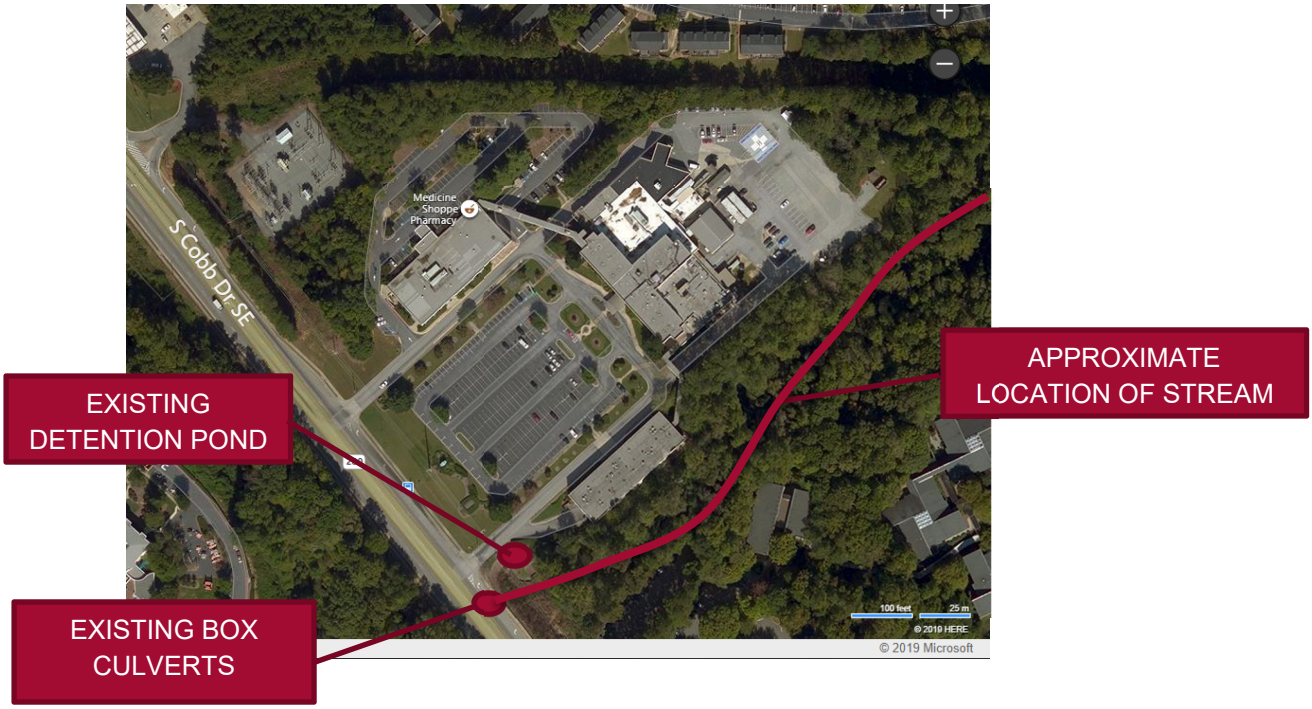
Kimley»Horn

MEMORANDUM

To:	City of Smyrna
From:	Kate Triplett, P.E. Mike Lopez, P.E. Kimley-Horn and Associates, Inc.
Date:	February 8, 2019
Subject:	Emory University Hospital Smyrna – Preliminary Stormwater Study for Rezoning

This memorandum summarizes the preliminary engineering design related to stormwater management for the redevelopment of the Emory University Hospital Smyrna located at 3903 South Cobb Drive, Smyrna GA 30080.

The campus is approximately 12.6 acres and is currently occupied by two medical office buildings, the hospital building, and multiple large surface parking lots. The property drains from the northwest to the southeast. There is an existing walled detention pond at the southern property corner that detains approximately 1.5 acres of the site. Most of the site is undetained and drains directly into the jurisdictional stream adjacent to the southeastern property line. The stream is conveyed under South Cobb Drive via three 7'x7' box culverts.



The proposed development maintains the existing buildings and replaces a portion of the surface parking lots with a new medical office building and a new parking deck. The overall impervious area remains similar to the existing condition.

We performed a preliminary hydrologic analysis utilizing HydroCAD software and the SCS TR-55 Methodology. The anticipated method of detention is a below grade concrete vault. Water quality is proposed to be handled via a proprietary device (Contech CDS or similar). We designed the detention vault to provide channel protection, overbank flooding protection, and extreme flooding protection in accordance with the City of Smyrna code. We assumed commercial/business (CN 92) for both pre- and post-developed conditions to get an accurate representation of the current conditions impacting the adjacent stream.

When we analyzed the downstream hydrologic assessment (10% analysis) with the on-site detention peak flows at the culvert increased. The overall basin drained by the three box culverts is approximately 1,000 acres, and the project site is at the bottom of the drainage basin. Detaining our site flows increased the peak flow due to the impacts to the flow timing.

DOWNSTREAM HYDROLOGIC ASSESMENT (10% ANALYSIS)			
STORM EVENT	**EXISTING PEAK FLOW (CFS)**	**POST DEVELOPED DETAINED FLOW (CFS)**	**POST DEVELOPED UNDETAINED FLOW (CFS)**
2-YEAR	792.03	789.04	791.03
5-YEAR	1,116.01	1,117.45	1,114.79
10-YEAR	1,416.33	1,418.16	1,414.94
25-YEAR	1,865.81	1,867.96	1,864.19
50-YEAR	2,232.94	2,235.25	2,231.15
100-YEAR	2,627.12	2,629.59	2,625.14

Based on the results of our 10% analysis, we recommend that no on site detention be provided. Providing detention may negatively impact downstream properties by increasing peak flows. Eliminating existing and proposed detention on site reduced peak flows in every storm event. Maintaining the existing pond and providing a new pond increased flows in every storm event except for the 2-year event. We recommend that water quality be provided by a proprietary device in compliance with the City of Smyrna code.