Attachment A-2

C.4 Quantity of Storm Water Discharge

Design runoff flows were determined by the Rational Method expressed as:

Q = C x I x A, where,
Q = Flow rate in cubic feet per second (cfs)
C = Runoff Coefficient = 0.85 for impervious areas
= 0.15 for pervious areas
I = Rainfall Intensity in inches per hour = 2.93 in/hr for 25 year, 1-hr storm (at grade condition)
Rainfall Intensity in inches per hour = 3.40 in/hr for 50 year, 1-hr storm (sump condition)
A = Drainage Area in acres

(Design Criteria for Highway Drainage – State of Hawaii Department of Transportation Highways Division)

(1) Runoff from the project site at Basin 1 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 1 & 2 – Existing Drainage Area

(2) Runoff from the project site at Basin 2 will sheet flow across the roadway in a northwest direction and enter a SDOT concrete drainage channel. It will then discharge into Halawa Stream.

See Figure 1 & 2 – Existing Drainage Area

(3) Runoff from the project site at Basin 3 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 2 – Existing Drainage Area

(4) Runoff from the project site at Basin 4 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 2 – Existing Drainage Area

(5) Runoff from the project site at Basin 5 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 2 – Existing Drainage Area

(6) Runoff from the project site at Basin 6 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 2 – Existing Drainage Area

(7) Runoff from the project site at Basin 7 will sheet flow across the roadway in a northwest/southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 2 & 3 – Existing Drainage Area

(8) Runoff from the project site at Basin 8 will sheet flow across the roadway in a northwest/southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 2 & 3 – Existing Drainage Area

(9) Runoff from the project site at Basin 9 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 3 – Existing Drainage Area

(10) Runoff from the project site at Basin 10 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 3 – Existing Drainage Area

(11) Runoff from the project site at Basin 11 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 3 – Existing Drainage Area

(12) Runoff from the project site at Basin 12 will sheet flow across the roadway in a west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 3 – Existing Drainage Area

(13) Runoff from the project site at Basin 13 will sheet flow across the roadway in west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Halawa Stream.

See Figure 3 – Existing Drainage Area

(14) Runoff from the project site at Basin 14 will sheet flow across the roadway in a southeast/southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 3 & 4 – Existing Drainage Area

(15) Runoff from the project site at Basin 15 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 3 & 4 – Existing Drainage Area

(16) Runoff from the project site at Basin 16 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 4 – Existing Drainage Area

(17) Runoff from the project site at Basin 17 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 4 – Existing Drainage Area

(18) Runoff from the project site at Basin 18 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 4 & 5 – Existing Drainage Area

(19) Runoff from the project site at Basin 19 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 4 & 5 – Existing Drainage Area

(20) Runoff from the project site at Basin 20 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 4 & 5 – Existing Drainage Area

(21) Runoff from the project site at Basin 21 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 4 & 5 – Existing Drainage Area

(22) Runoff from the project site at Basin 22 will sheet flow across the roadway in south direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 5 – Existing Drainage Area

(23) Runoff from the project site at Basin 23 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 5 – Existing Drainage Area

(24) Runoff from the project site at Basin 24 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 5 – Existing Drainage Area

(25) Runoff from the project site at Basin 25 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 5 & 6 – Existing Drainage Area

(26) Runoff from the project site at Basin 26 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 5 & 6 – Existing Drainage Area

(27) Runoff from the project site at Basin 27 will sheet flow across the roadway in south and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 – Existing Drainage Area

(28) Runoff from the project site at Basin 28 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 – Existing Drainage Area

(29) Runoff from the project site at Basin 29 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 – Existing Drainage Area

(30) Runoff from the project site at Basin 30 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 – Existing Drainage Area

(31) Runoff from the project site at Basin 31 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 & 7 – Existing Drainage Area

(32) Runoff from the project site at Basin 32 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 & 7 – Existing Drainage Area

(33) Runoff from the project site at Basin 33 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 & 7 – Existing Drainage Area

(34) Runoff from the project site at Basin 34 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 6 & 7 – Existing Drainage Area

(35) Runoff from the project site at Basin 35 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanlaua Stream.

See Figure 7 & 8 – Existing Drainage Area

(36) Runoff from the project site at Basin 36 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 7 & 8 – Existing Drainage Area

(37) Runoff from the project site at Basin 37 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 7 & 8 – Existing Drainage Area

(38) Runoff from the project site at Basin 38 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 7 & 8 – Existing Drainage Area

(39) Runoff from the project site at Basin 39 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 7 & 8 – Existing Drainage Area

(40) Runoff from the project site at Basin 40 will sheet flow across the roadway in a west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 8 – Existing Drainage Area

(41) Runoff from the project site at Basin 41 will sheet flow across the roadway in a west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 8 – Existing Drainage Area

(42) Runoff from the project site at Basin 42 will sheet flow across the roadway in a west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 8 – Existing Drainage Area

(43) Runoff from the project site at Basin 43 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 8 & 9 – Existing Drainage Area

(44) Runoff from the project site at Basin 44 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 8 & 9 – Existing Drainage Area

(45) Runoff from the project site at Basin 45 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 8 & 9 – Existing Drainage Area

(46) Runoff from the project site at Basin 46 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 9 – Existing Drainage Area

(47) Runoff from the project site at Basin 47 will sheet flow across the roadway in south direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 9 – Existing Drainage Area

(48) Runoff from the project site at Basin 48 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 9 – Existing Drainage Area

(49) Runoff from the project site at Basin 49 will sheet flow across the roadway in a southwest direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 9 – Existing Drainage Area

(50) Runoff from the project site at Basin 50 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 9 & 10 – Existing Drainage Area

(51) Runoff from the project site at Basin 51 is in a sump condition and will sheet flow across the roadway in a west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 9 & 10 – Existing Drainage Area

(52) Runoff from the project site at Basin 52 is in a sump condition and will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(53) Runoff from the project site at Basin 53 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(54) Runoff from the project site at Basin 54 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(55) Runoff from the project site at Basin 55 will sheet flow across the roadway in east direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(56) Runoff from the project site at Basin 56 will sheet flow across the roadway in east direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(57) Runoff from the project site at Basin 57 will sheet flow across the roadway in east direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(58) Runoff from the project site at Basin 58 will sheet flow across the roadway in east direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 – Existing Drainage Area

(59) Runoff from the project site at Basin 59 will sheet flow across the roadway in east direction and enter a SDOT drainage channel. It will then discharge into Moanalua Stream.

See Figure 10 & 11 – Existing Drainage Area

(60) Runoff from the project site at Basin 60 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 & 11 – Existing Drainage Area

(61) Runoff from the project site at Basin 61 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 10 & 11 – Existing Drainage Area

(62) Runoff from the project site at Basin 62 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 – Existing Drainage Area

(63) Runoff from the project site at Basin 63 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 & 12 – Existing Drainage Area

(64) Runoff from the project site at Basin 64 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 – Existing Drainage Area

(65) Runoff from the project site at Basin 65 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 – Existing Drainage Area

(66) Runoff from the project site at Basin 66 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 – Existing Drainage Area

(67) Runoff from the project site at Basin 67 will sheet flow across the roadway in a southwest direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 – Existing Drainage Area

(68) Runoff from the project site at Basin 68 will sheet flow across the roadway in a southwest direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 – Existing Drainage Area

(69) Runoff from the project site at Basin 69 will sheet flow across the roadway in a southeast/southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 & 12 – Existing Drainage Area

(70) Runoff from the project site at Basin 70 will sheet flow across the roadway in a southwest direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 11 & 12 – Existing Drainage Area

(71) Runoff from the project site at Basin 71 will sheet flow across the roadway in a northeast/southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 12 – Existing Drainage Area

(72) Runoff from the project site at Basin 72 will sheet flow across the roadway in a northeast/southeast direction and sheet flow into Moanalua Stream.

See Figure12 & 13– Existing Drainage Area

(73) Runoff from the project site at Basin 73 is in a sump condition and will sheet flow across the roadway in a northwest/southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 12 & 13 – Existing Drainage Area

(74) Runoff from the project site at Basin 74 will sheet flow across the roadway in a southwest direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 12 – Existing Drainage Area

(75) Runoff from the project site at Basin 75 is in a sump condition and will sheet flow across the roadway in a southwest direction and enter a catch basin. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 12 & 13 – Existing Drainage Area

(76) Runoff from the project site at Basin 76 is in a sump condition and will sheet flow across the roadway in a northeast direction and enter a drain

inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(77) Runoff from the project site at Basin 77 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(78) Runoff from the project site at Basin 78 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(79) Runoff from the project site at Basin 79 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(80) Runoff from the project site at Basin 80 is in a sump condition and will sheet flow across the roadway in a northeast/southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(82) Runoff from the project site at Basin 82 will sheet flow across the roadway in a northeast/southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(83) Runoff from the project site at Basin 83 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(84) Runoff from the project site at Basin 84 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 – Existing Drainage Area

(85) Runoff from the project site at Basin 85 will sheet flow across the roadway in a northeast/northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 & 14 – Existing Drainage Area

(86) Runoff from the project site at Basin 86 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 & 14 – Existing Drainage Area

(87) Runoff from the project site at Basin 87 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 13 & 14 – Existing Drainage Area

(88) Runoff from the project site at Basin 88 will sheet flow across the roadway in north direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 – Existing Drainage Area

(89) Runoff from the project site at Basin 89 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 – Existing Drainage Area

(90) Runoff from the project site at Basin 90 will sheet flow across the roadway in a northeast/southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 – Existing Drainage Area

(91) Runoff from the project site at Basin 91 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 – Existing Drainage Area

(92) Runoff from the project site at Basin 92 will sheet flow across the roadway in west direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 – Existing Drainage Area

(93) Runoff from the project site at Basin 93 is in a sump condition and will sheet flow across the roadway in a southeast/southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 & 15 – Existing Drainage Area

(94) Runoff from the project site at Basin 94 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 – Existing Drainage Area

(95) Runoff from the project site at Basin 95 will sheet flow across the roadway in a northeast/southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 & 15 – Existing Drainage Area

(96) Runoff from the project site at Basin 96 will sheet flow across the roadway in a northeast/southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 & 15 – Existing Drainage Area

(97) Runoff from the project site at Basin 97 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 14 & 15 – Existing Drainage Area

(98) Runoff from the project site at Basin 98 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Moanalua Stream.

See Figure 15 – Existing Drainage Area

(99) Runoff from the project site at Basin 99 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(100) Runoff from the project site at Basin 100 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(101) Runoff from the project site at Basin 101 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(102) Runoff from the project site at Basin 102 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(103) Runoff from the project site at Basin 103 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(104) Runoff from the project site at Basin 104 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(105) Runoff from the project site at Basin 105 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(106) Runoff from the project site at Basin 106 will sheet flow across the roadway in south direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(107) Runoff from the project site at Basin 107 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 & 16 – Existing Drainage Area

(108) Runoff from the project site at Basin 108 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 & 16 – Existing Drainage Area

(109) Runoff from the project site at Basin 109 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 – Existing Drainage Area

(110) Runoff from the project site at Basin 110 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 & 16 – Existing Drainage Area

(111) Runoff from the project site at Basin 111 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 15 & 16 – Existing Drainage Area

(112) Runoff from the project site at Basin 112 is in a sump condition and will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 – Existing Drainage Area

(113) Runoff from the project site at Basin 113 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 – Existing Drainage Area

(114) Runoff from the project site at Basin 114 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 – Existing Drainage Area

(115) Runoff from the project site at Basin 115 will sheet flow across the roadway in a southeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 – Existing Drainage Area

(116) Runoff from the project site at Basin 116 will sheet flow across the roadway in a southwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 – Existing Drainage Area

(117) Runoff from the project site at Basin 117 is in a sump condition and will sheet flow across the roadway in a north direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 & 17 – Existing Drainage Area

(118) Runoff from the project site at Basin 118 is in a sump condition and will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 16 & 17 – Existing Drainage Area

(119) Runoff from the project site at Basin 119 will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 17 – Existing Drainage Area

(120) Runoff from the project site at Basin 120 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 17 – Existing Drainage Area

(121) Runoff from the project site at Basin 121 is in a sump condition and will sheet flow across the roadway in a northeast direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 17 – Existing Drainage Area

(122) Runoff from the project site at Basin 122 will sheet flow across the roadway in a northeast/northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 17 – Existing Drainage Area

(123) Runoff from the project site at Basin 123 will sheet flow across the roadway in a northwest direction and enter a drain inlet. It will then flow through the SDOT drainage system and discharge into Kahauiki Stream.

See Figure 17 – Existing Drainage Area

The existing and proposed conditions will remain the same as no additional impervious areas will be added. Hydrology calculations for the existing areas can be found in Tables 1 and 2.

Table 1: Existing Weighted "C" Values

Interstate Route H-1 Guardrail and Shoulder Improvement
Middle Street to Punchbowl Off Ramp

SUB BASIN	DRAINAGE AREA (sf)	DRAINAGE AREA (ac)	IMPERVIOUS AREA (sf)	IMPERVIOUS AREA (ac)	PERVIOUS AREA (sf)	PERVIOUS AREA (ac)	C IMPERVIOUS	C PERVIOUS	WEIGHTED C
1	97,330	2.23	64,345	1.48	32,984	0.76	0.85	0.15	0.61
2	48,287	1.11	46,189	1.06	2,097	0.05	0.85	0.15	0.82
3	14,401	0.33	14,401	0.33	0	0.00	0.85	0.15	0.85
4	22,719	0.52	15,788	0.36	6,932	0.16	0.85	0.15	0.64
5	18,818	0.43	18,818	0.43	0	0.00	0.85	0.15	0.85
6	25,960	0.60	20,610	0.47	5,350	0.12	0.85	0.15	0.71
7	30,461	0.70	30,461	0.70	0	0.00	0.85	0.15	0.85
8	21,777	0.50	17,863	0.41	3,914	0.09	0.85	0.15	0.72
9	12,018	0.28	10,668	0.24	1,350	0.03	0.85	0.15	0.77
10	28,689	0.66	28,689	0.66	0	0.00	0.85	0.15	0.85
11	26,237	0.60	21,970	0.50	4,267	0.10	0.85	0.15	0.74
12	11,237	0.26	11,237	0.26	0	0.00	0.85	0.15	0.85
13	23,147	0.53	19,208	0.44	3,940	0.09	0.85	0.15	0.73
14	17,687	0.41	17,687	0.41	0	0.00	0.85	0.15	0.85
15	21,517	0.49	20,822	0.48	695	0.02	0.85	0.15	0.83
16	27,395	0.63	27,395	0.63	0	0.00	0.85	0.15	0.85
17	30,389	0.70	30,389	0.70	0	0.00	0.85	0.15	0.85
18	30,869	0.71	30,869	0.71	0	0.00	0.85	0.15	0.85
19	29,021	0.67	29,021	0.67	0	0.00	0.85	0.15	0.85
20	28,837	0.66	28,837	0.66	0	0.00	0.85	0.15	0.85
21	28,439	0.65	28,439	0.65	0	0.00	0.85	0.15	0.85
22	27,731	0.64	27,731	0.64	0	0.00	0.85	0.15	0.85
23	16,729	0.38	16,729	0.38	0	0.00	0.85	0.15	0.85
24	19,444	0.45	19,444	0.45	0	0.00	0.85	0.15	0.85
25	30,903	0.71	30,903	0.71	0	0.00	0.85	0.15	0.85
26	24,033	0.55	24,033	0.55	0	0.00	0.85	0.15	0.85
27	20,676	0.47	20,676	0.47	0	0.00	0.85	0.15	0.85
28	16,674	0.38	16,674	0.38	0	0.00	0.85	0.15	0.85
29	23,973	0.55	23,973	0.55	0	0.00	0.85	0.15	0.85
30	21,025	0.48	20,442	0.47	584	0.01	0.85	0.15	0.83
31	12,175	0.28	12,175	0.28	0	0.00	0.85	0.15	0.85
32	10,525	0.24	10,525	0.24	0	0.00	0.85	0.15	0.85
33	38,133	0.88	38,133	0.88	0	0.00	0.85	0.15	0.85
34	26,659	0.61	26,659	0.61	0	0.00	0.85	0.15	0.85
35	35,989	0.83	35,989	0.83	0	0.00	0.85	0.15	0.85

SUB BASIN	DRAINAGE AREA (sf)	DRAINAGE AREA (ac)	IMPERVIOUS AREA (sf)	IMPERVIOUS AREA (ac)	PERVIOUS AREA (sf)	PERVIOUS AREA (ac)	C IMPERVIOUS	C PERVIOUS	WEIGHTED C
36	11,611	0.27	11,611	0.27	0	0.00	0.85	0.15	0.85
37	34,654	0.80	27,866	0.64	6,788	0.16	0.85	0.15	0.71
38	29,215	0.67	29,215	0.67	0	0.00	0.85	0.15	0.85
39	36,146	0.83	25,648	0.59	10,499	0.24	0.85	0.15	0.65
40	25,914	0.59	25,914	0.59	0	0.00	0.85	0.15	0.85
41	22,196	0.51	16,386	0.38	5,810	0.13	0.85	0.15	0.67
42	11,357	0.26	8,004	0.18	3,353	0.08	0.85	0.15	0.64
43	15,942	0.37	15,942	0.37	0	0.00	0.85	0.15	0.85
44	31,920	0.73	20,323	0.47	11,597	0.27	0.85	0.15	0.60
45	29,080	0.67	29,080	0.67	0	0.00	0.85	0.15	0.85
46	28,262	0.65	22,257	0.51	6,005	0.14	0.85	0.15	0.70
47	17,449	0.40	13,299	0.31	4,149	0.10	0.85	0.15	0.68
48	30,485	0.70	28,778	0.66	1,707	0.04	0.85	0.15	0.81
49	18,508	0.42	15,099	0.35	3,410	0.08	0.85	0.15	0.72
50	20,573	0.47	19,990	0.46	583	0.01	0.85	0.15	0.83
51	24,350	0.56	20,227	0.46	4,123	0.09	0.85	0.15	0.73
52	34,279	0.79	32,650	0.75	1,629	0.04	0.85	0.15	0.82
53	38,923	0.89	34,479	0.79	4,445	0.10	0.85	0.15	0.77
54	2,792	0.06	2,792	0.06	0	0.00	0.85	0.15	0.85
55	11,784	0.27	11,784	0.27	0	0.00	0.85	0.15	0.85
56	31,943	0.73	28,475	0.65	3,468	0.08	0.85	0.15	0.77
57	1,425	0.03	1,425	0.03	0	0.00	0.85	0.15	0.85
58	3,162	0.07	3,162	0.07	0	0.00	0.85	0.15	0.85
59	58,224	1.34	42,507	0.98	15,718	0.36	0.85	0.15	0.66
60	9,447	0.22	9,447	0.22	0	0.00	0.85	0.15	0.85
61	19,511	0.45	13,549	0.31	5,962	0.14	0.85	0.15	0.64
62	24,067	0.55	20,569	0.47	3,498	0.08	0.85	0.15	0.75
63	26,385	0.61	22,036	0.51	4,349	0.10	0.85	0.15	0.73
64	12,804	0.29	12,677	0.29	127	0.00	0.85	0.15	0.84
65	26,974	0.62	0	0.00	26,974	0.62	0.85	0.15	0.15
66	3,822	0.09	0	0.00	3,822	0.09	0.85	0.15	0.15
67	2,058	0.05	2,058	0.05	0	0.00	0.85	0.15	0.85
68	13,009	0.30	8,882	0.20	4,127	0.09	0.85	0.15	0.63
69	29,007	0.67	28,939	0.66	68	0.00	0.85	0.15	0.85
70	19,826	0.46	19,826	0.46	0	0.00	0.85	0.15	0.85

