for a Conceptual Project Documentation on Creekside Emergency Restoration provided by CDM for this section of Sugar Creek.

4.5.5 Results

The following paragraphs discuss the water quantity model results, the existing level of service in terms of roads flooding, and sediment loads due to erosion.

4.5.5.1 Water Quantity Results

The stages for the 1.2-in, 5-, 25-, 50-, and 100–year design storms model runs are presented in **Table 4.5.4**. Road crown elevation, road names, and road classification (local, collector, arterial) are also shown in the table. The roads not meeting the City's defined Level of Service are highlighted in the model result tables. Due to lack of data in terms of finished floor elevations of houses and other structures, available topographic data were utilized to estimate potential flooding of structures for each storm event and tabulated. The model results table indicates the nearest node to the structures flooding location.

4.5.5.2 Total Suspended Solids (TSS) and Channel Bank 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 loads for the Sugar Creek sub-basin was estimated to be about 363,000 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. This method and the 1.2 inch storm event were used for evaluation of potential TSS water quality benefits in the alternatives.

Channel Bank Erosion: Almost 14,500 linear feet of Sugar Creek show velocities greater than 3 ft/sec. The threshold velocity for erosive velocity in Sugar Creek sub-basin is 3 ft/sec. Several locations were verified in field and showed signs of channel bank erosion.

4.5.5.3 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: