

August 29, 2008

Mr. Dan Serna
Director of Public Works
City of Harlingen
404 South 54th Street
Harlingen, Texas 78550

RE: CITY OF HARLINGEN MASTER DRAINAGE PLAN

Dear Mr. Serna:

Civil Systems Engineering, Inc. in association with Brown Leal & Associates, Inc. and Camacho-Hernandez & Associates, LLC proudly presents the City of Harlingen Master Drainage Plan (COHMDP). The City of Harlingen Master Drainage Plan was developed in accordance with the authorization agreement between the City of Harlingen and Civil Systems Engineering, Inc. The report presents the assumptions, procedures, findings, and recommendations of the engineering team effort for the development of a Capital Improvement Plan for the City's drainage infrastructure.

The information presented within the Master Drainage Plan includes: detailed descriptions of the existing storm sewer and drainage ditch systems, existing flooding problem areas, hydraulic capacities of the City's drainage systems, a listing of inadequate systems, recommended improvements, associated probable costs, and CIP project priority. The Master Drainage Plan provides the necessary tools for the City to plan and manage its drainage systems in a more efficient and effective manner.

The Capital Improvement Plan (CIP), as part of the Master Drainage Plan, gives the City a planning tool to manage its future capital improvement expenditures for the drainage infrastructure within the City limits and ETJ. The CIP identifies the general characteristics of proposed drainage modifications and improvements required for the drainage systems that are currently considered to be inadequate relative to City's drainage design criteria and historical flooding records, and their relative priority in the plan. It must be recognized that the CIP is a continuing and ongoing planning/implementation process.

A set of extensive Geographic Information System (GIS) data layers was developed as part of the engineering efforts of the CIP development. These GIS data layers are presented as part of the Master Drainage Plan and are provided to the City to be utilized as part of the CIP management. The GIS

data layers contains valuable digital geospatial information such as aerial photographs, land use, soil map data, existing and proposed storm sewer systems, drainage channels, drainage basins, and storm catchment delineations.

Civil Systems adopted a systematic approach, utilizing the latest GIS technology and modern hydrologic/ hydraulic modeling, to facilitate the project's various tasks and CIP development to meet the budget and time restraints. Led by Civil Systems Engineering, Inc., our project team has made an arduous effort to utilize each team member's expertise in the creation of the Master Drainage Plan and Capital Improvement Plan project. Extensive cooperative efforts were amongst team members to ensure a high level of accuracy and quality in the development of the COHMDP. The project team participants and their roles include the following:

- Civil Systems Engineering Inc. – Overall project management, drainage basin and catchment delineation, hydrologic and hydraulic modeling analysis, GIS application and development, and CIP development.
- Brown Leal & Associates, Inc. – Existing storm sewer and drainage ditch data collection, field survey, drainage basin and catchment delineations, QA/QC, and CIP development.
- Camacho-Hernandez & Associates, LLC – Existing storm sewer system data collection, storm sewer system digitizing, and CIP development.

We appreciate this opportunity to be of service to the City of Harlingen, and gratefully acknowledge the cooperation and support that City officials and engineering staff have given us throughout the entire study period. We look forward to the successful implementation of the CIP projects.

Respectfully,



Deren Li, Ph.D., P.E., D.WRE, CFM
President