Table 1: Existing Weighted "C" Values

SUB BASIN	DRAINAGE AREA (sf)	DRAINAGE AREA (ac)	IMPERVIOUS AREA (sf)	IMPERVIOUS AREA (ac)	PERVIOUS AREA (sf)	PERVIOUS AREA (ac)	C IMPERVIOUS	C PERVIOUS	WEIGHTED C
71	31,477	0.72	27,207	0.62	4,270	0.10	0.85	0.15	0.76
72	84,686	1.94	79,308	1.82	5,378	0.12	0.85	0.15	0.81
73	46,654	1.07	46,654	1.07	0	0.00	0.85	0.15	0.85
74	13,404	0.31	10,945	0.25	2,458	0.06	0.85	0.15	0.72
75	17,293	0.40	12,277	0.28	5,016	0.12	0.85	0.15	0.65
76	21,574	0.50	21,574	0.50	0	0.00	0.85	0.15	0.85
77	6,968	0.16	6,968	0.16	0	0.00	0.85	0.15	0.85
78	8,876	0.20	8,031	0.18	844	0.02	0.85	0.15	0.78
79	10,322	0.24	10,322	0.24	0	0.00	0.85	0.15	0.85
80	38,751	0.89	26,937	0.62	11,814	0.27	0.85	0.15	0.64
81	1,470	0.03	0	0.00	1,470	0.03	0.85	0.15	0.15
82	25,337	0.58	18,996	0.44	6,341	0.15	0.85	0.15	0.67
83	12,037	0.28	12,037	0.28	0	0.00	0.85	0.15	0.85
84	16,189	0.37	14,991	0.34	1,198	0.03	0.85	0.15	0.80
85	13,399	0.31	13,399	0.31	0	0.00	0.85	0.15	0.85
86	13,086	0.30	13,086	0.30	0	0.00	0.85	0.15	0.85
87	27,100	0.62	25,048	0.58	2,052	0.05	0.85	0.15	0.80
88	13,862	0.32	13,862	0.32	0	0.00	0.85	0.15	0.85
89	12,602	0.29	12,602	0.29	0	0.00	0.85	0.15	0.85
90	6,165	0.14	5,811	0.13	354	0.01	0.85	0.15	0.81
91	22,968	0.53	22,968	0.53	0	0.00	0.85	0.15	0.85
92	18,579	0.43	13,297	0.31	5,282	0.12	0.85	0.15	0.65
93	12,948	0.30	6,259	0.14	6,690	0.15	0.85	0.15	0.49
94	48,510	1.11	25,536	0.59	22,973	0.53	0.85	0.15	0.52
95	30,199	0.69	14,977	0.34	15,222	0.35	0.85	0.15	0.50
96	13,492	0.31	13,492	0.31	0	0.00	0.85	0.15	0.85
97	10,810	0.25	5,765	0.13	5,045	0.12	0.85	0.15	0.52
98	5,459	0.13	5,459	0.13	0	0.00	0.85	0.15	0.85
99	19,806	0.45	17,852	0.41	1,954	0.04	0.85	0.15	0.78
100	15,443	0.35	15,443	0.35	0	0.00	0.85	0.15	0.85
101	23,225	0.53	13,277	0.30	9,948	0.23	0.85	0.15	0.55
102	2,252	0.05	2,252	0.05	0	0.00	0.85	0.15	0.85
103	22,299	0.51	19,955	0.46	2,343	0.05	0.85	0.15	0.78
104	12,323	0.28	12,170	0.28	153	0.00	0.85	0.15	0.84
105	23,030	0.53	4,265	0.10	18,766	0.43	0.85	0.15	0.28

Table 1: Existing Weighted "C" Values

Interstate Route H-1 Guardrail and Shoulder Improvement
Middle Street to Punchbowl Off Ramp

SUB BASIN	DRAINAGE AREA (sf)	DRAINAGE AREA (ac)	IMPERVIOUS AREA (sf)	IMPERVIOUS AREA (ac)	PERVIOUS AREA (sf)	PERVIOUS AREA (ac)	C IMPERVIOUS	C PERVIOUS	WEIGHTED C
106	9,914	0.23	9,914	0.23	0	0.00	0.85	0.15	0.85
107	16,422	0.38	14,276	0.33	2,146	0.05	0.85	0.15	0.76
108	17,118	0.39	15,605	0.36	1,512	0.03	0.85	0.15	0.79
109	11,289	0.26	11,289	0.26	0	0.00	0.85	0.15	0.85
110	15,708	0.36	15,460	0.35	247	0.01	0.85	0.15	0.84
111	34,125	0.78	34,125	0.78	0	0.00	0.85	0.15	0.85
112	9,311	0.21	9,311	0.21	0	0.00	0.85	0.15	0.85
113	24,109	0.55	22,382	0.51	1,728	0.04	0.85	0.15	0.80
114	24,118	0.55	22,461	0.52	1,657	0.04	0.85	0.15	0.80
115	15,178	0.35	13,874	0.32	1,304	0.03	0.85	0.15	0.79
116	19,588	0.45	17,617	0.40	1,971	0.05	0.85	0.15	0.78
117	14,346	0.33	12,731	0.29	1,615	0.04	0.85	0.15	0.77
118	17,186	0.39	15,924	0.37	1,262	0.03	0.85	0.15	0.80
119	12,700	0.29	11,002	0.25	1,698	0.04	0.85	0.15	0.76
120	12,165	0.28	11,888	0.27	277	0.01	0.85	0.15	0.83
121	18,730	0.43	18,200	0.42	530	0.01	0.85	0.15	0.83
122	13,240	0.30	12,542	0.29	698	0.02	0.85	0.15	0.81
123	8,552	0.20	8,552	0.20	0	0.00	0.85	0.15	0.85
	Total	**61.37**		**53.55**					

