PRINCIPAL Engineering, Inc.

1011 N Causeway Blvd, Suite 19 ♦ Mandeville, Louisiana 70471 ♦ Phone: 985.624.5001♦ Fax: 985.624.5303

November 12th, 2020

Attn: Lacy Landrum, Director of Administration
City of Hammond
P.O. Box 2788
Hammond, Louisiana 70404-5602

RE: Proposal for Engineering Services
City of Hammond LOMR

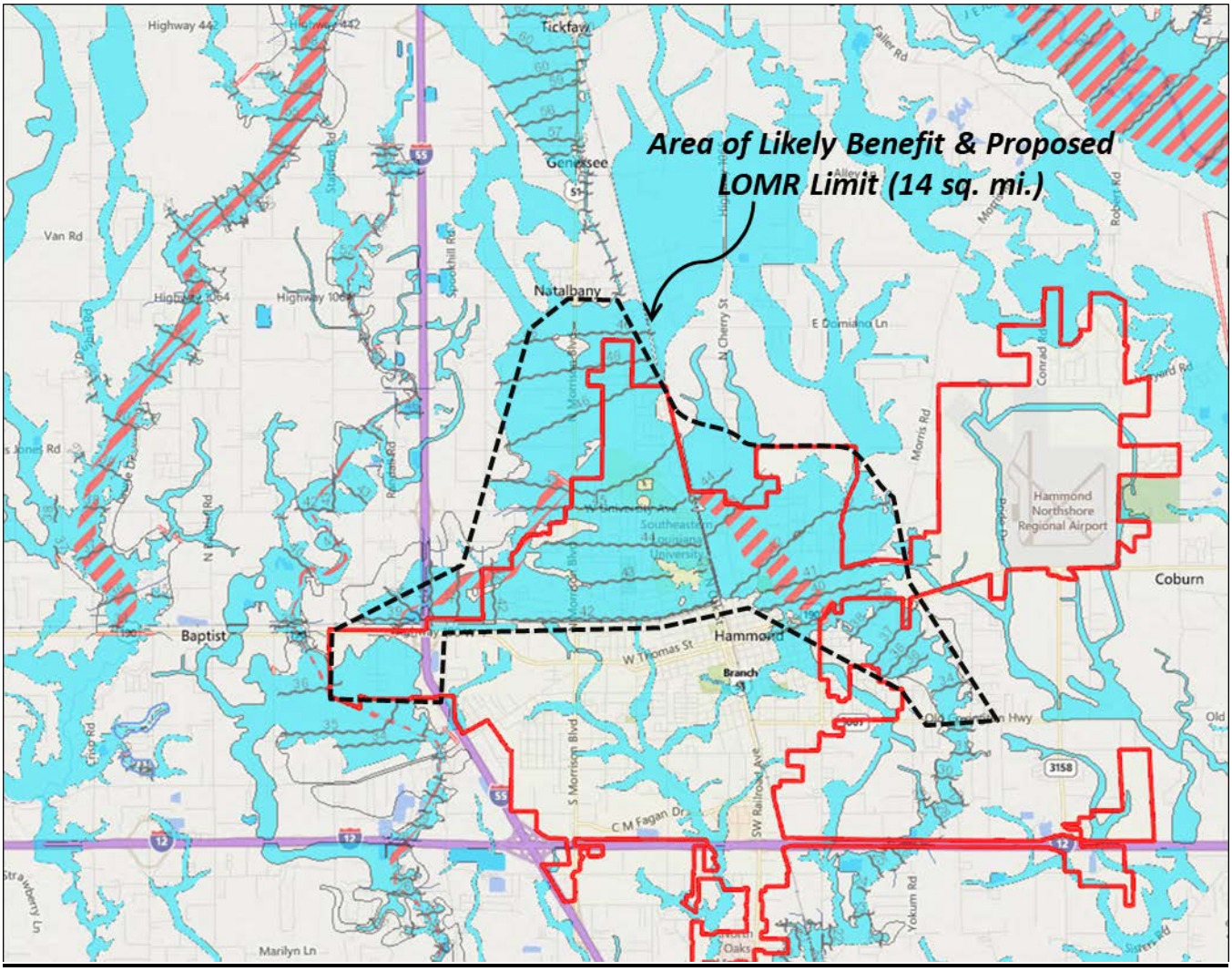
Introduction

The City's Flood Insurance Rate Maps (FIRMs) have long been thought by the City to over-predict Base Flood Elevations (BFEs), resulting in overly conservative structure finished floor elevations, and overly expensive flood insurance premiums for residents and businesses. Principal Engineering was retained by the City in 2018 to perform a reconnaissance study on the FIRMs and identify opportunity for improvements. The study revealed that FEMA employed approximate methods when modeling and mapping the waterways near Hammond, and that potential exists for reduction in BFEs in certain areas of the City if a refined analysis is accomplished and a Letter of Map Revision (LOMR) application is accepted by FEMA. Regions of the City most likely to benefit were defined and mapped.

