IDIQ CONTRACT FOR LOUISIANA WATERSHED INITATIVE/ STATE PROJECTS PROGRAM (LWI-SSP) – GROUP 2

Caddo, Jackson, Rapides, Evangeline, Grant and Franklin Parishes

Contract No. 4400023102
January 6, 2022

Stantec

DOTD FORM: 24-102

(Revised June 1, 2021)

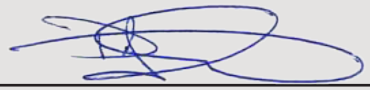
PROPOSAL TO PROVIDE CONSULTANT SERVICES

Prime consultant shall complete the DOTD Form 24-102 without altering the Form's text; however, the instruction and/or guidance for Sections 12 through 23 can be removed but do not remove Section title and number.

ANY CONSULTANT FAILING TO SUBMIT ANY OF THE INFORMATION REQUIRED ON THE DOTD FORM 24-102, OR PROVIDING IN-ACCURATE INFORMATION ON THE DOTD FORM 24-102, MAY BE CONSIDERED NON-RESPONSIVE.

Prime consultant should enter the firm name in the footer at the bottom of this page. (It will carry over to subsequent pages.)

1.	Contract title as shown in the advertisement.	**IDIQ Contract For Louisiana Watershed Initiative/State Projects Program (LWI-SSP) – Group 2 Caddo, Jackson, Rapides, Evangeline, Grant and Franklin Parishes**
2.	Contract number(s) as shown in the advertisement	No. 4400023102
3.	State Project Number(s), if shown in the advertisement	N/A
4.	Prime consultant name (as registered with the Louisiana Secretary of State where such registration is required by law)	Stantec Consulting Services Inc.
5.	Prime consultant license number (as registered with the Louisiana Professional Engineering and Land Surveying Board (LAPELS) if registration is required under Louisiana law)	EF.0003506
6.	Prime consultant mailing address	1200 Brickyard Lane Suite 400, Baton Rouge, LA 70802
7.	Prime consultant physical address (existing or to be established, if location is used as an evaluation criteria)	1200 Brickyard Lane Suite 400, Baton Rouge, LA 70802
8.	Name, title, phone number, and email address of prime consultant's contract point of contact	**Jon Keeling, PE** **Principal, Project Manager** **(859) 940-2854 | jon.keeling@stantec.com**
9.	Name title, phone number, and email address of the official with signing authority for this proposal	**Daniel Gilbert, PE** **Vice President, Principal-in-Charge** **(859) 230-6396 | daniel.gilbert@stantec.com**

10.	This is to certify that all information contained herein is accurate and true, and that the team presently has sufficient staff to perform these services within the designated time frame. By submitting this proposal, proposer certifies that it is not engaged in a boycott of Israel and it will, for the duration of its contract obligations, refrain from a boycott of Israel. Proposer also certifies and agrees that the following information is correct: In preparing its response, the proposer has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not, in the solicitation, selection, or commercial treatment of any subcontractor or supplier, refused to transact or terminated business activities, or taken other actions intended to limit commercial relations, with a person or entity that is engaging in commercial transactions in Israel or Israeli-controlled territories, with the specific intent to accomplish a boycott or divestment of Israel. The proposer also has not retaliated against any person or other entity for reporting such refusal, termination, or commercially limiting actions. DOTD reserves the right to reject the response of the bidder or proposer if this certification is subsequently determined to be false, and to terminate any contract awarded based on such a false response.	Signature (shall be the same person as #9):  Date: January 6, 2022
11.	If a Disadvantaged Business Enterprise (DBE) goal has been set for this advertisement, indicate which firm(s) will be used to meet the DBE goal and each firm(s)' percentage.	**Firms(s)** **Firm(s)'%:** **N/A**

12. **Past Performance Evaluation Discipline Table:**

As indicated in the advertisement, insert the completed table here. The percentages for the prime and sub-consultants must total 100% for **each past performance evaluation discipline**, as well as the overall total percent of the contract.

The past performance evaluation disciplines to be used are: Road, Bridge, Traffic, CE&I/OV, Geotech, Survey, Environmental, Data Collection, Planning, Right-of-Way, CPM, ITS, Appraiser and Other. The crosswalk from the old categories to the new categories can be found at the link below: http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/CCS/General%20Information/CPPR%20Crosswalk%20to%20New%20Evaluation%20Disciplines.pdf.

Sub-consultants are allowed to be used for this proposal. Fill in the table by identifying only those evaluation disciplines consistent with the approach and methodology proposed in Section 19 of the DOTD Form 24-102*, the name of each firm that is part of the proposal, and the percentage of work in each past performance evaluation discipline to be performed by that firm. The percentage estimated for each evaluation discipline is for evaluation purposes only and will not control the actual performance or payment of the work. The percentages for the prime and sub-consultants must total 100% for each past performance evaluation discipline, as well as the overall total percent of the contract.
(Add rows as needed)

Evaluation Discipline(s)	% of Overall Contract	**Stantec**	**GeoEngineering Inc.**	**T Baker Smith**	**ECM**	Each Discipline must total 100%
Geotech*	60%	80%	10%	0	10%	100%
Survey	10%	0	0	90%	10%	100%
Environmental	20%	100%	0	0	0	100%
CE&I/OV	5%	100%	0	0	0	100%
Other	5%	0	0	100%	0	100%
Identify the percentage of work for the **overall contract** to be performed by the prime consultant and each sub-consultant.						
Percent of Contract	100%	73%	6%	14%	7%	

*As the discipline table does not directly correlate with the assumed services, mechanical, structural, civil, geotechnical, and risk assessments are presented under the "Geotech" evaluation discipline. Hydraulics, hydrology, and environmental and permitting are presented under Environmental.

13. **Firm Size:**

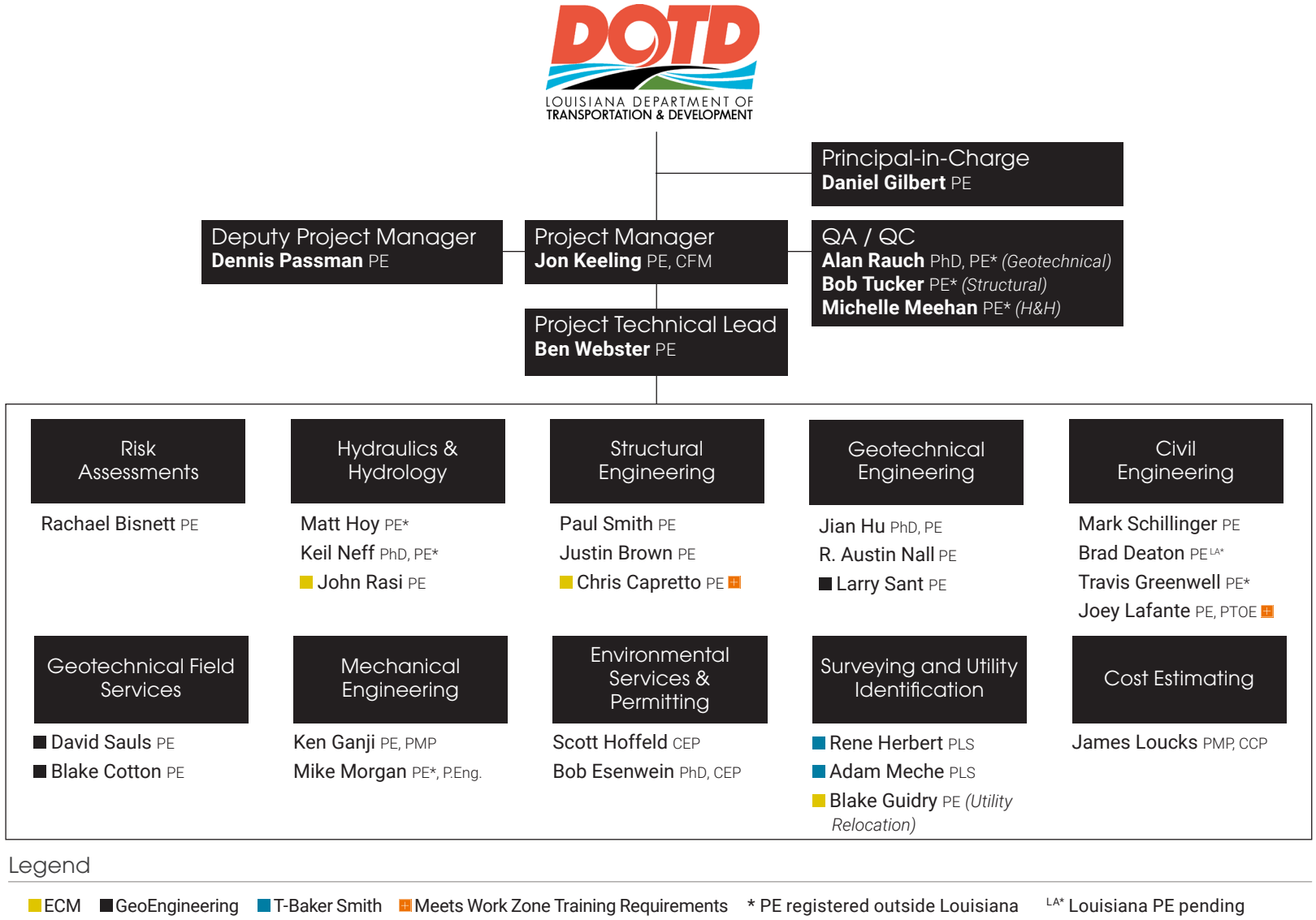
For all firms that are part of this team, indicate the approximate number of personnel to be committed to this contract, by DOTD Job Classification and the total number of personnel within the firm that could provide support, if needed. If a specialized job classification is required and not included on the DOTD job classification list, specify “Other (xxxx)” and include the classification title inside the parentheses. The DOTD Job Classification(s) to be used can be found at the following link:

Firm Name	DOTD Job Classification	Number of personnel committed to this contract	Total number of personnel available in this DOTD Job Classification (if needed)
Stantec Consulting Services Inc.	Engineer	13	16
Stantec Consulting Services Inc.	Environmental Professional	2	5
Stantec Consulting Services Inc.	Supervisor - Engineering	8	12
Stantec Consulting Services Inc.	Principal	1	2
Stantec Consulting Services Inc.	Engineering Intern	1	12
Stantec Consulting Services Inc.	CADD Technician	1	3
Stantec Consulting Services Inc.	Administrative	1	2
GeoEngineers, Inc.	Administrative	0	3
GeoEngineers, Inc.	CADD Technician	0	1
GeoEngineers, Inc.	Driller	2	3
GeoEngineers, Inc.	Engineer	2	8
GeoEngineers, Inc.	Engineer Intern	0	5
GeoEngineers, Inc.	Environmental Pro	0	2
GeoEngineers, Inc.	Principal	2	4
GeoEngineers, Inc.	Sr. Technician	1	1
GeoEngineers, Inc.	Technician	1	11
T. Baker Smith, LLC	Principal	1	5
T. Baker Smith, LLC	Supervisor ENG	1	3
T. Baker Smith, LLC	Engineer	1	18

13. **Firm Size:**

Firm Name	DOTD Job Classification	Number of personnel committed to this contract	Total number of personnel available in this DOTD Job Classification (if needed)
T. Baker Smith, LLC	Surveyor	5	12
T. Baker Smith, LLC	Senior Technician	1	13
ECM Consultants, Inc.	Principal	1	2
ECM Consultants, Inc.	Supervisor Engineer	2	8
ECM Consultants, Inc.	Engineer	1	10
ECM Consultants, Inc.	Engineer Intern	1	3
ECM Consultants, Inc.	Senior Technician	1	4
ECM Consultants, Inc.	CADD Technician	1	2

14. **Organizational Chart:**
Provide an organizational chart showing ALL **relevant** prime consultant and sub-consultant (if applicable) personnel assigned to the contract, area of project responsibility for each, and reporting lines for the purposes of this contract. An individual's role does not necessarily have to match their DOTD job classification identified in Section 13. If applicable, identify all personnel performing traffic engineering analysis and/or QC of traffic engineering analysis by placing an asterisk next to their name. Include the certificates required by the Traffic Engineering Process and Report Training Requirements article of the Advertisement in Section 20. It is acceptable to use an 11x17 format for Section 14.



15. **Minimum Personnel Requirements:**
Use the table below to identify both prime consultant and sub-consultant staff designated to work on this contract meeting the Minimum Personnel Requirements (MPRs) specified in the advertisement. Ensure the résumé reflects the required experience stated in the MPR.

MPR No.	Personnel being used to meet the MPR *(Individual(s) may not satisfy more than one MPR unless specifically allowed by Attachment B of the Advertisement)*	Firm employed by	Type of license / certification & number	State of license	License / certification expiration date
1.	Daniel Gilbert, PE	Stantec	PE No. 46099	LA	3/31/2022
2.	Daniel Gilbert, PE	Stantec	PE No. 46099	LA	3/31/2022
3.	Daniel Gilbert, PE	Stantec	PE No. 46099	LA	3/31/2022
4.	John Rasi PE	ECM	PE No. 20841	LA	3/31/2022
5.	Rene Hebert, PLS	TBS T. BAKER SMITH A CENTURY OF SOLUTIONS	Registered PLS-5070	LA	3/31/2022
6.	Keil Neff, PhD, PE	Stantec	PE No. 115015	TN	1/31/2022

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Daniel Gilbert** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**15**	
TITLE	**Vice President, US Dam and Levee Sector Leader**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**5**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2003 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.0046099 / LA / 03/31/2022** *(initial registration KY, 25728, 2007)*			
YEAR REGISTERED	**2021**	DISCIPLINE	**Civil Engineering**	

MEETS MINIMUM LADOTD PERSONNEL REQ.

Contract role(s) / brief description of responsibilities	Principal-in-Charge. Responsible for final review, approval, and successful implementation of the contract. Meets MPRs 1, 2, and 3.
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
03/16-Ongoing	**City of Newport News Waterworks On-Call Dam Inspection and Engineering On-call Services (2016-2021) | Newport News, VA** Advisor, Quality Manager, Subject Matter Expert and Independent Reviewer. Provided senior leadership and oversight for an on-call contract for dam safety inspections and engineering services for the client's dam portfolio of six regulated dams. Services included performing studies, evaluations, investigations (including geotechnical exploration and modeling), inspections, watershed modeling, modifications, and dam improvements on an as-needed basis.
09/12-12/21	**TVA Dam Safety Assurance Program | TN, NC, GA, AL** Program Manager and Principal in Charge. Responsible for overseeing the contract compliance, program scoping, project delivery, quality assurance and program communications. Also served as technical lead and subject matter expert on numerous task orders. Projects included inspections, geotechnical and geological investigations, instrumentation programs, global stability assessments, seismic evaluations, overtopping analysis, internal erosion evaluations, spillway evaluations, risk assessments (PFMAs, SQRAs, QRAs), modification design, risk-informed design, engineering during construction and routine dam safety program support. Supported TVA in programmatic decisions related to dam safety program involving prioritization of mitigations, interim risk reduction measures, feasibility studies, conceptual alternative development and decision-making frameworks. Program support has also included updates of O&M manuals, STIs, Instrumentation Monitoring Plans and periodic reviews, EAPs and routine dam safety reviews.
07/21-12/21	**System-wide Assessment Study for Kentucky River Locks and Dams | Multiple Locations, KY** Advisor, Quality Manager, Subject Matter Expert, Independent Reviewer, Project Manager. The Kentucky River Authority is charged with developing comprehensive plans for the management of the Kentucky River Basin which includes maintaining 14 lock and dam structures on the Kentucky River. Performed variety of roles with responsibilities for assessment, renovation design, and permitting and construction support. Served in Engineer of Record, Project Manager or Principal in Charge for the design and construction of 4 dam replacement projects (Dam Nos. 3, 8, 9 and 10), 4 lock renovations (Lock Nos. 1-4) and comprehensive assessment of the entire lock and dam system. Also have overseen several mitigations and repairs to the system involving upper and lower approach/guard walls, abutment repairs, sluice gates and lock maintenance.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
01/14-09/15	**Tennessee Valley Authority Embankment and Floodwall PMF Design at Four TVA Dams | Grainger, Loudoun, and Rhea Counties, TN** Principal in Charge and Quality Manager. Led design of floodwalls and/or embankment to raise 4 main stem dams on the Tennessee River three to six feet at each of the main dams and saddle dams along the reservoir rim. Project also included evaluation and design modification for several concrete non-overflow gravity structures at each site. The earth and rockfill structures combine for a total length of 17,000 feet and exhibit heights that range up to 100 feet. Stability mitigations included both post-tensioned anchors to address global instability and grouted bar anchors to address concrete dam neck instability along concrete lift joints. The projects were performed under an aggressive schedule and required to support licensing requirements for the Watts Bar Nuclear plant. Project was performed in accordance with TVA and FERC requirements.
09/16-Ongoing	**Programmatic Dam Safety Services for Mobile Area Water and Sewer System | Mobile, AL** Served as Civil Engineer for the investigation, inspection, assessment, design and implementation of mitigation measures for the chute spillway and embankment dam at Big Creek Lake Dam (80’ tall, 5,000’ long embankment dam with a gated chute spillway on the left abutment). Condition assessment consisted of review of project records, geotechnical investigation, stability analyses, breach modeling, flood routing, operations assessment and internal erosion evaluation. The assessment was used to perform a PFMA and risk-screening where Daniel served as the Civil SME. Based on the condition assessment and risk-screening, further studies were performed to address identified data gaps and further characterize existing conditions with the chute spillway underdrain system and elevated piezometric conditions in the dam foundation. Camera inspections were performed of the underdrain system, instrumentation was installed beneath the concrete chute spillway slabs at key locations and the underdrain system was reviewed in depth. PFMs were refined based on these findings. A monitoring plan was developed for the chute spillway, weirs were installed at seepage locations and additional instrumentation was installed to reduce risk. Design modifications included a replacement gate hoist system for the 7 tainter gates and a seepage berm along the embankment. Project is currently in construction.
07/19-Ongoing	**Bachman Lake Dam and Spillway Improvements Project | Dallas, TX** Civil Engineer for the assessment and design modification of Bachman Dam. Project includes geotechnical investigation, spillway assessment, global stability analyses, breach modeling, flood routing, and sedimentation assessment. Based on this assessment a PMFA was performed to inform future modifications. Daniel supported development of the detailed PFMs, participated in the PFMA workshop, developed risk-prioritization and was a contributor to the PFMA report. The assessment and PFMA were used to inform design modification of the dam including spillway replacement, seepage mitigation, scour mitigation and abandonment of the lake drain. The spillway will be replaced with a new labyrinth weir, stilling basin and outlet channel.
03/19-12/21	**Chatuge (and Nottely) Dam Spillway Evaluation and Risk Assessment | Clay County, NC** Civil Engineer for the stability evaluation for Chatuge and Nottely Dam. This includes a records review, inspection, condition assessment, investigations and engineering evaluations to support a PFMA, QRA and design modifications. As a Civil SME, Daniel has provided expert elicitation and engineering input to the support the QRA and development of IRRM and development of long-term mitigation measures. Daniel supported the development of detailed PFMs, construction of event trees and was a contributing author to associated reporting. Performed conceptual alternative development, development and design of interim risk reduction measures. Project is ongoing with evaluation of long-term mitigation and risk assessment.
10/14-09/16	**Boone Dam Seepage Mitigation | Washington and Sullivan Counties, TN** Project Manager and Subject Matter Expert. In 2014, a sinkhole appeared at the toe of TVA’s Boone Dam, an embankment structure built on karstic limestone, with turbid seepage in the tailrace. Stantec supported TVA’s response including 24-hour surveillance and a comprehensive investigation of the active internal erosion failure mechanism with the completion of over 50 boreholes and the installation of over 65 piezometers across the site. Daniel oversaw engineering studies that included a hydrogeology assessment, groundwater seepage modeling, and slope stability analysis. Mitigation alternatives were developed, and an expert panel participated in a risk assessment to identify potential failure modes, quantify dam safety risks, and rank remediation alternatives. Several designs supported the modification of the dam in preparation for final mitigations, which included a dam lowering, site civil, and utility packages. Daniel served as Project Manager and was accountable for project delivery, emergency response, design, and risk reduction measures. Additionally, he managed engineering services which included field studies, planning, risk reduction, design, test grout study, and site characterization. An extensive test grouting program was also undertaken at the site.

