type="checkbox"/> If the excavation cannot be restricted above 2 feet, infiltration tests are performed prior to the installation of the bioretention to ensure the infiltration rate is still present. If there is a loss in infiltration rate, deep tilling practices will be utilized to restore the rate. <p>[3.6.6 Bioretention Construction Sequence- Soil Erosion and Sediment Controls, page 132]</p>			
75	<p>If the bioretention area is also shown as a temporary sediment trap or basin, does the plan meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The maximum excavation depth of trap or basin at the construction stage must be at least 1 foot higher than post construction bioretention bottom elevation <input type="checkbox"/> The bioretention facility must contain an underdrain <p>[3.6.6 Bioretention Construction Sequence- Soil Erosion and Sediment Controls, page 132]</p>			
76	<p>If the bioretention area is also shown as a temporary sediment trap or basin, are there procedures for converting the temporary sediment control practice to a permanent bioretention, including dewatering, cleanout, and stabilization?</p> <p>[3.6.6 Bioretention Construction Sequence- Soil Erosion and Sediment Controls, page 132]</p>			
77	<p>Is Bioretention included in the maintenance plan, per GAR guidelines? Do they follow Table 3.25 from the DOEE Stormwater Management Guidebook?</p> <p>[Section 6, page 100; SWGB 3.6.7 Bioretention Maintenance Criteria, page 134]</p>			

Section B – New and Existing Plantings, B1-B4: New Plantings		Sheet #	Yes/No	Comments
78	What types of plants are being credited (B1, B2, B3, and/or B4)? [Section 5.3, page 44]			
79	Is every plant credited shown in the plans? Ground covers, perennials, and small shrubs may be hatches, large shrubs and trees should be plant-shaped elements. [Section 5.3, page 44]			
80	If a plant is represented by a hatch, is the size of that area labeled? [Section 5.3, page 44]			
81	Does the plan include a plant schedule? Does the plant schedule contain at least the following items: <ul style="list-style-type: none"> <input type="checkbox"/> Common name and botanical name of plant <input type="checkbox"/> Installed size of the plant (by height, container size, or caliper) <input type="checkbox"/> Plant spacing <input type="checkbox"/> Quantity of the plants installed <input type="checkbox"/> Whether the plant is counted towards a native plant bonus (See Section F1 – Native Bonus) <input type="checkbox"/> The GAR category each plant is being counted towards (B1, B2, B3, or B4) [Section 5.3, page 46]			
82	Do the species and quantities of plants tabulated in the plant schedule match what is shown in the plans?			
83	Does each of the plants in the plant schedule correspond to the correct plant category? Refer to the GAR Plant List as a reference. [Section 5.3, page 45]			
84	Do plants seeking B1 Credit – less than 2 feet tall at maturity – meet the following requirements: <ul style="list-style-type: none"> <input type="checkbox"/> Shrubs, perennials, and ornamental grasses less than 2 feet in height <input type="checkbox"/> Turf grass [Section 5.3, page 45]			

85	<p>Do plants seeking B2 Credit – at least 2 feet tall at maturity – meet the following requirements:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Shrubs, perennials, and ornamental grasses above 2 feet in height <input type="checkbox"/> Trees with less than 1.5-inch caliper, multi-stem trees less than 8 feet in height, or new trees with soil volumes less than 400 cubic feet <p>[Section 5.3, page 45]</p>			
86	<p>Do trees seeking B3 credit meet the following requirements:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mature tree canopy diameter for new trees will measure on average less than 40 feet, and <input type="checkbox"/> Have at least 400 cf to 600 cf of soil accessible within a 16-ft radius <p>[Section 5.3, page 46; and Section 5.1, page 32]</p>			
87	<p>Do trees seeking B4 credit meet the following requirements:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mature tree canopy diameter for new trees will measure on average 40 feet or more, and <input type="checkbox"/> Have at least 1,000 cf to 1,500 cf of soil accessible within a 27-ft radius <p>[Section 5.3, page 46; and Section 5.1, page 32]</p>			
88	<p>Are any of the plants on the following lists of invasive species:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plant Invaders of the Mid-Atlantic: https://www.nps.gov/planTs/alien/pubs/midatlantic/toc.htm <input type="checkbox"/> Mid-Atlantic Exotic Pest Plant Council Plant List (DC, MD, VA): https://www.invasive.org/maweeds.cfm <input type="checkbox"/> Virginia Invasive Plant Species List: http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf <p>Invasive plant species are not allowed to be installed on GAR projects.</p> <p>[Section 5.11, page 88]</p>			
89	<p>Are all plants planted in soils of the appropriate soil depth and soil volume?</p> <p>[Section 5.1, page 31]</p>			
90	<p>Are all plants spaced based on their mature size?</p> <p>[Section 5.3, page 47]</p>			

91	Are any plants shown to be planted within the root ball or existing root flair of any larger vegetation? [Section 5.3, page 47]			
92	Is vegetation planted according to its preferred lighting and soil conditions (i.e. plants that prefer full shade are not planted in full sun, plants that prefer dry soils are not planted with vegetation that requires regular irrigation)? [Section 5.3, page 48]			
93	Are planting areas protected from vehicular traffic by way of wheel stops, curbs, bollards, fencing, etc.? Are they shown on the plans and are details provided? [Section 5.3, page 48]			
94	Have planting details for each type of planting included in the plans been provided? (Perennials, shrubs, trees, and planting spacing) [Section 5.3, page 46]			
95	Do single trunk trees have a minimum 1.5-inch caliper measurement taken 6 inches above the ground? [Section 5.3, page 45]			
96	Do clump-form, multi-stem, and shrub-form trees have a minimum height of 8 feet? [Section 5.3, page 45]			
97	Do the plans contain planting construction notes? [Section 5.3, pages 48-50]			
98	Do the plans include a note that all new plant materials must meet the standards in the ANLA American Standards for Nursery Stock (ANSI Z60.1-2014)? [Section 5.3, page 46]			
99	Do the plans include a note that trees and shrubs must have a species identification tag from the nursery to remain on 2 of each planted species until the Landscape Checklist is signed? Tags may be removed after final inspection to prevent girdling. [Section 5.3, page 46]			

100	<p>When planted within tree pits, do the tree planting details include a note that the tree pit openings should be at least 3 times the mature tree's trunk diameter at chest height or greater?</p> <p>[Section 5.3, page 48]</p>			
101	<p>Does the maintenance plan include maintenance items for New and Existing Plantings, per the GAR Guidebook?</p> <p>[Section 6, pages 102-103]</p>			

