Attachment A-3 Supplementary Information

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 = 0.87 for impervious areas

= 0.20 for pervious areas

I = Rainfall Intensity in inches per hour = 5.60 in/hr for 5 year, 1-hr storm with the correction factor of 2.25 (using minimum time of concentration of 10 minutes based on HDOT criteria)

A = Drainage Areas 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 flow off of Kuamo`o Road and into Kuamo`o Culvert. From there, storm water flows into Coco Palms Lagoon. Some runoff may bypass the drainage culvert and be captured by the next drainage structure.

   See Figure 2A & 3A: Drainage Map – Existing/Proposed

2) Runoff from the project site at Basin 2 will sheet flow down Kuhio Highway in a southwest direction. Storm water will pass through scuppers in the existing concrete barrier running along the shoulder of the road and drain offsite into Wailua River. Some runoff may bypass the scuppers and be captured by the next drainage structure.

   See Figure 2A & 3A: Drainage Map – Existing/Proposed

3) Runoff from the project site at Basin 3 will sheet flow down Kuhio Highway in a southeast direction. Storm water will pass through scuppers in the existing concrete barrier running along the shoulder of the road and drain offsite into Wailua Bay (Pacific Ocean). Some runoff may bypass the scuppers and be captured by the next drainage structure.

   See Figure 2A & 3A: Drainage Map – Existing /Proposed

4) Runoff from the project site at Basin 4 will sheet flow down Kuhio Highway in a southwest direction. Storm water will flow directly from the road to Coco Palms Resort and eventually into Coco Palms Lagoon. Some runoff may bypass the drainageway and be captured by the next drainage area.

   See Figure 2A, 2B, 3A, & 3B: Drainage Map – Existing/ Proposed

5) Runoff from the project site at Basin 5 will sheet flow down Kuhio Highway in a southeast direction. Storm water will be captured by Grated Inlet 1 and then flow to a Discharge Outlet that leads to Wailua Bay. Some runoff may bypass the inlet and be captured by the next drainage structure.

   See Figure 2B & 3B: Drainage Map – Existing /Proposed

6) Runoff from the project site at Basin 6 will sheet flow down Haleilio Road in a southwest direction. Storm water will flow from the road and make its way to Coco Palms Lagoon. Some runoff may bypass the drainageway and be captured by the next drainage structure.

   See Figure 2B & 3B: Drainage Map – Existing/ Proposed

7) Runoff from the project site at Basin 7 will sheet flow down Kuhio Highway in a northwest direction. Storm water will flow from the road into the gutter and make its way to Kaloko Marsh. Some ruoff may bypass the catch basin and be captured by the next drainage structure.

   See Figure 2B & 3B: Drainage Map – Existing/Proposed

8) Runoff from the project site at Basin 8 will sheet flow from Kuhio Highway in the north direction. Storm water drains to the Kuhio Highway Culvert, which leads to Kaloko Marsh. Some runoff may bypass the drainageway and be captured by the next drainage structure.

   See Figure 2C & 3C: Drainage Map – Existing/ Proposed

9) Runoff from the project site at Basin 9 will sheet flow from Kuhio Highway in the north direction. Storm water will eventually drain offsite into Waipouli Canal. Some runoff may bypass the drainage way and be captured in the next drainage structure.

   See Figure 2C & 3C: Drainage Map – Existing/ Proposed