16. **Staff Experience:**

Résumés shall be provided for all prime and sub-consultant personnel listed in Sections 14 and/or 15 of the proposal. Résumés of personnel not identified in Section 14 or Section 15 of the proposal should not be included and will not be evaluated. Résumés should be limited to 2 pages per person. Any certificates required by the advertisement are to be placed in Section 20.

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Jon Keeling** PE, CFM	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**27**	
TITLE	**Principal and Project Manager**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**1**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 1992, 1994 / Civil Engineering, Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.0046008 / LA / 03/31/2022** *(initial registration KY, 20185, 1998)*			
YEAR REGISTERED	**2021**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Project Manager. Will serve as primary point of contact and manage the schedule, budget, scope, and subcontractors.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
03/16-Ongoing	**City of Newport News Waterworks On-Call Dam Inspection and Engineering On-call Services (2016-2021) | Newport News, VA** Project Manager, Technical Lead. Leads projects and technical tasks for an on-call contract for dam safety inspections and engineering services for the client's dam portfolio of six regulated dams. Services included performing studies, evaluations, investigations (including geotechnical exploration and modeling), inspections, watershed modeling, modifications, and dam improvements on an as-needed basis.
06/08-Ongoing	**City of Elizabethtown High Hazard Dam Safety Services | Elizabethtown, KY** Project Manager. Manages the on-going evaluation of four high hazard earth dams within Elizabethtown city limits, as part of the City’s annual maintenance and inspection programs. The evaluations involve coordination of field reconnaissance and reporting efforts, with reviews of dam operations, maintenance, and design records. Evaluations emphasize review of existing seepage, slope stability, or spillway issues at each dam, as well as reviewing historic documents to evaluate the potential for similar issues in the future. Responsible for producing the annual report of dam evaluations as well as completion of site evaluation checklists, photo logs, and plan views illustrating follow up items or areas of concern. Project now incorporates use of GIS based mapping to produce report documentation.
06/18-12/21	**White Rock Dam Spillway Capacity Evaluation and Maintenance Repair Design | Dallas, TX** Technical Lead. Led the development of repair plans and spillway capacity evaluation on a high hazard dam near downtown Dallas. Specific work being performed for the spillway capacity evaluation includes hydrologic and hydraulic analyses, PMF study evaluation, and development of potential rehabilitation alternatives to address spillway capacity of the dam. The repair project at the dam includes field surveying; utility coordination; permit coordination with TCEQ, and development of construction documents and technical specifications for repairs to the earth embankment and concrete service spillway.
09/16-01/21	**Lookout Lake Dam Rehabilitation | Dade County, GA** Project Manager, Engineer-of-Record. Supervising the assessment of a Category I, high hazard dam. The project involves developing design plans for dam modification to lower its hazard classification according to Georgia Safe Dams Program requirements and guidelines. The project also involved developing construction specifications, performing construction quality assurance services, and submitting as-constructed documents to Georgia SDP. A report was prepared summarizing the evaluation and provided recommendations for a path forward.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
06/19-Ongoing	**Bachman Lake Dam and Spillway Improvements Project | Dallas, TX** Technical Lead. Led rehabilitation design for a significant hazard dam. Phase 1, conducted in 2019, involved performing a five-year dam safety inspection to meet TCEQ requirements, reviewing and evaluating design criteria , and a gap analysis of existing information to determine the path forward for final design. Later phases will involve updating dam hydrologic and hydraulic analysis, permit coordination, and developing bid documents.
08/20-12/22	**Gwinnett County DWR Dam Safety Programmatic Services | Gwinnett County, GA** Senior Reviewer, Independent Technical Reviewer. Served on a team that conducted inspections, visual evaluations of dam spillway structures, and developed plans for rehabilitation improvements at 10 NRCS watershed dams. The project consisted of engineering, permitting, bid support, and engineer-of-record services during construction for the repair and rehabilitation of outlet control structures and associated principal spillway pipes.
09/16-Ongoing	**Programmatic Dam Safety Services for Mobile Area Water and Sewer System | Mobile, AL** Technical lead. Field inspection, assessment, and evaluation of current dam safety issues at Big Creek Dam, a high hazard water supply dam in Alabama. Assisting in performing a potential failure mode analysis of the dam, providing recommendations to client regarding their dam safety program, and providing dam safety training to staff.
06/13-06/17	**TVA Dam Safety Assurance Program | TN, NC, GA, AL** Senior Water Resources Engineer. Assisted the project team in developing and updating key dam safety documents associated with projects that are part of TVA’s Dam Safety Assurance Program (DSAP). These documents included Supporting Technical Information Documents (STID) and instrumentation Performance Report and Monitoring Plans (PRMP) for Chatuge, Chickamauga, Normandy and Nottely Dams. Also responsible for Independent Technical Review of project deliverables.
09/18-Ongoing	**Chatuge and Nottely Dam Spillway Evaluations and Risk Assessment | TN** Project Manager and Hydrology/Hydraulics Task Reviewer. Reviewed hydrology and hydraulic tasks for dam spillways in support of TVA’s Dam Safety Assurance Program. Each spillway had identified dam safety deficiencies that were evaluated in a Risk Informed Decision Making (RIDM) framework. The scope involved performing hydrologic and hydraulic modeling of spillway capacity, structural evaluation of spillway chute elements, developing initial concepts for spillway rehabilitation alternatives, and performing Potential Failure Mode Analysis (PFMA) for each spillway. Jon also performed risk analysis and expert elicitation to support risk estimates for various failure modes, as well as risk evaluation of proposed spillway alternatives.
06/12-06/16	**Dam Breach Analysis and Hazard Assessments | Various Locations, NY** Technical Manager. Responsible for technical management and coordination of hydrologic and hydraulic modeling and hazards assessment for this project, which involved eight dams across western New York. The dams were identified by NYDEC as having various deficiencies with regards to state dam safety regulations. Project involves field reconnaissance for dam condition assessment, hydrologic and hydraulic modeling of each dam and receiving stream, and dam breach analysis to support hazard assessment and evaluate deficiencies. Inundation mapping will be developed to support the assessments, and will also be used in the development of emergency action plans for the dams in order to meet NYDEC regulatory requirements. In addition, operations, maintenance and inspection plans will be developed or updated for each dam.
06/12-11/13	**Dam Breach Analysis, Inundation Mapping and LiDAR Acquisition for Various NRCS Dams | Statewide, KY** Project Manager. Hydraulic engineer and project manager responsible for dam breach analysis and inundation mapping for 16 dams identified as potential high hazard structures. Oversaw the development of hydrologic and hydraulic models (NRCS SITES model) for dam break analysis to support the determination of failure and risk index values for various loading conditions at each dam; and assisted the NRCS in scoring/ranking each dam in terms of repair or rehabilitation needs and risk. Developed failure and risk indices using NRCS methodology and procedures for potential failure modes, including static, hydrologic, and seismic conditions. Jon managed a multidisciplinary staff in reviewing original design parameters, as-built information, and existing conditions at each dam, and determining of loss of life estimates and economic, social, and environmental impacts due to failure to support risk index development. For dams with identified deficiencies, he assisted in development and preliminary analysis of alternatives for proposed improvements.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Dennis Passman** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**24**	
TITLE	**Principal, Water Resources Area Manager**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**4**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 1993 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.0027987 / LA / 9/30/2022**			
YEAR REGISTERED	**1998**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Deputy Project Manager. Will assist the Project Manager with scheduling, budgeting, client discussions, and associated tasks.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
6/2021-Ongoing	**Donner Canal Improvements | Orleans Parish, LA** Project Manager. Leading team for the detailed engineering and design for a new 60-foot, pile-founded concrete drainage flume along Donner Canal from the Algiers Outfall Canal to Nolan Canal (approximately 2,100 feet) and associated work. Specific tasks include coordination with all disciplines, review of government furnished information, preparation of plans, specifications, and cost estimates, and provide engineering assistance during advertisement.
03/20-Ongoing	**West Shore Lake Pontchartrain Pump Stations and Drainage Structures | St. Charles Parish, LA** Deputy Project Manager. Assisted with the preparation of the plans and specifications. Dennis was also responsible for the budget tracking, accruals, and invoicing to the client. As part of the Hurricane and Storm Damage Risk Reduction Project for the Parishes of St. Charles, St. John the Baptist, and St. James, this project involved the design of 2-2,000cfs and 2-800cfs pump stations and drainage structures with intake and discharge channels, t-walls, wing walls, levee tie-ins, access roads and bridges, a draw bridge, and associated work at four locations: Hope Canal, Reserve Relief Canal, I-55 Canal, and Prescott Canal.
01/18-Ongoing	**CPRA Mid-Breton Sediment Diversion (BS-0030) | Plaquemines Parish, LA** Transportation Team Lead. Responsible for management of his team to incorporate the LA 39 highway realignment and bridge over the proposed sediment diversion complex and conveyance channel. Also providing coordination between CPRA, DOTD, and District personnel, oversight of traffic analysis, corridor studies, conceptual planning and design, highway signage, detour roads, access roads, maintenance of traffic to accommodate evacuations during a hurricane, specifications, quantities, and opinions of probable construction costs. CPRA’s Mississippi River Mid-Basin Sediment Diversion Program is a major effort to accomplish the goals of the 2007 Master Plan and subsequent 2012 and 2017 Master Plans for a Sustainable Coast. Within this Program, the Mid-Breton Sediment Diversion (MBrSD) Project was identified as an important project to divert sediment-laden Mississippi River water into the Breton Sound Basin by re-establishing a connection between the Mississippi River and the Basin to build, sustain, and maintain land.
11/17-Ongoing	**Mississippi River Re-Introduction into Bayou Lafourche Pumping Capacity Improvements Project | Donaldsonville, LA** Lead Engineer. Led efforts associated with the overall site improvements. Specific responsibilities include developing a Basis of Design Report, Plans and Specification, Quantities, and Estimate for a vehicular access ramp to the new pump station, a pedestrian access bridge to the existing pump station, grading, drainage, parking, and utility relocations. The pump station was recently permitted for construction.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
09/13-11/16	**Comite River Diversion Project, Bayou Baton Rouge Drop Structure | Baton Rouge, LA** Project Manager. Responsibilities included oversight of surveys, site reconnaissance, geotechnical investigations, design and production of plans and specifications for the Bayou Baton Rouge reinforced concrete drop structure, guide levees, disposal areas, haul/access roads, temporary drainage, and a portion of the diversion channel through the project site. Specific tasks also included providing assistance with utility relocations and right-of-way drawings, preparation of a Design Documentation Report (DDR), detailed quantities, and cost estimates, and coordination with multiple entities.
09/07-09/12	**Carrollton Levee Floodwall and Levee Enlargement | Orleans Parish, LA** Project Manager. Responsible for the preparation of plans and specifications of approximately 10,450 linear feet of levee enlargement and approximately 2,850 linear feet of new floodwall, including flood gates. Also responsible for the coordination between several agencies, including both the New Orleans and Vicksburg Districts COE, sub-consultants, and clients which was critical to the success of the project. Project tasks included horizontal and vertical design of the floodwall and levee enlargement, drainage analysis, earthwork, quantities, cost estimates, and the preparation of Right-of-Entry drawings. Due to funding, the Corps removed the floodwall and floodgates from the scope of serves after the 35% submittal. The levee enlargement and associated features i.e. access ramps, review of impacted utilities, levee surfacing, coordination, quantities, and estimates, were carried on through final plans and construction.
06/10-06/16	**USACE MVN 5-Year IDIQ | Multiple Locations, LA** Project Manager. Indefinite Delivery, Indefinite Quantity Contract for general design support services primarily within the limits of the New Orleans District. Dennis served as the overall contract manager in which eight task orders have been awarded. Types of work involved in the task orders included levee inspections, a diversion channel, construction administration, and an embedment within the New Orleans District. Duties as contract manager also consisted of coordination between multiple team members, and invoicing.
02/09-07/11	**Bayou Dupont Marsh Creation Project | Plaquemines/Jefferson Parishes, LA** Project Manager. Oversaw team providing construction administration and inspection for the Office of Coastal Protection and Restoration (OCPR) to create approximately 500 acres of sustainable marsh in a rapidly eroding and subsiding section of the Barataria Landbridge. The project consisted of transporting sediment from the Mississippi River by pumping the spoil material through a pipeline that required jacking and boring under both a railroad and a highway and placing the material in the areas specified by the OCPR.
03/10-10/10	**Grenada Dam Downstream Face Drainage Pipes | Grenada County, MS** Project Manager. Provided plans and specifications for the removal of existing drop inlets, outlets, and buried downstream face drainage pipes at the Grenada Dam and replacing it with new drop inlets, outlets, and buried drainage pipes. Specific tasks included coordination with all local, State, and Federal authorities, determining the layout of the structures, preparing a sequence for the construction, and preparing detailed quantity estimates.
05/06-01/07	**Delta Management at Fort St. Phillip | Plaquemines Parish, LA** Project Manager. Responsible for a project designed to enhance marsh growth by diverting fresh water and sediment through crevasses into shallow, open water receiving areas. Three crevasses were constructed in each of the two areas. Earthen terraces were constructed to further trap sediment, promote the marsh-building process, and offset land loss. Dennis and his team provided construction administration for this project, including such tasks as submitting all forms and reports, meetings and coordination with contractors, shop drawings and submittals, onsite interpretation of documents, and all construction inspection duties.
02/05-12/05	**Capital Lake Improvements and Arsenal Modifications | Baton Rouge, LA** Project Manager. Prepared plans for drainage improvements and minor pavement repairs to the Capitol Access Road and Capitol Lake Drive. The design incorporated improved bank stabilization, as well as added paved walk and cart paths to provide access between the North Capital Park complex and the Capitol Building. Design also included bank stabilization and drainage improvements to the Governor's Mansion property along the lake. Dennis oversaw all tasks, including surveying, design, including plans and specifications, permitting and construction administration.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**		
NAME	**Ben Webster** PE, PMP	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**12**
TITLE	**Principal**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**0**
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 2009, 2011 / Civil Engineering, Civil Engineering**		
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.0046108 / LA / 03/31/2022** *(initial registration KY, 30339, 2014)*		
YEAR REGISTERED	**2021**	DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Project Technical Lead. Will be responsible for technical aspects of project execution.		

