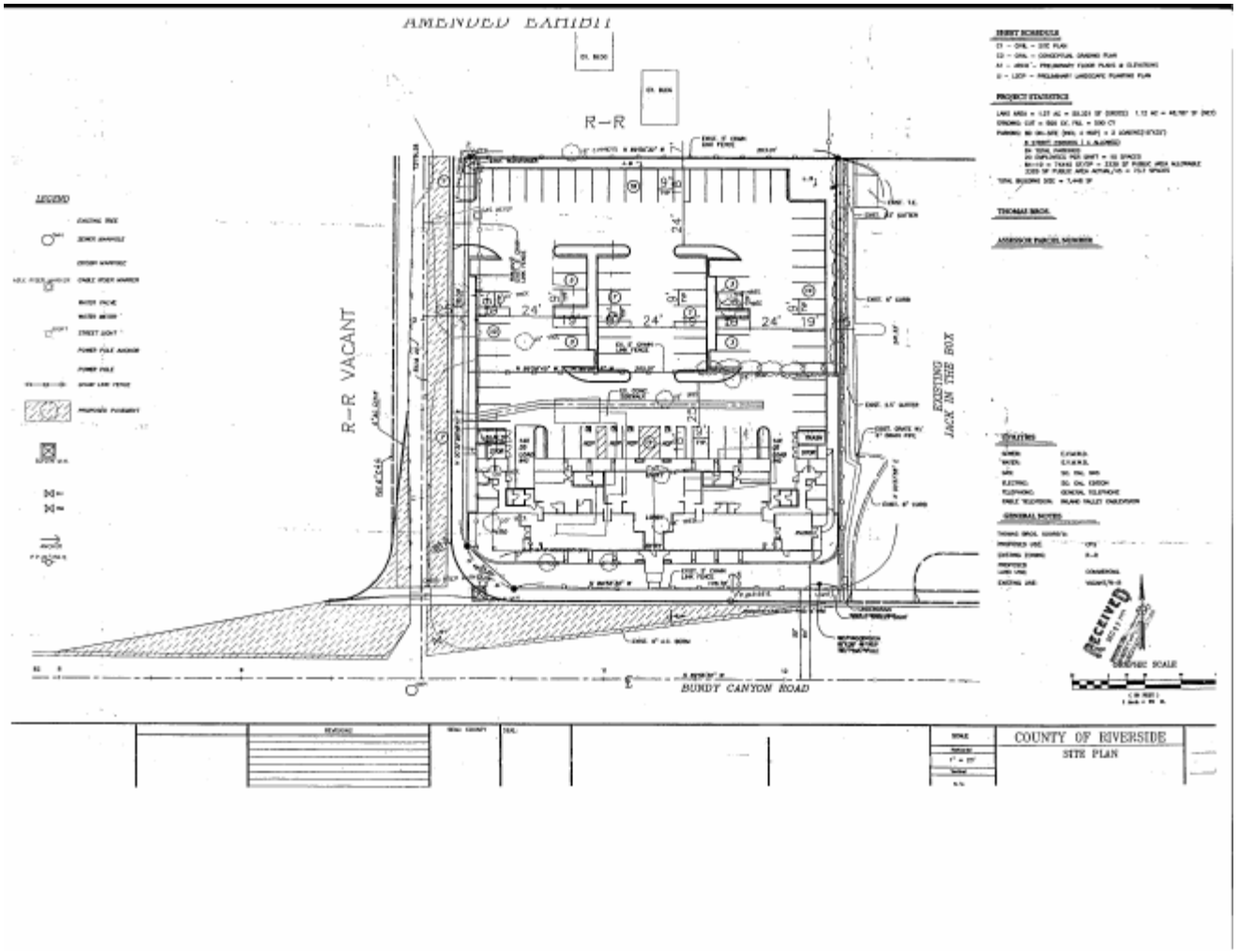
Appendix B
Stormwater Quality Best Management Practice
Design Handbook

