STAFF REPORT

City Council, Thursday, May 15, 2025

Title: Hillview Street Culvert Replacement (aka Mills Avenue Culvert)

Speaker: David Todd

Prepared by: David Todd, Assistant City Manager, and Dean Luebbe, Assistant City Manager

Approved by: Wilson Hooper, City Manager

Background

An inspection of Brevard's roads and sidewalks post Helene revealed a small sinkhole adjacent to the sidewalk along Mills Avenue below the Mary C. Jenkins Community Center. Repairs to this sinkhole had not yet occurred but the sinkhole was being continuously monitored. Following a post Helene large rain event the sinkhole expanded significantly and clearly was beginning to undermine the sidewalk along Mills Avenue. In response the sinkhole was marked and the sidewalk blocked off. Over the course of the following several days the sinkhole expanded drastically and began undermining Mills Avenue, resulting in a closure of the sidewalk and road. The expanded sinkhole also clearly revealed the source, the failure of a large approximate 6' culvert that crosses under Mills Avenue, the parking lot across from Silversteen Park, Cashiers Valley Road/Carver Street and two sidewalks. The culvert also runs immediately adjacent to a large Duke Power utility pole and the sinkhole is close to undermining the pole. The culvert bottom has failed, largely due to rust and age. Staff's guess is that the culvert was old but intact until Helene, at which time enough water and the associated velocity caused the bottom of the culvert to fail. With the bottom of the culvert failed the water eroded surrounding areas, resulting in the sinkhole. City Staff have been reviewing multiple repair options up to and including replacing the culvert. We have talked with several contractors about possibly "lining" the culvert but the problem is exasperated by both a water and sewer line that penetrate and cross through the culvert.

Discussion

At the Public Works and Utilities Committee meeting on Wednesday, April 2, 2025, Chair Morrow raised a concern related to flow rates of the Mills Avenue Culvert addressed in the 2007 Stormwater Master Plan. In the 2007 Stormwater Master Plan, McGill Associates analysis of the Mills Avenue culvert showed that the culvert would fail and overtop during a 100-year storm event as witnessed during Helene and on a few previous occasions. McGill's report recommends the culvert be replaced with a rectangular culvert nearly double the size of the current culvert. Staff's previous recommendation was to repair the existing culvert, which would not increase its capacity. The recommendation to repair rather than replace was based on cost and quickness, as staff assumed that the reopening of Mills Avenue was Council's highest priority. In the hydraulic analysis of the Norton Creek watershed the the 2007 Master Plan Stormwater Report also identified that the culvert on Silversteen Drive needed to be replaced as well as it would likely fail in anything greater than a 10-year storm event. Given the Silversteen culvert is downstream of the Mills Avenue culvert careful consideration will need to be given to the impact on the Silversteen culvert if only the Mills Avenue Culvert is upgraded as the McGill 2007 report advised replacing the Silversteen culvert first. In other words, it may be necessary to upgrade both culverts if the Mills Avenue culvert is increased in size. However, a preliminary engineering review indicates we can likely only replace the Mills Avenue Culvert without creating additional downstream issues at the Silversteen Culvert. Based on Chair Morrow's recommendation and the Committee's concurrence, staff have redirected their efforts to replacing the Mills Avenue Culvert. The Committee's hope and FEMA's preliminary indication is that FEMA funds can be used for the replacement of the Mills Avenue Culvert, which will ultimately result in better mitigation of a 100-year storm event. It is worth noting that Helene has been called a 2000-year storm. FEMA is requiring both a No Rise Study and a Hydrologic and Hydraulic Study (H&H) as a part of either repair or replacement of the culvert. Staff's plan is to conduct the needed studies, design the associated needed repairs, develop opinions of costs for these measures, and then assure FEMA will assist us with funding before formally moving forward with repairs. Staff are involving FEMA throughout the process to ensure our efforts will have the highest likelihood of reimbursement. FEMA financial assistance will be necessary as a full replacement will likely have a seven-figure price tag. WSP has been selected from our Annual Service Agreements under Civil Utility to assist with this effort as they have extensive experience in dealing with stormwater and culvert replacement. The design will be challenging due to the know unsuitable soil conditions, penetration of the culvert by both a water and sewer line, road and sidewalk crossings, needed permits and a plan to redirect the creek during repairs.

Fiscal Impact

The total cost of the culvert replacement is estimated to be approximately as high $1.1M, including engineering costs which are currently proposed at $119,130.

Action:

Staff request Council create a capital project for this work, approve any needed project amendments and approve the selection of WSP as the Engineer of Record based on their current proposal of $119,130.