At your request, this proposal defines the scope, fee, and approach to perform the necessary survey, hydrologic and hydraulic modeling, mapping, and reporting necessary for a LOMR.

Objective & Description

Revise FIRMs within the study area limits to adjust BFE. Limits are as follows: Ponchatoula Creek from LA 1064 (Natalbany Rd.) to LA 1067 (Old Covington Hwy.), Yellow Water River Canal from Ponchatoula Creek distributary to Yellow Water River confluence, and affected floodplains, an area of approximately 14 square miles (see Map). Work includes field data collection by topographic survey and direct observation; data collection by download from open sources; assembly and calibration of a combined hydrologic/hydraulic 1-D/2-D model in HEC-RAS 5.0.7; prediction of 100-yr and 500-yr water surface elevations; determination of the regulatory floodway boundary, mapping new BFEs and application to FEMA for FIRM panel revision; response to FEMA reviewer comments, public notice facilitation, and supporting tasks.



<u>Above</u>: Limits of LOMR Study Area shown in dashed black line, City Limits shown in solid red line, Flood Zones shadd in blue.

Scope of Work

The attached man-hour estimate spreadsheet displays task, sub-tasks, and the estimated effort required for each. Below, brief narrative explains the approach and work to be accomplished under each major task.

<u>Task 1 – Data Gathering and Preliminary Analysis</u>

The outcomes of Task 1 are as follows: 1) a data set of field surveyed elevations, downloaded open source lidar topographic surfaces, and observations; which have been reviewed and corrected for quality, and validated for relevance; 2) maps to be used for modeling reference and as basis of the revised FIRMs are assembled, checked, and ready for use; and 3) detailed

methodology is developed, coordinated, and approved by FEMA reviewers to reduce LOMR application comments to a reasonable minimum.

Topographic survey will be accomplished by Andrew Faller at critical locations, and used to supplement LiDAR topography downloaded from open sources. Field survey is anticipated at the following locations:

Ponchatoula Creek

1.1.1 Six stream cross sections (3 @ 300 ft; 2@1000 ft), See Map

1.1.2 Bridge Survey (US & DS Channel Section, Bottom Chord, Top El)

1.1.2.1 N. Oak St.
1.1.2.2 Whitmar Dr.
1.1.2.3 Railroad
1.1.2.4 LA 3234 (E. University Ave)
1.1.2.5 LA 1065 (N. Cheryl St.)
1.1.2.6 Martin Luther King Ave
1.1.2.7 CN Railroad (near E. Robinson St.)
1.1.2.8 E. Church St.
1.1.2.9 LA 1065 (E. Thomas St.)
1.1.2.10 US 190 (E. Morris Ave.)

Yellow Water River Canal

1.1.3 Four Stream Cross Sections @ 500 ft, See Map

1.1.4 Bridge Survey (US & DS Channel Section, Bottom Chord, Top El)

1.1.4.1 Woodstone Dr.
1.1.4.2 US 51 (Morrison Rd.)
1.1.4.3 LA 3234 (W. University Ave)
1.1.4.4 Rogers Rd.
1.1.4.5 Interstate 55
1.1.4.6 CN Railroad
1.1.4.7 US 190
1.1.4.8 Stein Rd.

Additional

1.1.5 Culvert and Channel under N. Oak St., between Western Ave and Tennessee Ave

1.1.6 Other survey required by FEMA reviewers for acceptance, or for unforeseen model development needs

No actionable deliverables are expected at the conclusion of Task 1. The City will be provided with status deliverables including the field survey data, compiled work maps, and documentation of FEMA/GOHSEP meetings and correspondence for methodological concurrence.

Task 2 – Hydrologic/Hydraulic Modeling (10, 100, 500 yr Events)

The outcomes of Task 2 are as follows: 1) a detailed model of the waterways according to FEMA guidelines, including overbank floodplain area and topography, sufficient for accurate

stage prediction at the design rainfall events, and 2) a plot of predicted BFEs, floodway boundaries, and 500-yr stages for use in mapping.

No actionable deliverables are expected at the conclusion of Task 2. The City will be provided the model files and working notes when complete. These models may be useful tools for a future drainage study or to test a proposed drainage improvement project, or to test effect of a development within the modeled study area.

Task 3 – Mapping, Report, and LOMR Application

The outcome of Task 3 is a complete LOMR application package for submittal to FEMA, including proposed maps, a technical report, and completed floodplain forms. This package will be delivered to the City for endorsement, and transmitted to FEMA for processing.

Fee Schedule

Task 1 – Data Gathering and Preliminary Analysis	**$ 81,440.00**
Task 1.1 – Topographic Survey	*$ 25,500.00 (Hourly, NTE)*
Tasks 1.2 thru 1.6	*$ 55,940.00 (LS)*
Task 2 – Hydrologic/Hydraulic Modeling	**$226,550.00 (LS)**
Task 3 – Mapping, Report, and LOMR Application	**$ 65,980.00 (LS)**
Response to FEMA Comments after LOMR Submittal	TBD (Hourly, NTE)
Total Proposed Fee Thru Application	**$373,970.00 (LS + NTE)**

Due to FEMA comments after LOMR Application submittal, and potential for additional survey requirement, a total budgeted amount of $400,000 is recommended.