Section B – New and Existing Plantings, B5 – B8: Tree Preservation		Sheet #	Yes/No	Comments
102	<p>If any trees are claiming preservation credit, is a tree survey included with the following information:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Conducted by a certified arborist or a licensed Maryland or Virginia landscape architect <input type="checkbox"/> Location of each tree <input type="checkbox"/> Common and botanical name of each tree <input type="checkbox"/> Trunk size in DBH <input type="checkbox"/> Condition of the tree (trees in poor condition may not receive credit) <input type="checkbox"/> Extent of the critical root zone (CRZ). The CRZ must meet the minimum 1.5-foot radius per inch of trunk DBH <p>[Section 5.4, page 54]</p>			
103	<p>Are any of the plants on the following lists of invasive species:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plant Invaders of the Mid-Atlantic: https://www.nps.gov/plantTs/alien/pubs/midatlantic/toc.htm <input type="checkbox"/> Mid-Atlantic Exotic Pest Plant Council Plant List (DC, MD, VA): https://www.invasive.org/maweeds.cfm <input type="checkbox"/> Virginia Invasive Plant Species List: http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf <p>The tree does NOT have to be removed, but it may not receive credit.</p> <p>[Section 5.11, page 88]</p>			
104	<p>Is a tree preservation plan included, or are tree protection measures shown in the ESC plan?</p> <p>[Section 5.4, page 54]</p>			
105	<p>Do the tree protection measures follow those described in DDOT’s 2009 Standard Specifications for Highways and Structures Section 611.07 Tree Protection and Replacement and DOEE’s ESC Guidebook?</p> <p>[Section 5.4, page 55]</p>			

106	Does the maintenance plan include maintenance items for Tree Preservation, per the GAR Guidebook? [Section 6, pages 102-103]			
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Section B – New and Existing Plantings, B9: Vegetated Walls		Sheet #	Yes/No	Comments
107	<p>What type of vegetated wall(s) is to be installed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Green façade <input type="checkbox"/> Living wall <p>[Section 5.5, page 59]</p>			
108	<p>Do the plans show a living retaining wall with built-in growing media? This type of structure does not qualify for credit under this category. See Section B – New and Existing Plantings.</p> <p>[Section 5.5, page 62]</p>			
109	<p>Do the plans clearly indicate the location and extent of the vegetated wall(s)?</p> <p>[Section 5.5, page 59]</p>			
110	<p>Do the plans specify the setback dimensions from any property lines? (As necessary)</p> <p>[Section 5.5, page 59]</p>			
111	<p>Is the vegetated wall at least 5-feet from lot lines if it meets the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is located along a side or rear lot line and faces adjacent lots with zero-lot line development <p>This setback does not apply to lot lines abutting streets or alleys.</p> <p>[Section 5.5, page 60]</p>			
112	<p>Is the vegetated wall at least 5-feet from adjacent, facing structures to allow adequate light penetration?</p> <p>[Section 5.5, page 60]</p>			

113	<p>Are the plants composing the vegetated wall specified in the plant schedule? Does the plant schedule contain at least the following items:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Common name and botanical name of plant <input type="checkbox"/> Installed size of the plant (by height, container size, or caliper) <input type="checkbox"/> Plant spacing <input type="checkbox"/> Quantity of the plants installed <input type="checkbox"/> Mature height (green façades) <input type="checkbox"/> Whether the plant is counted towards a native plant bonus (See Section F1 – Native Bonus) <p>[Section 5.5, page 59]</p>			
114	<p>Is vegetation planted according to its preferred lighting and soil conditions (i.e. plants that prefer full shade are not planted in full sun, plants that prefer dry soils are not planted with vegetation that requires regular irrigation)?</p> <p>[Section 5.3, page 48]</p>			
115	<p>Do the plans include vertical and cross-sectional details that show the height of the vegetated wall, its support structure, and extent of soil?</p> <p>[Section 5.5, page 59]</p>			
116	<p>If tendril or twining vines are specified, do they have a cable or lattice system to attach? If clinging vines are specified, they may attach directly to a wall surface.</p> <p>[Section 5.5, page 61]</p>			
117	<p>If the structure is a green façade, does the plan show a minimum of 1 cubic foot of soil per 10 square feet of credited area?</p> <p>[Section 5.5, page 60]</p>			
118	<p>If the structure is a green façade, are the plantings spaced no greater than 4 feet apart O.C.?</p> <p>[Section 5.5, page 60]</p>			

119	<p>If the structure is a green façade, is the credited height limited to 30 feet or below (from planting level)? This restriction does not apply for living walls.</p> <p>[Section 5.5, page 59]</p>			
120	<p>Does the designer attempt to double-count credit for this category and another category under New and Existing Plantings? This is not allowed.</p> <p>[Section 5.5, page 59]</p>			
121	<p>Does the designer correctly calculate the credited area as the length of the wall multiplied by the wall height? Sections of wall or spaces between the systems which do not have vegetated wall coverage are not credited.</p> <p>[Section 5.5, page 59]</p>			
122	<p>Is an irrigation plan included, either permanent irrigation or temporary irrigation in the form of hose bibs? Living walls require permanent irrigation.</p> <p>[Section 5.5, page 60]</p>			
123	<p>Are any of the plants on the following lists of invasive species:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plant Invaders of the Mid-Atlantic: https://www.nps.gov/plantTs/alien/pubs/midatlantic/toc.htm <input type="checkbox"/> Mid-Atlantic Exotic Pest Plant Council Plant List (DC, MD, VA): https://www.invasive.org/maweeds.cfm <input type="checkbox"/> Virginia Invasive Plant Species List: http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf <p>Invasive plant species are not allowed to be installed on GAR projects.</p> <p>[Section 5.11, page 88]</p>			
124	<p>Does the maintenance plan include maintenance items for Vegetated Walls, per the GAR Guidebook?</p> <p>[Section 6, pages 103-104]</p>			