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
07/21-12/21	**System-wide Assessment Study for Kentucky River Locks and Dams | Multiple Locations, KY** Principal-in-Charge. Responsible charge for the study used to develop a long-term capital improvement plan to secure central Kentucky's water supply. Project entailed an assessment study to provide the Kentucky River Authority (KRA) with a current condition assessment of their lock and dam portfolio. KRA uses this study to help prioritize future projects that are critical to retention of the pools behind each of the 14 lock and dam sites that were part of the study. While the focus of the study was on near term repairs to existing structures, a parallel track of long term planning for replacement structures was also addressed.
10/12-Ongoing	**Renovation of Kentucky River Lock and Dam No. 10 | Clark County, KY** Project Manager, Engineer of Record. The project consists of reviewing historical information, assessment of existing structures, preparation of design alternatives for replacement/renovation of the lock and dam, design of replacement dam and renovated lock (from inoperable to operable), preparation of contract documents (plans and specifications), permitting, bid-phase assistance, and engineering-during-construction.
06/17-Ongoing	**Renovation of Green River Dam 3 (Rochester Dam) | Rochester, KY** Project Manager, Engineer of Record. Initial efforts included providing support to a water commission to submit a grant application for funding to rehabilitate a dam run-of-the-river dam on the Green River in Kentucky. Once the grant was approved, detailed design of a maintenance project at the facility to restore the historical crest elevation of the existing dam and reduce leakage through the structure to improve water supply especially during low-flow conditions.
01/17-Ongoing	**Gwinnett County DWR Dam Safety Programmatic Services | Gwinnett County, GA** Design Lead, Engineer of Record. Key team member participating in a dam structural maintenance project, outlet control structures, and principal spillway pipes at 10 facilities. The dams and appurtenances were built by the Natural Resources Conservation Service and required significant maintenance improvements. The project included replacing low-level drawdown gates, cured-in-place pipe liners, safety improvements on the outlet control structures (handrails and ladders), and dam safety improvements (tree removal, surface drainage improvements, parapet wall crack repairs, and wave wash protection). The Stantec team also provided public outreach support and led the regulatory permitting process. Future services will include bid support and construction quality assurance services.
08/20-12/20	**Sabine Pass to Galveston Bay (S2G) Coastal Storm Risk Management (CSRM) and Ecosystem Restoration Program | USACE-Southwestern Division | Orange County, TX** Design Lead. The nearly $2B Sabine Pass to Galveston Bay Coastal Storm Risk Management program involves a 27-mile-long system comprised of floodwalls, levees, 2 navigable sector gates, several closure structures, 7 new pump stations, numerous interior drainage features, and hundreds of acres of marsh and wetland improvements. Ben led the $1.3M preliminary design of the Adams Bayou Complex, which included floodwall and levee sections, an 1,890 CFS pump station, a vertical lift gate structure, and an 84-foot-wide navigable Sector Gate structure across the mouth of an existing bayou. Future phases will include detailed design, and support during procurement and implementation.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
10/19-07/20	**John Sevier Dam Interim Risk Reduction Measures | Hawkins County, TN** Project Manager, Engineer of Record. This project was to perform interim risk reduction measures on the embankment portion of a run-of-river dam on the Holston River in Tennessee. The embankment portion of the dam is along the left abutment at a higher elevation than the normal crest. Recent increased overtopping has been experienced, and TVA determined there to be need for interim risk reduction measures to address the issue in the short-term while long-term planning could be performed. The project included a fast-paced design of slope armoring (riprap with slush grouting) on the downstream face to reduce the likelihood of an overtopping-induced embankment failure. Long-term plans for the facility could include removal and replacement of the abutment structure, dam removal, or modification of the embankment.
06/20-09/20	**Kingston Dike Slope Improvements | Kingston, TN** Project Manager, Engineer of Record. Design of slope armoring improvements on the protected side of a dike in Roane County, TN. The dike protects the city of Kingston from flood flows in the Clinch River, which forms the headwaters of Watts Bar Reservoir. The project objective was to mitigate shallow sloughing failures along the slope that had been frequently observed and repaired by TVA. The design involved slope armoring with geotechnical filter bedding considerations, four Gabion Basket retaining walls of different heights and lengths, preservation of a wetland area near the downstream toe of the dike, and site civil considerations to avoid impacts to a local high school parking lot and a pump station near the downstream toe of the dike. Stantec supported the project from planning and alternatives development through construction.
06/18-Ongoing	**Bear Creek Dam Sluice Gate and Frame Replacement Project | Franklin County, AL** Project Manager. The project objective is to replace an aged, failing steel slide gate and frame within an intake structure. Stantec has supported the project since 2018 through planning, alternatives development, detailed design, and construction (anticipated summer of 2022). Several alternatives were developed, and Stantec worked with the client to select a preferred alternative for the project and provide budgetary cost information. Detailed design was then performed for an AWWA-style slide gate with customizations to reduce hydrodynamic vibration-induced damage potential.
10/18-Ongoing	**Dam Operations, Maintenance, and Inspection Plans | Multiple Locations, AL, GA, KY, MS, NC, TN, VA** Principal-in-Charge. Principal-in-Charge over a program to develop Operations, Maintenance, and Inspection (OMI) Plans for all 49 of TVA's river dams. This program was established in 2018 in an effort to combined O&M Manuals and Inspection Plans into one comprehensive document encompassing the dams and appurtenances. The project is ongoing with anticipated completion in 2023
05/17-10/18	**Nolichucky Dam Spillway Gate Replacement | Greene County, TN** Project Manager. Planning studies included development of several alternatives to dewater the downstream face and toe of a run-of-the-river dam in Tennessee. The selected alternative included restoring a currently decommissioned existing spillway gate back to service to lower the upper pool elevation. Ben was Project Manager during planning, alternatives development, field studies (bathymetry and detailed structural inspections), design, and construction quality assurance services.
08/19-Ongoing	**Bird Lake Dam Removal | Gwinnett County DWR | Lilburn, GA** Geotechnical Engineer. Provided technical oversight and reviewed design package deliverables to support removing a small embankment dam. Geotechnical considerations included temporary considerations during construction, constructability, and stability of permanent slopes within the restored former reservoir area.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Alan Rauch** PhD, PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**17**	
TITLE	**Vice President**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**14**	
DEGREE(S) / YEARS / SPECIALIZATION	**PhD / 1997 / Civil Engineering; MS / 1990 / Civil Engineering; BS / 1986 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE 23934 / KY* / 6/30/2022**			
YEAR REGISTERED	**2004**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	QA/QC - Geotechnical. Expert in civil and geotechnical engineering who will provide quality control/quality assurance for the civil and geotechnical engineering services.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).			
07/12-10/17	**TVA Dam Safety Assurance Program | Tennessee Valley Authority (TVA) | Various Locations, TN, AL, NC, GA, VA** QA/QC / Geotechnical Reviewer. Responsible for establishing analysis methods, developing guidance documents, resolving technical issues, and providing programmatic technical review of project findings for a comprehensive dam stability assessment program. He assisted with performing stability and internal erosion evaluations for 22 dams during the program, including visual inspections, field explorations, laboratory testing, seepage modeling, slope stability analyses, liquefaction assessments, seismic stability analyses, internal erosion evaluations, and monitoring systems implementation. Structures included concrete gravity dams, earthen embankments, rockfill dams, lock walls, floodways, and spillways.			
07/14-09/16	**Douglas Saddle Dam Seepage Mitigation | Tennessee Valley Authority (TVA) | Sevier County, TN** Principal/Design Lead. Provided technical oversight for analyses, developed seepage models and methods for quantifying the factor of safety for soil heaving, and led the design effort for mitigations at five of the 10 saddle dams included in the project. Each is a homogeneous embankment underlain by steeply dipping, thinly laminated shale bedrock. Under flood pool conditions, seepage through the shale could cause soil heaving at the toe of the downstream slopes. Weighted berms of graded stone were constructed to provide additional stability to four saddle dams. At the tallest structure, 14 deep relief wells were installed to address artesian pressure conditions. Asphalt paving and extensions to a concrete floodwall raised the crest at three of the saddle dams.			
01/18-05/19	**Fort Loudoun Dam Internal Soil Erosion Study and SQRA | Tennessee Valley Authority (TVA) | Lenoir City, TN** Technical Lead/Subject Matter Expert. Principal author of the project report, and served as a subject matter expert for a semi-quantitative dam risk assessment (SQRA).Constructed in the 1940s, Fort Loudoun Dam includes a 120-foot-tall embankment section that is 2,640 feet long. The Stantec team evaluated dam seepage and the potential for internal soil erosion within the embankment and foundation. Historical photographs, construction records, inspection logs, soil borings, soil gradations and index properties, piezometric data and trends, seepage model results, and other information were integrated to assess dam conditions. The team inspected the dam embankment and identified wet areas, possible seepage outbreaks, and drainage features condition. The findings centered on observed seepage areas, the potential for cracking within the cutoff trench, and karstic solution features within the foundation rock.			
01/21-Ongoing	**Chatuge Dam Spillway Quantitative Risk Assessment | Tennessee Valley Authority (TVA) | Hayesville, NC** Geotechnical Subject Matter Expert for the risk assessment team and a principal author of the QRA report. The spillway at Chatuge Dam has a 1,350-ft long concrete chute founded on soil. TVA undertook a quantitative risk assessment (QRA) to characterize the expected performance of this structure for a range of discharge flows. A key consideration was the capacity of the underdrain system, and the potential to develop uplift pressures. Special studies were undertaken to support the risk assessment, which included instrumentation installed under the spillway slab to measure hydraulic pressures during spilling events.			

*PE registered outside of Louisiana

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
09/17-12/19	**Big Creek Lake Dam Evaluation | Mobile Area Water & Sewer System | Mobile, AL** QA/QC/Geotechnical Reviewer. As part of an updated engineering assessment, Alan provided senior technical review for the field reconnaissance, detailed slope stability and seepage analyses, and an internal erosion evaluation for the dam and spillway. Project entails comprehensive dam safety services for the primary water supply reservoir for Mobile. The dam is a 5,000-foot-long and 75-foot-tall earthen embankment structure. The project included a reinforced concrete chute spillway with seven gates.
05/18-Ongoing	**Mactaquac Dam PFMA and Quantitative Risk Assessment | Fredericton, New Brunswick** Subject Matter Expert. The Mactaquac Dam project includes a rockfill dam, two concrete spillways, and a six-turbine powerhouse. Severe concrete expansion due to AAR has reduced the operating life of the facility, and recent hydrologic studies have indicated the need to increase spillway capacity. Stantec was retained to develop solutions for extending the life of the facility. A multi-phase risk assessment was completed to support project decisions, consistent with CDA guidance. The quantitative risk assessment was consistent with FERC Level 4 standards and USACE/USBR best practices guidance. Alan served as a Geotechnical Subject Matter Expert for the PFMA and quantitative risk assessment.
01/16-07/19	**Watauga Dam Internal Soil Erosion Evaluation and SQRA| Tennessee Valley Authority (TVA) | Carter County, TN** Technical Lead/Subject Matter Expert. This dam is a 330-foot tall, rockfill structure with a compacted clay core. Stantec assessed the vulnerability of the dam's core to seepage and internal soil erosion. No seepage exits have been observed, but critical areas are buried beneath the massive rockfill shell of the dam embankment. Potential internal erosion mechanisms were systematically evaluated using historical design and construction records, numerical seepage models, and data from a network of installed piezometers. Potential dam safety risks were cataloged, documented, and assessed. Key findings focused on crest settlements and cracking, the effectiveness of the embankment filters, potential for seepage through a talus deposit that was left under part of the dam core, and elevated piezometer readings in the left abutment. Alan was the technical lead for the project and the principal author of the findings and recommendations. Later, Alan served as a subject matter expert for a semi-quantitative risk assessment (SQRA).
08/06-10/13	**Kentucky River Dam No. 3 and Lock Nos. 3 and 4 | Kentucky River Authority | Franklin and Owen Counties, KY** Engineer of Record. Led efforts to characterize the existing conditions at these 170-year old timber, stone masonry, and concrete facilities. Extensive geotechnical explorations and testing of rock core was completed. Alan then led the design effort for a replacement dam, which consists of a concrete-filled, cellular sheet pile structure, which was constructed without extensive dewatering. Unique features of the design include a cast-in-place concrete connection between the new dam and the historic lock wall, and a steel master pile system with lightweight fill that forms a downstream training wall.
10/15-04/18	**Beaverdam Creek Dam | Western Virginia Water Authority (WVWA) | Roanoke, VA** Geotechnical Design Lead. Stantec was retained to design improvements to Beaverdam Creek Dam, which impounds water supply for the Roanoke area. Built in 1925, the 73' tall embankment dam did not meet current stability criteria and had inadequate spillway capacity. Stantec's design included a new, larger concrete chute spillway, an earthen toe berm with a graded filter, and drainage improvements. Alan led the design for the embankment modifications.
10/15-06/19	**Eagle Creek Flood Basin - Maumee Watershed Conservancy District | Findlay, OH** QA/QC/Geotechnical Reviewer. The Eagle Creek Flood Basin is designed to reduce flood risks. The detention structure captures and temporarily stores stormwater runoff in the upper Blanchard River watershed. The dam is a nearly four-mile long, 35-foot tall embankment structure, with principal and auxiliary spillways. The dam crosses an alluvial flood plain, which required careful assessment of the foundation conditions. Challenges included optimizing the design to meet dam safety criteria, while recognizing that flood storage will be infrequent, rapid, and temporary. Alan provided senior technical review for the geotechnical aspects of the project.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Bob Tucker** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**7**	
TITLE	**Senior Structural Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**30**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 1983, 1998 / Civil Engineering, Structural Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE 25690 / KY* / 03/31/2022**			
YEAR REGISTERED	**2007**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	QA/QC - Structural. Expert in structural engineering who will provide quality control/quality assurance for the structural engineering services.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
10/19-Ongoing	**GCMC-Sabine Region: SATOC Orange County, Coastal Storm Risk Management and Ecosystem Restoration A-E Services | USACE-Galveston District | Orange County, TX** Drainage Structures Design Team Lead. Led the design of the three representative gated drainage structures that provide a template for the design of the proposed 13 additional structures required for the 2A reach of the hurricane flood protection line. The three structures taken to 95 percent design included two through-levee multiple gated culverts and a five-gate floodwall structure.			
06/19-02/20	**Structural Inspection of Outlet Control Structures and Principal Spillway Pipes | Gwinnett County, Georgia | Gwinnett County, GA** Structural Team Leader/Senior Reviewer. Led the structural team and reviewed above water (including within the structure) and underwater inspections of 15 outlet control structures (OCS) and principal spillway pipes (PSPs) at 15 NRCS dams. Deliverables included inspection and recommendation reports for the rehabilitation of the OCS and PSPs. The recommendations are utilized by GCDWR to rehabilitate the sites.			
02/20-08/20	**Dam Outlet Works Maintenance | Gwinnett County Department of Water Resources | Gwinnett County, GA** Independent Technical Reviewer. Reviewed structural aspects of the rehabilitation of OCSs and PSPs at 10 NRCS watershed dams. The rehabilitation consisted replacements/repairs to extend the service life of the structures, including re-lining the PSP’s gate replacement, concrete repairs, and access improvements.			
06/04-07/08	**Canton Lake Auxiliary Spillway | OK** Structural Team Leader. Due to an assessed hydraulic deficiency (the potential for PMF overtopping), a fuse-gated auxiliary spillway and channel was designed to increase discharge capacity. Managed concept and early design phases led the structural team for diaphragm wall remediation, highway bridge, and wet well structure. When construction was completed in 2017, the Canton Lake Dam Auxiliary Spillway was one of the largest fuse-gated spillways in the world.			
06/05-01/06	**Red River Basin Chloride Control Project | TX** Senior Structural Engineer. This project was designed to control natural chloride brine emissions at ten major source areas to improve water quality for municipal, industrial, and agricultural use. Improvements included the design and construction of low flow dams, pump stations, and diversion pipelines to impoundment facilities. Served as Project Structural Engineer for phases 9 and 10 of this multi-phase project.			

*PE registered outside of Louisiana

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
10/06-12/06	**Arkansas City Hwy 77 Bypass Levee Sluice Gate Assessment | KS** Senior Structural Engineer. Provided structural assessment of a 1930 era 84-inch-diameter sluice gate structure which had been experiencing major serviceability issues in addition of exhibiting extensive structural distresses. As no record drawings were available, the assessment included a site investigation which included developing detailed dimensioned drawings. The project further included an analysis of the capacity of the structure with regards to its diminished condition, a written report to the owner, and coordinating with USACE and municipal officials to establish the basis for replacement funding.
11/04-06/05	**Arkansas City Flood Protection Project | KS** Senior Structural Engineer. Supported the design of the flood protection system for the city of Arkansas City, Kansas. The project structural requirements included three sluice gated gravity drainage structures, a spillway, the refurbishment of a circa 1940 pumping station, an access bridge, and numerous secondary structures.
04/04-10/04	**Augusta Flood Protection Project | KS** Senior Structural Engineer. Responsible for the design of the flood protection system for the city of Augusta, Kansas. Structural facets included a four sluice gate gravity drainage structure, a spillway, T-wall type floodwall monoliths, and three road closure structures.
02/04-04/04	**50’-0” Stop Log Lift-Beam, Robert S. Kerr Lock & Dam Maintenance Area | OK** Structural Engineer. Assisted with designing a 50-foot stop log lift beam for use on the McClellan–Kerr Arkansas River Navigation System. The scope required a design less prone to pick up actuation problems and permanent beam deformation due to racking in the stop log slots. The design eliminated or greatly reduced these issues.
06/02-08/02	**Heyburn Dam Intake Structure* | Polecat Creek, OK** Project Engineer. Contributed to the design of a maintenance slide gate for an intake structure constructed in 1948. He wrote the scope of work for the in-the-wet installation and provided QC on the four-foot by five-foot gate design and track system.
02/01-04/01	**Columbia Lock & Dam, Ouachita River | US 165 Columbia, LA** Structural Engineer. Assisted in designing the heat straightening repair of the main strut and strut bracing of a tainter gate damaged because of a barge impact. There were significant cost savings in utilizing the FHWA approved technique.
11/98-03/99	**Swan Lake Environmental Management Program, Pool 26 | Calhoun County, IL** Project Team Leader. Led the design of two combination bridge-gate structures that involved cellular sheet pile abutments, pre-stressed concrete plank bridge structures, precast gate sills for underwater construction, and a slide gate system integral with the bridge structure. The project also included two pumping stations and ancillary structures.
04/97-02/98	**Bayou Rapides Pumping Station | Alexandria, LA** Structural Engineer. One of three Principal Structural Design Engineers of the combined pumping station and gravity drainage structure replacing an obsolete station located in downtown Alexandria, Louisiana. This structure, covered as the lead story of the October 7, 2002 issue of “Construction News,” magazine, included several innovative types and methods of construction for this type of structure including a U-frame configuration and the use of soil-nailed tie-backs in soft soils for the braced excavation and permanent wing walls.
02/97-08/97	**Sicily Island Bayou Pumping Station Project | LA** Primary Structural Engineer. Responsible for the design of the pumping station portion of this $10 million project located in the Tensas Basin area of Louisiana. The twin-diesel operated 750-CFS pumping station included two 13,500 HP diesel engines, a service bridge, a 10-ton capacity bridge crane, a twin 48-inch diameter steel pipe system, and numerous ancillary features.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Michelle Meehan** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**14**	
TITLE	**Senior Project Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**0**	
DEGREE(S) / YEARS / SPECIALIZATION	**MS / 2007 / Civil Engineering; BS / 2005 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE 27681 / KY* / 6/30/2022**			
YEAR REGISTERED	**2011**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	QA/QC - Hydraulics & Hydrology. Expert in hydraulics and hydrology who will provide quality control/quality assurance for these services.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
01/8-Ongoing	**FEMA Regions II, III, IV, V, VII and X Flood Insurance Studies and DFIRM Mapping | FEMA Regions IV and V** Senior Project Engineer. Performs hydrologic and hydraulic analyses or technical review for countywide floodplain map modernization and RiskMAP efforts in numerous communities in New York, Virginia, Kentucky, Ohio, Iowa, and Alaska. Projects involve redelineation of effective floodplains; establishing new flood hazard boundaries; incorporation of leverage studies and Letters of Map Change (LOMCs); assisting with program support; performing levee analysis utilizing the Levee Analysis and Mapping Procedures (LAMP); assessment of riverine tie-ins; performing new hydrologic and hydraulic modeling to varying levels of detail (1-D Steady, 1-D Unsteady, 2-D Unsteady; approximate studies, limited detailed studies, and detailed studies including floodway analysis), and coordination with local community partners. Project deliverables include development of H&H submittal packages as well as updated county-wide DFIRM mapping and revised Flood Insurance Study reports. Projects include, but are not limited to Warren and Washington Counties, NY, Albemarle County, Virginia, Floyd, Harrison, Pendleton, and Grant Counties, Kentucky, Athens, Butler, Greene, Sandusky, and Seneca Counties, Ohio, Lee and Des Moines Counties Iowa, and Ketchikan County, AK;
09/20-03/21	**Flood Damages Averted | Kingsport and Elizabethton, TN** Senior Project Engineer responsible for using steady-state HEC-RAS modeling data developed by TVA to create a HEC-LifeSim model to evaluate damages downstream. The results of the modeling were used by TVA to evaluate the potential damages resulting from flooding in the absence of Boone, Watauga, and South Holston Dams.
09/20-11/21	**Boltz Lake Dam-Phase I Preliminary Condition Assessment | Dry Ridge, KY** H&H Technical Lead. Led H&H components of this project to evaluate Boltz Lake Dam. The project consisted of evaluating the capacity of the dam's spillway in its current state, performing a breach analysis and evaluating downstream impacts, and identifying conceptual alternatives to bring the dam into compliance with state dam safety standards. Hydraulic modeling was performed using HEC-HMS and 1-D Unsteady HEC-RAS.
03/19-Present	**Chatuge Phase 1 Spillway Risk Analysis and Project Planning Document | NC** Senior project engineer. Performing a hydraulic analysis and uplift study of an existing spillway and conducting a follow-up quantitative risk assessment. Michelle updated 1-D unsteady hydraulic modeling of the area downstream of the spillway (using HEC-RAS) and used the modeling to create a HEC-LifeSim model of the area to evaluate potential loss of life and economic damages. She also completed hydraulic analysis of the spillway (using HEC-RAS, Z-PROF, and SpillwayPRO), computed stagnation pressures and seepage flows through joints and cracks of the spillway relative to the spillway's underdrain capacity, and reviewed inputs and outputs for the QRA (associated with the @Risk models). The risk assessment will be used to evaluate alternative design options for the spillway that reduce risk to acceptable levels.

*PE registered outside of Louisiana

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
11/16-06/20	**Lookout Lake Dam Rehabilitation | Trenton, GA** Senior Project Engineer. Performed dam breach analyses on existing conditions to confirm hazard classification and on proposed modifications to the dam to evaluate whether the alternatives could lower the hazard classification. Analyses were performed using dam breach capabilities within unsteady HEC-RAS.
06/19-12/20	**Dam Breach Analysis and Consequence Assessment | Central Queensland, Queensland** Project technical lead. Overseeing dam breach analysis, inundation mapping, and consequence assessment for a tailings dam and return water dam at the South Walker Creek mine site in Central Queensland. This project utilized HEC-HMS to develop inflows (using Australian Rainfall and Runoff (ARR) Guidelines) and outflows associated with a breach of the dams. The dams were evaluated both individually and together with a cascading breach scenario. The flow hydrographs were used in FLO-2D, which is capable of simulating a breach of tailings material and water as hyper-concentrated sediment flow. The results were used to develop inundation mapping and evaluate consequences of a breach in accordance with ANCOLD guidelines.
10/16-Ongoing	**Programmatic Dam Safety Services for Mobile Area Water and Sewer System (Big Creek Dam) | Mobile, AL** Senior Project Engineer. Oversaw hydrologic and hydraulic analysis of a high hazard water supply dam. Hydrologic analysis included creating a watershed model, calibrated using rainfall and stream gage data. Hydraulic modeling was performed using unsteady HEC-RAS to run with- and without-breach scenarios. Modeling results were used to prepare inundation mapping and update the dam's Emergency Action Plan. Future work phases will include performing a table-top exercise of the EAP with local officials.
09/12-12/12	**Dam Breach Outflow Hydrograph Development for TVA Dams | Various Locations, TN** Project Engineer. Assisting with developing dam breach outflow hydrographs for Fontana Dam in Tennessee for assumed failures of the concrete structure and dam embankment during an earthquake combined with a storm event. This work was performed in coordination with engineers from Barge, Waggoner, Sumner, and Cannon who utilized the results to determine warning times at Watts-Bar Nuclear Plant downstream. This work involved applying an operating guide to determine water levels and resulting outflows (in HEC-HMS 3.3) during a flood event up to the assumed time of the earthquake event resulting in instantaneous failure. Post-failure outflows were then determined in HEC-HMS and unsteady HEC-RAS.
06/12-12/12	**Dam Breach Analysis and Hazard Assessments | Multiple Sites, NY** Senior Project Engineer. Assisted with the hydrologic and hydraulic analysis of eight dams using HEC-HMS and unsteady HEC-RAS. Her contributions consisted of reviewing analyses and documenting and resolving technical issues. The assessments helped determine if the dams met safety requirements of the New York Department of Environmental Conservation (DEC), and identified needed repairs and/or rehabilitation so the client could prioritize funding.
09/16-03/18	**Statewide Dam Safety Evaluations | Statewide, OH** Senior Project Engineer. Responsible for reviewing dam breach analysis performed for Blue Rock Dam and performing dam breach analysis for Guilford Lake Dam as part of a larger project to assess performance and prepare Emergency Action Plans for a suite of dams for the ODNR. Dam breach analysis consisted of HEC-HMS watershed modeling and unsteady HEC-RAS modeling. Michelle was also responsible for development of a risk prioritization system (for potential future use by ODNR) that would allow for ranking of the dams within the program. The developed tool was based on U.S. Bureau of Reclamation's Risk-Based Profile System, with modifications made to address ODNR's dam inventory, program initiatives, and future usability of the tool.
09/19-01/21	**South Fork Little River Flood Control Structure | Hopkinsville, KY** Water Resources Engineer. Assisted with modeling review of a potential flood-retarding structure to reduce flooding for a downstream community. The project involved hydrologic and hydraulic modeling for the base condition, as well as with the proposed structure in place. Dam breach modeling was also performed for various return-period events to evaluate a worst-case breach scenario and its impacts on the downstream population.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**		
NAME	**Rachael Bisnett** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**11**
TITLE	**Principal Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**0**

DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 2008, 2010 / Civil Engineering (Structural Emphasis), Civil Engineering (Geotechnical Emphasis)**
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.142323 / LA / 3/31/2022** *(initial registration IL, 062.066106 , 2015)*
YEAR REGISTERED: **2021** / DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Risk Assessment. Expert in dam safety risk assessments will serve as a senior technical expert for risk assessments.

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
03/19-12/21	**Chatuge Dam Spillway Evaluation and Risk Assessment | NC** Risk Advisor. The Tennessee Valley Authority is performing a Quantitative Risk Assessment and issue evaluation study for the gated chute spillway at Chatuge Dam. Rachael is a risk advisor to the joint project team, responsible for coordination between the subject matter experts and facilitation team, providing recommendations for quantitative risk analysis best practices, and reviewing development of the risk model.
07/21-09/21	**Eraring Ash Dam Internal Erosion Risk Assessment | Origin Energy Eraring | Eraring, NSW, Australia** Internal Technical Reviewer. Stantec performed an internal erosion risk assessment for the ash storage dams at the Eraring Power Station using the Piping Toolbox method to calculate probability of failure for each credible initiating mechanism. Rachael provided independent technical review for the analysis.
07/21-11/21	**Cherokee Dam SQRA | Tennessee Valley Authority | TN** Independent Quality Control Geotechnical Reviewer. TVA performed a Semi-Quantitative Risk Assessment for Cherokee Dam as part of their Dam Safety Risk Informed Decision Making Program. Rachael performed an independent quality review of the draft report for conformance with TVA standards and industry best practices for risk assessment documentation.
03/21-05/21	**Harwoods Mill Dam Third Party Review | Newport News Waterworks | Newport News, VA** Geotechnical Reviewer. The Stantec team conducted a third-party independent review of final design for modifications to Harwoods Mill Dam focused on constructability, potential construction and project risks, and overall design approach according to industry standards.
10/20-Ongoing	**Confidential Project | Confidential Client** Risk Assessment Lead. Stantec is the engineer for developing the reference dam raise design for additional flood storage. The dam is a concrete gravity dam with gated spillway. The project design follows risk informed design practices using quantitative risk assessments in accordance with Queensland and ANCOLD guidance. Rachael is responsible for revising the baseline risk assessment, developing the upgrade risk assessment, and facilitating the workshops. Event trees are developed for each credible potential failure mode and nodal estimating performed by expert elicitation in workshops. Spillway gate reliability is incorporated into the annual probability estimates for all flood partitions.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
03/20-Ongoing	**Santee Cooper North Dam, South Dam, and Spillway Stability Analyses | Santee Cooper | Moncks Corner, SC** Project Technical Lead. Leading design team to perform spillway and dam stability analyses to evaluate the potential impact of increased tailwater levels. Piezometer threshold values are also being reevaluated. The Santee Spillway, North, and South Dams impound Lake Marion. The spillway is a 3,400-foot-long Ambursen dam with 63 radial gates. The North Dam is a 4.25-mile-long hydraulic sluice fill embankment, and the South Dam is a 2.6-mile-long compacted clay embankment.
03/16-Ongoing	**City of Newport News Waterworks On-Call Dam Inspection and Engineering On-call Services (2016-2021) | Newport News Waterworks | Toano, VA** Project Technical Lead. Little Creek Dam is an approximately 100-foot-high homogeneous silty sand embankment dam that impounds water for municipal supply. Rachael led the emergency response after observation of sand boils at the downstream toe of the dam in early 2020. The reservoir has been temporarily drawn down to mitigate the internal erosion issue and enhanced inspections and monitoring are being performed. Stantec prepared an evaluation of remediation alternatives including concept designs and cost estimates and is developing the detailed remediation design.
03/20-11/20	**Normandy Dam SQRA | Tennessee Valley Authority | Lexington, TN** Geotechnical subject matter expert for the semi-quantitative risk analysis of Normandy Dam. Responsible for reviewing data and background information related to geotechnical and geology aspects, brainstorming potential failure modes, participating in the SQRA workshop, and drafting and reviewing the SQRA report.
12/18-04/21	**West Gellibrand Reservoir Upgrade | Barwon Water | Victoria, Australia** Internal Technical Review. Stantec is the engineer of record for upgrades to the West Gellibrand Reservoir following a quantitative risk assessment which indicated that the risk associated with internal erosion and overtopping of the embankment exceeded tolerable risk guidelines. Rachael reviewed the final QRA to confirm design criteria for the upgrade design; development of geotechnical parameters and analyses (slope stability and seepage) for the upgrade design; final design for conformance with best practices for design and construction of filters in embankment dams; and potential failure modes associated with an active landslide in the left abutment and developed risk mitigation strategies during construction for the landslide. Support for engineering services during construction included responding to geotechnical and dam safety related contractor requests for information.
02/17-09/19	**White Swan Reservoir Risk Assessment and Risk Reduction Option Study | Central Highlands Water | Victoria, Australia** Project Technical Lead. The White Swan Reservoir is an extreme consequence category off-stream reservoir constructed around 1950 and impounded by primary and subsidiary earth and rockfill embankments which serves as the main terminal reservoir for the Ballarat (Australia) Water Supply System. Specific responsibilities included assessment of geotechnical material parameters; slope stability analyses; quantitative assessment of potential failure modes under steady-state, flood, and earthquake conditions, including internal erosion and piping failure modes using the Piping Toolbox; review of potential loss of life calculations; evaluation against tolerable risk guidelines; and recommendations for additional works. Developed a geotechnical investigation program to collect additional data for refinement of the risk assessment. Stantec developed risk reduction options for the reservoir following the Risk Assessment. The risk reduction options address the identified risk-driving potential failure modes and an opinion of probable construction cost was prepared for each option to evaluate risk mitigation in accordance with ALARP principles.
11/11-Ongoing	**Red Rock Hydroelectric Project | Western Minnesota Municipal Power Agency (WMMPA) / Missouri River Energy Services (MRES)** Lead Geotechnical Engineer and Project Technical Lead. Design responsibilities included: development of geotechnical investigation program; assessment of geotechnical material properties for design; slope stability and seepage analyses; direction and review of finite element analyses for design of retaining walls, deep excavations, and earth support systems; presentation of design to regulatory agencies and external review board; development of civil drawings and technical specifications; and development of design criteria for alternative contractor technical proposals. Participated in three FERC Potential Failure Mode Analyses (PFMA) to evaluate PFMs associated with a potential uncontrolled release of the reservoir during construction and operation of the hydropower project at the existing dam. Field engineer responsibilities included: oversight of pre-construction geotechnical investigations; oversight of diaphragm wall, secant wall, tie-back anchor, and initial soil excavation construction activities; providing field direction for pre-excavation grouting program, including treatment of a 3-to-5-foot voided horizon with artesian flows; review of blasting plans; and foundation geologic mapping. Prepared dam safety surveillance and monitoring reports during construction; reviewed contractor submittals and RFIs; and responsible for ongoing coordination with client, regulatory agencies, and external review board.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Matt Hoy** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**15**	
TITLE	**Senior Principal**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**0**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 2003, 2005 / Civil Engineering, Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**2011003311 / MO* / 01/01/2024**			
YEAR REGISTERED	**2011**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Hydraulics & Hydrology Lead. Will lead the hydraulics and hydrology team with modeling, studies, and assessments. Has performed hydraulic evaluation and/or design of over 50 dam projects ranging in height from 15 to over 200 feet.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).			
05/10-Ongoing	**FEMA Production & Technical Services | Various Locations, US** Project Manager, Technical Lead. Responsibilities have ranged from preparing HUC-8 watershed-wide HEC-HMS and HEC-RAS (1D/2D, steady/unsteady) models to managing floodplain mapping, RiskMAP and Levee Analysis and Mapping Plan (LAMP) projects. Several projects have included mapping of Special Flood Hazard Areas for leveed areas with pumped interior drainage. Managed FEMA's pilot LAMP project in Grand Rapids, MI and continues to provide management, review and advisory roles on LAMP and mapping projects across the country. Matt is experienced in all phases of FEMA's RiskMAP process, from Discovery through Mitigation Planning.			
02/09-11/11	**TVA Shawnee Spillway Replacement | Paducah, KY** Project Manager/Engineer of record. Design of a new spillway system at the Shawnee Fossil Plant Ash Stilling Pond. The system included a siphon spillway emergency drawdown system and concrete inlet structures equipped with stoplogs that serve as the primary spillway. Concerns with the structural integrity of the existing outlet works required design of the new spillway system, reconstruction of a portion of the existing embankment, and grouting of the former spillway outlet pipe penetrations. The permanent spillway system included concrete inlet structures equipped with stoplogs to allow for regulation of permanent pool elevation, HDPE outlet pipes to resist material deposition, a filter diaphragm along the outlet pipes to intercept seepage along the pipes, and a concrete outlet headwall with energy dissipaters. This project involved development of permit documents, preparation of construction plans and technical specifications, supporting hydrologic and hydraulic analyses, and construction observation and testing services.			
09/13-Ongoing	**Downtown Levee Flood Protection Plan | Des Moines, IA** Project Manager and Technical Lead. Responsible for the evaluation and improvements design of more than 16 miles of earthen levees and concrete floodwalls in Des Moines, Iowa. Led the overall system evaluation and hydraulic modeling efforts along both the river and interior drainage system. Hydrologic frequency analyses performed using HEC-SSP. Hydraulic modeling including 1D and 2D unsteady-flow HEC-RAS modeling of three river systems. Models were calibrated and validated against observed data and approved by FEMA and USACE. SWMM models, with 2D overland flow representations, were used to evaluate the interior drainage and pumping system. Identified multiple projects to lower water surface elevations and reduce flood risk. Led development of a "Master Plan" of projects to address deficiencies. Oversaw application of USACE HEC-FDA/FIA models to perform risk and uncertainty analyses. Engineer of record for design of multiple phases of levee improvements. Leading development of Emergency Preparedness Plan (EPP) for FEMA accreditation submittal, using hydraulic model and LifeSIM results to inform evacuation planning and risk assessments.			

