

Calculation Spreadsheet Instructions

Visit tahoebmp.org for most recent version of calculation spreadsheet

Second tab on Exel calc sheet for instructions

GENERAL INFORMATION

Pop ups	The pop ups can be moved by putting the mouse pointer over them, then holding down the left mouse button and dragging. Some cells do not have pop ups yet even some of the non-data entry cells do - click to see
Color Codes	Yellow cells are for user input
	Green cells show that treatment met or exceeded runoff capacity
	Peach cells show "potential" errors and should be accompanied by an explanation in the notes
	Red cells show an error, for example an installation within 12" of the seasonal high water table

PROPERTY AND DESIGNER INFORMATION

Property Address:	Computer calculated - if APN is found with no address the user will be able to enter the address on the line above
APN:	Enter the APN
Date:	Enter the Date
Designed By:	Enter the name of the designer/calc sheet user
Water Table:	Enter any on-site data relative to the depth to evidence of a seasonal high water table
Restriction:	Enter any on-site data for the depth to any restrictive feature, ie bedrock

GRAVEL ARMOR FOR DRIP LINES

Contributing Surface	Enter the label for the roof
# of Stories	Enter the number of stories (1,2, or 3)
Length (ft.)	Enter the length of the drip line
Width (ft.)	Enter the width of the roof
Area (ft²)	Computer calculated area of the contributing surface
Runoff (ft³)	Computer calculated volume of runoff from the contributing surface in a 1" storm event
Treatment Label:	Enter the treatment label
Length (ft.)	Enter the length of the armor - should be at least as long as the drip edge
Width (in.)	Enter the width of the armor - should be at least as wide as appropriate width for the # of stories
Depth (in.)	Enter ZERO
On-Site Ksat (in/hr)	If the Ksat was measured enter the results here
mapped Ksat (in/hr)	Computer calculated Ksat value taken from the soil survey based on a depth of 12"
Prefab Void Space (%)	Leave blank
Overall Void Space (%)	Leave blank
Volume (yds³)	Computer calculated (ZERO)
Capability (ft³)	Computer calculated capability of the gravel armor for infiltration of water in one hour
Drain Rock Quantity (yd³)	Computer calculated volume of drain rock necessary for the gravel armor
Excess Runoff (ft³)	Computer calculated volume of excess runoff (treatment is undersized)
Excess Capacity (ft³)	Computer calculated volume of excess capacity (treatment is oversized)

NON-GRAVEL ARMOR FOR DRIP LINES (i.e. vegetation)

Basin								
2:1 (rock lined or vegetated)					5:1 (mowable)			
Contributing Surface	Dimensions of the structure for which the basin is being created (usually the driveway)							
Length (ft.)								
Width (ft.)								
Area (ft ²)								
Area (ft ²)					0	0	0	
Runoff (ft³)	0.0	0.0	0.0					
Treatment Label:								
Top Length (ft.)	Dimensions of the basin to treat the runoff from the structure							
Top Width (ft.)								
Depth (in.)								
Bottom Length (ft.)					0.0	0.0	0.0	0.0
Bottom Width (ft.)					0.0	0.0	0.0	0.0
Volume (yd ³)	0.0	0.0	0.0	0.0				
On-Site Ksat								
Mapped Ksat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Treatment Capacity (ft³)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Excess Runoff (ft³)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Excess Capacity (ft³)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Notes

These sections do not need to "calc out" because they are for stabilizing sources of sediment

Deck Treatments				
Deck Label	Deck dimensions for quantity of drain rock			
Area (ft ²)				
Slope (%)				
Slope Length (ft)				
Gravel Treatment Length (ft.)				
Gravel Treatment Width (ft.)				
Additional Treatment See				
Drain Rock Quantity (yd ³)				

Source Control Treatments				
Area Label	Place source control BMP dimensions here to quantify quantity of drain rock			
Area (ft ²)				
Slope (%)				
Slope Length (ft)				
% Cover				
% Canopy Treatment				
Drain Rock Quantity (yd ³)				

Reviewer Comments



The average void space for gravel (3/4" to 1 1/2" diameter) is 40%. If you forget to put in that percentage, you will notice that the treatment capacity does not meet the amount of runoff that requires treatment



Property Address:	751 EAGLE DR	
(Start here) APN:	128-041-03	
Date:		
Designed By:		
Contributing Surface	R1	R2
# of Stories	2	2
Length (ft.)	42	42
Width (ft.)	19	19
Area (ft ²)		
Area (ft ²)	798	798
Runoff (ft³)	66.5	66.5
Treatment Label:	T1	T2
Length (ft.)	44.0	44.0
Width (in.)	24	24
Depth (in.)	6	6
On-Site Ksat (in/hr)		
mapped Ksat (in/hr)	6.0	6.0
Prefab Void Space (%)		
Average Void Space (%)		
Effective Volume (yd ³)	0.8	0.8
Treatment Capacity (ft³)	51.3	51.3
Drain Rock Quantity (yd ³)	1.6	1.6
Excess Runoff (ft³)	15.2	15.2
Excess Capacity (ft³)	0.0	0.0



BMP Calculation Spreadsheet

Estimated Soil Erosion Savings of 30.5 pounds per year by doing your BMPs.

Soil erosion is estimated by the treatment volume multiplied by a 250 mg/l concentration plus contributions of source control and deck treatments calculated with the USLE.

Property Address: 751 EAGLE DR	MAP DATA	ON-SITE DEPTHS							
(Start here) APN: 128-041-03 APN lookup	Water Table: >5ft						Total Drain Rock Quantity (yd³)		4.9
Date:	Restriction: None noted					Total Runoff (ft³)	183.0	Amount Treated	183.0
Designed By:	Max. Depth of Install: 67 in.	Map Unit: 7142					Total Excavation (yd³)		4.2

Basin

	2:1 (rock lined or vegetated)			
Contributing Surface	dway			
Length (ft.)	20.0			
Width (ft.)	12.0			
Area (ft ²)				
Area (ft ²)	240	0	0	0
Runoff (ft ³)	20.0	0.0	0.0	0.0
Treatment Label:	dw basin			
Top Length (ft.)	8.0			
Top Width (ft.)	5.0			
Depth (in.)	6			
Bottom Length (ft.)	6.0	0.0	0.0	0.0
Bottom Width (ft.)	3.0	0.0	0.0	0.0
Volume (yd ³)	0.5	0.0	0.0	0.0
On-Site Ksat				
Mapped Ksat	4.0	4.0	4.0	4.0
Treatment Capacity (ft³)	24.0	0.0	0.0	0.0
Excess Runoff (ft ³)	0.0	0.0	0.0	0.0
Excess Capacity (ft ³)	4.0	0.0	0.0	0.0

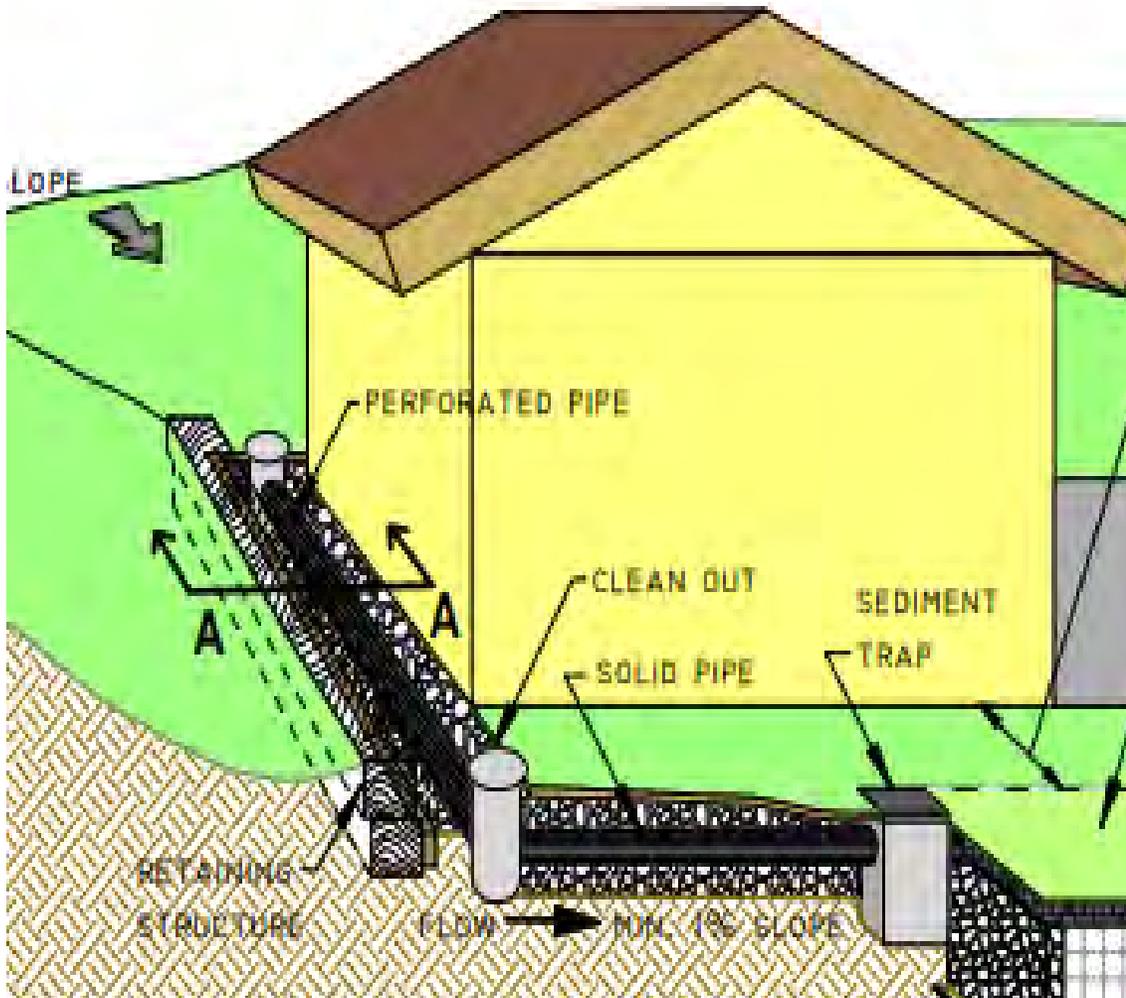
The calc sheet automatically accounts for 1 foot of separation between the bottom of the basin to groundwater or bedrock. The treatment capacity cell will turn red if you try to go down too deep

The bottom of the basin automatically calculates when you put in the top dimensions.

