4.4.5.2 Total Suspended Solids (TSS) and Channel Bank Erosion Evaluation

Significant sediment loads resulting from erosion of stream banks has been observed in the whole Sugar Creek basin and in One Mile Branch. As per the findings of the Geomorphologic assessment report (Section 3 of this report) of the Sugar Creek, this increase in sediment loads is generated by down cutting of the channel bed (incision), scour of the stream banks or both. Yearly TSS loads were calculated based on standard EMC of TSS, yearly rainfall, tributary area; land use characteristics like percent imperviousness for Valdosta. Yearly TSS loads from various hydrologic units for each sub-basin were computed in lbs/year units. The total TSS loading for One Mile Branch was estimated to be 472,000 lbs/year.

The Georgia Stormwater Manual states the sizing criteria for any stormwater control/mitigation system to treat the runoff from 85 percent of the storms that occur in an average year. For Georgia, this equates to providing water quality treatment for the runoff resulting from a rainfall depth of 1.2 inches. This runoff is also termed as the Water Quality treatment volume (WQ_V). Please refer to Georgia Stormwater Manual Volume 2 (technical handbook) Section 1.3 for a detailed discussion on WQ_V and the unified stormwater sizing criteria.

Channel Bank Erosion: Almost 9,000 linear feet of One Mile Branch show velocities greater than 3 ft/sec. The threshold velocity for erosive velocity in One Mile Branch is 3 ft/sec. Several locations were verified in field and showed signs of channel bank erosion.

4.4.5.3 Level of Service Summary

Under the present land use conditions, the 1.2-in, 5-, 25-, 50-, and 100–year design storms were simulated to determine the problem areas as defined below:

- Roads

In the One Mile Branch sub-basin the following roads do not meet the City's Level of Service as described in Section 2. The One Mile Branch stage Table 4.4.4 highlights all roads not meeting the level of service in red. For a road to be classified as not meeting the level of service, it has more than 6 inches of flooding for the storm event under consideration for that particular road classification (5-year event for a local road and 50-year event for a collector and arterial road).

One local road (Lakeland Avenue) does not meet the defined level of service (more than 6 inches of flooding for a 5-year storm event). Two collector roads (Lee Street and Vallotton Drive) do not meet the defined level of service (more than 6 inches of flooding for a 50-year storm event). One arterial road (Park Avenue) also does not meet the defined level of service (> 6 inches of flooding for a 50-year storm event).