Infiltration Basin Example


AMENDED EXHIBIT
R-R
R-R VACANT
EXISTING JACK IN THE BOX
BUNDY CANYON ROAD
LEGEND
SHEET SCHEDULE
PROJECT STATISTICS
UTILITIES
GENERAL NOTES
RECEIVED
GRAPHIC SCALE
COUNTY OF RIVERSIDE
SITE PLAN

Worksheet 1

Design Procedure for BMP Design Volume

85th percentile runoff event

Designer:	**Benjie Cho**
Company:	**Riverside County Flood Control and Water Conservation District**
Date:	**3/1/04**
Project:	**BMP Example**
Location:	**Township 6 South & Range 4 West Section 22**

1. Create Unit Storage Volume Graph		
a. Site location (Township, Range and Section)	T **6S** &R **4W** Section **22**	***(1)***
b. Slope value from the Design Volume Curve in **Appendix A**.	Slope = **1.148**	***(2)***
c. Plot this value on the Unit Storage Volume Graph shown on **Figure 2.**		
d. Draw a straight line form this point to the origin, to create the graph	Is this graph attached? Yes ☒ No ☐	
2. Determine Runoff Coefficient		
a. Determine total impervious area	$A_{impervious}$ = **1.143** acres	***(5)***
b. Determine total tributary area	A_{total} = **1.27** acres	***(6)***
c. Determine Impervious fraction i = ***(5)*** / ***(6)***	i = **.90**	***(7)***
d. Use ***(7)*** in **Figure 1** to find Runoff OR $C = .858i^3 - .78i^2 + .774i + .04$	C = **.73**	***(8)***
3. Determine 85% Unit Storage Volume		
a. Use ***(8)*** in **Figure 1** Draw a Vertical line from ***(8)*** to the graph, then a Horizontal line to the desired V_u value.	V_u = **0.88** in-acre / acre	***(9)***
4. Determine Design Storage Volume		
a. V_{BMP} = ***(9)*** x ***(6)*** [in- acres]	V_{BMP} = **1.12** in-acre	***(10)***
b. V_{BMP} = ***(10)*** / 12 [ft- acres]	V_{BMP} = **0.093** ft-acre	***(11)***
c. V_{BMP} = ***(11)*** x 43560 [ft^3]	V_{BMP} = **4051** ft^3	***(12)***

Notes:

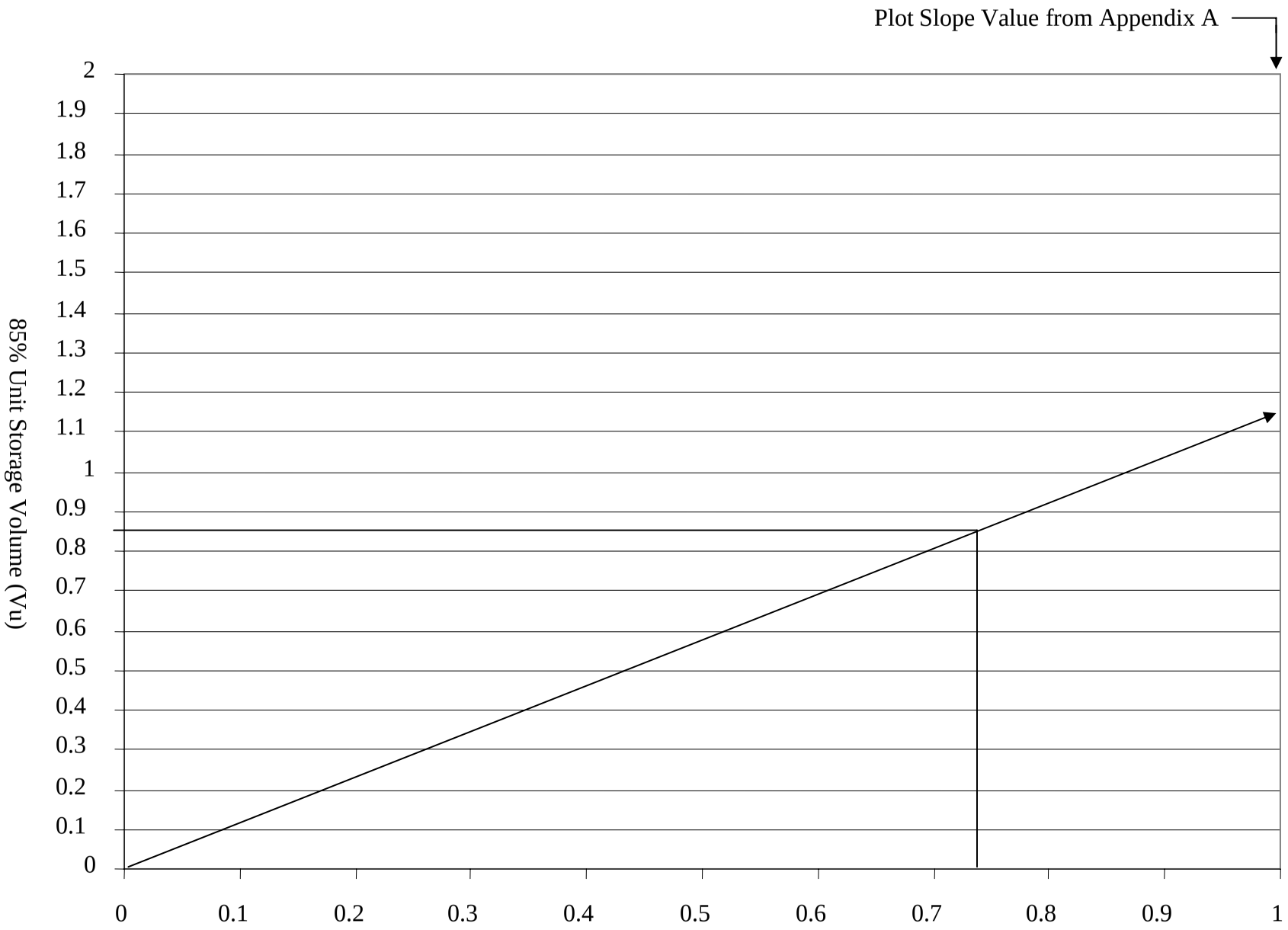


Figure 2 Unit Storage Volume Graph

Datasheet

Site Conditions

A_{total} = 1.27 acres
Land Use = Commercial
Impervious Cover = 90%

Design Assumptions

1. Design Storage Volume

V_{BMP} = 4051 ft^3 (from worksheet 1)

2. Trench Water Depth

Maximum depth should not exceed 8 feet
Calculate the maximum allowable depth of water in the trench, Dm, in feet using the following equation:

$$D_m = [(t) \times (I)] / 12s$$

Where I = site infiltration rate (in/hr)
s = safety factor
t = minimum draw down time (48 hours)

Step#1: For urban cover with B type soil the District uses a RI value of 56
Step#2: Using Plate E-6.2, Fp (infiltration rate) = 0.517 in/hr (for an AMC II)
Step#3: Assuming a safety factor of 3, **D_m = 0.689 feet**

3. Trench Surface Area

Calculate the minimum surface area of the trench bottom will the following equation:

$$A_m = V_{BMP} / D_m$$
A_m = 5880 ft^2 = 0.135 Acres

Where A_m = minimum area required (ft^2)
V_{BMP} = volume of the infiltration basin (ft^3)
D_m = maximum allowable depth (ft)