Section C – Vegetated Roofs		Sheet #	Yes/No	Comments
125	Do the plans label the area and growing depth of each vegetated roof space? [Section 5.6, page 63]			
126	Do the plans provide vegetated roof details and specifications? [Section 5.6, page 64]			
127	Are the vegetated roof plant species, size, spacing, type of root system included in the plant schedule? [Section 5.6, page 64]			
128	Does the plant spacing or mat meet the following minimum requirements: <ul style="list-style-type: none"> <input type="checkbox"/> A minimum of 80% coverage after 2 years <input type="checkbox"/> Succulent plantings: 2 plugs per square foot <input type="checkbox"/> Succulent cuttings: 10 pounds per 100 square feet [Section 5.6, page 65]			
129	Are the source, type, and location of supplemental irrigation to the vegetated roof specified? [Section 5.6, page 65]			
130	If plantings are not drought-tolerant, is a permanent supplemental irrigation system provided? [Section 5.6, page 65]			
131	Does the designer attempt to credit groundcover plants on the green roof under B1? Groundcovers are ineligible for additional credit if they are on vegetated roofs. They are included in the vegetated roof credit. [Section 5.6, page 63]			
132	Is vegetation planted according to its preferred lighting and soil conditions (i.e. plants that prefer full shade are not planted in full sun, plants that prefer dry soils are not planted with vegetation that requires regular irrigation)? [Section 5.3, page 48]			

133	Do the plants meet the requirements outlined in Table 6 of Section 5.6 - Vegetated Roofs? [Section 5.6, page 66]			
134	<p>Are any of the plants on the following lists of invasive species:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plant Invaders of the Mid-Atlantic: https://www.nps.gov/planTs/alien/pubs/midatlantic/toc.htm <input type="checkbox"/> Mid-Atlantic Exotic Pest Plant Council Plant List (DC, MD, VA): https://www.invasive.org/maweeds.cfm <input type="checkbox"/> Virginia Invasive Plant Species List: http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf <p>Invasive plant species are not allowed to be installed on GAR projects. [Section 5.11, page 88]</p>			
135	<p>Is the credited depth calculated correctly? To calculate credited depth, measure the depth of the growth media only. Growth medium with a depth 1 inch or greater and less than 2 inches may be credited if supplied with an additional water-retention layer with depth of 1-inch or greater. Otherwise, the water-retention layer is not included in the growing media depth. [Section 5.6, page 63]</p>			
Confirm that green roofs satisfy the feasibility and design criteria described in the Stormwater Management Guidebook (see below):				
136	<p>Is the roof pitch less than or equal to 30%? If the roof pitch is greater than 1-2%, are baffles, grids, or strips used to prevent slippage of the media? [SWGB 3.2.1 Green Roof Feasibility Criteria- Roof Pitch, page 34]</p>			
137	<p>Does the plan identify how the roof will be accessed to deliver construction materials and perform routine maintenance and inspections? [SWGB 3.2.1 Green Roof Feasibility Criteria- Roof Access, page 34]</p>			

138	<p>Is access to the green roof clearly depicted on the plan? Allowable access includes:</p> <ul style="list-style-type: none"> <input type="checkbox"/> For heights up to 10 feet, a temporary ladder at least 3 feet longer than the height of the wall is sufficient for access from the floor below; or <input type="checkbox"/> For heights greater than 10 feet, permanent roof access by either an interior stairway through a penthouse or by a window or hatch (not less than 16 square feet in area with a minimum dimension of 24 inches) <p>[SWGB 3.2.1 Green Roof Feasibility Criteria- Roof Access, page 34]</p>			
139	<p>If the green roof receives runoff from an adjacent rooftop area:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does the plan clearly show how runoff will be distributed or dissipated to prevent erosion or overloading? <p>[SWGB 3.2.1 Green Roof Feasibility Criteria- Contributing Drainage Area, page 34]</p>			
140	<p>Are cross-sectional details provided which shows the green roof at the roof drain and roof deck?</p> <p>[SWGB 3.2.2 Green Roof Conveyance Criteria, page 35]</p>			
141	<p>Does the design include a waterproofing layer to prevent damage to the roof deck layer? The layer must be 100% waterproof and have a lifespan as long as all other green roof components. The plans should include a profile detail showing waterproofing layer.</p> <p>[SWGB 3.2.4 Green Roof Design Criteria- Waterproofing Layer, page 36]</p>			
142	<p>Does the design include a chemical or physical root barrier free of pesticides, metals, or other chemicals that could leech into stormwater runoff? Provide supporting documentation or include a specification.</p> <p>[SWGB 3.2.4 Green Roof Design Criteria- Root Barrier, page 37]</p>			
143	<p>Does the design include a drainage layer to quickly remove excess water from the vegetation root zone? Provide supporting documentation or include a specification.</p> <p>[SWGB 3.2.4 Green Roof Design Criteria - Drainage Layer and Drainage System, page 37]</p>			
144	<p>If the green roof contains a root barrier, does it allow for the downward migration of water into the drainage layer? Provide supporting documentation or include a specification.</p> <p>[SWGB 3.2.4 Green Roof Design Criteria- Root-Permeable Filter Fabric, page 37]</p>			

145	<p>Does the growing media meet the following characteristics?</p> <ul style="list-style-type: none"> <input type="checkbox"/> 70-80% lightweight inorganic materials <input type="checkbox"/> No more than 30% organic matter <p>[SWGB 3.2.4 Green Roof Design Criteria- Growing Media, page 37]</p>			
146	<p>If solar panels or other structures are installed above a green roof, does it meet the following?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Structure above the green roof must be no more than 6.5 feet wide. <input type="checkbox"/> Panels must have a minimum 3-foot separation between each array. <input type="checkbox"/> The lower edge of the structure must be at least 1 foot above the top of the green roof, and the upper edge must be at least 2.5 feet above the top of the green roof. For flatter installations, the lower edge would need to be raised to ensure that the 2.5-foot minimum for the upper edge is met. <p>[SWGB 3.2.4 Green Roof Design Criteria- Solar Panels and Other Structures, page 41]</p>			
147	<p>Do the plans contain construction notes for green roofs that follow the minimum requirements in the Stormwater Management Guidebook, which includes the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Conduct a leak detection test to ensure the system is watertight, preferably using electronic leak detection test. A flood test may be performed if an electronic test is not possible. <input type="checkbox"/> If there is a reason to mix the green roof growing media on site, the DDOE inspector should be notified during the pre-construction meeting and the media supplier should provide guidance. <input type="checkbox"/> The growing media must be covered and anchored in place until planting. <input type="checkbox"/> Fertilizer is not recommended. If applied, the fertilizer must be a slow release type, rather than liquid or gaseous form. <p>[Section 5.6, page 67; SWGB 3.2.6 Green Roof Construction Sequence – Green Roof Installation, pages 45-46]</p>			
148	<p>Does the maintenance plan include maintenance items for Vegetated Roofs, per the GAR Guidebook?</p> <p>[Section 6, pages 104-105; SWGB 3.2.6 Green Roof Maintenance Criteria – Maintenance Inspections, page 47]</p>			

