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June 12, 2018

Mr. Jesse Morales, CFM
Permits Manager
Harris County Permits Division
10555 Northwest Freeway, Suite 120
Houston, TX 77092
Jesse.Morales@hcpid.org



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SENT VIA ELECTRONIC MAIL: NO HARD COPY TO FOLLOW

RE: Project No. 1602240007
Drainage and Detention Analysis for the Greenhouse Road Landfill Expansion Revision
HCFCFD Unit U100-01-00; Key Map 446-M; Pct. 3

Dear Mr. Morales:

The referenced report has been reviewed pursuant to the HCFCFD Policy, Criteria, and Procedure Manual and Section 3.02 of the *“Regulations of Harris County, Texas for the Approval and Acceptance of Infrastructure.”* The goals of the review are to provide technical support to the Harris County Floodplain Administrator and to apply HCFCFD policy and criteria where appropriate.

This review addresses issues regarding hydraulic and hydrologic drainage design criteria only. Design criteria regarding the site layout of the proposed development and drainage facilities will be reviewed upon submittal of site plans.

Our understanding of the report is described below. Please see the response contained within the *“Hydrologic & Hydraulic Technical Review”* section.

HCFCFD Jurisdiction

The project meets at least one of the following conditions; HCFCFD criteria apply:

- The project directly affects HCFCFD Infrastructure.
- The project proposes infrastructure to be maintained by HCFCFD.
- The project is located within a watershed where HCFCFD has a regional project adopted by Harris County Commissioners Court.
- A technical review has been requested by Harris County.

Submittal Information

Submitted Report

Drainage and Detention Analysis for the
Greenhouse Road Landfill Expansion Revision
May 31, 2018

Consulting Engineer

Jones and Carter, Inc.
6335 Gulfon Street, Suite 200
Houston, TX 77081
TBPE Registration No. F-439
Mr. Scott Saenger, P.E.
TX P.E. # 70925

M367887

Project Summary

Jones & Carter herein requests approval for some revisions to the Drainage and Detention Analysis for the 2016 Expansion of the Greenhouse Road Landfill located in the Addicks Reservoir Watershed. This report was previously approved on July 13, 2016 (almost two years ago) using the Site Runoff Curves and Small Watershed Method. Since that time, minor changes have been requested by either the Harris County Engineering Department (HCED) or the Texas Commission on Environmental Quality (TCEQ). The XPSTORM models were revised to match plans submitted to the HCED. Additionally, onsite drainage features have been included in the XPSTORM models to reflect the updated model. Per TCEQ criteria, a 25-year XPSTORM model and analysis was included in the report. Based on these changes, the overall outfall flow rate has been reduced from 198.19 cfs to 157.59 cfs.

Detention Summary

Table 1 – Detention Summary Table

Project Name: Greenhouse Road Landfill				
Total Project Area	181.13 Acres			
Offsite Drainage Area	68.34 Acres			
Total Drainage Area	249.47 Acres			
Detention Storage Rate Required (HCFCD Min.)	0.55 acre-feet per acre			
Minimum Detention Storage Required	99.62 acre-feet			
Detention Storage Provided	151.08 acre-feet			
Detention Storage Rate Provided	0.83 acre-feet per acre			
Detention Storage Utilized (XPSTORM)	126.22 acre-feet			
Detention Storage Rate Utilized (XPSTORM)	0.70 acre-feet per acre			
100-Year Allowable Release Rate	200 cfs			
100-Year Release Rate Provided	187.98 cfs			
10-Year Allowable Release Rate	197.23 cfs			
10-Year Release Rate Provided	142.95 cfs			
Basin Name	A	B	C	D
100-Year WSEL	119.51 ft	122.97 ft	120.86 ft	121.02 ft
10-Year WSEL	115.95 ft	118.85 ft	117.02 ft	117.16 ft
Detention Storage Provided	33.13 acre-feet	94.44 acre-feet	13.56 acre-feet	9.95 acre-feet
Detention Storage Utilized	25.77 acre-feet	81.10 acre-feet	11.22 acre-feet	8.13 acre-feet

Floodplain Related Information

According to FEMA FIRM Panel No. 48201C0605L, effective June 18, 2007, the proposed 189.3 acre development is located completely outside of the South Mayde Creek floodplain.

Report Findings

The report states, “This study utilizes a combination of HEC-HMS, NRCS Method, Manning’s Equation, and XPSTORM 2014 to evaluate the existing and proposed conditions of the development to show no adverse impact in the 1% and 10% exceedance probability storm events.”

Hydrologic & Hydraulic Technical Review

HCFCFCD offers the following:

The report includes statements that the project will cause no adverse impact to the receiving waterways in storm events up to and including the 100-year event. The documentation within the report generally supports the conclusions stated by the engineer. Based on the stated conclusions, HCFCFCD interposes no objection to the referenced report. Please note, this acceptance does not necessarily mean that the entire report, including all supporting data and calculations, has been completely checked and verified. However, the report is signed, dated, and sealed by a Professional Engineer licensed to practice in the State of Texas, which therefore conveys the licensed engineer's responsibility and accountability.

Additional HCFCFCD Criteria

Site plans must be submitted to HCFCFCD for review and signature.

All work proposed within existing and future HCFCFCD right-of-way must be designed and constructed in accordance with the HCFCFCD Policy, Criteria, and Procedure Manual.

Environmental Review & Permitting

The Harris County Flood Control District's Regulatory Compliance Department requires that proposed projects impacting regulated waters of the U.S. obtain and document the required U.S. Army Corps of Engineers permit(s) for any portions of the project located within any existing or proposed HCFCFCD right-of-way. The type of permit required (if any) must be stated on the site plans even if written permit authorization from the Corps of Engineers is not required. If written permit authorization is required, copies of approved Corps of Engineers permits must be submitted with the HCFCFCD *Notification of Construction in Right-of-Way* and submitted to the HCFCFCD Development Coordination and Inspection Department at least 48 hours prior to construction along with the *48-hour Pre-Construction Notification*.

Thank you for coordinating this project with the Flood Control District. If you have any questions regarding the technical comments, please contact Mr. Robert Fanning, P.E. via email at Robert.Fanning@hcfcd.org. For any other questions, you may contact me at david.saha@hcfcd.org.

Sincerely,

David B. Saha, P.E.
Watershed Coordinator

DBS:rf:ag