AECOM
5444 Westheimer Rd
Suite 200
Houston, TX 77056
www.aecom.com

713.780.4100 tel
713.267.3110 fax

To	Marcus Stuckett, PE	Pages 2 + Attachment
CC	Kristin Landry, PE - AECOM	
Subject	Addendum to Hydrologic & Hydraulic Analysis for Skyscraper Shadows Subdivision	
From	Anthony Holder, PE, CFM	
Date	October 3, 2014	

The document serves as an addendum to the report titled “Hydrologic & Hydraulic Analysis for Skyscraper Shadows Subdivision” (the Report) dated December 2013 and prepared by AECOM Technical Services. Inc. After the report was submitted, AECOM was informed that the proposed wet bottom detention facility was within 10,000 ft of Hobby Airport, and that as a result, a wet bottom basin is not recommended. AECOM has revised the detention basin design to have a dry bottom and confirmed through modeling that the revised basin design also achieves the objectives of the wet bottom basin with no adverse impact to the surrounding areas. The proposed detention modifications are detailed in **Attachment A**. This document describes the revisions and provides an updated detention summary table.

After a review of the design and the neighboring channel, AECOM determined that the detention basin invert could be lowered to elevation 34.25 ft by moving the outfall to the concrete-lined section. The previous basin invert was one foot above the baseflow water elevation, which is approximately elevation 34.0 because the downstream natural channel is silted up. The concrete lined channel invert is approximately 32.5 ft at the bend where the channel turns from being parallel to Monroe to being perpendicular to Monroe. The proposed outfall is approximately one foot above the channel invert at approximately elevation 33.53 ft.

Lowering the invert allows us to design a dry-bottom detention basin without changing the shape of the basin above what would have been the wet pool elevation of 35.75 ft. The new design increases the basin volume as a result. During the re-design, AECOM attempted to remove the previously designed outfall, however the system is complex and sensitive to the outfall location as well as size. After a few unsuccessful model iterations, the final proposed design adds a 24” RCP low flow outfall with a flap gate to prevent flow from entering the basin, but maintains the other outfall structures per the previous design. A pilot channel system is placed in the bottom of the detention basin to help drain the basin at the end of the storm.

The modeling analysis confirms that the basin will drain within 48 hours.

Table 1 is a detention basin summary table showing the peak 10-yr and 100-yr water surface elevations and the maximum volume in the detention basin.

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Table 1. Detention Basin Summary Table

Items	10-Year Storm	100-Year Storm
Peak Basin Water Surface Elevation (ft)	40.29	42.31
Peak Basin Volume (ac-ft)	27.5	41.3
Allowed Peak Flow in A120-00-00 at RS 106.1 (cfs)	599	825
Provided Peak Flow in A120-00-00 at RS 106.1 (cfs)	592	808
Allowed Peak Flow in A125-00-00 at RS 48.2 (cfs)	231	267
Provided Peak Flow in A125-00-00 at RS 48.2 (cfs)	230	266

As is shown in the table, there is a net reduction in flow in each of the two outfall channels. In addition, AECOM confirmed that the water surface elevations within the system are similar to those described in the drainage report, with no adverse impacts shown. Therefore, it is concluded that the proposed detention basin bottom and outfall modifications will not result in an adverse impact on water surface elevations and flow rates within the neighborhood or along the A120-00-00 and A125-00-00 channels.

If you have any questions, please do not hesitate to contact Anthony Holder, PE, CFM by phone at 713-267-2958 or by email at ross.gordon@aecom.com.

Sincerely,

Anthony Holder, PE, CFM
AECOM Technical Services, Inc.
TBPE Reg. No. F-3580

ATTACHMENT A

NOTE: Attachment A to the addendum included preliminary versions of two sheets from the plan set "PROPOSED DETENTION POND" and the "PROPOSED DETENTION SECTIONS" sheet containing Sections A-A and B-B. Please refer to the plan set for the final drawings, which supersede those in the report addendum.