Barowka and Bonura
Engineers and Consultants, L.L.C.

SOQ: Professional Engineering and Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish

Resolution No.: 138896

Deadline: Wednesday, March 23, 2022 at 3:30 PM

Barowka and Bonura Engineers and Consultants, L.L.C.
209 Canal Street
Metairie, Louisiana 70005

Jeffrey Bonura, P.E., Member
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Collaborate.

Innovate.

Implement.

MSMM ENGINEERING, LLC

BRYANT HAMMETT & ASSOCIATES, LLC
CIVIL ENGINEERING & LAND SURVEYING

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BBEC Barowka and Bonura
Engineers and Consultants, L.L.C.

March 23, 2022

Jefferson Parish Government
Purchasing Department
General Government Building
200 Derbigny St., Suite 4400
Gretna, Louisiana 70053

SUBJECT: **PROFESSIONAL ENGINEERING AND SUPPLEMENTAL SERVICES FOR A DRAINAGE MASTER PLAN FOR THE EAST BANK OF JEFFERSON PARISH** (RESOLUTION NO. 138896)

Dear Purchasing Director:

Barowka and Bonura Engineers and Consultants, L.L.C. (BBEC) appreciates the opportunity to submit this Statement of Qualifications to provide Professional Engineering and Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish.

BBEC, an engineering consulting firm specializing in civil engineering, planning, design, construction management, and related services is fully qualified to provide the engineering services necessary for any type of drainage project. To perform the project, BBEC teamed with MSMM Engineering, L.L.C. (MSMM) and Bryant Hammett & Associates, L.L.C. (BHA).

BBEC has substantial experience in hydrologic and hydraulic (H&H) modeling, design, and master planning in Jefferson and its surrounding parishes with uur proposed teaming partner, MSMM, having similar experience. Combined, our H&H modeling and master planning experience includes the following projects in Jefferson Parish alone:

- Waggaman Drainage Master Plan
- Cleary Avenue Drainage Study (Veterans Blvd. to West Esplanade Ave.)
- Harvard Avenue Drainage Study, (Master Plan of area bounded by Veterans, I-10, Transcontinental, and Clearview)
- Bissonet Plaza Drainage Master Plan
- Bucktown Area Drainage Master Plan
- Avondale/Bridge City Drainage Study
- Lafitte Area Inner Drainage Study (Area Master Plan)
- USACE's Silver Jackets Program, Jefferson Parish (Parish-wide) Green Infrastructure and Watershed Master Plan
- City of Kenner Drainage Master Plan
- South Kenner Pump to the River Feasibility Report (Area Master Plan)
- New Orleans International Airport North Terminal Comprehensive H&H Modeling (Area Master Plan)
- Coventry Court Drainage Evaluation Feasibility Modeling Report and Subsurface Design
- Woodlake Drainage Pump Station Hydraulic Modeling
- Jefferson Parish DFIRM upgrade (floodplain mapping only)

209 Canal Street • Metairie, Louisiana 70005 • phone 504.828.0030 • fax 504.828.8006

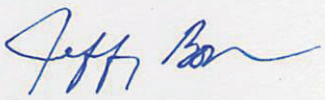
We have substantial experience working within the Parish's existing models and the Parish's GIS facilitating the development of the Parish's drainage facility inventory. And, having been working in the Parish for 30+ years, we are aware of the subsidence and settlement in parts of the East Bank that should be studied.

The BBEC Project Team has substantial H&H modeling and master planning experience in our surrounding parishes as well, such as developing a parish-wide H&H model and performing the necessary floodplain mapping for St. Bernard Parish to update its flood insurance rate maps to FEMA standards. Additional projects are provided in the following Statement of Qualifications.

BBEC and MSMM are based on the East Bank of Jefferson Parish; BHA maintains an office on the East Bank of Jefferson Parish, as well.

Once again, we sincerely appreciate the opportunity to submit this Statement of Qualifications to Jefferson Parish, and we look forward to serving you.

Very truly yours,
BAROWKA AND BONURA ENGINEERS AND CONSULTANTS, L.L.C.



Jeffrey Bonura, P.E.
Member

TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

Provide Professional Engineering and Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish (Resolution # 138896)

B. Firm Name & Address:

Barowka and Bonura Engineers and Consultants, L.L.C.
209 Canal Street, Metairie, LA 70005

C. Name, title and contact information of Principal, as defined in Section 2-926 of the Jefferson Parish Code of Ordinances, who is a registered, licensed architect, professional engineer, or surveyor in the State of Louisiana:

Jeffrey A. Bonura, P.E.
Member
Office: (504) 828-0030
Fax: (504) 828-8006
Email: jbonura@bbecllc.com

D. Name and contact information of employee who is a registered and licensed architect, professional engineer, or surveyor in the State of Louisiana in the applicable discipline. A subcontractor may be substituted here only if the advertised Project requires more than one discipline.

Kevin Forschler, P.E.
Civil Engineer
Office: (504) 828-0030
Fax: (504) 828-8006
Email: kforschler@bbecllc.com

E. Please provide the number of employees whose primary function corresponds with each category:

3 Administrative	1 Estimators	1 Specification Writers
0 Architects (Licensed)	0 Geologists	0 Structural Engineers
0 Chemical Engineers	0 Geotechnical Engineers	1 Graduate Engineers
4 Civil Engineers	0 Interior Designers	1 Project Managers
3 Construction Inspectors	0 Landscape Architects	1 Clerical
0 Ecologists	0 Land Surveyor	3 Grant/Funding Specialist
1 Electrical Engineers	0 Mechanical Engineers	0 Sanitary Engineers
0 Engineer Intern	0 Environmental Engineers	
0 Professional Land Surveyors		**19 TOTAL**

F. Is this submittal by a JOINT-VENTURE? Please check: YES [ ] **NO** [✓]

If marked "No" skip to Section I. If marked "yes" complete Sections G-H.

TEC Professional Services Questionnaire

G. If submittal is by JOINT-VENTURE, list the firms participating and outline specific areas of responsibility (including administrative, technical, and financial) for each firm. Please attach additional pages if necessary.

1. N/A

2. N/A

H. Has this JOINT-VENTURE previously worked together? Please check: N/A
YES _____ NO _____

I. List all subcontractors anticipated for this Project. Please note that all subcontractors must submit a fully completed copy of this questionnaire, applicable licenses, and any other information required by the advertisement. See Jefferson Parish Code of Ordinances, Sec. 2-928(a)(3). Please attach additional pages if necessary.

Name & Address:	Specialty:	Worked with Firm Before (Yes or No):
1. MSMM Engineering, L.L.C. 4508 S. Clearview Pkwy., Suite C Metairie, LA 70006	H&H Modeling Master Plan Development	Yes
2. Bryant Hammett & Associates, LLC 1104 Dealers Avenue, Suite A Harahan, LA 70123	Surveying	Yes
3.		
4.		

J. Please specify the total number of support personnel that may assist in the completion of this Project:

48 (BBEC staff including support staff and sub-consultants available staff)

TEC Professional Services Questionnaire

K. List the professional in charge, key persons, specialists, and individual consultants anticipated for this Project and provide their relevant information below. If necessary, please attach additional documentation (i.e. resume) that demonstrates the employment history and experience of the Firm's key persons that may assist in the completion of this Project. Please attach additional pages if necessary.

PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Jeffrey Bonura, P.E.
Principal

Project Assignment:

Supervising Professional / Project Manager

Name of Firm with which associated:

Barowka and Bonura
Engineers and Consultants, L.L.C.

Years' experience with this Firm:

25

Education: Degree(s)/Year/Specialization:

B.S. / 1991 / Civil Engineering

Active registration: Year first registered/discipline:

1995 / Civil

Other experience and qualifications relevant to the proposed Project:

Jeffrey Bonura, P.E., the sole owner of the firm of Barowka and Bonura Engineers and Consultants, L.L.C. Mr. Bonura began his career in 1988 and since that time has worked as a project engineer, project manager and program manager on municipal, commercial, institutional and industrial projects.

Mr. Bonura's experience related to drainage includes design of drain piping, box culverts, structures, pump stations, ditches and canal, detention systems, and managing the cleaning of debris from the systems. Mr. Bonura's experience includes developing hydrologic and hydraulic models for stormwater systems and developing master drainage plans for improvements based on the analysis. Mr. Bonura's hydrologic and hydraulic modeling includes utilizing SWMM v.5, Autodesk Storm and Sanitary Analysis, Intergraph Storm and Sanitary SelectCAD, Haestad StormCAD, HEC-1, HEC-2, HEC-RAS, HEC-HMS, and Mr. Bonura has written his own hydraulic modeling software when third party software was not available for the task.

Mr. Bonura's experience with developing master plans also include planning for city or parish-wide improvements of drainage pump stations, sewerage collection systems, and water treatment and distribution systems. Mr. Bonura

also has experience with developing funding sources, local and federal, for major public works type programs.

Relevant projects Mr. Bonura has worked on over the years include:

H&H MODELING AND MASTER PLANNING OF DRAINAGE SYSTEMS

The projects listed demonstrate Mr. Bonura's vast experience with H&H models:

Avondale/Bridge City Drainage Evaluation (Area between the Mississippi River and the Union Pacific Railroad, from Huey P. Long Bridge to Avondale Garden Road), Jefferson Parish, LA, 04/2021-Present
Mr. Bonura is serving as Supervising Engineer for this project where BBEC developed the topographical survey scope for the project and manages the surveyor for the Parish. BBEC is developing a hydraulic and hydrologic model using SWMM v.5 of the Project Area between the Mississippi River and the Union Pacific Railroad, from the Huey P. Long Bridge to Avondale Garden Road; and, developing various alternatives for improvements with cost estimates for the alternatives. BBEC will provide alternatives and associated cost estimates for improvements, including alternate channels to drain the Host Facility and rail yard area, alternatives to drain the Training Facility, potential locations for storage as an alternative to transmission, and alternatives to drain the Bridge City residential area.

Bissonet Plaza Drainage Master Plan (A/E Project No. 20-1708), Jefferson Parish, LA, 05/2018-05/2021
Mr. Bonura served as the Supervising Engineer for this project where BBEC developed a hydrologic and hydraulic (H & H) model of a 180 acre residential (zoned R1) area in Jefferson Parish, Louisiana, said area bounded by Power Boulevard, Kawanee Avenue, West Esplanade Avenue, and the Elmwood Canal. BBEC developed a limited scope of services for the necessary topographical survey; provided oversight and reviewed the final topographic survey; developed the H & H model using third party software; coordinated the model with the Parish's own parish-wide H & H model; and provided the running model to others for evaluation of improvements.

Waggaman Drainage Master Plan (Project No. 2011-03-DR), Jefferson Parish, LA, 02/2013-01/2016
Mr. Bonura served as Supervising Engineer to perform a hydrologic study for three separate residential subdivisions in Waggaman, Louisiana: Waggaman, South Kenner, and Manor Lane. The Waggaman subdivision is bounded by River Road to the north, Live Oak Boulevard to the south, Saul's Canal to the west, and Dandelion Ditch to the east. South Kenner subdivision is bounded by River Road to the north, North Railroad Canal to the south, Saul's Canal to the east, and another subdivision to the west. The Manor Lane subdivision is bounded by River Road to the north, North Railroad Canal to the south, Latigue Road Ditch to the west, and Modern Farms Road Ditch to the east. BBEC used the Storm Water Management Model (SWMM) to evaluate the existing subsurface drainage capacities for each subdivision and to examine if the existing system was able handle a 10-year design storm. BBEC developed a hydrologic and hydraulic model for each area and recommended subsurface improvements based on the SWMM model to handle a 10-year design storm.

Harvard Avenue Drainage Study (Master Plan of area bounded by Veterans, I-10, Transcontinental, and Clearview), Project No. 99-046-046-DR and 99-046A-DR, Jefferson Parish, LA, 04/2000-06/2006
Mr. Bonura designed approximately 6,000 linear feet of 24-inch to 72-inch drainpipe in Jefferson Parish, Louisiana. BBEC used Intergraph's Storm and Sanitary SelectCAD modeling software to determine the surface runoff and the pipe sizes. Data from the existing Parish's GIS was used to develop the surface terrain for the basis of the model. The project requires that the various drain lines be installed within 50-foot Parish rights-of-way in commercial and residential areas, existing utilities throughout the length of the project are maintained, and the site is restored, including roadways, to its before construction condition. The project also required three separate jack-and-bores, from 30-inches to 72-inches in diameter, across a three-lane roadway to discharge into a canal. The estimated construction cost is $2,430,000.

Lake Avenue and Carrolton Avenue Drainage Study, Jefferson Parish, LA, 04/2003-07/2005
Project included an extensive drainage and traffic control study on Lake and Carrollton Avenues in the Bucktown area of Jefferson Parish, Louisiana. Hydraulic modeling of the entire area was performed, and drainage improvements were recommended in conjunction with the findings of the traffic study. Mr. Bonura performed the hydraulic model, coordinated with the traffic engineer and designed the proposed drainage improvements.

Cleary Avenue Roadway and Drainage Improvements, Jefferson Parish, LA, 01/1998-06/2005 & 11/2017-Present
The construction project included reconstruction of approximately 4000 feet of concrete roadway, redesign of existing drainage system and general improvements to existing infrastructure on Cleary Avenue from Veterans Boulevard to West Esplanade Avenue. The project area modeled included Cleary Avenue from Veterans Boulevard to West Esplanade Avenue, including neighbor streets connecting to Cleary's drainage trunk line. Mr. Bonura performed the modeling, design, evaluation (drainage under roadway), and plans and specifications. The project is complete through construction.

LA-45 Evacuation Route Basin Drainage Improvements, Lafitte Area Independent District, LA, 02/2020-Present
Mr. Bonura is serving as Supervising Engineer for BBEC, performing as sub-consultant, for the development H&H models for the LA-45 Evacuation Route Basin, both for existing conditions and to reflect the proposed Lafitte Tidal protection project. The analysis identified internal drainage problems resulting from the completion of the Tidal Protection project and established pipe, ditch, canal, and LADOTD roadway culvert sizes. BBEC also modeled discharge pump station and determined the capacity for each of the three pump stations. BBEC also provided Drainage Maps and Conceptual Storm Sewer Routing Plans to show ditches and storm sewer locations, and sized required, and identify any potential problem areas, plans and profiles, required right-of-way and construction access, and any impacts to existing properties.

Widening / Stabilization of Congressman Hebert, Creely, and Bluebird Canals (Hazard Mitigation Grant Program (HMGP), St. Bernard Parish, LA, 01/2015-Present
Mr. Bonura serves as the supervising professional and project engineer on the hydraulic and hydrologic model phase of the entire project and the design of the Congressman Hebert Canal replacement portion of the project. The project includes increasing the capacity and improves the stability of Congressman Hebert, Creely, and Bluebird Canals, that consists of 11,600 linear feet of open canal and culverts ranging from 4-feet bottom width to 16-feet bottom width channels. Mr. Bonura coordinated with St. Bernard Parish, Lake Borgne Basin Levee District, and the Louisiana Department of Transportation and Development to obtain information regarding the existing drainage plan. BBEC performed a hydrologic and hydraulic analysis of the existing system to evaluate the entire area for the 5-year, 10-year, and 25-year storms. BBEC established the design cross sections for the channels, which included concrete u-channels, concrete box culverts, and round and arched pipe, and concrete lined trapezoidal sections, depending on the availability of land and other conditions.

Cypress Park Subdivision Drainage Evaluation, St. Tammany Parish, LA, 11/2016-12/2017
Mr. Bonura served as the supervising professional and project engineer on the hydraulic and hydrologic study of the Erindale Heights and Cypress Park Subdivisions (about 450 acres of single-family residential property). The study consisted of developing a computer model of the hydrology and drainage system consisting of natural channels, open ditches, closed conduits, and culverts. BBEC evaluated the 5, 10, 25, 50, and 100-year storms, and developed several alternatives for addressing the flooding concerns. BBEC provided pros and cons, permitting concerns, and construction cost estimates related to the alternatives. The alternatives considered included elevation adjustments to open channels, increased closed conduit usage and size of existing closed conduits, levees, and pump stations.

HMGP Elevation of Coast Guard Road, Phase I (Project No. 1603x-075-0010), Plaquemines Parish, LA (Funding Source: FEMA Hazard Mitigation Grant Program), 09/2013-06/2016
Mr. Bonura worked with Plaquemines Parish Government to design the two-foot elevation and stabilization of Coast Guard Road. As Supervising Engineer, he oversaw the design of the upgrades to the existing drainage system, a Hydrologic and Hydraulic (H & H) Study to identify the existing drainage system, the need for upgrades, and to assess the reduction of flooding due to contemplated improvements to Coast Guard Road. He performed calculations, modeling, and analysis to assess the hydraulic capacity of the existing drainage system and provided recommendations for improvements that will increase system capacity and reduce the risk of flooding. As part of the H&H evaluation, Mr. Bonura included an analysis of Mississippi River elevations data to identify periods when the improvements would be inundated by the river effects, and what depths would be encountered. Mr. Bonura oversaw the surveying and environmental review process.

Map Modernization Project (DFIRM) (Contract No. EMT-2005-CA-0110), St. Bernard Parish, LA, 03/2005-12/2008
Mr. Bonura oversaw and assisted FEMA to develop St. Bernard Parish's flood insurance rate maps as part of FEMA's map modernization program. Mr. Bonura prepared the project scoping document for St. Bernard Parish and received FEMA approval in accordance with FEMA document Guidance for Scoping Flood Mapping Projects. Mr. Bonura incorporated the Parish's hydraulic features into the GIS. Mr. Bonura performed the necessary hydraulic and hydrologic studies and analyses necessary for the implementation of the map modernization project by using USCAE's hydraulic and hydrologic modeling software HEC-RAS and HEC-HMS. Mr. Bonura incorporated the results of the hydrologic and hydraulic studies GIS to develop the necessary flood plains. Mr. Bonura prepared a Base Map for the project (streets, ditches, benchmarks, etc.) from St. Bernard Parish's existing GIS, modifying the format to FEMA standards. Mr. Bonura has submitted all hydraulic and hydrologic and survey work for independent QA/QC and is currently developing DFIRM base maps. All work associated with the development of the DFIRMs were in strict compliance with the National Flood Insurance Program.

Bayou Gauche Drainage Analysis, St. Charles Parish, LA, 01/2003-12/2005
Mr. Bonura served as Design Engineer for the project which included updating the Parish's existing hydraulic and hydrologic computer models with current developments for the Sunset Drainage District watershed in St. Charles Parish. The Parish's existing HEC -1 and HEC-2 hydraulic models were evaluated and revised to include infrastructure improvements throughout the drainage district. The existing models were converted to HEC-RAS and HEC-HMS for use in this study and future evaluations. Model runs were performed to verify the need for drainage pump station improvements in the area and determine the improved capacity of the pump station.

Guichard Canal Area Drainage Evaluation, St. Bernard Parish, LA, 03/2004-04/2005
The project consisted of evaluating the ability of an existing drainage system in St. Bernard Parish, Louisiana to handle the 10-year storm for a 200-drainage basin in a residential area primarily consisting of open ditches and miscellaneous culverts with multiple outfalls into the Guichard Canal. The area is bounded by the Guichard Canal on the west, Paris Road on the east, Judge Perez Drive on the south, and Patricia Street on the north. The area also contained two drainage pump stations that were designed to drain the subsurface system, while the main volume of flow during the rain events utilized roadside ditches and some subsurface drain lines. Mr. Bonura supervised the development of a drainage layer in the Parish's GIS, supervised the surveying of elevations of the drainage features, developed a hydrologic and hydraulic model for the area, modeled the area and determined all deficient drain lines. Mr. Bonura made recommendations for the necessary improvements to cover the 10-year storm.

DRAINAGE PROJECT ENGINEERING

The projects listed demonstrate Mr. Bonura's vast experience with the design and construction of drainage facilities, enabling him to develop realistic projects in a drainage master plan:

Craig Avenue Drainage Improvements, Public Works Project No. 2019-022-DR, Jefferson Parish, LA, 01/2020-Present

Mr. Bonura is currently serving as the Supervising Engineer for this project. The scope of work includes the design and construction administration services for the design of upgrades to subsurface drainage on Craig Avenue between Kawanee Avenue and West Esplanade Avenue. The project involves installing a large diameter drain line within 20 feet of residential structures and connecting this new drain line to the existing trunk line that runs along the opposite side of the road and to the existing catch basins on the cross streets of Craig Avenue. BBEC is overseeing the Surveying and Geotechnical Engineering services.

Westbank Mississippi River Bike Trail, Around Avondale Shipyard (2017-059-RBP), Jefferson Parish, LA, 05/2018-Present

Mr. Bonura is the supervising professional over the project, providing day to day input for the implementation of the project. BBEC is currently working on detailed plans and specifications for the construction of the 2.5-mile bike path, part of which is on the top of the Mississippi River levee and the balance of which in on the shoulders of two state highways. A key component to BBEC's designs on the levee section is to maintain the integrity of the levee and while constructing the base and asphalt bike path section with a limited width of top of levee. For the state highway portion of the project, part of the project has asphalt shoulders in place, therefore only pavement markings and signage are required. In other locations, roadway widening and required subsurface drainage is necessary to install the bicycle travel lanes. BBEC developed a hydraulic and hydrologic model to drain a 220-acre area. BBEC designed the drainage for the area, which includes a series of canals with 48-inch and double 48-inch culverts. BBEC is currently coordinating its work with the LDOTD, the West Jefferson Levee District, the USACE through the levee district, and Union Pacific Railroad to obtain the necessary permits to perform the project. BBEC is also working with Jefferson Parish to determine the required right-of-way (ROW) so it could be acquired from the adjacent property owner(s). Once the design is complete, BBEC will perform bidding services, construction administration services, and resident inspection services for the construction project.

Design of Access Ways and Ladders at Drainage Pump Stations, Jefferson Parish, LA, 01/2015-11/2016

Mr. Bonura served as Supervising Engineer where BBEC prepared cost estimates and designed ladders, stairs, and elevated walkways to be installed in 16 drainage pump stations to connect elevated structures or allow personnel to access the top of structures within Jefferson Parish. Design included analysis and details to retrofit new items to existing structures.

Manson Ditch and Lower Kraak Outfall System Improvements, Jefferson Parish, LA, 06/2004-09/2008

Mr. Bonura served as Supervising Engineer for the project which the scope of the work was to provide full engineering services, including evaluation of alternatives, preliminary design, final design, bidding, construction administration, resident inspection, and as-built drawing services, for the improvements to the Manson Ditch outfall into the West Metairie Avenue Canal. All design work is complete, and the project is on hold pending funding. The project consists of hydraulic modeling of drainage structures, design of drainage systems composed of cast-in-place concrete structures and pipe systems, connection to existing culverts, transition to existing canal banks, utility relocations, roadway and other site restoration, traffic maintenance and signal design, pavement striping, and all incidental work. Currently two large diameter drain lines (60-inch and 72-inch diameter) discharge into the West Metairie Canal culvert crossing under Cleary Avenue. The purpose of the project is to remove the connection and discharge the two drain lines directly into the canal, requiring an outfall structure. The outfall structure is designed to accept the two drain lines, connect to the existing two 96-inch diameter culverts, and be able to transition to a future 16-foot wide u-channel. Temporary bank stabilization is required until the future u-channel project is completed. Traffic flow on the two major arterial streets always had to be maintained throughout construction of the project.

Ames Boulevard Roadside Drainage Improvements, Jefferson Parish, LA, 01/2004-12/2005
Mr. Bonura performed runoff calculations and designed drainage improvements for a two-mile segment of Ames Boulevard on the West Bank of Jefferson Parish. Mr. Bonura prepared construction drawings for the project in less than three weeks utilizing the Parish's standard details, and the Parish's GIS maps for plan sheets, and coordinated the work with the Parish, private utilities, and the annual contractor constructing the project. The total project cost is about $800,000.

West Napoleon Avenue Improvements, Cleary Avenue to Severn Avenue, (LA DOTD Project No. 742-07-0088), Jefferson Parish, LA, 02/2003-08/2005
Mr. Bonura performed design and construction administration services on this $13 million TIMED roadway and drainage project, which consisted of about 3,800 LFT. of four-lane concrete roadway divided by a new 30-foot wide concrete u-channel. Mr. Bonura coordinated with the private utility companies to relocate (or work around) natural gas pipelines and power and communication lines, overhead and buried, and coordinated construction and connection to public utilities (water and sewer) as well. Mr. Bonura reviewed and made recommendations regarding substitute materials and construction methods and monitored the contractors' accelerated operations that reduced the construction contract time from two and a half years to one and a half years.

Labarre Road Back-to-Back U-Turn Intersection Improvements (West Esplanade Avenue/North Labarre Road), Jefferson Parish, LA, 2004
Mr. Bonura server as the Supervising Engineer where the project consisted of the construction of a new cast-in-place concrete bridge and the installation of a 36-inch diameter water line canal crossing. BBEC provided construction management and resident inspection. The construction cost was $1,200,000.

Drainage Pump Station Fuel Storage Secondary Containment, Jefferson Parish, LA, 09/2002-06/2004
Mr. Bonura designed secondary containment systems to contain diesel fuel at 11 west bank drainage pump stations so that the fuel from the largest storage tank on the site would be retained in the event of a diesel fuel spill. Mr. Bonura developed details for containment systems such as concrete retaining walls for tanks farms stored on existing slabs, and lining systems for earthen containment ponds if the slab option did not provide enough volume. Mr. Bonura provided the details to the Drainage Department, who in-turn advertised the work for public bid as funding allowed and administered the work through construction.

Sanitary Landfill Stormwater Detention, Jefferson Parish, LA, 1998
As part of the landfill permitting process, the requirement for the site was to contain the 25-year storm. Mr. Bonura developed the initial stormwater management plans to address the requirement. To put the landfill project out for bid, Mr. Bonura designed the actual facilities and site improvements to maintain compliance with the 25-year storm requirement. Mr. Bonura designed a complete drainage system for the 88 acre Phase III expansion site, which included the construction of ditches, canals, bridges, culverts, and outfall structures, Mr. Bonura performed the hydraulic modeling to determine the runoff for the site, performed the hydraulic modeling analysis to determine the ditch and canal cross sections, with the existing tight elevation constraints, performed a cost analysis study to determine the most cost effective method for the canal crossings, compared precast box culverts, poured in place box culverts, ConSpan sections, precast (Waskey) bridge sections, and poured in place bridge sections. Mr. Bonura determined (with concurrence of the contractor on the site) that the poured in place bridge section was the most cost-effective method, determined the culvert sizes and prepared final construction drawings and specifications for the entire project. The drainage portion of the project cost about $3,000,000.

CN Railroad Culverts in Ormond, Project No. P200801, Ordinance No. 20-9-5, St. Charles Parish, LA, 10/2020 – Present
Mr. Bonura is serving as Supervising Engineer for this project which includes performing engineering services related to improving the drainage systems crossing Canadian National (CN) Railroad System on the east bank of St. Charles Parish. The project includes the drainage facilities crossing and/or adjacent to the CN railroad at

Ducayet Drive, Ormond Oaks Drive, Destrehan Drive, Longview Drive, Longwood Drive, and S. Destrehan Avenue. The project includes the installation of (6) 60-inch culverts, (2) 54-inch culverts, and (1) 48-inch culvert crossing the railroad at various locations. The project also includes the installation of 60-inch drainpipe, cast-in-place concrete box culverts, u-channels, and other drainage structures. BBEC is performing design, construction management, and permitting of the project. BBEC is also coordinating with and managing the surveying, and geotechnical engineering services.

Gloria Drive Pump Station, Project No. 20-2022A, Lafitte Area Independent Levee District Drainage, Town of Jean Lafitte, LA, 05/2020-Present

Mr. Bonura is serving as Supervising Engineer for this project for Design Engineering Services for the Gloria Drive Pump Station Improvement Project which consists of expanding the existing pump station by doubling its capacity from 45 cfs to 90 cfs. The existing pump station has one pump on a pile supported structure, adjacent to an existing levee. The existing pump discharge pipe runs through the levee, discharging on the other side. On the pump station side, the levee is supported by a timber bulkhead, part of which has deteriorated over time. When constructed, the levee project provided for a second pipe penetration in anticipation of this project. The pump station has an existing stand-by generator, which was appropriately sized for the single pump. The proposed scope of the 45 cfs expansion includes:

- Installing a new 45 cfs pump in line with the second discharge pipe provided by the levee project
- Constructing a new reinforced concrete pump station structure for both pumps, with bar screens (mechanical if funding allows) at the entrance. The new structure will replace the deteriorating timber bulkhead, as well.
- Repairing or replacing the timber bulkhead wall not addressed by the pump station structure.
- Installing a new generator structure and generator sized to run both pumps and incidental equipment.
- Extending the new pump discharge pipe as required and providing for scour protection at the outfall.
- Building the project in phases to utilize the existing pump during construction or providing temporary pumping during construction.

Project Worksheet 20824 – Storm Drains, Jean Lafitte Parkway Drainage Line Repairs/Replacement, St. Bernard Parish, LA, 06/2014-11/2019

Mr. Bonura assisted the Parish in securing funding; and managed as supervising professional the Design, bidding, and construction services for repairs. The project included the complete replacement of about 4,200 linear feet of 72-inch to 96-inch drainpipe, with drainage structures and smaller lateral lines to collect stormwater from existing roadway catch basins. The project also included the replacement of roadway intersections where the drain line crosses streets. The project bid was $3.9 million. BBEC performed all design, bidding, and is performing the construction services for the project. In addition to the normal design services, Mr. Bonura obtained a Coastal Use Permit determination, and USACE wetlands permit determination, and a SLFPA-E (regional levee district) permit for the project.

Reggio Canal Flood and Erosion Protection, St. Bernard Parish, LA, 2006

The project consisted of structural design of the steel sheet pile bulkhead wall and tieback systems, design of drainage systems, connection and coordination with a levee project adjacent to the proposed bulkhead, maintenance dredging of the existing canal, utility relocations, roadway and other site restoration, traffic maintenance, and all incidental work. Mr. Bonura performed all phases of the project, including design of bulkhead and drainage system, construction supervision throughout the project and coordination with local and state agencies for disposal of spoil.

Ring Levee Improvements, St. Bernard Parish, LA, 2003-2005

Mr. Bonura served as Project Engineer assisting St. Bernard Parish in identifying low segments of their existing levees for approximately 12 miles of Parish-maintained levees. BBEC utilized existing aerial photographs and GPS elevations obtained from a surveyor to determine the low areas as compared to the permitted levee. BBEC

provided the Parish with cross sections, fill estimates, and construction details to repair the settled levees. St. Bernard Parish repaired the levees themselves.

Primrose Box Culverts, St. Charles Parish, LA, 03/2004-10/2004
Mr. Bonura provided design and construction related services for the three 24-foot clear span box culverts and related road/drive restoration.

Boutte Drainage Improvements, St. Charles Parish, LA, 09/2002-05/2004
Mr. Bonura performed all engineering tasks for the project consisting of about 1,500 linear feet of 24-inch drainage pipe along US Highway 90 in Boutte. Included is provision of additional catch basins and manholes, traffic maintenance, roadway restoration, and re-grading of existing channels. TR-55 (computer model) was used to determine the watershed's runoff. Hydraulic calculations were performed by hand. The estimated construction cost is $274,000.

OTHER MASTER PLAN DEVELOPMENT PROJECTS

The following projects demonstrate that Mr. Bonura has experience in developing comprehensive master plans, including existing topography, surveying (aerial and field) hydraulic conditions, condition assessment, and needed improvements to facilities (pipes and pump stations), prioritizing with the client, estimating project cost, developing funding mechanisms, and addressing O&M concerns.

Drainage User Fee Study, Jefferson Parish, LA, 2005
Mr. Bonura served as a project engineer supervising data collection and performed statistical analysis of the collected data and drafted various sections of the final report. The project scope was to develop a parish-wide drainage utility user fee for Jefferson Parish. The project consisted of collecting sufficient data to develop a comparison of previous to impervious land for the various land uses in the Parish. The project utilized the Parish's then current drainage master plan cost projections as a cost basis, and then used the data collected and analyzed as a basis for cost allocation to the residents, businesses, and other property owners in Jefferson Parish. The report served as the basis for the proposed drainage user fee that was put out for a vote of the public.

Drainage Pump Station Evaluation, St. Bernard Parish, LA, 2005
Evaluation of condition and hydraulic capacity of the Parish's 18 existing pump stations, perform preliminary design services, identify alternatives for improvements. The evaluation considered the hydraulic performance of the pumps, the conditions of the incoming channel, automation/control capabilities, and projected flows. Mr. Bonura developed a master plan document to prioritize the improvements, and developed cost estimate for the improvements.

Water Master Plan, Jefferson Parish, LA, 1993-1994 (Demonstrates Mr. Bonura's knowledge of comprehensive master plans)
Mr. Bonura assisted the Project Engineer for this project, which included a complete analysis of the 5 water treatment plants and two separate water distribution systems for Jefferson Parish, Louisiana. Mr. Bonura assisted with developing the computer models of both distribution systems, evaluating the systems with the models, and estimating the cost and constructability of the recommended improvements for the distribution system. Mr. Bonura assisted with the treatment plant evaluation regarding their current treatment process, operation and constructability. Mr. Bonura also assisted with the overall report development.

OPERATION AND MAINTENANCE (O&M)

O&M concerns may be incorporated into a comprehensive drainage masterplan. If desired, Mr. Bonura has experience with O&M projects such as canal bottom right-of-way surveys and the parish-wide drain line cleaning

programs as shown in the following projects:

District 4 Drainage Outfall Improvements Evaluation, Jefferson Parish, LA, 08/2014-08/2017
Mr. Bonura was project engineer and the supervising professional on the project. The project consisted of identifying all drainage outfalls in Jefferson Parish Council District 4 and developing preliminary plans and cost estimates for options to replace the existing outfalls with improved structures, considering aesthetics, maintenance, and hydraulic performance.

Canal Monumentation Program, Jefferson Parish, LA, 01/2004-12/2005
Mr. Bonura worked with the Parish's Drainage Department to develop and implement a canal monumentation project for the entire Parish. The project included stationing the canals with vertical and horizontal monuments strategically located, locating right of way and servitude information, researching existing data and projects for data relevant to the project such as current or past projects, subdivision plats, the Parish's GIS, and other information available for the implementation of the project.

Parish-Wide Drain Line Cleaning – Phase 2, St. Bernard Parish, LA, 2007
Phase 1 of the project included the removal of debris from the drainage system immediately following Katrina. After Phase 1 was completed, and Parish residents started to return home, further drainage problems were observed. It was determined that drain lines not cleaned in Phase 1 contained debris that required cleaning. Mr. Bonura coordinated with the Parish, State, and FEMA to develop a project to clean the remaining drain lines that needed cleaning. The project included working with FEMA to perform eligibility inspections, documentation of the eligibility inspections, procurement of a contractor, construction contract administration, resident inspection of the project, and compliance with the FEMA funding program. Mr. Bonura managed the project through completion, coordinating the work with the Parish and FEMA, overseeing the procurement, construction contract administration, and resident inspection.

Parish-Wide Drain Line Cleaning – Phase I, St. Bernard Parish, LA, 2005
Immediately following Hurricane Katrina many of the Parish's streets were flooded and had difficulty draining due to the storm debris clogging its drainage system. The Parish issued an emergency contract for debris removal services, including the removal of debris from Parish drain lines. Mr. Bonura managed the immediate issuance of work orders to the contractor to remove the debris and restore drainage, and monitored the work being performed. He utilized the Parish's existing GIS system to accurately track and report progress. Mr. Bonura worked with the Parish and FEMA to obtain FEMA Public Assistance eligibility determinations and assisted the Parish in securing $9.3 million in FEMA funding to cover the project costs. Mr. Bonura managed the project though completion, including developing the necessary work orders and field protocol for resident inspection and quality control, overseeing the document control and invoice review in the office, coordination of disposal sites, and contract compliance.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Kevin Forschler, P.E. **Project Engineer**
Project Assignment:
Project Engineer / Model Development
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
7
Education: Degree(s)/Year/Specialization:
B.S. / 2014 / Civil
Active registration: Year first registered/discipline:
2020 / Civil
Other experience and qualifications relevant to the proposed Project:

Mr. Forschler is a graduate of Louisiana State University. His knowledge and experience in the civil engineering field has been expanded by the diverse types of projects he has worked on. He is currently working on projects for the City of New Orleans, St. Bernard Parish, St. Tammany Parish and Jefferson Parish. The projects he is working on involve roadway restoration, drainage modeling and design, off-system bridges, walkway design, lift station design, and water and wastewater treatment.

Mr. Forschler has utilized Autodesk Storm and Sanitary Analysis and SWMM modeling programs to develop drainage models for multiple areas in Jefferson Parish, including certain sections of Waggaman and the Bissonet Plaza neighborhood. He is currently working on a drainage model for the Avondale and Bride City area using SWMM V.5 in order to determine possible drainage improvements in the area. In addition to drainage modeling, Mr. Forschler also has experience using the HYDRWIN application to design drainage systems for roadways.

Mr. Forschler has experience working with Jefferson Parish and other municipalities, coordinating with other entities such as the levee districts, LADOTD, and railway companies to resolve conflicts and ensure that proposed designs meet the entities' guidelines.

Relevant projects Mr. Forschler has worked on over the years include:

Bissonet Plaza Drainage Master Plan (A/E Project No. 20-1708), Jefferson Parish, LA, 05/2018-05/2021
Mr. Forschler met with Jefferson Parish personnel to identify and discuss flood prone streets within the study area. He worked with a CAD technician to develop a map highlighting these flood prone areas and utilized Jefferson

Parish GIS and Autodesk Storm and Sanitary Analysis software to create an accurate drainage model of the project area. The drainage model provided analysis of the area's interior drainage system for a 10-year storm event. **Mr. Forschler ran the Parish's existing East Bank drainage model in SWMM to determine the discharge water surface elevation of the project.**

Waggaman Hydraulic Study, Jefferson Parish, LA, 02/2013-01/2016

Mr. Forschler performed a hydrologic study for three separate residential subdivisions in Waggaman, Louisiana, Waggaman, South Kenner, and Manor Lane. The Waggaman subdivision is bounded by River Road to the north, Live Oak Boulevard to the south, Saul's Canal to the west, and Dandelion Ditch to the east. South Kenner subdivision is bounded by River Road to the north, North Railroad Canal to the south, Saul's Canal to the east, and another subdivision to the west. The Manor Lane subdivision is bounded by River Road to the north, North Railroad Canal to the south, Latigue Road Ditch to the west, and Modern Farms Road Ditch to the east. Mr. Forschler utilized the Storm Water Management Model (SWMM) to evaluate the existing subsurface drainage capacities for each subdivision and to examine if the existing system can handle a 10-year design storm. He developed a hydrologic and hydraulic model for each area and recommended subsurface improvements based on the SWMM model to handle a 10-year design storm. **Mr. Forschler ran the Parish's existing West Bank drainage model in SWMM to determine the discharge water surface elevation of the project.**

Widening / Stabilization of Congressman Hebert, Creely, and Bluebirds Canals, St. Bernard Parish, LA, 01/2015-Present

Mr. Forschler used Autodesk Storm and Sanitary Analysis software to create accurate drainage models of the project area for both pre-mitigation and post-mitigation conditions. The drainage model provides analyses of the area's interior canal system for a 10-year, 50-year and 100-year storm event. The results of the model were then compared to the existing house slab elevation data provided by St. Bernard Parish for each of the storms in order to determine the impact that the improvements have on flooding of the properties in the project area.

Craig Ave. Drainage Improvements, Jefferson Parish, LA, 05/2020-Present

Mr. Forschler assisted with the development of plans for the addition of new drain line on this road. The project contains the area of Craig Ave. from Kawanee Ave. to Gillen St. The scope of the project includes the installation of a new trunk line, connecting the lateral drain lines to the new trunk line, and the removal and replacement of existing concrete roadway. Mr. Forschler helped in the design of the proposed drain line, determining the correct vertical and horizontal alignment to avoid conflicts with existing utilities. He also designed the vertical profile for the proposed roadway repairs.

Project Worksheet 20824 – Storm Drains, Jean Lafitte Parkway Drainage Line Repairs/Replacement, St. Bernard Parish, LA, 06/2014-11/2019

Mr. Forschler estimated the cost of the replacement of drain lines along Jean Lafitte Parkway from Judge Perez Dr. to the outfall at Hermitage Dr. The scope of work for the project included the removal and replacement of drain lines; removal and replacement of roadway pavement section, sidewalks, and driveways; and the improvement of the outfall at Hermitage Dr.

Westbank Mississippi River Bike Trail, Around Avondale Shipyard, (2017-059-RBP), Jefferson Parish, LA, 05/2018-Present

Mr. Forschler is developing plans and specifications for the construction of a bike path around the Avondale Shipyard area. The project contains the area of River Rd. from east of Avondale shipyard to LA 18 and the stretch of LA-18 up until the existing bike path access ramp west of the shipyard. The project includes the installation of a bike path on top of the levee, restriping existing shoulder to be repurposed as a bike path, widening the road to allow for bike travel, and addition of subsurface drainage in areas indicated by Jefferson Parish. Mr. Forschler is also currently developing the necessary details to cross active railroads at 3 locations and working with the railroad company and LDOTD to obtain construction permits.

TEC Professional Services Questionnaire

RR176 – St. Roch Group North Group A (PMOI), City of New Orleans, LA, 10/2019-Present
Mr. Forschler accompanied a representative of New Orleans DPW and assessed the damage along the streets contained in this project. The project area consists of the streets in the area south of I-610, north of the Florida Ave. canal, east of N. Broad St., and west of Elysian Fields Ave. The scope of work for each street is either replacement of sidewalks and driveways, incidental road repairs determined by FEMA, or full replacement of roadway section and subsurface sewer, water, and/or drainage. **Mr. Forschler used DOTD's HYDRWIN software to design all drainage improvements in the project area.** He is also designing the roadways receiving full pavement replacement and subsurface utility relocations/improvements and creating plans for the construction of the proposed work. Mr. Forschler made sure that the plans for sewer and water line replacements addressed all SWBNO comments and that design followed the SWBNO guidelines.

RR177 – St. Roch Group North Group B (FRC), City of New Orleans, LA, 10/2019-Present
Mr. Forschler accompanied a representative of New Orleans DPW and assessed the damage along the streets contained in this project. The project area consists of the streets in the area south of I-610, north of the Florida Ave. canal, east of Elysian Fields Ave., and west of St. Roch Ave. The scope of work for each street is either replacement of sidewalks and driveways, incidental road repairs determined by FEMA, or full replacement of roadway section and subsurface sewer, water, and/or drainage**. Mr. Forschler used DOTD's HYDRWIN software to design all drainage improvements in the project area.** He is also designing the roadways receiving full pavement replacement and subsurface utility relocations/improvements and creating plans for the construction of the proposed work. Mr. Forschler made sure that the plans for sewer and water line replacements addressed all SWBNO comments and that design followed the SWBNO guidelines.

RR178 – St. Roch Group North Group C (FRC), City of New Orleans, LA, 10/2019-Present
Mr. Forschler accompanied a representative of New Orleans DPW and assessed the damage along the streets contained in this project. The project area consists of the streets in the area south of I-610, north of the Florida Ave. canal, east of St Roch Ave., and west of the Peoples Ave. canal. The scope of work for each street is either replacement of sidewalks and driveways, incidental road repairs determined by FEMA, or full replacement of roadway section and subsurface sewer, water, and/or drainage. **Mr. Forschler used DOTD's HYDRWIN software to design all drainage improvements in the project area.** He is also designing the roadways receiving full pavement replacement and subsurface utility relocations/improvements and creating plans for the construction of the proposed work. Mr. Forschler made sure that the plans for sewer and water line replacements addressed all SWBNO comments and that design followed the SWBNO guidelines.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Madan Kamboj, P.E. **Project Engineer**
Project Assignment:
Project Engineer / Project Development
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
1
Education: Degree(s)/Year/Specialization:
M.S. / 1978 / Civil Engineering: Structures/Soil Mechanics **B.S. / 1967 / Civil Engineering**
Active registration: Year first registered/discipline:
1977 / Civil - Environmental
Other experience and qualifications relevant to the proposed Project:

Mr. Kamboj has more than 41 years of experience performing project design, construction administration, and project monitoring for general civil projects including drainage, utilities, streets, highways and bridges, buildings, water and sewer treatment plants, multi-story parking garages; airport taxiways, traffic separation facilities, bike paths, and overhead pedestrian walkways at high traffic intersections.

