

Water and Sediment Control Basin (WASCoB) Design Information Sheet (Single WASCoB System)

SI Units

This worksheet is a supplement to Publication 832: Agricultural Erosion Control Structures: A Design and Construction Manual.

Note: Use this Design Information Sheet if only one WASCoB is to be constructed and drained through a single subsurface tile outlet.

WASCoB Identification _____

Section 1: Watershed Data Input

No.	Description	Input Value
1	Watershed area	_____ ha
2	Watershed slope	_____ %
3	Runoff curve number from Tables 2.2–2.4	_____
4	Peak flow from watershed for 10-year storm from Table 4.25-M to 4.31-M	_____ m ³ /s
5	Peak flow from watershed for 25-year storm from Table 4.25-M to 4.31-M	_____ m ³ /s
6	Obtain the storm duration for a 10-year storm from Table 4.25-M to 4.31-M	_____ hrs
7	Obtain the storm volume expected for a 10-year storm from Table 4.25-M to 4.31-M	_____ m ³

Section 2: Storage and Pond Dimensions

No.	Description	Input Value
8	Determine slope of ponding area upstream from storage berm from field measurements	_____ %
9	Determine slope of side of ponding area upstream from storage berm from field measurements. If side slopes are different, use the average of the two slopes	_____ %
10	Determine soil loss expected above ponding area from Table 4.32-M	_____ tonnes/ha/yr
11	Storage required for eroded soil for 15-year life expectancy	Line (10) _____ x Line (1) _____ x 15 = _____ tonnes x 0.68 m ³ /tonne = _____ m ³
12	Total pond storage	Line (7) _____ + Line (11) _____ = _____ m ³

(Storage and Pond Dimensions table continued on next page)

Section 2: Storage and Pond Dimensions *(continued)*

No.	Description	Input Value
13	Determine volume factor	Line (12) _____ x Line (8) _____ x Line (9) _____ = _____ m ³
14	Obtain pond depth (design berm height) from table 4.33-M	_____ m
15	Determine pond length	Line (14) _____ ÷ Line (8) _____ x 100 = _____ m
16	Determine maximum pond width Note: In Line 16, if pond side slopes vary by more than 50%, the calculated pond width will be different than the actual field pond width. For accuracy, separate the sides and calculate individually.	Line (14) _____ ÷ Line (9) _____ x 200 = _____ m

Section 3: Outlet Design

No.	Description	Input Value
17	Obtain maximum flooding time from Table 4.34	_____ hrs
18	Determine outlet capacity	Line (7) _____ ÷ (Line (17) _____ - Line (6) _____) x 0.000277 = _____ m ³ /s
19	Determine the horizontal pipe and riser pipe sizes. Complete the following	Horizontal pipe slope: _____ % Horizontal pipe diameter (Table 4.28-M of Figure 4.31 or Publication 29, Drainage Guide for Ontario): _____ mm Riser Pipe diameter (Tables 4.19-M to 4.20-M): _____ mm Orifice diameter (if required) (Tables 4.21-M to 4.22-M): _____ mm

Section 4: Emergency Spillway Design & Final Berm Construction

No.	Description	Input Value
20	Emergency overflow spillway type to be used. (Check one)	Grass Lined Rock Lined
21	Determine emergency overflow spillway capacity from Line (5)	_____ m ³ /s

(Emergency Spillway Design & Final Berm Construction table continued on next page)

Section 4: Emergency Spillway Design & Final Berm Construction *(continued)*

No.	Description	Input Value
22	Determine emergency overflow spillway notch dimensions from Table 4.35-M to meet capacity requirements from Line (21)	Notch width (L): _____ m Notch depth (D): _____ m
23	Actual berm height (Note: Freeboard is 10% of Line (14) to maximum of 0.15 m)	Line (14) _____ m + freeboard _____ m + notch depth (D) (Line (22)) _____ m = _____ m
24	Actual berm length	Line (23) _____ ÷ Line (9) _____ x 200 = _____ m
25	Berm side slope (minimum 2:1, maximum 8:1)	_____ :1
26	Top width of berm (Note: Default width of 1.2 m)	_____ m
27	Bottom width of berm	Line (26) _____ + (2 x Line (23) _____ x Line (25) _____) = _____ m
28	Earth volume for berm from Table 4.36-M to 4.38-M	_____ m ³