Section D – Permeable Paving		Sheet #	Yes/No	Comments
149	Do the plans label the area and reservoir depth of each permeable pavement system? [Section 5.7, page 69]			
150	Is the practice counted correctly under the proper category, according to the depth of the reservoir layer? The reservoir depth is considered the stone or other material between the bottom of the permeable pavement and the top of the in-situ soils. <input type="checkbox"/> D1: 6-24 inches <input type="checkbox"/> D2: ≥ 24 inches [Section 5.7, pages 69-70]			
151	Is the permeable practice used in conjunction with an enhanced tree growth system? If so, the depth of soil may be counted towards the permeable pavement reservoir layer for GAR purposes. [Section 5.7, page 70]			
152	Is the credit given to both permeable pavement and enhanced tree growth systems combined less than 1/3 of the total GAR score? [Section 5.7, page 69]			
Confirm the plans satisfy the feasibility, pretreatment, and design criteria described in the SWM Permeable Paving Checklist (see below):				
153	What type of permeable pavement is used? <input type="checkbox"/> Porous asphalt <input type="checkbox"/> Pervious concrete <input type="checkbox"/> Permeable pavers <input type="checkbox"/> Other DOEE-approved surface material such as porous rubber, plastic grid pavers, and synthetic turf systems [SWGB 3.5 Permeable Pavement, page 82]			

154	<p>Is the permeable pavement a standard or enhanced design configuration?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Standard Design- practices with a standard underdrain design and no infiltration sump or water quality filter layer. <input type="checkbox"/> Enhanced Design- practices without an underdrain or with an underdrain that contain a water quality filter layer and an infiltration sump beneath the underdrain that can infiltrate the design storm volume in 48 hours. <p>[SWGB 3.5 Permeable Pavement, page 82]</p>			
155	<p>Is the contributing drainage area, not including the permeable pavement, less than five times the surface area of the permeable pavement?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- CDA, page 84]</p>			
156	<p>Is the permeable pavement slope less than 5%?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- Pavement Surface Slope, page 84]</p>			
157	<p>Is the groundwater table and/or bedrock layer at least 2 feet from the bottom of the practice? A geotechnical report demonstrating this information must be provided.</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- Min. Depth to Water Table, page 84]</p>			
158	<p>Is there a minimum setback of 10 feet from a structure and waterproofing protection for foundation and basement? If setback not achieved, is an impermeable liner used along the sides of the practice?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- Setbacks, page 84]</p>			
159	<p>Is an impermeable waterproof membrane installed at the interface between the permeable pavement and traditional pavement?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- Setbacks, page 84]</p>			
160	<p>Does the drainage area contain high loading, such as turf or landscaping? If so, does the site contain pretreatment measures? What pretreatment mechanism is being used?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- High Loading Situations, page 85]</p>			
161	<p>For Enhanced Designs Only: Has the designer verified the soil permeability by completing the geotechnical requirements outlined in Appendix P of the Stormwater Guidebook?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- Soils, page 83]</p>			
162	<p>Does the design follow the DC Water Green Infrastructure Utility Protection Guidelines?</p> <p>[SWGB 3.5.1 Permeable Pavement Feasibility Criteria- Proximity to Utilities, page 84]</p>			

163	Are all orifice sizes at least 1-inch in diameter? [SWGB 3.5.4 Permeable Pavement Design Criteria- Rapid Drawdown, page 87]			
164	Are there multiple underdrains for permeable pavement systems wider than 40 feet? Is each of these underdrains located 20 feet or less from the next pipe or edge of pavement? [SWGB 3.5.4 Permeable Pavement Design Criteria- Underdrains, page 88]			
165	Is the underdrain encased in a layer of No. 57 or No. 2 stone with a minimum 2-inch cover over the top and maximum 2-inch depth underneath on the bottom? [SWGB 3.5.4 Permeable Pavement Design Criteria- Underdrains, page 88]			
166	Does the permeable pavement system include 4- to 6-inch diameter PVC observation wells (or cleanout) with no perforation within 1 foot of the surface? If it has an underdrain, is the observation well (or cleanout) tied to it? [SWGB 3.5.4 Permeable Pavement Design Criteria- Observation Wells, page 88]			
167	Are the underdrain, cleanout/observation well, and overflow (if used) clearly marked on the plans? [SWGB 3.5.2 Permeable Pavement Conveyance Criteria and 3.5.4 Permeable Pavement Design Criteria, pages 85 and 88]			
168	If the system contains an infiltration sump (required for Enhanced Design with an underdrain), does it meet the following requirements? <ul style="list-style-type: none"> <input type="checkbox"/> Sized so the design storm can infiltrate into sub-soils in 48 hours <input type="checkbox"/> Installed below the underdrain or upturned elbow invert <input type="checkbox"/> The bottom of the sump is at least 2 feet above the seasonal high groundwater table [SWGB 3.5.4 Permeable Pavement Design Criteria- Infiltration Sump, page 88]			
169	If included on the sides of the permeable pavement system, does the geotextile fabric, meet the following requirements? <ul style="list-style-type: none"> <input type="checkbox"/> Comply with AASHTO M-288 Class 2 <input type="checkbox"/> Permeability at least 10 times higher than the soil subgrade permeability <input type="checkbox"/> Not placed horizontally between any layers of the practice, as this often becomes an interface for clogging [SWGB 3.5.4 Permeable Pavement Design Criteria- Geotextile, page 89]			