The calc sheet uses a 2:1 ratio for basins to obtain a trapezoidal shape



Determining Void Space for Subsurface Perforated Drainage AKA French Drain



Property Address:	128 MARKET ST			
(Start here) APN:	1318-26-101-011	APN Info		
Date:				
Designed By:				
Contributing Surface				
# of Stories				
Length (ft.)				
Width (ft.)				
Area (ft ²)				
Area (ft ²)	0	0	0	0
Runoff (ft ³)	0.0	0.0	0.0	0.0
Treatment Label:				
Length (ft.)				
Width (in.)				
Depth (in.)				
Calc_Sheet	Void_Calculator	INSTRUCTIONS		



A perforated pipe has greater capacity to capture and infiltrate runoff than drain rock alone. We must determine the average void space for a single unit with 100% void space and gravel envelope with 40% to determine the total capacity

Prefab Dimensions: single unit of perforated pipe

Overall Dimensions: single unit of perf-pipe + surrounding drain rock = average prefab void-space

Treatment Label	Prefab Dimensions		Overall Dimensions		Inches	to	Feet
Prefab Type	Length (ft.)	40.0	Length (ft.)	40.0			
	or Cubic Inches		or Cubic Inches				
	Width (in.)		Width (in.)	18	Radius (in)	to	Cross Sectional Area (in ²)
	or Cross Sectional Area (in ²)	50.3	or Cross Sectional Area (in ²)				
	Depth (in.)		Depth (in.)	10	4.0		50.3
	or # of Units						
Prefab Void %	100%	Average Void %	57%				



Go back to the first tab on the calculation spreadsheet

Put in the dimensions of the contributing surface, the BMP treatment and our void space

Explain the increase of void space in the notes section at the bottom of the calc sheet

Contributing Surface	Roof A	
# of Stories	1	
Length (ft.)	38	
Width (ft.)	16	
Area (ft ²)		
Area (ft ²)	608	0
Runoff (ft ³)	50.7	0.0
Treatment Label:	B1	
Length (ft.)	40.0	
Width (in.)	18	
Depth (in.)	10	
On-Site Ksat (in/hr)		
mapped Ksat (in/hr)	4.0	4.0
Prefab Void Space (%)		
Average Void Space (%)	57%	
Effective Volume (yd ³)	1.9	0.0
Treatment Capacity (ft³)	55.7	0.0
Drain Rock Quantity (yd ³)	2.6	0.0
Excess Runoff (ft³)	0.0	0.0
Excess Capacity (ft³)	5.0	0.0





Site Constraint Tracking Form

Property Address:	County:	APN:
443 Lakeview Ave	Douglas	1318-16-810-035
Site Evaluator:	Agency:	Date:
Sarah Traiman	TRPA	01/19/2021

The following site constraint(s) has/have been identified on your property:

- Property located in an area with a Seasonal High Water Table/Stream Environment Zone
- Property located on slow soils (Ksat <=1"/hr)
- Property located on rocky soils or in an area with bedrock at or near grade
- Infiltration area restricted due to utility placement
- Infiltration area restricted due to retaining structures
- Steep slopes / Cut and fill slopes
- Infiltration area restricted due to property boundaries
- Conveyance structure cannot be installed due to underground heating unit
- Structure located with no/minimal setback to public right-of-way
- Subsurface contamination
- Tahoe Keys property, unless utilizing pervious coverage exemption pursuant to TRPA Code § 30.4.6.D.1

Evaluator Notes:

This parcel is considered site constrained due to the reason stated above making the installation of full infiltration BMPs difficult and/or infeasible at this time in terms of stormwater capture and infiltration. **However, Source Control BMPs are still required around the property.** Source Control BMPs are designed to stabilize sediment on-site; examples include mulching, gravel armoring and terracing. Fire-defensible space BMPs are also required. **No** combustible materials, including woody vegetation or wooden borders for infiltration systems, are permitted within 5 feet of any structure. Remove tree limbs that are within 5' of chimneys, decks and roofs of structures.

Where applicable, Source Control BMPs also include parking barriers to restrict vehicle access to all unpaved areas without impeding snow removal practices. Vehicle traffic compacts soil and disturbs vegetated areas. Please keep this in mind when installing the parcel BMPs on this property.

If property is site constrained request a copy of a Site Constraint Tracking Form (775)589-5202

The document can be submitted with the permit application, so the planner knows that the installation of full infiltration BMPs is not possible due to an environmental constraint

The BMP database and parcel tracker is updated to show the site constraint