*PE registered outside of Louisiana

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
04/18-Ongoing	**CPRA Mid-Breton Sediment Diversion | Plaquemines Parish, LA** Hydraulics Lead. This diversion project serves to rebuild coastal land in Southeast Louisiana. Responsible for coordinating surveying, river instrumentation and modeling efforts with various project design elements. Modeling includes HEC-RAS models of the Mississippi River to evaluate impacts of sea level rise on the project, CFD models of the diversion structure, and interior drainage modeling of local drainage features such as canals and pump stations. Participated as H&H lead in Semi-Quantitative Risk Assessment (SQRA), along with USACE and CPRA staff, for the project.
01/13-12/16	**Embankment and Floodwall PMF Design at Four TVA Dams Grainger | Loudoun, & Rhea Counties, TN** Hydraulic Engineer. Led the design team to raise the crests of four TVA dams to address potential overtopping due to revised Probable Maximum Flood elevations for the Cherokee, Fort Loudoun, Tellico, and Watts Bar Dams. Led the development of the technical specifications for all dams, including both concrete floodwall and earthen embankment raises of approximately 5 feet. In addition, led the design of improvements and development of construction drawings at Cherokee Dam. Improvements included a dam raise as well as roadway and parking lot improvements. A fast-tracked schedule and accelerated project delivery were implemented to meet the new PMF requirements for the new flood protection measures.
01/15-12/18	**Western New York Dams | Various Locations, NY** Senior Project Engineer. Supported analysis of several dams in western New York state. Hydrologic models were first created using HEC-HMS to determine inflow hydrographs to the various low- and moderate-hazard dams. The hydrologic and hydraulic design criteria were evaluated for each dam to determine if they could convey the required design storm and meet low water drawdown requirements. In addition to conveyance and storage requirements, the auxiliary spillways were evaluated relative to erosion and headcut susceptibility. Breach analyses were then performed to determine the downstream inundation area and aid in assignment of a dam hazard classification. Due to the uncertainty associated with the selection of dam breach parameters, a sensitivity analysis was performed to evaluate the potential impacts of parameter selection on the outflow hydrograph and inundation area. Inundation mapping was prepared to detail the impacted areas. For dams that failed to meet New York state and NRCS criteria, remediation measures were evaluated and conceptual-level design plans were developed.
01/17-12/17	**TVA Dam Breach Analyses | Various Locations, Tennessee** Hydraulic Engineer. Supported the breach analysis of several high-hazard dams owned and operated by the TVA, including Norris, Blue Ridge, and Hiwassee Dams. Matt computed dam breach outflow hydrographs for instantaneous seismic failures of these during postulated flood events. Calculations were performed, checked, and documented in accordance with Nuclear Regulatory Commission (NRC) Quality Assurance program requirements. Rating curves were developed for the complex gate geometry at each dam and pre-failure dam outflows were assumed to follow the Flood Operating Guide (FOG) for each facility. Outflow hydrographs were developed using a combination of HEC-HMS and HEC-RAS, since the outflows were limited by the geometry of the downstream valley and impacted by submergence. Matt prepared a report summarizing the analyses in accordance with regulatory criteria.
05/20-Ongoing	**South Harbor Two-Dimensional Modeling Analysis | Granite City, IL** Senior Project Engineer. In support of the Tri-City Regional Port District’s proposed South Harbor project, performed a 2D hydrodynamic analysis to evaluate the potential effects of the harbor and a nearby L-dike on passing barge traffic in the Mississippi River. This work involved close coordination with the USACE, and USCG, as well as the Port District. The model of the approximately 1.5-mile reach near St. Louis, Missouri compared favorably with velocity measurements and helped to alleviate concerns regarding transverse flows near the harbor. GIS applications were utilized in providing custom output displays to aid in conveying the results of the complex modeling effort to the client and public stakeholders.
05/13-12/16	**Permanent Canals Closures & Pumps Project | New Orleans, LA** Hydraulic Modeler. Responsible for hydraulic analysis and design of the $731M Permanent Canal Closures and Pumps design-build project. This project provides a long-term solution for reducing risk from a 100-year storm event by blocking Lake Pontchartrain surges from entering the canals with 18-foot high barriers and pumps, with a combined capacity of 24,300 cfs that convey rainwater from each canal into the lake. Performed 1D and 2D HEC-RAS and RiverFlo-2D hydraulic modeling of the canals, including storm surge considerations, to verify that the planned design flows could be conveyed without exceeding maximum allowable water surface elevations in the canals. Also optimized flow patterns to the gate structures and pump intakes and determined scour protection requirements.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Keil Neff** PhD, PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**1**	
TITLE	**Principal Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**17**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS, PhD / 1997, 2007, 2010 / Engineering Science, Environmental Engineering, Civil Engineering-Water Resources**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**115015 / TN* / 1/31/2022**			
YEAR REGISTERED	**2012**	DISCIPLINE	**Civil Engineer**	

MEETS MINIMUM LADOTD PERSONNEL REQ.

Contract role(s) / brief description of responsibilities	Hydraulics and Hydrology. Expert in hydraulics and hydrology who will support the hydraulics and hydrology team with modeling, studies, and assessments. Meets MPR #6.
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
3/20-12/21	**Chatuge Dam Spillway Risk Analysis and Alternatives Development | NC** H&H Subject Matter Expert. As a hydraulic and hydrologic Subject Matter Expert, provided expert elicitation and supplemental analyses to support the Chatuge Dam Spillway Quantitative Risk Analysis (QRA), and development and selection of alternatives. Provided level-pool routings, applied flood frequency information, and performed erosion modeling and drainage adequacy calculations. Additionally, supported development of Potential Failure Modes (PFMs) and led development and application of event trees in @Risk models. To support the QRA, led team in performing a Downstream Consequences Analysis (DCA) associated with breach of the spillway. The second phase of this work included improving consequences estimation by advancing the hydraulic model (HEC-RAS) and consequences model (HEC-LifeSim).
5/21-10/21	**Periodic Reviews of Bureau of Indian Affairs' Dams | AZ** Risk Facilitator. Assisted team through a potential failure mode analysis (PFMA) and risk analysis process. Met with the team prior to risk analysis to ensure engineering analyses were completed to support the team analysis and ensure the team composition was appropriate to develop credible risk estimates. Facilitated the team risk analysis, helping the team develop potential failure modes, event trees, strategies for estimating risks, and developing ranges of likelihood and consequence estimates.
03/18-12/19	**Flood Loadings for Final Design* | Shasta Lake, CA** Hydrologic Specialist. Performed peer review, senior-level technical support and guidance, and document reporting of the Shasta Dam PMF, in which estimates were developed to support the final design associated with its proposed raise. As the primary input parameter for PMF development, Probable Maximum Precipitation (PMP) volumes were calculated following HMR 58/59. Hydrologic inputs were developed to characterize the sub-basins and river reaches in the Shasta Dam Basin for model parameterization. Precipitation and hydrologic inputs were incorporated into a hydrologic model to develop PMF estimates. Led team performing analyses of: precipitation frequency, storm template development, Reservoir Frequency Analysis (RMC-RFA), peak discharge frequency analysis (EMA), development of HEC-HMS and HEC-RAS models, and AEP-neutral application of precipitation frequency and storm templates in rainfall runoff model. Phase two, an Issue Evaluation study, included a detailed paleoflood study for application in statistical flood frequency models and used to adjust/reduce uncertainty of flood frequency estimates, specifically extremely rare annual exceedance probabilities.

*PE registered outside of Louisiana

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
06/20-Ongoing	**Orange County Coastal Storm Risk Management (CRSM) Project | TX** Hydraulics and Hydrology Technical Lead. Supports the task leader and H&H teams by providing expert guidance, assistance, and review throughout the course of this project. Technical work consists of hydrologic and hydraulic modeling of the project domain for baseline, design, and future conditions to provide recommendations for the drainage system including any modifications to the proposed CRSM features, required storage, detention, conveyance and drainage infrastructure, and pump station requirements. This new levee system (26.3 miles of newly constructed levee and flood walls, 7 pump stations, 56 drainage structures, 32 closure gates located at road and railway crossings, and two navigable sector gates) to support the CRSM Project. A critical component of this project includes Interior Drainage Analysis and Modeling to evaluate any adverse impacts due to the proposed levee system on rainfall-induced flooding interior of, and adjacent to, the CRSM system and provide information necessary for specifying design elevations, conveyance structures and gates, and pump capacities.
11/16 -12/19	**Flood Hazard Issue Evaluation, Corrective Action, Comprehensive Review, and Final Design Studies | Bureau of Reclamation Facilities in Western U.S.** Technical Lead/Project Manager/Peer Reviewer. Led and supported dozens of flood hazard studies to support assessment and design modifications of Reclamation facilities in the Western U.S. Issue Evaluation studies (IEs) are conducted to improve risk estimates, and hydrologic IEs include meteorological analysis, paleoflood investigation and associated hydraulic modeling, statistical flood flow frequency analysis, and hydrologic modeling. To support Comprehensive Reviews (CRs), Keil led flood hydrology program and team (2017-2019) in evaluating flood risk of approximately 35 facilities each year. This included developing and/or evaluating flood estimates by combining peak flow, water surface elevation, and volume probability relationships with respect to their Annual Exceedance Probabilities, to support risk assessment of potential hydrologic-related failure modes. When it is determined that an action is necessary to reduce risk at a facility, a Corrective Action Study (CAS) is conducted. Keil conducted several CAS projects to update flood frequency estimates and reservoir routings, develop construction hydrographs, evaluate interim reservoir restrictions, and provide additional design and construction risk information. Keil provided senior-level technical support/guidance and performed peer review for Final Design (FD) flood risk projects. This included developing design flows to support specifications for dam and spillway modifications. Keil used multiple methods to develop flood frequency estimates to verify and quantify the hydrologic inputs and risks associated with proposed design components. Drafted Flood Hazard Section of Comprehensive Review Guidelines (2019) to provide improved process and methodology.
6/19-12/19	**Reclamation Dam Safety Advisory Team (DSAT) | Bureau of Reclamation Facilities in Western U.S.** Flood Hydrology Subject Matter Expert. Provided review, expert guidance, and concurrence of Comprehensive Reviews, Issue Evaluations, and Corrective Action Studies to support the Bureau of Reclamation’s Dam Safety Office and facilitate risk-informed decision-making.
10/14-10/16	**Downstream Consequences Assessments | Multiple locations, AL, GA, KY, MS, NC, TN, VA** H&H Lead. Led development of consequences methodology and directed project team to conduct downstream consequences assessments of flooding hazards for several dams in the TVA system. This included scenario development, GIS data acquisition and processing, hydraulic modeling, warning and evacuation estimations, and Hydrologic Engineering Center’s Flood Impact Analysis (HEC-FIA) modeling. Life loss and economic consequence results were incorporated in risk assessments.
05/15-8/16	**Dam Safety Inspections* | Multiple locations, TN, NC** H&H Subject Matter Expert. Participated in TVA Dam Safety Formal Inspections. Work included 1) preparing and presenting project-specific information related to reservoir operations, flood history, hydrologic hazard, emergency action planning, and hydraulic capacity and spill; 2) inspection and performance evaluation of projects (powerhouse, galleries, sluice and spillways, non-overflow sections, earth embankments, and saddle dams); and 3) drafting hydrology section of formal inspection report.
03/13-08/14	**Emergency Action Planning Flood Inundation Mapping Updates | Multiple locations, AL, GA, KY, MS, NC, TN, VA** Engineering Team Lead. Responsible for model development and unsteady modeling of ten tributary reservoirs and associated river reaches in the TVA reservoir system. Collected bathymetric data utilizing RTK-GPS and kayak mounted echo-sounder. Developed a geo-referenced geometry in ArcGIS and integration with existing data. Developed unsteady flow analyses (HEC-RAS) for multiple flood scenarios. Emergency Action Plan map books were developed for all TVA facilities in the 40,000 mi2 basin and distributed to TVA groups, state, county and municipal emergency management organizations.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Paul Smith** PE, MSCE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**4**	
TITLE	**Structural Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**3**	
DEGREE(S) / YEARS / SPECIALIZATION	**BA, BS, MS / 2010, 2010, 2015 / Engineering Mathematics, Civil Engineering, Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.0043690 / LA / 3/31/2022**			
YEAR REGISTERED	**2019**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Structural Design Lead. Will lead the structural engineering efforts.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
03/19-12/21	**Chatuge Dam Spillway Evaluation and Risk Assessment | Clay County, NC** Project Engineer. Participated in the ongoing development of a qualitative risk assessment (QRA) for a spillway. The scope included a Potential Failure Mode Analysis (PFMA), site visit, and a risk assessment of PFMs determined to be risk-drivers. The joint project team consisted of several subject matter experts and supporting project engineers from TVA and Stantec who conducted multiple two-to-three-day long workshops. Paul was responsible for reporting on the structural condition and capacity of the spillway, reviewing and developing potential failure modes (PFM), and participating in meetings, and report development. As a result of the QRA, he also performed a repair mapping site visit and designed and oversaw Interim Risk Reduction Measure (IRRM) repairs.			
01/19-12/19	**Chatuge Dam Spillway Evaluation and Risk Assessment: Chatuge and Nottely Dams, Spillway Hydraulic Analysis and Uplift Study | Clay County, NC and Union County, GA** Lead Structural Engineer. Developed and performed structural assessments of reinforced concrete spillways. The assessments determined the strength and stability of the aging spillways based on modern codes/standards for normal conditions, various flood events, and seismic events. The analyses were performed to determine the point of failure, which required careful applicable load and safety factors assessments. This included the training and approach walls, spillway slab, crest and terminal structures, and the steel gate structure. Repair and replacement alternatives were developed to update the structures to current industry standards.			
01/18-11/18	**Chatuge Dam Spillway Evaluation and Risk Assessment: Chatuge and Nottely Dams, Spillway Gate Assessment | Clay County, NC and Union County, GA** Project Engineer. Assessed performance during extreme flooding load events for several aspects of existing spillway gates. The gates and supporting structure are constructed of steel members and operated by a motorized hoist that travels on overhead rails. Multiple scenarios involving water levels, gate location, and hoist location were considered using a combination of finite element models and hand calculations.			
07/19-Ongoing	**Bachman Lake Dam and Spillway Improvements Project | Dallas, TX** Structural Subject Matter Expert. Assessed the structural condition, global stability, and failure mechanisms of a concrete spillway and masonry intake tower during normal conditions and flood events. The evaluation determined relative risk to the structural components of the dam and that foundation and structural failures to the spillway and intake tower conduit may lead to an uncontrolled release of the reservoir and subsequent failure of the embankment dam.			

