Alternative TM4 – Patterson Street Culvert Improvement (two 5 ft H x 8 ft W) + McKey Park RSF

The existing culvert at Patterson Street was found to be undersized and is causing Patterson Street (arterial road) to not meet the 50-year level of service. Additionally, the culvert should be replaced based on its current condition and age. The improvement includes replacing the existing 6 ft H x 11 ft W box culvert with a 5 ft H x 8 ft W double box culvert. The 1996 SWMP also recommended replacing this culvert with a 6 ft H x 8 ft W double box culvert.

A 1.6-acre RSF is also proposed to be constructed. This facility consists of an offline retention basin and is proposed to be located upstream of N. Oak Street in the City-owned McKey Park. Primarily, the RSF needs to be constructed to provide additional storage and peak flow attenuation in order to prevent increased water levels downstream of Patterson Street, as a result of the increased conveyance at the Patterson Street crossing. A secondary benefit of this facility is that it will treat and attenuate 173 acres of previously untreated tributary area, which is fully developed residential and commercial property.

This tributary area is located between N. Oak Street and N. Toombs Street, south of McKey Park. The proposed RSF occupies approximately 2 acres and provides a permanent pool volume of 4.4 ac-ft and a residence time of 2.8 days. The location of the RSF is shown on **Figure 4.6.6**.

Implementation of this alternative will allow N. Patterson Street, classified as an arterial road, to meet the 50-year level of service. Additionally, the RSF has the ability to capture more than 20,000 pounds of sediment annually. Because the RSF is proposed to be located in McKey Park, which is owned by the City, no land will need to be acquired for this alternative. However, it should be noted that the City agreed, upon purchasing the McKey Park property, to not develop the land. This could be an obstacle to implementation of this alternative, but incorporation of park features and amenities with the RSF could assist with completion of this project. Additionally, maintenance of traffic along N. Patterson Street will need to be addressed, as replacing the culvert under N. Patterson Street will result in significant traffic disruption. **Table 4.6.8** shows the conceptual cost estimates for this alternative.

Alternative TM5 – Grade Control – Ashley Street to Patterson Street

In order to reduce the high velocities and channel erosion observed along the 1,400-foot section of Two Mile Branch between N. Ashley and N. Patterson Streets, grade control structures are recommended to be installed. Implementation of Alternative TM5 includes the installation of three 3-foot high grade control structures spaced approximately 450 feet apart.

In its existing condition, velocities reaching almost 7 ft/sec during the 1.2-inch storm are observed in the stormwater model. After completion of Alternative TM5, no stream velocities are observed above the erosive threshold, which for the soils predominant in Two Mile Branch, is 5 ft/sec.