Version 30.09.2004 For latest version visit http://stumbles.id.au/clem/

Department Primary Industries
FLOOD DISCHARGE COMPUTATION SHEET
(Rural Areas up to 2500 hectares)

Landholder: ______________________________ File: ____________

Location GDA94:________________ Locality:________________ Site No:______

CATCHMENT AREA – A

Catchment Area determined from ______________________________ ha

STREAM BED LENGTH AND SLOPE

Straight line length of stream ______________________________m

Tortuosity factor ______________________________

Adjusted stream length L = __________ x __________ = __________m

Total Fall H = ______________________________m

Undulating & Mountainous	Flat Country
Weighted slope = 0.75 x H/L x 100	Weighted slope = H/L x 100
= ________________%	= ________________%

TIME OF CONCENTRATION

(Use Bransby-Williams formula if total flow length exceeds 1000m)

Average stream velocity VS =______________________________m/s

Time for stream flow TS = L/(60VS)=______________________mins

Time for overland flow TO =______________________________mins

Total time of concentration TC =______________________________mins

DESIGN RAINFALL INTENSITY – I

Design Rainfall Intensity I = __________mm/hr for Return Period ______years

RUNOFF COEFFICIENT – C

(as per tables overleaf)

Design rainfall intensity =______________________

Relief =______________________

Retention =______________________

Infiltration =______________________

Cover =______________________

Sum of values selected = Runoff coefficient C =______________________

FLOOD DISCHARGE – Q

$$Q = \frac{CIA}{360} = \frac{\quad \times \quad \times \quad}{360} = \quad m^3/sec$$

Prepared: ______________________________ Checked:______________________

Date: ______________________________ Date: ______________________

COEFFICIENT OF RUNOFF
(Turner's Table)

CATCHMENT LESS THAN 260 HECTARES IN AREA				
RUN – OFF FACTORS	CATCHMENT CHARACTERISTICS			
Relief	Steep, rugged country with average slopes above 20 % 0.10	Hilly with average slopes of 10 – 20 % 0.05	Rolling with average slopes 5 – 10 % 0.00	Relatively flat land with average slope of 0 – 5 % 0.00
Surface retention: Stream and surface storage	Negligible: few surface depressions; watercourses. Steep with thin film of overland flow. 0.10	Well defined system of small watercourses. 0.05	Considerable surface depressions; overland flow is significant; some farm ponds and swamps; some contour banks and furrows. 0.05	Poorly defined and meandering stream courses large surface storage; water and soil conservation plan on 90% of catchment. 0.00
Infiltration	No effective soil cover; either solid rock or thin mantle of negligible infiltration capacity. 0.25	Slow water infiltration eg. Solodic soils (red-brown earths and grey soils of heavy texture as found in Mallee) When surface sealed or saturated. 0.20	Loam soils or well structured clay soils eg. Krasnozems (red loams or clays) 0.10	Deep sands or well aggregated soil eg. Chernozems (black soils as found in the Wimmera) 0.05
Cover	No effective plant cover. 0.25	Sheet eroded native pastures; less than 10% of area under good native or improved pastures; clean cultivated crops. 0.20	About 50% of area with improved cover not more than 50% cultivation; open woodlands. 0.10	About 90% of area with improved pastures; dry Sclerophyll (open eucalyptus) type forest. 0.05
Average Rainfall Intensity	75 to 100 mm/hour 0.30	50 to 75 mm/hour 0.25	25 to 50 mm/hour 0.15	25 mm/hour 0.05

CATCHMENT GREATER THAN 260 HECTARES AND NOT MORE THAN 2600 HECTARES IN AREA				
RUN – OFF FACTORS	CATCHMENT CHARACTERISTICS			
Relief	Steep, rugged country with average slopes above 20 % 0.10	Hilly with average slopes of 10 – 20 % 0.05	Rolling with average slopes 5 – 10 % 0.00	Relatively flat land with average slope of 0 – 5 % 0.00
Surface retention: Stream and surface storage	Negligible: few surface depressions; watercourses. Steep with thin film of overland flow. 0.25	Well defined system of small watercourses. 0.15	Considerable surface depressions; overland flow is significant; some farm ponds and swamps; some contour banks and furrows. 0.10	Poorly defined and meandering stream courses large surface storage; water and soil conservation plan on 90% of catchment. 0.05
Infiltration	No effective soil cover; either solid rock or thin mantle of negligible infiltration capacity. 0.25	Slow water infiltration eg. Solodic soils (red-brown earths and grey soils of heavy texture as found in Mallee) When surface sealed or saturated. 0.20	Loam soils or well structured clay soils eg. Krasnozems (red loams or clays) 0.15	Deep sands or well aggregated soil eg. Chernozems (black soils as found in the Wimmera) 0.10
Cover	No effective plant cover. 0.30	Sheet eroded native pastures; less than 10% of area under good native or improved pastures; clean cultivated crops. 0.20	About 50% of area with improved cover not more than 50% cultivation; open woodlands. 0.15	About 90% of area with improved pastures; dry Sclerophyll (open eucalyptus) type forest. 0.05
Average Rainfall Intensity	75 to 100 mm/hour 0.15	50 to 75 mm/hour 0.10	25 to 50 mm/hour 0.05	25 mm/hour 0.00

C = sum of values selected (appropriate to the field conditions) for each of the five factors listed.

FLOOD FREQUENCY RETURN PERIOD

FWS Dams (Large)	100 years	Structures & Grassed Chutes – bypass	10 years
Detention Dams	100 to 40 years	- if no bypass	40 years
Minor Dams (Depending on potential damage)	40 to 10 years	Waterways, Diversion and Graded Banks	10 years
		Minor Silt Traps	10 to 5 years