Note: As authorized by the City of Hammond, Principal Engineering will sequentially work tasks and portions of tasks to remain within funds available.

We look forward to discussing the scope, tasks and fees proposed and we truly appreciate the opportunity to work with the City of Hammond. If you have any questions regarding this proposal, please do not hesitate to contact our office.

Sincerely,
PRINCIPAL *Engineering, Inc.*

Andre C. Monnot, P.E.
Executive Vice President

City of Hammond LOMR

Man-Hour Estimate

Submitted By: PRINCIPAL Engineering, Inc.

Expected Personnel Classification, Billable Rate & Man-Hour Estimate							
Classification:	**PRINCIPAL**	**SENIOR ENGINEER**	**SURVEYOR W/CREW**	**PROJECT ENGINEER**	**TECHNICIAN**	**OFFICE MANAGER**	**Per Task**
Rate:	**$180.00**	**$170.00**	**$150.00**	**$120.00**	**$95.00**	**$55.00**	
TASK / **DESCRIPTION**	**Man-Hours**						
1.0 Data Gathering and Preliminary Analysis							
1.1 Topographic Survey and Drafting (NTE, Subconsultant)	-	-	170	-	-	-	170
1.2 Topographic Survey and Mapping Administration/Coordination	4	8	-	-	-	-	12
1.3 Field Visits to Validate Basins and Survey	-	40	-	40	16	-	96
1.4 Data Analysis for Model Input	12	24	-	16	-	-	52
1.5 Assemble Base Work Maps (LidAR, Survey, Ex. Studies)	8	16	-	-	60	-	84
1.6 FEMA Region IX and GOHSEP Technical Concurrence	40	80	-	16	-	-	136
Sub-Total Task 1.0	**64**	**168**	**170**	**72**	**76**	**0**	**380**
	$11,520.00	**$28,560.00**	**$25,500.00**	**$8,640.00**	**$7,220.00**	**$0.00**	**$81,440.00**
2.0 Hydrologic/Hydraulic Modeling (10, 100, 500 yr Events)							
2.1 Hydrologic Modeling	-	-	-	-	-	-	
a. Initial Build and 10 Year Event	4	80	-	120	120	-	324
b. 100 Year Event	2	4	-	24	24	-	54
c. 500 Year Event	2	4	-	16	24	-	46
2.2 Hydraulic Modeling (Riverine and Floodplain)	-	-	-	-	-	-	
a. Devise Boundary Conditions	8	48	-	40	16	-	112
b. Initial Model Geometry and Topography Input	8	80	-	200	280	-	568
c. 10 Year Event	-	16	-	60	30	-	106
d. 100 Year Event	-	16	-	60	60	-	136
e. 500 Year Event	-	16	-	60	60	-	136
2.3 Hydraulic Modeling (Floodway Analysis)	-	40	-	60	60	-	160
2.4 Model Calibration and QA Review	32	80	-	80	8	-	200
Sub-Total Task 2.0	**56**	**384**	**0**	**720**	**682**	**0**	**1842**
	$10,080.00	**$65,280.00**	**$0.00**	**$86,400.00**	**$64,790.00**	**$0.00**	**$226,550.00**
3.0 Mapping, Report, and LOMR Application							
3.1 Develop Mapping Strategy from Results and FEMA Regulation	8	8	-	16	24	-	56
3.2 Transfer Modeled Elevations to Work Map	-	8	-	16	36	-	60
3.3 Develop New Zones Boundaries	-	8	-	24	-	-	32
3.4 Interpolate Topography for Boundaries between Gutters	4	4	-	8	24	-	40
3.5 Prepare Revised FIRM Panels (5)	4	8	-	8	80	-	100
3.6 Complete FEMA Standard Forms	4	4	-	16	-	-	24
3.7 Prepare Technical Report	16	40	-	40	-	4	100
3.8 Prepare Annotated Maps/Figures for Report	2	8	-	20	24	-	54
3.9 Public Meeting and/or Notifications	4	16	-	16	-	2	38
3.10 Prepare and Submit LOMR Application	2	4	-	8	8	2	24
Sub-Total Task 3.0	**44**	**108**	**0**	**172**	**196**	**8**	**528**
	$7,920.00	**$18,360.00**	**$0.00**	**$20,640.00**	**$18,620.00**	**$440.00**	**$65,980.00**
Total Man-Hours Per Classification:	**164**	**660**	**170**	**964**	**954**	**8**	**2750**
Total Fee:	**$29,520.00**	**$112,200.00**	**$25,500.00**	**$115,680.00**	**$90,630.00**	**$440.00**	**$373,970.00**