170	<p>If the system utilizes an impermeable liner, does it meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use a PVC geomembrane liner or equivalent of an appropriate thickness <input type="checkbox"/> Field seams sealed with a minimum 6-inch overlap of material at all seams <p>[SWGB 3.5.4 Permeable Pavement Design Criteria- Impermeable Liner, page 89]</p>			
171	<p>Do the bedding and reservoir layer materials meet the specifications outlined in Table 3-12 for washed clean stone free of fines (no more than 2% passing the No.200 sieve)?</p> <p>[SWGB 3.5.4 Permeable Pavement Design Criteria- Material Specifications, page 90]</p>			
172	<p>Will the permeable pavement drain in 36 to 48 hours?</p> <ul style="list-style-type: none"> <input type="checkbox"/> For infiltration design without underdrains or with infiltration sumps, is Equation 3.3 Drawdown Time used to determine if the system will drain between 36-48 hours? <input type="checkbox"/> For infiltration design with underdrains, drawdown calculations are not required. A 1-inch orifice where the underdrain connects to the storm system is required. <p>[3.5.4 Permeable Pavement Design Criteria- Hydraulic Design, page 92]</p>			
173	<p>If permeable interlocking concrete pavers are used, are edge restraints shown on the plan? Do the edge restraints meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Minimum 6 inches wide and 18 inches deep <input type="checkbox"/> Composed of Class A3 concrete <p>[SWGB 3.5.6 Permeable Pavement Construction Sequence Criteria- Permeable Interlocking Concrete Pavers Installation, page 98]</p>			
174	<p>If permeable interlocking concrete pavers are used, are the paver joint openings shown filled with ASTM D448 No. 8 stone (or No. 8P or No. 9 stone to fill narrower joints)?</p> <p>[SWGB 3.5.6 Permeable Pavement Construction Sequence Criteria- Permeable Interlocking Concrete Pavers, page 98]</p>			
175	<p>Do the plans contain construction notes for permeable pavement which follow the minimum requirements in the Stormwater Management Guidebook, including specific construction notes based on the type of permeable pavement to be installed?</p> <p>[Section 5, page 71]</p>			

176	<p>Are all permeable pavement areas intended for infiltration located outside of the Limits of Disturbance during construction to prevent soil compaction? If not, does the design meet one of the following criteria?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The in-situ soils are not disturbed any deeper than 2 feet above final design excavation of the bottom of the aggregate reservoir course. The impacted area is excavated and tilled to a depth of 12-inches below the bottom of the reservoir layer. <input type="checkbox"/> The excavation cannot be restricted above 2 feet. Infiltration tests are performed prior to the installation of the permeable pavement to ensure the infiltration rate is still present. If there is a loss in infiltration rate, deep tilling practices will be utilized to restore the rate. <p>[SWGB 3.5.6 Permeable Pavement Construction Sequence Criteria- Soil Erosion and Sediment Controls, page 94]</p>			
177	<p>Is any site intended to be used as a permeable pavement area also shown as a temporary sediment trap or basin? If so, does the site meet one of the following?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The in-situ soils are not disturbed any deeper than 1 foot above final design excavation of the bottom of the aggregate reservoir course. Then remediation can be achieved with proper removal of trapped sediments and deep tilling practices. <input type="checkbox"/> The excavation cannot be restricted above 1 foot. The sediment trap or basin is lined with an impermeable liner to protect in-situ soils. <p>[SWGB 3.5.6 Permeable Pavement Construction Sequence Criteria- Soil Erosion and Sediment Controls, page 94]</p>			
178	<p>If the permeable pavement area is also shown as a temporary sediment trap or basin, does the plan include the following construction notes?</p> <ul style="list-style-type: none"> <input type="checkbox"/> All sediment deposits in the excavated area must be carefully removed prior to installing the permeable pavement sub-base, base, and surface materials <input type="checkbox"/> Procedures for converting the temporary sediment control practice to permeable pavement, including dewatering, cleanout, and stabilization <p>[SWGB 3.5.6 Permeable Pavement Construction Sequence Criteria- Soil Erosion and Sediment Controls, page 94]</p>			
179	<p>Does the maintenance plan include maintenance items for permeable pavement, per the GAR Guidebook?</p> <p>[Chapter 6, pages 105-106; SWGB 3.5.7 Permeable Pavement Maintenance Criteria, page 100]</p>			

180	<p>Does the maintenance plan include a statement that the following tasks must be avoided:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sanding <input type="checkbox"/> Re-sealing <input type="checkbox"/> Re-surfacing <input type="checkbox"/> Power washing <input type="checkbox"/> Storage of snow piles containing sand <input type="checkbox"/> Storage of mulch or soil materials <input type="checkbox"/> Construction staging on unprotected pavement <p>[SWGB 3.5.7 Permeable Pavement Maintenance Criteria, page 99]</p>			
181	<p>Does the maintenance plan consider the following seasonal maintenance items:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Large snow storage piles should be located in adjacent grassy areas so that sediment and pollutants in snowmelt are partially treated before they reach the permeable pavement. <input type="checkbox"/> Sand or cinders should never be applied for winter traction over permeable pavement or areas of standard pavement that drain toward permeable pavement, since they will clog the system. <input type="checkbox"/> When plowing plastic reinforced grid pavements, snow plow blades should be lifted ½ inch to 1 inch above the pavement surface to prevent damage to the paving blocks or turf. Porous asphalt, pervious concrete, and some permeable pavers can be plowed similarly to traditional pavements, using similar equipment and settings. <input type="checkbox"/> Chloride products should be used judiciously to deice above permeable pavement designed for infiltration, since the salt will be transmitted through the pavement. Salt can be applied, but environmentally sensitive deicers are recommended. <p>[SWGB 3.5.7 Permeable Pavement Maintenance Criteria- Seasonal Maintenance Considerations, page 100]</p>			

<i>Section E – Other Landscape Features, E1: Enhanced Tree Soil Systems</i>		Sheet #	Yes/No	Comments
182	Do the plans label the area of each enhanced tree soil system? [Section 5.8, page 73]			
183	Is the depth of soil a minimum of 24 inches and connected to an adjacent planting area where trees are grown? [Section 5.8, page 74]			
184	Is a detail of the system provided with associated dimensions? [Section 5.8, page 73]			
185	If necessary, is irrigation provided? [Section 5.8, page 73]			
186	Does the plan identify the type of enhanced tree soil system: suspended pavement, sand-based structural soil system, or aggregate structural soils? [Section 5.8, page 75]			
Confirm the system satisfies the design criteria in the Stormwater Management Guidebook – Engineered Tree Pits (see below):				
187	Engineered tree boxes should contain the following: <ul style="list-style-type: none"> <input type="checkbox"/> Bottom of soil layer at minimum 4 inches below the root ball of plants <input type="checkbox"/> Fencing or protective barrier provided at the drop off from pavement to bioretention area <input type="checkbox"/> Contain at least 2 feet of soil beneath the surface [SWGB 3.6.4 Bioretention Design Criteria- Engineered Tree Boxes, page 121]			
188	Engineered tree boxes that cover portions of the filter media with pervious pavers or cantilevered sidewalks must contain the following: <ul style="list-style-type: none"> <input type="checkbox"/> Filter media connected beneath the surface so that stormwater and tree roots can share this space <input type="checkbox"/> Minimum surface ponding depth of 3”, averaged over surface area of bioretention area <input type="checkbox"/> If sand based structural soil (SBSS) is used, it must meet same phosphorus content limits as typical bioretention soil [SWGB 3.6.4 Bioretention Design Criteria- Engineered Tree Boxes, page 122]			

