Instruction Document – GI Worksheet

Instruction

Upon opening this GI Worksheet, there are four sheets listed below:

1) A sheet of instruction (Instruction)
2) A sheet for entering the Site Plan basic information (Site_Plan_Info)
3) A sheet for filling out in all green infrastructure (GI) and/or best management practice (BMP) details in the site plan (BMP_GI_Detail)
4) A sheet contains a list of Neighborhood Codes and Names

Users need to fill out the "Site_Plan_Info" and "BMP_GI_Detail" sheets in the GI Worksheet for each site plan. In each spreadsheet, All the fields highlighted in "**light blue**" are required fields and need to either be filled out or the proper options from the dropdown list needs to be selected, as applicable. Please fill in values to match the units and decimal places requested in the GI Worksheet. The fields highlighted in "light gray" are automatically filled and do not need to be entered.

One worksheet should be for one site plan. If there are more than one site plans, please make copies of this GI Worksheet and fill out each of them for each site plan separately.

Data Entry - Site_Plan_Info Spreadsheet

To fill out the site plan basic information, go to the Site_Plan_Info spreadsheet. All the fields in the "Site_Plan_Info" sheet are required field and should be available in the site plan drawings except for the account number and neighborhood. As one GI Worksheet is for one site plan. There should be only one column in this sheet entered in Column D with a detailed information of the field name, description, and units (if applied) given in Columns A to C. Users need to either enter a value to the field or select an option from dropdown list (if applied). A Sheet "Neighborhood_Code_List" is provided as a reference of complete neighborhood name. There is one unique combination for each street name and neighborhood code in the dropdown list. Best judgement should be used to select the appropriate neighborhood designation for each site plan.

An example of completed Site_Plan_Info spreadsheet is given in Figure 1 below.

	A	B	C	D
1	**Field**	**Description**	**Unit**	**Value**
2	**Site Plan Project Number**	Site Plan Project Number assigned by the Commission	-	30199
3	**Account Number**	Water Account Number, if available	-	
4	**Street Name & Neighborhood Code**	Street Name and Neighborhood Code. Please select from the dropdown.	-	
5	**Address Number**	Address Number	-	6786
6	**Parcel ID**	Tax Parcel ID	-	33/00534123
7	**Owner**	Owner Type. Please select from the dropdown.	-	PRIVATE
8	**Stormwater Depth**	Inches of stormwater required to be captured by the BMP/GI	inch (to hundreds)	1.25
9	**Project Area**	Total Project Area	square ft. (to nearest whole number)	43242
10	**Total Existing Impervious Area**	Impervious area based on existing site conditions submitted in the Site Plan review process.	square ft. (to nearest whole number)	234253
11	**Total Proposed Impervious Area**	Impervious area based on proposed site conditions submitted in the Site Plan review process.	square ft. (to nearest whole number)	76536

Figure 1 Example of a completed Site_Plan_Info Spreadsheet

Data Entry - BMP_GI_Detail Spreadsheet

The details and essential information of BMP/GI features in the site plan will be entered in the sheet "BMP_GI_Detail". In this spreadsheet, Columns A to C provides the name, description, and units (if applied) of the required fields to be entered. Each BMP/GI feature associated with the site plan needs to be entered into this spreadsheet starting from Column D. If a site plan includes multiple BMP/GI features, each BMP/GI feature needs to be entered separately in the BMP_GI_Detail spreadsheet. An example of a site plan with two subsurface infiltration systems, one porous paver, and one perforated pipe installed are provided in this manual. The stormwater recharge volume calculation of the example site plan is provided in Figure 2. A detailed instruction of step-by-step data entry is given below with a completed BMP_GI_Detail spreadsheet based on the calculations is given in Figure 3.

Data Entry Instructions:

Step	Fields	Action/Calculation
Step 1	Header Row	Assign a sequence number to each BMP/GI feature in the site plan with a format of "GI1", "GI2", "GI3",…,etc. into the header row. • Example Site Plan: GI1 to GI4
Step 2	• Project Number (auto-filled) • GI Feature Sequence Number (auto-filled)	Verify fields "Project Number" and "GI Feature Sequence Number" in the spreadsheet, which are automatically filled. The "Project Number" should be consistent with the site plan project number entered in the "Site_Plan_Info" spreadsheet. The GI Feature Sequence Number should be auto-populated if GI Feature Sequence Number is available (i.e., not blank). No user data entry needed for these two fields. • Example Site Plan: Expect to see 23900 in "Project Number" and 1 to 4 in "GI Feature Sequence Number".
Step 3	• Longitude • Latitude	Fill the longitude and latitude of each BMP/GI feature. The BMP/GI location may be obtained from web mapping platform (e.g., google map)
Step 4	• Infiltration System Type • Low Impact Development (LID) Type (auto-filled)	Select the corresponding infiltration system type from the dropdown for each BMP/GI feature. • Example Site Plan: "Stormtech Chambers" for the subsurface infiltration system #1 and #2; "Permeable Pavement" for the porous pavers; "Perforated Pipe" for the perforated pipes in stone. The field "Low Impact Development (LID) Type" will be automatically filled based on the infiltration system type specified. No user data entry needed.

Step	Fields	Action/Calculation
		• Example Site Plan: Stormtech chamber and perforated pipe are both mapped to Infiltration trench and permeable pavement is mapped to permeable pavement in this case.

Step 5	• Proposed Infiltration Capacity
	• Proposed Impervious Area
	• Required Infiltration Capacity (auto-filled)
		Specify the "Proposed Infiltration Capacity" for each BMP/GI feature based on the calculated proposed calculation of provided storage volume.
		