Table 2: Existing Conditions Hydrology Calculations

MOANALUA FREEWAY, HIGHWAY LIGHTING IMPROVEMENTS, HALAWA HEIGHTS OFF-RAMP TO MIDDLE ST. OVERPASS

Sub Basin	AREA (acre)	C	LENGTH (ft)	HEIGHT (ft)	SLOPE (ft/ft)	T_c (min)	i (in/hr)	Corr. Factor	i_{corr} (in/hr)	Q (ft^3/s)
1	2.23	0.61	1104	65.64	0.06	10.00	2.93	2.30	6.74	9.23
2	1.11	0.82	706	50.26	0.07	10.00	2.93	2.30	6.74	6.12
3	0.33	0.85	374	27.07	0.07	10.00	2.93	2.30	6.74	1.89
4	0.52	0.64	365	21.18	0.06	10.00	2.93	2.30	6.74	2.24
5	0.43	0.85	332	24.71	0.07	10.00	2.93	2.30	6.74	2.47
6	0.60	0.71	391	23.12	0.06	10.00	2.93	2.30	6.74	2.83
7	0.70	0.85	426	24.83	0.06	10.00	2.93	2.30	6.74	4.01
8	0.50	0.72	274	21.52	0.08	10.00	2.93	2.30	6.74	2.44
9	0.28	0.77	211	13.59	0.06	10.00	2.93	2.30	6.74	1.43
10	0.66	0.85	350	13.24	0.04	10.00	2.93	2.30	6.74	3.77
11	0.60	0.74	348	12.89	0.04	10.00	2.93	2.30	6.74	2.99
12	0.26	0.85	198	4.02	0.02	10.00	2.93	2.30	6.74	1.48
13	0.53	0.73	283	7.19	0.03	10.00	2.93	2.30	6.74	2.62
14	0.41	0.85	242	3.95	0.02	10.00	2.93	2.30	6.74	2.33
15	0.49	0.83	340	6.64	0.02	10.00	2.93	2.30	6.74	2.75
16	0.63	0.85	566	18.23	0.03	10.00	2.93	2.30	6.74	3.60
17	0.70	0.85	539	19.26	0.04	10.00	2.93	2.30	6.74	4.00
18	0.71	0.85	706	27.19	0.04	10.00	2.93	2.30	6.74	4.06
19	0.67	0.85	650	25.09	0.04	10.00	2.93	2.30	6.74	3.82
20	0.66	0.85	655	26.80	0.04	10.00	2.93	2.30	6.74	3.79
21	0.65	0.85	626	25.34	0.04	10.00	2.93	2.30	6.74	3.74
22	0.64	0.85				10.00	2.93	2.30	6.74	3.65
23	0.38	0.85	451	17.83	0.04	10.00	2.93	2.30	6.74	2.20
24	0.45	0.85	540	22.04	0.04	10.00	2.93	2.30	6.74	2.56
25	0.71	0.85	556	21.30	0.04	10.00	2.93	2.30	6.74	4.06
26	0.55	0.85	516	23.80	0.05	10.00	2.93	2.30	6.74	3.16
27	0.47	0.85	358	19.05	0.05	10.00	2.93	2.30	6.74	2.72
28	0.38	0.85	335	19.09	0.06	10.00	2.93	2.30	6.74	2.19
29	0.55	0.85	430	25.46	0.06	10.00	2.93	2.30	6.74	3.15
30	0.48	0.83	410	23.14	0.06	10.00	2.93	2.30	6.74	2.70
31	0.28	0.85	300	18.89	0.06	10.00	2.93	2.30	6.74	1.60
32	0.24	0.85	285	13.70	0.05	10.00	2.93	2.30	6.74	1.38
33	0.88	0.85	629	39.01	0.06	10.00	2.93	2.30	6.74	5.01
34	0.61	0.85	550	27.17	0.05	10.00	2.93	2.30	6.74	3.51
35	0.83	0.85	497	31.65	0.06	10.00	2.93	2.30	6.74	4.73