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
06/19-06/20	**Kirwan Dam, Geotechnical Investigation and Testing | Wayland, OH** Project Engineer. Prepared the structural inspection program and documents. He collaborated with another project engineer and inspected the reinforced concrete slabs and walls forming the spillway structure. The inspection tasks consisted of visual observations, sounding of concrete, and recording observations. Paul was also responsible for compiling the inspection report to present the findings and make repair recommendations.
01/17-Ongoing	**Gwinnett County DWR Dam Safety Programmatic Services | Gwinnett County, GA** Lead Structural Engineer. Led structural inspections of outlet control structures (OCS) and principal spillway pipes (PSP) at 15 municipal reservoirs. The scope included preparing inspection documents, performing the top side and rope access inspections within the OCS, and coordinating the diving inspection underwater. Structure conditions were reviewed, and individual inspection reports were created for each site documenting overall condition, deficiencies, and repair recommendations.
02/19-Ongoing	**Rochester Dam Rehabilitation | Rochester, KY** Project Engineer. Designed concrete bulkhead walls in rock mill race and in the defunct masonry lock chamber to restore a constant weir crest of an old dam and lock structure. The strength and stability analyses were performed using a combination of finite element modeling software and worksheets created for the specific complexities of these structures. The structures were analyzed for normal loading, flood event, and seismic events. The bulkhead wall in the lock required socketing the wall into the existing masonry, while also protecting the existing lock gates for historic preservation.
05/18-Ongoing	**SR1-Low Level Outlet Works | Calgary, AB** Lead Structural Engineer. Responsible for collaborating with other disciplines and organizing a team of structural engineers to complete the design of structural elements of the project. In addition, Paul performed the design of several components and reviewed the designs of the remaining structures.
08/19-05/20	**TVA JOF Process Water Basin | Johnsonville, TN** Lead Structural Engineer. Completed designs for two large process water basins at TVA’s Johnsonville Fossil Plant. The structures were unique due to their size and the large loads applied by the excavators and trucks servicing the structures.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Justin Brown** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**2**	
TITLE	**Structural Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**6**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2013 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.142518 / LA / 9/30/2022**			
YEAR REGISTERED	**2018**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Structural Design. Will support the structural engineering team.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
03/20-Ongoing	**West Shore Lake Pontchartrain | St. Charles, St. John the Baptist, and St. James Parishes, LA** Structural Design Engineer. Responsibilities include performing structural analysis and design calculations for the Drainage Structure Superstructure using SAP2000, STAAD.pro and Mathcad as well as Pile foundation analysis and design of the substructure using Lpile, GROUP and CWALSHT. Further responsibilities include Material Take-Off and Definitive Estimation of all parts of the project within the scope of the Drainage structure feature
10/16-01/20	**Houma Navigation Canal Lock Complex | Terrebonne Parish, LA** Structural Design Engineer. Responsibilities included performing structural calculations for the design of multiple flood protection structures. Designs include temporary retaining structures, braced floodwalls, OESP plumb and batter structures, precast concrete piles, and miscellaneous structural framing.
01/19-01/20	**Bayou Chene Flood Protection Structure | St. Mary Parish, LA** Structural Design Engineer. Responsibilities included performing structural calculations for the design of multiple flood protection structures. Designs include steel tapered Bent Plate floodwalls, OESP plumb and batter structures, and miscellaneous structural framing.
05/18-10/19	**Bayou Teche Flood Protection Structure | St. Mary Parish, LA** Structural Design Engineer. Responsibilities included performing structural calculations for the design of multiple flood protection structures. Designs include braced floodwalls, OESP plumb and batter structures and miscellaneous structural framing.
01/18-03/19	**Grand Bayou Flood Control Structure | Lafourche Parish, LA** Structural Design Engineer. Responsibilities included performing structural calculations for the design of multiple flood protection structures. Designs include braced floodwalls, OESP plumb and batter structures, and miscellaneous structural framing
01/14-10/16	**The MOX Project, DOE Savannah River Site | Aiken, SC** Structural Design Engineer. Responsibilities included performing detailed structural analysis and design for electrical and process commodity supports within the facility, completing structural steel designs for sections of the pipe racks and main process units which satisfy ANSI/AISC N690 Nuclear codes.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**		
NAME	**Jian Hu** PhD, PE, GE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**1**
TITLE	**Geotechnical Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**19**

DEGREE(S) / YEARS / SPECIALIZATION	**PhD / 2005 / Geotechnical Engineering; MS / 2000 / Underground Structural Engineering; BS / 1995 / Civil Engineering**
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.132382 / LA / 3/31/2022**
YEAR REGISTERED: **2018** / DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Geotechnical Engineering Lead. Will lead geotechnical engineering team.

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
09/17-09/20	**Arbuckle Reservoir Geotechnical Design and Instrumentation Monitoring | Lane City, TX** Key Technical Team Member. Provided geotechnical support during the design and construction of the Arbuckle Reservoir. The reservoir is designed to store 40,000 acre-feet (50 million m3) of water pumped in from the adjacent Lower Colorado River. The embankment is composed of onsite clay and sand material approximately 45-feet-high and five miles long with soil-cement steps on the upstream face. Jian also conducted instrumentation monitoring and dam safety inspection during the initial filling.
03/18-09/18	**Englewood and Holly Dam Inspection and Assessment | Arapahoe County, CO** Team Leader. Led an inspection team and performed field inspection of the condition of Englewood Dam and Holly Dam. Each dam and its appurtenant structures, such as the crest, downstream slope, upstream slope, plunge pool, spillways, outlet works, drains, and instrumentation, were visually inspected. Photographs of important or notable features were taken and included in the inspection report, along with the findings and recommendations for the safety and maintenance of the dams.
05/17-08/17	**Inspection and Assessment of Little Sandy-Trail Creek Dams 10, 14, and 16 | Athens, GA** Team Leader. Reviewed the existing inspection and maintenance program and previous inspection reports for three dams. He led an inspection team and performed field inspection of the condition of the dams. The inspection reports were submitted to Georgia Department of Natural Resources Environmental Protection Division (EPD) to comply with regulatory requirements.
01/14-01/17	**Seismic Analysis of North Dam | Richmond, CA** Geotechnical Engineer. The dynamic response and seismic deformations of North Dam in Chevron’s Richmond facility were estimated using the computer program FLAC. The primary objective of the analyses is to assess the effects of strong seismic shaking on the existing groundwater protection system (GPS wall) embedded in North Dam. An advanced soil constitutive model was used to simulate the pore pressure build-up and liquefaction of the coarse-grained materials in the dam.
06/13-06/16	**Inland Lake Dam Risk Assessment and Stability Analysis | Blount County, AL** Key Technical Team Member. Conducted grain size analysis to investigate the suffusion issue of the embankment materials. Reviewed the seepage and slope stability analyses of the dam. Participated potential failure mode analysis (PFMA) workshop. Developed data management plan and emergency response plan for the dam. Provided seismic and stability input for the risk assessment of the dam.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
01/14-01/16	**Tillman Water Reclamation Plant (DCTWRP) Levee Improvements for Los Angeles Department of Public Works | Los Angeles, CA** Discipline Technical Leader. Completed field reconnaissance and investigation and proposed improvement alternatives to the levees at the DCTWRP. The scope was necessary to meet the plant lease renewal agreement between the City of Los Angeles and USACE-Los Angeles District and to make the flood control system around the plant suitable for certification so that FEMA Accreditation can be pursued by the Los Angeles Bureau of Engineering. Jian also participated in flood system risk assessment workshops as a geotechnical expert.
02/10-02/11	**Seismic Stability and Deformation Analysis of Qaraoun Dam | Beruit** Geotechnical Engineer. Performed dynamic response and seismic deformation analysis of Qaraoun Dam using FLAC. Qaraoun dam is a concrete-faced rockfill dam. This approach involves performing two-dimensional, finite-difference analyses to evaluate the nonlinear dynamic response and permanent deformation of the maximum cross section of the embankment during the postulated seismic shaking at the dam site. Preliminary analyses were performed to simulate the reservoir’s hydrodynamic loads. The results of these analyses indicate the effects of including the hydrodynamic loads for this sloping face rockfill dam were not significant.
10/11-04/12	**Lake Fordyce Dam Seepage Analysis | Nevada County, CA** Key Technical Team Member. Performed parametric seepage analyses using Seep/w to evaluate the effectiveness of lining the dam concrete face (using CARPI) in two stages to reduce the leakage observed in the field. Additionally, he conducted an evaluation of the hydraulic gradients along the boundaries between toe embankment soil and the rockfill and between the alluvium soil and the rockfill. The estimated hydraulic gradients were used to assess the potential for piping of the soil into the rockfill zone.
04/12-12/12	**Hell Hole Dam and L.L. Anderson Dam Stability and Deformation Analysis | Placer County, CA** Geotechnical Engineer. Computed the static stress distribution in the dam embankment using FEADAM. Estimated the earthquake-induced stresses using the two-dimensional equivalent linear finite element analysis program QUAD4. Permanent deformations of the embankment slopes were estimated using the yield acceleration concept. The computed deformations were used to estimate the available freeboard, the potential for cracking, and to assess the overall stability of the embankment.
12/14-03/15	**TVA Stability Analysis for Douglas Saddle Dam | Sevier County, TN** Project Manager. Led the team and performed seepage and stability analysis (static and seismic) of the earth embankments for load cases Four options were considered for the stability calculations and preliminary design: Clay Core; Core Wall; Flood Wall (FW); and Roller-Compacted Concrete (RCC).
01/09-06/10	**Levees Inspection and Assessment for USACE | Alameda County, CA** Team Leader. Participated in periodic levee inspection standardization workshops organized by USACE. For the six levee systems on Pajaro River North, San Lorenzo Creek and San Leandro Creek, he conducted documentation collection and review, prepared pre-inspection packets, conducted field inspection, and prepared Periodic Inspection (PI) reports.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**R. Austin Nall** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**1**	
TITLE	**Geotechnical Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**8**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 2012, 2013 / Civil Engineering-Geosystems, Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE 41611 / LA / 09/30/2023**			
YEAR REGISTERED	**2017**	DISCIPLINE	**Civil / Geotechnical Engineer**	
Contract role(s) / brief description of responsibilities	Geotechnical Engineering. Will support the geotechnical engineering team.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
03/15-11/21	**CPRA Houma Navigation Canal Lock Complex | Terrebonne Parish, LA** Geotechnical Engineer of Record. The Houma Navigation Canal Lock Complex consists of a new 800 ft. long lock system and upgrades to the existing 300 ft. wide barge-type floodgate. New construction will include braced floodwalls, barge gates, receiving structures, swing gate monoliths, sector gates, control buildings, I-Walls, nose piers, dredging, and mitigation. Has performed detailed geotechnical analyses for the project that include pile capacity/settlement; down drag; global stability of levees, banks, T-Walls, and monoliths, including unbalanced load determination; seepage cut-off walls; lateral pile capacities; retaining walls; settlements. A pile load test was performed as a part of the design phase and included several axial compression and tension load tests as well as a lateral load test on 66- and 90-inch diameter steel pipe piles. Analyses for the project must adhere to the latest guidelines set forth by the HSDRRS-DG and applicable USACE Engineering Manuals. The results of analyses and recommendations made for the project were presented in a geotechnical report sealed by Austin. Construction began in 2021.
02/18-11/21	**CPRA Mid-Breton Sediment Diversion | Plaquemines Parish, LA** Project Engineer. The Mid-Breton Diversion project (BS-0030) is located on the east side of the Mississippi River in Plaquemines Parish, LA and is intended to divert sediment rich water from the Mississippi River to create new land in the Breton Sound Basin. Project features will include a gated diversion control structure in line with a realigned segment of Mississippi River Levee, diversion channel and conveyance levees, inlet and outfall channels, and new segments of state highway to connect a new bridge. Assists in managing the project as well as supporting the permitting process, planning the field investigations (soil boings, CPTs), developing laboratory test programs, and performing engineering analyses (global stability, settlement, seepage, pile capacity, etc.). The project is currently moving into the 60% design phase.
07/18-11/21	**Marmande Canal Floodgate | Terrebonne Parish, LA** Project Engineer. The Marmande Canal Floodgate Project consists of a new braced floodwall and steel swing gate structure located on Marmande Canal in Terrebonne Parish, LA. The project includes tying the new braced floodwall into two existing reaches of earthen levee. The project includes improving soils along the canal banks through use of wick drains to support the new levee tie-ins. Performed engineering analyses (axial and lateral pile analyses, braced wall analyses, global stability and settlement analyses of levee tie-ins, and wick drain design).

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
09/20-08/21	**Raccoon Bayou Levee Improvements | Richwood, LA** Geotechnical Engineer of Record. The proposed project consists of various drainage improvement features to reduce recurrent flooding associated with Raccoon Bayou within the project area. During heavy rain and flood events, water backs up into Raccoon Bayou and floods the project area. Managed the geotechnical investigation for the project which included soil borings and CPT soundings, laboratory testing, and performing engineering analyses (slope stability, settlement, seepage, road design). Improvements include a new earthen flood protection levee and adjacent drainage canal, a gravel service road, two new pump station control structures, new culverts, and the excavation and widening of an existing drainage channel.
03/21-10/21	**Dechene Road and Embankment | Columbia, LA** Geotechnical Engineer of Record. The proposed project consists of constructing a new gravel road, approximately 3,400 ft in length, through mostly undeveloped land. The gravel road will be built on top of a new embankment, approximately 2,200 ft in length, that will be raised from the existing grade of approximately El. +82 to +85 ft. up to El. +98 ft. The road and embankment are designed to DOTD standards. Managed the geotechnical investigation for the project which included soil borings, laboratory testing, and performing engineering analyses (slope stability, settlement, seepage, road design).
08/16-10/21	**Little Bayou Black Forced Drainage | Houma, LA** Project Engineer. The Little Bayou Black Forced Drainage project aimed to reduce recurrent flooding upstream of the new pump station by forcing drainage downstream using 2 pumps. The structure also included a tainter gate for use during non flood events. Managed the geotechnical investigation for the project which included soil borings, laboratory testing, and performing engineering analyses (slope stability, retaining wall analysis, settlement, seepage, lightweight fill). Construction was recently completed and the pump station is in use.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Mark Schillinger** PE, CFM	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**2**	
TITLE	**Senior Associate**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**11**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 2008, 2011 / Civil Engineering, Civil Engineering (Hydraulics and Hydrology)**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.46078 / LA / 3/31/2021** *(initial registration SC, 31569 , 2014)*			
YEAR REGISTERED	**2021**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Civil Engineering Lead. Will lead the civil engineering team for design and completion of deliverables.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
08/20-Ongoing	**Gwinnett County DWR Dam Safety Programmatic Services | Gwinnett County, GA** Project Manager and Erosion and Sediment Control Designer. The Stantec team is supporting rehabilitation improvements at ten Natural Resources Conservation Service (NRCS) watershed dams. The project consists of engineering, permitting, bid support, and engineer of record services during construction to repair and rehabilitate ten outlet control structures and associated principal spillway pipes. The project was started after successful completion of structural inspections of 15 dams. The rehabilitation consists of in-kind replacement/repairs to extend the service life of the structures, including re-lining the PSPs, gate replacements, concrete repairs, and access improvements. Mark oversees work planning documents, on-site environmental surveys, permitting, and coordination with multiple agencies, including USACE, Georgia EPD Safe Dams Program, Gwinnett County P&D, and NRCS. He's also providing public outreach support, ten construction drawing sets (civil, structural, and ESC drawings), technical specifications, design reports, water control alternatives analysis, structural and hydraulic calculations, cost opinions, bid support services, and engineer of record services during construction.
03/20-Ongoing	**Bird Lake Dam Removal | Gwinnett County DWR | Lilburn, GA** Project Manager and Senior Design Engineer. Mark managed the removal of a 31-feet-high embankment dam. Due to identified deficiencies, risk to the public, and downstream structures if the dam inadvertently breached, the City decided to remove the dam and stabilize the inundated stream and pool area. On behalf of the City of Lilburn, Gwinnett County Department of Water Resources (DWR) managed the project. To support the removal, the Stantec team developed construction documents (plans, specifications), design calculations (hydraulics and hydrology), and completed permitting (USACE 404, GA EPD stream buffer variance, and land development). The team also led field efforts that included a geotechnical exploration of the embankment and environmental surveys for wetlands, streams, and threatened and endangered species.
05/20-01/21	**Lookout Lake Dam Rehabilitation | Dade County | Trenton, GA** CQA Manager. The Stantec team performed dam breach and detailed alternatives analyses, design, and construction services to rehabilitate a dam. The design consisted of lowering the dam, constructing a new self-priming siphon system serving as the principal spillway, constructing a new auxiliary spillway, and geotechnical improvements. Mark reviewed submittals, provided RFIs, daily field reports, and led weekly client construction calls.
10/19-11/19	**Georgia Subdivision Dam | Gwinnett County, GA** Project Manager. Stantec developed high-level construction opinions for repairing or breaching of a Subdivision Dam located in Georgia. The 20-ft high earthen embankment dam was deemed to be in poor condition due to multiple deficiencies including seepage, undermining of the auxiliary spillway, and a non-functioning principal spillway. Due to the high priority of the cost opinions, Stantec provided a deliverable within an accelerated schedule of only two weeks. Mark served as the Project Manager and a technical reviewer for the cost opinions.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
11/19-05/20	**John Sevier Dam Interim Risk Reduction Measures-Right Embankment | Rogersville, TN** CQA Manager and Senior Engineer. A run of the river dam located in the Southeastern United States experienced periodic overtopping along an earthen embankment adjacent to the overflow spillway. Due to the potential risk of failure, the team designed an interim grouted riprap repair and provided construction oversight, on an accelerated schedule, to restore the embankment crest. Deliverables included construction plans, quantity estimates, specifications, excavation permits, contractor work plans, quality control plans, and supporting hydraulic calculations developed from start to finish in less than two months. Mark led and reviewed multiple design deliverables and served as the CQA Manager during construction.
06/20-07/21	**Lake Louisa Emergency Action Planning | Louisa County, VA** Senior Engineer. Blue Ridge Shores Property Owners Association (POA) owns and maintains Lake Louisa Dam-a 600-ft long, 25-ft high earthen embankment that impounds the 280 acre Lake Louisa. Stantec developed an Emergency Action Plan (EAP for the dam and facilitated an emergency drill. The purpose of the emergency drill was to educate the attendees (ex: VDOT, VCDR, dam owner, multiple emergency management personnel, and NOAA) on dam safety concepts, potential dam failure modes, and provide a hands-on interactive environment where the functionality of the EAP can be testing using an emergency event simulation impacting Lake Louisa Dam. As part of the drill, Mark presented on dam safety concepts and potential failure modes and afterwards wrote the After Action Report to document the performance of the drill and recommendations on where the EAP may be improved.
09/19-12/19	**Lake Louella Third Party Review | GA** Civil and H&H Engineering Review. Stantec provided third-party review for 30 and 60 percent design plans to rehabilitate a high-hazard embankment dam. The multi-faceted scope included reviews from a geotechnical, civil, hydraulic, and structural engineering perspective focused on the project's design approach, constructability, value engineering opportunities, and maintenance requirements. Mark reviewed engineering plans, technical specifications, bid documents, and supporting information. At the client's request, Mark also completed the senior review and directed the independent construction cost opinion developed based on constructed dam projects, RS Means, and engineering judgment.
06/18-08/18	**Dam Decommissioning for Confidential Client | Southeastern United States** Permitting Lead. The project involved decommissioning 30-foot-high earthen levees (regulated as dams) and associated spillway structures located near a major river, cooling lake, and within a coastal flood zone. Mark developed a permit strategy and technical memorandum to show local regulators that decommissioning would minimally impact floodplain limits. The strategy allowed construction to proceed in a timely manner and avoid a more costly and time-consuming FEMA Letter of Map Revision floodplain permit process.
09/17-10/17	**Levee Stability Evaluation for Confidential Client | Southeastern United States** Project Engineer. Prior to a major hurricane event, the Owner implemented emergency measures to stabilize a CCR levee located adjacent to a stream. Mark and the engineering team evaluated the impacts of the emergency measures from a geotechnical, hydraulics/erosion, and permitting perspective. Mark provided the technical guidance and senior review for the development of a hydraulics and hydrologic model and calculations to estimate the potential and frequency for erosion at the base of the stream and along the levee's embankment.
09/13-12/13	**Emergency Action Plan (EAP) Inundation Project | TN** Project Engineer. The scope included updating the flood mapping component of system-wide updates for TVA's emergency action plans (EAPs). Mark was responsible for completing dam break analyses in HEC-RAS for multiple dams for three select scenarios: sunny day failure, probable maximum flood with non-failure, and probable maximum flood with failure.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Brad Deaton** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**8**	
TITLE	**Project Engineer, Water**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**2**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2014 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE 133296 / TX* / 12/31/2021**			
YEAR REGISTERED	**2019**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Civil Engineering. Will support the civil engineering team with design and deliverables (ex: cost estimates, drawings, specs, etc.)			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
11/19-12/21	**White Rock Dam Spillway Capacity Evaluation and Maintenance Repair Design | Dallas, TX** Project Engineer and Construction Management. Performs bid phase and construction phase services for the maintenance activities for the spillway, weir, dikes, and embankment components of the White Rock Lake Dam. Responsibilities include leading progress meetings, documentation of defects and repair remedies, site visit reports, project team coordination, managing subconsultants.			
07/19-Ongoing	**Bachman Lake Dam and Spillway Improvements Project | Dallas, TX** Civil Lead Phase 2B, Construction Management Phase 2B, Deputy PM Phase 2A. Develops the Design Basis Memorandum in addition to the Potential Failure Mode Analysis, performs job site inspections, coordinates survey development, supports hydrologic and hydraulic analysis, and drives deliverable schedules for the dam and spillway improvements. Brad will also oversee construction phase services for the dredging portion of the project in addition to the detailed design phases for site civil improvements including pipeline abandonments, floodwall design, and other site civil improvements.			
04/14-02/16	**CPRA Bayou Long Ridge and Marsh Restoration Project | Plaquemines Parish, LA** Technical Support. Coordinating the collection of documentation and data, reviewing paperwork and tracking correspondences for the design of a 7.5-mile-long ridge along the Empire Waterway in Plaquemines Parish for the purpose of reducing hurricane storm surges and wave energy, and to restore marsh platforms and habitats. Capital Project Value $15 million.			
09/14-12/17	**CPRA East Timbalier Barrier Island Restoration | Terrebonne Parish, LA** GIS/Spatial Analysis. Responsibilities include collection and management of data, providing aerial imagery with GIS data overlay, document control, meeting with the client, and corresponding with project team consisting of five sub consultants. Worked with the geotechnical team during the initial site visit to survey water depths around the island. Capital Cost $3 Million.			
04/18-Ongoing	**Elm Fork of the Trinity River | Irving, TX** Project Engineer and Construction Management. Develops designs to protect existing and newly installed underground infrastructure from the washout effects of rivers immediately adjacent to the assets. He provides construction over sight and inspections for the field installation of the bank protection.			

*PE registered outside of Louisiana

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Travis Greenwell** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**5**	
TITLE	**Geotechnical Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**5**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2012 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE 33925 / KY* / 6/30/2023**			
YEAR REGISTERED	**2018**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Civil Engineering. Will support the civil engineering team with design deliverables (ex: cost estimates, drawings, specs, etc.)			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
09/18-04/19	**Robert C. Byrd Locks and Dam Harbor Explorations | USACE-Huntington, WV** Project Engineer. Responsible for development of the work plan for assessing and monitoring subsurface conditions during field exploration. Installed the automated data acquisition system (ADAS) consisting of 10 tiltmeters along the sheet pile wall. Development of threshold and warning levels to be utilized during drilling based upon ADAS obtained data. Responsible for directing and documenting drilling, hydroexcavation, and pressure grouting operations.			
06/18-09/18	**TVA Watauga Dam Supplemental Evaluation of Vulnerability to Internal Erosion | Carter County, TN** Project Engineer. Assisting in evaluating potential seepage mechanisms in a rockfill and clay core dam. Performed surface water and groundwater sampling along with water level gauging. Synthesized historic observations and recent field data to develop work plan for evaluation of potential failure mode.			
06/18-09/18	**TVA Instrumentation Record Drawings | Multiple Locations, TN** Project Engineer. Responsible for the revision and updates to the project record drawings for three TVA dams. Project responsibilities included Ocoee No. 1, Ocoee No. 2, and Chickamauga Dams. These hydroelectric facilities consisted of rockfill embankment dams, earthfill embankment dams, concrete gravity dams, and roller compacted concrete structures. The record drawings included updates and revisions to include historic and recent modifications to each site. The modifications included the incorporation of new dam safety instrumentation and dam modifications.			
08/18-09/18	**TVA Cherokee Dam Toe Drain | Grainger and Jefferson Counties, TN** Project Engineer. Responsible for the revision and updates to the project instrumentation record drawings. The record drawings included historic and recent modifications to dam safety instrumentation for Saddle Dam 1 and the North and South embankments.			
06/18-12/19	**Green River Lock and Dam No. 3 Renovation | Rochester, KY** Project Engineer. Responsible for development of General Conditions and Technical Specifications. Assisted with development of construction drawings and construction cost opinion for the renovation that included reinforced concrete cutoff wall, lock miter gate removal, sheet pile wall, concrete weirs, grout bags, and passive rock anchors.			

*PE registered outside of Louisiana

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Joey Lefante** PE, PTOE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**13**	
TITLE	**Traffic Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**0**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2008 / Civil Engineering; ATSSA Work Zone Traffic Control Flagger, Technician & Supervisor**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**37244 / LA / 9/30/2022**			
YEAR REGISTERED	**2012**	DISCIPLINE	**Civil Engineer**	
Contract role(s) / brief description of responsibilities	Civil Engineering. Will support the civil engineering team in the areas of transportation and traffic engineering.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
01/14-12/16	**Permanent Canal Closures and Pumps Project (PCCP) | New Orleans, LA** Traffic Engineer. Designed and detailed traffic control plans for construction site access points in conjunction with the PCCP project in New Orleans, Louisiana. He planned haul routes for construction vehicles and delivery trucks to access the sites, and verified the feasibility of the routes using AutoTURN software. Joey developed traffic control plans for both the duration of the construction, as well as for specific tasks, such as road closures due to equipment positioning. Joey also participated in finalizing the site layouts by determining locations for the various buildings such that delivery and fuel trucks could access the different parts of the site properly.			
08/11-Ongoing	**SR 82 Improvements and CFI at Daniels Parkway/Gunnery Road | Lee County, FL** Project Engineer. Stantec is on the team performing study and design for the reconstruction of a section of SR 82, currently a two-lane rural roadway. The improvements will modify the segment to a six-lane divided suburban highway with a CFI at the intersection of SR 82 and Daniels Parkway/Gunner Road.			
03/19-Ongoing	**DOTD Loyola Interchange Design-Build Project | Kenner, LA** Traffic Engineer. Performed VISSIM analyses of an Alternative Technical Concept (ATC) consisting of two new flyover ramps leading to/from the Airport on the east side of the interchange and the first Diverging Diamond Interchange (DDI) in Louisiana. Joey completed an IMR to meet FHWA access policy standards to move the project forward on the accelerated design-build schedule. Joey also led the traffic signal design effort, including specialized DDI operations and complete street accommodations such as sidewalks and a two-way cycle track.			
01/14-10/14	**DOTD LA 511 Jimmie Davis Bridge Rehabilitation | Bossier Parish, LA** Traffic Engineer. This project required a full bridge closure for the emergency rehabilitation of Jimmie Davis Bridge. Joey performed traffic analysis for the designated detour route as part of the TMP and proposed locations for temporary signal installations during the bridge closure. The detour routes included city streets on both side of bridge. Based on his analysis, Joey then designed and detailed traffic signal plans for temporary signal installations. Each selected improvement was needed to handle rerouting of all bridge traffic to the detoured route with minimal permanent pavement changes. Joey coordinated with the City of Shreveport and Bossier City for the selection of temporary improvements in order to meet their individual needs.			
03/13-03/14	**Perkins Road Segment 1 | City of Baton Rouge | Baton Rouge, LA** Traffic Engineer. Performed traffic study for environmental document required to widen a 3.4 mile stretch of Perkins Road from a 2-lane roadwy to a 4-lane divided curb and gutter roadway with raised median, sidewalks, sewer, and subsurface drainage. The study projected traffic for future roadway conditions and real estate developments impacted by the widening. Joey used HCS, Synchro, and SIDRA analysis software packages to analyze signalized intersections, unsignalized intersections, roundabouts, and U-turns. He also assisted in the selection of proper locations for U-turns based on traffic circulation patterns and roadway access.			

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Ken Ganji** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**27**	
TITLE	**Senior Principal Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**0**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 1998 / Mechanical Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**PE.0042674 / LA / 9/30/2022** *(initial registration IL, 062.056647, 2003)*			
YEAR REGISTERED	**2018**	DISCIPLINE	**Mechanical Engineer**	
Contract role(s) / brief description of responsibilities	Mechanical Engineering Lead. Will lead the mechanical engineering team.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
01/18-12/18	**Fishing Creek Hydro Station-Hoist Alternatives Budget Studies | Great Falls, SC** Lead Hydromechanical Engineer. Performed a site inspection and evaluations related to alternatives studies for improving efficiency and operating reliability of the existing spillway Stoney type gates at the Fishing Creek Hydro Station’s spillway. The spillway consists of twenty-two 13.7m (45-ft) wide by 7.6m (25-ft) high, screw stem hoist operated Stoney gates of 1920s vintage. Alternative hoisting arrangements were presented in a budget study report for incorporation in future upgrade projects.
03/18-09/18	**Wylie Hydro Station-Hoist Alternatives Budget Studies | Fort Mill, SC** Lead Hydromechanical. Performed a site inspection and evaluations related to alternatives studies for improving efficiency and operating reliability of the existing spillway Stoney type gates at the Wylie Hydro Station’s spillway. The spillway consists of eleven 13.7m (45-ft) wide by 9.1m (30-ft) high, screw stem hoist operated Stoney gates of 1920s vintage. Alternative hoisting arrangements were presented in a budget study report for incorporation in future upgrade projects.
02/14-02/15	**EB Campbell Dam Safety Review on Saskatchewan River (near Tobin Lake) | Saskatchewan, Canada** Project Manager. Project Manager for dam safety review report task, in regard to hydromechanical/gate equipment, supporting other Stantec operations.
07/17-06/18	**Lake Houston Dam-Outlet Works Sluice Gate Study | Coastal Water Authority | Houston, TX** Project Engineer. Lead hydromechanical engineer performed inspection and condition assessment of existing 0.9m by 0.9m (3-ft by 3-ft) manually operated cast iron sluice gate and developed alternatives for its rehabilitation/replacement. The study considered the use of the sluice gate for maintaining a water pool in the 963m long (3,160-ft) Ambursen type dam’s hearth for stability. Upon further review by the client, it was determined that the sluice gate was no longer required and follow-up work included conceptual design of means for its abandonment/removal. Prepared detailed design for the abandonment work, which consisted of the installation of a fixed bulkhead on the upstream side of the sluice gate’s portal in the dam.
02/19-11/19	**Rough River Dam Value Engineering Study | Strategic Value Solutions, Inc. | Falls of Rough, KY** Project Manager; Lead Hydromechanical Engineer. Participated in value engineering study for U.S. Army Corps of Engineers, Louisville District’s Rough River Dam Reconstruction. As a subcontractor to the value engineering study’s facilitator (client), focus of study was on a new outlet works tower and re-alignment of the low level release tunnel through the dam, including review of 30% design prepared by the U.S. Army Corps of Engineers, Louisville District.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
03/19-Ongoing	**Callide Dam Radial Gates Risk Assessment | Sunwater | Bioela, Queensland, Australia** Lead Hydromechanical Engineer. Participated in a site inspection and risk assessment workshop to identify the impacts related to potential malfunctioning spillway gates at the Callide Dam. The risk assessment centered around vibrations associated with the existing three pairs of counterweight automatically-operated spillway gates, each pair of radial gates 25.6m (84-ft) wide by 9.14m (30-ft) high, and their hydro-mechanical operating equipment.
07/18-04/20	**Bear Creek Sluice Gate Engineering Study | Tennessee Valley Authority | Vina, AL** Lead Hydromechanical Engineer. Lead hydromechanical engineer for an engineering study to assess the deficiencies of the existing outlet tower sluice gates and operators and develop recommendations for their replacement/rehabilitation. Performed site inspection, condition assessment, identification of rehabilitation alternatives and associated cost and schedule estimates, and prepared a project planning document. Follow-on services included QC review of the rehabilitation design associated with the recommended replacement gate alternative from the previous phase.
01/17-10/17	**Raystown Lake Dam Value Engineering Study | Strategic Value Solutions, Inc. | Raystown Lake, PA** Project Manager; Lead Hydromechanical Engineer. Participated in value engineering study for U.S. Army Corps of Engineers, Baltimore District’s Raystown Lake Dam. As a subcontractor to the value engineering study’s facilitator (client), focus of study was on spillway gates and temperature control (selective withdrawal) gates at the project site, including review of 60% design prepared by the U.S. Army Corps of Engineers, Portland District.
08/18-Ongoing	**Sterling C. Robertson Dam Gate Improvement | Brazos River Authority | Franklin, TX** Lead Mechanical Engineer. Ken is providing engineering services related to the replacement of the five existing spillway Tainter gates at the Sterling C. Robertson Dam impounding Lake Limestone. Services include the inspection of gate features including wire rope hoists and embedded parts (complete), preparation of plans and specifications for new/replacement Tainter gates (ongoing), and services during construction.
09/18-12/18	**Sterling C. Robertson Dam Tainter Gate Replacement Cost Analysis | Brazos River Authority | Franklin, TX** Mechanical Engineering Reviewer (QC). Ken performed QC review for evaluation of Tainter gate repairs report (by others). Work included recommendations and cost analysis for various alternatives related to gate repair/replacement at the Sterling C. Robertson Dam’s service spillway.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**			
NAME	**Mike Morgan** PE, P.Eng.	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**29**	
TITLE	**Vice President, Mechanical Engineering**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**4**	
DEGREE(S) / YEARS / SPECIALIZATION				
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**62049299 / IL* / 2/28/2022**			
YEAR REGISTERED	**1994**	DISCIPLINE	**Mechanical Engineer**	
Contract role(s) / brief description of responsibilities	Mechanical Engineering. Expert in mechanical engineering and will serve as a technical expert and advisor.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
06/15-06/16	**Powell Lake Dam Spillway Gate Rehabilitation | Powell River, British Columbia** Lead Project Engineer. Led engineering efforts for the rehabilitation of a 90-year-old gated spillway. The work included design and replacement of 19 radial gates measuring 24 feet wide by 13 feet high. Two different designs were provided for the gates, with seven gates capable of withstanding the 1:10,000 magnitude earthquake and the other twelve gates a more robust replacement design, still capable of being operated by the current hoisting equipment. New, reinforced trunnion anchorages were retrofitted to the existing piers to accommodate the increased seismic load. Other design features included vertical pier stability anchoring, spillway deck replacement, gate wire rope hoist design, traveling chain hoist rehabilitation design, electrical upgrades, and automation.			
07/96-Ongoing	**Radial Gate Inspection and Analyses | Various States, PUD, Avista, Eugene Water & Electric, Virginia Power, City of Ann Arbor, MI** Project Engineer. Performed several inspection and/or structural analyses of existing radial spillway gates at over 10 projects to verify conformance with FERC’s requirements regarding trunnion friction as brought about by the failure of the Folson Dam Spillway gate. Analyses ranged from basic hand calculations to 3D finite element analysis. Designed and prepared drawings for gate arm strengthening at Avista’s Noxon Dam, Grant County PUD’s Wanapum Dam and Lewis County PUD’s Cowlitz Dam.			
12/07-Ongoing	**Ruskin Dam Powerhouse Improvements Project | Vancouver, British Columbia** Project Engineer. Supported the $25 million design services for the Ruskin Powerhouse Improvement Project, an expected $350 million rehabilitation project for BC Hydro. The project includes the comprehensive rehabilitation, modernization, and improvements to the Ruskin powerhouse; a 1930 vintage plant housing three vertical-shaft, 35-MW, Francis-type turbines, and generators. Overall scope of the rehabilitation includes replacement of three turbine generator units, improvements to the project intakes, generating unit water conveyances, generating units, plant auxiliary equipment and systems, powerhouse structure, and auxiliary features. Specifically, the scope included development and evaluation of alternatives and preparation of final design for numerous project features in need of rehabilitation or upgrade including retrofit of new hydraulically-operated emergency wheel gates to the the existing intake structures, rehabilitation of all mechanical and electrical equipment in the powerhouse, seismic upgrade of the powerhouse structure, seismic upgrade of the dam intakes, draft tube gate isolation system addition, slope stabilization and access bridge seismic upgrades. Stantec is presently performing bid assistance, negotiation assistance and construction management services for the entire powerhouse improvements project, consisting of 4 major construction and equipment contracts. Construction management services include review of contractor submissions, change management, shop and field inspections, and witnessing of commissioning activities.			

