

Jefferson Parish Professional Services Questionnaire
Resolution No. 138811
SOQ NO. 22-011
Routine Engineering Services for Drainage Projects
March 31, 2022



TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

Statement of Qualifications to Provide Routine Engineering Services for Drainage Projects –
Resolution # 138811

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



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:

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

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 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 <input type="checkbox"/> NO <input checked="" type="checkbox"/>		
I. List all subcontractors anticipated for this Project. Please note that <u>all subcontractors must submit a fully completed copy of this questionnaire</u>, 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. No Subs		
2.		
3.		
J. Please specify the total number of support personnel that may assist in the completion of this Project: <div style="margin-left: 40px;"> <u>15</u> </div>		

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: <u>Environmental</u> State: <u>Louisiana</u> License No.: <u>28482</u> <i>Also registered in Mississippi (18522)</i>
Other experiences and qualifications relevant to the proposed Project:
<p>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.</p> <p>Mr. Mardia has worked <i>on more than 200 projects for various departments of Jefferson Parish</i>. 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.</p> <p><u>Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA</u></p> <p>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 these recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models.</p>

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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

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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:

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- 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

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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 these 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

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Thomas M. Willis, P.E., MBA
H&H Engineer

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-foot 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

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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

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H&H Engineer

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 modeled 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.

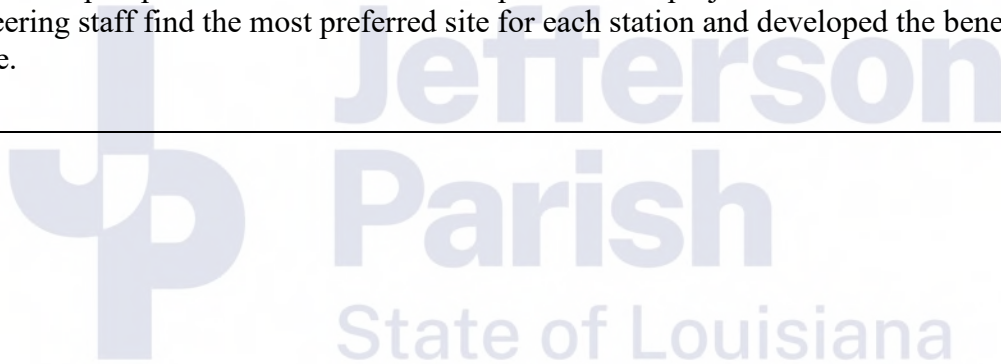
Landside drainage design was based upon a drainage model for combined Phase 1, 2, and catchup conditions to accommodate the construction of the new terminal. MSMM updated hydrologic characteristics (T_c , impervious area, runoff coefficients, etc.), evaluated and designed outfall routing to Canal 15, 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

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Thomas M. Willis, P.E., MBA H&H Engineer
<p>the feasibility report, the following alternatives were identified:</p> <ul style="list-style-type: none">- 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 <p>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.</p>



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 Sauv  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 these 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

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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 Sauv  Road pump station layout.

Sauv  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 Sauv  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 initial 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 disciplines 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
<p>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.</p> <p><u>Lakeview City Park HMGP, New Orleans, LA</u></p> <p>Ms. Morris was asked to assist with stormwater modeling for this project two weeks before the 75% design deadline. Ms. Morris troubleshooted 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.</p> <p><u>Downtown Development District Drainage Upgrades Implementation, New Orleans, LA</u></p> <p>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.</p> <p><u>Downtown Stormwater Opportunities Study, New Orleans, LA</u></p> <p>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.</p>

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: <u>Civil (EIT)</u> State: <u>Louisiana</u> License No.: 34186
Other experiences and qualifications relevant to the proposed Project:
<p>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. Mills also performs various field services, inclusive of collecting survey data, manhole location data, GIS data and provides construction administration services for various construction projects.</p> <p><u>Kenner Drainage Master Plan Development, Kenner, LA</u></p> <p>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.</p> <p>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.</p> <p>Mr. Mills provided field data collection services on this project, collecting survey data for drainage inlets,</p>

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: <u>Civil</u> State: <u>Louisiana</u> License No.: <u>35468</u>
Other experiences and qualifications relevant to the proposed Project:
<p>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.</p> <p><u>Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA</u></p> <p>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 these recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models.</p> <p>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.</p> <p>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.</p> <p>Utilizing the selected alternative for the Proposed Full-Build Terminal Design facility and infrastructure plans,</p>

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
<p>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.</p> <p>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.</p> <p>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.</p>

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:
<p>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.</p> <p>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.</p> <p><u>Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA</u></p> <p>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.</p> <p>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</p>

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:
<p>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.</p> <p><u>Coventry Court Drainage Evaluation Feasibility Report, Jefferson Parish, LA</u></p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none">- 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:	
<p>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:</p> <p><u>Bayou Segnette State Park Improvements, Jefferson Parish, LA</u> 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.</p> <p><u>Hurricane Isaac CDBG Disaster Recovery Funding Program Management, St. Tammany Parish, LA</u> 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</p>	

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. 1


Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>USACE Silver Jackets Program Jefferson Parish Infrastructure and Watershed Master Plan Development</p> <p>USACE New Orleans District</p> <p>Nik Richard, USACE Project Manager 504-862-2411</p> <p>Michelle Gonzales, CFM – Director, Ecosystem and Coastal Management 504-736-6653</p>	<p>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.</p>	
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

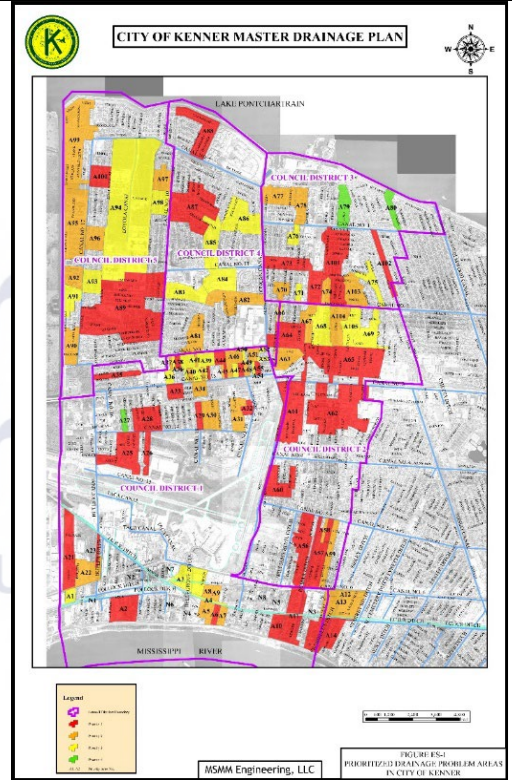
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>Louisiana Intermodal Terminal – Port of New Orleans, Chalmette, LA</p> <p>Port of New Orleans/AECOM</p> <p>Jonathan McDowell, PE (504) 450-9905</p> 	<p>MSMM was tasked with developing an existing conditions Hydrologic 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 these recurrence intervals were directly input as flow hydrographs at corresponding locations in the hydraulic models.</p> <p>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.</p> <p>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.</p>	
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:	
<p>Drainage Master Plan Development, Kenner, LA</p> <p>City of Kenner Department of Public Works</p> <p>Tom Schreiner, Director (504) 468-7515</p>	<p>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.</p> <p>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.</p>	
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:	
<p>South Kenner Pump to the River Feasibility Study, Kenner, LA</p> <p>Jefferson Parish Drainage Department</p> <p>Mitch Theriot, PE, Director (504) 736-6751</p> 	<p>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.</p> <p>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.</p>	
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:	
<p style="text-align: center;">Coventry Court Drainage Evaluation Feasibility Modeling Report and Subsurface Design River Ridge, LA</p> <p style="text-align: center;">Jefferson Parish Drainage Department</p> <p style="text-align: center;">Mitch Theriot, PE – Drainage Director (504) 736-6751</p> 	<p>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:</p> <ul style="list-style-type: none"> - 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 <p>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.</p>	
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:	
<p>Woodlake Drainage Pump Station Hydraulic Modeling and Preliminary Design, Kenner, LA</p> <p>Jefferson Parish Drainage Department</p> <p>Mitch Theriot, PE – Drainage Director (504) 736-6751</p> 	<p>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.</p> <p>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.</p>	
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:	
<p>New Orleans International Airport Taxiway Golf and Delta Extension, Kenner, LA</p> <p>New Orleans Aviation Board</p> <p>James McCluskie (504) 464-0831</p> 	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>The project was bid in late 2020 and as of March 2022 is currently in construction where MSMM is performing construction admin services.</p>	
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:	
<p>New Orleans International Airport North Terminal Comprehensive Hydraulic and Hydrologic Modeling Study, Kenner, LA</p> <p>New Orleans Aviation Board</p> <p>Chris Spann, Program Manager (913) 940-1301</p> 	<p>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.</p>	
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:	
<p style="text-align: center;">Mirabeau Garden Stormwater Management and Flood Mitigation Modeling</p> <p style="text-align: center;">City of New Orleans Department of Public Works</p> <p style="text-align: center;">Megan Williams Stormwater Program Manger 504-658-8065</p>	<p>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.</p> <p>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.</p>	
Completion Date (actual or estimated):	Estimated Cost (in thousands):	
	Entire Project	Work for which Firm was Responsible:
2021	\$900	\$180

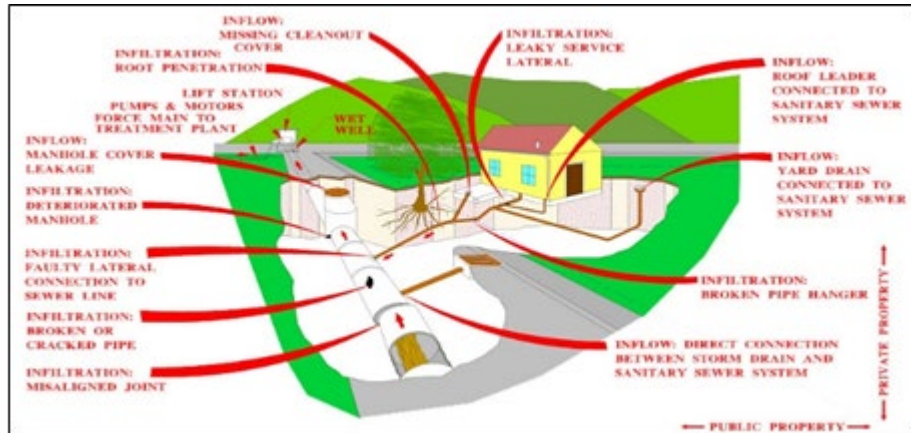


TEC Professional Services Questionnaire

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:	
<div>Jefferson Parish Department of Sewerage (DOS) – Sewer Infiltration and Inflow Management – Jefferson Parish, LA</div> <div>Jefferson Parish Sewer Department</div> <div>Mike Lockwood, Sewer Director (504) 736-6661</div>	<p>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.</p> <div></div>	
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 dual 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 40 versus NOAA Atlas 14 rainfall intensity predictions and using current sea level versus NOAA’s 2100 intermediate Sea Level Rise Projection which anticipates a 5.8-foot 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 Sauv  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:

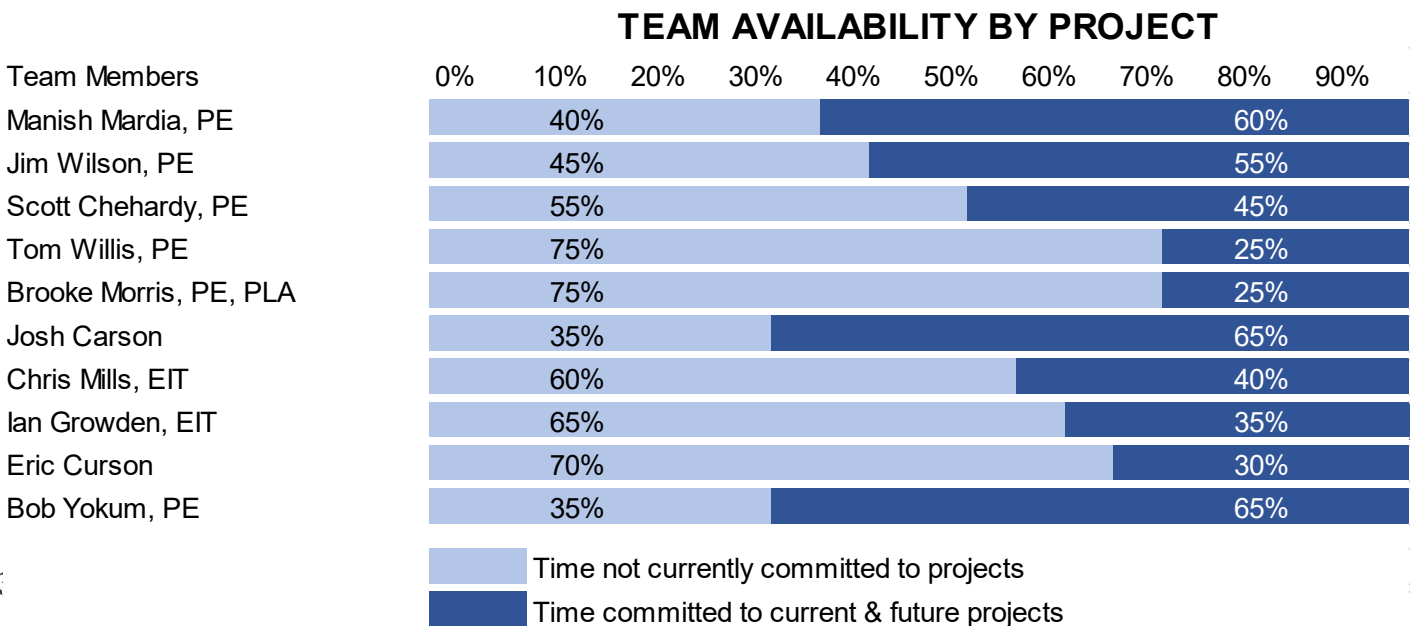
MSMM prides itself in completing projects on time and under budget. Since the inception of MSMM, our staff engineers have completed over one hundred design projects, including multiple drainage pump stations (as detailed above). We have also experience utilizing SWMM, HEC-RAS and HEC-HMS models that 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 depicts the availability of the proposed key personnel for this project



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 drafter/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 Sauv  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 16, 2022