Mr. Kamboj has successfully attended a course in "Highway Capacity Manual" at New York Polytechnical. He led a team of Engineers and Cost Estimators for conducting line and grade studies for North South Expressway in Northern Louisiana which eventually became Interstate 49. This project includes Hydraulic Design of culverts, pavement type analysis, intersection geometry and cost estimates for each projected alignment analysis. Mr. Kamboj designed twelve (12) miles of US-61 four lane highway in Wilkinson County, Mississippi for MDOT. He evaluated geometrical design, profile and grades, intersection layout, culvert analysis and cost estimation for construction. Mr. Kamboj designed city streets for C.J. Peete including geometry, pavement, design, intersection improvements, redesigning utilities (e.g. water, sewer, gas) and drainage improvements. The cost of street improvements was $24M.

Relevant projects Mr. Kamboj has worked on over the years include:

Gloria Drive Pump Station, Project No. 20-2022A, Lafitte Area Independent Levee District Drainage, Town of Jean Lafitte, LA., 02/2021 – Present
Mr. Kamboj is providing Structural and Foundation design of Gloria Drive Pumping Station and approximately 70

Ft. long Steel Sheet Pile wall supported by ASTM D25 Timber Piles. The Pump Station design incorporates designing foundations supported by 14"X 14" PPC Piles, Concrete Base Level, Middle Level and Roof Slabs, Concrete Enclosure Walls & Structural Supports for Pump Station Screens. The present Generator Structure will be enlarged and strengthen ally to accommodate new electrical equipment.

CN Railroad Culverts in Ormond, Project No. P200801, Ordinance No. 20-9-5, St. Charles Parish, LA, 10/2020-Present

Mr. Kamboj is preparing drainage improvements by the Jack & Bore method of multiple culvert sites to improve frequent flooding in Luling, St. Charles Parish. Multiple culverts employing Jacking Method are to be rammed under the road embankment by using 72", 60" and 48" metal pipes. The ditches on inlet and outlet shall be improved by providing Conspan Culvert Bridges and these ditches shall be provided with G.C.C.M. lining to improve flow of rain discharge. The project cost is $6.2M.

Westbank Mississippi River Bike Trail, Around Avondale Shipyard, (2017-059-RBP), Jefferson Parish, LA, 12/2020-Present

Mr. Kamboj is designing a 2.3 milelong bike path along River Road and finishing on the top of Mississippi River Levee. The bike path is designed to provide separated path to the pedestrians and shall provide safety by separating bike and pedestrian traffic. The project cost is $350,000.

Clear Creek CSO Treatment Facility, Atlanta, Georgia, 04/2004-09/2006

While employed with Delon Hampton Associates, Mr. Kamboj oversaw the structural design group. The Clear Creek CSO Treatment serves as one of the largest combined sewershed of the City's seven (7) CSO facilities and includes the downtown business district and midtown areas. Dry weather flow 40 MGD is routed to the Peachtree Intercept which then takes the flow to RM Clayton WRC for treatment. Wet weather flow is routed to Clear Creek CSO facility for treatment before being discharged to open channel that leads to Clear Creek.

B & E Jackson Engineers, Atlanta, GA., 06/2001-11/2003

Mr. Kamboj performed planning and preliminary design for rerouting I-285 with twin tunnel structures under proposed New Runway V and related Taxiway 10-28 at Hartsfield Airport.
He also performed planning and preliminary design for I-285 from Riverdale Road (GA 139) to Lake Mirror Road, detailed construction sequence, traffic detours, and construction estimation. Project Const Cost: $ 160 million. Consolidated Rental Car facility planning, preliminary design for people movers, parking garages and maintenance facilities for all rental carriers at Hartsfield airport. Concourse E planning and preliminary design for land side at-grade and elevated access at the airport, improvements to Airport Blvd. Roadways, ramps and retaining wall structures, geometry and profiles, drainage and utility relocations. Project Const. Cost: $ 182 million.

Volkert Consulting Engineer, Metairie LA, 1990-1994

Mr. Kamboj designed US 61 12 miles of four lane highway in Wilkinson County for MDOT, designed geometry, plan & profile, drainage culverts with HY-8, drainage ditches and construction sequencing. Mr. Kamboj designed 6500 ft long, 75 wide Taxiway at New Orleans International Airport in Kenner LA, this Taxiway was surcharged with 13 ft high fill to reduce after construction settlement. The cross Taxiways leading to East West Runway had 8 ft of Polystyrene under the pavement to reduce differential settlement at the intersections to the East West Runway.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
John J. Housey, P.E. **Project Engineer**
Project Assignment:
Project Engineer / Project Development
Name of Firm with which associated:
 **Barowka and Bonura** **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
10
Education: Degree(s)/Year/Specialization:
M.S. / 1965 / Structural Engineering **B.S. / 1964 / Civil Engineering**
Active registration: Year first registered/discipline:
1966 / Civil
Other experience and qualifications relevant to the proposed Project:
Mr. Housey has been working as an engineer in the public works industry for over 54 years. His experience includes bridges, buildings, roadways, and utility (water, sewer, and drainage) construction. He has substantial experience in project management, steel building detailing, bridges, barges and parts for offshore platforms. As a steel fabricator, Mr. Housey oversaw the fabrication of steel buildings, steel bridges (stationary and movable), barges, various parts of offshore platforms including girders, piling and legs, floor and wall framing, various parts of ships including bulkheads and framing members. Over the past 54 years, he has been responsible for the design of crane runways, spreader bars, lifting frames, and hydraulic jacking of heavy structures and barges. Mr. Housey managed the construction of over $40 million in asphaltic concrete (AC) and Portland cement concrete (PCC) roadways funded by FEMA Public Assistance Grants. He has intimate knowledge in how various site conditions affect the construction and performance of the roadways, as well as how to maintain the necessary documentation to comply with the funding federal programs. Mr. Housey is a past Board Member and President of the Southern Association of Steel Fabrication. He served as a member on AISC committee regarding quality control. As a member and past Chairman of the ASCE/SEI Structures Committee in New Orleans for several years, he is familiar with the design of bridges, buildings and residential structures. He is familiar with fabrication specifications of API, AWS, AREA, AISC and ABS. Relevant projects Mr. Housey has worked on over the years include:

Widening / Stabilization of Congressman Hebert, Creely, and Bluebird Canals, St. Bernard Parish, LA, 01/2015-Present

The project includes increasing the capacity and improving the stability of Congressman Hebert, Creely, and Bluebird Canals, that consists of 11,600 linear feet of open canal and culverts ranging from 4-feet bottom width to 16-feet bottom width channels. Mr. Housey coordinated with St. Bernard Parish, Lake Borgne Basin Levee District, and the Louisiana Department of Transportation and Development to obtain information regarding the existing drainage plan. BBEC established the design cross sections for the channels, which included concrete u-channels, concrete box culverts, and round and arched pipe, and concrete lined trapezoidal sections, depending on the availability of land and other conditions. Mr. Housey is currently designing 2,500 linear feet of large diameter reinforced concrete pipe box culverts, and U-channels for the project.

Private Residential Structure Elevation Project, Statewide (HMGP Project), 10/2012-02/2014

The project included performing plan review for grant compliance and some technical aspects of the elevation of residential structures throughout south Louisiana. The project also includes performing periodic inspections of the construction work to verify compliance with the project plans. Mr. Housey was responsible for providing professional engineering, program management, construction monitoring, observation of construction methods, code enforcement compliance, and general monitoring technical assistance services in association with construction contractors elevating and/or reconstructing residential structures for eligible construction activities through the Hazard Mitigation Grant Program (HMGP).

Access Ways & Ladders at Drainage Pump Stations; Project No. 2014-022-DR, Jefferson Parish, LA, 11/2014-Present

Mr. Housey has prepared cost estimates and designed ladders, stairs, and elevated walkways to be installed in 16 drainage pump stations to connect elevated structures or allow personnel to access the top of structures within Jefferson Parish. Design included analysis and details to retrofit new items to existing structures.

Lower 45 Evacuation Route Basin, Lafitte Tidal Protection, Lafitte Area Independent District, LA, 05/2018-Present

As Project Manager, Mr. Housey is providing design alignment and earthen levee.

Hurricane Katrina Roadway Restoration, St. Bernard Parish, LA, 05/2011-08/2017

Mr. Housey provided Construction Administration services and Supervised Resident Inspectors for over $40 Million in roadway repair for 436 streets. Mr. Housey developed plans and construction cost estimates as well as managed the construction of facility repairs. He reviewed contractor submittals for conformity, resolved construction issues and led field progress meetings. Mr. Housey was BBEC's on-site engineer for BBEC's (18) project $100 million street and drainage repair program. Mr. Housey coordinated with the Contractor, Parish, and inspectors to troubleshoot issues in the field, resolved neighbor complaints, interpreted design specs to maintain the quality and standards of the work, and ensured that the work is satisfactorily completed. Mr. Housey reviewed all test reports for conformity to specifications, performed substantial and final completion walk-throughs for acceptance, reviewed as-builts for work completed, and reviewed contractor's monthly invoices and quantities. The project lasted 11 years and consisted of up to 18 construction inspectors at one time.

Orleans Materials & Equipment Company, Inc.

As Project manager, Mr. Housey was responsible for interpreting plans and specifications, interacting with owner, engineer and contractor, resolving discrepancies, ensuring quality of construction and maintaining construction schedule. Many projects included modifications to existing structures for increased load capacity, replacement of existing structural members, connections or other requirements. Requirements for pumping stations usually included all steel requirements including columns, crane runways, bar screens and floor grating.

Sample projects completed by Mr. Housey include:
Bulkheads

- H-Piling for T-Wall at the Industrial Canal (Cajun Contractors)
- Sheet Piling for Gate at Bayou Bienvenue (Manson Construction Company)
- Sheet Piling for Louisiana Citrus at Venice, LA

Bridges

- **Sunshine Bridge, St. James Parish, LA**
  Removal and replacement of concrete and steel bridge decking across the entire span of Sunshine Bridge including all field measurements required to replace steel gussets and floor beams.
- **Bayou Milhome Swing Span Bridge, St. Martin Parish, LA**
  Complete new bridge structure including floor beams, grating, pivot girder, and related items.
- **Bayou Lafourche Lift Span Bridge, Larose, LA**
  Complete new bridge structure including floor beams, grading, lift girders, and related items.
- **Intracoastal Waterway Bascule Bridge**
  Complete steel framing including floor beams, grating trunnion support girders and related items.

Pumping Stations

- **Hero Canal Pumping Station**
  All structural steel, walkway grating, bar screens, and related items.
- **Citrus Pumping Station**
  All structural steel, walkway grating, bar screens, and related items.
- **Michoud Pumping Station**
  All structural steel, walkway grating, bar screens, and related items.
- **Pumping Station No. 6**
  All structural steel, walkway grating, bar screens, and related items.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Pete Foret **Computer Aided Drafting**
Project Assignment:
Drafting / CAD
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
1
Education: Degree(s)/Year/Specialization:
B.S. / 1995 / Business Administration with a Computer Science Option and Management Minor
Active registration: Year first registered/discipline:
Other experience and qualifications relevant to the proposed Project:

Mr. Foret is a multi-discipline AutoCAD drafter and designer with experience in the Civil, Structural, Architectural, Electrical and GIS/Mapping fields. He has a combined 31 years of experience generating alignments, plan and profile sheets, cross sections, contour maps, structural and architectural plans and details and electrical one-line diagrams. He has been the drafting coordinator for multiple firms and has been responsible for developing drafting standards for a consistent and quality drawing set.

Relevant projects Mr. Foret has worked on over the years include:

Gloria Drive Pump Station, Project No. 20-2022A, Lafitte Area Independent Levee District Drainage, Town of Jean Lafitte, LA, 02/2021-Present
Mr. Foret set up the survey and generated a preliminary site plan for a drainage pump station.

CN Railroad Culverts in Ormond, Project No. P200801, Ordinance No. 20-9-5, St. Tammany Parish, LA, 10/2020-Present
Mr. Foret set up the survey reference file with a baseline supplied by the railroad and created site plans for 6 proposed construction sites including a plan/profile sheet for a new 425' long 60" drainpipe connecting two sites. He also generated multiple cross sections through the 6 construction sites as well as other details.

Craig Avenue Drainage Improvements, Public Works Project No. 2019-022-DR, Jefferson Parish, LA, 10/2020-Present
Mr. Foret updated the plan/profile sheets with a new proposed roadway grade line.

TEC Professional Services Questionnaire

Texaco, Inc., New Orleans, LA., 05/1990-11/1994
Mr. Foret's job duties at Texaco included the drafting of geologic structures and civil/GIS mapping using Microstation. This involved scanning large scale maps and inserting the raster image into the design file in order to digitize the data for digital manipulation.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Tony Bonura **GIS**
Project Assignment:
GIS / Mapping
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
28
Education: Degree(s)/Year/Specialization:
B.A. / 1988 / Social Sciences
Active registration: Year first registered/discipline:
Other experience and qualifications relevant to the proposed Project:

Mr. Bonura has broad experience in computer consulting with a strong emphasis on Geographic Information Systems (GIS). He has been employed in the computerized mapping industry for over 30 years and has been a Senior Consultant with BBEC since its inception in November 1993. Mr. Bonura has an extensive knowledge of a wide range of computer application software packages, including the GIS programs GDS, ARC/INFO and Intergraph. He has guided BBEC in the management and administration of databases and database dependent applications for numerous projects.

Mr. Bonura has experience working as Project Manager, Database Administrator, DM Manager and GIS Consultant for clients including St. Bernard Parish, Livingston Parish, Louisiana Land Trust, Calcasieu Parish, Jefferson Parish, and the Town of Jean Lafitte. Mr. Bonura served as senior consultant/manager for the projects listed below and his responsibilities included work plan preparation, budgeting, cost control and monitoring, team supervision and database administration.

Relevant projects Mr. Bonura has worked on over the years include:

Map Modernization Project, St. Bernard Parish, LA, 03/2005-12/2008
Mr. Bonura Supervised the Jefferson Parish Digital Flood Insurance Rate Map project. He was responsible for the timeliness and quality of the services provided, including the preparation of the DFIRM metadata, base layers, and final maps. Duties included meeting with Parish personnel, researching data availability and National Flood Insurance Program standards, reviewing the metadata and map production and assisting with all aspects of the

map production.

Digital Flood Insurance Rate Map, Jefferson Parish, LA, 03/2005-12/2008
Mr. Bonura performed all GIS / Database Management services for the Jefferson Parish DFIRM Project, including documentation and preparation of maps and GIS data. Mr. Bonura was responsible for preparing Metadata Base according to "Content Standard for Digital Geospatial Metadata." Mr. Bonura prepared base maps including streets, railroads, canals, ditches, benchmarks and flood hazard contours to meet DFIRM specifications. Mr. Bonura was also responsible for generating maps to meet DFIRM specifications and to provide all data and maps in the correct format acceptable by FEMA. Considering that all work associated with the development of the DFIRMs was in strict compliance with the National Flood Insurance Program, BBEC has an intimate knowledge of the NFIP program.

GIS Project, Jefferson Parish, LA
As senior consultant/manager, Mr. Bonura oversaw work plan preparation, budgeting, cost control and monitoring, team supervision and database administration, including importing data from various sources and incorporating into the Jefferson Parish GIS, developing applications allowing simple access to GIS information by numerous departments throughout Jefferson Parish and performing spatial analysis on the GIS data combining both graphic and non-graphic data into information useful for decision making by Jefferson Parish administration. Mr. Bonura assisted the GIS staff with using the various GIS applications available to them, trained new users and provided help desk type support to the Jefferson Parish GIS user community, maintained the GIS database to ensure accuracy and efficient performance and exported the various GIS layers into DXF file grids for distribution to various entities in and around Jefferson Parish, as well as assisting these entities with use of the information.

Street Network Project, Calcasieu Parish, LA
Mr. Bonura assisted in the creation for Calcasieu Parish of a parish wide street address network file. ArcCAD and AutoCAD software were utilized to combine information from printed maps, computer printouts and Tiger Line files into a street network used for mapping various databases by address throughout Calcasieu Parish.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Rayburn Clipper **GIS**
Project Assignment:
GIS / Mapping / Data Collection
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
15
Education: Degree(s)/Year/Specialization:
B.S. / 2006 / Computer Information Systems **A.S. / 2000 / Computer Aided Drafting**
Active registration: Year first registered/discipline:
Other experience and qualifications relevant to the proposed Project:

Mr. Clipper is a Geographic Information Systems Analyst with 20 years of experience in GIS project architecture, systems engineering and management, and 10 years designing, supporting, and maintaining enterprise and solutions architectures in a variety of public and private projects; he also has 20 years of experience using AutoCAD in association with his GIS projects.

Relevant projects Mr. Clipper has worked on over the years include:

Widening/Stabilization of Congressman Hebert, Creely, and Bluebird Canals, St. Bernard Parish, LA, 01/2015-Present
Mr. Clipper created flood inundation models to assist with capital drainage projects. Models built for the project were used to forecast the water depths for 1 year, 5-year, 50-year, 100 year, and 500-year flood events.

Digital Flood Insurance Rate Map, Jefferson Parish, LA, 03/2005-12/2008
Mr. Clipper created features and layers for the creation of DFIRM maps in Geomedia 5. He geoprocessed digital elevation models used in the determination of flood zones and provided support for Jefferson parish officials accessing data.

Bissonet Plaza Drainage Master Plan (A/E Project No. 20-1708), Jefferson Parish, LA, 05/2018-05/2021
Mr. Clipper created maps to illustrate the locations of drainage lines and inlets, and he created project maps to show affected drainage areas.

Waggaman Area Drainage Study, Jefferson Parish, LA, 02/2013-01/2016
Mr. Clipper created hydraulic models based on the engineer specifications to determine 10-year storm flooding.

Jefferson Parish GIS Dept., Jefferson Parish, LA, 2019-Present
Mr. Clipper Maintains the Parish's GIS infrastructure. The enterprise architecture includes ArcGIS Enterprise Portal, ArcGIS GeoEvent Server, ArcGIS Image Server, ArcGIS Datastore, and several ArcGIS Servers. Mr. Clipper has created several applications for the enterprise including a Damage assessment application for parish inspectors to survey damages after hurricanes. The recent pandemics called for the creation of a covid-19 dashboard to track cases and hospitalizations in the parish. Parish administration required several sites for economic development and analysis which Mr. Clipper designed.

Cypress Park Subdivision Drainage Evaluation, St. Tammany Parish, LA, 11/2016-12/2017
Mr. Clipper created hydraulic models based on the engineer specifications to determine 10, 25, 50, and 100-year storms flood inundation.

GIS Project, St. Charles Parish, LA, 2003-2006
Mr. Clipper designed GIS for St. Charles Parish Government, collected field information on parish assets to incorporate them into the GIS Aerial imagery rectification and mosaicing, and provided Base map creation. Mr. Clipper created 3-D terrain models from elevation data collected from sub-meter GPS precision units, developed first, highly accurate, zoning map based on parish code and CAD drawings, created first land use map for zoning department, and created shapefiles for project base map.

GIS Project, St. Tammany Parish, LA, 1999-2003
Mr. Clipper inaugurated the GIS Project; collected ground control points with sub-meter precision GPS receiver for aerial image orthorectification. He identified parish assets from aerial imagery, geoprocessed initial features for base map layer creation, created 3-D terrain models from analysis of Imagery and Digital Elevation Models. Mr. Clipper provided re-mapping of facilities on a land base into different co-ordinate systems. He developed digital land base maps inclusive of Planimetric, topographic and cadastral features maps from mosaiced aerial imagery.

GIS Projects, St. Bernard Parish, LA
Mr. Clipper provided the parish with GIS support with daily need and custom request. He supported St. Bernard's 911 systems by providing telco's with addressing requests. Mr. Clipper designed the first Evacuation Registration application in the State of Louisiana based on state requirements which surpassed the states own software by providing a failure free registration environment during the Hurricane Gustav evacuation. During the summer when the river levels reached record highs throughout the state, Mr. Clipper created ESRI ArcGIS Server maps for the projects showing the area of construction exclusion based on the army corps of engineers' guild lines that state no construction or excavation work could take place within a certain distance from the levees.

GIS Projects, Jefferson Parish, LA
Mr. Clipper created mobile application with ESRI ArcGIS Mobile mapping screens for location-based field work and code enforcement that synchronized map date to ArcSDE server via ArcGIS Server over HTTP.

GIS Project, St. Charles Parish, LA
Mr. Clipper was responsible for drawing maps, diagrams, and profiles, using cross-sections and surveys, to represent elevations, topographical contours, subsurface formations and structures. Mr. Clipper would correlate, interpret, and modify data obtained from topographical surveys, well logs, and geophysical prospecting reports, and he prepared subdivision plats for integration into the GIS. Mr. Clipper used AutoCAD to digitize features on aerial images.

TEC Professional Services Questionnaire

FEMA Hazard Mitigation Assistance Consultant (Project No. 2130-02035), Project Management for 2013 FMA Grant Funding, City of New Orleans, LA, 08/2017- Present
Mr. Clipper created flood inundation models to identify homes impacted during flood events. Models built for the project were used to forecast the water depths for 1 year, 5-year, 50-year, 100 year, and 500-year flood events.

Technical Assistance for Floodplain Management, Community Rating System and Hazard Mitigation Related Services (Project No. 0352), Jefferson Parish, LA, 01/2017-06/2020
Mr. Clipper created and identified areas in the Parish that were not developed and could be certified for FEMA's undeveloped land use for rainwater drainage. He developed a new parish map to calculate the total are of parish land to be used by the parish for all FEMA certifications. Mr. Clipper reviewed previous Mitigation Plans, identified areas of the plan to be updated. He also mapped critical facilities and developed inundation models to forecast the water depths for 1 year, 5-year, 50-year, 100 year, and 500-year flood events.

I-85 Extension and Corridor Study, ALDOT Project No. NCPD-PE02 (910), Montgomery, AL
I-85 Extension from I-59/I-20 near the Mississippi State Line NE of Cuba to I-65 near Montgomery. Mr. Clipper was a GIS consultant to Volkert and associates, in the use of CorridorTrak software. He developed a highly accurate parcel map with land-owner information for use in land acquisition and created map of ecologically sensitive areas which includes mapping of WMA and other wetlands.

I-12 to Bush Corridor Study, LADOTD Project No. 700-52-0124 (TIMED), Bush, LA, 2006
While employed with DBSysgraphy, Mr. Clipper provided Environmental Site Assessment, extensive cultural resources survey and wetlands delineations, and hydrological modeling, along with numerous other analyses. Mr. Clipper separated from DBSysgraphy prior to completion of the project.

Merlin Oil Company, Smith, MS
Mr. Clipper created parcel base map for Mineral Lease Ownership map in Smith county Mississippi and collected ground control points for geoprocessing of parcel ownership information.

Louisiana Land Trust, Statewide, LA, 01/2009-12/2016
Mr. Clipper created ESRI ArcGIS Server web-based mapping of LLT properties for tracking property status and provided analysis of properties in flood zones by given spec from LDEQ. Complete design of n-tier architecture. Demonstrated proximity and contiguous properties through a specially designed proxy parcel layer in the absence of a real parcel layer in ESRI ArcMap.

MRGO Closure
Mr. Clipper designed figures and base maps for engineering support and created Triangulated irregular network (Tin) datasets for 3D surface model of the MRGO channel bottom for closure location review by project engineer in ArcMap and ArcGLOBE.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Craig Comeaux **Certified Floodplain Manager**
Project Assignment:
Flood Analysis and Funding Options
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
19
Education: Degree(s)/Year/Specialization:
M.A. / In Progress / Public Policy and Administration **B.S. / 1996 / Mathematics**
Active registration: Year first registered/discipline:
Other experience and qualifications relevant to the proposed Project:

Craig Comeaux joined Barowka and Bonura Engineers and Consultants, L.L.C., in 2000. Since that time, Mr. Comeaux has successfully managed or been significantly involved in nearly 100 federal recovery projects in a program management capacity throughout South Louisiana. These projects involve FEMA Public Assistance Grants, FEMA Hazard Mitigation Grants, and U.S. Department of Housing and Urban Development Community Development Block Grants. Mr. Comeaux worked extensively in coordination with FEMA, GOHSEP, Office of Community Development, and local Parish groups to manage over $750 million in project funds, including oversight of project inspection.

In addition to program management, Mr. Comeaux has experience in grant management which includes project formulation, cost estimation, fund accounting, and closeout of a broad range of public assistance and hazard mitigation grants. Mr. Comeaux has experience as an educator and school administrator which includes conducting professional development and community outreach opportunities for employees, parents, students, and other constituent groups.

Relevant projects Mr. Comeaux has worked on over the years include:

Technical Assistance for Floodplain Management, Community Rating System, and Hazard Mitigation Related Services, (Project No. 0352), Jefferson Parish, LA, 12/2016-06/2020

Mr. Comeaux managed the 2016 Technical Assistance services contract with the Jefferson Parish Department of Floodplain Management and Hazard Mitigation. He worked with local officials to assist with Education and Outreach projects, activities to assist with meeting CRS points, edits and updates to flood maps, analysis of NFIP

policies, and the planning process for the Parish's multi-jurisdictional Hazard Mitigation Plan. In preparation for the Parish's CRS visit, Mr. Comeaux coordinated the review of Elevation Certificates, flood zone determination letters, preparation of required maps and table, and the review of various sections of the CRS manual to evaluate the Parish's compliance with meeting the requirements. As part of the Parish's Hazard Mitigation Plan update, Mr. Comeaux coordinated the evaluation of critical facilities, the preparation of the Hazard Mitigation Plan Advisory Committee, the revision and development of hazard profiles, and the development of draft resolutions to be enacted by the various jurisdictions. To assist the Parish with meeting its educational and outreach requirements in accordance with its Program for Public Information, Mr. Comeaux coordinated the design and publication of various public information media, including videos, brochures, websites, and vehicle decals and billboards. Mr. Comeaux also assisted with the preparation and review of materials for the public meetings as required for the Hazard Mitigation Plan update. Mr. Comeaux attended several of the meetings while coordinating the activities with the responsible parties of the BBEC team.

Project Management and Technical Services, 2020 Application Development, Terrebonne Parish, LA, 09/2020 - Present

In his role, Mr. Comeaux has prepared and is managing grant applications submitted for the FMA and BRIC grants in the Fiscal Year 2020 cycle. Mr. Comeaux coordinated with Local and State representatives during the development and selection processes. Mr. Comeaux has directly been involved in the application development of the following projects:

- Terrebonne Parish, FY 2020 FMA SRL Elevation $953,245.00
- Terrebonne Parish, FY 2020 FMA RL Elevation..... $179,412.00

Grant and Project Management Consulting Services for the RESTORE Act, Plaquemines Parish, LA, 09/2020-Present

Mr. Comeaux assists Plaquemines Parish by providing consultant services associated with grant writing, administration, technical support, application, monitoring and post-grant requirements of the Restore Act to Plaquemines Parish Government and all Treasury guidelines and federal grant regulations and those additional grant consulting services required of the professional with the Restore Act as required by Plaquemines Parish Government and the U.S. Treasury. Mr. Comeaux has directly been involved in the application development, approval and/or management of the following projects:

- Bayou Eau Noire Ridge Restoration and Marsh Creation Phase 1 and 2.....$3,254,150.13
- Bay Adams Headland Restoration and Marsh Creation Phase 1 .....$1,222,250.00
- Eastbank Landbridge Project – Phoenix to Lake Leary Phase 1 ..... $500,000.00

Hazard Mitigation Grant Program Grant Administration Services, City of Zachary, LA, 02/2020-Present

Mr. Comeaux assists the City in preparing and submitting grant amendments for its generator project. The amendment consists of aligning the scope of projects to actual projects scheduled for completion by the City. Mr. Comeaux has directly been involved in the administration of the following project:

- City of Zachary, DR-4277 HMGP Generator $855,477.00

Application Development and/or Project Management of FEMA HMA Grant Programs Lafourche Parish, LA, 11/2019-Present

Mr. Comeaux assists the Parish in preparing and submitting grant applications for the Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM) grant programs. He has also been assisting the Parish with preparing and submitting grant applications to FEMA's new Building Resilient Infrastructure and Committees (BRIC) Grant

Program. In his role, Mr. Comeaux assists the Parish in identifying projects that meet all grant requirements and works on the required Benefit Cost Analysis. Mr. Comeaux has been directly involved in the application development and approval of the following projects:

- Lafourche Parish, FY 2019 FMA SRL/RL Elevations $749,891.00
- Lafourche Parish, FY 2020 BRIC Elevations..... $643,111.00

Project Management Services for the Implementation of FEMA – FMA-PJ-06-LA-2017-023, Lafourche Parish, LA, 05/2019-Present

Mr. Comeaux manages the grant for the elevation of seven projects in Lafourche Parish. Mr. Comeaux works with local officials to plan and prepare grant kickoff meetings, prepare grant required paperwork, and to process reimbursement requests and payment requests through GOHSEP. Mr. Comeaux also works with homeowners to assist with contractor selections and meeting all FMA grant requirements.

- Lafourche Parish, FY 2017 FMA Elevations.....$1,040,209.00

Project Management and Technical Services, 2018 Application Development, Terrebonne Parish, LA, 11/2018 - Present

In his role, Mr. Comeaux has prepared and is managing grant applications submitted for the FMA and PDM grants in the Fiscal Year 2017 and 2018 cycles. During the 2017 cycle, the Parish presented Mr. Comeaux with several projects to be evaluated for application development. After reviewing the projects and the best available information concerning these projects, Mr. Comeaux determined the available projects would not get approved. However, in 2018, Mr. Comeaux was able to assist the Parish in identifying projects that had a better likelihood of being selected and prepared and submitted those applications. Mr. Comeaux coordinate with Local and State representatives during the development and selection processes. Mr. Comeaux has directly been involved in the application development and approval of the following projects:

- Terrebonne Parish, FY 18 FMA SRL Elevation $255,455.00
- Terrebonne Parish, FY18 PDM St. Louis Canal Road Drainage Improvements $1,779,298.00

Project Management Services for the Implementation of FEMA – FMA-PJ-06-LA-2016-003 Award, Lafourche Parish, LA, 07/2018-Present

Mr. Comeaux manages the grant for the elevation of eight projects in Lafourche Parish. Mr. Comeaux works with local officials to plan and prepare grant kickoff meetings, prepare grant required paperwork, and to process reimbursement requests and payment requests through GOHSEP. Mr. Comeaux also works with homeowners to assist with contractor selections and meeting all FMA grant requirements.

- Lafourche Parish, FY 2016 Elevations $1,399,280.00

FEMA Hazard Mitigation Assistance Consultant (Project No. 2130-02035), Project Management for 2013 FMA Grant Funding, City of New Orleans, LA, 08/2017-Present

Mr. Comeaux is currently the project manager for the City of New Orleans hazard mitigation assistance grants managed by the Office of Hazard Mitigation. Mr. Comeaux works with the City of New Orleans to prepare and submit applications for funding to FEMA's Hazard Mitigation Assistance (HMA) Programs, including but not limited to the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Grant Program, State Generator Program, and the Pre-Disaster Mitigation (PDM) Grant program. It is also the responsibility of Mr. Comeaux to implement the HMGP program for the City. Mr. Comeaux has also been involved in the preparation and review of Benefit Costs Analysis reports for Green Infrastructure projects for the City of New Orleans, including the Mirabeau Gardens Green Infrastructure, the Broadmoor Drainage Improvements project and the City Park Green Infrastructure projects. In this role, Mr. Comeaux has managed the collection of data necessary to

calculate the benefit cost ratio and assisted in the preparation of the Benefit Costs Analysis and report for FEMA review. Mr. Comeaux has directly been involved in the application development, approval and/or management of the following projects:

- FY21 FMA SRL Structure Elevation $10,730,860.00
- FY21 FMA SRL/RL Structure Elevation.....$11,684,737.00
- FY21 FMA RL Reconstruction..... $205,835.00
- FY20 FMA SRL Structure Elevation $14,200,582.00
- FY20 FMA RL Structure Elevation $9,263,934.00
- FY20 FMA SRL Structure Reconstruction $475,151.00
- FY20 BRIC Audubon Golf Course Community Flood Mitigation (BCA only) $13,070,071.00
- FY19 FMA Residential Historic Elevation $8,438,022.00
- FY19 FMA Residential Non-Historic Elevation $6,308,246.00
- FY18 1786 Statewide Generator Application.....$1,131,195.00
- FY18 FMA Residential Historic Elevation $4,227,236.00
- FY18 FMA Residential Non-Historic Elevation $4,172,098.39
- FY18 FMA Non-Residential Elevation $337,150.00
- FY18 SRL-PJ-06-LA-2012-009 .....$1,792,928.00
- FY17 FMA Elevation (52 properties) $12,451,579.52
- FY 17 Multi-Jurisdictional Hazard Mitigation Plan Project..... $345,150.00
- FY 2013 FMA Elevation (36 properties) $7,410,818.00
- 1603/1607 HMGP (8 grant applications, 50+ properties).....$21,349,250.00
- 1607 HMGP Mirabeau Gardens Stormwater Management and Flood Mitigation BCA $23,469,698.00
- 1603 HMGP Broadmoor Stormwater Drainage BCA $55,666,026.00
- 1603 HMGP City Park/Lakeview Drainage Project BCA.....$2,316,000.00
- 1603 HMGP St. Roch Drainage Project BCA.....$7,500,000.00

FEMA Public Assistance and Hazard Mitigation Program Services, St. Charles Parish, LA, 08/2017-Present
Mr. Comeaux has managed this project since 2017. In his role, he has prepared the application for FMA and PDM grants in the Fiscal Year 2017 cycle. In addition, Mr. Comeaux currently manages the Parish's efforts for Public Assistance program funding as a result of Hurricane Barry. Mr. Comeaux also provides technical assistance services to the Grants Department. Mr. Comeaux has directly been involved in the application development and approval of the following projects:

- St. Charles Parish, FY21 FMA SRL Elevation (36 properties)……$6,367,899.00
- St. Charles Parish, FY20 FMA SRL Elevation (34 properties).....$6,055,422.00
- St. Charles Parish, FY19 FMA Elevation (31 properties).....$5,605,602.00
- St. Charles Parish, FY17 FMA Elevation (11 properties).....$1,606,584.00
- St. Charles Parish, FY 17 Multi-Hazard Mitigation Plan Update $63,450.00.00

Hazard Mitigation Assistance, Elevation of Four (4) Residential Structures (HMGP # 1786-057-0007, Lafourche Parish, LA, 09/2016-Present
Mr. Comeaux manages the grant for the elevation of four projects in Lafourche Parish. Mr. Comeaux works with local officials to plan and prepare grant kickoff meetings, prepare grant required paperwork, and to process reimbursement requests and payment requests through GOHSEP.

- Lafourche Parish, FY 2016 HMGP Elevations..... $621,376.00

Program Management 2014 Hazard Mitigation Assistance Grant Funding, Jefferson Parish, Louisiana (HMGP PROJECT), 04/2015-04-2019

Mr. Comeaux managed the 2014 Hazard Mitigation Assistance Grant for home elevation and reconstruction for Jefferson Parish. In his role as Project Manager, Mr. Comeaux planned and prepared for grant kickoff meetings hosted by Jefferson Parish. He worked with homeowners preparing grant required paperwork, contracts, and all other documentation required for grant application. Additionally, Mr. Comeaux worked closely with parish officials to prepare program guidance, forms, and processes to guarantee proper accounting and funding of home elevation and reconstruction project.

As Project Manager for elevation and reconstruction projects for Jefferson Parish, Mr. Comeaux coordinates activities between homeowners, contractors, construction management firm, and the parish. As part of the coordination process, Mr. Comeaux is responsible for reviewing contracts for grant compliance, preparing cost reasonable analysis for the work proposed, and applying for reimbursement for the funds allocated to each project. These projects resulted in approximately $12.6 million in federal grant funding to the parish in reimbursements.

Mr. Comeaux has been directly involved in the management of the following projects:

- Jefferson Parish, FY14, FMA Elevations.....$3,121,877.50
- Jefferson Parish, FY14, FMA Elevations.....$3,698,327.00
- Jefferson Parish, FY14, FMA Non-Residential Elevation..... $928,220.00
- Jefferson Parish, FY14, PDM Wind Retrofit Project.....$3,757,904.00
- Jefferson Parish, FY14, FMA Reconstruction.....$1,051,822.00

Grant Closeout for Federal Declared Disasters, 2014 Contract, FEMA Public Assistance Category A and B Projects, St. Bernard Parish, LA, 09/2014-Present

In his role as grant closeout specialist, Mr. Comeaux has provided closeout services for St. Bernard Parish on Category A and B projects since 2015. In his role, Mr. Comeaux has provided oversight of the closeout process and participated in cost reconciliations, cost analyses, documentation reviews, and preparation of closeout versions for submittal by GOHSEP to FEMA. He has been successful in identifying costs that were previously overlooked through the reimbursement process as well as justifying cost reasonableness for the numerous emergency and debris removal projects that were undertaken by St. Bernard Parish.

Louisiana Land Trust Demolition Program, Statewide, LA (CDBG PROJECT), 01/2009-06/2013

As Project Manager for demolition projects for the Louisiana Land Trust, Mr. Comeaux designed and managed the development of several databases utilized for the validation, tracking, accounting, and auditing of U.S. Department of Housing and Urban Development Community Development Block Grants (CDBG). As part of the auditing process, Mr. Comeaux worked with the Louisiana Legislative Auditors for validating work completed against contractor invoices. This has resulted in the processing of approximately $80 million of CDBG funds and the demolition and restoration of approximately 8600 sites. Mr. Comeaux coordinated and managed contracts involved in the demolition of structures and the removal of slabs and all associated concrete from sites purchased by the Road Home Corporation following Hurricanes Katrina and Rita throughout south Louisiana. He conducted progress meetings with contractors and reviewed daily schedules and progress reports; managed the assignment of field personnel for all aspects of demolition and debris removal monitoring; coordinated progress meetings with Louisiana Land Trust and its agents in all matters pertaining to structure demolition and the removal of slabs and all associated concrete; and reviewed and monitored all reports and data received and transmitted to the Louisiana Land Trust for accounting and progress reporting. Mr. Comeaux assisted with the coordination of LDEQ for compliance for the abatement of structures and slabs.

Demolition of Road Home Owned Properties, St. Bernard Parish, Louisiana (CDBG PROJECT), 2008-2009

As Project Manager for recovery projects throughout St. Bernard Parish, Louisiana following Hurricanes Katrina and Rita, Mr. Comeaux managed the grant for the demolition of homes owned by the Road Home Corporation

throughout St. Bernard Parish. Approximately $18 million of grant eligible work was completed and St. Bernard Parish received in federal grant funding to the parishes applying to reimburse money spent on recovery projects. Mr. Comeaux worked directly with the Louisiana Office of Community Development – Disaster Recovery Unit, to process environmental review records for each of the properties included in the program.

Federal Emergency Management Agency Public Assistance Grants, City of Baker, St. Bernard Parish, St. Charles Parish, Livingston Parish, and the Town of Jean Lafitte, 2005-Present

As Project Manager for recovery projects throughout south Louisiana following Hurricanes Katrina/Rita, Gustav/Ike, Isaac, 2016 Floods, and Hurricane Barry, Mr. Comeaux prepared grant applications for recovery grants for the City of Baker, Town of Jean Lafitte, and the Parishes of St. Bernard, St. Charles, and Livingston. As part of the grant application process, the following information had to be collected and reported: scope of disaster, scope of services to be covered, cost estimate based on cost reasonableness in accordance with the Code of Federal Regulations (44 CFR Part 13, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments) and the updated 2 CFR 200. These grant applications resulted in approximately $800 million in federal grant funding to the parishes applying to reimburse money expended on recovery projects.

Letter of Map Revision Study and Application, (CCE#119-112), City of Covington, LA, 05/2019-Present

Mr. Comeaux is assisting the City of Covington with preparing a Letter of Map Revision based on FEMA's Flood Insurance Study for the City's Preliminary Digital Flood Insurance Rate Map (DFIRM). Mr. Comeaux has assisted with identifying projects to support the City's request to make preliminary flood zones effective with respect to its current flood zone determinations.

Pre-Monitoring of Emergency Storm Debris Removal, Debris Management Plan, Greater Lafourche Port Commission, LA, 8/2018-05/2019

Mr. Comeaux oversaw the development of a comprehensive Debris Management Plan based on the below listed contents which met FEMA's general criteria for a debris management plan. The plan was successfully completed in May 2019 and ultimately approved by FEMA. Plan components included:

- Debris management overview
- Incidents and assumptions
- Debris collection and removal plan
- Debris removal from private property
- Public Information
- Health and safety requirements
- Environmental considerations and other regulatory requirements
- Temporary debris management sites and disposal locations
- Force account or contracted resources and procurement
- Monitoring of debris operations

FEMA Hazard Mitigation Grant Village Square Site Clearance, Phases 1, 2 and 3, St. Bernard Parish, LA, 2011-2015

Mr. Comeaux coordinated and managed contracts involved in the removal of slabs and all associated concrete in the Village Square area of St. Bernard Parish in compliance with FEMA's Hazard Mitigation Grant Program to return properties in the affected area to green space. He prepared and reviewed contract specifications and advertisements, prepared change order adjustments, completed site reviews with the contractor, conducted progress meetings with contractors and reviewed daily schedules and progress reports. The value for this contract totaled $1.2 million.

- FY 2011 HMGP Acquisition/Demolition.....$1,071,555.00

TEC Professional Services Questionnaire

Residential Slab Removal, St. Bernard Parish, LA, 2011-2013

Mr. Comeaux coordinated and managed contracts involved in the removal of slabs and all associated concrete from privately-owned sites throughout St. Bernard Parish where removal has been requested by the receipt of a right-of-entry agreement. He conducted progress meetings with contractors and reviews daily schedules and progress reports; managed the assignment of field personnel for all aspects of slab removal and debris removal monitoring; coordinated progress meetings with St. Bernard Parish and its agents in all matters pertaining to the removal of slabs and all associated concrete; and reviewed and monitored all reports and data received and transmitted to St. Bernard Parish Government for accounting and progress reporting. Mr. Comeaux assisted with the coordination of LDEQ for compliance for the abatement of structures and slabs.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Thomas Rodrigue **Certified Floodplain Manager**
Project Assignment:
Floodplain Analysis and Funding Options
Name of Firm with which associated:
Barowka and Bonura **Engineers and Consultants, L.L.C.**
Years' experience with this Firm:
6
Education: Degree(s)/Year/Specialization:
Diploma / 1963 / Business Administration/Traffic Management
Active registration: Year first registered/discipline:
Other experience and qualifications relevant to the proposed Project:

Thomas Rodrigue has 20 years of experience as a Floodplain Manager and Hazard Mitigation Specialist for both Parish Government and the civilian sector as a consultant for a private company in the above fields. Mr. Rodrigue became a Floodplain Manager in May of 2001 and became a Certified Floodplain Manager (CFM) through the Association of State Floodplain Managers (ASFPM) in April 2004. He has been involved in the FEMA Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Building Resilient Infrastructure and Community (BRIC) Program, and the Severe Repetitive Loss (SRL) grants both for the Parish and the private company previously mentioned.

Relevant projects Mr. Rodrigue has worked on over the years include:

Technical Assistance for Floodplain Management, Community Rating System and Hazard Mitigation Related Services (Project No. 0352), Jefferson Parish, LA, 01/2017-05/2019
BBEC was tasked by Jefferson Parish to provide Technical Support in enhancing multiple programs that are critical to the Parish's standing with FEMA. One being the submission of the five-year update to the Hazard Mitigation Plan which is a FEMA requirement to ensure the Parish's eligibility to continue applying and receiving FEMA mitigation grant funding. The second initiative deals with the enhancement of the Community Rating System (CRS) rating for the Parish through the National Flood Insurance Program (NFIP) to a Class "5". This rating determines how high of a discount the homeowners in the Parish receive on their annual premiums for their respective Flood Insurance policies if they reside in a Special Flood Hazard Area (SFHA). Mr. Rodrigue was tasked by BBEC to assist the Parish and provide the requested Technical Support based on his previous

employment with the Parish where he was instrumental in formulating the original Hazard Mitigation Plan for the Parish in his role as the Floodplain Manager and the Community Rating System (CRS) Coordinator where he successfully increased the CRS rating from a Class "8" to a Class "6" during his tenure with the Parish. Through Mr. Rodrigues' efforts, Jefferson Parish was successful in improving their rating from a Class "6" to a Class "5" in May 2019. Note: This program has a descending class rating with "1" being the highest.