Table 2: Existing Conditions Hydrology Calculations

MOANALUA FREEWAY, HIGHWAY LIGHTING IMPROVEMENTS, HALAWA HEIGHTS OFF-RAMP TO MIDDLE ST. OVERPASS

Sub Basin	AREA (acre)	C	LENGTH (ft)	HEIGHT (ft)	SLOPE (ft/ft)	T_c (min)	i (in/hr)	Corr. Factor	i_{corr} (in/hr)	Q (ft^3/s)
36	0.27	0.85	250	15.01	0.06	10.00	2.93	2.30	6.74	1.53
37	0.80	0.71	368	21.95	0.06	10.00	2.93	2.30	6.74	3.82
38	0.67	0.85	456	25.06	0.05	10.00	2.93	2.30	6.74	3.84
39	0.83	0.65	417	35.63	0.09	10.00	2.93	2.30	6.74	3.62
40	0.59	0.85	417	10.67	0.03	10.00	2.93	2.30	6.74	3.41
41	0.51	0.67	312	26.62	0.09	10.00	2.93	2.30	6.74	2.29
42	0.26	0.64	250	15.36	0.06	10.00	2.93	2.30	6.74	1.13
43	0.37	0.85	273	6.41	0.02	10.00	2.93	2.30	6.74	2.10
44	0.73	0.60	404	17.36	0.04	10.00	2.93	2.30	6.74	2.94
45	0.67	0.85	451	10.82	0.02	10.00	2.93	2.30	6.74	3.82
46	0.65	0.70	362	14.23	0.04	10.00	2.93	2.30	6.74	3.07
47	0.40	0.68	218	11.26	0.05	10.00	2.93	2.30	6.74	1.85
48	0.70	0.81	446	14.35	0.03	10.00	2.93	2.30	6.74	3.82
49	0.42	0.72	235	10.05	0.04	10.00	2.93	2.30	6.74	2.06
50	0.47	0.83	423	8.40	0.02	10.00	2.93	2.30	6.74	2.64
51	0.56	0.73	221	4.03	0.02	10.00	3.40	2.30	7.82	3.20
52	0.79	0.82	492	10.62	0.02	10.00	3.40	2.30	7.82	5.03
53	0.89	0.77	457	3.55	0.01	10.00	2.93	2.30	6.74	4.64
54	0.06	0.85	78	3.46	0.04	10.00	2.93	2.30	6.74	0.37
55	0.27	0.85	215	6.10	0.03	10.00	2.93	2.30	6.74	1.55
56	0.73	0.77	385	3.85	0.01	10.00	2.93	2.30	6.74	3.82
57	0.03	0.85				10.00	2.93	2.30	6.74	0.19
58	0.07	0.85				10.00	2.93	2.30	6.74	0.42
59	1.34	0.66	941	12.00	0.01	10.00	2.93	2.30	6.74	5.95
60	0.22	0.85				10.00	2.93	2.30	6.74	1.24
61	0.45	0.64	267	9.15	0.03	10.00	2.93	2.30	6.74	1.92
62	0.55	0.75	367	7.02	0.02	10.00	2.93	2.30	6.74	2.79
63	0.61	0.73	393	4.37	0.01	10.00	2.93	2.30	6.74	3.00
64	0.29	0.84	269	6.48	0.02	10.00	2.93	2.30	6.74	1.67
65	0.62	0.15	390	30.33	0.08	10.00	2.93	2.30	6.74	0.63
66	0.09	0.15	188	5.52	0.03	10.00	2.93	2.30	6.74	0.09
67	0.05	0.85	98	6.35	0.06	10.00	2.93	2.30	6.74	0.27
68	0.30	0.63	280	9.08	0.03	10.00	2.93	2.30	6.74	1.26
69	0.67	0.85	558	5.41	0.01	10.00	2.93	2.30	6.74	3.81
70	0.46	0.85	421	4.01	0.01	10.00	2.93	2.30	6.74	2.61