		• Example Site Plan
		   o Subsurface Infiltration System #1: 1,428 (cu. ft.)
		   o Subsurface Infiltration System #2: 4,177 (cu. ft.)
		   o Porous Pavers: 1,609 (cu. ft.)
		   o Perforated Pipe: 82 (cu. ft.)
		
		The field "Proposed Impervious Area" will be estimated based on the tributary drainage area of each individual BMP/GI features. For a site plan with multiple BMP/GI features, the sum of proposed impervious area shall match the total proposed area filled in sheet "Site_Plan_Info".
		
		• Example Site Plan
		   o Subsurface Infiltration System #1: 10,452 (cu. ft.)
		   o Subsurface Infiltration System #2: 30,572 (cu. ft.)
		   o Porous Pavers: 11,776 (cu. ft.)
		   o Perforated Pipe: 600 (cu. ft.)
		
		The "Required Infiltration Capacity" of each BMP/GI feature will then be automatically calculated by multiplying the individual proposed impervious area by the required stormwater depth specified in sheet "Site_Plan_Info" (see Figure 1).
		
		• Example Site Plan (No user data entry needed)
		   o Required Infiltration Capacity (No user data entry needed)
		      ▪ Subsurface Infiltration System #1: $10{,}452 \times \frac{1.25}{12} \cong 1{,}089$ (sq. ft.)
		      ▪ Subsurface Infiltration System #2: $30{,}572 \times \frac{1.25}{12} \cong 3{,}185$ (sq. ft.)
		      ▪ Porous Pavers: $11{,}776 \times \frac{1.25}{12} \cong 1{,}227$ (sq. ft.)
		      ▪ Perforated Pipe: $600 \times \frac{1.25}{12} \cong 63$ (sq. ft.)

Step 6	• BMP/GI Surface Area	Fill an estimated surface area for each BMP/GI feature.

Step	Fields	Action/Calculation

		• Example Site Plan (Subsurface Infiltration System #1 and #2)
		   ○ Subsurface Infiltration System #1: 683.88 (sq. ft.) (calculated based on the overall system size in Figure 2)
		   ○ Subsurface Infiltration System #2: 1438.25 (sq. ft.) (overall system size provided in Figure 2)

RECHARGE VOLUME CALCULATIONS

REQUIRED STORAGE VOLUME

Total Impervious Area   = 53,400 SF
(Roof Area + Impervious Site Area)

Required Recharge Volume   = 1.25" Storm over Total Impervious Area
                          = [1.25"/12"/'] x 53,400 SF
                          = 5,562 CF ◄

PROVIDED STORAGE VOLUME

Subsurface Infiltration System #1: 40 4'x4'x3' INFILTRATION GALLEYS
Overall System Size: 41.00' x 16.68' x 4.50'
4 Rows, 10 Chambers per Row, surrounded by stone
Weir Elevation=16.00'
Storage Provided below Weir Elevation = **1,428 CF** (per HydroCAD)

Subsurface Infiltration System #2: 11 8'x14'x3.7' INFILTRATION GALLEYS
Overall System Size: 1438.25 SF
2 Rows of 4, 1 Row of 3, surrounded by stone
Outlet Elevation=12.50'
Storage Provided below Outlet Elevation = **4,177 CF** (per HydroCAD)

Porous Pavers:
Outlet Elevation = 17.71'
Storage Provided below Outlet Elevation = **1,609 CF** (per HydroCAD)

Perforated Pipe in Stone:
Weir Elevation = 10.20'
Storage Provided below Weir Elevation = **82 CF** (per HydroCAD)

Total Provided Storage = 1,428 + 4,177 + 1,609 + 82 = 7,296 CF ◄

7,296 CF > 5,562 CF

Figure 1 Example Site Plan Stormwater Recharge Volume Calculation

	Field	Description	Unit	GI1	GI2	GI3	GI4
2	Project Number	Site Plan Project Number, same for all the GI features in this table. This field is automatically filled.	-	23900	23900	23900	23900
3	GI Feature Sequence Number	Unique sequence number assigned to each GI feature in the site plan. This field is automatically filled.	-	1	2	3	4
4	Longitude	Longitude in decimal format.	decimal degrees (to the sixth decimal place)	-71.128720	-71.130141	-71.128720	-71.128666
5	Latitude	Latitude in decimal format.	decimal degrees (to the sixth decimal place)	42.364394	42.364357	42.364394	42.364355
6	Infiltration System Type	Type of infiltration system. Please select from the dropdown.	-	STORMTECH CHAMBERS	STORMTECH CHAMBERS	PERMEABLE PAVEMENT	PERFORATED PIPE
7	Low Impact Development (LID) Type	Type of LID corresponding to the infiltration system type specied above. This field is automatically filled.	-	INFILTRATION TRENCH	INFILTRATION TRENCH	PERMEABLE PAVEMENT	INFILTRATION TRENCH
8	Proposed Infiltration Capacity	Proposed infiltration capacity calculated based on proposed stormwater depth.	cubic ft. (to tenths)	1,428.0	4,177.0	1,609.0	82.0
9	Proposed Impervious Area	Proposed impervious area specified in the site plan. The sum of proposed impervious area from each BMP/GI feature should be the same as the total proposed impervious area in sheet "Site_Plan_Info"	square ft. (to nearest whole number)	10,452	30,572	11,776	600
10	Required Infiltration Capacity	Required infiltration capacity calculated based on required stormwater depth.	cubic ft. (to tenths)	1,088.8	3,184.6	1,226.7	62.5
11	BMP/GI Surface Area	Surface area or footprint of BMP/GI features (e.g., length x width)	square ft. (to nearest whole number)	640	1,232	387	420

Notes:
Assign a sequence number to each BMP/GI feature in the site plan to the **first row** with a format of "GI1", "GI2", "GI3"...etc.

Figure 3 Example of a completed BMP_GI_Detail Spreadsheet