Project Management and Technical Services, 2018 Contract, Terrebonne Parish, LA, 11/2018-Present
Mr. Rodrigue conducted one on one meetings with each homeowner interested in pursuing elevation of their structure under this grant. He guided them in the process of obtaining necessary bid estimates from contractors for their selection to accomplish the project. Mr. Rodrigue was also involved in the process of obtaining quotes for those structures requiring an American Disability Act (ADA) lift for individuals who obtained the required declaration from a physician on the need for these lifts.

FEMA Hazard Mitigation Assistance Consultant, New Orleans, LA (Project No. 2130-02035), 01/2017-Present
Mr. Rodrigue manages the individual projects from start to finish in conjunction with the elevation of Repetitive Loss structures covered by the National Flood Insurance Program (NFIP) and approved for mitigation by the Federal Emergency Management Agency (FEMA) as a result of mitigation grant requests submitted by the respective Parish through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP). He serves as the point of contact with the homeowners, Parish, and Contractor during the duration of the project. He advises on the budget, homeowner cost, and duplication of benefits (if applicable). Mr. Rodrigue issues Notice to Proceed upon receipt and completion of all required paperwork, attends meetings to review agreements, Engineer Design Plans and go over milestone expectations. Mr. Rodrigue develops a consolidated project "Dashboard" to track each property throughout the course of the project. He conducts visits to each property at the completion of all milestones to verify completion, take photographs, and compile a site visit report. Upon completion of each site, he is notified and a final site visit is conducted to verify elevation is at the correct height, and coordinate with the homeowner to ensure they are satisfied with the work so the completion certificate can be signed and the final payment can be processed. Throughout the project, Mr. Rodrigue provides problem resolution with the homeowner and contractor, as needed.

Project Management 2014 Hazard Mitigation Grant Funding, Jefferson Parish, LA, 04/2015-04/2019
Mr. Rodrigue managed the individual projects from start to finish in conjunction with the elevation of Repetitive Loss structures covered by the National Flood Insurance Program (NFIP) and approved for mitigation by the Federal Emergency Management Agency (FEMA) as a result of mitigation grant requests submitted by the respective Parish through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP). He served as the point of contact with the homeowners, Parish, and Contractor during the duration of the project. He advised on the budget, homeowner cost, and duplication of benefits (if applicable). Mr. Rodrigue issued Notice to Proceed upon receipt and completion of all required paperwork, attended meetings to review agreements, Engineer Design Plans and go over milestone expectations. Mr. Rodrigue developed a consolidated project "Dashboard" to track each property throughout the course of the project. He conducted visits to each property at the completion of all milestones to verify completion, take photographs, and compile a site visit report. Upon completion of each site, he was notified and a final site visit was conducted to verify elevation is at the correct height, and coordinated with the homeowner to ensure they were satisfied with the work so the completion certificate could be signed and the final payment could be processed. Throughout the project, Mr. Rodrigue provided problem resolution with the homeowner and contractor, as needed.

Flood Mitigation Assistance Grant, Elevation of eight (8) structures under SRL/RL Elevation Project, Lafourche Parish, LA, 07/2018-Present
Mr. Rodrigue manages the individual projects from start to finish in conjunction with the elevation of Repetitive Loss structures covered by the National Flood Insurance Program (NFIP) and approved for mitigation by the Federal Emergency Management Agency (FEMA) as a result of mitigation grant requests submitted by the

respective Parish through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP). He serves as the point of contact with the homeowners, Parish, and Contractor during the duration of the project. He advises on the budget, homeowner cost, and duplication of benefits (if applicable). Mr. Rodrigue issues Notice to Proceed upon receipt and completion of all required paperwork, attends meetings to review agreements, Engineer Design Plans and go over milestone expectations. Mr. Rodrigue develops a consolidated project "Dashboard" to track each property throughout the course of the project. He conducts visits to each property at the completion of all milestones to verify completion, take photographs, and compile a site visit report. Upon completion of each site, he is notified and a final site visit is conducted to verify elevation is at the correct height, and coordinate with the homeowner to ensure they are satisfied with the work so the completion certificate can be signed and the final payment can be processed. Throughout the project, Mr. Rodrigue provides problem resolution with the homeowner and contractor, as needed.

Grant Management Specialist/Consultant, 12/2010-05/2013

During the period Dec 2010-May 2013, Mr. Rodrigue was employed by Coastal Shoring, a private concern, which gave him the opportunity to operate at the other end of the mitigation spectrum in the elevation of structures. His duties and responsibilities consisted of the following aspects:

- Coordination with Parish contractor and respective homeowners for elevation of their structures upon their selection of Coastal Shoring to perform the project.
- Monitoring of project progression and advising Parish contractor of the status accordingly.
- Coordinating and establishing the request for periodic funding payments for work performed on these projects to include the submission of appropriate documentation required.
- Coordination with the State Hazard Mitigation Program through the State Office of Community Development for elevation of structures contracted with Coastal Shoring in the same manner previously mentioned for the Parish programs.

Floodplain Manager/CRS Coordinator, Jefferson Parish, LA, 12/2000-12/2010

Mr. Rodrigue's duties and responsibilities consisted of the following aspects:

- Supervision of the Parish contractor staff in administering all the mitigation programs to include the preparation and submission of the FEMA grant applications which produced the funding resources mentioned above as well as required periodic reports on these grants to the Governor's Office of Homeland Security/Emergency Preparedness (GOHSEP).
- Coordination with the Parish contractor concerning appropriate documentation to be maintained for execution of the grant all the way to closeout.
- Participation in all introductory meetings conducted by the Parish contractor with respective homeowners to explain the aspects of the program and the process for getting their project started.
- Coordination with Parish Contractor concerning any and all problem areas resulting from the projects, whether it be Parish requirements, FEMA requirements, or contractor issues.
- Reviewed and approved all periodic contractor payment requests for work performed forwarded from the Parish contractor prior to their transmission to the Parish Finance office for check payment to appropriate elevation contractors. This also included review and approval of all periodic payment requests from the Parish contractor for their performance of Program Management functions for the designated mitigation grants.
- Attended and conducted status meetings both with the Parish contractor and contractors performing the work, if necessary. These meetings also involved individual homeowners, when required.

The above actions resulted in the awarding of over $200M in HMGP grants from FEMA to include structures damaged as a result of Hurricane Katrina. Upon departing Parish employment in 2010, for another position, Mr. Rodrigue was responsible for mitigating over 1,100 structures for elevation and/or reconstruction.

Mr. Rodrigue was responsible for obtaining FEMA grants for several key drainage projects both on the East Bank and Westbank of Jefferson Parish. Some of the key projects are listed below:

Eastbank:

- Midway Dr. (River Ridge)
- Cleary/Transcontinental Drs. (Metairie)
- Elmwood Corridor (Metairie)

Westbank:

- Maplewood Subdivision (Harvey)
- Oakwood (Terrytown/Gretna)

These projects represented approximately $50M in total project costs.

Community Rating System

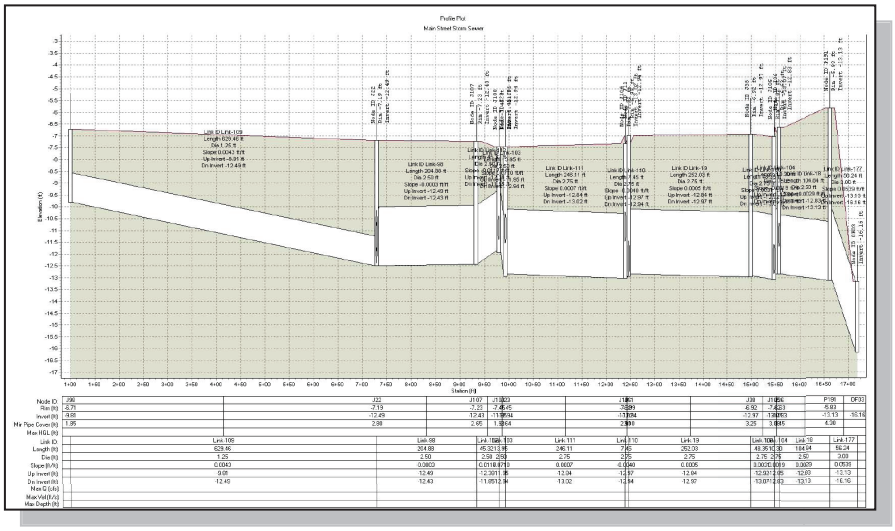
Mr. Rodrigue's duties and responsibilities consisted of the following:

- Maintaining all necessary documentation required by the National Flood Insurance Program CRS manual to substantiate the appropriate CRS rating for the community.
- Coordination with all pertinent entities with Parish government to collect the required documentation (i.e. Public Works, Drainage, Environmental, Public Affairs, Library, Electronic Information Systems).
- Submission of required community documentation for the annual program recertification in October of each year.
- Presentation of required documentation for the 5-year on-site program review by the Insurance Servicing Office (ISO).

TEC Professional Services Questionnaire

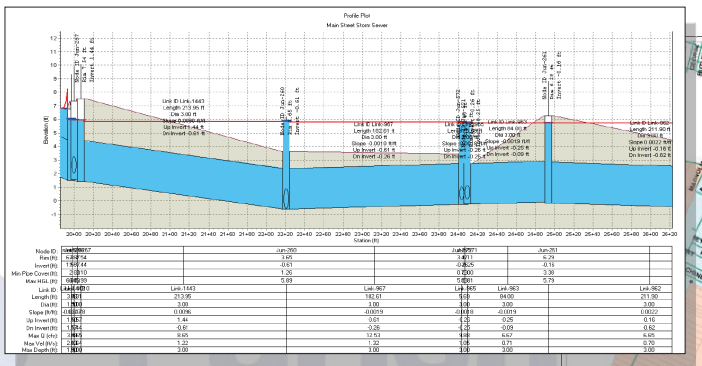
L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 1

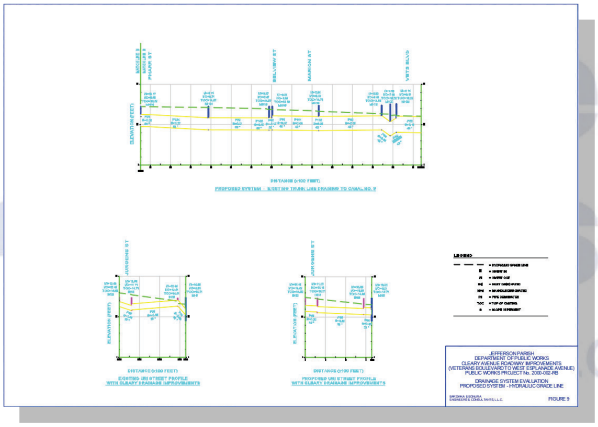
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Bissonet Plaza Master Drainage Plan (A/E Project No. 20-1708), Jefferson Parish, LA **Jefferson Parish Government** **John O'Connor, P.E.** **Department of Capital Projects** **1221 Elmwood Park Blvd., Suite 906** **Jefferson, LA 70123** **joconnor@jeffparish.net** **(504) 736-6833**	**Applicable Experience** • Model Results Mapping • Floodplain Analysis • Utilize Parish Data • H&H Modeling • Survey Management BBEC developed a hydrologic and hydraulic (H & H) model of a 180-acre residential (zoned R1) area in Jefferson Parish, Louisiana, said area bounded by Power Boulevard, Kawanee Avenue, West Esplanade Avenue, and the Elmwood Canal. BBEC developed a limited scope of services for the necessary topographical survey; provided oversight and reviewed the final topographic survey; developed the H & H model using third party software; coordinated the model with the Parish's own parish-wide H & H model; and provided the running model to others for evaluation of improvements. 

Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	**Work for which Firm was Responsible:**
May 2021	$108,258	$24,500 (fee)

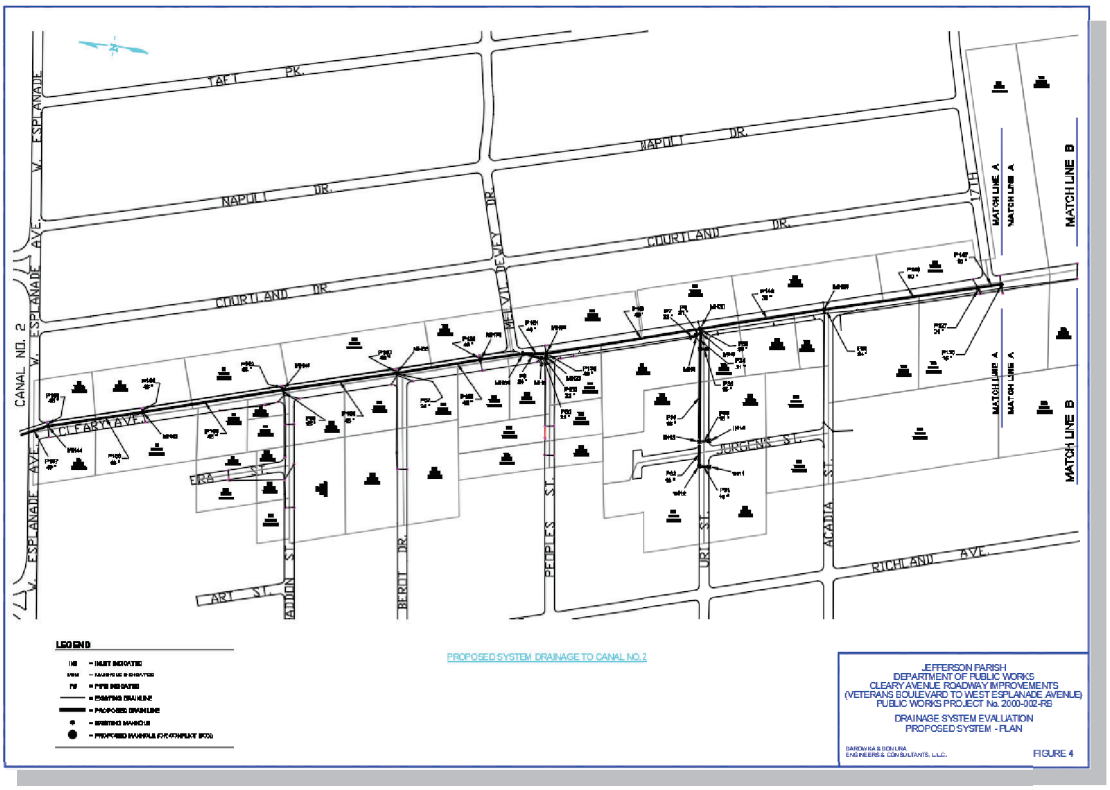
TEC Professional Services Questionnaire

PROJECT NO. 2	
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**
Waggaman Area Drainage Study (Project No. 2011-03-DR), Jefferson Parish, LA **Jefferson Parish Government** **Mitchell Theriot, P.E., Director** **Department of Drainage** **1221 Elmwood Park Blvd., Suite 907** **Jefferson, LA 70123** **MTheriot@jeffparish.net** **(504) 736-6753**	**Applicable Experience** • Utilize Parish Data • H&H Modeling • Model Results Mapping • Alternatives Review • Project Development • Survey Management BBEC performed a hydrologic study for three separate residential subdivisions in Waggaman, Louisiana: Waggaman, South Kenner, and Manor Lane. The Waggaman subdivision is bounded by River Road to the north, Live Oak Boulevard to the south, Saul's Canal to the west, and Dandelion Ditch to the east. South Kenner subdivision is bounded by River Road to the north, North Railroad Canal to the south, Saul's Canal to the east, and another subdivision to the west. The Manor Lane subdivision is bounded by River Road to the north, North Railroad Canal to the south, Latigue Road Ditch to the west, and Modern Farms Road Ditch to the east. BBEC used the Storm Water Management Model (SWMM) V.5 to evaluate the existing subsurface drainage capacities for each subdivision and to examine if the existing system was able handle a 10-year design storm. BBEC developed a hydrologic and hydraulic model using the existing Parish GIS for each area and recommended subsurface improvements based on the SWMM model to handle a 10-year design storm.  
Completion Date (Actual or estimated):	**Estimated Cost:**
	Entire Project: / **Work for which Firm was Responsible:**
2016	$300,000 (fee) / $300,000 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 3	
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**
Cleary Avenue Roadway and Drainage Improvements, Jefferson Parish, LA **Jefferson Parish Government** **Mark Drewes, Director** **Department of Public Works** **1221 Elmwood Pk. Blvd., Suite 904** **Jefferson, LA 70123** **MDrewes@jeffparish.net** **(504) 736-6783**	**Applicable Experience** • Utilize Parish Data • Model Results Mapping • Floodplain Analysis • Project Development • H&H Modeling • Survey Management BBEC developed a hydrologic and hydraulic model for the project area and the surrounding neighborhoods that drain into the project area. BBEC evaluated the various alternatives to drain to the Veterans Boulevard canal and/or the West Esplanade Avenue canal to accommodate the 10-year design storm, which concluded with a recommendation for construction. BBEC utilized the Parish's existing GIS to develop a base map of the project area, including a schematic of the existing drainage system. BBEC developed a drainage model of the existing conditions and calibrated the model with the Parish's parish-wide HEC-RAS model. With the existing conditions model, BBEC determined areas of deficient drainage capacity. BBEC developed different scenarios for improvement by increasing pipe sizes and/or adding trunk lines to address the deficiencies. The improvements include removing and replacing approximately 4,000 linear feet of four-lane concrete street (2 travel lanes, 2 parking lanes) with curbs; removing and replacing adjoining concrete sidewalks, drives, and ADA ramps; installation of about 2,500 feet of new sub-surface drainage from 36-inch to 48-inch pipe; installation of (2) new outfall pipe crossing W. Esplanade Avenue and discharging into W. Esplanade Avenue Canal; the replacement of all water mains crossing Cleary Avenue and West Esplanade Avenue in the project area; and coordination with private utilities for their respective utility relocations.  The scope of work also includes traffic phasing, allowing the contractor to work on one lane at a time. When working on the parking lanes, the 2-way traffic is maintained. When working in the travel lanes, only 1-way traffic is allowed. As part of the roadway and drainage improvement project, BBEC performed the engineering services to design and construct 7 water line roadway crossings varying in size from 8-inch to 12-inch water mains. The roadway crossings included connecting to existing water mains with valves, tees, and other fittings as required.

TEC Professional Services Questionnaire



Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
November 2021	$4,456,889	$4,456,889

TEC Professional Services Questionnaire

PROJECT NO. 4		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Lake Avenue and Carrollton Avenue Drainage Study, Jefferson Parish, LA **Jefferson Parish Government** **Mark Drewes, Director** **Department of Public Works** **1221 Elmwood Pk. Blvd., Suite 904** **Jefferson, LA 70123** **MDrewes@jeffparish.net** **(504) 736-6783**	**Applicable Experience** • Utilize Parish Data • H&H Modeling • Model Results Mapping • Floodplain Analysis • Project Development • Funding Assistance • Survey Management The project included an extensive drainage and traffic control study on Lake and Carrollton Avenues in the Bucktown area. BBEC utilized the Parish's GIS to develop a base map of the area and determine the drainage facilities that needed to be studied. BBEC developed a survey scope of work for the surveyor to collect the needed data to develop an H&H model. BBEC ran an existing model and calibrated model with the Parish's parish-wide model to have continuity between the models. BBEC ran multiple model runs to determine the most cost-effective alternatives to drain a 10-year storm in the area. BBEC made recommendations for a trunk line running down Lake Avenue, which addressed the 10-year storm, but presented constructability issues due to traffic on Lake Avenue. At the Parish's request, BBEC provided a secondary project on Orpheum Avenue that addressed the 5-year storm but did not have the same traffic problems. BBEC designed the drainage trunk line down Orpheum Avenue from Plaquemine Street to West Esplanade Avenue, but the project is still awaiting funding for construction. 	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2005	$80,000 (fee)	$80,000 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 5	
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**

Harvard Avenue Drainage Improvements, Project No 99-046-DR and 99-046A-DR, (Funding Source: Community Development Block Grant), Jefferson Parish, LA

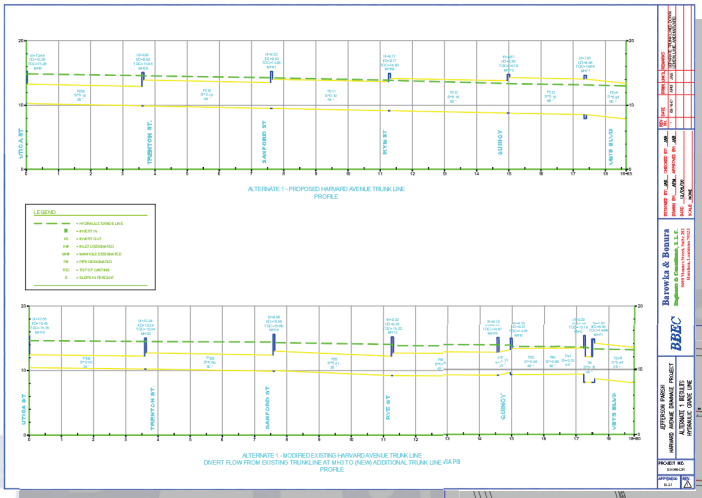
Jefferson Parish Government
Mark Drewes, Director
Department of Public Works
1221 Elmwood Pk. Blvd., Suite 904
Jefferson, LA 70123
MDrewes@jeffparish.net
(504) 736-6783

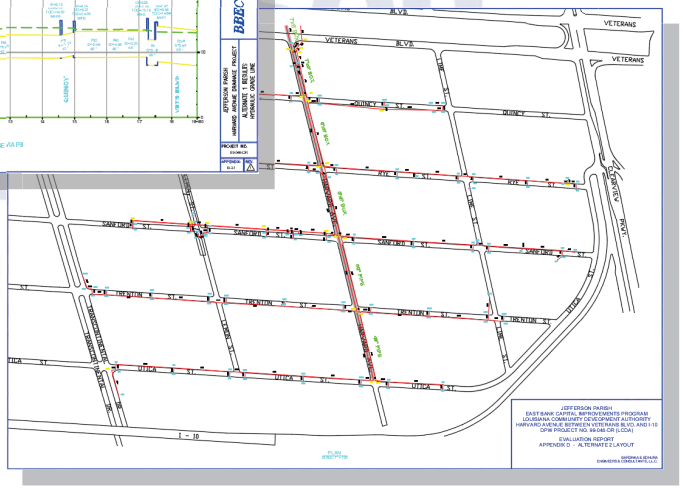
Applicable Experience

- Utilize Parish Data
- H&H Modeling
- Model Results Mapping
- Funding Assistance
- Survey Management

The Parish residents and businesses were encountering flooding along Harvard Avenue between Veterans Boulevard and I-10. BBEC used the Parish's GIS to determine that the area of concern was the area bounded by Veterans Boulevard, I-10, Transcontinental Boulevard, and Clearview Parkway. BBEC developed a topographic survey scope of work and managed the surveyor to obtain the needed survey data to develop an H&H model of the area.

BBEC used the Parish's GIS to develop a base map of the project area and incorporated the base map and survey data into an H&H model of the existing drainage system using Intergraph's Storm and Sanitary Select CAD modeling software. BBEC coordinated the model with the Parish's parish-wide model for continuity of modeled basins.





BBEC performed multiple model runs to determine the most cost-effective means to drain the 10-year storm. The recommended option exceeded the project budget, so BBEC developed a phased approach to accomplish the Parish's goals, with the first phasing being within budget and providing the most cost-effective benefit.

The Phase I project constructed consisted of about 1,900 linear feet of 30-inch to 72-inch drainpipe, including crossing Veterans Boulevard with an outfall into the Veterans Boulevard Canal.

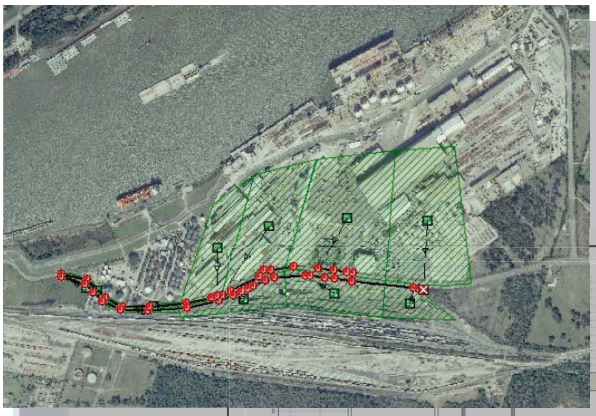
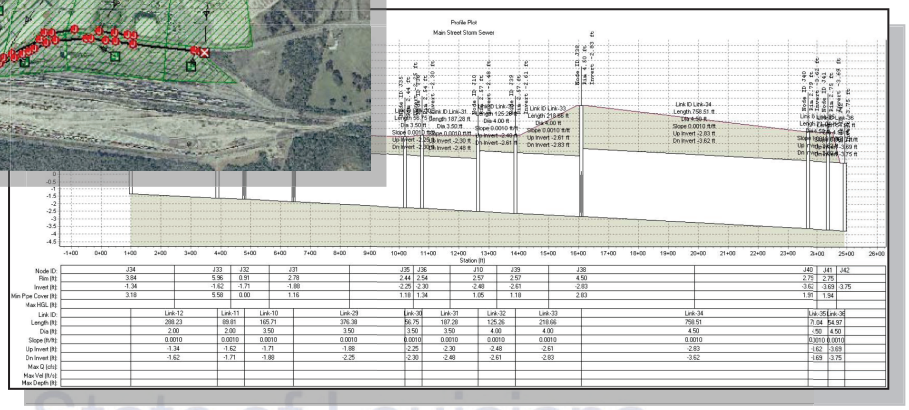
	BBEC performed the H&H study, design, construction administration, and resident inspection services for the project.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2006	$2,879,840	$2,879,840

TEC Professional Services Questionnaire

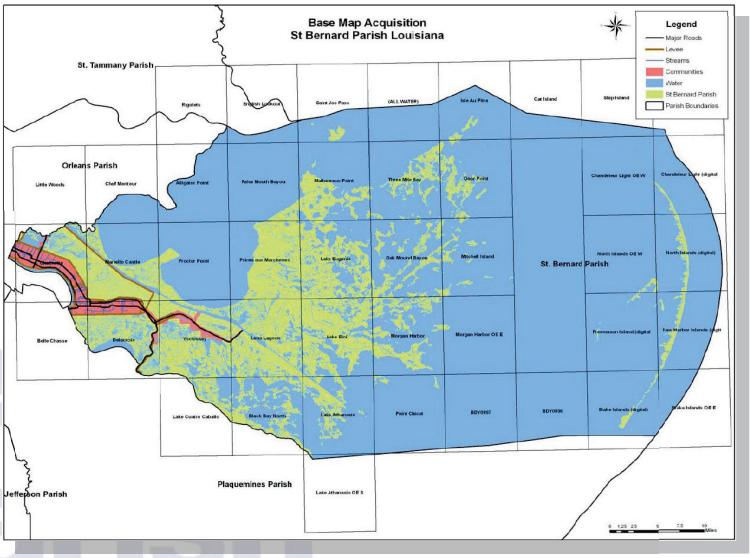
PROJECT NO. 6	
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**
LA-45 Evacuation Route Basin Drainage Improvements, Lafitte Area Independent District, LA **Lafitte Area Independent Levee District** **Nicole Cooper, Project Manager** **2654 Jean Lafitte Blvd.** **Lafitte, LA 70067** **(504) 233-1109** **ncooper@townofjeanlafitte.com**	**Applicable Experience** • H&H Modeling • Project Development • Alternatives Review • Floodplain Mapping • Floodplain Analysis BBEC, performing as sub-consultant, developed H&H models for the LA-45 Evacuation Route Basin, both for existing conditions and to reflect the proposed Lafitte Tidal protection project. The analysis identified internal drainage problems resulting from the completion of the Tidal Protection project and established pipe, ditch, canal, and LADOTD roadway culvert sizes. BBEC also modeled discharge pump station and determined the capacity for each of the three pump stations. BBEC also provided Drainage Maps and Conceptual Storm Sewer Routing Plans to show ditches and storm sewer locations, and sized required, and identify any potential problem areas, plans and profiles, required right-of-way and construction access, and any impacts to existing properties.

Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	**Work for which Firm was Responsible:**
2021 (est)	$67,200 (fee)	$67,200 (fee)

TEC Professional Services Questionnaire

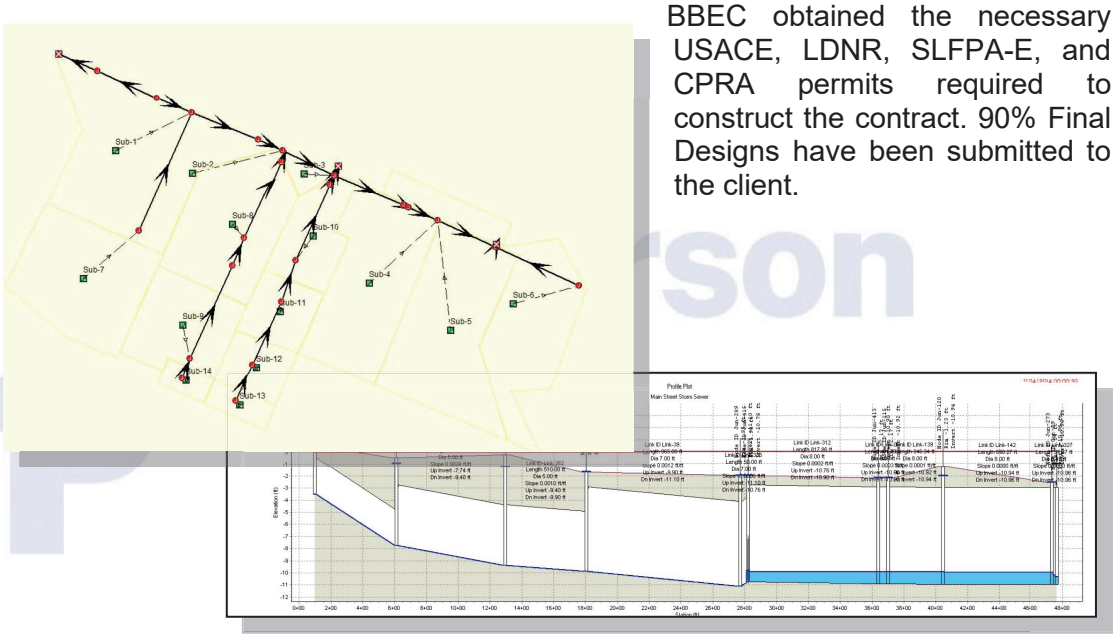
PROJECT NO. 7			
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**		
Avondale/Bridge City Drainage Evaluation (Area between the Mississippi River and the Union Pacific Railroad, from Huey P. Long Bridge to Avondale Garden Road), Jefferson Parish, LA **Jefferson Parish Government** **Mitchell Theriot, P.E., Director** **Department of Drainage** **1221 Elmwood Park Blvd., Suite 907** **Jefferson, LA 70123** **MTheriot@jeffparish.net** **(504) 736-6753**	**Applicable Experience** • Utilize Parish Data • Model Results Mapping • Alternatives Review • Project Development • Floodplain Analysis • Survey Management BBEC developed the topographical survey scope for the project and manages the surveyor for the Parish. BBEC is developing a hydraulic and hydrologic model using SWMM v.5 of the Project Area between the Mississippi River and the Union Pacific Railroad, from the Huey P. Long Bridge to Avondale Garden Road; and, developing various alternatives for improvements with cost estimates for the alternatives. BBEC will provide alternatives and associated cost estimates for improvements, including alternate channels to drain the Host Facility and rail yard area, alternatives to drain the Training Facility, potential locations for storage as an alternative to transmission, and alternatives to drain the Bridge City residential area.  		
Completion Date (Actual or estimated):	**Estimated Cost:**		
	Entire Project:	**Work for which Firm was Responsible:**	
2024 (est)	$237,342 (fee)	$237,342 (fee)	

TEC Professional Services Questionnaire

PROJECT NO. 8	
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**
Map Modernization Project (DFIRM) (Contract No. EMT-2005-CA-0110) (2003 Contract), St. Bernard Parish, LA **St. Bernard Parish Government** **Donald R. Bourgeois, Capital Projects Manager** **Department of Public Works** **1125 E. St Bernard Hwy.** **Chalmette, LA 70043** **dbourgeois@sbpg.net** **(504) 278-4250**	**Applicable Experience** • H & H Modeling • Model Results Mapping • Floodplain Analysis • Funding Development • Funding Assistance • Utilize Parish Data • Survey Management BBEC assisted FEMA develop St. Bernard Parish's flood insurance rate maps as part of FEMA's map modernization program. BBEC prepared the project scoping document for St. Bernard Parish and received FEMA approval in accordance with FEMA document Guidance for Scoping Flood Mapping Projects. BBEC incorporated the Parish's hydraulic features into the GIS. BBEC performed the necessary hydraulic and hydrologic studies and analyses necessary for the implementation of the map modernization project by using USCAE's hydraulic and hydrologic modeling software HEC-RAS and HEC-HMS. BBEC incorporated the results of the hydrologic and hydraulic studies GIS to develop the necessary flood plains. BBEC prepared a Base Map for the project (streets, ditches, benchmarks, etc.) from St. Bernard Parish's existing GIS, modifying the format to FEMA standards. BBEC has submitted all hydraulic and hydrologic and survey work for independent QA/QC and is currently developing DFIRM base maps. All work associated with the development of the DFIRMs were in strict compliance with the National Flood Insurance Program. 

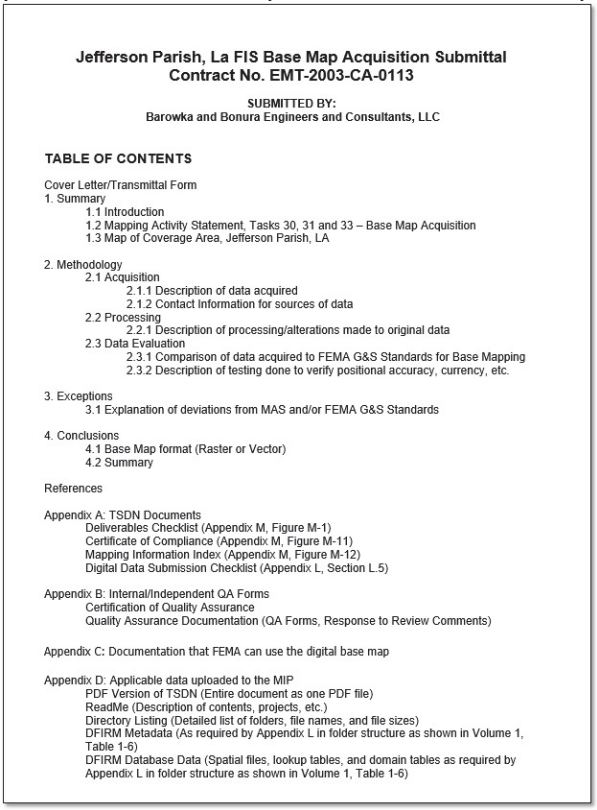
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	**Work for which Firm was Responsible:**
2008	$536,163 (fee)	$536,163 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 9			
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**		
Widening / Stabilization of Congressman Hebert, Creely, and Bluebird Canals (Hazard Mitigation Grant Program (HMGP)), St. Bernard Parish, LA **St. Bernard Parish Government** **Matt Falati** **Department of Hazard Mitigation** **8201 West Judge Perez Drive** **Chalmette, LA 70043** **mfalati@sbpg.net** **(504) 278-4223**	**Applicable Experience** • Model Results Mapping • Floodplain Analysis • Funding Assistance • Utilize Parish Data • H&H Modeling • Survey Management The project includes increasing the capacity and improves the stability of Congressman Hebert, Creely, and Bluebird Canals, that consists of 11,600 linear feet of open canal and culverts ranging from 4-feet bottom width to 16-feet bottom width channels. BBEC coordinated with St. Bernard Parish, Lake Borgne Basin Levee District, and the Louisiana Department of Transportation and Development to obtain information regarding the existing drainage plan. BBEC performed a hydrologic and hydraulic analysis of the existing system to evaluate the entire area for the 5-year, 10-year, and 25-year storms. BBEC established the design cross sections for the channels, which included concrete u-channels, concrete box culverts, and round and arched pipe, and concrete lined trapezoidal sections, depending on the availability of land and other conditions. BBEC obtained the necessary USACE, LDNR, SLFPA-E, and CPRA permits required to construct the contract. 90% Final Designs have been submitted to the client. 		
Completion Date (Actual or estimated):	**Estimated Cost:**		
	Entire Project:	**Work for which Firm was Responsible:**	
On Hold	$106,000 (fee)	$106,000 (fee)	

TEC Professional Services Questionnaire

PROJECT NO. 10		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Digital Flood Insurance Rate Map, Jefferson Parish, LA **Jefferson Parish Government** **Jeb Tate, Director** **Electronic Information Systems** **1221 Elmwood Park Blvd., Suite 700** **Jefferson Parish, LA 70123** **jtate@jeffparish.net** **(504) 736-6720**	**Applicable Experience** • **Model Results Mapping** • **Floodplain Analysis** • **Utilize Parish Data** BBEC performed all GIS / Database Management services for the Jefferson Parish DFIRM Project, including documentation and preparation of maps and GIS data. BBEC was responsible for preparing Metadata Base according to "Content Standard for Digital Geospatial Metadata." BBEC prepared base maps including streets, railroads, canals, ditches, benchmarks and flood hazard contours to meet DFIRM specifications. BBEC was also responsible for generating maps to meet DFIRM specifications and to provide all data and maps in the correct format acceptable by FEMA. Considering that all work associated with the development of the DFIRMs was in strict compliance with the National Flood Insurance Program, BBEC has an intimate knowledge of the NFIP program.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2008	$248,131 (fee)	$248,131 (fee)



Jefferson Parish, La FIS Base Map Acquisition Submittal
Contract No. EMT-2003-CA-0113

SUBMITTED BY:
Barowka and Bonura Engineers and Consultants, LLC

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TEC Professional Services Questionnaire

M. List all prior and/or on-going litigation between Firm and Jefferson Parish. Please attach additional pages if necessary.

Parties:		Status/Result of Case:
Plaintiff:	**Defendant:**	
1. N/A	N/A	BBEC's firm nor its staff has had any litigation with Jefferson Parish.
2.		
3.		
4.		

N. Use this space to provide any additional information or description of resources supporting Firm's qualifications for the proposed project.

Barowka and Bonura Engineers and Consultants, L.L.C. is an engineering consulting firm specializing in civil engineering design, construction management, and computer consulting services. BBEC's Project Team has substantial experience in all aspects of public works projects. Our staff has specific experience in hydraulic and hydrologic modeling, alternative project evaluation, project development, and drainage design and construction management. Our drainage design experience includes numerous projects including drainage pipe, cast-in-place conduit (closed and open), and roadway culvert crossings of all kinds. Our project experience also includes the necessary environmental permitting and property acquisition necessary to get any project done.

In addition to our specific engineering expertise, BBEC has extensive knowledge of the Parish's Geographic Information Systems (GIS) and existing parish-wide models. BBEC has utilized the Parish's GIS in many similar H&H projects and has worked in the Parish's models to obtain data, as well.

PROJECT UNDERSTANDING:

The SOQ states "Project will consist of hydraulic modeling of the drainage system on the East Bank of Jefferson Parish. Deliverables will include a full inventory of the existing system with a written breakdown of the systems operation. Hydrographic information will be documented in an easy to view format. Recommended improvements will be modeled, and cost estimates generated. The intent of the project is to

generate a document to guide future drainage improvement construction and provide guidance for development."

Our understanding of the desired scope, summarized, is to develop a comprehensive drainage model (hydrologic and hydraulic) of the existing drainage system, identify areas needing improvement, and develop projects scopes and cost to resolve the problems.

We anticipate the project will contain the following key components:

1. Utilize Parish Data – The Parish has an existing GIS, existing H & H models in various programs, and recent improvements that may have not been incorporated into the model. The Parish has at least two existing SWMM models on the East Bank: the East Bank Polder and the Hoey's Basin Polder; along with other data from its older HEC-RAS and HEC-HMS models. The Parish has data regarding land use, zoning, repetitive losses due to drainage concerns, and other floodplain data that may be useful for the project. LIDAR contour information is available, as is soil characteristics information. The data needs to be inventoried, evaluated for accuracy and usefulness, and a determination needs to be made on what data is used, enhanced, or replaced. The existing data needs to be inventoried and determined to be used or replaced.
2. Surveying Management – The survey scope is important to make sure the needed aspects of the system are captured for the model development. Conduit types, sizes, shapes, materials, and drainage network configuration are part of the needed information. Contours and land use are needed to determine surface runoff quantities. Another important aspect of the surveying is historical survey data. With various areas of the Parish settling more than others, an analysis of historical settlement can be made to identify, for example, where gravity drainage used to work but now requires pumping to drain an area. Part of the survey scope could be to obtain elevations from points where historical elevation data is available for comparison to current data so the effects of settlement and subsidence on the existing system can be evaluated and can be considered in the development of future projects.
3. H & H Modeling – The Parish indicated that it desires that SWMM v.5 be used for the project. A brief evaluation of alternate software could be done if desired. H & H modeling includes incorporating existing model elements for the various existing models, developing new elements from the surveys, debugging the model for successful model runs, calibrating the model using available data, running the model with the various design storms, and then identifying deficiencies needing attention. The modeling also includes developing fixes for the deficiencies and running the model to ensure the fixes perform as needed.
4. Alternative Analysis – Coordinated with the modeling, alternatives to resolve deficiencies need to be developed in an organized and technical manner so unnecessary model iterations are minimized.
5. Floodplain Mapping – Data resulting from the model are mapped to show actual effects of the suggested improvements. The mapping can be overlaid onto the Parish's GIS so water surface elevations can be plotted among the buildings and facilities throughout the Parish.
6. Project Development – Once feasible corrections to the drainage system are determined, projects with preliminary scopes and cost estimates need to be developed. Hydraulics, topography, public impact, and constructability are some of the factors affecting the project scope and cost. Another aspect of project development could include a condition assessment of existing Parish facilities. Components of the assessment could include pump stations that are aging may need major structural repairs; some pump stations might need mechanical bar screens; some may need improved access to equipment, secondary containment facilities, or operator quarters; and yet others may need improved secondary power.
7. Floodplain Analysis – If desired, the model results can be evaluated to determine if the modeled improvements affect the flood insurance rate maps (FIRMs) or can affect the community rating system (CRS) scoring, potential ways to reduce flood insurance rates.
8. Funding Assistance – If desired, the floodplain analysis may suggest the ability to lower the floodplain is areas or obtain a better CRS score (we assisted the Parish obtain its current score and recognize

another advancement would major steps including a change in the Code of Ordinances regarding stormwater design for developments). Funding assistance can also identify possible federal funding programs such as FEMA's Hazard Mitigation (HMA) or Building Infrastructure and Communities Programs, HUD Community Development Block Programs, or other similar programs. Another option is to develop a framework for a parish-wide drainage user fee as was developed for the Parish in 1990.

The statement in the RFQ, "The intent of the project is to generate a document to guide future drainage improvement construction and provide guidance for development." is fairly broad and therefore opens the potential scope to a broader range of subjects. Therefore, relevant information regarding the drainage related topics of FEMA programs and funding are provided at the end of this Statement of Qualifications in the section labelled "Additional Master Plan Functions".

1. PROFESSIONAL TRAINING AND EXPERIENCE IN RELATION TO THE TYPE OF WORK REQUIRED FOR THE ENGINEERING SERVICES:

BBEC is currently developing a drainage master plan for the Bridge City / Avondale area for Jefferson Parish. The project includes all aspects of the project sought. We have already performed the data acquisition and developed the model of the existing conditions in SWMM v.5. BBEC completed multiple similar projects for Jefferson and its surrounding parishes as described in this SOQ. Each project included many or all the same components: utilize Parish data, surveying, H & H modeling, alternative analysis, floodplain mapping, project development, floodplain analysis, and funding assistance. BBEC performed a Parish-wide map modernization for St. Bernard Parish, which included developing an H & H model to FEMA standards and developed the digital flood insurance rate maps for the Parish in accordance with FEMA standards. BBEC performed the floodplain mapping for the Parish's parish-wide 2008 FEMA digital flood insurance rate map project to FEMA standards. So, BBEC has substantial training and experience in similar projects of scope and size to the project sought.

BBEC teamed with MSMM to complement our resources and abilities. MSMM demonstrates in their attached questionnaire similar exceptional training and experience for similar projects. Similar projects performed by BBEC and MSMM combined include:

- Waggaman Drainage Master Plan
- Cleary Avenue Drainage Study (Veterans Blvd. to West Esplanade Ave.)
- Harvard Avenue Drainage Study, (Master Plan of area bounded by Veterans, I-10, Transcontinental, and Clearview)
- Bissonet Plaza Drainage Master Plan
- Bucktown Area Drainage Master Plan
- Avondale/Bridge City Drainage Study
- Lafitte Area Inner Drainage Study
- USACE's Silver Jackets Program, Jefferson Parish (Parish-wide) Green Infrastructure and Watershed Master Plan (MSMM)
- City of Kenner Drainage Master Plan (MSMM)
- South Kenner Pump to the River Feasibility Report (MSMM)
- New Orleans International Airport North Terminal Comprehensive H&H Modeling (MSMM)
- Coventry Court Drainage Evaluation Feasibility Modeling Report and Subsurface Design (MSMM)
- Woodlake Drainage Pump Station Hydraulic Modeling (MSMM)
- Jefferson Parish DFIRM upgrade (floodplain mapping only)

Having been performing engineering, surveying, and mapping projects in Jefferson Parish as a firm for over 23 years, and having many years of engineering, surveying, and mapping experience in Jefferson Parish

before that, BBEC has extensive knowledge in the areas of Jefferson Parish, with emphasis on the East Bank of Jefferson Parish, of the historic settlement of various areas within Jefferson Parish. BBEC has substantial experience with gathering available historical and current elevation data, mapping experience to display the data (with differences highlighted), and evaluating the data to determine potential methods to address the settlement in the project development, whether by remedies or life cycle cost analysis and cost estimates.

Our training and experience is directly embedded in our staff. What follows are a list of key individuals anticipated for the project with brief resumes. Complete resumes are provided elsewhere in this SOW.

Mr. Jeffrey Bonura, P.E., (34 years of experience), Owner and Supervising Engineer for BBEC provides quality control and assurance for all BBEC projects. Mr. Bonura has been working with computer-based hydraulic models since 1988. Mr. Bonura has experience in HEC-1, HEC-2, HEC-RAS, HAEC-HMS (including converting HEC-1 and HEC-2 models to HEC-HMS and HEC-RAS systems), SWMM, StormCAD, SewerCAD, HydroCAD, Flowmaster, TR-55, and other package hydrologic and hydraulic modeling software packages. He has and continues to write his own hydraulic modeling programs for special cases. Mr. Bonura spot checks the modeling by hand for model verification. Mr. Bonura also has substantial experience analyzing hydraulic and operating conditions of existing pump stations, including the configuration of suction and discharge basins.

Mr. Bonura has taken the raw input data from an old Kentucky Pipe Model for the entire Jefferson Parish water distribution system, added it to tables from the Parish's GIS, and developed a working geographical hydraulic model for the entire Jefferson Parish. Mr. Bonura extracted the raw input data from old HEC-1 and HEC-2 models in St. Charles Parish and inserted the data into HEC-RAS and HEC-HMS and verified the results between the two models. Mr. Bonura has substantial experience using computer models such as Storm CAD and Storm and Sanitary Select CAD to evaluate drainage systems and determine the optimum design for the site conditions. Mr. Bonura used computer models for the design of the aforementioned Cleary Avenue, Coast Guard Road, Harvard Avenue, and the Widening/Stabilization of Congressman Hebert, Creely, and Bluebird Canal projects, as well as to evaluate drainage conditions along Ames Boulevard and the Bucktown area in Jefferson Parish, Cypress Park Subdivision in St. Tammany Parish, and Guichard Canal area in St. Bernard Parish.

In addition to Mr. Bonura:

- **Mr. Kevin Forschler, P.E.**, (7 years of experience), has been designing and administering the construction of typical public works projects (sewer, drainage, and roadway); including the recent completion of the hydrologic and hydraulic modeling of the area associated with our Waggaman Hydraulic Study and the completion of the Bissonet Plaza Master Drainage Plan in Jefferson Parish. He is currently working on the Widening/Stabilization of Congressman Hebert, Creely, and Bluebird Canals in St. Bernard Parish and the Drainage and roadway improvements described herein.
- **Mr. Madan Kamboj, P.E.** (41 years of experience) has been performing project design, construction administration, and project monitoring for general civil projects including drainage, utilities, streets, highways and bridges, buildings, water and sewer treatment plants, multi-story parking garages; airport taxiways, traffic separation facilities, bike paths, and overhead pedestrian walkways at high traffic intersections.
- **Mr. John J. Housey, Jr., P.E.**, (54 years of experience), has been administering the construction of over $40 million roadway and drainage improvements for the last several years. Working on projects such as Hurricane Damage Katrina Roadway Improvements and Drainage Repair in St. Bernard Parish, Drainage Pump Stations in Jefferson Parish, the Widening/Stabilization of Congressman Hebert, Creely, and Bluebird Canals in St. Bernard Parish, and the Lower 45 Evacuation Route Basin for the Lafitte Area Independent District.
- **Mr. Pete Foret** (31 years of experience), is a multi-discipline AutoCAD drafter and designer with

experience in the Civil, Structural, Architectural, Electrical and GIS/Mapping fields. He has a combined 31 years of experience generating alignments, plan and profile sheets, cross sections, contour maps, structural and architectural plans and details and electrical one-line diagrams. He has been the drafting coordinator for multiple firms and has been responsible for developing drafting standards for a consistent and quality drawing set.

- **Mr. Tony Bonura** (31 years of experience), has broad experience in computer consulting with a strong emphasis on Geographic Information Systems (GIS). He has been employed in the computerized mapping industry for over 30 years and has been a Senior Consultant with BBEC since its inception. Mr. Bonura has an extensive knowledge of a wide range of computer application software packages, including the GIS programs GDS, ARC/INFO and Intergraph. He has guided BBEC in the management and administration of databases and database dependent applications for numerous projects. Mr. Bonura has experience working as Project Manager, Database Administrator, DM Manager and GIS Consultant for clients including Jefferson Parish, St. Bernard Parish, Livingston Parish, Louisiana Land Trust, Calcasieu Parish, and the Town of Jean Lafitte.
- **Mr. Rayburn Clipper,** (25 years of experience), is a Geographic Information Systems Analyst with 20 years of experience in GIS project architecture, systems engineering and management, and 10 years designing, supporting, and maintaining enterprise and solutions architectures in a variety of public and private projects; he also has 20 years of experience using AutoCAD in association with his GIS projects. Mr. Clipper's many years of experience includes his GIS work on the Bissonet Plaza Master Drainage Plan, Waggaman Area Drainage Study, and Digital Flood Insurance Rate Map projects for Jefferson Parish as evidenced in his resume. He is also currently maintaining Jefferson Parish's GIS infrastructure.
- **Mr. Craig Comeaux, C.F.M.** (19 years of experience) has successfully managed or been significantly involved in nearly 100 federal recovery projects in a program management capacity throughout South Louisiana. These projects involve FEMA Public Assistance Grants, FEMA Hazard Mitigation Grants, and U.S. Department of Housing and Urban Development Community Development Block Grants. Mr. Comeaux worked extensively in coordination with FEMA, GOHSEP, Office of Community Development, and local Parish groups to manage over $700 million in project funds, including oversight of project inspection. Mr. Comeaux recently completed the Technical Assistance for Floodplain Management, Community Rating System, and Hazard Mitigation Related Services for Jefferson Parish where he worked with local officials to assist with Education and Outreach projects, activities to assist with meeting CRS points, edits and updates to flood maps, analysis of NFIP policies, and the planning process for the Parish's multi-jurisdictional Hazard Mitigation Plan.
- **Mr. Thomas Rodrigue, C.F.M.** (20 years of experience), has experience as a Floodplain Manager and Hazard Mitigation Specialist for both Parish Government and the civilian sector as a consultant for a private company in the above fields. Mr. Rodrigue became a Floodplain Manager in May of 2001 and became a Certified Floodplain Manager (CFM) through the Association of State Floodplain Managers (ASFPM) in April 2004. He has been involved in the FEMA Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Building Resilient Infrastructure and Community (BRIC) Program, and the Severe Repetitive Loss (SRL) grants for Parish and the private company. Mr. Rodrigue recently assisted with the development of the Hazard Mitigation Plan and the enhancement of the Community Rating System for the Technical Assistance for Floodplain Management, Community Rating System and Hazard Mitigation Related Services project in Jefferson Parish.

BBEC teamed with MSMM to complement our staff's abilities for the subject project. What follows are MSMM's professionals available and anticipated for the project, with brief resumes highlighting their relevant experience. Complete information regarding MSMM is provided in their attached TEC Professional Services

TEC Professional Services Questionnaire

Questionnaire:

- **Manish Mardia, P.E.,** (26 years of experience), is an experienced engineering manager and principal with twenty-six (26) years of experience in managing and designing public works projects for Jefferson Parish, municipalities in the greater New Orleans area, and the United States Army Corps of Engineers (USACE). His experience includes drainage pump station evaluation and design, drainage evaluation, hydraulic modeling, levee design, T-wall design, roadway, and utility design. Mr. Mardia has worked *on more than **200 projects for various departments of Jefferson Parish.*** These projects were successfully completed on time and schedule. Projects designed and managed by Mr. Mardia range from Drainage Pump Station Design, Drainage Evaluation and Modeling, Infiltration and Inflow; Water Treatment and Collection; Wastewater Collection, Distribution and Treatment; Street and Roadways Design; and Landfill Design and Permitting.
- **Thomas M. Willis, P.E., MBA** (40 years of experience), is a Senior Hydraulic Engineer with 40 years of experience. At MSMM he conducts civil engineering design and hydrologic and hydraulic (H&H) analyses of the stormwater drainage systems associated with roadways, bridges, highways, and airports in Southeast Louisiana. Mr. Willis has extensive experience with open channel hydraulics, channel restoration, geomorphology, hydrologic analyses, storm water analysis, master planning and design, bridge hydraulic and scour studies, and FEMA modeling and permitting. He is proficient in the use of EPA SWMM, HEC-RAS and HEC-HMS models.
- **Jim Wilson, P.E.,** (25 years of experience), is a senior civil/drainage engineer with over 25 years of experience in the public sector, successfully designing and managing drainage, roadway, sewerage, waterline, and site development projects in multiple jurisdictions of south Louisiana. Recently (between 2014 and 2019), Mr. Wilson designed and performed construction management for seven (7) drainage/pump station projects (Sauvé Road, Coventry Court feasibility analysis, New Orleans International Airport Drainage Pump Station, Sena Drive, Harahan Pump to the River, Hoey's Basin Pump to the River, and University City & Audubon Place Subdivisions), seven (7) roadway projects (Manhattan Boulevard, Lapalco Boulevard, Aubry Street, West End Neighborhood, Little Woods Neighborhood, Plum Orchard Neighborhood, and City Park neighborhood), five (5) sewer lift stations projects (Kennedy Heights, Hillaryville, East Baton Rouge, Chetta Drive, and Cooper/Wilber), and two (2) site improvement projects (Government Complex, and NOLA Motorsports Park), all in south Louisiana. Mr. Wilson was the designer of record for the Sauvé Road drainage pump station. He was also the civil engineer tasked with developing the alternatives for the Coventry Court project. Mr. Wilson has extensive design experience developing drainage improvement projects in Jefferson Parish. He is intimately familiar with the characteristics, existing infrastructure, and design practices required by Jefferson Parish. As a result of designing multiple projects in this area within a short period of time, Mr. Wilson has developed excellent working relationship with many of the local authorities having jurisdiction (AHJ) over the features, utilities, properties, and regulatory requirements in Jefferson Parish.
- **Scott Chehardy, P.E.,** (25 years of experience), has over two decades of civil design and hydraulic evaluation experience working on projects in Jefferson Parish. He has successfully completed the development of plans and specifications for pump stations and force mains, roadways and bridges, levees and floodwalls, canals, and box culverts. He has been an integral part of the design efforts for several recent drainage pump station projects completed in Jefferson Parish, inclusive of the new 600 cfs drainage pump station at the New Orleans International Airport, improvements to Pump #4 at the Parish Line Pump Station, development of the new 22 cfs Clearview drainage pump station, and has been instrumental in helping identify conflicting utilities, running hydraulic calculations, and resizing subsurface drainage infrastructure during the development of the Coventry Court drainage pump station evaluation report. Mr. Chehardy's responsibilities have included project management, design, construction management, quality control, and permitting.
- **Brooke Morris, P.E., PLA** (13 years of experience), is a licensed landscape architect and civil

engineer that practices at the overlap of the two disciplined to produce functional designs. She specializes in stormwater management and green infrastructure planning, modeling and design. At MSMM, she provides HEC-RAS green infrastructure modeling and modeling review of EPA SWMM and other modeling outputs.

- **Chris Mills, EIT,** (2 years of experience), is an EIT at MSMM where her performs a wide variety of design and hydraulic evaluations for public works project in Orleans and Jefferson Parish. Mr. Wills also performs various field services, inclusive of collecting survey data, manhole location data, GIS data and provides construction administration services for various construction projects.
- **Arthur Ian Growden, EIT,** (2 years of experience), is an EIT at MSMM where he performs wide-ranging services inclusive of CAD drafting, REVIT modeling, field services inclusive of survey and data collection, and the input of data for hydraulic models.
- **Bob Yokum** (40 years of experience), was employed by the USACE New Orleans District for 12 years, serving as a senior structural engineer for the design locks, dams, levees, floodwalls, floodgates, flood control structures, and drainage pump stations. Mr. Yokum has extensive experience designing USACE levees and floodwalls, performing stability analysis, pile group analysis pile capacity curves, designing sheet pile cutoff walls, and steel sheet pile temporary retaining structure (TRS). Mr. Yokum developed the unbalanced load criteria used by USACE for all levee design. Mr. Yokum has provided detailed foundation and structural design, construction plans, inspections for all types of gated/non-gated dam and auxiliary monoliths including spillways, outlet structures, concrete retaining walls, stilling basins, training works, and various structures associated with spillways and outlet works. Since leaving USACE, and during his time with MSMM, Mr. Yokum has provided extensive design of dolphin structures, levee crossings, riprap discharge basins, bridges, structural foundations and is currently designing an 8,190 cfs pump station for USACE in Texas.
- **Joshua Carson** (13 years of experience), worked as an in-house consultant and Project Manager for the Corps of Engineers (New Orleans District) on multiple Federal projects including storm risk reduction, navigation, coastal restoration and recreation. Mr. Carson's role at the New Orleans District was to manage projects from project initiation through the planning and construction phases. Mr. Carson's position responsibilities included tasks typical of a project manager, such as, briefing senior level personnel, managing project delivery team members to execute project milestones, and relaying critical project information to sponsors, interested parties and the public. He was tasked for meeting legislative and organizational deadlines and to deliver projects on-time and under budget. Mr. Carson executed multiple environmental projects while at the Corps, including projects that required extensive environmental permitting and NEPA clearances. At MSMM, Mr. Carson has served as a project manager and environmental permitting coordinator. He is a responsible for being a liaison between the clients, engineering teams, and is often tasked with briefing the public or client about the project design. Mr. Carson serves as the lead project manager for all MSMM tasks completed in Jefferson Parish.
- **Erin M. Curson,** (13 years of experience), is a GIS Specialist, geospatial, and CAD manager at MSMM, where his project experience encompasses a variety of geospatial and software initiatives within the Federal and local market in southeast Louisiana. Mr. Curson has worked extensively on projects that require the use of ESRI ArcGIS and Microsoft SQL Server for Federal clients including the USACE New Orleans District. He has been instrumental in leading the GIS database creation and management for several MSMM projects including the Jefferson Parish I&I project, and the Chitimacha and Ascension Parish GIS planning tool initiatives. With a background in both CAD and GIS, Mr. Curson understands the similarities and differences between the two systems and has played an important role in working through any conversion issues that have arisen through the digitization and database creation process. As the lead drafter at MSMM, Mr. Curson has been instrumental in the development of project plans, working in conjunction with the engineering staff to finalize all submittals.

- **John M Dominique,** (12 years of experience) has extensive experience in construction management, resident inspection, administration, resident project representation, site assessment, inspection, and quality control representation of projects in the Greater New Orleans area. He has worked on infrastructure projects such as flood control, water resources, roads, bridges, water, sanitary sewer, gas and electrical, as well as environmental projects including marsh restoration. Mr. Domingue has worked closely with local government officials from the City of New Orleans, City of Westwego, City of Gretna and St. Tammany Parish.

2. CAPACITY FOR TIMELY COMPLETION OF NEWLY ASSIGNED WORK, CONSIDERING THE FACTORS OR TYPE OF ENGINEERING TASK, CURRENT UNFINISHED WORKLOAD, AND PERSON OF FIRM'S AVAILABLE PROFESSIONAL AND SUPPORT PERSONNEL:

Over the years, BBEC successfully performed well over $100 million in fees of engineering and engineering related projects for various entities and municipalities throughout southeast Louisiana. The work performed included surveying management, H & H modeling, project design and development, floodplain analysis and hazard mitigation, geographic information systems, and others.

We have substantial specific experience in performing drainage master planning services for portions of Jefferson Parish, such as the Avondale / Bridge City, Bucktown, and other areas mentioned in this SOQ. Our subconsultant, MSMM, has performed similar services in Jefferson Parish for the City of Kenner, New Orleans International Airport, and Jefferson Parish under the USACE Silver Jackets Program. We've worked within the Parish's existing drainage models to extract and compare data for our area specific modeling projects. We've converted old USACE HEC program data to current software standards.

We have substantial experience working with the Parish's GIS, having been assisting the Parish in its development and upgrade for 20 of the last 24 years. We continue to assist the Parish in its development and maintenance every day. We have used the Parish's GIS before to develop the floodplain mapping for the Parish's 2008 flood rate map upgrade. We know what information exists in the Parish,and what is available from the Regional Planning Commission, FEMA, and other agencies. There will be no learning curve in developing a base map for the model and performing the floodplain mapping, as we did it before for Jefferson Parish.

Our surveyor is local and experienced in providing topographical and property surveys, and developing flood elevation certificates, throughout Jefferson Parish.

We, and our subconsultants, have substantial experience in working on many public works projects, drainage and otherwise, in Jefferson Parish. We've worked as a company for the Parish for 25 years, and Mr. Bonura worked an additional 10 years on Parish projects before that. Our experience also includes performing floodplain consulting and funding assistance to Jefferson Parish and the surrounding parishes.

Our wealth of experience with drainage and master planning project in Jefferson Parish allows us to provide the Parish with the necessary knowledge of keeping the Project on schedule and within budget, adhering to the standards set forth by the Parish. BBEC can begin work immediately and devote the necessary manpower to continue with the work through completion within any reasonable schedule required by the Parish. BBEC has never failed to meet or exceed our clients' expectations on any of our projects.

The project generally includes data collection, surveying, modeling, project development, and potentially floodplain analysis. Factors related to our ability to perform is as follows:

- Much of the data collection will be performed within the Parish building using our GIS technicians, who are available now to perform the task. Including MSMM, we have two modeling personnel available to

review existing model data almost full time, with as needed assistance being provided by the others.

- Our surveyor has crews working in the area constantly, and we can provide them with the needed scope for collection and they can incorporate the scope into their day to day operations.

- Regarding modeling, we recently completed one modeling and master planning project in Jefferson Parish (in Lafitte, La.), and are in the middle of another Jefferson Parish modeling and master planning project (Bridge City / Avondale) which is scheduled for completion for May 2022. If selected, the project is not likely to start until May or June 2022. With two modelers available at inception, and others becoming available later, there will be no problems with getting the model developed, running, and calibrated within any reasonable time frame. Keep in mind that the East Bank of Jefferson Parish can be considered one big water shed, so too many modelers can be cumbersome when putting the overall model together.

- BBEC and MSMM have multiple design engineers experienced in developing drainage projects available to assist the modelers in the development of alternatives and correction projects.

- At the end of the project, if desired, BBEC can schedule into its efforts the needed specialists in floodplain management to assist the engineering staff as necessary. Our staff has two Certified Floodplain Managers onsite with a combined 45 years of experience; which includes the recent completion of providing Technical Assistance for the Community Rating System (CRS) and Hazard Mitigation Services for Jefferson Parish where we assisted with Education and Outreach project, activities to assist with meeting CRS points, edits and updates to flood maps, analysis of NFIP policies, and the planning process for the Parish's multi-jurisdictional Hazard Mitigation Plan.

3. LOCATION OF PRINCIPAL OFFICE WHERE WORK WILL BE PERFORMED:

BBEC and MSMM are based on the East Bank of Jefferson Parish; BHA maintains an office on the East Bank of Jefferson Parish, as well. All work will be performed in our Jefferson Parish offices.

4. ADVERSARIAL LEGAL PROCEEDINGS BETWEEN THE PARISH AND THE PERSON OR FIRM PERFORMING PROFESSIONAL SERVICES, IN WHICH THE PARISH PREVAILED, OR ANY ONGOING PROCEEDINGS BETWEEN PARISH AND THE PERSON OR FIRM:

BBEC's firm nor staff has had any litigation with Jefferson Parish.

5. PRIOR SUCCESSFUL COMPLETION OF THE PROJECTS OF THE TYPE AND NATURE OF THE ENGINEERING SERVICES, AS DEFINED, FOR WHICH FORM HAS PROVIDED VERIFIABLE REFERENCES:

We offer the following references that can attest to our previous work history regarding H&H modeling and master planning projects.

For Jefferson Parish drainage and H&H projects completed by BBEC inclusive of Waggaman Area Drainage Study, Bissonet Plaza Master Drainage Plan, Harvard Avenue Drainage Improvements, Cleary Avenue Roadway and Drainage Improvements, and Lake Avenue and Carrollton Avenue Drainage Study, we offer the following references:

- **Mitch Theriot, P.E., Director of Drainage Department • Jefferson Parish** • 1221 Elmwood Park Blvd.,
  Suite 907, Jefferson, LA. 70123 • 504-736-6751

- **Michelle Gonzales, CFM Director of Ecosystem and Coastal Management • Jefferson Parish •** 1221
  Elmwood Park Blvd., Suite 310, Jefferson, LA. 70123 • 504-736-6653
- **Neil Schneider, P.E., Director of Capital Projects • Jefferson Parish •** 1221 Elmwood Park Blvd., Suite
  906, Jefferson, LA. 70123 • 504-736-6833
- **Mark Drewes, Director of Public Works • Jefferson Parish •** 1221 Elmwood Park Blvd., Suite 904, Jefferson, LA. 70123 • 504-736-6783
- **Jeb Tate, Director of Electronic Information Systems • Jefferson Parish •** 1221 Elmwood Park Blvd., Suite 700, Jefferson, LA. 70123 • 504-736-6720

For recent projects we have performed that have similar detailed H&H modeling, master planning, and drainage project development aspects for other clients, we offer the following references:

- **Gina Hayes, Chief Administration Officer • St. Tammany Parish •** 21490 Koop Drive, Mandeville, LA 70471 • 985-898-2445
- **Miles Bingham, P.E., Director of Public Works • St. Charles Parish •** 15045 River Road, Hahnville, LA. 70057 • 504-736-8753
- **Guy McInnis, Parish President • St. Bernard Parish •** 8201 W. Judge Perez Drive, Chalmette, LA 70043
  • 504-278-4227
- **Nicole Cooper, Project Manager, Lafitte Area Independent Levee District • Town of Jean Lafitte • 2654 Jean Lafitte Blvd, Lafitte, LA 70067** • 504-689-2208

Relevant projects in addition to those described in Section L include:

H&H MODELING AND MASTER PLANNING OF DRAINAGE SYSTEMS

Cypress Park Subdivision Drainage Evaluation, St. Tammany Parish, LA, 11/2016-12/2017
BBEC performed a hydraulic and hydrologic study of the Erindale Heights and Cypress Park Subdivisions (about 450 acres of single-family residential property). The study consisted of developing a computer model of the hydrology and drainage system consisting of natural channels, open ditches, closed conduits, and culverts. BBEC evaluated the 5, 10, 25, 50, and 100-year storms, and developed several alternatives for addressing the flooding concerns. BBEC provided pros and cons, permitting concerns, and construction cost estimates related to the alternatives. The alternatives considered included elevation adjustments to open channels, increased closed conduit usage and size of existing closed conduits, levees, and pump stations.

HMGP Elevation of Coast Guard Road, Phase I (Project No. 1603x-075-0010), Plaquemines Parish, LA (Funding Source: FEMA Hazard Mitigation Grant Program), 09/2013-06/2016
Approximately 0.2 miles of the existing section of Coast Guard Road in Venice, beginning with its intersection with Tidewater Road, between longitude/latitude 29.258072/-89.367031 and 29.253624/-89.35847, was addressed under this project. The work included the design for the addition of appropriate earth materials to elevate the roadway base with stabilization from its current elevation of +3' NGVD to an elevation of +5' NGVD. In its previous condition, this roadway experienced overtopping with flood waters regularly whenever the stage of the Mississippi River at Venice exceeds +4' NGVD. Additionally, the existing drainage system was upgraded in order to increase the outflow capacity, replacing the current 24"/30" diameter piping with 36" piping.

In accordance with Executive Order 11988, Plaquemines Parish Government determined that the entirety of the project area is located within the 100-year floodplain, and in accordance with Executive Order 11990, that the project had the potential to impact the wetlands in the area.

Phase I of the HMGP Elevation of Coast Guard Road consisted of:

- Hydrologic and Hydraulic (H&H) study to identify the existing drainage system, the need for project upgrades, and the anticipated benefits to be derived from the proposed upgrades,
- Environmental review,
- Design the upgrades including the recommendations of the H&H Study and prepare the bid and construction documents, and
- Preliminary and revised cost estimates.

Bayou Gauche Drainage Analysis, St. Charles Parish, LA, 01/2003-12/2005
The project included updating the Parish's existing hydraulic and hydrologic computer models with current developments for the Sunset Drainage District watershed in St. Charles Parish. The Parish's existing HEC -1 and HEC-2 hydraulic models were evaluated and revised to include infrastructure improvements throughout the drainage district. The existing models were converted to HEC-RAS and HEC-HMS for use in this study and future evaluations. Model runs were performed to verify the need for drainage pump station improvements in the area and determine the improved capacity of the pump station.

Guichard Canal Area Drainage Evaluation, St. Bernard Parish, LA, 03/2004-04/2005
The project consisted of evaluating the ability of an existing drainage system to handle the 10-year storm for a 200-drainage basin in a residential area primarily consisting of open ditches and miscellaneous culverts with multiple outfalls into the Guichard Canal. The area is bounded by the Guichard Canal on the west, Paris Road on the east, Judge Perez Drive on the south, and Patricia Street on the north. The area also contained two drainage pump stations that were designed to drain the subsurface system, while the main volume of flow during the rain events utilized roadside ditches and some subsurface drain lines. BBEC developed a drainage layer in the Parish's GIS, surveyed elevations of the drainage features, developed a hydrologic and hydraulic model for the area, modeled the area and determined all deficient drain lines. BBEC made recommendations for the necessary improvements to cover the 10-year storm.

Plaza Drive Area Drainage Evaluation, St. Bernard Parish, LA, 2005
The project consisted of evaluating the ability of an existing drainage system to handle the 10-year storm for a 150-drainage basin in a residential area primarily consisting of open ditches and miscellaneous culverts with multiple outfalls into the drainage trunk line under Judge Perez Drive to the north and the drainage canal along St. Bernard Highway to the south. The area includes three parallel streets, including Plaza Drive. The area also contained two drainage pump stations that were designed to drain the subsurface system, while the main volume of flow during the rain events utilized roadside ditches and some subsurface drain lines. BBEC developed a drainage layer in the Parish's GIS, surveyed elevations of the drainage features, developed a hydrologic and hydraulic model for the area, modeled the area and determined all deficient drain lines. BBEC made recommendations for the necessary improvements to cover the 10-year storm.

DRAINAGE PROJECT ENGINEERING

The projects listed below demonstrate BBEC's staff vast experience with the design and construction of drainage facilities enabling them to develop realistic projects in a drainage master plan:

Westbank Mississippi River Bike Trail, Around Avondale Shipyard, (2017-059-RBP), Jefferson Parish, LA, 05/2018-Present
BBEC is currently working on detailed plans and specifications for the construction of the 2.5-mile bike path, part of which is on the top of the Mississippi River levee and the balance of which in on the shoulders of two state highways. A key component to BBEC's designs on the levee section is to maintain the integrity of the levee while constructing the base and asphalt bike path section with a limited width of top of levee. For the

state highway portion of the project, part of the project has asphalt shoulders in place, therefore only pavement markings and signage are required. In other locations, roadway widening and required subsurface drainage is necessary to install the bicycle travel lanes.

BBEC developed a hydraulic and hydrologic model to drain a 220-acre area. BBEC designed the drainage for the area, which includes a series of canals with 48-inch and double 48-inch culverts.

BBEC is currently coordinating its work with the LDOTD, the West Jefferson Levee District, the USACE through the levee district, and Union Pacific Railroad to obtain the necessary permits to perform the project. BBEC is also working with Jefferson Parish to determine the required right-of-way (ROW) so it could be acquired from the adjacent property owner(s).

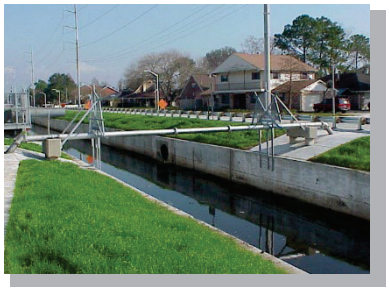
Once the design is complete, BBEC will perform bidding services, construction administration services, and resident inspection services for the construction project.

Design of Access Ways and Ladders at Drainage Pump Stations, Project No. 2014-022-DR, Jefferson Parish, LA, 11/2014-11/2019

The projects included the design of access ways and ladders at various drainage pump stations on the East bank and Westbank of Jefferson Parish identified as follows: Project I: Bondable, Elmwood, Estelle No. 1, Estelle No. 2, Hero, Lake Cataouche No. 2 and Westminster. Project II: Suburban, Duncan and Planters. Project III: Parish Line, Ames, Bayou Segnette, Mount Kennedy, Westwego No. 2 and Whitney-Barataria. Jefferson Parish determined the need for protected access ways and ladders at drainage pump stations to allow operators safe movement to outside equipment. BBEC prepared cost estimates and designed ladders, stairs, and elevated walkways in 16 drainage pump stations to connect elevated structures and allow personnel to access the top of structures within Jefferson Parish. Design included analysis and details to retrofit new items to existing structures. BBEC also performed Bidding, Construction Management, Resident Inspection and As-built services for Project I.

Manson Ditch and Lower Kraak Outfall System Improvements, Jefferson Parish, LA, 06/2004-09/2008

The scope of BBEC's work was to provide full engineering services, including evaluation of alternatives, preliminary design, final design, bidding, construction administration, resident inspection, and as-built drawing services, for the improvements to the Manson Ditch outfall into the West Metairie Avenue Canal. The project consisted of hydraulic modeling of drainage structures, design of drainage systems composed of cast-in-place concrete structures and pipe systems, connection to existing culverts, transition to existing canal banks, utility relocations, roadway and other site restoration, traffic maintenance and signal design, pavement striping, and all incidental work. Currently two large diameter drain lines (60-inch and 72-inch diameter) discharge into the West Metairie Canal culvert crossing under Cleary Avenue. The purpose of the project was to remove the connection and discharge the two drain lines directly into the canal, requiring an outfall structure. The outfall structure is designed to accept the two drain lines, connect to the existing two 96-inch diameter culverts, and be able to transition to a future 16-foot wide u-channel. Temporary bank stabilization is required until the future u-channel project is completed. Traffic flow on the two major arterial streets must always be maintained through construction of the project.



Ames Boulevard Roadside Drainage Improvements, Jefferson Parish, LA, 01/2004-12/2005

BBEC designed roadside drainage improvements along approximately 6,200 linear feet of Ames Boulevard in Jefferson Parish for this project. BBEC utilized TR-55 (computer model) to determine surface runoff for the drainage system. BBEC developed a computer model based on DOTD's spreadsheet to perform

the hydraulic design. The drainage pipe ranged from 15- to 36-inches in diameter. Round and arched pipe was installed; concrete and plastic materials were used. Project site provided limited space between the road and property lines because of its 40-foot ROW. Existing water, sewer, power, cable television, and telephone services were worked around.

West Napoleon Avenue Improvements, Cleary Avenue to Severn Avenue, (LA DOTD Project No. 742-07-0088), Jefferson Parish, LA, 02/2003-08/2005

BBEC performed construction administration services on this $11 million TIMED roadway and drainage project, which consisted of about 3,800 linear feet of four-lane concrete roadway divided by a new 30-foot wide concrete u-channel. BBEC coordinated with the private utility companies to relocate (or work around) natural gas pipelines and power and communication lines, overhead and buried, and coordinated construction and connection to public utilities (water and sewer) as well. BBEC reviewed and made recommendations regarding substitute materials and construction methods and monitored the contractors' accelerated operations that reduced the construction contract time from two and a half years to one and a half years. The project consisted of the design of three 9' x 9' box culverts (for a 250-foot box culvert crossing; design (roadway & culvert), construction administration services for about 3,500 linear feet of a new four-lane roadway construction with installation of 26 foot-wide concrete u-channel, traffic design & maintenance, utility relocations, resident inspection.

Drainage Pump Station Fuel Storage Secondary Containment, Jefferson Parish, LA, 09/2002-06/2004

BBEC designed secondary containment systems to contain diesel fuel at 11 west bank drainage pump stations so that the fuel from the largest storage tank on the site would be retained in the event of a diesel fuel spill. BBEC developed details for containment systems such as concrete retaining walls for tanks farms stored on existing slabs, and lining systems for earthen containment ponds if the slab option did not provide enough volume. BBEC provided the details to the Drainage Department, who in-turn advertised the work for public bid as funding allowed and administered the work through construction.

CN Railroad Culverts in Ormond, Project No. P200801, Ordinance No. 20-9-5, St. Charles Parish, LA, 10/2020 – Present

BBEC is performing engineering services related to improving the drainage systems crossing Canadian National (CN) Railroad System on the east bank of St. Charles Parish. The project includes the drainage facilities crossing and/or adjacent to the CN railroad at Ducayet Drive, Ormond Oaks Drive, Destrehan Drive, Longview Drive, Longwood Drive, and S. Destrehan Avenue. The project includes the installation of (6) 60-inch culverts, (2) 54-inch culverts, and (1) 48-inch culvert crossing the railroad at various locations. The project also includes the installation of 60-inch drainpipe, cast-in-place concrete box culverts, u-channels, and other drainage structures. BBEC is performing design, construction management, and permitting of the project. BBEC is also coordinating with and managing the surveying, and geotechnical engineering services.

Gloria Drive Pump Station, Project No. 20-2022A, Lafitte Area Independent Levee District Drainage, Town of Jean Lafitte, LA, 05/2020-Present

BBEC is providing Design Engineering Services for the Gloria Drive Pump Station Improvement Project which consists of expanding the existing pump station by doubling its capacity from 45 cfs to 90 cfs.

The existing pump station has one pump on a pile supported structure, adjacent to an existing levee. The existing pump discharge pipe runs through the levee, discharging on the other side. On the pump station side, the levee is supported by a timber bulkhead, part of which has deteriorated over time. When constructed, the levee project provided for a second pipe penetration in anticipation of this project. The pump station has an existing stand-by generator, which was appropriately sized for the single pump.

The proposed scope of the 45 cfs expansion includes:

- Installing a new 45 cfs pump in line with the second discharge pipe provided by the levee project
- Constructing a new reinforced concrete pump station structure for both pumps, with bar screens (mechanical if funding allows) at the entrance. The new structure will replace the deteriorating timber bulkhead, as well.
- Repairing or replacing the timber bulkhead wall not addressed by the pump station structure.
- Installing a new generator structure and generator sized to run both pumps and incidental equipment.
- Extending the new pump discharge pipe as required and providing for scour protection at the outfall.
- Building the project in phases to utilize the existing pump during construction or providing temporary pumping during construction.

Drainage Pumping Stations Improvements, St. Bernard Parish, LA, 2005
BBEC evaluated the condition and performance of 18 existing drainage pump stations in St. Bernard Parish and made recommendations for improvements. The evaluation consisted of site visits to observe condition and make test pump runs to measure performance, developing computer models to evaluate alternatives for improvements, perform hydrologic analysis to determine required capacity, and evaluate costs of improvements to arrive at the most cost effective improvements. BBEC prepared plans and specifications for several stations.

Primrose Box Culverts, St. Charles Parish, LA, 03/2004-10/2004
BBEC performed preliminary and final design, construction related services, administration, and resident inspection services for three 24-foot clear span box culverts and related road/drive restoration.

Boutte Drainage Improvements, St. Charles Parish, LA, 09/2002-05/2004

The project consisted of design and construction related services for 2,000 linear feet of 15-inch to 30-inch drainpipe along US Highway 90, including roadway and parking lot restoration. TR-55 (computer model) was used to determine the watershed's runoff. Hydraulic calculations were performed by hand.

OPERATION AND MAINTENANCE (O&M)

O&M concerns may be incorporated into a comprehensive drainage masterplan. If desired, Mr. Bonura has experience with O&M projects such as canal bottom right-of-way surveys and the parish-wide drain line cleaning programs as shown in the following projects:

Canal Monumentation Program, Jefferson Parish, LA, 01/2004-12/2005
BBEC worked with the Parish's Drainage Department to develop and implement a canal monumentation project for the entire Parish. The project included stationing the canals with vertical and horizontal monuments strategically located, locating right of way and servitude information, researching existing data and projects for data relevant to the project such as current or past projects, subdivision plats, the Parish's GIS, and other information available for the implementation of the project.

Parish-Wide Drain Line Cleaning – Phase 2, St. Bernard Parish, LA, 2007
Following Hurricane Katrina, while BBEC was managing and administering an emergency drain line cleaning contract, BBEC developed bid documents to publicly bid a drain line cleaning contract to complete the cleaning of all Parish drain lines not covered by the emergency contract (Phase 1). BBEC assisted the Parish

through the Public Bid process to obtain a new contractor. BBEC utilized the Parish's existing GIS system to accurately track and report progress, and to verify that work performed under Phase 1 was not duplicated under Phase 2. BBEC worked with the Parish and FEMA to obtain FEMA Public Assistance eligibility determinations and assisted the Parish in securing FEMA funding to cover the project costs.

Parish-Wide Drain Line Cleaning – Phase I, St. Bernard Parish, LA, 2005

Immediately following Hurricane Katrina many of the Parish's streets were flooded and had difficulty draining due to the storm debris clogging its drainage system. The Parish issued an emergency contract for debris removal services, including the removal of debris from Parish drain lines. BBEC immediately issued work orders to the contractor to remove the debris and restore drainage, and monitored the work being performed. BBEC utilized the Parish's existing GIS system to accurately track and report progress. BBEC worked with the Parish and FEMA to obtain FEMA Public Assistance eligibility determinations and assisted the Parish in securing $9.3 million in FEMA funding to cover the project costs. Mr. Bonura managed the project though completion, including developing the necessary work orders and field protocol for resident inspection and quality control, overseeing the document control and invoice review in the office, coordination of disposal sites, and contract compliance.

GIS SERVICES

BBEC has been performing general GIS services for Jefferson Parish for over 20 years. While much of the services addressed other utilities, parcel and subdivision mapping, database and software licensing and upgrades, BBEC performed drainage specific projects relevant to drainage modeling and master planning:

- BBEC assisted the Department develop the drainage layer, adding drainage structures from aerial photography and developing the subsurface piping network from the Parish's paper unit sheets.
- BBEC assisted the Parish develop its canal monumentation project by managing the survey and abstracting effort to identify many of the Parish canals' right-of-way boundaries, and installed x, y, z survey monuments for use by the maintenance crews.
- BBEC assisted and continues to assist the Parish in updating its aerial photography and LIDAR information, whether Parish funded or obtained from other agencies.

6. SIZE OF FIRM, CONSIDERING NUMBER OF PROFESSIONAL AND SUPPORT PERSONNEL REQUIRED TO PERFORM THE TYPE OF ENGINEERING TASKS:

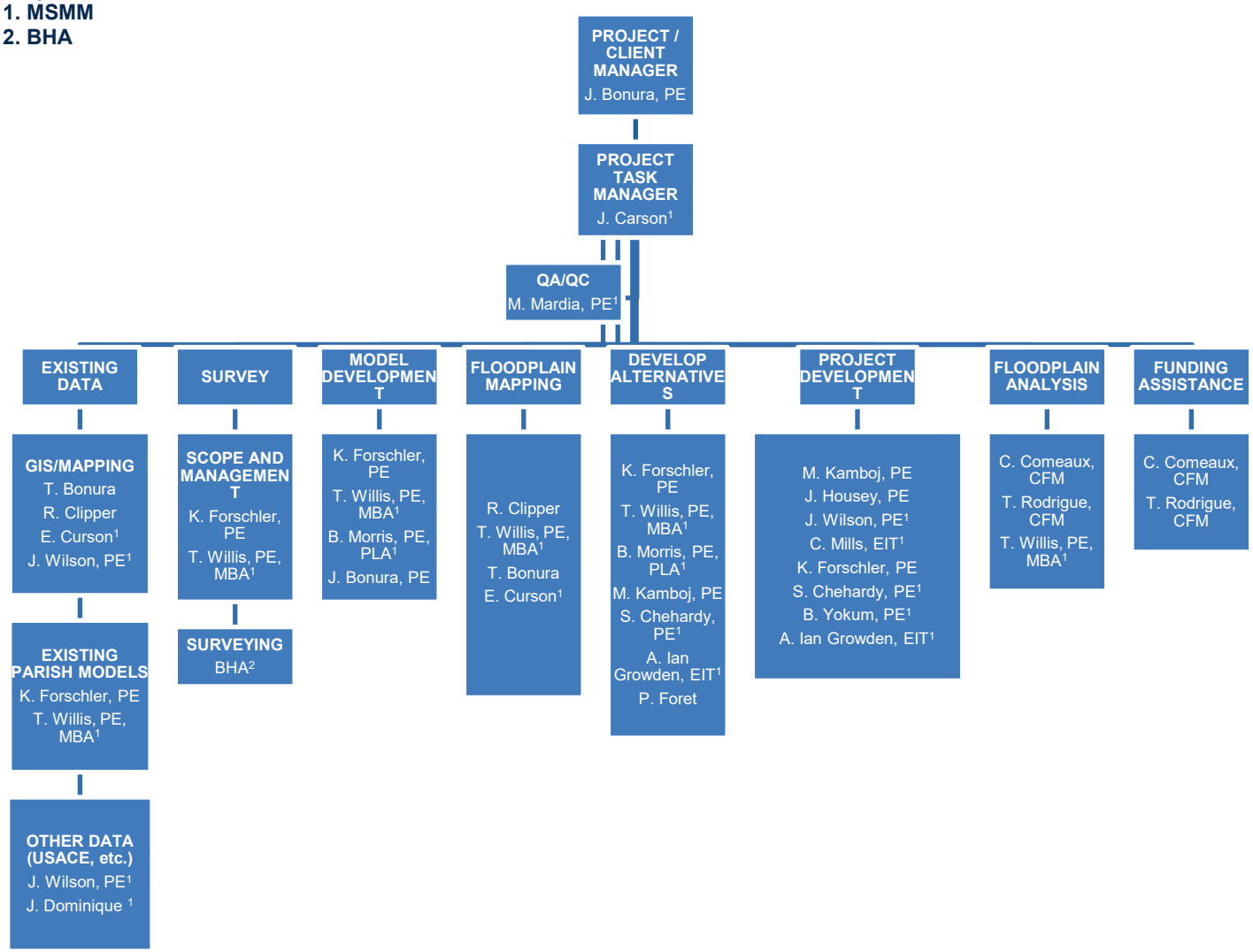
The firm's staff consists of 19 professional, technical, and clerical personnel capable of handling all project and administrative tasks; all of which are available to work on the project. Recognizing the project could require additional staff with specific knowledge and experience with Jefferson Parish's drainage system, and the modeling thereof, BBEC teamed with MSMM to complement our staff.

For this project, we envision a project start near June or July of 2022, allowing time for selection, contract negotiation, and contract signing. We expect the project to require an overall project/client manager, a individual task manager, (2) GIS Technicians used periodically, as needed, (2) H&H modelers, (2) drainage project engineers, and support staff. BBEC will provide the project manager, one modeler, and the GIS Technicians and support staff as needed. MSMM will provide the other needed personnel. Mr. Bonura will manage the project through completion, making sure that all requirements of the project are met.

An organizational chart of the expected effort is on the following page.

TEC Professional Services Questionnaire

Key:
1. MSMM
2. BHA



7. PAST PERFORMANCE BY PERSON OR FIRM ON PARISH CONTRACTS:

Our proposed Project Manager performed several drainage model and master planning projects for Jefferson Parish, namely, Harvard Avenue Drainage, Bucktown Drainage, Cleary Avenue Drainage, and Waggaman Drainage (on-going). Mr. Bonura also managed the parish-wide drainage model for St. Bernard Parish to update its FIRMs and performed similar multi-subdivisions drainage model and master planning project for other parishes. Kevin Forschler has modeling experience, working on many of the projects with Mr. Bonura. Mr. Forschler also performed BBEC's portion of the Bissonet Drainage Master Plan in gathering data, reviewing the Parish's existing SWMM model, and developing the existing conditions model for the watershed. Mr. Forschler is currently performing the modeling and master planning services for the Avondale/Bridge City project, too.

Our GIS staff has been working within the Parish's GIS for over 20 years, including developing the floodplain maps for the Parish's flood insurance rate map update in 2008. Our GIS staff did the same mapping for our FIRM update project for St. Bernard Parish

Previous relevant projects completed by BBEC specifically for Jefferson Parish include:

- Ames Boulevard Roadside Drainage Improvements, Jefferson Parish, LA, 01/2004-12/2005
- Canal Monumentation Program, Jefferson Parish, LA, 01/2004-12/2005
- Lake Avenue and Carrollton Avenue (Bucktown) Drainage Study, Jefferson Parish, LA, 04/2003-07/2005
- Cleary Avenue Roadway and Drainage Improvements, Jefferson Parish, LA, 01/1998-06/2005
- Harvard Avenue Drainage Improvements, Project No 99-046-DR and 99-046A-DR, (Funding Source: Community Development Block Grant), Jefferson Parish, LA 04/2000-06/2006
- Waggaman Area Drainage Study (Project No. 2011-03-DR), Jefferson Parish, LA, 02/2013-01/2016
- 2014 Hazard Mitigation Assistance (HMA) Grant Management Services, Jefferson Parish, LA, 04/2015-04/2019
- Technical Assistance for Floodplain Management, Community Rating System and Hazard Mitigation Related Services (Project No. 0352), Jefferson Parish, LA, 01/2017-06/2020
- Drainage Pump Station Fuel Storage Secondary Containment, Jefferson Parish, LA, 09/2002-06/2004
- Labarre Road Back-to-Back U-Turn Intersection Improvements (West Esplanade Avenue/North Labarre Road), Jefferson Parish, LA, 2004
- Manson Ditch and Lower Kraak Outfall System Improvements, Jefferson Parish, LA, 06/2004-09/2008
- West Napoleon Avenue Improvements, Cleary Avenue to Severn Avenue, (LA DOTD Project No. 742-07-0088), Jefferson Parish, LA, 02/2003-08/2005
- Design of Access Ways and Ladders at Drainage Pump Stations, Project No. 2014-022-DR, Jefferson Parish, LA
- Sanitary Landfill Stormwater Detention, Jefferson Parish, LA, 1998
- Underground Storage Tank Improvements Program, Jefferson Parish, LA, 1995
- Digital Flood Insurance Rate Map, Jefferson Parish, LA, 03/2005-12/2008

BBEC performed many other engineering projects for Jefferson Parish unrelated to drainage; therefore, they are not listed.

8. ADDITIONAL MASTER PLAN FUNCTIONS:

Should the Parish decide to utilize BBEC's abilities towards hazard mitigation planning and funding assistance, we have the following experience:

FEMA HM OPTIONS AND GRANT OPPORTUNITIES

BBEC's development of applications for and management of prior HMA grants, including HMGP, FMA, PDM, and BRIC grants, affords it the knowledge of the needs of the Parish and its constituents. BBEC's experience makes it particularly well-suited for working with staff of the Parish's Drainage and Floodplain Management Departments to leverage funding from various grant sources to assist, implement, and manage grant awards for hazard mitigation activities. BBEC has worked closely with Floodplain Management personnel since 2015 in various capacities, assisting the Parish with grant administration and hazard mitigation planning of several projects.

For projects that address critical facilities and infrastructure, BBEC's dedicated and licensed engineering staff will work with Parish departments and managers to identify areas of interest and need. BBEC will work directly with Parish officials to determine the anticipated timeline for any hazard mitigation and resiliency activities and to prepare a comprehensive project plan that will effectively implement the Parish's goals for hazard mitigation and resiliency as demonstrated in its Multi-Jurisdictional Hazard Mitigation Plan. BBEC has worked with local governments and their Capital Projects staff to assist with the Benefit Cost Analysis of several projects that FEMA had determined were not cost reasonable. BBEC worked with department staff

and the assigned project engineer to collect data, analyze the results, and then prepare and justify a benefit cost analysis that would meet FEMA's requirements of at least a 1:1 ratio between project costs and benefits. This has resulted in the FEMA's approval of nearly $100 million in construction costs for the City of New Orleans.

CRS IMPACTS

The BBEC team possesses expert knowledge in the Community Rating System (CRS) area, as one of our staff members, Mr. Thomas Rodrigue, was the former CRS coordinator for Jefferson Parish from May 2001 to December 2010. His experience, understanding of the program, and various contacts established during his time with the Parish would be instrumental in assisting the Parish in future endeavors with this program. We believe that we possess the ability for our staff to make the necessary recommendations for changes to projects to improve the Parish's ability to increase its compliance with CRS and its ever-changing requirements to maintain participation at its various levels.

O. To the best of my knowledge, the foregoing is an accurate statement of facts.

Signature: _____ **Print Name:** Jeffrey Bonura, P.E.

Title: Member **Date:** March 23, 2022

MSMM ENGINEERING, LLC

TEC Professional Services Questionnaire for

H&H MODELING

MASTER PLAN DEVELOPMENT

MSMM ENGINEERING, L.L.C.

4508 S. CLEARVIEW PKWY., SUITE C

METAIRIE, LA 70006

Manish Mardia, P.E.
President
Office: (504) 570-6098
Email: mmardia@msmmeng.com

TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

Statement of Qualifications to Provide Professional Engineering and Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish, Resolution No. 138896

B. Firm Name & Address where Project work will be performed:

MSMM ENGINEERING, LLC

4508 Clearview Parkway, Suite C
Metairie, Louisiana 70006

C. Name, title & contact information of Principal, as defined in Section 2-926 of the Jefferson Parish Code of Ordinances, who is a registered, licensed architect, professional engineer, or surveyor in the state of Louisiana:

Manish Mardia, P.E., President
mmardia@msmmeng.com
(504) 559-1897

D. Name and contact information of employee who is a registered and licensed architect, professional engineer, or surveyor in the State of Louisiana in the applicable discipline. A subcontractor may be substituted here only if the advertised Project requires more than one discipline.

Manish Mardia, P.E., President
mmardia@msmmeng.com
(504) 559-1897

E. Please provide the number of employees whose primary function corresponds with each category:

1	Administrative	3	Estimators		Specification Writers
1	Architects (Licensed)		Geologists	2	Structural Engineers
	Chemical Engineers		Geotechnical Engineers		Graduate Engineers
5	Civil Engineers		Interior Designers	5	Project Managers
7	Construction Inspectors	1	Landscape Architects		Clerical
	Ecologists		Land Surveyor		Grant/Funding Specialist
1	Electrical Engineers		Mechanical Engineers		Sanitary Engineers
2	Engineer Intern	2	Environmental Engineers	1	Administrative/Accounting
	Professional Land Surveyors	3	CAD Draftsman	30	**TOTAL**
	Environmental Scientist		Transportation Engineer		

F. Is this submittal by a JOINT-VENTURE? Please check:

YES ☐ NO [X]

If marked "No" skip to Section I. If marked "Yes" complete Sections G-H.

General Professional Services Questionnaire

G. If submittal is by JOINT-VENTURE, list the firms participating and outline specific area of responsibility (including administrative, technical, and financial) for each firm. Please attach additional pages if necessary.

1. Not Applicable

2.

H. Has this JOINT-VENTURE previously worked together? Please check:
YES ☐ NO X

I. List all subcontractors anticipated for this Project. Please note that all subcontractors must submit a fully completed copy of this questionnaire, applicable licenses, and any other information required by the advertisement. See Jefferson parish Code of Ordinances, Sec. 2-928(a)(3). Please attach additional pages if necessary.

Name & Address:	Specialty	Worked with Firm Before (Yes or No):
1. Please Refer to Prime Consultants Submittal		
2.		
3.		

J. Please specify the total number of support personnel that may assist in the completion of this Project:

15

TEC Professional Services Questionnaire

PROFESSIONAL IN CHARGE OF PROJECT:
Name & Title:
Manish Mardia, P.E. President
Project Assignment:
Quality Control Manager
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
11 (2011)
Education: Degree(s)/Year/Specialization:
M.S. in Civil Engineering, 1994, Louisiana State University B.S. in Civil Engineering, 1990, University of Jodhpur
Active registration: Year first registered/discipline:
Year First Registered: 1999 Discipline: Environmental State: Louisiana License No.: 28482 *Also registered in Mississippi (18522)*
Other experiences and qualifications relevant to the proposed Project:
Manish Mardia is a registered professional civil and environmental engineer; and is the President of MSMM Engineering, LLC. He is an experienced engineering manager and principal with twenty-six (26) years of experience in managing and designing public works projects for Jefferson Parish, municipalities in the greater New Orleans area, and the United States Army Corps of Engineers (USACE). His experience includes drainage pump station evaluation and design, drainage evaluation, hydraulic modeling, levee design, T-wall design, roadway, and utility design. Mr. Mardia has worked *on more than* ***200 projects for various departments of Jefferson Parish*****.** These projects were successfully completed on time and schedule. Projects Mr. Mardia has designed and provided quality control on range from Master Plan Development, Drainage Pump Station Evaluation and Design, Drainage Evaluation and Modeling, Infiltration and Inflow Evaluation and Project Alternative Development; Water Treatment and Collection; Wastewater Collection, Distribution and Treatment; Street and Roadways Design; and Landfill Design and Permitting. ***Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA*** MSMM was tasked with developing an existing conditions Hydrologic and Hydraulic model for the new Port of New Orleans located in St. Bernard Parish. The site contains approximately 450 acres and will be utilized as an intermodal facility with ship, barge, rail, and truck traffic. The existing storage areas were modeled as subbasins in the HEC-HMS Version 3.5 (USACE 2010) and the 10-, 2-, 1-, and 0.2-percent annual chance event discharges for theses recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models.

PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Manish Mardia, P.E.
President

Frequency-based synthetic rainfall was used for each subbasin within a polder and the annual chance storm events were estimated using information obtained from the National Weather Service's (NWS) Technical Memorandum HYDRO-35 (NOAA 1977), and the South-eastern Regional Climatic Center (SRCC) Technical Report 97-1.

The hydrologic analyses for this project used rainfall runoff modeling using HEC-HMS to develop flow hydrographs which were used in unsteady HEC-RAS models. The final hydrograph output was a flow hydrograph as opposed to a single flow value. Therefore, rather than provide tables with the flow hydrograph information at various locations, the user is referred to the digital HEC-HMS model output that contains all the flow hydrograph discharges.

Utilizing the selected alternative for the Proposed Full-Build Terminal Design facility and infrastructure plans, MSMM has also developed a "Proposed Conditions SWMM Model" that includes proposed drainage features (location/size of pump stations, detention pond sizing, major canals, major culverts) necessary for the Full-Build Terminal Design. MSMM will make modifications to the Proposed Conditions SWMM Model to determine solutions to drainage problems within the studied area such that the post-development drainage flow stage, peak and volume characteristics are the same as the predevelopment drainage characteristics. The modifications will include alternate solutions for storm routing (including hydraulic grade line analysis), proper sizing of detention basins, pumping adjustments including supplemental pumping at existing stations and construction of additional pumping facilities to Violet Canal and the Mississippi River.

Mr. Mardia is the Quality Control Manager for this effort. He reviewed modeling outputs, the draft modeling document and compared the project deliverables with the scope of the task order and the needs of the Port of New Orleans.

Jefferson Parish Watershed Master Planning, Jefferson Parish, LA

Through the Federal Silver Jackets Program at the USACE New Orleans District, MSMM is completing a detailed hydraulic analysis and watershed master planning document for Jefferson Parish. Utilizing the parish's existing SWMM models, MSMM adjusted input parameters for rising sea levels, changing storm patterns as projected in the NOAA Atlas 14 rain models, and changing development plans as projected in the Jefferson Parish future land use plan. The output from this modeling effort was then quantified in terms of water surface elevation changes.

Utilizing modeling results, FEMA CRS guidance criteria, Jefferson Parish planning studies, input from the parish, and MSMM broad experience from previous drainage and flood studies; a series of recommended watershed management strategies were developed. These recommendations ranged from proposed implementation of standard low impact development principles, such as use of permeable pavements and bio-swales, to specific unique recommendations for Jefferson Parish watershed management regarding pump maintenance considerations, generation capacity and levee resiliency planning.

Mr. Mardia was the Quality Control Manager for this effort. He reviewed modeling outputs, the draft master plan document and compared the project deliverables with the scope of the task order and the needs of

PROFESSIONAL IN CHARGE OF PROJECT:

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Manish Mardia, P.E.
President

Jefferson Parish.

Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA

In early 2017, following repetitive street flooding in the Coventry Court area of River Ridge, MSMM Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated. In 2018, the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area.

As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM investigate and determine the feasibility of providing improved drainage. The investigation consisted of the following:

- Evaluation Phase/Data Review – collection and analysis of existing information
- Field Reconnaissance and Preliminary Survey – collection of relevant field information
- Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events.
- Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials
- Development of a Prioritized List of Recommendations – the alternatives developed were prioritized based on our engineering recommendations.

MSMM is the only entity to envision and develop the Coventry Court drainage pump station concept. The final report was completed in less than 6 months, and the final recommendation is to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge force main placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes.

Mr. Mardia was responsible for the overall QA/QC on this project. He worked with the administration and Councilman's office to identify a tangible project that would not only reduce drainage impacts in this River Ridge neighborhood by completing a master drainage plan document and identifying an alternative that could fit within the available Parish funding.

Woodlake Estates/Seton Park Subdivision Drainage Pump Station, Jefferson Parish, LA

MSMM was tasked by the Jefferson Parish council to evaluate drainage pump station alternatives to solve the issue of long-term flooding in within the Woodlake and Seton Park neighborhoods within the City of Kenner. In 2018, MSMM completed a feasibility study that developed multiple drainage pump station alternatives which bypass the capacity limitations of the canals and alleviate stormwater flooding in the area. At the completion of the feasibility report, the following alternatives were identified:

PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Manish Mardia, P.E.
President

- A new drainage pump station at the corner of Canal 17 and Canal 7 (west end of Joe Yenni Blvd.), a discharge force main westward, with a discharge basin in the West Return Canal.
- A new drainage pump station at the northeast corner of Vintage Drive and Platt Street on Canal 17, a discharge force main westward, with a discharge basin in the West Return Canal.
- A new inline drainage pump station at or near the corner of Canal 17 and Canal 7 with discharge into the canals and also with a discharge force main westwards to a discharge basin in the West Return Canal

Mr. Mardia provided the program management for the feasibility study. He led the team through the evaluation process that was based on the following considerations: Constructability, Hydraulic Modeling, Property Availability, Permit Concerns and Cost. The team decided that the inline station was the best solution, as it directly benefits the Woodlake Estates and Seton Park subdivisions as the 120 cfs pump station will be the new outlet, therefore no longer relying on the canal system. Following selection of the preferred alternative and final compilation of the report; MSMM submitted the final report to the Jefferson Parish drainage department and council in 2018 and were approved to develop an application to the DOTD Statewide Flood Control program for disaster assistance. The statewide flood control application was submitted in 2018; MSMM is currently awaiting the construction funding to initiate design.

New Orleans International Airport Drainage Pump Station, Kenner, LA.

MSMM recently completed full engineering design services for a new 600 cfs drainage pump station and for all landside drainage, as part of constructing the new airport terminal at the New Orleans International airport. The $45 million of drainage mitigation design involved successfully delivering a true multi-disciplinary effort spanning civil, structural, electrical, mechanical and environmental engineering, hydraulic modeling (HEC-HMS and HEC-RAS), architectural services, cost estimating, environmental permitting, drafting (CAD, Civil 3D, REVIT, GIS), and agency coordination (USACE, CPRA, EJLD, SLFPA-E, LDNR, Entergy, City of New Orleans, City of Kenner, and Jefferson Parish). The station was designed to contain four 150 cfs pumps with 900 HP motors. As part of the pump station design, MSMM tasks required successfully negotiating the challenge of discharging stormwater over a hurricane protection flood wall. Project tasks included: Coordinating with USACE to obtain approval to run more than 4,000 ft. of steel discharge pipes over the floodwall (required Section 408 permitting), developing detailed structural design calculations, design and drafting for several structural elements including sheet pile cutoff walls, sheet pile TRS system, scour protection, a reinforced box culvert; as well as, coordination and permitting with the levee board and CPRA to secure the crucial clearances.

The landside drainage design effort required continuous close coordination with the program management team and design team to coordinate roadway drainage, terminal, and apron design. This required extreme flexibility and adaptability to incorporate numerous changes to other designs into the drainage design via multiple hydraulic modeling exercises, and multiple pipe networking and sizing. More than 5 miles of drainage piping (size range of 15” to 72” diameter), open channels and box culverts were designed to route stormwater flow from the terminal to the discharge points.

Mr. Mardia served as the Program Manager for the project. His duties included: handling the sensitive issue of operation and control of the pump station. This sensitivity of this subject became apparent due to the separate

PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Manish Mardia, P.E.
President

and unique demands of multiple entities – Jefferson Parish, City of Kenner, and the airport. Mr. Mardia's vast experience with local drainage work, decades of relationships with local administrations and public works directors, and intimate knowledge of the Jefferson Parish drainage system was utilized to establish a path forward that was agreed to by all agencies. Mr. Mardia was responsible for ensuring the design produced by the MSMM team were in compliance with the Design Quality Review Plan and met regularly with the client to ensure the MSMM design was consistent with the overall airport effort.

Clearview Drainage Pump Station, St. Peter's Ditch Improvements – Phase 4, Jefferson Parish, LA.

MSMM engineering staff provided complete design services for a 220 cfs drainage pump station located within the DOTD Right-of-Way of the Clearview Parkway/Earhart Expressway interchange. The goal of this pump station was to pump stormwater runoff from the existing detention pond network, over Cross Canal, and discharge directly into the improved St. Peter's Ditch (box culvert). The project required multiple disciplines including civil, structural, electrical, and mechanical engineering, as well as cost estimating and drafting (CAD). The pump station structure contained three 75 cfs vertical lift pumps with 250 HP motors and several hundred feet of 36" discharge piping. Additional features of the project included a pile supported reinforced concrete structure, sheet pile intake area, trash rake with conveyor, conditioned control building, generator, traffic detour plan, discharge pipe aerial canal crossing, utility relocations, and other related improvements. Mr. Mardia was the program manager, he led the overall design effort and worked with Parish officials to identify the initial problem, making the design and implementation of this project a reality.

Statewide Flood Control Program Grant Drainage Improvements, Kenner, LA

LDOTD's Statewide Flood Control Program grant funding was utilized to undertake stormwater drainage system improvements to two neighborhoods (University City and Audubon Place Subdivisions). The estimated project cost was $4.57 million, with a grant amount of $2.7 million. The project was conducted from beginning to conclusion, which included preparing the grant pre-application package, coordinating with the City and LDOTD staff, conducting hydraulic and hydrologic analyses (HYDRWIN and SWMM), communicating with LDOTD experts on the project's feasibility and technical merit, conducting multiple site visits with LDOTD experts and project staff to clarify project features, existing drainage infrastructure, and facilitating continuous communication with the City's elected representatives about the status of grant process. Through the course of this project, excellent working relationship was forged with LDOTD's SWFCP staff and experts. Significant coordination was required with LDOTD staff due to the unique drainage conditions in the New Orleans area and due to the SWMM models of the city's previous drainage master plan work required to be re-analyzed with LDOTD's HYDRWIN software. The project involved (i) installation of new subsurface drainage pipes and inlets along three city streets: (ii) upgrading of existing drainage features with larger subsurface pipes, inlets, and outfall pipe along three other city streets. The subsurface pipes ranged in size from small 18" diameter circular pipes to large 54"x88" arch pipes. Adjustment of sanitary sewer house connections, and numerous pavement restoration tasks were included in this project, as well. During this project continuous coordination with the DPW staff was required. Most of the drainage improvements under this project were derived from previously completed Master Drainage Plan, the new improvements were compared with the Master Drainage Plan to ensure that no conflicts arise. Mr. Mardia served as the quality control manager for this project. He coordinated the drainage evaluation and design with DOTD, and reviewed the final P&S.

TEC Professional Services Questionnaire

KEY PERSON:
Name & Title:
Thomas M. Willis, P.E., MBA H&H Engineer
Project Assignment:
Hydraulic and Hydrologic Engineer
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
10 (2012)
Education: Degree(s)/Year/Specialization:
M.B.A., 1989, Louisiana State University B.S., 1981, Civil Engineering, Louisiana State University
Active registration: Year first registered/discipline:
Year First Registered: 1991 Discipline: Civil and Environmental State: Louisiana License No.: 24205
Other experiences and qualifications relevant to the proposed Project:
Mr. Willis is a Senior Hydraulic Engineer with 40 years of experience. At MSMM he conducts civil engineering design and hydrologic and hydraulic (H&H) analyses of the stormwater drainage systems associated with roadways, bridges, highways, and airports in Southeast Louisiana. Mr. Willis has extensive experience with open channel hydraulics, channel restoration, geomorphology, hydrologic analyses, storm water analysis, master planning and design, bridge hydraulic and scour studies, and FEMA modeling and permitting. He is proficient in the use of EPA SWMM, HEC-RAS and HEC-HMS models. ***Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA*** MSMM was tasked with developing an existing conditions Hydrologic and Hydraulic model for the new Port of New Orleans located in St. Bernard Parish. The site contains approximately 450 acres and will be utilized as an intermodal facility with ship, barge, rail, and truck traffic. The existing storage areas were modeled as subbasins in the HEC-HMS Version 3.5 (USACE 2010) and the 10-, 2-, 1-, and 0.2-percent annual chance event discharges for theses recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models. Frequency-based synthetic rainfall was used for each subbasin within a polder and the annual chance storm events were estimated using information obtained from the National Weather Service's (NWS) Technical Memorandum HYDRO-35 (NOAA 1977), and the South-eastern Regional Climatic Center (SRCC) Technical Report 97-1. The hydrologic analyses for this project used rainfall runoff modeling using HEC-HMS to develop flow hydrographs which were used in unsteady HEC-RAS models. The final hydrograph output was a flow

hydrograph as opposed to a single flow value. Therefore, rather than provide tables with the flow hydrograph information at various locations, the user is referred to the digital HEC-HMS model output that contains all the flow hydrograph discharges.

Utilizing the selected alternative for the Proposed Full-Build Terminal Design facility and infrastructure plans, MSMM has also developed a "Proposed Conditions SWMM Model" that includes proposed drainage features (location/size of pump stations, detention pond sizing, major canals, major culverts) necessary for the Full-Build Terminal Design. MSMM will make modifications to the Proposed Conditions SWMM Model to determine solutions to drainage problems within the studied area such that the post-development drainage flow stage, peak and volume characteristics are the same as the predevelopment drainage characteristics. The modifications will include alternate solutions for storm routing (including hydraulic grade line analysis), proper sizing of detention basins, pumping adjustments including supplemental pumping at existing stations and construction of additional pumping facilities to Violet Canal and the Mississippi River.

Mr. Willis is working alongside Mr. Cecil Soileau to develop the model, develop the modeling outputs and write the modeling portion of the engineering report.

Stormwater Watershed Management Plan, Jefferson Parish, LA

The purpose of this Watershed Management Plan (WMP) is to provide an assessment of how flood stages will be affected by projected changes in future rain and sea-level conditions and to recommend strategies for mitigating increased flood loss damages caused by the projected environmental changes and by redevelopment and new development in the Jefferson Parish area watersheds. Mr. Willis performed the hydraulic modeling utilizing the **EPA SWMM** model to determine the existing and future conditions on over 50-percent of the Parish inside the levees for the 10-year, 25-year and 100-year storm events. SWMM models of the Jefferson Parish Eastbank and Catouatche Polder were analyzed individually. The combined areas of the two polders exceeded the inside the levee area criteria of 50-percent. Comparative future conditions were assessed using **Technical Paper 40 versus NOAA's 2100 intermediate Sea Level Rise Project** which anticipates a 5.8-feet rise in sea level. Future lands use was based on the newly updated Jefferson Parish Edge 2040 land use information. **The Parish EPA SWMM numerical hydrologic-hydraulic models were used in assessing impacts**. The model analysis indicated that the existing pump system has sufficient capacity to maintain near-present water surfaces despite rising sea levels, but the percent utilization and power usage are increased so that maintenance wear and tear, and power provisions should be considered. Based on the findings of the SWMM model analyses, Mr. Willis made recommendations for future development and redevelopment to ensure that peak stages for the 10-year, 25-year, and 100-year storm events are not increased.

Southern University Drainage Outfall Ravine and Riverbank Instability Study, Baton Rouge, LA

Conditions at Southern University Baton Rouge Campus threaten human safety and guarantee serious losses of historic oaks, architecture, and vital utility systems unless action is taken to stop eroding conditions on the campus. MSMM was contracted by the U.S. Army Corps of Engineers under the USACE Planning Assistance to States (PAS) program to develop a framework for addressing these problems. This report was developed from a planning, hydrology, and hydraulics analyses perspective to consider the origins and effects of storm and

KEY PERSON:
Name & Title:
Thomas M. Willis, P.E., MBA H&H Engineer

surface waters on the campus. With emphasis given to addressing the concerns of the University facility management, the charge given for this project was to identify consequential stream and bank instability and deterioration, with a focus on the lower reach of the ravine and the University bluff area facing the river. The desired deliverable for this project was a list of discrete problem areas which could be identified as separate projects for funding, analysis, and implementation of construction alternatives. The problem areas, the failure modes, and the effects of that failure were identified for each of these projects. An alternative approach for each project was developed with calculation of rough order of magnitude costs for design and construction. Alternatives provided were not
embellished; but, with the exception of general ravine channel degradation, they were designed to be holistic, long-term, and sustainable in the sense that they will arrest the active failure forces without requiring follow-up projects or excessive special maintenance.

Mr. Willis ran the HEC-RAS model and developed project alternatives design to address erosion problems at the following areas on campus: Scott's Bluff bank erosion, Army and Navy ROTC sink-holes, paving repairs and ravine side deterioration area, Baranco-Hill health center perimeter and outfall bank land-loss areas and the outfall ravine lower reach channel degradation area.

Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA

In early 2017, following repetitive street flooding in the Coventry Court area of River Ridge, MSMM Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated. In 2018, the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area.

As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM investigate and determine the feasibility of providing improved drainage. The investigation consisted of the following:

- Evaluation Phase/Data Review – collection and analysis of existing information
- Field Reconnaissance and Preliminary Survey – collection of relevant field information
- Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events.
- Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials
- Development of a Prioritized List of Recommendations – the alternatives developed were prioritized based on our engineering recommendations.

MSMM is the only entity to envision and develop the Coventry Court drainage pump station concept. The final report was completed in less than 6 months, and the final recommendation is to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge forcemain placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream

conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes.

Mr. Willis was the lead hydraulic modeler for the feasibility study. He worked directly with Mr. Jim Wilson to model the alternatives that were developed. Mr. Willis ran multiple model iterations and incorporated multiple streets within the project area. Through Mr. Willis modeling efforts, MSMM was able to provide Jefferson Parish with a conceptual level project that will bring extensive flood relief to the Coventry Court area.

New Orleans Airport Drainage Study, Kenner, LA.

MSMM was 100% responsible for the design and construction administration for the entire landside drainage system including over 37,000 linear feet of storm sewers ranging in sizes from 12" to 72", over 600 drainage structures, box culverts and headwalls for the New North Terminal. MSMM also modelled and designed improvements to Canal 15 (including open channel improvements), box culvert under Taxiway C, connection to the Butler Canal, rip-rapped scour basins, and backflow preventers. MSMM coordinated with the roadway designer to establish top of casting elevations and curb inlet spacing, as well as, providing tie-in structures for the elevated roadway drainage and terminal building roof drains.

Landside drainage design was based upon a drainage model for combined Phase 1, 2, and catchup conditions to accommodate the construction of the new terminal. MSMM updated hydrologic characteristics (Tc, impervious area, runoff coefficients, etc.), evaluated and designed outfall routing to Canal 15, and outfall pipe to Butler (located north of Taxiway G). MSMM also designed required drainage improvements to connections to Canal 15 and to Butler Canal. The drainage design efforts involved updating CAD, GIS model mapping of boundaries for dry conditions, and for frequency dependent shifting boundaries. We identified area adjustments to boundaries used in Jefferson Parish HECHMS/HECRAS model, which was used for FEMA 100-Year flood plain analysis and airport improvement study communications. Hydrological analysis included use of Rational Method for storm drains, NRCS TR55 for culvert, channel capacity, HEC-HMS for overall check to Jefferson Parish Canal Pump system, and assurance of mitigation requirements tributary areas to Canal 14, Canal 15, and Butler Canal (Area upstream of Butler Canal and Tacca Canal). For Hydraulics design, MSMM utilized FAA prescribed methods for capacity analysis of individual structures, LaDOTD prescribed methodology for hydraulic grade line analysis of needed road storm drains, and HEC-RAS methodology for hydraulic grade line analysis of open channels and canal system.
Mr. Willis was the only modeler that worked on this project and completed the full evaluation. He was able to complete this assessment due to his familiarity with urban subsurface drainage systems, and the ability to cross reference more than 400 as-built drawings with the available data. Mr. Willis modeled different variations of the pump station. In addition, he was responsible for modeling all landside, airside drainage systems, and to incorporate all changes (made known) during construction.

Woodlake Estates/Seton Park Subdivision Drainage Pump Station, Jefferson Parish, LA

MSMM was tasked by the Jefferson Parish council to evaluate drainage pump station alternatives to solve the issue of long-term flooding in within the Woodlake and Seton Park neighborhoods within the City of Kenner. In 2018, MSMM completed a feasibility study that developed multiple drainage pump station alternatives which bypass the capacity limitations of the canals and alleviate stormwater flooding in the area. At the completion of

KEY PERSON:
Name & Title:
Thomas M. Willis, P.E., MBA H&H Engineer
the feasibility report, the following alternatives were identified: - A new drainage pump station at the corner of Canal 17 and Canal 7 (west end of Joe Yenni Blvd.), a discharge forcemain westwards, with a discharge basin in the West Return Canal. - A new drainage pump station at the northeast corner of Vintage Drive and Platt Street on Canal 17, a discharge forcemain westwards, with a discharge basin in the West Return Canal. - A new inline drainage pump station at or near the corner of Canal 17 and Canal 7 with discharge into the canals and also with a discharge forcemain westwards to a discharge basin in the West Return Canal Mr. Willis was the hydraulic modeler for this feasibility study. He modeled all the project alternatives and ran multiple iterations of pump station features for development of the project cost estimates. Mr. Willis helped the MSMM engineering staff find the most preferred site for each station and developed the benefits expected from each alternative.

TEC Professional Services Questionnaire

KEY PERSON:
Name & Title:
Jim Wilson, P.E., LEED® AP Vice-President
Project Assignment:
Civil Engineer/Engineering Manager
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
8 (2014)
Education: Degree(s)/Year/Specialization:
B.S. in Civil Engineering, 1988, Michigan Technological University
Active registration: Year first registered/discipline:
Year First Registered: 1992 Discipline: Civil State: Louisiana License No.: 35456 *Also registered in Michigan (38800)*
Other experiences and qualifications relevant to the proposed Project:

Mr. Wilson is a senior civil/drainage engineer with over 25 years of experience in the public sector, successfully designing and managing drainage, roadway, sewerage, waterline, and site development projects in multiple jurisdictions of south Louisiana. Mr. Wilson is fully versed in the development of drainage alternatives explored through detailed modeling efforts, and understands specific areas of Jefferson Parish topography that will be critical for the success of this project.

Mr. Wilson was the designer of record for the Sauvé Road drainage pump station. He was also the civil engineer tasked with developing the alternatives for the Coventry Court project. Mr. Wilson has extensive design experience developing drainage improvement projects in Jefferson Parish. He is intimately familiar with the characteristics, existing infrastructure, and design practices required by Jefferson Parish. As a result of designing multiple projects in this area within a short period of time, Mr. Wilson has developed excellent working relationship with many of the local authorities having jurisdiction (AHJ) over the features, utilities, properties, and regulatory requirements in Jefferson Parish.

Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA

MSMM was tasked with developing an existing conditions Hydrologic and Hydraulic model for the new Port of New Orleans located in St. Bernard Parish. The site contains approximately 450 acres and will be utilized as an intermodal facility with ship, barge, rail, and truck traffic. The existing storage areas were modeled as subbasins in the HEC-HMS Version 3.5 (USACE 2010) and the 10-, 2-, 1-, and 0.2-percent annual chance event discharges for theses recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models. Frequency-based synthetic rainfall was used for each subbasin within a polder and the annual chance storm events were estimated using information obtained from the National Weather Service's (NWS) Technical Memorandum HYDRO-35 (NOAA 1977), and the South-eastern Regional Climatic Center

KEY PERSON:
Name & Title:
Jim Wilson, P.E., LEED® AP Vice-President

(SRCC) Technical Report 97-1. The hydrologic analyses for this project used rainfall runoff modeling using HEC-HMS to develop flow hydrographs which were used in unsteady HEC-RAS models. The final hydrograph output was a flow hydrograph as opposed to a single flow value. Therefore, rather than provide tables with the flow hydrograph information at various locations, the user is referred to the digital HEC-HMS model output that contains all the flow hydrograph discharges.

Utilizing the selected alternative for the Proposed Full-Build Terminal Design facility and infrastructure plans, MSMM has also developed a "Proposed Conditions SWMM Model" that includes proposed drainage features (location/size of pump stations, detention pond sizing, major canals, major culverts) necessary for the Full-Build Terminal Design. MSMM will make modifications to the Proposed Conditions SWMM Model to determine solutions to drainage problems within the studied area such that the post-development drainage flow stage, peak and volume characteristics are the same as the predevelopment drainage characteristics. The modifications will include alternate solutions for storm routing (including hydraulic grade line analysis), proper sizing of detention basins, pumping adjustments including supplemental pumping at existing stations and construction of additional pumping facilities to Violet Canal and the Mississippi River.

Mr. Wilson is the engineering manager for the tasks associated with this project. He is responsible for working with the H&H engineering team to interpret the modeling results, develop the engineering/modeling report and advancing the project alternatives.

Kenner Drainage Master Plan Development, Kenner, LA

MSMM was responsible for updating the Kenner Drainage Master Plan through a combination of hydraulic modeling and alternatives analysis. As part of developing the Kenner Master Drainage plan project, our staff characterized the drainage system via field inspections and Hydraulic Modeling utilizing the EPA SWWM. MSMM personnel were previously involved in developing drainage planning documents, inclusive of the City of Kenner Drainage Master Plan completed in April of 2010. Several of the projects identified in that plan were subsequently constructed. However, several drainage projects remained so this report was developed to prioritize recommended subsurface drainage improvement projects on a Council District based by identifying ten (10) highest priority project in each Council District.

At the completion of this analysis, the City of Kenner received a compiled report that identified the highest priority projects, along with cost estimates, maps, and recommended drainage piping information. The recommended pipe sizing was based on a ten (10) year storm design standard. The Hydraulic Modeling for this Master Plan update was completed in a similar format to recent Hydraulic Modeling changes performed by Jefferson Parish. The result is a list of drainage projects that can compete for available funding.

Mr. Wilson was the lead civil engineer on the project. He developed the project alternatives based on the modeling outputs, completed cost estimates for the alternatives and met with Kenner officials to explain the expected benefits from each alternative.

Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA

In early 2017 and following repetitive street flooding in the Coventry Court area of River Ridge, MSMM

KEY PERSON:

Name & Title:

Jim Wilson, P.E., LEED® AP

Vice-President

Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated, and in 2018 the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area.

As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM investigate and determine the feasibility of providing improved drainage. The investigation consisted of the following:

- Evaluation Phase/Data Review – collection and analysis of existing information
- Field Reconnaissance and Preliminary Survey – collection of relevant field information
- Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events.
- Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials
- Development of a Prioritized List of Recommendations – the alternatives developed were prioritized based on our engineering recommendations.

MSMM is the only entity to envision and develop the Coventry Court drainage pump station concept. The final report was completed in less than 6 months, and the final recommendation is to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge forcemain placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity, while requiring the least amount of permanent drainage servitudes.

Mr. Wilson was the lead civil engineer for the project, he was tasked with working with the hydraulic modeler to develop project alternatives. The alternative developed by Mr. Wilson, and recommended for implementation for this project, consists of a 90 CFS pump station placed in the vacant Parish owned parcel between Coventry Court and Lee Court on the river side of Jefferson Highway. The pump station wet well and valve vault are sized to house four (4) pumps and valves for the ultimate pumping capacity of 120 CFS, but only three (3) pumps and valves would be installed initially as Levee View Drive and Hennessey Court would be considered a future service area. The pump station intake will be two 54" gravity sewer lines running parallel to Jefferson Highway and a 72" gravity sewer coming into the wet well from Jefferson Highway. The pump station would utilize three pumps with a single 48" forcemain to discharge storm water over the Mississippi River levee and into the river. The forcemain will be approximately 2,600 linear feet and terminate into a discharge dolphin structure in the Mississippi River. Mr. Wilson has provided conceptual plans for the entire project, outlined the permitting requirements and made sure the design aligns with the requirements for the Sauvé Road pump station layout.

Sauvé Road Drainage Improvements, Jefferson Parish, LA.

KEY PERSON:

Name & Title:

Jim Wilson, P.E., LEED® AP

Vice-President

Mr. Wilson performed 100% of the planning, engineering phase services and construction phase services for the construction of a drainage pump station in the Sauvé Road neighborhood of Jefferson Parish, LA. Through a collaboration between the USACE New Orleans District and Jefferson Parish, the project resulted in the design and construction of a 60 cfs (27,000 gpm) drainage pumping station, 2600 linear feet of 30" and 36" discharge forcemains and 60" gravity drainage. At the time of construction, the project was considered a major accomplishment for the neighborhood, as the area was heavily flooded following Hurricane Katrina and subsequent storm events. To this date, this project has been viewed as one of the most successful post Katrina storm risk reduction measures constructed in Jefferson Parish, as the flooding impact on the neighborhood has been greatly diminished.

Design and construction administration for subsurface drainage improvements to the Sauve Road and Jefferson Highway area consisting of the construction of a 40 cfs drainage pump station and force main discharging into the Mississippi River. The project also consisted of gravity line installations, any street work, and utility adjustments necessitated by the work.

Aubry St. CDBG 10-year Storm Drainage Improvement and Roadway Construction, New Orleans, LA

Mr. Wilson was the designer of record for the design of drainage and concrete road reconstruction of Aubry Street in the Gentilly neighborhood of New Orleans. The project length is approximately 1,400 linear feet, a four-block design that serves as major thoroughfare during the annual Jazz Festival. Project details are as follows: Concrete Roadway Reconstruction, drainage design to meet a 10-year storm event, relocation of existing utilities, development of bid documentation, cost estimates, construction management, and resident inspection services.

Mr. Wilson started his design in April of 2016, and the City of New Orleans requested an expedited design to allow the street to be open for the 2017 Jazz Festival. This was successfully designed and bid documentation was completed in time, as the construction finished in April of 2017, and the street was opened for the 2017 Jazz Festival.

Statewide Flood Control Program Grant Drainage Improvements, Kenner, LA

LDOTD's Statewide Flood Control Program grant funding was utilized to undertake stormwater drainage system improvements to two neighborhoods (University City and Audubon Place Subdivisions) in the city. The estimated project cost was $4.57 million, with a grant amount of $2.7 million. The project included preparing the grant pre-application package, coordinating with the City and LDOTD staff, conducting hydraulic and hydrologic analyses (HYDRWIN and SWMM), communicating with LDOTD experts on the project's feasibility and technical merit, conducting multiple site visits with LDOTD experts and project staff to clarify project features and existing drainage infrastructure, and facilitating continuous communication with the City's elected representatives about the status of grant process. Significant coordination was required with LDOTD staff due to the unique drainage conditions in the New Orleans area and due to the SWMM models of the city's previous drainage master plan work required to be re-analyzed with LDOTD's HYDRWIN software. The project involved (i) installation of new subsurface drainage pipes and inlets along three city streets; (ii) upgrading of existing drainage features with larger subsurface pipes, inlets, and outfall pipe along three other

KEY PERSON:
Name & Title:
Jim Wilson, P.E., LEED® AP Vice-President

city streets. The subsurface pipes ranged in size from small 18" diameter circular pipes to large 54"x88" arch pipes. Adjustment of sanitary sewer house connections, and numerous pavement restoration tasks were included in this project as well. During this project continuous coordination with the DPW staff was required. Most of the drainage improvements under this project were derived from previously completed Master Drainage Plan, the new improvements were compared with the Master Drainage Plan to ensure that no conflicts arise.

Mr. Wilson was the designer of record for the project. He worked with officials from DOTD and the City of Kenner during the design and construction phase of this project.

New Orleans International Airport Drainage Pump Station, Kenner, LA.

MSMM recently completed full engineering design services for a new 600 cfs drainage pump station and for all landside drainage, as part of constructing the new airport terminal at the New Orleans International airport. The $45 million of drainage mitigation design involved successfully delivering a true multi-disciplinary effort spanning civil, structural, electrical, mechanical and environmental engineering, hydraulic modeling (HEC-HMS and HEC-RAS), architectural services, cost estimating, environmental permitting, drafting (CAD, Civil 3D, REVIT, GIS), and agency coordination (USACE, CPRA, EJLD, SLFPA-E, LDNR, Entergy, City of New Orleans, City of Kenner, and Jefferson Parish). The station was designed to contain four 150 cfs pumps with 900 HP motors.

As part of the pump station design, MSMM tasks required successfully negotiating the challenge of discharging stormwater over a hurricane protection flood wall. Project tasks included: Coordinating with USACE to obtain approval to run more than 4,000 ft. of steel discharge pipes over the floodwall (required Section 408 permitting), developing detailed structural design calculations, design and drafting for several structural elements including sheet pile cutoff walls, sheet pile TRS system, scour protection, a reinforced box culvert; as well as, coordination and permitting with the levee board and CPRA to secure the crucial clearances.

The landside drainage design effort required continuous close coordination with the program management team and design team to coordinate roadway drainage, terminal and apron design. This required extreme flexibility and adaptability to incorporate numerous changes to other designs into the drainage design via multiple hydraulic modeling exercises, and multiple pipe networking and sizing. More than 5 miles of drainage piping (size range of 15" to 72" diameter), open channels and box culverts were designed to route stormwater flow from the terminal to the discharge points.

Mr. Wilson is the designer of record and engineering manager for the design of this pump station. He successfully led a multi-disciplinary team of design engineers, provided shop drawing review, and engineering during construction.

TEC Professional Services Questionnaire

SPECIALIST:
Name & Title:
Scott Chehardy, P.E.
Project Assignment:
Civil Engineer
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
7 (2015)
Education: Degree(s)/Year/Specialization:
B.S. in Civil Engineering, 1994, University of Southwestern LA
Active registration: Year first registered/discipline:
Year First Registered: 1998 Discipline: Civil State: Louisiana License No.: 28532
Other experiences and qualifications relevant to the proposed Project:

Mr. Chehardy has over two decades of civil design and hydraulic evaluation experience in Louisiana's coastal Parishes. He has successfully designed levees and floodwalls, pump stations and forcemains, and canals and box culverts. His design and assessment experience spans levee and floodwall, roadway, water, sewer and drainage infrastructure elements. He has been an integral part of the study and design of the new 600 cfs drainage pump station in New Orleans International Airport, drainage study of Canal No. 17, Canal No. 7, and Parish Line Pump Station in Jefferson Parish, East Bank Subsurface Drainage Improvement Program in Jefferson Parish, Sewerage & Water Board of New Orleans' SELA Urban Flood Control Projects (Claiborne Avenue Manifold Canal and South Claiborne Avenue Canal II), Hurricane Katrina Related Water Restoration Projects for S&WBNO, etc. Mr. Chehardy's levee design work included West Bank & Vicinity, Lake Cataouatche Pumping Station to Segnette State Park, Phase 2, First Lift. of a 20,250 linear foot segment of the hurricane protection system ($41.3 M), West Bank & Vicinity, Algiers Canal Levee West, Algiers Lock to Hwy. 23, Orleans & Plaquemines Parish (EAR $230M to $425M), and West Bank & Vicinity, Phase 2 Hurricane Protection, Algiers Canal (East), Hero Levee to Highway 23, WBV-49.2, Plaquemines Parish, LA (EAR $474M to $558M). Mr. Chehardy's responsibilities have included project management, design, permitting, and quality control.

Teche Vermillion Pump Station Debris Barrier, St. Landry Parish, LA. The Teche-Vermilion Pumping Station pumps fresh water from the Atchafalaya River into a six-mile long Conveyance Channel ultimately leading to the Vermilion River. This project included the design of a deep foundation anchor system for debris screening barrier to be installed on both north and south banks near the channel entrance. The project objective was to maintain the existing intake channel through debris screening process. CPRA is in charge of this station as of 2012, and identified the need for the design of the debris screen. MSMM designed the screen to the 30% stage, and submitted all requested design reports and plans to CPRA for review. Plans were reviewed and

SPECIALIST:
Name & Title:
Scott Chehardy, P.E.

comments received, but the project was later constructed via in-house funding mechanism at CPRA. Mr. Chehardy provided the design services completed by MSMM.

Bayou Mandeville Maintenance Dredging, St Bernard Parish, LA
This CPRA project was established to look at the possible need for maintenance dredging at the confluence of Bayou Mandeville and Lake Lery. The project was initiated as tug boat owners were noticing siltation in the navigation channel and were unsure of traversing their vessels through Lake Lery. MSMM helped guide the initial design of the marsh creation and worked with CPRA and USACE to establish the best practices for discharging dredge material to create wetlands. An evaluation was conducted to look at different containment structures such as silt fencing, hard structures and stacking dredge material. An intial permit application was drafted and routed for review through the USACE permitting office. Mr. Chehardy provided all of the design services completed by MSMM inclusive of the wetland creation design.

Cow Bayou Drainage Pump Station Complex, Orange, TX
The project involved completion of design services for an 8,800 CFS drainage pump station in Orange, TX for the USACE New Orleans and Galveston Districts. This new pump station is in a remote stretch of marsh, therefore complete site development was provided in addition to the pump station, safe house, floodwall, floodgate, and utility design. Mr. Chehardy was the designer of record for the project. He provided the civil site design, developed the environmental permitting requirements, outlined the requirements for the storage of fuel onsite and coordinated all design elements with the team which consisted of environmental, structural, mechanical, and electrical engineers.

Southern University Drainage Outfall Ravine and Riverbank Instability Design and Study, Baton Rouge, LA
The project was completed as part of the Silver Jackets program at the USACE New Orleans District with the goal of completing a feasibility study inclusive of engineering alternatives to formulate solutions for ongoing erosion and flooding problems on the Southern University Campus in Baton Rouge, Louisiana.
Mr. Chehardy was responsible for working with the hydraulic engineer to develop the project alternatives and for developing cost estimates for each of the alternatives recommended.

Timber Creek Recreational Facility Design, Travis County, TX
This federal project designed for USACE Ft. Worth District turned a former neighborhood located in a flood zone into a recreational park consisting of trails, trail head connectors, shelters, picnic tables, roadway and parking areas, and sports courts. Mr. Chehardy was the designer of record for the project. He worked with Travis County and USACE to layout the site design, remove non-native trees for establishment of the trails, tie-in the new trails to existing trail heads in the area, establish ADA access for each shelter and picnic area, design the new one-way traffic pattern and parking areas and layout the restroom design.

Improvements to Bayou Segnette Drainage Pump Station No. 1, Jefferson Parish, LA. Project engineer for rehabilitation of the Bayou Segnette No 1 pump station. Design plans and specifications addressed replacement of four 70,000 gpm vertical axial flow pumps, six 350 Hp diesel engines and six right angle gear reducers.
Professional Services**:** 2016

TEC Professional Services Questionnaire

SPECIALIST:
Name & Title:
Brooke Morris, PE, PLA Hydraulic Engineer
Project Assignment:
Program Manager
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
2 (2020)
Education: Degree(s)/Year/Specialization:
MLA in Landscape Architecture, 2009, Louisiana State University BS in Biological Engineering, 2007, Louisiana State University
Active registration: Year first registered/discipline:
Year First Registered: 2021 Discipline: Civil State: Louisiana License No.: 45513
Other experiences and qualifications relevant to the proposed Project:
Ms. Morris is a licensed landscape architect and civil engineer that practices at the overlap of the two disciplined to produce functional designs. She specializes in stormwater management and green infrastructure planning, modeling and design. At MSMM, she provides HEC-RAS green infrastructure modeling and modeling review of EPA SWMM and other modeling outputs. ***Southern University Drainage Outfall Ravine and Riverbank Instability Study, Baton Rouge, LA*** Conditions at Southern University Baton Rouge Campus threaten human safety and guarantee serious losses of historic oaks, architecture, and vital utility systems unless action is taken to stop eroding conditions on the campus. MSMM was contracted by the U.S. Army Corps of Engineers under the USACE Planning Assistance to States (PAS) program to develop a framework for addressing these problems. This report was developed from a planning, hydrology, and hydraulics analyses perspective to consider the origins and effects of storm and surface waters on the campus. With emphasis given to addressing the concerns of the University facility management, the charge given for this project was to identify consequential stream and bank instability and deterioration, with a focus on the lower reach of the ravine and the University bluff area facing the river. The desired deliverable for this project was a list of discrete problem areas which could be identified as separate projects for funding, analysis, and implementation of construction alternatives. The problem areas, the failure modes, and the effects of that failure were identified for each of these projects. An alternative approach for each project was developed with calculation of rough order of magnitude costs for design and construction. Alternatives provided were not embellished; but, except for general ravine channel degradation, they were designed to be holistic, long-term, and sustainable in the sense that they will arrest the active failure forces without requiring follow-up projects or excessive special maintenance.

SPECIALIST:
Name & Title:
Brooke Morris, PE, PLA Hydraulic Engineer

Ms. Morris provided QA/QC of the modeling output, the project alternatives, and the modeling report. She provided assessment and details for green infrastructure concepts.

Lakeview City Park HMGP, New Orleans, LA

Ms. Morris was asked to assist with stormwater modeling for this project two weeks before the 75% design deadline. Ms. Morris troubleshot the previous modeling efforts, refined the existing conditions model, and added proposed design interventions. She is currently carrying this modeling effort forward into later design phases.

Downtown Development District Drainage Upgrades Implementation, New Orleans, LA

Ms. Morris is providing stormwater modeling and green infrastructure design consulting services to support implementation of pervious paving parking lanes and drainage upgrades on a total of 45 blocks spanning from the French Quarter to Warehouse District.

Downtown Stormwater Opportunities Study, New Orleans, LA

Ms. Morris provided stormwater modeling services for this study on stormwater detention opportunities in Downtown New Orleans. The planning process considered over 50 different storage nodes in and around downtown New Orleans. Ms. Morris performed all the stormwater modeling in the city-wide SWMM model.

TEC Professional Services Questionnaire

INDIVIDUAL CONSULTANT:
Name & Title:
Chris Mills, EIT Engineer Intern
Project Assignment:
Engineer Intern
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
3 (2019)
Education: Degree(s)/Year/Specialization:
BS in Civil Engineering, 2019, Louisiana State University
Active registration: Year first registered/discipline:
Year First Registered: 2019 Discipline: Civil (EIT) State: Louisiana License No.: 34186
Other experiences and qualifications relevant to the proposed Project:

Chris Mills is an EIT (taking PE exam March 18, 2022) at MSMM where he performs a wide variety of design and hydraulic evaluations for public works project in Orleans and Jefferson Parish. Mr. Wills also performs various field services, inclusive of collecting survey data, manhole location data, GIS data and provides construction administration services for various construction projects.

Kenner Drainage Master Plan Development, Kenner, LA

MSMM was responsible for updating the Kenner Drainage Master Plan through a combination of hydraulic modeling and alternatives analysis. As part of developing the Kenner Master Drainage plan project, our staff characterized the drainage system via field inspections and Hydraulic Modeling utilizing the EPA SWWM. MSMM personnel were previously involved in developing drainage planning documents, inclusive of the City of Kenner Drainage Master Plan completed in April of 2010. Several of the projects identified in that plan were subsequently constructed. However, several drainage projects remained so this report was developed to prioritize recommended subsurface drainage improvement projects on a Council District based by identifying ten (10) highest priority project in each Council District.

At the completion of this analysis, the City of Kenner received a compiled report that identified the highest priority projects, along with cost estimates, maps, and recommended drainage piping information. The recommended pipe sizing was based on a ten (10) year storm design standard. The Hydraulic Modeling for this Master Plan update was completed in a similar format to recent Hydraulic Modeling changes performed by Jefferson Parish.

Mr. Mills provided field data collection services on this project, collecting survey data for drainage inlets,

INDIVIDUAL CONSULTANT:
Name & Title:
Chris Mills, EIT Engineer Intern

manholes and street elevations. He also helped developed GIS graphics for the main report and was ultimately responsible for finalizing the report and submitting it to the client.

Lower 9th Ward NW Group D (RR111) Neighborhood Design Project

MSMM has been tasked with providing roadway design for approximately 16 blocks of this Lower 9th ward project. The project included mostly full depth replacement and waterline design. Other services included the development of drainage calculations and drainage features, the re-establishment of base course and new roadway on blocks fully covered with vegetative growth, and curb, gutter, roadway, sidewalk, and street surface improvements on a few blocks not requiring full reconstruction. Mr. Mills worked in conjunction with the lead engineer to develop line and grade analysis, plan and profile drawings, participation in field reviews and virtual plan-in-hand meetings, and coordination with CNO.

Gentilly Terrace North Group B (RR052) Neighborhood Roadway Design

MSMM has been tasked with providing roadway design for 8 streets of this Gentilly Terrace project as a subconsultant to PEC. The project included mostly full depth replacement and waterline design. Other services included the development of drainage calculations and drainage features, the re-establishment of base course and new roadway, and curb, gutter, roadway, sidewalk, and street surface improvements on a few blocks not requiring full reconstruction. Mr. Mills worked in conjunction with the lead civil engineer from PEC to help establish an acceptable full depth replacement of the roadway, establishment of utilities appropriate grade adjustments to street intersections, driveways, and sidewalks.

Lower 9th Ward South Group E (RR115) Neighborhood Roadway Design

MSMM has been tasked with providing full depth reconstruction roadway design for 20 blocks of this Lower 9th ward project. Design services included the development of drainage calculations and drainage features, the widening and addition of curbs on some streets, and full depth reconstruction inclusive of all utilities for most of the area. Mr. Mills worked in conjunction with the lead civil engineer to provide drainage modifications and improvements, and final grades compatible with adjacent properties to ensure positive flow of water toward designed catch basins.

West End Group A (RR193) Neighborhood Roadway Design, New Orleans, LA

MSMM Engineering was tasked by the City of New Orleans Department of Public Works to finalize the design and perform construction management of the West End Group A project. The project includes full depth reconstruction, patch, mill and overlay and incidental pavement repair inclusive of driveways, sidewalks, curbs, and manhole adjustments. Mr. Mills worked in conjunction with the lead civil engineer to revise the preliminary construction plans, update the project specifications and revise the cost estimate. He was also responsible for providing regular updates to the city concerning the progress of the requested design services.

TEC Professional Services Questionnaire

INDIVIDUAL CONSULTANT:
Name & Title:
Arthur Ian Growden, EIT Engineer Intern
Project Assignment:
Engineer Intern
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
3 (2019)
Education: Degree(s)/Year/Specialization:
BS in Civil Engineering, 2020, University of New Orleans
Active registration: Year first registered/discipline:
Year First Registered: 2021 Discipline: Civil State: Louisiana License No.: 35468
Other experiences and qualifications relevant to the proposed Project:

Ian Growden is an EIT at MSMM where he performs wide-ranging services inclusive of CAD drafting, REVIT modeling, field services inclusive of survey and data collection, and the input of data for hydraulic models.

Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA

MSMM was tasked with developing an existing conditions Hydrologic and Hydraulic model for the new Port of New Orleans located in St. Bernard Parish. The site contains approximately 450 acres and will be utilized as an intermodal facility with ship, barge, rail, and truck traffic. The existing storage areas were modeled as subbasins in the HEC-HMS Version 3.5 (USACE 2010) and the 10-, 2-, 1-, and 0.2-percent annual chance event discharges for theses recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models.

Frequency-based synthetic rainfall was used for each subbasin within a polder and the annual chance storm events were estimated using information obtained from the National Weather Service's (NWS) Technical Memorandum HYDRO-35 (NOAA 1977), and the South-eastern Regional Climatic Center (SRCC) Technical Report 97-1.

The hydrologic analyses for this project used rainfall runoff modeling using HEC-HMS to develop flow hydrographs which were used in unsteady HEC-RAS models. The final hydrograph output was a flow hydrograph as opposed to a single flow value. Therefore, rather than provide tables with the flow hydrograph information at various locations, the user is referred to the digital HEC-HMS model output that contains all the flow hydrograph discharges.

Utilizing the selected alternative for the Proposed Full-Build Terminal Design facility and infrastructure plans,

INDIVIDUAL CONSULTANT:
Name & Title:
Arthur Ian Growden, EIT Engineer Intern

MSMM has also developed a "Proposed Conditions SWMM Model" that includes proposed drainage features (location/size of pump stations, detention pond sizing, major canals, major culverts) necessary for the Full-Build Terminal Design. MSMM will make modifications to the Proposed Conditions SWMM Model to determine solutions to drainage problems within the studied area such that the post-development drainage flow stage, peak and volume characteristics are the same as the predevelopment drainage characteristics. The modifications will include alternate solutions for storm routing (including hydraulic grade line analysis), proper sizing of detention basins, pumping adjustments including supplemental pumping at existing stations and construction of additional pumping facilities to Violet Canal and the Mississippi River.

Mr. Growden worked with the hydraulic engineering team and civil engineering team to develop the alternatives produced from the model and develop the engineering report that was provided to the Port of New Orleans outlining the current drainage conditions, the future conditions and project alternatives that should be implemented.

Airport Taxiway G Extension, Kenner, LA

MSMM provided extensive hydraulic modeling, engineering design and construction administration services for the extension of Taxiway Golf and Taxiway Bravo at the New Orleans International Airport. Taxiway G will serve the new terminal facility opened on the north side of the airport. In its current condition, Taxiway G does not extend to the Runway 11 threshold, and aircraft departing from Runway 11 are required to cross the active runway at Taxiway A to access Runway 11. Extending Taxiway G will provide much more efficient access to the Runway 11 threshold, and aircraft will no longer be required to cross an active runway to depart from Runway 11. Project design elements MSMM completed/assisted with included the following:

• Hydraulic Modeling – Design of the storm sewer system was based on the EPA SWMM methodology. Pipes were designed to flow full for the 5-year storm event and to provide one-foot freeboard below the inlet grate for the 10-year storm event for a free outfall condition. Some freeboard exceptions were made in the upper end of the storm sewer where the pipes to be employed by the system are existing and dual flow of storm sewer and ditch may occur along the vehicle service road. Freeboard exceptions will also occur in portions of the median area impounded by Taxiway G, Taxiway Ult. G2, Runway 11-29, and Taxiway Ult. G3 (now Taxiway A) where the existing ground and grates to remain in the system currently do not provide freeboard. Tailwater values at the canal outfalls were based on stage-frequency relationships extracted from the Parish HEC-RAS model.
•Drainage Design – Storm drainage design for the medians and infields, a culvert crossing for Taxiway B, channel stabilization design for Canal 15, and adjustments of the Airport Intake Canal to accommodate the vehicle service road relocation.

The project was bid for construction in 2020 and is currently in construction. Mr. Growden is providing construction phase services including construction administration, pay application review and approval, change order processing and engineering during construction.

Woodlake Drainage Pump Station Hydraulic Modeling and Preliminary Design

INDIVIDUAL CONSULTANT:
Name & Title:
Arthur Ian Growden, EIT Engineer Intern
The Woodland Estates & Seton Park subdivision areas are located at the confluence of Canal 7 and Canal 17 in Kenner. The current drainage system consists of an enclosed gravity storm sewer system that outlets at various locations in the canals. The distance the stormwater within the canal must travel before it is pumped is excessive (nearly 2 miles to the Duncan Canal Pump Station and 2.25 miles to the Parish Line Pump Station). Due to the excessive distance, the water within the canal typically backs up, creating an increased head situation where the gravity drainage pipes are unable to discharge as intended. This generates a backwater flow condition which causes repeated flooding in the area. Because of the existing conditions in the area, MSMM completed a drainage evaluation report that evaluated options for removing the backflow condition in this area. The subsurface drainage was modeled with the US EPA Storm Water Management Model (SWMM) and the canals and pump station utilized the River Analysis System (HEC-RAS) software. The HEC-RAS model conducted existing condition and other simulation under design storms of 10-year, 50-year and 100-year intensities. The resulting conditions were utilized for comparison purposes. The alternate iterations result in varying degrees of water surface lowering and flooding reduction. Extents of improvement projects, associated cost opinions, and required ancillary items such as right of way acquisitions, etc. were considered to select the most optimum combination which will provide the most flooding reduction. The modeling process indicated that both the subsurface drainage system and high-water elevations in the canal during a 10-year storm event are contributing to flooding issues in the project area. The recommendation was made to construct an in-line 120 cfs drainage pump station directly benefiting the two neighborhoods, as the pump station will be the new outlet, therefore no longer relying on the canal system. This alternative will indirectly benefit the entire area by removing the runoff created from these subdivisions from entering the canal system, therefore freeing up canal capacity from other areas. Mr. Growden participated in developing detailed images for inclusion in the final modeling report. He was also involved in putting together the Statewide Flood Control Application and the Louisiana Watershed Initiative Application for this project. Recently he has been involved in collecting field information and properly citing the project within the park to provide the least amount of interruption to the neighborhood.

TEC Professional Services Questionnaire

SPECIALIST:
Name & Title:
Bob Yokum, P.E. Structural Engineer
Project Assignment:
Structural Engineer
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
9 (2013)
Education: Degree(s)/Year/Specialization:
B.S., 1975, Civil Engineering M.S., 1980, Civil Engineering
Active registration: Year first registered/discipline:
Year First Registered: 1984 Discipline: Structural State: Louisiana License No.: 21422
Other experiences and qualifications relevant to the proposed Project:

Mr. Robert W. Yokum has over 40 years of experience in structural engineering. Mr. Yokum was employed by the USACE New Orleans District for 12 years, serving as a senior structural engineer for the design locks, dams, levees, floodwalls, floodgates, flood control structures, and drainage pump stations. Mr. Yokum has extensive experience designing USACE levees and floodwalls, performing stability analysis, pile group analysis pile capacity curves, designing sheet pile cutoff walls, and steel sheet pile temporary retaining structure (TRS). Mr. Yokum developed the unbalanced load criteria used by USACE for all levee design.

Mr. Yokum has provided detailed foundation and structural design, construction plans, inspections for all types of gated/non-gated dam and auxiliary monoliths including spillways, outlet structures, concrete retaining walls, stilling basins, training works, and various structures associated with spillways and outlet works. Since leaving USACE, and during his time with MSMM, Mr. Yokum has provided extensive design of dolphin structures, levee crossings, riprap discharge basins, bridges, structural foundations and is currently designing an 8,190 cfs pump station for USACE in Texas.

Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA

In early 2017, following repetitive street flooding in the Coventry Court area of River Ridge, MSMM Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated. In 2018, the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area.

As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM

SPECIALIST:
Name & Title:
Bob Yokum, P.E. Structural Engineer

investigate and determine the feasibility of providing improved drainage. The investigation consisted of the following:

- Evaluation Phase/Data Review – collection and analysis of existing information
- Field Reconnaissance and Preliminary Survey – collection of relevant field information
- Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events.
- Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials
- Development of a Prioritized List of Recommendations – the alternatives developed were prioritized based on our engineering recommendations.

MSMM is the only entity to envision and develop the Coventry Court drainage pump station concept. The final report was completed in less than 6 months, and the final recommendation is to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge forcemain placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes.

Mr. Yokum was the lead structural engineering tasked with assisting in the development of alternatives for the feasibility report. Mr. Yokum is an expert levee design engineer and Mississippi River engineer, making him instrumental in helping to determine the best routing of the discharge pipe, for proper siting and size of the dolphin structure that will need to be designed in the river. Mr. Yokum provided conceptual level design for these features.

Woodlake Estates/Seton Park Subdivision Drainage Pump Station, Jefferson Parish, LA

MSMM was tasked by the Jefferson Parish council to evaluate drainage pump station alternatives to solve the issue of long-term flooding in within the Woodlake and Seton Park neighborhoods within the City of Kenner. In 2018, MSMM completed a feasibility study that developed multiple drainage pump station alternatives which bypass the capacity limitations of the canals and alleviate stormwater flooding in the area. At the completion of the feasibility report, the following alternatives were identified:

- A new drainage pump station at the corner of Canal 17 and Canal 7 (west end of Joe Yenni Blvd.), a discharge forcemain westwards, with a discharge basin in the West Return Canal.
- A new drainage pump station at the northeast corner of Vintage Drive and Platt Street on Canal 17, a discharge forcemain westwards, with a discharge basin in the West Return Canal.
- A new inline drainage pump station at or near the corner of Canal 17 and Canal 7 with discharge into the canals and also with a discharge forcemain westwards to a discharge basin in the West Return Canal

Mr. Yokum was the lead structural engineer for this project. He was responsible for developing the structural components of the identified alternatives, for assisting with cost estimating, for providing conceptual level design for the foundation of the pump station, the discharge crossing of the levee, and the discharge basin.

SPECIALIST:
Name & Title:
Bob Yokum, P.E. Structural Engineer

New Orleans International Airport Drainage Pump Station, Kenner, LA.

MSMM recently completed full engineering design services for a new 600 cfs drainage pump station and for all landside drainage, as part of constructing the new airport terminal at the New Orleans International airport. The $45 million of drainage mitigation design involved successfully delivering a true multi-disciplinary effort spanning civil, structural, electrical, mechanical and environmental engineering, hydraulic modeling (HEC-HMS and HEC-RAS), architectural services, cost estimating, environmental permitting, drafting (CAD, Civil 3D, REVIT, GIS), and agency coordination (USACE, CPRA, EJLD, SLFPA-E, LDNR, Entergy, City of New Orleans, City of Kenner, and Jefferson Parish). The station was designed to contain four 150 cfs pumps with 900 HP motors.

As part of the pump station design, MSMM tasks required successfully negotiating the challenge of discharging stormwater over a hurricane protection flood wall. Project tasks included: Coordinating with USACE to obtain approval to run more than 4,000 ft. of steel discharge pipes over the floodwall (required Section 408 permitting), developing detailed structural design calculations, design and drafting for several structural elements including sheet pile cutoff walls, sheet pile TRS system, scour protection, a reinforced box culvert; as well as, coordination and permitting with the levee board and CPRA to secure the crucial clearances.

The landside drainage design effort required continuous close coordination with the program management team and design team to coordinate roadway drainage, terminal and apron design. This required extreme flexibility and adaptability to incorporate numerous changes to other designs into the drainage design via multiple hydraulic modeling exercises, and multiple pipe networking and sizing. More than 5 miles of drainage piping (size range of 15” to 72” diameter), open channels and box culverts were designed to route stormwater flow from the terminal to the discharge points.

Mr. Yokum was the lead Structural Engineer for this project. He provided the structural design components for the pump station which included the foundation support, the pipe support, the concrete structures for the generator and safe house, as well as, the pipe bents for the pipe going over the T-wall. He also designed the wing walls and concrete intake basin on the flood side.

Cow Bayou Drainage Pump Station Complex, Orange, TX

MSMM is currently designing an 8,190 cfs drainage pump station in Orange County Texas as part of the Sabine Pass to Galveston Bay Texas Coastal Storm Risk Management and Ecosystem Restoration project. MSMM is responsible for all design activities for the features of work associated with the Sabine to Galveston, Cow Bayou Complex. The Cow Bayou Complex includes the design efforts for tie-in levee’s, transition floodwall tying the floodwall into the levee section, multiple T-wall monoliths (both straight and P.I. monoliths), Drainage Structures (sluice gate structures & culverts through the floodwall) that are used to maintain flows of existing bayous, horizontal and vertical lift gates, a sector gate monolith for navigational traffic, and the 8190 cfs pumping station. This project is being designed for the USACE New Orleans and Galveston Districts. MSMM was hand selected by USACE to design this project, based on recent drainage pump station design experience in the greater New Orleans area.

SPECIALIST:
Name & Title:
Bob Yokum, P.E. Structural Engineer
Mr. Yokum is the lead structural engineer of record for the project. He is responsible for working with USACE to lead the design for the entire Cow Bayou complex. Mr. Yokum's design efforts include tie-in levee's, transition floodwall tying the floodwall into the levee section, multiple T-wall monoliths, drainage structures, sluice gate structures, culverts through the floodwall that are used to maintain flows of existing bayous, vertical and horizontal lift gates, a sector gate monolith for navigation traffic, and an 8190 cfs pumping station.

TEC Professional Services Questionnaire

INDIVIDUAL CONSULTANT:
Name & Title:
Joshua Carson Project Manager
Project Assignment:
Project Manager
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
8 (2014)
Education: Degree(s)/Year/Specialization:
B.S. in Biology, 2007, Baldwin-Wallace University M.S. in Environmental Policy, 2011, Johns Hopkins University
Active registration: Year first registered/discipline:
N/A
Other experiences and qualifications relevant to the proposed Project:
Mr. Carson worked as an in-house consultant and Project Manager for the Corps of Engineers (New Orleans District) on multiple Federal projects including storm risk reduction, navigation, coastal restoration and recreation. Mr. Carson's role at the New Orleans District was to manage projects from project initiation through the planning and construction phases. Mr. Carson's position responsibilities included tasks typical of a project manager, such as, briefing senior level personnel, managing project delivery team members to execute project milestones, and relaying critical project information to sponsors, interested parties and the public. He was tasked for meeting legislative and organizational deadlines and to deliver projects on-time and under budget. Mr. Carson executed multiple environmental projects while at the Corps, including projects that required extensive environmental permitting and NEPA clearances. At MSMM, Mr. Carson has served as a project manager and environmental permitting coordinator. He is a responsible for being a liaison between the clients, engineering teams, and is often tasked with briefing the public or client about the project design. Mr. Carson serves as the lead project manager for all MSMM tasks completed in Jefferson Parish. ***Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA*** In early 2017, following repetitive street flooding in the Coventry Court area of River Ridge, MSMM Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated. In 2018, the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area. As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM investigate and determine the feasibility of providing improved drainage. The investigation consisted of the

INDIVIDUAL CONSULTANT:

Name & Title:

Joshua Carson
Project Manager

following:

- Evaluation Phase/Data Review – collection and analysis of existing information
- Field Reconnaissance and Preliminary Survey – collection of relevant field information
- Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events.
- Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials
- Development of a Prioritized List of Recommendations – the alternatives developed were prioritized based on our engineering recommendations.

MSMM is the only entity to envision and develop the Coventry Court drainage pump station concept. The final report was completed in less than 6 months, and the final recommendation is to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge forcemain placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes.

Mr. Carson was instrumental in working with the councilman's office to understand the flooding issues plaguing the Coventry Court area. He worked with the councilman's office to gain an understanding of the project focus and goals. He worked with the MSMM engineering team to relay the intended results of the feasibility study. He was involved in reviewing and briefing the results of the feasibility study; working with the councilman's office to finalize siting of the intended pump station on Parish owned land.

Woodlake Estates/Seton Park Subdivision Drainage Pump Station, Jefferson Parish, LA

MSMM was tasked by the Jefferson Parish council to evaluate drainage pump station alternatives to solve the issue of long-term flooding in within the Woodlake and Seton Park neighborhoods within the City of Kenner. In 2018, MSMM completed a feasibility study that developed multiple drainage pump station alternatives which bypass the capacity limitations of the canals and alleviate stormwater flooding in the area. At the completion of the feasibility report, the following alternatives were identified:

- A new drainage pump station at the corner of Canal 17 and Canal 7 (west end of Joe Yenni Blvd.), a discharge forcemain westwards, with a discharge basin in the West Return Canal.
- A new drainage pump station at the northeast corner of Vintage Drive and Platt Street on Canal 17, a discharge forcemain westwards, with a discharge basin in the West Return Canal.
- A new inline drainage pump station at or near the corner of Canal 17 and Canal 7 with discharge into the canals and also with a discharge forcemain westwards to a discharge basin in the West Return Canal

Mr. Carson was involved in working with the Councilman's office to develop the concept of providing a drainage pump station in the Woodlake/Seton Park area. Mr. Carson was tasked with leading the feasibility study, for briefing the project alternatives and preferred plan. Mr. Carson also oversaw the development of the

INDIVIDUAL CONSULTANT:
Name & Title:
Joshua Carson Project Manager

application for the Statewide Flood control program.

Cow Bayou Drainage Pump Station Complex, Orange, TX

MSMM is currently designing an 8,190 cfs drainage pump station in Orange County Texas as part of the Sabine Pass to Galveston Bay Texas Coastal Storm Risk Management and Ecosystem Restoration project. MSMM is responsible for all design activities for the features of work associated with the Sabine to Galveston, Cow Bayou Complex. The Cow Bayou Complex includes the design efforts for tie-in levee's, transition floodwall tying the floodwall into the levee section, multiple T-wall monoliths (both straight and P.I. monoliths), Drainage Structures (sluice gate structures & culverts through the floodwall) that are used to maintain flows of existing bayous, horizontal and vertical lift gates, a sector gate monolith for navigational traffic, and the 8190 cfs pumping station. This project is being designed for the USACE New Orleans and Galveston Districts. MSMM was hand selected by USACE to design this project, based on recent drainage pump station design experience in the greater New Orleans area.

Mr. Carson is the lead project manager for the MSMM tasks associated with this project. He is responsible for working with the USACE PDT to determine scope and schedule, for managing the MSMM engineering team, and for the development of briefing materials to senior leaders at USACE and the non-Federal partners.

TEC Professional Services Questionnaire

INDIVIDUAL CONSULTANT:
Name & Title:
Eric M. Curson Design Manager
Project Assignment:
GIS Specialist GIS/CADD
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
7 (2015)
Education: Degree(s)/Year/Specialization:
Some classes: Purdue University Southeast College of Technology
Active registration: Year first registered/discipline:
N/A
Other experiences and qualifications relevant to the proposed Project:
Eric Curson is a GIS Specialist, geospatial, and CAD manager at MSMM, where his project experience encompasses a variety of geospatial and software initiatives within the Federal and local market in southeast Louisiana. Mr. Curson has worked extensively on projects that require the use of ESRI ArcGIS and Microsoft SQL Server for Federal clients including the USACE New Orleans District. He has been instrumental in leading the GIS database creation and management for several MSMM projects including the Jefferson Parish I&I project, and the Chitimacha and Ascension Parish GIS planning tool initiatives. With a background in both CAD and GIS, Mr. Curson understands the similarities and differences between the two systems and has played an important role in working through any conversion issues that have arisen through the digitization and database creation process. As the lead drafter at MSMM, Mr. Curson has been instrumental in the development of project plans, working in conjunction with the engineering staff to finalize all submittals. ***Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA*** In early 2017, following repetitive street flooding in the Coventry Court area of River Ridge, MSMM Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated. In 2018, the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area. As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM investigate and determine the feasibility of providing improved drainage. The investigation consisted of the following: - Evaluation Phase/Data Review – collection and analysis of existing information

INDIVIDUAL CONSULTANT:

Name & Title:

Eric M. Curson

Design Manager

- Field Reconnaissance and Preliminary Survey – collection of relevant field information
- Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events.
- Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials
- Development of a Prioritized List of Recommendations – the alternatives developed were prioritized based on our engineering recommendations.

MSMM is the only entity to envision and develop the Coventry Court drainage pump station concept. The final report was completed in less than 6 months, and the final recommendation is to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge forcemain placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes.

Mr. Curson worked with the civil and hydraulic engineering staff to develop GIS shapefiles for inclusion into the model. He also mobilized to the field identifying catch basins, inlets, manholes and other drainage features, which he grabbed coordinates for and uploaded into the model. Finally, Mr. Curson developed project alternatives in GIS and provided conceptual level design in CAD.

Clearview Drainage Pump Station, St. Peter's Ditch Improvements – Phase 4, Jefferson Parish, LA.

MSMM engineering staff provided complete design services for a 220 cfs drainage pump station located within the DOTD Right-of-Way of the Clearview Parkway/Earhart Expressway interchange. The goal of this pump station was to pump stormwater runoff from the existing detention pond network, over Cross Canal, and discharge directly into the improved St. Peter's Ditch (box culvert). The project required multiple disciplines including civil, structural, electrical and mechanical engineering, as well as, cost estimating and drafting (CAD). The pump station structure contained three 75 cfs vertical lift pumps with 250 HP motors and several hundred feet of 36" discharge piping. Additional features of the project included a pile supported reinforced concrete structure, sheetpile intake area, trash rake with conveyor, conditioned control building, generator, traffic detour plan, discharge pipe aerial canal crossing, utility relocations, and other related improvements.

Mr. Curson was the lead CAD designer for the project. He worked with civil, structural, electrical and mechanical engineers to develop the project design and supply of all drawings.

Woodlake Estates/Seton Park Subdivision Drainage Pump Station, Jefferson Parish, LA

MSMM was tasked by the Jefferson Parish council to evaluate drainage pump station alternatives to solve the issue of long-term flooding in within the Woodlake and Seton Park neighborhoods within the City of Kenner. In 2018, MSMM completed a feasibility study that developed multiple drainage pump station alternatives which bypass the capacity limitations of the canals and alleviate stormwater flooding in the area. At the completion of the feasibility report, the following alternatives were identified:

INDIVIDUAL CONSULTANT:

Name & Title:

Eric M. Curson

Design Manager

- A new drainage pump station at the corner of Canal 17 and Canal 7 (west end of Joe Yenni Blvd.), a discharge forcemain westwards, with a discharge basin in the West Return Canal.
- A new drainage pump station at the northeast corner of Vintage Drive and Platt Street on Canal 17, a discharge forcemain westwards, with a discharge basin in the West Return Canal.
- A new inline drainage pump station at or near the corner of Canal 17 and Canal 7 with discharge into the canals and also with a discharge forcemain westwards to a discharge basin in the West Return Canal

Mr. Curson worked with the civil and hydraulic engineering staff to develop GIS shapefiles for inclusion into the model. He also mobilized to the field identifying catch basins, inlets, manholes and other drainage features, which he grabbed coordinates for and uploaded into the model. Finally, Mr. Curson developed project alternatives in GIS and provided conceptual level design in CAD.

Jefferson Parish Inflow & Infiltration System Modeling, Jefferson, LA

MSMM modeled wastewater collection network piping involving 225 sewer pump stations, more than 8,000 sewer manholes, 200 miles of gravity piping, and 200 miles of forcemains. Field inspection of all modeled stations was performed to conduct pump tests and determine current station capacities. GPS surveys were conducted to determine exact coordinates of manholes and wet wells. The data was updated in the GIS database, which was then utilized in the InfoWorks modeling software to determine the network's reaction to various design storms, and to quantify inflow and infiltration (I&I) problems. The model results identified SSO areas that matched closely with known customer complaints, sewer overflow records, and knowledge of O&M staff. The model was subsequently utilized to test and optimize system improvements, which were utilized by local planning authorities for long term master planning.

Mr. Curson was tasked with running the technical side of the program and routinely meets with GIS and Engineering personnel from Jefferson Parish to provide updates on data gaps/needs, priority projects and the potential for database improvements. He has been involved in the creating of this data set and database since before he was employed by MSMM. He continues to refine the data and database for planning use by Jefferson Parish.

Soniat Canal Improvements (SELA), Jefferson Parish, LA.

Federally funded project under the Southeast Louisiana Urban Flood Control (SELA) program that involved improving drainage along a major north-south running drainage canal via hydraulic studies, DDRs, design, geotechnical investigations, preparation of plans and specifications, construction management and resident inspection. This project increased the capacity of Soniat Canal from Canal No. 3 to West Metairie Avenue in Metairie, LA from 3,000 cfs to 5,200 cfs. This involved designs for U-shaped concrete flumes, utility relocations, and sheet piling transitions in seven separate bid packages:

1. Canal No. 3 to Veterans Memorial Boulevard –750' in length, lined with concrete flume;
2. Veterans Memorial Boulevard vehicular bridge replacement – 300' in length with three box culverts (each 18'H x 36'W);
3. Veterans Memorial Boulevard to West Napoleon Boulevard – 3,500' total length, lined with concrete flume;

INDIVIDUAL CONSULTANT:
Name & Title:
Eric M. Curson Design Manager

4. West Napoleon Avenue vehicular bridge replacement – 400' in length;
5. West Napoleon Avenue to Lynette Drive – 1,100' long;
6. Lynette Drive to Lester Street – approx. 2,900' long;
7. Lester Street to West Metairie Avenue – approx. 450' long with bridge replacement.

Mr. Curson provided all drafting work for the features of this project. He also worked with the engineering staff to develop figures and diagrams to present to Parish personnel and the public.

Avenue D Drainage Improvements, Jefferson Parish, LA.
Design of a drainage project (funded in part by LADOTD Statewide Flood Control), in highly urbanized neighborhood, including the upgrade of approximately 20,000 lf of storm drainpipe (15" – 96") and relocating approximately 10,000 lf of (6" – 48") waterlines and 8" sanitary sewer. Entire road was reconstructed as part of the project. The Project was divided into six (6) phases generally described as follows:

Phase I, Installation of 54", 72" and 78"x122" arch pipe along 8th Street between Avenue C and Gaudet Drive, and 54" and 60" drain line along Allo Street between 6th Street and 8th Street. (Construction Complete)
Phase II-A, Installation of 54"x88", 72", 62"x102" and 2 – 10'x7' box culverts along Avenue D between the Westbank Expressway and 6th Street. (Construction Complete)
Phase III, Installation of 54" and 60" drain line along Avenue A, 60" and 72" along Avenue C, and 48" and 54" along Gaudet Drive between 6th Street and 8th Street. (Construction on-going)
Phase IV, Installation of 48" drain line along Allo Street and Avenue C between 4th Street and 6th Street. (Design on-going)
Phase V, Installation of 42" and 48" drain line along Gaudet Drive and 48" and 54" along Avenue A between 4th Street and 6th Street. (Future Phase)
Phase VI, Installation of 72" RCP on 7th Street between Avenue B and Avenue C.

Mr. Curson provided all drafting services associated with the multiple phases of this project. He worked with multiple engineering personnel from various disciplines to draft and revise all drawings created for this project.

TEC Professional Services Questionnaire

INDIVIDUAL CONSULTANT:
Name & Title:
John M. Domingue Construction Inspector
Project Assignment:
Field Data Collection
Name of Firm with which associated:
MSMM ENGINEERING, LLC
Years' experience with this Firm:
7 (2015)
Education: Degree(s)/Year/Specialization:
N/A
Active registration: Year first registered/discipline:
N/A
Other experiences and qualifications relevant to the proposed Project:

Mr. John Domingue has more than 12 years of experience in construction management, resident inspection, administration, resident project representation, site assessment, inspection and quality control representation of projects in the Greater New Orleans area. He has worked on infrastructure projects such as flood control, water resources, roads, bridges, water, sanitary sewer, gas and electrical, as well as environmental projects including marsh restoration. Mr. Domingue has worked closely with local government officials from the City of New Orleans, City of Westwego, City of Gretna and St. Tammany Parish during construction of these projects as presented below:

Bayou Segnette State Park Improvements, Jefferson Parish, LA

MSMM is under contract with CPRA to perform all engineering services for five (5) areas of work, including playground improvements, boat launch improvements, culvert replacement, cabin roadway improvements, and bridge improvements. Implementation of the project was required as sea level rise and lack of routine maintenance had left a portion of the State Park unusable to the public. The design team was tasked with complete engineering services inclusive of topographic survey, preparation of a full design package, including drawings and specifications, coordination with the client for bidding construction administration, and resident inspection services for all areas of work. The playground and boat launch components were designed as stand-alone construction packages, and each construction package was released for bid 3-4 months apart to stagger the construction area. Mr. Domingue is currently providing the Resident Inspection for the boat launch portion of the project.

Hurricane Isaac CDBG Disaster Recovery Funding Program Management, St. Tammany Parish, LA

Construction of roadways and utilities for a planned academic campus, stormwater detention pond, and a Cultural Arts District, all funded by HUD/CDBG Disaster Recovery program. Specific project tasks included HUD/Davis Bacon labor compliance, resident inspection and reporting of construction activities, development, update and review of project schedule, NEPA documentation (ERR), and coordination with HUD and local

INDIVIDUAL CONSULTANT:
Name & Title:
John M. Domingue Construction Inspector

municipality. Total amount of funding was $10,915,000. Specific Role: Construction management, resident inspection, monitoring daily construction activities, review project plans and specs, writing daily field reports, coordinating with project manager and project engineer on any problems encountered during construction, HUD labor compliance interviews.

North Galvez Street Road Improvements, New Orleans, LA Complete street and utility replacement on North Galvez Street between Elysian Fields and Almonaster (9 city blocks). Associated project elements included street restoration, water and sewer relocation, and gas and fiber optic line relocation. Specific Role: Construction management, conducting on-site observations of work in progress, reviewing contract plans and specs, writing daily reports, monitoring daily activities, coordinating with project manager and project engineer on any problems encountered during construction.

Western Closure Complex Pumping Station, Jefferson, LA for US Army Corps of Engineers
Project was construction of concrete T-walls for flood protection on Peter's Road (Sector gate). Mr. Domingue performed construction management duties for the project, and was responsible for knowledge of construction concepts, principles and practices applicable to a full range of duties concerned. Observed and investigated construction as all stages to identify problems, report potential problems and take action on potential issues in a timely fashion. In charge of enforcement of contractor inspections on multiple sites, and responsible for making sure all personnel in compliance with the plans and specs. At the end of the project, performed a final inspection to make sure the final product met the expectation of both the client and contractor.

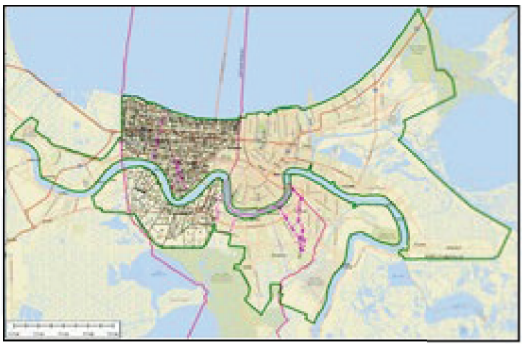
Construction Administrator, Mandeville, LA Primary responsibilities include the management of daily activities including management of the field staff, plans and specs compliance, review and progress completion schedule processes, and serving as the direct link between the project owner and the contractor with regards to monitor methodology and quality control.

Resident Project Inspector, Westwego, LA Primary responsibilities were monitoring the methodology and construction adherence to roadway specs. Heavy emphasis was places on roadway materials and re-routing of underground facilities. Primary duties included observing and inspecting all aspects of the construction from structural steel and concrete in foundations, to framing, electrical, HVAC and finishes, punch lists and following everything through to closeout.

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 01

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
USACE Silver Jackets Program Jefferson Parish Infrastructure and Watershed Master Plan Development **USACE New Orleans District** **Nik Richard, USACE Project Manager 504-862-2411** **Michelle Gonzales, CFM – Director, Ecosystem and Coastal Management 504-736-6653**	MSMM recently developed the Jefferson Parish Watershed Management Master Plan. Development of the Jefferson Parish Watershed Management Master Plan, (WMP) gave MSMM the dual opportunities of assisting parish leadership in developing strategies to prepare the drainage system for future sea level rise and of assisting the parish residents in lowering their flood insurance rates. Working through the US Army Corps of Silver Jackets program, MSMM provided lead assistance in the ongoing process of acquiring National Flood Insurance Program (NFIP) credit for developing the WMP as part of the Community Rating System (CRS).  The NFIP considers a WMP to be the result of a hydrologic and hydraulic study of the watershed using a hydrograph approach, examining both existing and future development conditions, and under different management scenarios. For CRS credit it must model at least the 100-year fully developed watershed at a scale sufficient to determine local problems. Utilizing the parish's existing SWMM models, MSMM adjusted input parameters for rising sea levels, changing storm patterns as projected in the NOAA Atlas 14 rain models, and changing development plans as projected in the Jefferson Parish future land use plan. The output from this modeling effort was then quantified in terms of water surface elevation changes. Utilizing modeling results, FEMA CRS guidance criteria, Jefferson Parish planning studies, input from the parish, and MSMM broad experience from previous drainage and flood studies; a series of recommended watershed management strategies were developed. These recommendations ranged from proposed implementation of standard low impact development principles, such as use of permeable pavements and bio-swales, to specific unique recommendations for Jefferson Parish watershed management regarding pump maintenance considerations, generation capacity and levee resiliency planning.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2021	$180	$180

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 02

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA **Port of New Orleans/AECOM** **Jonathan McDowell, PE** **(504) 450-9905**  	MSMM was tasked with developing an existing conditions Hydrologic and Hydraulic model for the new Port of New Orleans located in St. Bernard Parish. The site contains approximately 450 acres and will be utilized as an intermodal facility with ship, barge, rail, and truck traffic. The existing storage areas were modeled as subbasins in the HEC-HMS Version 3.5 (USACE 2010) and the 10-, 2-, 1-, and 0.2-percent annual chance event discharges for theses recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models. The hydrologic analyses for this project used rainfall runoff modeling using HEC-HMS to develop flow hydrographs which were used in unsteady HEC-RAS models. The final hydrograph output was a flow hydrograph as opposed to a single flow value. Therefore, rather than provide tables with the flow hydrograph information at various locations, the user is referred to the digital HEC-HMS model output that contains all the flow hydrograph discharges. Utilizing the selected alternative for the Proposed Full-Build Terminal Design facility and infrastructure plans, MSMM will develop a "Proposed Conditions SWMM Model" that includes proposed drainage features (location/size of pump stations, detention pond sizing, major canals, major culverts) necessary for the Full-Build Terminal Design. MSMM will make modifications to the Proposed Conditions SWMM Model to determine solutions to drainage problems within the studied area such that the post-development drainage flow stage, peak and volume characteristics are the same as the predevelopment drainage characteristics. The modifications will include alternate solutions for storm routing (including hydraulic grade line analysis), proper sizing of detention basins, pumping adjustments including supplemental pumping at existing stations and construction of additional pumping facilities to Violet Canal and the Mississippi River.

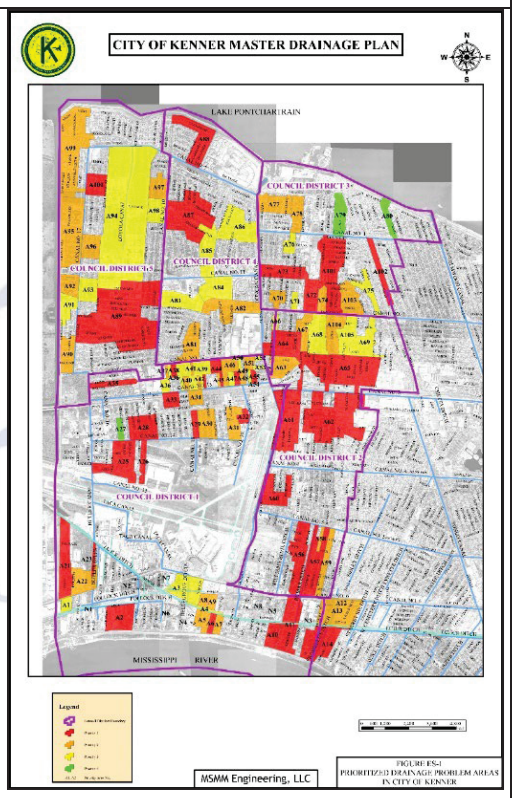
Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2022	$425	$425

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 03

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Drainage Master Plan Development, Kenner, LA **City of Kenner Department of Public Works** **Tom Schreiner, Director (504) 468-7515**	MSMM's principals created the GIS system for the entire City of Kenner subsurface drainage infrastructure that included 304 miles of pipes and culverts, 14,511 individual pipe/culvert segments, and 13,000 drain inlets and catch basins, and managed the database for quick retrieval. As part of developing this information for the Kenner Master Drainage plan project, our staff also characterized the drainage system via field inspections and Hydraulic Modeling utilizing the EPA SWWM. MSMM personnel were previously involved in developing drainage planning documents, inclusive of the City of Kenner Drainage Master Plan completed in April of 2010. Several of the projects identified in that plan were subsequently constructed. However, several drainage projects remained so this report was developed to prioritize recommended subsurface drainage improvement projects on a Council District based by identifying ten (10) highest priority project in each Council District. At the completion of this analysis, the City of Kenner received a compiled report that identified the highest priority projects, along with cost estimates, maps, and recommended drainage piping information. The recommended pipe sizing was based on a ten (10) year storm design standard. The Hydraulic Modeling for this Master Plan update was completed in a similar format to recent Hydraulic Modeling changes performed by Jefferson Parish. The end result was a list of drainage projects that will compete for available funding.



Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2018	$120	$120

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 04

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
South Kenner Pump to the River Feasibility Study, Kenner, LA **Jefferson Parish Drainage Department** **Mitch Theriot, PE, Director** **(504) 736-6751**  	For this project, MSMM provided key modeling and coordination roles for developing the South Kenner Pump to the River Feasibility Study. Examining the feasibility of the project gave our engineering staff the opportunity to assist Parish leadership in advancing a concept which has been considered a "no-go" strategy in previous studies. Utilizing a knowledge base of the storm drain system and the canal-pump station system that has been developed through years of working with Kenner and the Parish on drainage problems in the area, MSMM was able to leverage their knowledge base and analytical skills to develop a plan that resurrected the Pump to the River (PTR) concept as a viable strategy for decreasing flood stages over a broad area of Kenner and unincorporated Jefferson Parish. The modeling effort for this study involved analysis of the South Kenner EPA SWMM model and performing hydrology and hydraulic analyses utilizing the HEC-HMS and HEC-RAS models approved by FEMA and the Army Corps of Engineers. These models were used to identify runoff volume and storm flood stages expected in the watershed of the Duncan Canal and Soniat Canal. The Harahan Pump-to-the-River system was added to the HEC-RAS "Jefferson East Bank HSDRRS Project Model" so the model would reflect the projected pump conditions that would exist when the Kenner PTR system would be brought online. Rigorous modeling efforts culminated in the finding that a significant area of flooding could be reduced by extending the conveyance system to the larger reach of the Duncan Canal. In terms of value as measured by the cost of canal and pump station per of volume of water removed from the system, the PTR system was found to provide significant economies because of the short distance of conveyance to the river when compared to the long distance and multiple constrictions involved in conveyance to Lake Ponchartrain.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2014	$150	$150

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 05

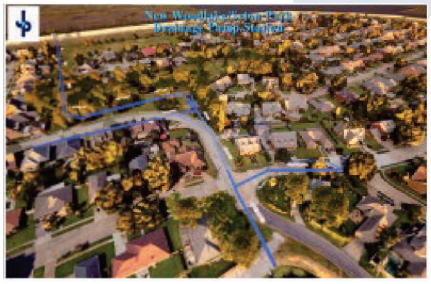
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Coventry Court Drainage Evaluation Feasibility Modeling Report and Subsurface Design River Ridge, LA **Jefferson Parish Drainage Department** **Mitch Theriot, PE – Drainage Director** **(504) 736-6751**  	In early 2017 and following repetitive street flooding in the Coventry Court area of River Ridge, MSMM Engineering worked with the Jefferson Parish District 2 office to propose a solution to the flooding issues in the area. The MSMM engineering team identified several potential options that could be evaluated, and in 2018 the Jefferson Parish Council tasked our staff with developing a multi-phase feasibility report to evaluate several drainage solutions in the area. As part of the Coventry Court evaluation, the Jefferson Parish drainage department requested that MSMM investigate and determine the feasibility of providing improved drainage. The investigation consisted of the following: - Evaluation Phase/Data Review – collection and analysis of existing information - Field Reconnaissance and Preliminary Survey – collection of relevant field information - Model Runs and Calibration – updated the HEC-RAS model with the area's data for 10-year, 50-year and 100-year storm events. - Cost Estimating of Multiple Alternatives – provided detailed cost breakouts consisting of vendor furnished pricing data for materials - Development of a Prioritized List of Recommendations The final report was completed in less than 6 months, and the final recommendation was to design a new drainage pump station on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway. This 90 cfs (120 cfs ultimate) pump station with a 48' open cut discharge forcemain placed down Colonial Heights Road and over the Mississippi River levee. Other project features consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2018	$299	$299

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 06

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Woodlake Drainage Pump Station Hydraulic Modeling and Preliminary Design, Kenner, LA **Jefferson Parish Drainage Department** **Mitch Theriot, PE – Drainage Director** **(504) 736-6751** 	The Woodland Estates & Seton Park subdivision areas are located at the confluence of Canal 7 and Canal 17 in Kenner. The current drainage system consists of an enclosed gravity storm sewer system that outlets at various locations in the canals. The distance the stormwater within the canal must travel before it is pumped is excessive (nearly 2 miles to the Duncan Canal Pump Station and 2.25 miles to the Parish Line Pump Station). Due to the excessive distance, the water within the canal typically backs up, creating an increased head situation where the gravity drainage pipes are unable to discharge as intended. This generates a backwater flow condition which causes repeated flooding in the area. Because of the existing conditions in the area, MSMM completed a drainage evaluation report that evaluated options for removing the backflow condition in this area. The subsurface drainage was modeled with the US EPA Storm Water Management Model (SWMM) and the canals and pump station utilized the River Analysis System (HEC-RAS) software. The HEC-RAS model conducted existing condition and other simulation under design storms of 10-year, 50-year and 100-year intensities. The resulting conditions were utilized for comparison purposes. The alternate iterations result in varying degrees of water surface lowering and flooding reduction. Extents of improvement projects, associated cost opinions, and required ancillary items such as right of way acquisitions, etc. were considered to select the most optimum combination which will provide the most flooding reduction. The modeling process indicated that both the subsurface drainage system and high-water elevations in the canal during a 10-year storm event are contributing to flooding issues in the project area. The recommendation was made to construct an in-line 120 cfs drainage pump station directly benefiting the two neighborhoods, as the pump station will be the new outlet, therefore no longer relying on the canal system. This alternative will indirectly benefit the entire area by removing the runoff created from these subdivisions from entering the canal system, therefore freeing up canal capacity from other areas.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2018	$225	$225

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 07

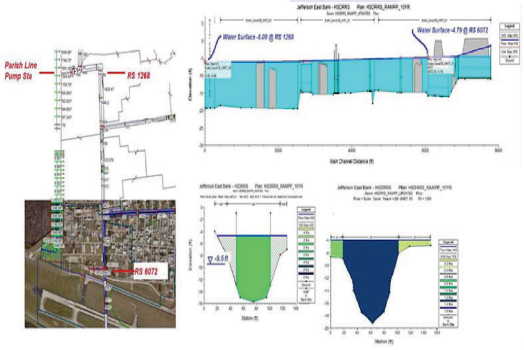
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
New Orleans International Airport Taxiway Golf and Delta Extension, Kenner, LA **New Orleans Aviation Board** **James McCluskie** **(504) 464-0831**  	MSMM provided extensive hydraulic modeling, engineering design and construction administration services for the extension of Taxiway Golf and Taxiway Bravo at the New Orleans International Airport. Taxiway G will serve the new terminal facility opened on the north side of the airport. In its current condition, Taxiway G does not extend to the Runway 11 threshold, and aircraft departing from Runway 11 are required to cross the active runway at Taxiway A to access Runway 11. Extending Taxiway G will provide much more efficient access to the Runway 11 threshold, and aircraft will no longer be required to cross an active runway to depart from Runway 11. Project design elements MSMM completed/assisted with included the following: • Hydraulic Modeling – Design of the storm sewer system was based on the EPA SWMM methodology. Pipes were designed to flow full for the 5-year storm event and to provide one-foot freeboard below the inlet grate for the 10-year storm event for a free outfall condition. Some freeboard exceptions were made in the upper end of the storm sewer where the pipes to be employed by the system are existing and dual flow of storm sewer and ditch may occur along the vehicle service road. Freeboard exceptions will also occur in portions of the median area impounded by Taxiway G, Taxiway Ult. G2, Runway 11-29, and Taxiway Ult. G3 (now Taxiway A) where the existing ground and grates to remain in the system currently do not provide freeboard. Tailwater values at the canal outfalls were based on stage-frequency relationships extracted from the Parish HEC-RAS model. •Drainage Design – Storm drainage design for the medians and infields, a culvert crossing for Taxiway B, channel stabilization design for Canal 15, and adjustments of the Airport Intake Canal to accommodate the vehicle service road relocation. The project was bid in late 2020 and as of March 2022 is currently in construction where MSMM is performing construction admin services.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2022	$900	$900

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 08

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
New Orleans International Airport North Terminal Comprehensive Hydraulic and Hydrologic Modeling Study, Kenner, LA **New Orleans Aviation Board** **Chris Spann, Program Manager** **(913) 940-1301** 	MSMM performed the hydraulic and hydrologic aspect of the North Terminal Expansion Project at the New Orleans International Airport. MSMM adopted the existing hydraulic models such as the 1992 Jefferson Parish UNET model, the 2005 Corps of Engineers HEC-RAS model, and the 2012 Jefferson Parish HEC-RAS model and supplemented them with recent field and record data, creating the new 2013 Airport hydraulic model. From this it was determined the airport would mitigate its peak rate of discharge to include all previous improvements from 1992 to the present. This was commonly known as "Catch-up Mitigation". The difference from the peak runoff from 1992 to the peak runoff from the 2013 conditions as well as the improvements from the North Terminal Expansion were used to size the new drainage pump station along with the drainage conveyance systems for both airside and landside drainage. MSMM worked with airport personnel to determine different mitigation options including on-site pumping, on-site storage or capacity enhancements to Parish owned pumping facilities. MSMM completed a comprehensive analysis of existing as-builts from projects completed at the airport since 1992; completed a field walk-through investigation to inventory existing drainage features; collected data for model calibration; completed a hydrology analysis of the storm sewer system for both the 1992 and 2013 conditions and completed a storm sewer hydraulic grade line analysis. As a result, MSMM prepared numerous Hydraulic and Hydrologic studies including the Phase 1 North Terminal Expansion, Catch-up Mitigation, Phase 2 North Terminal Expansion, Parking Garage Upgrades and the North Wooded Area. MSMM utilized the model to design airside and landside drainage features including more than five miles of drainage piping ranging in sizes from 12" to 72", open channels, box culverts, and the connection to the Butler Canal box culvert, and a new 600 CFS drainage pump station.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2016	$500	$500

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 09

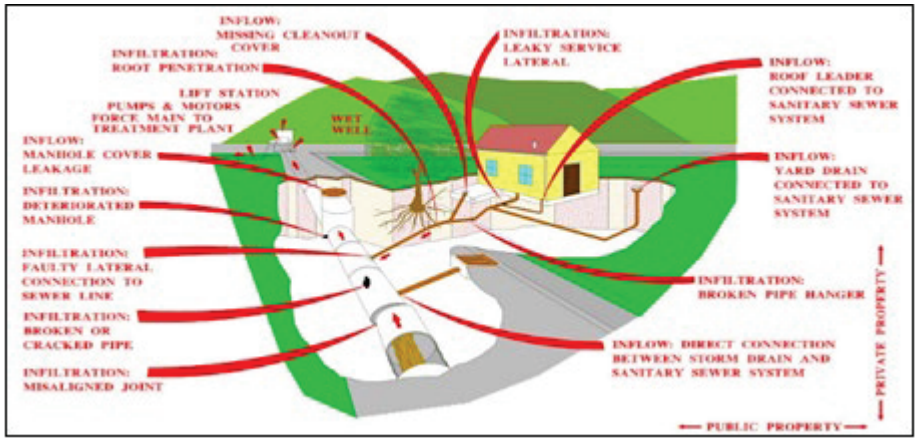
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Mirabeau Garden Stormwater Management and Flood Mitigation Modeling **City of New Orleans Department of Public Works** **Megan Williams Stormwater Program Manger 504-658-8065**	The Mirabeau Gardens Green Infrastructure project involved the intake of water from the Mirabeau trunk line into the project site via a forebay, followed by pumps, vegetated filtration ponds, freshwater swimming pool, woodlands, washes and bioswales, recreational, educational and sports amenities, and eventual discharge into the Mirabeau trunk line. Downstream discharge into Mirabeau trunk line is planned for storms exceeding 10-year intensity, while for all lesser intensity storms, the stormwater will be stored and infiltrated within the site. During the design stage, MSMM conducted hydrologic and hydraulic (H&H) modeling, derived model predicted flood depths, and mapped flooded areas and flood depths. This data was utilized by FEMA to calculate benefit-cost ratio (BCR) of the project. MSMM's H&H model efforts and deliverables proved to be key elements that facilitated BCR of greater than 1.0. Our evaluation utilized both SWMM and HEC-RAS models, reviewed and reconciled the elevation parameters, evaluated the interconnectivity and the numerical model flows between 2 storm sewer systems (DPS03 & DPS04), reviewed information on calibration and model adjustments that were made to derive expected depth of flow in the storm sewers adjacent to the project, SWMM model data, developed stormwater flow rate and volume at multiple drainage nodes around the subject site for 2-year, 5-year, 10-year, and 100-year storms, developed maps of modeled drainage nodes, developed profiles of modeled storm drains, calculated drainage area acreages and prepared maps. We also developed drainage sub-basin delineation maps to facilitate analysis of backwater in the storm drains acting as 'upstream' areas, and relationship of drainage area boundaries to the status of flow within the storm sewer. Based on our modeling efforts, the project was full designed and will be constructed in 2022.

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	Work for which Firm was Responsible:
2021	$900	$180

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 10

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:
Jefferson Parish Department of Sewerage (DOS) – Sewer Infiltration and Inflow Management – Jefferson Parish, LA **Jefferson Parish Sewer Department** **Mike Lockwood, Sewer Director** **(504) 736-6661**	MSMM principals conducted field survey of sewer manholes and pump stations utilizing GPS equipment (GPS System 500) and SKI-Pro software (both from Leica Geosystems), data entry into database and management of database (MS Access) to create and maintain Jefferson Parish's intricate wastewater collection system network in ArcGIS software, mapping of the system's features, followed by hydraulic modeling (InfoWorks) to identify problem areas under various storm conditions graphically within a GIS mapping environment, and recommend capacity and rehabilitation improvements to minimize rainfall derived infiltration and inflow (I&I) and related sanitary sewer overflows (SSOs). Detailed field investigation of nearly 6,000 manholes and 250 plus pump stations were conducted. Many rehabilitation projects have been identified costing upwards of $500 million, along with identifying many areas that will require sewer system evaluation surveys (SSES) to further pinpoint problem locations and causes. A total of twenty SSO areas were chosen for evaluation as part of this project. The total estimated cost of all recommended improvements because of model evaluation of 20 SSO areas located on the East Bank of Jefferson Parish was $21,858,424.00. Currently the hydraulic model is being updated to reflect recent construction projects and identify/rank the remaining project areas in terms of need for action to resolve current issues. 

Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	**Work for which Firm was Responsible:**
2018	$300	$300

TEC Professional Services Questionnaire

M. List all prior and/or on-going litigation between Firm and Jefferson Parish. Please attach additional pages if necessary.

Parties:		Status/Result of Case:
Plaintiff:	**Defendant:**	
Not Applicable	**Not Applicable**	**Not Applicable**

N. Use this space to provide any additional information or description of resources supporting Firm's qualifications for the proposed project.

MSMM Engineering, LLC (MSMM) is one of the fastest growing small businesses in the greater New Orleans area. Specializing in drainage infrastructure assessment and design, MSMM offers experienced personnel with an extremely diverse skill set. MSMM engineers total over 150 years of design experience and combined have designed over 250 projects for Jefferson Parish. The principals of MSMM alone have designed over two hundred Jefferson Parish projects. We are extremely proficient in providing feasibility/drainage phase, design phase, and construction phase services for drainage infrastructure projects.

Given the scope detailed in the solicitation, MSMM's modeling and drainage design acumen can be clearly seen through the list of recently completed assessment, modeling, and design (drainage-related) projects listed below:

- Jefferson Parish Watershed Management Plan
- Evaluation of Coventry Court Drainage
- Evaluation of the Woodlake Drainage Pump Station
- New Orleans International Airport Taxiway G Extension Hydraulic Analysis
- Sauvé Road Drainage Improvements
- Drainage Pump Station Design, New Orleans International Airport, Kenner, LA
- Kenner Statewide Flood Control Drainage Improvements
- Harahan Pump to the River, Jefferson Parish, LA
- Clearview Drainage Pump Station
- Soniat Canal Drainage Improvements (USACE/SELA project)
- Sena Drive Drainage Improvements
- Complete reconstruction of Aubry Street in New Orleans including drainage
- Design for Additional Pump at the Parish Line Pump Station

1. Professional Training and Experience in Relation to the Type of Work Required for the Engineering Services:

MSMM is currently completing a large-scale Watershed Management Plan for Jefferson Parish that includes extensive watershed modeling. This collaborative effort completed through the USACE New Orleans District is an important duel hatted program for the Parish as it helps identify drainage deficiencies while subsequently providing National Flood Insurance Program criteria for the possibility of benefitting Parish residents. The objective of this FEMA watershed master planning project is to provide Jefferson Parish with a framework to make decisions that will result in decreased losses from flooding. Based on FEMA recommended criteria, the Watershed Management Plan presents an analysis of the existing and future conditions on over 50-percent of

the Parish inside the levees for 10-year, 25-year, and 100-year storm events using a hydrograph approach based on EPA SWMM model analysis. SWMM models of the Jefferson East bank Polder and the Catouatche Polder were analyzed individually. The combined area of the two polders exceeded the "inside the levee" area criteria of 50-percent. Comparative future conditions were assessed using Technical Paper 40versus NOAA Atlas 14 rainfall intensity predictions and using current sea level versus NOAA's2100 intermediate Sea Level Rise Projection which anticipates a 5.8-feet rise in sea level. Future land use was based on the newly updated Jefferson Parish Edge 2040 land use information. Parish EPA SWMM numerical hydrologic-hydraulic models were used in assessing impacts.

The model analysis indicated that the existing pump system has sufficient capacity to maintain near-present water surfaces despite rising sea levels, but the percent utilization and power usage are increased so that maintenance wear and tear, and power provisions should be considered. Considering storm intensity revisions as standard rain intensities are adjusted from historic Technical Paper 40 intensities to the more current NOAA Atlas 14, the values Jefferson Parish uses for 10- and 25-year storms already exceed NOAA Atlas 14 storm intensities. However, the 100-year NOAA storm is 1.4-inches greater than the Technical Paper 40 value used such that associated water surface impacts should be considered to avoid future revision of the flood plain mapping. The storm water surface impacts due to development in the Catouatche Polder were found to be substantial if the area is built out to the future land use plan without mitigation or canal and pump capacity upgrades. Based on the findings of the SWMM model analyses, recommendations for future development and redevelopment are addressed to ensure that peak stages for the 10-year, 25-year, and 100-year storm events are not increased.

MSMM is also the sole entity to envision, develop and evaluate this Coventry Court Drainage Pump Station project. On the sixth day of June 2018, MSMM was selected under Resolution #131571 to provide professional engineering services for a drainage analysis of the Coventry Court area of River Ridge. The drainage analysis (feasibility report) was completed in December of 2018, with our staff recommending design of a new drainage pump station to be placed on a vacant parcel owned by the parish between Coventry Court and Lee Court, westerly of Jefferson Highway in River Ridge. The pump station will be 90 cfs (120 cfs ultimate) and will have discharge pipe (48' open cut discharge force main) placed down Colonial Heights Road and over the Mississippi River levee. Other project features of the conceptual design consist of a discharge dolphin in the Mississippi River and upsizing of the Jefferson Highway drainage crossings and downstream conveyance. This recommended alternative provides the greatest pumping capacity while requiring the least amount of permanent drainage servitudes within the neighborhood.

MSMM was selected under an amendment to our Coventry Court contract to provide subsurface drainage design phase for the Coventry Court project. For this component of the project, our civil and structural engineers are currently designing 500 linear feet of 48" RCP drainpipe from Rex to Hazel Street, 1,100 linear feet of 54" RCP drainpipe from Hazel to Colonial Heights, and 200 linear feet of 72' RCP drainpipe from Jefferson Highway to the proposed site of the drainage pump station. This drainage design is the first step in the Coventry Court drainage pump station process and allows this phase of the design to move forward as utility conflicts and permitting for this phase, may take more time. Drainage connections to the easterly side of Jefferson Highway will eventually be cut-off and a distinct drainage district will be created in the Coventry Court neighborhood. The drainage improvements currently under design by MSMM will be a critical step in routing water to the pump station for discharge over the levee and into the Mississippi River.

We are one of the most knowledgeable firms about subsurface drainage in general, and Jefferson Parish drainage in particular. Since the beginning of the SELA program, MSMM's Principal Mr. Manish Mardia has been involved with large scale canal improvement and pump station projects in Jefferson Parish (Harahan Pump to the River, and Soniat Canal improvements). MSMM has modeled, designed, and provided construction inspection and management on several subsurface drainage improvement projects in Kenner (Jefferson Parish), analyzed the entire drainage system of the New Orleans International airport in Jefferson Parish, and conducted complete design of the 600 cfs airport drainage pump station that was recently constructed. The airport drainage work required MSMM to conduct hydraulic modeling, which included the entire east bank of Jefferson Parish, and included recent SELA improvements as well. MSMM's principals also analyzed the entire subsurface drainage system of a prominent Jefferson Parish community (Kenner) through the Woodlake and Seton Park drainage evaluation. We have developed a feasibility study for the community, conducted hydraulic modeling, and applied for a state grant to implement the drainage improvements. Furthermore, Mr. Mardia managed several phases of the Harahan Pump to the River project, and Mr. Chehardy was the designer of record of multiple phases of the project. Mr. Wilson was the designer of record for the Sauvé Road drainage pump station and the new drainage pump station at the airport. Mr. Willis has provided all the hydraulic modeling for each of the MSMM projects and is currently the lead POC for the Parish on the Watershed Masterplan Work.

Given the qualifications listed above, our engineering staff are extremely familiar with the region's drainage infrastructure in general, Jefferson Parish's drainage infrastructure, and the soil characteristics that impact design decisions, pose constructability issues, and factor into permitting.

2. Capacity for Timely Completion of Newly Assigned Work, considering the Factors of Type of Engineering Task, Current Unfinished Workload, and Person or Firm's Available Professional and Support Personnel:

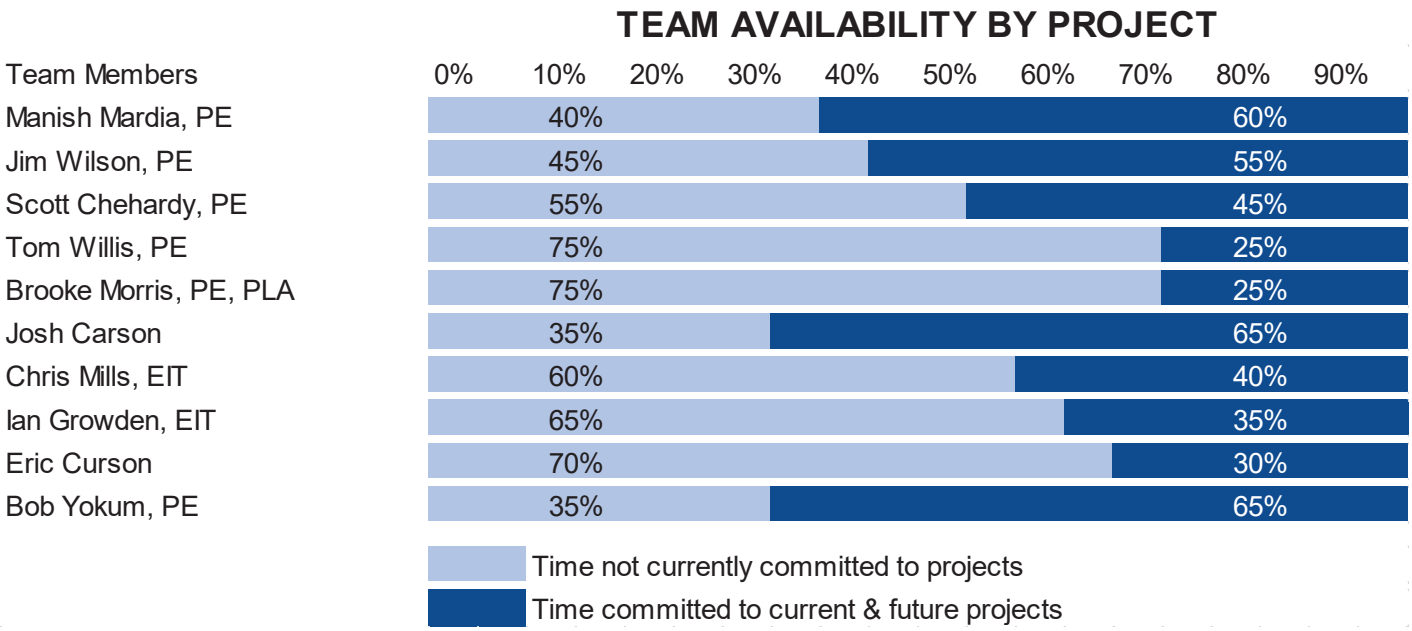
MSMM prides itself in completing projects on time and under budget. Since the inception of MSMM, our staff engineers have completed over one hundred design projects, including multiple drainage pump stations (as detailed above). We have also experience utilizing SWMM, HEC-RAS and HEC-HMS models that will be instrumental in the development of this project. Having prior knowledge of running these models for the Parish and meeting deadlines will be critical for any firm. Waiting to win the contract, acquiring the software and training staff will not be a successful strategy for this project, and our staff currently runs these programs daily, and can be seen in the chart below, has ample availability to continue serving the needs of the Parish. Our engineering staff have designed/worked on more than ***two hundred projects for various Jefferson Parish departments.*** These projects were successfully completed within the identified schedule and met the quality standard Jefferson Parish expects in design performance. The Jefferson Parish references identified in the response to question #7 can attest to the quality standard and timely completion of Parish projects by MSMM and our personnel. Please reach out to them to gain a better understanding of our firm abilities/accomplishments.

MSMM's current project load allows ample flexibility in our staffing arrangements to ensure that completion of the field and modeling work associated with this project is completed on time and within budget. We recently wrapped up four of our largest design jobs, one being the large drainage pump station at the New Orleans International Airport, and the other three were large design task orders for USACE Ft. Worth where we designed an office building, a roadway and bridge project and a large recreational project. These four jobs encompassed most of our engineering resources over the last 2 years. With these jobs now finished, we have

started to allocate our engineering resources to smaller jobs, and they have ample availability in their current schedules for a new project. In addition, the other large design jobs we currently have ongoing for USACE (Cow Bayou Drainage Complex, Ascension Parish Wastewater Treatment Plant, and design for a new floodwall in Texas City, TX) have moved past the preliminary design phase and final design will be completed before the end of the year. Additionally, the larger Jefferson Parish Watershed report has been finalized and provided to the Parish and USACE, so our modeling staff also has ample availability currently. Given the nature of our current workload, our engineering design and support staff availability is shown in the following table:

Current Workload and Future Commitments

The bar graph below depict the availability of the proposed key personnel for this project



3. Location of Principal Office Where Work Will be Performed:

All work associated with this project will take place out of the MSMM office located at 4508 Clearview Parkway, Metairie, LA 70006.

4. Adversarial Legal Proceedings between the Parish and the Person or Firm Performing Professional Services, in which the Parish prevailed, or any ongoing Proceedings between Parish and the Person or Firm:

MSMM is proud to state that **neither the firm nor our staff have been involved in any litigation activity with Jefferson Parish** or any other client.

5. Prior Successful Completion of Projects of the Type and Nature of the Engineering Services, as Defined, for which firm has Provided Verifiable References:

We offer the following references that can attest to our previous work history regarding hydraulic modeling utilizing SWMM and HEC-RAS modeling, along with the appropriate fieldwork it will require to supply accurate data to the model.

For recent Jefferson Parish drainage projects completed by MSMM inclusive of: Jefferson Parish Watershed Master Planning, Coventry Court Drainage Evaluation, Sauvé Road Drainage Pump Station Design, Woodlake/Seton Park Drainage Evaluation, New Orleans International Airport Drainage Pump Station Design, Kenner Statewide Flood Control Drainage Improvements, Harahan Pump to the River, Clearview Drainage Pump Station, Soniat Canal Drainage Improvements (USACE/SELA project), and Sena Drive Drainage Improvements, we offer the following references:

- **Mitch Theriot, P.E., Director of Drainage Department • Jefferson Parish •** 1221 Elmwood Park Blvd., Ste. 907, Jefferson, LA. 70123 • 504-736-6751
- **Michelle Gonzales, CFM Director of Ecosystem and Coastal Management • Jefferson Parish •** 1221 Elmwood Park Blvd., Ste. 310, Jefferson, LA. 70123 • 504-736-6653
- **Neil Schneider, P.E., Director of Capital Projects • Jefferson Parish •** 1221 Elmwood Park Blvd., Ste. 906, Jefferson, LA. 70123 • 504-736-6833
- **Walter Krygowski, Deputy Director, and Chief Operations Officer • New Orleans International Airport •** 504-303-7551

For recent projects we have designed that have involved detailed hydraulic modeling, permitting with DOTD, CPRA, the Coast Guard and levee lifts/re-design and bike path/utilities relocation for the USACE New Orleans District:

- **Mark R. Wingate, P.E., Deputy District Engineer for Programs and Project Management (DPM) • US Army Corps of Engineers, New Orleans District •** 504-862-2512
- **Durund Elzey, Assistant Deputy District Engineer for Programs and Project Management (DPM) • US Army Corps of Engineers, New Orleans District •** 504-862-1674

6. Size of Firm, considering number of Professional and Support Personnel Required to Perform the type of Engineering Tasks:

MSMM has a total of twenty-eight personnel that will be available to work on this project. Though labeled as a small DBE firm, our modeling and engineering qualifications rival those of larger firms in the region. We were selected by the USACE Ft. Worth and New Orleans Districts for Prime small business contracts to perform A-E Design and Project and Program Management on Federal projects. We have also received a prime engineering design contract by the RTA of New Orleans. Finally, were ranked the top small business firm for roadway design in the region by the City of New Orleans Department of Public Works. Recently in Jefferson Parish, we have primarily provided hydraulic modeling services for various projects. These modeling reports have been widely successful and have been reviewed and approved by top Parish officials.

When beginning any new job, MSMM launches a QA/QC template that assigns personnel based on experience, location, and availability. This plan is developed by the Project Manager and reviewed by the Program

Manager before any tasks are executed on the project. MSMM employs a QA/QC manager who not only reviews the quality of the design but engages in forecasting available resources based on the current workload at the company. The QA/QC manager works in unison with the project manager to guarantee that MSMM is providing quality work products and ample capacity to add resources to the job, should the scope change during design.

For this project, we envision the standard need for the Program Manager, QA/QC manager and Project Manager. We will also assign 2 Hydraulic Engineers, 2 Civil Engineers, a CAD drafters/woman, 1 GIS lead, and two engineers in training who will be responsible for the management, collection and dissemination of new field information that will supply the model with accurate data. The resources available may be too many for the type of work involved, but this is all factored into how MSMM will run the project through our QA/QC plan.

Mr. Tom Willis will be the primary hydraulic modeler for this project. He has recent relevant modeling experience in the Parish and is currently completing the Jefferson Parish Watershed Management Plan where he is actively working with Ms. Michelle Gonzales, FEMA, and the US Army Corps of Engineers to supply the Parish with a usable watershed plan. He was also the lead modeler for multiple MSMM drainage task orders at the New Orleans International Airport, where he was responsible for determining appropriate drainage mitigation measures for multiple infrastructure components. Mr. Willis is extremely proficient in using EPA SWMM, HEC-RAS and HEC-HMS modeling software to complete model runs and brings over 30 years of modeling experience to Jefferson Parish for this project.

7. Past Performance by Person of Firm on Parish Contracts:

Our engineering staff have been the designer of record for seven (7) recent drainage pump stations in Jefferson Parish and Texas. Of the recent pump stations completed in Jefferson Parish, our engineering staff were the designer of record for 5 (five of those stations. Mr. Jim Wilson was the designer of record for the recent six hundred cfs drainage pump station at the New Orleans International Airport, as well as the Sauvé Road Drainage Pump Station that was also constructed in River Ridge. Mr. Scott Chehardy was the designer of record for the Clearview Drainage Pump station and for multiple packages of the Harahan Pump to the River project. Mr. Chehardy and Mr. Manish Mardia were also heavily involved in recent updates to the Parish Line Pump Station. As stated above, Mr. Tom Willis has been the hydraulic modeler on several of these drainage pump station projects and has identified drainage pump stations as the best mitigation method from his modeling runs. As you can see, MSMM is highly qualified to perform the required services for this project and has recent similar project experience that proves our capability to successfully complete this project.

Since the early 1990s, the President of MSMM Engineering, LLC has worked *on more than* ***two hundred projects for various departments of Jefferson Parish.*** Project types designed by MSMM engineering staff include drainage evaluation/pump stations, roads and bridges, stormwater and wastewater system assessment, funding and construction administration, environmental site assessments, permitting and NEPA documentation, and hurricane hazard mitigation design for drainage and sewerage facilities. MSMM's Principals have worked on Jefferson Parish contracts for the past 20 years and have a history of successful project execution starting from grant applications, through environmental permitting and design, to construction administration and grant management. At no point during the 20+ year career of producing project plans and specifications has any member of MSMM been involved in projects involving design inadequacies,

cost over-runs or assertions of fault. This statement can be verified by checking with the references listed in the response to Question #5.

A listing of other (not previously covered in this RFQ response) Jefferson Parish projects completed by MSMM engineering staff:

- Utility (Sewer) Relocations – Huey P. Long Bridge Widening
- 31st Street Bridge Replacement
- Hilltop to Quitman Bridge Replacement
- Manhattan Boulevard Rehabilitation from Lapalco to Harvey
- Lapalco Boulevard Widening
- Hickory Avenue (LA-48 to Mounes)
- Harahan Pump to the River, Jefferson Parish, LA
- Soniat Canal Drainage Improvements (USACE/SELA project)
- Drainage Pump Station Design, New Orleans International Airport, Kenner, LA
- Storm Water Demonstration Project, Force Main & East Bank Wastewater Treatment Plant Expansion, Jefferson Parish, LA.
- Sena Drive Drainage Improvements
- Sauvé Road Drainage Improvements
- Canal 7 Drainage Improvements at Chateau Boulevard and Joe Yenni Boulevard
- East Bank Subsurface Drainage Improvement Program Phases I and II
- Drainage Evaluation of Canal Nos. 17 and 7, and Parish Line Pump Station
- Environmental Review for Hurricanes Gustav and Ike CDBG Disaster Recovery grant projects
- Infiltration/Inflow Hydraulic Modeling, Jefferson Parish, LA
- Chetta Drive Gravity Sewer System, Jefferson Parish, LA
- East Bank Water Treatment Plant Expansion, Jefferson Parish, LA
- Wastewater Treatment Plant Modifications, including Sewer Force Main (Tribune to East Bank WWTP), Jefferson Parish, LA
- Sewerage Improvements to the Crown Point Area, Jefferson Parish, LA
- Drainage Design Services for the Long-Term Airport Development, New Orleans International Airport, Kenner, LA

Concept design of the MSMM Hydraulic Modeling Results for the Woodlake Pump Station

O. To the best of my knowledge, the foregoing is an accurate statement of facts.

Signature: _____ **Print Name:** Manish Mardia, PE

Title: President **Date:** March 18, 2022

BRYANT HAMMETT & ASSOCIATES, LLC
CIVIL ENGINEERING & LAND SURVEYING

TEC Professional Services Questionnaire for

SURVEYING

BRYANT HAMMETT & ASSOCIATES, L.L.C.

1104 DEALERS AVENUE, SUITE A

HARAHAN, LA 70123

Bryant O. Hammett, Jr., P.E./P.L.S.
Owner/manager
Office: (504) 733-8004
Email: bhammett@bha-engineers.com

TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

Provide Professional Engineering and Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish (Resolution # 138896)

B. Firm Name & Address:

Bryant Hammett & Associates, LLC
104 Dealers Avenue; Suite A
Harahan, LA 70123

BRYANT HAMMETT & ASSOCIATES, LLC
CIVIL ENGINEERING & LAND SURVEYING

C. Name, title and contact information of Principal, as defined in Section 2-926 of the Jefferson Parish Code of Ordinances, who is a registered, licensed architect, professional engineer, or surveyor in the State of Louisiana:

Bryant O. Hammett, Jr, P.E./P.L.S.
Owner/Manager
Office: (504) 733-8004
Email: bhammett@bha-engineers.com

D. Name and contact information of employee who is a registered and licensed architect, professional engineer, or surveyor in the State of Louisiana in the applicable discipline. A subcontractor may be substituted here only if the advertised Project requires more than one discipline.

Hugh McCurdy, III, P.L.S.
Professional Land Surveyor
Office: (504) 391-2835
Email: hmccurdy@bha-engineers.com

E. Please provide the number of employees whose primary function corresponds with each category:

3 Administrative	0 Estimators	0 Specification Writers
0 Architects (Licensed)	1 Geologists	0 Structural Engineers
0 Chemical Engineers	0 Geotechnical Engineers	0 Graduate Engineers
2 Civil Engineers	0 Interior Designers	3 Project Managers
7 Construction Inspectors	0 Landscape Architects	4 Clerical
0 Ecologists	9 Land Surveyor	___ Grant/Funding Specialist
0 Electrical Engineers	0 Mechanical Engineers	___ Sanitary Engineers
0 Engineer Intern	0 Environmental Engineers	
2 Professional Land Surveyors		33 **TOTAL**

F. Is this submittal by a JOINT-VENTURE? Please check: YES [ ] NO [✓]

If marked "No" skip to Section I. If marked "yes" complete Sections G-H.

TEC Professional Services Questionnaire

G. If submittal is by JOINT-VENTURE, list the firms participating and outline specific areas of responsibility (including administrative, technical, and financial) for each firm. Please attach additional pages if necessary.

1.

NOT APPLICABLE

2.

H. Has this JOINT-VENTURE previously worked together? Please check: NOT APPLICABLE

YES ☐ **NO** ☐

I. List all subcontractors anticipated for this Project. Please note that all subcontractors must submit a fully completed copy of this questionnaire, applicable licenses, and any other information required by the advertisement. See Jefferson Parish Code of Ordinances, Sec. 2-928(a)(3). Please attach additional pages if necessary.

Name & Address:	Specialty:	Worked with Firm Before (Yes or No):
1. NOT APPLICABLE		
2.		
3.		

J. Please specify the total number of support personnel that may assist in the completion of this Project:

14

TEC Professional Services Questionnaire

K. List the professional in charge, key persons, specialists, and individual consultants anticipated for this Project and provide their relevant information below. If necessary, please attach additional documentation (i.e. resume) that demonstrates the employment history and experience of the Firm's key persons that may assist in the completion of this Project. Please attach additional pages if necessary.

PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Bryant O. Hammett, Jr., P.E./P.L.S.
Owner/Manager

Project Assignment:

Supervising Professional

Name of Firm with which associated:

BRYANT HAMMETT & ASSOCIATES, LLC
CIVIL ENGINEERING & LAND SURVEYING

Years' experience with this Firm:

37

Education: Degree(s)/Year/Specialization:

B.S. / 1978 / Civil Engineering

Active registration: Year first registered/discipline:

1983/Civil Engineering, LA
1985/Surveyor, LA
1985/Civil Engineering, MS
1996/Environmental Engineering, LA

Other experience and qualifications relevant to the proposed Project:

Bryant O. Hammett, Jr. P.E./P.L.S. is the sole proprietor and manager of Bryant Hammett & Associates, LLC. He founded in 1984, providing engineering and land surveying services for sewer, water, gas, streets, landfill and drainage projects for public bodies, as well as for the private sector. Under Mr. Hammett's management, BHA has expanded from a small four-member firm in Concordia Parish to operate offices in Jefferson, East Baton Rouge, Concordia, and Plaquemines parishes and currently employs over 30 individuals.

Hammett has been the surveyor and engineer of record for numerous types of projects, including: wastewater collection and treatment; water treatment, transmission and distribution; natural gas distribution and transmission; electrical transmission; oil transmission; off-system bridges; levee systems; construction servitudes; and roadway and drainage.

As infrastructure manager for the Louisiana Office of Community Development's Disaster Recovery Unit, Hammett performed and oversaw professional civil, structural and/or transportation engineering work related to the planning, design, development, construction, and maintenance of projects funded under the LCDBG/DRU

TEC Professional Services Questionnaire

QUALIFICATIONS

- 36+ years of project and program management experience
- Dual licensee as a registered civil engineer and professional land surveyor
- Management of staff of over 30 employees

PROFESSIONAL MEMBERSHIPS:

American Society of Civil Engineers
Consulting Engineers Council of Louisiana
Louisiana Engineering Society
Louisiana Society of Professional Surveyors
National Society of Professional Engineers
National Society of Professional Surveyors
American Council of Engineering Companies

YEARS OF EXPERIENCE:

With Firm: (37)
Total: (43)

program. Such projects included capital improvements, storm water and drainage systems, wastewater systems, potable water systems, natural gas systems, fire protection systems, roads, bridges and utility systems. He managed complex engineering programs; provided professional assistance and technical advice to state and local officials; and coordinated project development. He oversaw disbursements of more than $178 million for infrastructure projects in the state related to Hurricanes Katrina and Rita.

Relevant Projects (other than those listed in Section L):

Primrose Canal Cleaning and Improvements, St. Charles Parish:
BHA provided a topographic and cross section survey along the Primrose Canal from the Cousin Canal to the Blouin Canal. Topographic features were collected, as well as top banks to include the erosion area around the concrete headwalls. Additional elevation shots were collected to show the severity of the erosion.

HMGP Drainage Improvements to Hawks Creek/Brushy Creek Road, Vernon Parish, LA:
BHA provided professional services for drainage improvements to Hawks Road and Brushy Creek Road in Vernon Parish. Firm responsibilities included surveying of all existing drainage structures, design of drainage improvements, field staking, on-site construction supervision, preparation of as-builts, and final inspection and testing.

Town of Clayton Drainage Improvements (MIP), Concordia Parish, LA:
Under the Disaster Recovery Unit of the state Office of Community Development, the scope of work for this project consisted of redesigning and modifying the water control gate within the bank of the levee, then rehabilitating the existing pumping system to prevent flooding of residential properties within this area. BHA provided all surveying, design, and support services for this project.

Privateer & Joan Marie Lift Station and Force Main Improvements, SCIP D4508, Jefferson Parish, LA:
BHA is providing Construction Administration, Record Drawing and Resident Inspection services for construction improvements and relocation of a sewer force main and lift station. BHA performed the topographic and boundary surveying, all permitting services, and staking for this project.

New River Weir Removal and Channel Improvements Ascension Parish, LA:
The East Ascension Consolidated Gravity Drainage District required the development of a hydraulic model, analyzing the flow capacity and water surface profiles for future dredging construction along approximately 3 miles of New River in Ascension Parish. BHA performed a topographic and cross section survey for a reach of New River, including surveying existing rock weirs, incoming drainage pipes, adjacent bank structures, and adjacent utilities.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Hugh McCurdy, III, P.L.S. ***Professional Land Surveyor***
Project Assignment:
Survey Manager
Name of Firm with which associated:
BRYANT HAMMETT & ASSOCIATES, LLC CIVIL ENGINEERING & LAND SURVEYING
Years' experience with this Firm:
6
Education: Degree(s)/Year/Specialization:
Non-degreed
Active registration: Year first registered/discipline:
1991/Land Surveying
Other experience and qualifications relevant to the proposed Project:
Mr. McCurdy is a registered land surveyor in Louisiana with over 45 years' experience in land surveying, beginning his career as a rodman in 1973. McCurdy has worked with numerous engineering firms throughout Louisiana as a Professional Land Surveyor. He is involved in all aspects of boundary/property surveys for real estate transfer and the surveying required for engineering, rights-of-way acquisition, and construction projects, and is responsible for courthouse research and coordination of work. McCurdy has provided surveying services for oyster leases; pre- and post-dredging; construction projects, pipelines, accident sites, and boundary establishment. He is responsible for supervision of all field crew activities, drafting, property descriptions, plats, and all surveying-related operations. Since 1978, Mr. McCurdy has worked on oyster leases for local fishermen and has exhaustively surveyed most all bays and bayous in Jefferson, Plaquemines, and St. Bernard Parishes. In the late 1970's and early 1980's, he worked on pipelines and well locations in Venice, LA and in the Barataria Basin. Hydrographic surveys include pre-dredging and post-dredging, as well as dredge volume calculations. Mr. McCurdy has extensive experience in all aspects of surveying, including but not limited to property boundary surveys for real estate transfer; subdivision and re-subdivision of properties; topographic and hydrographic survey for engineering and construction; and preparation of legal descriptions for attorneys. He is registered with the Courts in Orleans, Jefferson, St. Tammany, and Plaquemines Parishes.

TEC Professional Services Questionnaire

Relevant Projects (other than those listed in Section L):

Jefferson Parish BUDMAT Barataria Waterway, Jefferson Parish, LA:
BHA performed a topographic and bathymetric survey 181 acres of marshland of the Barataria Waterway. Elevations in the four marsh-creation and nourishment areas were taken on a 200-foot grid. Elevation information was referenced to North American Datum of 1983 (NAD83) and North American Vertical Datum of 1988 (NAVD88) with northings and easting coordinates shown as State Plane Coordinates. Pipeline information from USACE data was included in the mapping exercise.

Jesuit Bend Flood Protection Improvements, Plaquemines Parish, LA:
BHA provided general alignment and topographic survey and mapping services for approximately 16 miles in Plaquemines Parish from Oakville to LaReussite, to serve as the design basis for Jesuit Bend Flood Protection Improvements.

Lake Borgne Surge Barrier Levee Floodwall Survey, Orleans Parish, LA:
Orleans Levee District requested a survey of all the hard structures associated with the levees in the OLD, including floodwalls, surge barriers, and gates. BHA collected data on the 50 settlement markers identified by the Flood Protection Authority and 3 monoliths. Northings, Eastings, and Elevations were collected at each marker and monolith to help determine if any settlement had occurred since construction.

Waterline Replacement, Plaquemines Parish, LA :
BHA provided necessary surveying services for a waterline replacement project along River Road in Plaquemines Parish, from Gibbins Lane heading south to Freeport Drive, approximately 20,000 linear feet. Topographic data was collected inside the existing DOTD and PPG servitudes from the landside toe of the Mississippi River Levee to the westerly River Road Right of way, along with the areas within the Highway 23 right of way. BHA determined the depth, size, and type of pipes within surface observable drainage, sewerage, and water structures as established above.

Drainage Canal Relocation Project, Hurricane and Storm Damage Risk Reduction System, NOV-NFL-05: La Reussite to Myrtle Grove, Plaquemines Parish, LA:
BHA provided general alignment, topographic, and hydrographic surveys, as well as surveying and mapping of existing overhead and underground utility lines, culvert crossings, proposed disposal area and staging areas, proposed access roads and other planimetric features within the identified survey limits.; enough points were taken to show the topographic features of the entire areas including areas currently covered by water

Holmes Blvd Improvements, Jefferson Parish, LA:
BHA performed a topographic survey of ~8,000 linear feet along Holmes Blvd from Terry Parkway to Behrman Hwy. Services included: Locating trees, pavement types, water meters, sewer clean-outs, fences, manholes, drainage structures, gas meters, traffic signals, and all other visible topographic features. Establishing apparent property lines. Plotting existing utilities from record drawings. Setting permanent benchmarks. Establishing a baseline. Collect cross section data at 50' intervals.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Jeff Carey, C.F.M. ***Survey Technician***
Project Assignment:
Survey Technician/Field Manager
Name of Firm with which associated:
BRYANT HAMMETT & ASSOCIATES, LLC CIVIL ENGINEERING & LAND SURVEYING
Years' experience with this Firm:
10
Education: Degree(s)/Year/Specialization:
B.S. / 2009 / Disaster Management
Active registration: Year first registered/discipline:
2010/ASFPM Certified Floodplain Manager US-10-05305 **2018/ATSSA Traffic Control Supervisor, Technician & Flagger** **2012/Contractors License: Residential Construction**
Other experience and qualifications relevant to the proposed Project:
As a survey technician for Bryant Hammett & Associates, Mr. Carey manages field work, collects data in the field and performs field-checking duties at project completion. He manages boundary and topographic surveys and all surveying activity required for engineering, rights-of-way, and construction projects. He is involved in all aspects of land surveying projects, including land descriptions and elevation certificates. He has managed several projects from project execution to completion on numerous pipeline construction projects, roadway projects, levee construction projects, property boundary surveys, cadastral surveys, topographic surveys, differential GPS real time hydrographic surveys, GPS static surveys for horizontal and vertical control, planimetric surveys, elevation surveys and subdivision layout. Mr. Carey is responsible for maintaining communication with field and office personnel to determine potential job issues, serves as a client liaison, reports on project status and cost reporting, and manages the day-to-day scheduling of survey work. Mr. Carey is actively sitting for the P.L.S. exam this year. In previous roles with BHA, Mr. Carey served as a HMGP Program Coordinator. He was the field activity team lead for the construction monitoring of Jefferson Parish HMGP and SRL and Orleans SRL contracts.

TEC Professional Services Questionnaire

Relevant Projects (other than those listed in Section L):

City of Gretna Downtown Drainage Improvements, Jefferson Parish, LA:
As part of an overall infrastructure initiative, the City of Gretna engaged professionals to design and engineer a layered green and grey storm water infrastructure project within the City of Gretna's downtown area. The drainage work is to help mitigate severe street flooding during hard rains. Carey managed the topographic and right-of-way surveying within the City of Gretna's downtown area.

Brewster Road Drainage Study, St. Tammany Parish, LA:
Carey managed the field work, data collection and final QAQC for the topographical survey of Brewster Road for a drainage study to be conducted by the Parish. Crews performed a full topographical survey of the roadway, as well as providing GPS locations and elevations, length, type of structure, and slope of drainage structures of boundary structures along the roadway.

Engineers Road/Cazalard Road Drainage Improvements, Plaquemines Parish, LA:
Carey managed the data collection, field crews, and final deliverable for a full topographical, utility, and cross section survey for drainage improvements along Cazalard Road. Proposed improvements included re-grading drainage ditches, cleaning of drain pipes/culverts, removal and replacement of drain pipes/culverts and sheet pile retaining wall, installation of drain inlets and a weir structure, construction of a new drainage pump station and discharge pipe, and installation of pump, hydraulic piping and power unit.

Certification and Accreditation of Marvin Braud Pump Station and Laurel Ridge Levee Systems, Ascension Parish, LA:
The parish-built levee system was accredited by FEMA as providing protection from a 100-year flooding event; accreditation meant reduced flood insurance premiums for parts of the parish. BHA surveyed over 10 miles of levee in Ascension Parish providing general alignment, topographic, and hydrographic surveys. Surveying services included: freeboard calculations, topographic surveys of all drainage structures in the parish, hydrographic surveys of parish canals and bayous, levee cross sections and alignment surveys, as well as certified as-built plans, and establishing temporary benchmarks

Sims Creek/The Haven Subdivision Drainage Analysis, Tangipahoa Parish, LA:
In support of a drainage analysis project, BHA surveyed approximately 100 culverts in the subdivision to obtain invert and size data; along the streets, typical cross sections were collected at the drainage ditches.

E. Rutland Street Drainage Improvements Project; St. Tammany Parish, LA:
BHA provided surveying for a drainage improvements project on E. Rutland Street including the intersections of Massachusetts Street, Jahncke Street and Vermont Street. Topographic features were collected and included items such as culverts, drains, inlets, pavements, bushes, trees, perimeter outlines of heavily wooded areas, vegetation, utility poles, fences, curbs, and driveways. Manhole inverts for drainage and sewerage lines were obtained in the field for profile information.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Paul Schiele ***Computer Aided Design and Drafting***
Project Assignment:
Drafting / CADD Technician
Name of Firm with which associated:
BRYANT HAMMETT & ASSOCIATES, LLC CIVIL ENGINEERING & LAND SURVEYING
Years' experience with this Firm:
14
Education: Degree(s)/Year/Specialization:
B.Arch / 2008/ Architecture
Active registration: Year first registered/discipline:
NA
Other experience and qualifications relevant to the proposed Project:
Paul Schiele provides computer-aided drafting and design for all survey projects, including: drainage projects; state highway, road, and bridge projects; levee surveys; hydrographic and topographic surveys; rights-of-ways maps; accident investigation layouts; crime scene layouts; and survey plats. Schiele is trained in use of AutoCAD, Intellicad, and Carlson computer drafting software. Mr. Schiele has served as a civil draftsman and CADD technician at BHA since graduating college in 2008. He prepares topographic drawings and maps used in major construction projects such has highways, buildings, bridges, pipelines, flood control structures, roadways, and water and sewerage systems. He provides right-of-way plats, topographic drawings (including horizontal and vertical control) and design services. Has been involved in the computer drafting of several subdivisions, sanitary sewer systems and street and drainage projects for the private sector. Mr. Schiele has significant experience in drafting required for drainage and flood control projects, as well as experience in drafting required for coastal restoration and creation projects

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Keith Capdepon, P.E. ***Chief Engineer***
Project Assignment:
Supervising Professional
Name of Firm with which associated:
BRYANT HAMMETT & ASSOCIATES, LLC CIVIL ENGINEERING & LAND SURVEYING
Years' experience with this Firm:
24
Education: Degree(s)/Year/Specialization:
B.S./1980/Civil Engineering
Active registration: Year first registered/discipline:
1984/Civil Engineering, LA **1985/Contractors License: Building Construction, Heavy Construction, Highway, Street & Bridge Construction, Municipal and Public Works, Construction**
Other experience and qualifications relevant to the proposed Project:
Mr. Capdepon is a Registered Professional Engineer in the State of Louisiana and has been practicing for over 30 years, working for BHA since 1998. He has owned a construction company licensed in heavy construction, highway, street and bridge construction, utilities. and public works construction. Mr. Capdepon has significant experience with various engineering projects including drainage and street, landfills, municipal water transmission, detention/retention pond design, distribution and treatment and wastewater collection and treatment. He has designed various engineering projects including new road construction and road re-construction and highway reconstruction for the LADOTD; subsurface drainage and flood control projects for several municipalities; municipal water transmission including ground storage and elevated storage tanks; distribution and treatment for ground water and surface water; and wastewater collection and treatment. Capdepon has designed subdivision developments including streets, all utilities (gas, water, and sewerage), subsurface drainage, and has engineered site and grading plans for hospitals. Mr. Capdepon specializes in managing large-scale projects from inception to project closeout, responsible for the overall design, execution, and coordination of complex projects. He develops cost estimates, reviews plans and specifications, approves change orders, and manages the construction management of design projects.

TEC Professional Services Questionnaire

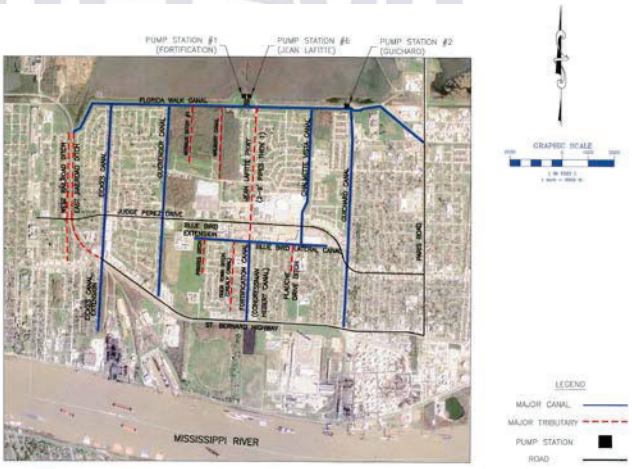
KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Melonie Ellzey, C.F.M. ***Hazard Mitigation Program Manager***
Project Assignment:
Certified Floodplain Manager
Name of Firm with which associated:
BRYANT HAMMETT & ASSOCIATES, LLC CIVIL ENGINEERING & LAND SURVEYING
Years' experience with this Firm:
2
Education: Degree(s)/Year/Specialization:
Non-degreed
Active registration: Year first registered/discipline:
2013/ASFPM Certified Floodplain Manager US-13-07337
Other experience and qualifications relevant to the proposed Project:
Melonie Ellzey is a Certified Floodplain Manager (CFM) with 10 years of experience in Program Management & Project Implementation. Previous mitigation experience includes the development, implementation, supervision, and management of HMA programs for GOHSEP and the private sector. Mrs. Ellzey is proficient in the most recent FEMA BCA toolkit, RISK Map 6, FEMA Mitigation eGrants, the Flood Map Service Center, and the LouisianaHM Web site Ellzey currently manages Jefferson Parish's 2015, 2016, 2017, 2018, 2019 HMGP & Hazard Mitigation Assistance Grant Funding-Construction Supervision Services. This home elevation program provides construction supervision services for elevation and reconstruction grants in the cities of Kenner, Gretna, Harahan, Westwego, Grand Isle, Jean Lafitte, Metairie, Marrero, New Orleans, River Ridge, Harvey, and Barataria.

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

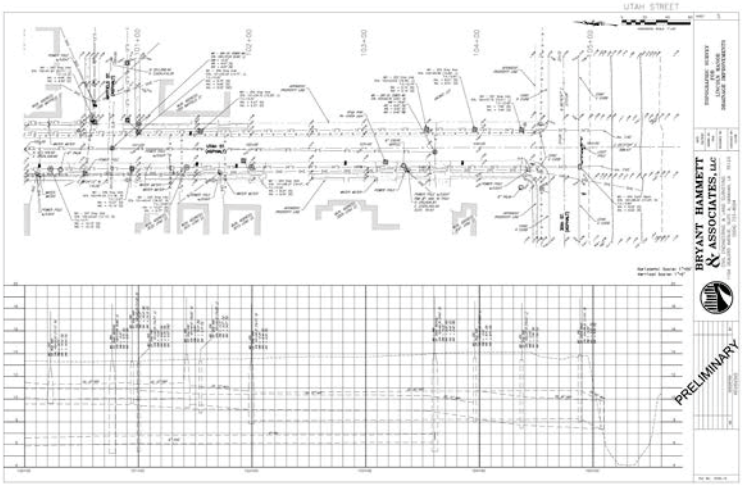
PROJECT NO. 1

Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**
Bainbridge Canal Closure and Roadway Improvements **PW Project 2020-009-RBP** **Jefferson Parish, LA** **Jefferson Parish Government** **Neil Schneider, P.E.** **Capital Projects** **1221 Elmwood Park Blvd., Suite 906** **Jefferson, LA 70123** **NSchneider@jeffparish.net** **(504) 736-6833**	BHA performed a topographic, cross-section, and utility survey an area along the westbound lanes of Veterans Blvd. from Virginia to Bainbridge (not eastbound lanes), then continuing down Bainbridge to the entrance to the Airport, as well as the canal along Bainbridge Avenue. BHA established horizontal and vertical reference points for the project. BHA collected topographic features such as culverts, drains, inlets, pavements, trees, utility poles, curbs, heavily wooded areas, vegetation, property lines, driveways. Cross sections were taken along the route and included shots across the drainage canal: top bank, toe of canal, centerline, water elevation, width of canal. The topographic survey extended 100 feet down all intersecting streets from the apparent right-of-way on Bainbridge. All utility features were collected, such as valves, hydrants, meters, utility poles, utility boxes, etc. Manhole inverts for drainage and sewerage lines were obtained in the field for profile information. Apparent right-of-way information was shown. 

Completion Date (Actual or estimated):	**Estimated**	
	Entire Project:	**Work for which Firm was Responsible:**
2021	$24MM	$41,000

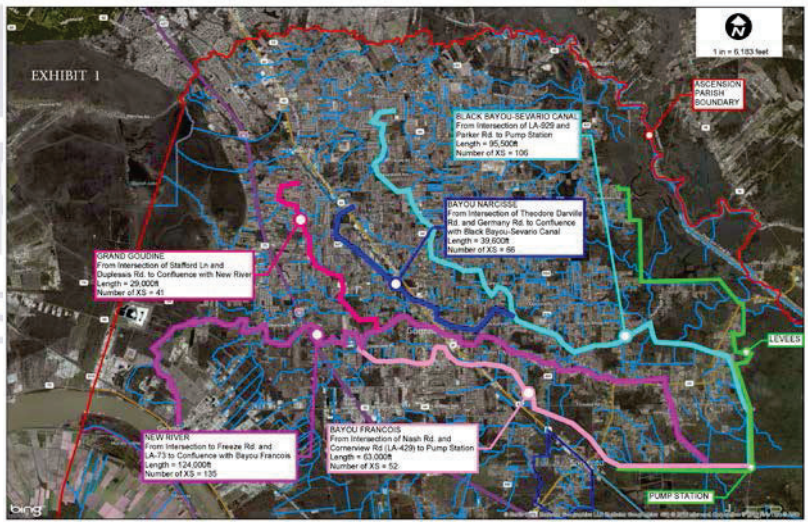
PROJECT NO. 2		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
St. Bernard Master Drainage Assessment **St. Bernard Parish, LA** **St. Bernard Parish Government** **Matthew Falati, P.E.** **Public Works** **1125 E. St. Bernard Hwy** **Chalmette, LA 70043** **Mfalati@sbpg.net** **(504) 278-4300**	BHA performed complete topographic surveys throughout St. Bernard Parish to aid in the update to the Parish's Master Drainage Plan. For approximately 60 miles of canals, BHA performed the following services: - Cross sections every 500'-including shots at the invert, toe of slope, top of bank, & 25' from top of bank - Measuring major culverts contributing to canals 60' in diameter or larger-pipe type, sizer, invert - Locate major utility canal crossings-utilizing utility data provided (utility data that would not affect drainage capacity unneeded) - Utilize drone technology to collect adjacent street elevations and other applicable data (minimum 3 elevations per adjacent street) - Collect current LiDAR data to develop 1-foot contour lines - Supplement LiDAR elevation data with conventionally collected elevation shots to create 1-foot contours A plan/profile drawing was developed to show the topographic features surveyed in the field. The plan view showed the survey area, the relevant topographic features therein and the elevation data. The profile view showed drainage structures, utility information, and profile elevations. Survey data was compatible with input into SWMM computer models.  	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2017	unknown	$250,000

PROJECT NO. 3		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Crown Point Drainage Improvement Project **Jefferson Parish, LA** **Lafitte Area Independent Levee District** **David Dupre, P.E. (MEL)** **4937 Hearst St; Ste 1B** **Metairie, LA 70001** **ddupre@meyer-e-l.com** **(504) 231-2869**	This project consisted of designing pumps stations and drainage improvements in the Crown Point area and vicinity. Design was completed for a 10-year storm event in accordance with Jefferson Parish Standards, and the drainage was tied into the existing drainage system. BHA completed a topographic, utility, and cross section survey in five different areas: Glisson Park Pump Station; Sharpe Road Pump Station; North Sharpe Road Drainage; South Sharpe Road Drainage; and Southwest Pump Station and Southwest Drainage Area. For each of the pump stations (150 X 300' each), topographic features were collected, including culverts, drains, ditches, pavements, trees, curbs, etc. Cross sections were collected at 50-ft intervals extending to the center of Bayou Barataria. For the North Sharpe Road Drainage area (~ 2450') and the South Sharpe Road Drainage area (~3200'), BHA surveyed along North Sharpe Rd from Shady Park to proposed Glisson Pump Station and along South Sharpe Rd. to the proposed Glisson Pump Station location and the proposed South Sharpe Pump Station location. The survey extended across North Sharpe Rd. from apparent right of way to apparent right of way, including the roadside ditches, all culverts, drains, etc. Cross sections were collected at 100-foot intervals. For the Southwest Pump Station and Drainage Area, BHA surveyed an area approximately 150'x300' for the proposed pump station location. The length of the drainage survey is approx. 1300'. Topographic features were collected and included items such as culverts, drains, ditches, pavements, bushes, trees, perimeter outlines of heavily wooded areas, utility poles, fences, curbs, and driveways. Cross sections were collected at the pump station location on 50-foot intervals. Cross sections extended into the center of Bayou Barataria at the pump station site. Cross sections for the drainage survey area were collected at 100-foot intervals.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2021	unknown	$49,100

PROJECT NO. 4		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Lincoln Manor Drainage Improvements Project **Jefferson Parish, LA** **City of Kenner** **Jim Wilson, P.E. (MSMM)** **4640 South Carrollton Ave; Ste 2200** **New Orleans, LA 70119** **Jwilson@msmmeng.com** **(504) 509-7706**	BHA provided surveying services for a two-phase drainage improvement project in Jefferson Parish in the Lincoln Manor subdivision. The initial survey extended from Canal #13 to the North, approximately 400 feet on the following streets: Tifton, Ohio, Utah, and Dawson, with limits extending from R/W to R/W on each street. The survey also extended 50 feet down the intersections of Mayfield and 30th Street. The second phase included 3112 Tifton Street and 3112 Helena Ave. approximately 500 feet North to the drainage canal along 32nd Street. BHA established control points and benchmarks; collected topographic features such as culverts, drains, inlets, pavements, bushes, trees, perimeter outlines of heavily wooded areas, vegetation, utility poles, overhead electric, fences, curbs, driveways, etc. Cross-sections were collected every 50-feet. Utilities such as valves, hydrants, meters, utility poles, utility boxes, overhead electric lines, communication systems were collected. Inverts for drainage and sewerage lines were collected in the field. The type, size, and invert of the outfall pipes draining into Canal #13 were identified on the survey. 	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2022	Unknown	$25,400

PROJECT NO. 5		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Louisiana Watershed Initiative Modeling-Region 2 Several LA Parishes LADOTD IDIQ #4400017068 **LADOTD Jie Gu, PE Public Works & Water Resources East Wing 5th Floor, N526B Baton Rouge, LA 70804 jie.gu2@la.gov (225) 379-1483**	BHA serves as the surveyor for the Louisiana Watershed Initiative (SWI)Modeling Contract for Region 2. In 2016, historic flooding throughout Louisiana exposed deficiencies in the state's approach to floodplain management at all levels of government, prompting a reassessment of how Louisiana prepares for increasing flood events. In 2018, a new watershed-based approach to reducing flood risk in Louisiana was introduced to reform the state's approach to flood mitigation. Louisiana received a $1.2 billion flood mitigation grant, some of which is being split between 7 different watershed regions to develop scientific models of major watersheds throughout Louisiana. BHA is part of the team will implement modeling in Region 2, consisting of 10 parishes in North Louisiana. The first task assigned was gather existing survey data in the areas, including existing channel surveys, engineering drawings, proposed design plans, and other data, as well developing overall budgets and methodologies for data collection for the region. Current tasks include topographic and bathymetric survey data collection for the following channels to be incorporated into the model terrain. Bayou Batholomew, Bayou DeLoutre, Bayou Darbonne, Lower Ouachita, Castor Bayou, Dugdemona River, Little River, and Lower Red River. For over 433 miles of channels in Region 2, channel cross sections will be collected at slope breaks including the channel invert, centerline, low-flow toe and bank, and main channel bank while also collecting the overall shape and geo-photos. For over 480 structures (bridges and culverts), up and down-stream cross section will be collected, as well as the road profile, inverts and mudline elevations, size, material, condition, headwall type, and geo-photos. All collected data will be incorporated in the overall hydrologic model system to develop a common understanding of known flood risks, vulnerabilities, and priorities throughout the region.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2023 (E)	$20 MM	$665,000

PROJECT NO. 6		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Ormond Oaks Drainage Project **St. Charles Parish, LA** **St. Charles Parish Department of Public Works** **Michael Palamone, CAO** **100 River Oaks Drive** **Destrehan, LA 70047** **mpalamone@stcharlesgov.net** **(985) 783-5000**	As part of St. Charles Parish's overall drainage improvement initiative, BHA provided professional surveying services along several canals throughout the Parish. BHA provided topographic, utility, and cross section surveys along the following canals: Canal A, Carriage Canal and Dunleith Canal, Carriage Canal and Houmas Canal, as well as at five specific locations outside the r/w. Control points were established throughout the project to provide horizontal and vertical reference points. Topographic features that were visible and accessible were identified within the survey limits in order to identify the northing, easting and elevation value for each data point. Topographic features included items such as culverts, drains, inlets, pavements, bushes, trees, perimeter outlines of heavily wooded areas, vegetation, utility poles, overhead electric, fences, curbs, driveways, etc. Cross sections were collected on 50-foot intervals along the survey route and extended from right-of-way to right-of-way. In areas where there are no fences along the right of way, the cross section extended 30 feet past the right-of-way. Visible and accessible utility features within the canal right-of-way and the five topo areas were surveyed and mapped. These features included items such as valves, hydrants, meters, utility poles, utility boxes, overhead electric lines, communication systems, etc. Any Drainage Pipes entering the canals were identified with a top of pipe and invert elevation, along with the type and size of the pipe.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2020	unknown	$40,000

PROJECT NO. 7		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Channel Cross Sections in Support of LAMP H&H Analysis of Marvin Braud Levee System **Ascension Parish, LA** **East Ascension Consolidated Gravity Drainage District 1** **Ron Savoy** **615 E. Worthy St.** **Gonzales, LA 70737** **Ron.savoy@apgov.us** **(225) 450-1335**	As part of an overall H&H Study of the Marvin Braud Levee System in Ascension Parish to determine potential updated base flood elevations and the level of protection afforded by the existing levee system, BHA collected over 400 channel cross sections. Cross sections were taken for over 351,000 linear feet of canals throughout the Parish along Grand Goudine, Black Bayou-Severio Canal, Bayou Narcisse, New River and Bayou Francois. Every 1000 feet, cross sections were taken, from top-of-bank to top-of-bank, with a minimum of nine points, three at the bottom and three points for each side slope. Every 25th cross section was extended a minimum of 100 feet on each of the channel bank every 20-foot interval. Collected data was compared to existing LiDAR data. A comprehensive survey report describing equipment and methodologies used in the survey, permanent benchmarks, additional control, survey accuracy, and data processing methodology was completed. 	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2016	unknown	$123,230

PROJECT NO. 8		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Ridgelake Drive Drainage Improvements **Jefferson Parish, LA** **Jefferson Parish Government** **Neil Schneider, P.E.** **Capital Projects** **1221 Elmwood Park Blvd., Suite 906** **Jefferson, LA 70123** **NSchneider@jeffparish.net** **(504) 736-6833**	BHA provided a topographic, cross section, and utility survey for the Ridgelake Drive Drainage Improvements Project, located in Metairie, Louisiana. The length of the project along Ridgelake Drive is approximately 1,660 feet. Additionally, the survey extended 50 feet past the north and south ends of the project, and 50 feet past the apparent R/W lines down the intersecting streets. At the Ridgelake Drive / West Esplanade Canal intersection, the survey extended 100 feet east of the road centerline and 50 feet west of the roadway centerline. Control points were established every 500 feet to provide horizontal and vertical reference points for the project. Topographic features that were visible and accessible were surveyed in the project area to identify the northing, easting and elevation value for each data point. Topographic features included items such as roadway centerline, roadway edges, fences, light standards, traffic control devices, signage, structures, curbs, inlets, vegetation, driveways, utility poles, water's edge, canal top of bank, bridges, and manhole tops. Pavement joint lines and areas of heavy cracking were surveyed and mapped within the project limits. We also provided municipal numbers for the adjacent residences in the project area. BHA located visible above ground utilities and those underground utilities with visible surface evidence. These features include items such as valves, hydrants, meters, utility poles, utility boxes, culverts, drains, inlets. BHA determined the depth, size, and type of pipes within surface observable drainage, sewerage, and water structures as established above; invert elevations of the existing outfall pipe in the project area were obtained. BHA is currently providing a boundary survey of an area surrounding the proposed outfall pipe relocation along Ridgelake Drive and West Esplanade.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2022	unknown	$25,060

PROJECT NO. 9		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Survey of Existing Conditions **Ascension Parish, LA** **East Ascension Consolidated Gravity Drainage District 1** **Ron Savoy** **615 E. Worthy St.** **Gonzales, LA 70737** **Ron.savoy@apgov.us** **(225) 450-1335**	BHA provided surveying, mapping, and engineering design and the related construction drawings, specifications, and documents for drainage improvements along four roadways in the Parish. • Savoy Road – 2,800' • Penny Street - 1,600' • She Lee Drive – 2,700' • W. Autumn Drive – 1,500' Existing topographic features that are visible and accessible were surveyed in the project area, to identify the northing, easting and elevation value for each data point. The survey corridor width extended from apparent road right-of-way line to the opposite right-of-way line. This width was a nominal distance of 50' for the project roadways. Topographic features surveyed included items such as ditch top-of-bank, ditch centerline, culverts, drains, inlets, pavements, bridges, vegetation, utility poles, curbs, and driveways. The majority of the survey corridor has open ditch drainage and driveway culverts parallel to the roadways. In areas where a subsurface drainage system had been installed, invert elevations of the drainage network were obtained at all accessible inlets or drains. A random spray of elevations was obtained along the survey corridor to identify the top of ditch bank elevations, ditch slope elevations and the flowline of the existing ditch bottom. Also, the ditch centerline had an adequate number of shots taken to identify the profile of the ditch flowline. Other utility features to be surveyed were the visible and accessible items such as valves, hydrants, meters, utility poles and overhead electric lines. When available, BHA used record drawings from controlling agencies (Parish) to plot subsurface utilities based upon those maps when actual locations were not available. Additionally, a localized hydraulic analysis was performed from the topographic survey and potential drainage improvement options were presented for approval, for all four locations. Upon approval, the recommendations were incorporated into a set of construction drawings showing the approved final drainage improvements. A set of construction bid documents were provided, comprised of construction plans, specifications, and opinion of probable cost.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2018	unknown	$69,500

PROJECT NO. 10		
Project Name, Location and Owner's contact information:	**Nature of Firm's Responsibility:**	
Dickory Avenue Extension: Hickory Ridge Lane to Jefferson Hwy **PW Project 2020-010-RBP** **Jefferson Parish, LA** **Jefferson Parish Government** **Neil Schneider, P.E.** **Capital Projects** **1221 Elmwood Park Blvd., Suite 906** **Jefferson, LA 70123** **NSchneider@jeffparish.net** **(504) 736-6833**	BHA provided a topographic, utility, and cross section survey of the proposed Dickory Avenue extension corridor connecting Dickory Ave to Jefferson Highway. The limits of the survey begin 500 feet North of the intersection of Hickory Ridge Lane and Dickory Avenue and continue South to approximately 500 feet South of Jefferson Highway along Powerline Drive. At Jefferson Highway, the survey will extend 500 feet East/West down Jefferson Highway from the proposed Dickory Ave. Extension corridor. Survey data was collected within the corridor from r/w to r/w. Data was be collected 100 feet down any side roads that intersect the survey limits. Control points were established for the project to provide horizontal and vertical reference points for the project. *Four* main control points were established using GPS technology with *three 3-hour OPUS Observations* to comply with DOTD control recommendations Topographic features were collected to identify the northing, easting and elevation value for each data point. Items such as culverts, drains, inlets, pavements, bushes, trees, perimeter outlines of heavily wooded areas, vegetation, utility poles, overhead electric, fences, curbs, driveways, etc, were collected. Additionally, finished floor elevations were be collected on any buildings that fell within the limits of the survey. Cross sections were collected within the Dickory Avenue Extension survey corridor from Right of Way to Right of Way on 100-foot intervals. Utilities such as valves, hydrants, meters, utility poles, utility boxes, overhead electric lines, communication systems were collected. Manhole inverts for drainage and sewerage lines were obtained in the field for profile information. BHA produced a drainage map of the survey area. BHA confirmed drainage patterns, structure sizes and inverts, etc. The drainage map will show the survey line, the outline of the watershed area, and all structures/ditches. All surveying procedures and drafting will be in accordance with the LA DOTD Location and Survey Manual and submitted to DOTD for review.	
Completion Date (Actual or estimated):	**Estimated Cost:**	
	Entire Project:	**Work for which Firm was Responsible:**
2021	$16MM	$101,600

TEC Professional Services Questionnaire

M. List all prior and/or on-going litigation between Firm and Jefferson Parish. Please attach additional pages if necessary.

Parties:		Status/Result of Case:
Plaintiff:	**Defendant:**	
1. NOT APPLICABLE	NOT APPLICABLE	
2.		
3.		
4.		

N. Use this space to provide any additional information or description of resources supporting Firm's qualifications for the proposed project.

1. Professional Training and Experience :

Bryant Hammett & Associates, LLC (BHA) is a Louisiana-based Limited Liability Corporation multi-disciplinary consulting land surveying, civil engineering, and disaster response firm which provides professional services for various governmental and private concerns. BHA was first organized in Concordia Parish in August 1984, starting as a small 4-member firm providing civil engineering and land surveying services to surrounding municipalities. Since then, the firm has grown to operate offices in Plaquemines, Jefferson, East Baton Rouge, and Concordia parishes.

BHA employees licensed and experienced professional land surveyors and civil and environmental engineers and, each with decades of performance. The firm has been the surveyor and engineer of record for numerous types of projects and offers the following survey services: boundary surveys; ALTA surveys, hydrographic surveys, topographic surveys, right-of-way determination, control and benchmarks, wetlands delineation, construction surveys, utility layout, pipeline surveys, elevation certificates and subdivision design and layout.

TEC Professional Services Questionnaire

BHA surveyors have extensive experience in the surveying required to support drainage and roadway infrastructure design and improvements, having performed the surveying required for complete subdivision designs, master drainage plans, lift station construction and relocation, force main installation and relocation, grading plans, and drainage studies. Topographic surveys completed to capture the terrain, vegetation, drainage patterns, ground elevations, improvements, pavements, culverts, manholes, ground slopes, ditches, roadways and utilities that are existing. These topographic surveys aid the design work which could include grading plans, roadway designs, drainage system designs, utility layout and landscaping plans.

2. Capacity for Timely Completion:

Based on the current and projected project workload and schedule, BHA is capable of allocating the necessary resources and manpower required to fulfill the requirements of this engagement in a timely fashion. BHA currently has the professional and support personnel available to provide the required services and initiate those services once authorized to proceed. BHA maintains a strong working relationship with the client to protect their interests and accomplish project goals in a cost effective, responsive, and responsible manner.

BHA maintains a staff of highly qualified, experienced, and licensed engineers, surveyors, technicians, cost estimators, GIS managers, certified floodplain managers, administrators, disaster recovery subject matter experts, inspectors, CADD operators and clerical support ensuring availability of professional and support personnel no matter the project.

No project in which BHA has been involved has been jeopardized because of failure to meet schedules. BHA has not been involved in any projects that were jeopardized because of cost overruns, or because inadequate designs were rejected by parish, state, or federal review agencies.

3. Location of Principal Office Where Work Will be Performed:

BHA's central locations allow us to work easily throughout Louisiana, however all work for this project will be performed out of our Harahan, LA office in Jefferson Parish.

4. Adversarial Legal Proceedings between the Parish and the Person or Firm:

BHA has no prior or on-going litigation with Jefferson Parish.

5. Prior Successful Completion of Projects of the Type and Nature of the Engineering Services:

As illustrated in Section L, as well as in number 7 below, BHA has successfully completed dozens of projects providing professional services relating to the data collection of existing drainage systems, including civil design and all surveying required.

TEC Professional Services Questionnaire

6. Size of Firm:

Bryant Hammett & Associates has grown from a small four-member firm in 1984 to 33 full-time employees today. The firm began by primarily serving local municipalities. The team at BHA worked, and continues to work, with these clients in coordinating, permitting, and securing funding sources through grants and bonds. Our executive management team has been working together since 1984 and has achieved a wealth of knowledge of engineering, surveying and the governmental permitting and funding processes. As a small business, the BHA Team is flexible and able to adapt to changing circumstances quickly and efficiently, as well as develop close relationships with clients to intimately understand project needs from inception to completion. Employees are cross-trained, ensuring that no facet of a project will ever be delayed.

BHA maintains a staff of highly qualified, experienced, and licensed engineers, surveyors, technicians, cost estimators, GIS managers, certified floodplain managers, administrators, disaster recovery subject matter experts, inspectors, CADD operators and clerical support ensuring availability of professional and support personnel no matter the project.

7. Past Performance by Person of Firm on Parish Contracts:

For the past 5 years, BHA has been qualified as a professional firm qualified to perform **As-Needed Surveying Services for Jefferson Parish.** Below is a listing of several surveying projects performed directly for Jefferson Parish.

Ridgewood Drive Rehabilitation
Renaud Street Boundary
Privateer Blvd Boundary
Holmes Blvd. Improvements
Marrerro WWTP
Wright Avenue Force Main
Oakwood Smart Growth-Whitney Avenue and WB Expressway
Avenue F Boundary
BUDMAT Barataria Waterway
JPRD Golf Driving Range
Privateer & Joan Marie Lift Station
Independence Park Drainage Improvements
Woodmere Playground
Hesper St. Boundary
Dickory Avenue Extension
Veterans Bike Multi-Use Bike Path Improvements
Manley St. Boundary
Goose Bayou Hydrographic Survey (post-Ida)
Lower Jefferson Waterway Debris Removal
Over 400 individual property elevation certificates

TEC Professional Services Questionnaire

BHA regularly provides **surveying for engineering consultants in Jefferson Parish.** Below is a listing of several surveying projects located in Jefferson Parish performed or in process for engineering consultants in the Parish.

City of Gretna Drainage Improvements
Long-Distance Sediment Pipeline
Goose Bayou/Penn Levee
LAILD-Lafitte Tidal Protection-Lower Barataria Basin
Harahan Wilson Sewer Improvements
Florence Street Drainage Improvements
Ridgelake Drive Drainage Improvements
Parc Des Families Dock
Bainbridge Canal Closure and Roadway Improvements
Parc Des Families Soccer Fields
Brown Foundation Ornamental Garden
Crown Point Drainage Improvements
Kennedy Heights Playground
Johnny Jacobs Playground
Jefferson Parish Animal Care and Service Facility
JPRD Saints Drive Girls Complex
King Avenue Roadway Rehabilitation
Zatarain's Gretna Facility Upgrade
Lincoln Manor Drainage Improvements
Lift Station F8-5 Cleary and West Esplanade
5th and 9th Street Sewer Lift Station
3rd Street Drainage Improvements
Lafitte Bridge Park Improvements
JPRD LaSalle Soccer Fields Improvements
Laffite Levee Path Phase 4
Brown Avenue Linear Park
City of Kenner Highway Park Subdivision Resubdivision

Jefferson Parish has actively participated in HMGP and HMA Funding since 2006. BHA personnel have been involved with Jefferson Parish in over $280 million in funding grants for the home elevation program, in response to Hurricanes Katrina, Rita, Gustav, Ike and Isaac in the cities of Kenner, Gretna, Harahan, Westwego, Grand Isle, Jean Lafitte, Metairie, Marrero, River Ridge, Harvey, Barataria. BHA has been responsible for **Construction Supervision Services for Jefferson Parish's HMA Grant Program** for fiscal years 2013, 2014, 2015, 2016, 2017, 2018, and 2019 and HMGP projects for Katrina/Rita, Gustav/Ike, and Isaac.

- Jefferson Parish Construction Supervision of 2019 FMA and PDM Grant Funding: 178 properties, $27 million
- Jefferson Parish Construction Supervision of 2018 HMGP and HMA Grant Funding: 79 properties, $15.8 million
- Jefferson Parish Construction Supervision of 2017 HMGP and HMA Grant Funding: 126 properties, $17.3 million

TEC Professional Services Questionnaire

- Jefferson Parish Construction Supervision of 2015/2016 HMGP and HMA Grant Funding: 313 properties, $30 million
- Jefferson Parish Construction Supervision of 2014 HMA Grant Funding: 50 properties, $8.8 million
- Jefferson Parish Severe Repetitive Loss Program: 380+ properties, $60 million
- Jefferson Parish Katrina/Rita HMGP: 450+ properties, $83 million
- Jefferson Parish Gustav/Ike Recalculation HMGP: 130+ properties, $30 million
- Jefferson Parish Isaac HMGP: 70+ properties, $11 million

BHA currently manages Jefferson Parish's **Disaster Recovery Homeowner Repair Program for Residential Properties** through the Office of Community Development, where the construction supervision of approximately 160 individual properties is managed, including the monitoring of plans and construction to ensure compliance with applicable federal, state, and local guidance and to ensure all grant funds expended are allocated and used according to award requirements.

O. To the best of my knowledge, the foregoing is an accurate statement of facts.

Signature: _____ **Print Name: Bryant O. Hammett, Jr. P.E./P.L.S**

Title: Owner/Manager **Date: March 16, 2022**