Table 2: Existing Conditions Hydrology Calculations

MOANALUA FREEWAY, HIGHWAY LIGHTING IMPROVEMENTS, HALAWA HEIGHTS OFF-RAMP TO MIDDLE ST. OVERPASS

Sub Basin	AREA (acre)	C	LENGTH (ft)	HEIGHT (ft)	SLOPE (ft/ft)	T_c (min)	i (in/hr)	Corr. Factor	i_{corr} (in/hr)	Q (ft^3/s)
71	0.72	0.76	309	3.50	0.01	10.00	2.93	2.30	6.74	3.68
72	1.94	0.81	226	4.86	0.02	10.00	2.93	2.30	6.74	10.55
73	1.07	0.85	483	3.56	0.01	10.00	3.40	2.30	7.82	7.12
74	0.31	0.72	292	2.12	0.01	10.00	2.93	2.30	6.74	1.50
75	0.40	0.65	313	4.53	0.01	10.00	3.40	2.30	7.82	2.01
76	0.50	0.85	152	3.31	0.02	10.00	3.40	2.30	7.82	3.29
77	0.16	0.85	121	4.14	0.03	10.00	2.93	2.30	6.74	0.92
78	0.20	0.78	149	4.75	0.03	10.00	2.93	2.30	6.74	1.08
79	0.24	0.85	215	5.64	0.03	10.00	2.93	2.30	6.74	1.36
80	0.89	0.64	437	12.29	0.03	10.00	3.40	2.30	7.82	4.43
81	0.03	0.15	93	1.86	0.02	10.00	2.93	2.30	6.74	0.03
82	0.58	0.67	318	9.84	0.03	10.00	2.93	2.30	6.74	2.65
83	0.28	0.85	245	8.25	0.03	10.00	2.93	2.30	6.74	1.58
84	0.37	0.80	246	7.66	0.03	10.00	2.93	2.30	6.74	2.00
85	0.31	0.85	272	8.34	0.03	10.00	2.93	2.30	6.74	1.76
86	0.30	0.85	271	8.43	0.03	10.00	2.93	2.30	6.74	1.72
87	0.62	0.80	385	5.09		10.00	2.93	2.30	6.74	3.34
88	0.32	0.85	403	4.99	0.01	10.00	2.93	2.30	6.74	1.82
89	0.29	0.85	258	5.33	0.02	10.00	2.93	2.30	6.74	1.66
90	0.14	0.81	110	1.69		10.00	2.93	2.30	6.74	0.77
91	0.53	0.85	75	1.74	0.02	10.00	2.93	2.30	6.74	3.02
92	0.43	0.65	347	5.79	0.02	10.00	2.93	2.30	6.74	1.87
93	0.30	0.49	350	6.20	0.02	10.00	3.40	2.30	7.82	1.14
94	1.11	0.52	208	6.10	0.03	10.00	2.93	2.30	6.74	3.89
95	0.69	0.50	266	8.86	0.03	10.00	2.93	2.30	6.74	2.32
96	0.31	0.85	432	4.48	0.01	10.00	2.93	2.30	6.74	1.77
97	0.25	0.52	262	6.21	0.02	10.00	2.93	2.30	6.74	0.88
98	0.13	0.85	303	5.49	0.02	10.00	2.93	2.30	6.74	0.72
99	0.45	0.78	145	7.97	0.05	10.00	2.93	2.30	6.74	2.39
100	0.35	0.85	303	6.59	0.02	10.00	2.93	2.30	6.74	2.03
101	0.53	0.55	296	6.57	0.02	10.00	2.93	2.30	6.74	1.98
102	0.05	0.85	298	6.00	0.02	10.00	2.93	2.30	6.74	0.30
103	0.51	0.78	297	6.06	0.02	10.00	2.93	2.30	6.74	2.68
104	0.28	0.84	245	5.48	0.02	10.00	2.93	2.30	6.74	1.60
105	0.53	0.28	350	25.62	0.07	10.00	2.93	2.30	6.74	1.00

Table 2: Existing Conditions Hydrology Calculations

MOANALUA FREEWAY, HIGHWAY LIGHTING IMPROVEMENTS, HALAWA HEIGHTS OFF-RAMP TO MIDDLE ST. OVERPASS

Sub Basin	AREA (acre)	C	LENGTH (ft)	HEIGHT (ft)	SLOPE (ft/ft)	T_c (min)	i (in/hr)	Corr. Factor	i_{corr} (in/hr)	Q (ft^3/s)
106	0.23	0.85	239	4.94	0.02	10.00	2.93	2.30	6.74	1.30
107	0.38	0.76	125	4.18	0.03	10.00	2.93	2.30	6.74	1.93
108	0.39	0.79	354	15.49	0.04	10.00	2.93	2.30	6.74	2.09
109	0.26	0.85	288	6.42	0.02	10.00	2.93	2.30	6.74	1.48
110	0.36	0.84	315	6.22	0.02	10.00	2.93	2.30	6.74	2.04
111	0.78	0.85	334	5.41	0.02	10.00	2.93	2.30	6.74	4.49
112	0.21	0.85	717	7.31	0.01	10.00	3.40	2.30	7.82	1.42
113	0.55	0.80	373	18.82	0.05	10.00	2.93	2.30	6.74	2.98
114	0.55	0.80	287	4.68	0.02	10.00	2.93	2.30	6.74	2.99
115	0.35	0.79	307	3.15	0.01	10.00	2.93	2.30	6.74	1.85
116	0.45	0.78	357	4.59	0.01	10.00	2.93	2.30	6.74	2.36
117	0.33	0.77	58	1.52	0.03	10.00	3.40	2.30	7.82	1.99
118	0.39	0.80	287	2.95	0.01	10.00	3.40	2.30	7.82	2.46
119	0.29	0.76	278	2.10	0.01	10.00	2.93	2.30	6.74	1.49
120	0.28	0.83	271	3.02	0.01	10.00	3.40	2.30	7.82	1.82
121	0.43	0.83	234	3.19	0.01	10.00	2.93	2.30	6.74	2.41
122	0.30	0.81	205	3.07	0.02	10.00	2.93	2.30	6.74	1.67
123	0.20	0.85	436	5.24	0.01	10.00	2.93	2.30	6.74	1.12
									Total	**319.36**

NOTE:

SUMP CONDITION

- At Grade Condition i = 2.93 in/hr

ı - Sump Condition i = 3.40 in/hr