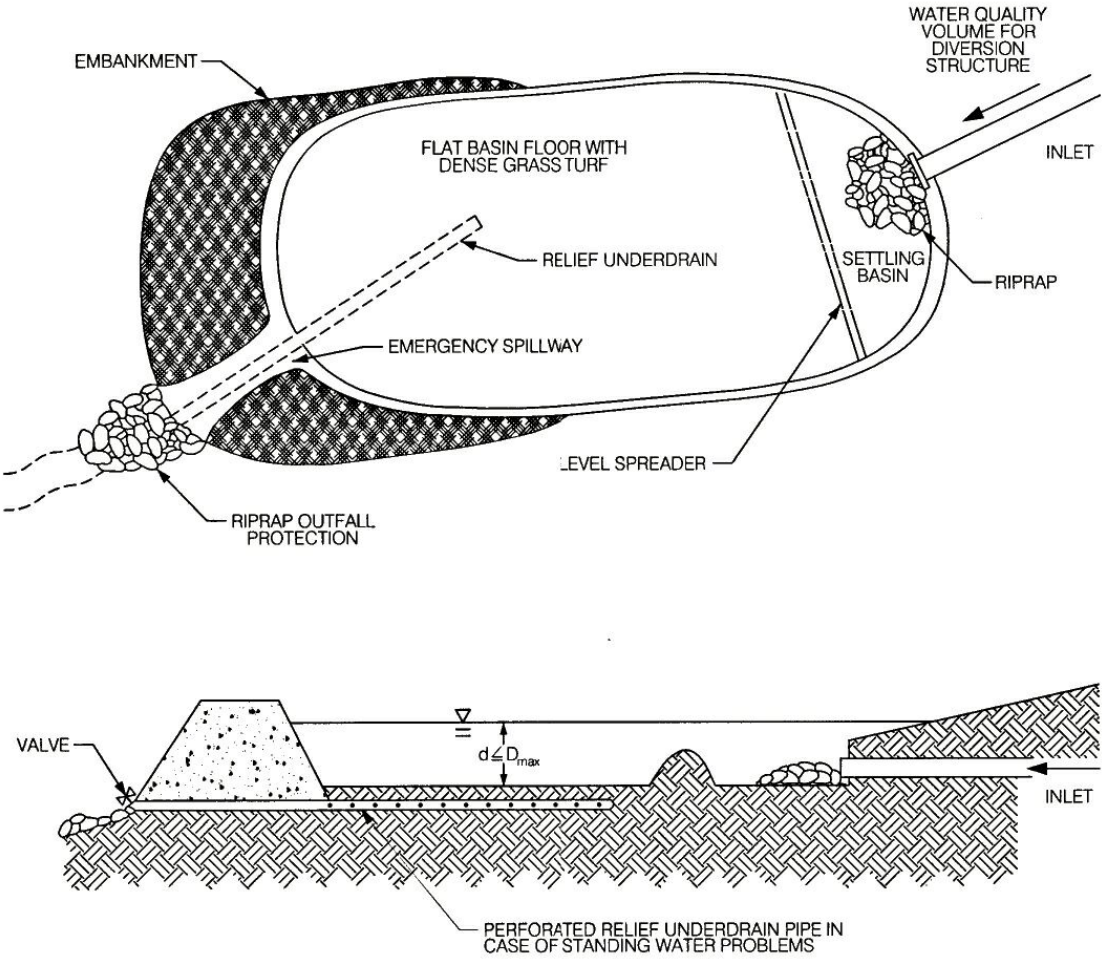


Figure 6: INFILTRATION BASIN

Source: City of Modesto Guidance Manual

Worksheet 4

Design Procedure Form for Infiltration Basin

Designer: Benjie Cho
Company: Riverside County Flood Control
Date: 5/24/04
Project: Example
Location: Township 6 South & Range 4 West Section 22

1. Determine Design Storage Volume (Use Worksheet 1) a. Total Tributary Area (maximum 50) b. Design Storage Volume, V_{BMP}	A_{total} = 1.27 acres V_{BMP} = 4051 ft^3
2. Maximum Allowable Depth (D_m) a. Site infiltration rate (I) b. Minimum drawdown time (48 hrs) c. Safety factor (s) d. D_m = [(t) x (I)]/[12s]	I = 0.517 in/hr t = 48 hrs s = 3 D_m = 0.689 ft
3. Basin Surface Area $A_m = V_{BMP} / D_m$	A_m = 5880 ft^2
4. Vegetation (check type used or describe "other")	____ Native Grasses _X_ Irrigated Turf Grass ____ Other

Notes: