

Attachment A-2
Tables and Calculations

Discharge Point Information and Discharge Quantity (Table 1)***Q = Σ Contributory Outlets**

	Location	Latitude	Longitude	Contributory Outlet(s)	Q(cfs)	Class
1	Waipake Stream	22D11'10"	159D21'39"	S-1, S-2	7.39	2
2	Moloaa Stream	22D10'56"	159D21'28"	M-1, S-3	10.09	2
3	Unnamed Intermittent Stream	22D10'53"	159D21'26"	S-4	11.34	2
4	Unnamed Intermittent Stream	22D10'54"	159D21'25"	S-5	3.59	2
5	Unnamed Intermittent Stream	22D10'49"	159D21'19"	S-6	2.39	2
6	Unnamed Intermittent Stream	22D10'45"	159D21'12"	S-7	1.51	2
7	Unnamed Intermittent Stream	22D10'43"	159D21'06"	S-8	2.71	2
8	Unnamed Intermittent Stream	22D10'43"	159D21'01"	S-9	1.77	2
9	Unnamed Intermittent Stream	22D10'43"	159D20'59"	S-10	4.77	2
10	Unnamed Intermittent Stream	22D10'43"	159D20'51"	S-11	7.75	2
11	Unnamed Intermittent Stream Discharge Point No. 1	Start: 22D10'57" End: 22D11'07"	Start: 159D20'52" End: 159D20'36"	S-12, I-12	7.70	2
12	Moloaa Stream Discharge Point No. 2	Start: 22D11'11" End: 22D11'16"	Start: 159D20'33" End: 159D20'09"	S-13, I-13	7.70	2
13	Moloaa Stream Discharge Point No. 3	Start: 22D11'16" End: 22D11'19"	Start: 159D20'09" End: 159D20'06"	S-14, I-14	3.57	2

Quantity of Storm Water Discharge

The main disturbance during construction comes mainly from the reconstruction of weakened pavement areas, cold planing and resurfacing.

Use the **Rational Method** in calculating the quantity of storm water runoff from Maximum Area of disturbance:

$$Q = CIA$$

where: Q = quantity of storm water runoff in cu.ft./sec.
C = runoff coefficient
I = rainfall intensity in inches for the duration equal to time of concentration, Tc
(use Tc = 10 min.)
A = drainage area in acres

For this project: C = 0.87 for paved streets
I = 5.98 (see calculations below)
A = varies (see table below)

$$I = i \times Cf$$

where: i = 2.6 (intensity of a 2-yr., 1-hr rainfall)
Cf = 2.30 (correction factor)

$$I = i \times Cf = 2.6 \times 2.3 = 5.98$$

For design parameters, refer to County of Kauai Storm Water Runoff System Manual 2001.
See attachment "X" for Quantity of Storm Water Discharges.

Quantity of Storm Water Discharge (Table 2)
Runoff Calculations

TABLE 1- QUANTITY OF STORM WATER DISCHARGE							
OUTLET NO.	RECEIVING STATE WATER	LOCATION	i (in./hr)	C (const.)	I (in./hr)	A (Acre)	Q (cfs)
S-1	Waipake Stream	Route 56, BL Sta. 70+10	2.0	0.87	5.98	0.92	4.79
S-2	Waipake Stream	Route 56, BL Sta. 72+30	2.0	0.87	5.98	0.50	2.60
M-1	Moloaa Stream	Route 56, BL Sta. 87+00	2.0	0.87	5.98	1.60	8.32
S-3	Moloaa Stream	Route 56, BL Sta. 90+00	2.0	0.87	5.98	0.34	1.77
S-4	Moloaa Stream	Route 56, BL Sta. 92+40	2.0	0.87	5.98	2.18	11.34
S-5	Moloaa Stream	Route 56, BL Sta. 101+30	2.0	0.87	5.98	0.69	3.59
S-6	Moloaa Stream	Route 56, BL Sta. 107+25	2.0	0.87	5.98	0.46	2.39
S-7	Moloaa Stream	Route 56, BL Sta. 112+60	2.0	0.87	5.98	0.29	1.51
S-8	Moloaa Stream	Route 56, BL Sta. 116+80	2.0	0.87	5.98	0.52	2.71
S-9	Moloaa Stream	Route 56, BL Sta. 119+70	2.0	0.87	5.98	0.34	1.77
S-10	Moloaa Stream	Route 56, BL Sta. 127+45	2.0	0.87	5.98	0.92	4.77

S-11	Moloaa Stream	Route 56, BL Sta. 140+15	2.0	0.87	5.98	1.49	7.75
S-12	Moloaa Stream	Route 56, BL Sta. 152+90	2.0	0.87	5.98	0.74	3.85
I-12	Moloaa Stream	Route 56, BL Sta. 152+90	2.0	0.87	5.98	0.74	3.85
S-13	Moloaa Stream	Route 56, BL Sta. 160+50	2.0	0.87	5.98	0.74	3.85
I-13	Moloaa Stream	Route 56, BL Sta. 160+50	2.0	0.87	5.98	0.74	3.85
S-14	Moloaa Stream	Route 56, BL Sta. 170+00	2.0	0.87	5.98	0.34	1.77
I-14	Moloaa Stream	Route 56, BL Sta. 170+00	2.0	0.87	5.98	0.34	1.77

***I-12 to I-14: Drain Inlets 12 through 14**

***S-1 to S-14: Contributory Sheet Flow for Inlets 1 through 14**

$$\begin{aligned}
 Q(\text{total}) &= \Sigma Q \times (7.48 \text{ Gallons} / 1 \text{ cu. ft.}) \times (1 \text{ Gallon} / 10^{-6} \text{ Million Gallons}) \times (86400 \text{ sec.} / \text{ Day}) \\
 &= (72.25 \text{ cu. ft.} / \text{ sec.}) \times (7.48 \times 10^{-6} \text{ Million Gallons} / \text{ cu. ft.}) \times (86400 \text{ sec.} / \text{ Day}) \\
 &= \mathbf{46.70 \text{ Million Gallons} / \text{ Day}}
 \end{aligned}$$