189	Does the maintenance plan include maintenance items for enhanced tree soil systems, per the GAR Guidebook? [Section 5.8, page 106]			
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Section E – Other Landscape Features, E2: Renewable Energy		Sheet #	Yes/No	Comments
190	Do the plans label the area of each renewable energy system? [Section 5.9, page 77]			
191	Are all renewable energy systems either solar PV or solar thermal systems? [Section 5.9, page 77]			
192	Are reference notes included on the GAR plans listing all electrical, plumbing, mechanical, or other relevant plan sheet details and specifications that are part of the total building permit approval. [Section 5.9, page 77]			
193	Has a copy of the plan documents for the project electrical, plumbing, and building permitting been provided? [Section 5.9, page 78]			
194	Has the supplemental solar permit number been provided (not required, but helpful)? [Section 5.9, page 77]			
195	Do these plans show locations of solar arrays, the number of collectors or panels, the system size, the array dimensions, and location of array mounting? [Section 5.9, page 77]			
196	Has a schematic diagram been provided showing the balance of system components? (System wiring, disconnects, inverters, valves, pipes, tanks, pumps.) [Section 5.9, page 78]			
197	Has a shading analysis been provided? Request from the solar professional if more than 20% shading exists on the array location. http://www.builditsolar.com/References/SunChartRS.htm [Section 5.9, page 78]			

198	<p>Is the renewable energy system located over a green roof, permeable pavement, or soils? If so, these elements may be credited over the same area as long as they meet the PV over green roof criteria defined in the DOEE Stormwater Management Guidebook.</p> <p>[Section 5.6, page 63]</p>			
199	<p>Does the maintenance plan include maintenance items for renewable energy, per the GAR Guidebook?</p> <p>[Section 6, pages 106-107]</p>			

Section E – Other Landscape Features, E3: Water Features		Sheet #	Yes/No	Comments
200	Do the plans label the area of each water feature? [Section 5.10, page 83]			
201	Is the area credited covered with water a minimum of six months of the year? [Section 5.10, page 83]			
202	Is the area credited supplied by a minimum of 50% of harvested rainwater as a percentage of annual flow? [Section 5.10, page 83]			
203	Is the water recirculated to conserve water and inhibit the breeding of mosquitos? [Section 5.10, page 84]			
Confirm the cistern feeding the water feature meets the design criteria for Harvested Rainwater as outlined in the Stormwater Guidebook (see below):				
204	Are all underground utilities and other obstructions identified and not in conflict with the cistern and pipe locations? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Available Space, page 53]			
205	Is the invert of the cistern inflow pipe at least as high or higher than the invert of the outlet pipe? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Site Topography, page 53]			
206	If the rainwater harvesting tank is subject to flooding or partially below the groundwater table, is the tank secured with fasteners or weighed down to keep from floating? The combined weight of the tank and the hold down ballast must meet or exceed the buoyancy force of the tank. [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Water Table, page 53]			
207	Is the cistern watertight to prevent water damage when placed near building foundations? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Setbacks from Buildings, page 54]			
208	Is the cistern overflow device designed to avoid causing ponding or soil saturation within 10-feet of building foundations? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Setbacks from Buildings, page 54]			
209	Is the cistern subject to vehicle loads? Is the design rated for this loading? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Vehicle Loading, page 55]			

210	If municipal backup water supply is used, does the rainwater harvesting system have a backflow preventer or air gaps to keep harvested water separate from the main water supply? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Plumbing Code, page 52]			
211	Has the designer reviewed the requirements in Appendix N Rainwater Harvesting Treatment and Management Requirements and provided a Design Report? This report outlines design assumptions and water quality end use standards. [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Water Use, page 53]			
212	Does the Design Report contain all the sections as listed in Appendix N Rainwater Harvesting Treatment and Management Requirements? [SWGB Appendix N Rainwater Harvesting Treatment and Management Requirements- N.9 Design Report, page N-9]			
213	Has the applicant provided documentation of each proposed non-potable use demand and certification from the appropriate professional? <input type="checkbox"/> Replenishment of water features and water fountains - professional MEP engineer [SWGB 3.3 Rainwater Harvesting- Definition, page 51]			
214	Is the rainwater harvesting system sized using the Rainwater Harvesting Storage Volume Calculator? [SWGB 3.3.4 Rainwater Harvesting Design Criteria- Sizing of Rainwater Harvesting Systems, page 64]			
215	If the applicant increased the filter efficiency in the Rainwater Harvesting Storage Volume Calculator, have they provided the filter specifications verifying the efficiency rate? [SWGB 3.3.3 Rainwater Harvesting Pretreatment Criteria, page 55]			
216	Does the cistern have a low water cutoff to provide backup water supply? Has the volume of water below the low flow cutoff been identified and was this volume subtracted from the overall cistern storage volume? [SWGB 3.3.4 Rainwater Harvesting Design Criteria- Completing the Sizing Design of the Cistern, page 68]			
217	To help estimate the number of gallons of water needed each month to replenish the water feature, does the plan include the calculations from EPA's Water Budget Tool ? Under <i>Plant Type or Landscape Feature</i> , "Pool, Spa, or Water Feature" should be selected. The tool will calculate the landscape water requirements (LWR) in gallons/month. This number may be entered into DOEE's Rainwater Harvesting Calculator under <i>Irrigation</i> .			

218	<p>The Calculator does not allow for a specific cistern size input. To determine a specific cistern size, has the applicant interpolated between two cistern sizes provided in the Results tab of the spreadsheet? [SWGB 3.3.4 Rainwater Harvesting Design Criteria- Completing the Sizing Design of the Cistern, page 68]</p>			
219	<p>Is an additional volume above the emergency overflow provided to allow very large storms to pass? Above the overflow water level, is there a freeboard volume that accounts for at least 5 percent of the overall cistern size? These volumes must be included in the overall size of the cistern. [SWGB 3.3.4 Rainwater Harvesting Design Criteria- Completing the Sizing Design of the Cistern, page 68]</p>			
220	<p>Does the pretreatment system meet the following criteria?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Leaf and gutter guards for small systems <input type="checkbox"/> Design intensity of 1 inch/hour (for design storm=SWRv) to size pre-cistern conveyance and filter components <input type="checkbox"/> Filter efficiency of 90% is used when managing the 2-year and 15-year storms <p>[SWGB 3.3.3 Rainwater Harvesting Pretreatment Criteria, page 55]</p>			
221	<p>Does the cistern satisfy the following characteristics?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aboveground cisterns should be ultraviolet and impact resistant <input type="checkbox"/> Opaque or otherwise protected from direct sunlight <input type="checkbox"/> Sealed using water safe, non-toxic substance <input type="checkbox"/> Screened to prevent mosquito breeding (if applicable) <input type="checkbox"/> Total cistern volume includes dead storage below the outlet to the distribution system and an air gap at top of the cistern (gravity systems require a minimum 6 inches of dead space) <input type="checkbox"/> Drain plug, cleanout sump to allow system to completely drain <input type="checkbox"/> Includes additional volume above the emergency overflow to allow very large storms to pass <input type="checkbox"/> Freeboard volume to account for at least 5% of the overall cistern size <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria, page 58]</p>			

222	<p>Does an underground system have an access opening meeting the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Standard size manhole or equivalent opening for cleaning, maintenance, and inspection <input type="checkbox"/> Installed in such a way as to prevent surface and groundwater from entering through the top of any fittings and secured and locked to prevent unwanted entry <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Cisterns, page 58]</p>			
223	<p>Does the cistern contain a drain plug or cleanout sump to allow the system to be completely emptied, as needed?</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Distribution Systems, page 60]</p>			
224	<p>Are the distribution lines buried below the frost line with shut off valves accessible in the snow? Above ground outdoor pipes must be insulated or heat wrapped to prevent freezing.</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Distribution Systems, page 60]</p>			
225	<p>Does the system have an overflow pipe? Does the overflow pipe meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The capacity is greater than or equal to the inflow pipe <input type="checkbox"/> Diameter and slope are sufficient to drain the cistern while maintaining adequate freeboard height <input type="checkbox"/> Screened to prevent access by birds and mammals <input type="checkbox"/> Includes a backflow preventer if connected directly to combined sewer or storm sewer <p>[SWGB 3.3.2 Rainwater Harvesting Conveyance Criteria- Overflow, page 55]</p>			
226	<p>Does the maintenance plan include a maintenance schedule similar to Table 3.7 Typical Maintenance Tasks for Rainwater Harvesting Systems in the Stormwater Management Guidebook?</p> <p>[SWGB 3.3.7 Rainwater Harvesting Maintenance Criteria, page 70]</p>			
227	<p>Does the maintenance plan address cold climate maintenance considerations for rainwater harvesting systems, such as:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Heat tape on piping <input type="checkbox"/> Taking rainwater harvesting systems offline for winter to prevent freezing <input type="checkbox"/> Disconnecting and draining vulnerable above ground pipe systems <input type="checkbox"/> Checking underground and indoor system downspouts and overflow components for ice blockages during snowmelt events <p>[SWGB 3.3.7 Rainwater Harvesting Maintenance Criteria- Cold Climate Considerations, page 70]</p>			

228	Does the maintenance plan include maintenance items for water features, per the GAR Guidebook? [Section 6, page 107; SWGB 3.3.7 Rainwater Harvesting Maintenance Criteria, page 70]			
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Section F – Bonus Credits, F1: Native Plants		Sheet #	Yes/No	Comments
229	Are plants being counted for the native bonus indicated as native in the plant schedule? [Section 5.11, page 88]			
230	Is each proposed native plant (or a cultivar of the plant) found in at least one of the following references: <ul style="list-style-type: none"> <input type="checkbox"/> U.S. Fish and Wildlife Native Plants for Wildlife Habitat and Conservation Landscaping, Chesapeake Bay Watershed; <input type="checkbox"/> the Chesapeake Bay Native Plants Center online database; <input type="checkbox"/> the GAR Plant List [Section 5.11, page 88]			
231	If a proposed native plant cannot be found in one of the previous references, have two references in current publication been provided to support the plant's designation as a regional native? [Section 5.11, page 88]			
232	Are the plants credited in section B or C? Plants must receive initial credit to receive the bonus. [Section 5.11, page 87]			

Section F – Bonus Credits, F2: Food Cultivation		Sheet #	Yes/No	Comments
233	Are plants being counted for the food cultivation bonus indicated as such in the plant schedule? [Section 5.12, page 91]			
234	Are cover crops included in the plant schedule for non-food production seasons? [Section 5.11, page 92]			
235	Is the food cultivation area accessible by at least one building occupant? [Section 5.12, page 92]			
236	Has a permanent water source been provided for all food cultivation plantings? [Section 5.12, page 92]			
237	Do the plans contain food cultivation bonus calculations? [Section 5.12, pages 91-92]			
238	Does the maintenance plan include maintenance items for Food Cultivation, per the GAR Guidebook? [Section 6, pages 107-108]			

Section F – Bonus Credits, F3: Harvested Rainwater Irrigation		Sheet #	Yes/No	Comments
239	Do the plans contain a schematic irrigation and drainage plan showing:			
	<input type="checkbox"/> Areas to receive irrigation			
	<input type="checkbox"/> Delivery system (spray, drip)			
	<input type="checkbox"/> Calculations showing the anticipated water demand from plantings that require irrigation https://www.epa.gov/watersense/water-budget-data-finder			
	<input type="checkbox"/> Water budget indicating the percentage of water demand met by rainwater, calculated on a monthly and annual basis			
	<input type="checkbox"/> Drainage plan for all irrigated areas			
[Section 5.13, page 93]				
240	If the plan proposes spray irrigation, are the treatment standards consistent with the DOEE Stormwater Guidebook? [Section 5.13, page 93]			
241	Is the percent of irrigation water demand met by harvested rainwater greater than 50%? [Section 5.13, pages 94-95]			
242	If the anticipated water demand is greater than 1.0"/week, has a justification been provided? [Section 5.13, page 95]			
Confirm the cistern follows the design criteria for Harvested Rainwater as outlined in the Stormwater Guidebook (see below): [Section 5.13, page 95]				
243	Are all underground utilities and other obstructions identified and not in conflict with the cistern and pipe locations? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Available Space, page 53]			

244	Is the invert of the cistern inflow pipe at least as high or higher than the invert of the outlet pipe? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Site Topography, page 53]			
245	If the rainwater harvesting tank is subject to flooding or partially below the groundwater table, is the tank secured with fasteners or weighed down to keep from floating? The combined weight of the tank and the hold down ballast must meet or exceed the buoyancy force of the tank. [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Water Table, page 53]			
246	Is the cistern watertight to prevent water damage when placed near building foundations? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Setbacks from Buildings, page 54]			
247	Is the cistern overflow device designed to avoid causing ponding or soil saturation within 10-feet of building foundations? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Setbacks from Buildings, page 54]			
248	Is the cistern subject to vehicle loads? Is the design rated for this loading? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Vehicle Loading, page 55]			
249	If municipal backup water supply is used, does the rainwater harvesting system have a backflow preventer or air gaps to keep harvested water separate from the main water supply? [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Plumbing Code, page 52]			
250	Has the designer reviewed the requirements in Appendix N Rainwater Harvesting Treatment and Management Requirements and provided a Design Report? This report outlines design assumptions and water quality end use standards. [SWGB 3.3.1 Rainwater Harvesting Feasibility Criteria- Water Use, page 53]			
251	Does the Design Report contain all the sections as listed in Appendix N Rainwater Harvesting Treatment and Management Requirements? [SWGB Appendix N Rainwater Harvesting Treatment and Management Requirements- N.9 Design Report, page N-9]			
252	Is the rainwater harvesting system sized using the Rainwater Harvesting Storage Volume Calculator? [SWGB 3.3.4 Rainwater Harvesting Design Criteria- Sizing of Rainwater Harvesting Systems, page 64]			
253	Does the calculator assume 1 inch of watering per week during the growing season? If not, is EPA's Water Budget Tool used to calculate the estimated gallons required per month?			

254	<p>If the applicant increased the filter efficiency in the Rainwater Harvesting Storage Volume Calculator, have they provided the filter specifications verifying the efficiency rate?</p> <p>[SWGB 3.3.3 Rainwater Harvesting Pretreatment Criteria, page 55]</p>			
255	<p>Does the cistern have a low water cutoff to provide backup water supply? Has the volume of water below the low flow cutoff been identified and was this volume subtracted from the overall cistern storage volume?</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Completing the Sizing Design of the Cistern, page 68]</p>			
256	<p>The Calculator does not allow for a specific cistern size input. To determine a specific cistern size, has the applicant interpolated between two cistern sizes provided in the Results tab of the spreadsheet?</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Completing the Sizing Design of the Cistern, page 68]</p>			
257	<p>Is an additional volume above the emergency overflow provided to allow very large storms to pass? Above the overflow water level, is there a freeboard volume that accounts for at least 5 percent of the overall cistern size? These volumes must be included in the overall size of the cistern.</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Completing the Sizing Design of the Cistern, page 68]</p>			
258	<p>Does the pretreatment system meet the following criteria?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Leaf and gutter guards for small systems <input type="checkbox"/> Design intensity of 1 inch/hour to size pre-cistern conveyance and filter components <input type="checkbox"/> Filter efficiency of 90% is used when managing the 2-year and 15-year storms <p>[SWGB 3.3.3 Rainwater Harvesting Pretreatment Criteria, page 55]</p>			

259	<p>Does the cistern satisfy the following characteristics?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aboveground cisterns should be ultraviolet and impact resistant <input type="checkbox"/> Opaque or otherwise protected from direct sunlight <input type="checkbox"/> Sealed using water safe, non-toxic substance <input type="checkbox"/> Screened to prevent mosquito breeding (if applicable) <input type="checkbox"/> Total cistern volume includes dead storage below the outlet to the distribution system and an air gap at top of the cistern (gravity systems require a minimum 6 inches of dead space) <input type="checkbox"/> Drain plug, cleanout sump to allow system to completely drain <input type="checkbox"/> Includes additional volume above the emergency overflow to allow very large storms to pass <input type="checkbox"/> Freeboard volume to account for at least 5% of the overall cistern size <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria, page 58]</p>			
260	<p>Does an underground system have an access opening meeting the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Standard size manhole or equivalent opening for cleaning, maintenance, and inspection <input type="checkbox"/> Installed in such a way as to prevent surface and groundwater from entering through the top of any fittings and secured and locked to prevent unwanted entry <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Cisterns, page 58]</p>			
261	<p>Does the cistern contain a drain plug or cleanout sump to allow the system to be completely emptied, as needed?</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Distribution Systems, page 60]</p>			
262	<p>Are the distribution lines buried below the frost line with shut off valves accessible in the snow? Above ground outdoor pipes must be insulated or heat wrapped to prevent freezing.</p> <p>[SWGB 3.3.4 Rainwater Harvesting Design Criteria- Distribution Systems, page 60]</p>			

263	<p>Does the system have an overflow pipe? Does the overflow pipe meet the following requirements?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The capacity is greater than or equal to the inflow pipe <input type="checkbox"/> Diameter and slope are sufficient to drain the cistern while maintaining adequate freeboard height <input type="checkbox"/> Screened to prevent access by birds and mammals <input type="checkbox"/> Includes a backflow preventer if connected directly to combined sewer or storm sewer <p>[SWGB 3.3.2 Rainwater Harvesting Conveyance Criteria- Overflow, page 55]</p>			
264	<p>If the harvested water is used for irrigation, does the design include the following?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Proposed delineation of planting areas to be irrigated <input type="checkbox"/> Planting plan <input type="checkbox"/> Quantification of expected water demand (assuming default of 1 inch/week over area to be irrigated between May and October) <input type="checkbox"/> If the expected water demand exceeds 1 inch/week or 0 inch/week from October through May, a Certified Landscape Expert signature certifying the water demand <p>[SWGB 3.3.5 Rainwater Harvesting Landscaping Criteria, page 68]</p>			
265	<p>Does the maintenance plan include a maintenance schedule similar to Table 3.7 Typical Maintenance Tasks for Rainwater Harvesting Systems in the Stormwater Management Guidebook?</p> <p>[SWGB 3.3.7 Rainwater Harvesting Maintenance Criteria, page 70]</p>			
266	<p>Does the maintenance plan address cold climate maintenance considerations for rainwater harvesting systems, such as:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Heat tape on piping <input type="checkbox"/> Taking rainwater harvesting systems offline for winter to prevent freezing <input type="checkbox"/> Disconnecting and draining vulnerable above ground pipe systems <input type="checkbox"/> Checking underground and indoor system downspouts and overflow components for ice blockages during snowmelt events <p>[SWGB 3.3.7 Rainwater Harvesting Maintenance Criteria- Cold Climate Considerations, page 70]</p>			
267	<p>Does the maintenance plan include maintenance items for Harvested Rainwater Irrigation?</p> <p>[Chapter 6, pages 108-109; SWGB 3.3.7 Rainwater Harvesting Maintenance Criteria, page 70]</p>			

