1. Determination of Simplified Approach Volume Requirements

All proposed impervious areas (as required by the Municipality's Ordinance) must be included in the determination of the amount of new impervious areas and the size of proposed BMPs needed to manage stormwater. Proposed impervious areas on an individual residential lot generally include, but are not limited to: roof area, pavement, sidewalks, driveways, patios, porches, permanent pools, or parking areas, etc. See the definitions provided in Section 2 and check with the Municipal Engineer to confirm what features of the proposed project must be included in the calculation of new impervious areas. Sidewalks, driveways, or patios that are constructed with gravel or pervious pavers and will not be disturbed or altered in the future may not need to be included in this calculation (check with the Municipal Engineer). In these cases, the amount of proposed impervious area may be reduced for proposed driveways, patios, and sidewalks through the use of gravel, pervious pavement, and turf pavers. All proposed impervious areas must be constructed so that runoff is conveyed to a BMP(s); no runoff may be directed to storm sewers, inlets or other impervious areas (i.e. street) without effective stormwater management from a site.

In addition, the use of low impact development is recommended to further minimize the effect of the new construction on water, land, and air. Low impact development is a method of development that incorporates design techniques that include: minimizing the amount of land disturbance, reducing the amount of impervious cover, disconnecting gutters and directing stormwater runoff to vegetated areas to infiltrate, and redirecting the flow of stormwater runoff from impervious surfaces to vegetated areas instead of the street or gutter.

Below are the steps that must be undertaken to meet the Ordinance requirements. The size and description of the proposed construction as well as important aspects related to the design of the BMP(s) must be documented in the Simplified Approach Worksheet found in Table 4. All individuals planning on using the Simplified Approach are encouraged to review the planned project with the Municipal Engineer prior to initiating the Simplified Approach to confirm the following:

- That the proposed project is not otherwise exempt from the stormwater management control and engineered Stormwater Management Site Plan requirements of the Municipality's Stormwater Management Ordinance;
- That the proposed project size is within the range eligible to use this Simplified Approach;
- To determine which components of the proposed project must be included in the calculation of "impervious areas"; and
- Whether any local conditions are known to the Municipal Engineer that would preclude the use of any of the techniques included in this Simplified Approach.

Step 1 - Prepare the Simplified SWM Site Plan (i.e. sketch plan) that includes:

- Name and address of the owner of the property, and name and address of individual preparing the plan (if different than the property owner), along with the date of submission.
- Location of all existing structures including buildings, driveways, and roads within fifty (50) feet of the project site.

- Location of proposed structures, driveways, or other paved areas with approximate size in square feet.
- Location, and distance, of any existing surface water features, such as streams, lakes, ponds, wetlands or other natural waterbodies, within fifty (50) feet of the project site and/or BMPs. Depending upon the Municipality's requirements, the following may also be required (check with the Municipal Engineer):
    - The project and/or BMPs cannot cause earth disturbance within fifty (50) feet from a perennial or intermittent stream, wetland or waterbody. Protecting this area from non-disturbance along the aforementioned features helps protect the applicant's land from erosion, the flood carrying capacity of streams, and the water quality of the waterbody. Where the applicant cannot meet the 50-foot non-disturbance width, the applicant should work with the Municipal Engineer to determine if a reduced width is acceptable, however a minimum of at least a 10 foot non-disturbance area width should be maintained.
    - If an existing buffer is legally prescribed (i.e., deed, covenant, easement, etc.) and it exceeds this requirements, the existing buffer must be maintained.
- Location, orientation, and dimensions of all proposed BMPs. For all rain gardens/bioretention, infiltration trenches, and dry wells the length, width, and depth must be included on the plan. For rain barrels or cisterns the volume must be included.
- Location of any existing or proposed on-lot septic system and potable water wells showing rough proximity to infiltration facilities. See Section 3. Description of BMPs, for the appropriate setbacks for on-lot septic systems and potable water wells.

Step 2 –Determine the Impervious Area to be Managed

- Determine the total area of all proposed impervious surfaces that will need to drain to one or more BMP(s).
- Also determine the total area for proposed earth disturbance to complete the project and install the BMP(s). The total earth disturbance to complete a project is often greater than the project area to allow for access from construction vehicles, stock piling of materials and excavation. The total area of earth disturbance must account for all of the construction activities necessary to construct the project.
- Determine locations where BMP(s) need to be placed so that the appropriate amount of stormwater runoff from the proposed impervious surfaces can be captured and managed.

Step 3 – Select the BMP(s) to be Used and Determine Appropriate Sizing Criteria

- Select the BMP(s) to be used and determine the requirements of each from Section 3, Description of BMPs.
    - For instance, the back half of a garage may drain to a rain barrel and the front half of the garage and a driveway may drain to a bioretention area. Each BMP will be sized differently, manage stormwater runoff and will need to be designed to be consistent with Section 3.
- Then obtain the required storage volume and surface area needed for each of the proposed BMP(s) from the appropriate heading below.
- Complete Table 4 Simplified Approach Worksheet.

For Rain Barrels/Cisterns:
Step 3A –Select the proposed impervious area value in Column 1 of Table 1 that is closest to, but not less than the determined value.

Step 3B – Determine the volume that needs to be provided in cubic feet and gallons to satisfy the volume requirements using Columns 2 and 3 in Table 1.

For Rain Gardens/Bioretention or Dry Well #1:
Step 3A – Select the proposed impervious area value in Column 1 of Table 2 that is closest to, but not less than the determined value.

Step 3B - Determine the volume that needs to be provided in cubic feet to satisfy the volume requirements using Column 2 in Table 2.

Step 3C – Using the value from Column 2 determined above, and the depth (D) of the proposed BMP, simply determine the surface area needed from Column 3 of Table 2.

Note: The arrows under Column 3 in Table 2 indicate which range of depths is appropriate for each BMP. To determine the depth based on the area, select an area that corresponds to the required volume, and is closest to, but not more than the area to be used. To determine the area based on the depth, select a depth that is closest to, but not less than the depth that is to be used.

For Infiltration Trench or Dry Well #2:
Step 3A – Select the proposed impervious area value in Column 1 of Table 3 that is closest to, but not less than the determined value.

Step 3B - Determine the volume that needs to be provided in cubic feet to satisfy the volume requirements using Column 2 in Table 3.

Step 3C – Using the value from Column 2 determined above, and the depth (D) of the proposed BMP, simply determine the surface area needed from Column 3 of Table 3.

Note: The arrows under Column 3 in Table 3 indicate which range of depths is appropriate for each BMP. To determine the depth based on the area, select an area that corresponds to the required volume, and is closest to, but not less than the area to be used. To determine the area based on the depth, select a depth that is closest to, but not less than the depth that is to be used.

Step 4 – Submit the final SWM Site Plan, Simplified Approach Worksheet, and signed and notarized "Simplified Approach Operation, Maintenance and Inspection Plan and Agreement" (a sample document is provided in the accompanying appendix) to the Municipality for review and approval prior to beginning construction. After the Municipality has signed the "Simplified Approach Operation, Maintenance and Inspection Plan and Agreement", record the Agreement at the County's Office of Recorder of Deeds. Construction can begin only after the Municipality has issued its approval of the proposed project to the applicant.

Table 1: Simplified Approach - Calculating Rain Barrel/Cistern Storage Volume for 1" Rainfall[1]

Column 1	Column 2	Column 3	
Proposed Impervious Area (square feet)	**Volume of Rain Barrel/Cistern[2] (cubic feet)**	**Volume of Rain Barrel/Cistern (gallons)**	
I	V_{RBcf}	V_{RBgal}	
Sum of all Proposed Impervious Areas	$(1*(1/12)*I)/0.75=V_{RBcf}$	$V_{RBcf} * 7.48=V_{RBgal}$	
50	6	42	
100	11	83	
150	17	125	**Rain Barrel**
200	22	166	
250	28	208	
300	33	249	
350	39	291	
400	44	332	
450	50	374	
500	56	416	
550	61	457	**Cistern**
600	67	499	
650	72	540	
700	78	582	
750	83	623	
800	89	665	
850	94	706	
900	100	748	
950	106	790	
1,000	111	831	
1,050	117	873	
1,100	122	914	
1,150	128	956	
1,200	133	997	
1,250	139	1,039	
1,300	144	1,080	
1,350	150	1,122	
1,400	156	1,164	
1,450	161	1,205	
1,500	167	1,247	
1,550	172	1,288	
1,600	178	1,330	
1,650	183	1,371	
1,700	189	1,413	
1,750	194	1,454	
1,800	200	1,496	
1,850	206	1,538	
1,900	211	1,579	
1,950	217	1,621	
2,000	222	1,662	

[1]The typical volume of a rain barrel is between 50-200 gallons, so more than one rain barrel may be needed. Larger volumes may require a cistern.
[2]It is assumed that the rain barrel/cistern is 25% full prior to receiving runoff.

Table 2: Simplified Approach - Calculating Rain Garden/Bioretention and Dry Well #1 Storage Volume and Surface Area for 1 Inch Rainfall

Column 1	Column 2	Column 3							
		Surface Area of Rain Garden/Bioretention or Dry Well #1 Acceptable Depths for Each BMP are indicated by the arrows below **(square feet)**							
Total Proposed Impervious Area (square feet)	**Volume of Rain Garden/ Bioretention or Dry Well #1[1] (cubic feet)**	*Area Required for a BMP with a Depth(D) of 0.5'*	*Area Required for a BMP with a Depth(D) of 1.0'*	*Area Required for a BMP with a Depth(D) of 1.5'*	*Area Required for a BMP with a Depth(D) of 2.0'*	*Area Required for a BMP with a Depth(D) of 2.5'*	*Area Required for a BMP with a Depth(D) of 3.0'*	*Area Required for a BMP with a Depth(D) of 3.5'*	*Area Required for a BMP with a Depth(D) of 4.0'*
		← Rain Garden /Bioretention (0.5'-1.0') →		← Dry Well #1 (1.5'-4.0') →					
I	V	*A(sf)*							
Sum of all Proposed Impervious Areas	1*(1/12)*I= V	V/D=A							
50	4	8	4	3	2	2	1	1	1
100	8	17	8	6	4	3	3	2	2
150	13	25	13	8	6	5	4	4	3
200	17	33	17	11	8	7	6	5	4
250	21	42	21	14	10	8	7	6	5
300	25	50	25	17	13	10	8	7	6
350	29	58	29	19	15	12	10	8	7
400	33	67	33	22	17	13	11	10	8
450	38	75	38	25	19	15	13	11	9
500	42	83	42	28	21	17	14	12	10
550	46	92	46	31	23	18	15	13	11
600	50	100	50	33	25	20	17	14	13
650	54	108	54	36	27	22	18	15	14
700	58	117	58	39	29	23	19	17	15
750	63	125	63	42	31	25	21	18	16
800	67	133	67	44	33	27	22	19	17
850	71	142	71	47	35	28	24	20	18
900	75	150	75	50	38	30	25	21	19
950	79	158	79	53	40	32	26	23	20
1,000	83	167	83	56	42	33	28	24	21
1,050	88	175	88	58	44	35	29	25	22
1,100	92	183	92	61	46	37	31	26	23
1,150	96	192	96	64	48	38	32	27	24
1,200	100	200	100	67	50	40	33	29	25
1,250	104	208	104	69	52	42	35	30	26
1,300	108	217	108	72	54	43	36	31	27
1,350	113	225	113	75	56	45	38	32	28
1,400	117	233	117	78	58	47	39	33	29
1,450	121	242	121	81	60	48	40	35	30
1,500	125	250	125	83	63	50	42	36	31
1,550	129	258	129	86	65	52	43	37	32
1,600	133	267	133	89	67	53	44	38	33
1,650	138	275	138	92	69	55	46	39	34
1,700	142	283	142	94	71	57	47	40	35
1,750	146	292	146	97	73	58	49	42	36
1,800	150	300	150	100	75	60	50	43	38
1,850	154	308	154	103	77	62	51	44	39
1,900	158	317	158	106	79	63	53	45	40
1,950	163	325	163	108	81	65	54	46	41
2,000	167	333	167	111	83	67	56	48	42

[1] It is assumed that the rain garden/bioretention or the dry well #1 are empty prior to receiving runoff (i.e. 0% full)

Table 3: Simplified Approach - Calculating Infiltration Trench and Dry Well #2 Storage Volume and Surface Area for 1 Inch of Rainfall

Column 1	Column 2	Column 3							
		Surface Area of Infiltration Trench or Dry Well #2 Acceptable Depths for Each BMP are indicated by the arrows below **(square feet)**							
Total Proposed Impervious Area (square feet)	**Volume of Infiltration Trench or Dry Well #2[1] (cubic feet)**	*Area Required for a BMP with a Depth(D) of 1.5'*	*Area Required for a BMP with a Depth(D) of 2.0'*	*Area Required for a BMP with a Depth(D) of 2.5'*	*Area Required for a BMP with a Depth(D) of 3.0'*	*Area Required for a BMP with a Depth(D) of 3.5'*	*Area Required for a BMP with a Depth(D) of 4.0'*	*Area Required for a BMP with a Depth(D) of 4.5'*	*Area Required for a BMP with a Depth(D) of 5.0'*
		Dry Well #2 (1.5'-4.0')				Infiltration Trench (2.0'-5.0')			
I	V	*A(sf)*							
Sum of all Proposed Impervious Areas	(1*(1/12)**I*)/ (0.4)[1] =V	V/D=A							
50	10	7	5	4	3	3	3	2	2
100	21	14	10	8	7	6	5	5	4
150	31	21	16	13	10	9	8	7	6
200	42	28	21	17	14	12	10	9	8
250	52	35	26	21	17	15	13	12	10
300	63	42	31	25	21	18	16	14	13
350	73	49	36	29	24	21	18	16	15
400	83	56	42	33	28	24	21	19	17
450	94	63	47	38	31	27	23	21	19
500	104	69	52	42	35	30	26	23	21
550	115	76	57	46	38	33	29	25	23
600	125	83	63	50	42	36	31	28	25
650	135	90	68	54	45	39	34	30	27
700	146	97	73	58	49	42	36	32	29
750	156	104	78	63	52	45	39	35	31
800	167	111	83	67	56	48	42	37	33
850	177	118	89	71	59	51	44	39	35
900	188	125	94	75	63	54	47	42	38
950	198	132	99	79	66	57	49	44	40
1,000	208	139	104	83	69	60	52	46	42
1,050	219	146	109	88	73	63	55	49	44
1,100	229	153	115	92	76	65	57	51	46
1,150	240	160	120	96	80	68	60	53	48
1,200	250	167	125	100	83	71	63	56	50
1,250	260	174	130	104	87	74	65	58	52
1,300	271	181	135	108	90	77	68	60	54
1,350	281	188	141	113	94	80	70	63	56
1,400	292	194	146	117	97	83	73	65	58
1,450	302	201	151	121	101	86	76	67	60
1,500	313	208	156	125	104	89	78	69	63
1,550	323	215	161	129	108	92	81	72	65
1,600	333	222	167	133	111	95	83	74	67
1,650	344	229	172	138	115	98	86	76	69
1,700	354	236	177	142	118	101	89	79	71
1,750	365	243	182	146	122	104	91	81	73
1,800	375	250	188	150	125	107	94	83	75
1,850	385	257	193	154	128	110	96	86	77
1,900	396	264	198	158	132	113	99	88	79
1,950	406	271	203	163	135	116	102	90	81
2,000	417	278	208	167	139	119	104	93	83

[1] Assumes a percent void volume of 40%

Table-4: Simplified Approach Worksheet

Name of Property Owner(s):	Date:
Name of Applicant(s) [if different than Owner(s)]:	
Contact Phone #: Email Address:	
Address of Project:	
Description of Project:	
☐ Met with Municipal Engineer to discuss proposed project. [insert date of meeting]	
Distance from earth disturbance to nearest surface water feature (stream, pond, wetland, etc.) (if required by the Municipality, circle one): 50 feet or less More than 50 feet	
☐ **Step 1**: Attach Simplified SWM Site Plan (i.e. sketch plan), per Section 1, Step 1	
Step 2: Determine the Impervious Area to be Managed	
Total Proposed Impervious Area (square feet):	
Total Earth Disturbance (square feet):	

Step 3: Select the BMP(s) to be Used and Appropriate Sizing Criteria

Rain Barrel or Cistern

Proposed Impervious Surface from Column 1 in Table 1	Volume from Column 3 in Table 1			

Rain Garden/Bioretention or Dry Well #1

Proposed Impervious Surface from Column 1 in Table 2	Volume of BMP from Column 2 in Table 2	Area Dimensions of BMP - Column 3 in Table 2	Depth of BMP from Column 3 in Table 2	Types of Materials to be Used

Infiltration Trench or Dry Well #2

Proposed Impervious Surface from Column 1 in Table 3	Volume of BMP from Column 2 in Table 3	Area Dimensions of BMP - Column 3 in Table 3	Depth of BMP from Column 3 in Table 3	Types of Materials to be Used

☐ **Step 4**: Complete, Sign & have Operation, Maintenance and Inspection Plan and Agreement Notarized and Recorded at the County Recorder of Deeds (when signed by Municipality)

Note: For additional BMPs, use additional sheet(s).