*PE registered outside of Louisiana

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**		
NAME	**Scott Hoffeld** CEP	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**2**
TITLE	**Senior Environmental Planner/Economist**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**26**

DEGREE(S) / YEARS / SPECIALIZATION	**BA, MS / 1989, 1994 / Economics, Resource Management and Administration** **Certified Environmental Practitioner (CEnvP) #02040408**
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	
YEAR REGISTERED / DISCIPLINE	
Contract role(s) / brief description of responsibilities	Environmental Services and Permitting Lead. Will lead environmental and permitting tasks.

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
12/05-06/06	**Categorical Exclusion for Globalplex Internal Roadway Improvements | Reserve, LA** Project Manager. Project Manager for categorical exclusion from further documentation under the National Environmental Policy Act. The Port of South Louisiana proposes to improve the internal operations at its Globalplex facility by extending existing roadways and paving unimproved paths presently and wholly on the Globalplex property. The action will be partly funded by the U.S. Department of Housing and Urban Development, which triggered NEPA compliance. A Phase I Environmental Site Assessment was completed, as well as an environmental issues analysis. Because the project included improvements wholly on Port property, and no significant adverse effects were evaluated as likely from the issues analysis, a Categorical Exclusion was proposed by the Port and approved by the U.S. Department of Housing and Urban Development. No adverse effects were of concern; however, coordination with the USACE and LDNR was required as the project is located in the Louisiana Coastal Zone.
09/12-06/15	**DOTD I-210 at Nelson Road Interchange Improvements | Lake Charles, LA** NEPA Project Manager. Worked with the ABMB team during this project. He served as NEPA Project Manager for this aggressive seven-month NTP to FONSI, high-profile interstate interchange improvement project in Lake Charles, Louisiana. Project need is related to a new casino special traffic generator. Expedited work included completion of outreach, field work, and analysis of six build alternatives within six weeks of the NTP. Special NEPA documentation and review protocols were proposed by ARCADIS and approved by DOTD and FHWA, enabling environmental streamlining and reduction of schedule by over 55 percent.
12/15-12/17	**DOTD EA for the Dijon Extension Improvements | Baton Rouge, LA** Project Manager. Project Manager responsible for EA and public outreach for short connector roadway between LA 3064 (Essen Lane) and LA 1248 (Bluebonnet Boulevard) in Baton Rouge. The project involved coordination with the Our Lady of the Lake and The General hospitals regarding future development plans, as well as consideration of future bikeway plans for the City of Baton Rouge.
02/16-12/17	**EA for the Florida Avenue Improvements | Orleans and St. Bernard Parishes, LA** Project Manager. Scott was responsible for team coordination and public/stakeholder outreach oversight and agency coordination. The project alternatives include a new bridge over the Inner Harbor Navigation Canal, as well as optional roadway improvements, and neighborhood traffic calming for neighborhoods in the vicinity of the project alternatives, including 9th Ward of New Orleans. Key issues include truck traffic, property values, and environmental justice concerns.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
12/00-12/03	**East-West Corridor Multi-modal Transportation Improvement Environmental Impact Statements | New Orleans, LA** Senior Environmental and Transportation Planner/NEPA Task Leader. Senior Environmental and Transportation Planner and NEPA Task Leader for a multi-modal transportation improvement project for a corridor that spans between the Louis Armstrong International Airport and the Central Business District of New Orleans. In accordance with a 1997 Major Investment Study for this Corridor, the LDOTD and Regional Planning Commission propose both highway and transit improvements. A hybrid NEPA compliance approach was developed and used to comply with the FHWA and FTA NEPA requirements for the project, which includes a joint scoping effort for both the highway and transit components, followed by separate NEPA studies.
12/98-12/00	**Jefferson Parish Roadway Improvement Program Management NEPA Studies | Jefferson Parish, LA** NEPA documentation Quality Assurance Coordinator. NEPA documentation Quality Assurance Coordinator for the Jefferson Parish Roadway Improvement Program, which consists of 47 individual road projects ranging from intersection improvements to new roadways. He was responsible for conducting scheduled reviews of environmental documentation and analyses prior to submittal to the LDOTD and FHWA, as well as coordinating the delivery of all environmental documentation between the DOTD and the consultants working on the effort, which number over 20.
12/06-07/08	**Individual Environmental Report (IER) Environmental NEPA Compliance | Chalmette Loop Levee, St. Bernard Parish, LA** Project Manager. Project manager for investigations and preparations for NEPA compliance documentation for the Chalmette Loop portion of the Lake Pontchartrain and Vicinity Hurricane Protection Project in St. Bernard Parish, Louisiana. The IER will investigate the improvement of 22-miles of levee, approximately 2,500 feet of floodwalls, a ramp for LA-46 over the levee, and the replacement or modification of all structures in the levee system. Earthen berms, T-walls, and T-wall caps atop earthen berms are the three principal alternative types or scales. Alignment options include straddling the existing alignment, and either a floodside or protected side shift.
12/06-12/07	**NEPA Documentation for Establishment of Temporary Housing Facilities | New Orleans, LA** Program Manager. Program Manager for related NEPA activities. From December 2005 thru February 2005, worked as lead NEPA documentation specialist in Orleans and surrounding parishes to establish group temporary housing facilities for residents displaced by Hurricane Katrina. Responsibilities included performing site reconnaissance; identifying potential environmental and socioeconomic constraints associated with the site; performing historical research on site use; identifying and performing necessary level of documentation; and determining overall site suitability for use as temporary housing facilities.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**		
NAME	**Bob Esenwein** PhD, CEP	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**4**
TITLE	**Environmental Services and Permitting**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**36**

DEGREE(S) / YEARS / SPECIALIZATION			**PhD / 1977 / Contemporary Analytical Value Theory; MA / 1974 / Contemporary Analytical Value Theory; MA / 1971 / Contemporary Analytical Value Theory; BA / 1969 / Contemporary Analytical Value Theory** **Certified Environmental Professional (CEP)**
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE			
YEAR REGISTERED		DISCIPLINE	
Contract role(s) / brief description of responsibilities	Environmental Services and Permitting. Will lead the environmental services and permitting team.		

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
12/19-Ongoing	**Sterling C. Robertson Dam Tainter Gate Replacement Project | Lake Limestone, TX** Environmental/Permitting Lead. Conducted a Waters of the U.S. investigation for the various locations near the dam to be used for the tainter gate replacement project and developed a United States Army Corps of Engineers (USACE) permitting strategy that minimized USACE Ft. Worth’s processing times to keep the overall project on schedule. He achieved this by coordinating and developing a construction and gate replacement plan which avoided Waters of the U.S. impacts by including lake dredging, dredged material placement, and wetland avoidance in Stantec’s design. All work was complied with USACE regulations implementing Section 404 of the Clean Water Act, State of Texas NPE, and water quality requirements. Robert is assigned to monitor gate replacement and prepare documentation for USACE on the replacement gat installation. He also will observe dredged material placement related to barge operations and the tug launching area.
07/19-Ongoing	**Bachman Lake Dredging and Spillway and Dam Rehabilitation | Dallas, TX** Permitting lead for dredging the lake to increase boater access to various areas of the lake and rehabilitation of the dam spillway and the dam itself. He secured USACE authorization for the dredging and dredged material placement and s coordination the permit application for demolition of the old spillway and construction of the new spillway.
09/18-08/20	**Cedar Ridge Reservoir EIS USACE | Ft. Worth, TX** Project manager for this third party environmental impact statement (EIS), working with the USACE Ft. Worth District Regulatory Division to evaluate a major water supply reservoir proposed for west central Texas in the upper Brazos River watershed. Plans and organizes contractor work assignments and participates in conducting status and progress meetings with USACE and the dam’s applicant, the City of Abilene, who is providing funding for the EIS. Bob also provides National Environmental Policy Act (NEPA) and 404(b)(1) guidance to the contractor team and supports the USACE Fort Worth District’s project manager in developing EIS process work products. Budget and schedule responsibilities and reports to both the Applicant and USACE on the status of these key items.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
05/20-11/21	**NEPA Compliant Environmental Assessment for the ARS Field Station Dam Rehabilitation Project Natural Resources Conservation Service | Woodward, OK** Environmental Lead. The ARS Field Station Dam has been determined to be unsafe and requires significant repair and rehabilitation which will require adjustments to the size of the structure at various locations. This NEPA-required environmental assessment is intended to provide the NRCS with information regarding unavoidable adverse effects to the biological, physical, and socioeconomic environments around the dam. Deputy project manager for Stantec’s assignments on the assessment, which includes quality control and assurance; technical review of the NEPA document; cultural resource studies; and hazardous, toxic, and radioactive waste (HTRW) assessment.
10/19-11/21	**Pawnee Watershed Multiple Dam Sites Investigations | Multiple Locations, KS** Environmental Planning Lead. Robert was the environmental investigations lead for evaluating proposed earthen dam sites at five locations in the state of Kansas Pawnee Watershed. Work involved evaluating watershed biological and physical features, documenting potentially contaminated areas at or near proposed dam site locations, and identifying permitting requirements.
09/07-06/10	**West Shore Lake Pontchartrain | Laplace, LA** Provide technical support to project management. The project is a feasibility level study for providing hurricane storm surge protection to areas near and including the city of Laplace. Storm surge protection also is being contemplated for at-grade sections of the I-10 freeway traversing the Maurepas Swamp north of the city. Technical support tasks include planning and executing a technical outreach effort in conjunction with the local sponsor (Pontchartrain Levee District) management; identify research needs to respond to issues raised in interviews; and conduct research as needed to develop information necessary to evaluate project alternatives.
08/93-12/05	**Houston-Galveston Navigation Channels Widening and Deepening | Houston, TX** Project Director responsible for preparation of the environmental impact analyses in support of the USACE’s supplemental draft and final statement of the overall project. Additional assignments included submitted recommendation to the port on the adequacy of environmental analyses of physical, biological, and socioeconomic environments relating to the overall project. Developed a cumulative impact methodology needed to evaluate the overall project and the value of using new work and maintenance dredged material beneficially to create and restore an intertidal marsh in the Galveston Bay estuary. Prepared and coordinated the USACE Section 10 permitting documents needed to develop a demonstration marsh (250 acres) that would demonstrate dredged material for marsh creation. Developed design criteria for the demonstration marsh used to later develop other beneficial use marsh sites. Developed and participated in implementing beneficial use site monitoring, (adaptive) management, and maintenance plans for the beneficial use sites. Assisted in developing bioengineering parameters for intertidal marsh design in cooperation with the Beneficial Use Group resource agencies. These criteria were incorporated to the overall approach for constructing intertidal marsh. By 2005, approximately 900 acres of marsh and proposed marsh cells had been developed at three locations in Galveston Bay with the ultimate goal of constructing 4,250 acres of marsh from new work and maintenance dredged material associated with the widening and deepening project.
01/10-12/12	**Luce Bayou Interbasin Transfer Water Supply Project Third Party Environmental Impact Statement | Liberty and Harris Counties, TX** Project Manager. Led development of the EIS under SWG direction. Responsibilities included budget, and project management plan development and execution; preparation of Sections 1.0 and 2.0 of the EIS and preparation of various analyses for water resources, and cumulative impacts.
05/02- 02/03	**Spring Lake Dam Environmental Assessment | San Marcos, TX** Project Manager. Led the environmental assessment for repairs to Spring Lake Dam. His responsibilities involved preparation of a National Environmental Policy Act (NEPA) compliant document that also included a biological assessment of five federally listed endangered species identified in the vicinity of the dam. Bob also prepared the assessment, participated in the Section 7 Endangered Species Act consultation with the U.S. Fish and Wildlife Service, and led public meeting interactions on repair alternatives.

16. **Staff Experience:**

FIRM EMPLOYED BY	**Stantec Consulting Services Inc.**		
NAME	**James Loucks** PMP, CCP	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**21**
TITLE	**Senior Principal, Project Controls**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**22**
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 1981 / Construction Engineering** **Certified Cost Professional #2361, Project Management Professional (PMP)® #534386**		
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE			
YEAR REGISTERED	DISCIPLINE		
Contract role(s) / brief description of responsibilities	Cost Estimating. Will lead cost estimating tasks.		

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
05/19-05/21	**Little Bear Pump Station and Force Main D/M Document and Support Services | Palmetto, GA** Cost Estimator. Prepared a Class 4 OPCC in support of a 30 percent design submittal to construct a sewage lift station and approximately 20,100 linear feet (LF) of 12-inch forcemain from Little Bear Creek to the Ono Road Pump Station. The project is a component of a larger design-build project to pump wastewater from the Serenbe development and surrounding areas.
12/01-12/14	**Shasta Lake Water Resources Investigation EIS | Central Valley, CA** Cost Estimator. Led appraisal-level Class 4 cost estimates to support plan formulation phase designs of dam raise alternatives, including main concrete dam and earthen wing dam (embankment) modifications, dikes around the rim of the reservoir, spillway improvements, river outlet upgrades, temperature-control device (TCD) installation, and miscellaneous civil infrastructure improvements. He also led the feasibility-level cost estimates for the utilities relocations, recreation relocations, the Pit 7 powerhouse modifications, vehicular bridges, dikes, reservoir area clearing, and road relocations.
01/13-12/13	**San José-Santa Clara Regional Wastewater Facility Capital Improvement Plan (CIP) Program | San Jose, CA** Principal Estimator. The Stantec team provided program and project management services for the implementation of a 10-year capital improvement program (CIP). The daft plant master plan envisions a $2.2 million capital investment over the 30-year planning period, with $1.4 billion occurring in the next 10 years. Served as a principal estimator for the program, which included developing and reviewing cost estimates, taking into consideration escalation spiking, and providing auxiliary support to the City’s estimating team. The cost estimating effort for this program included 33 CIP projects.
06/98-10/13	**San Vicente Dam Raise | Lakeside, CA** QA/QC Team Lead. Reviewed all cost opinion deliverables from Stantec's teaming partner, prior to submission to the client. The $200M project scope consisted of a major roller compacted concrete dam raise plus related site infrastructure.
05/18-12/18	**Orville Dam Palermo Cold Water Pipeline | Oroville, CA** Cost Estimator. Developed Class 4 OPCCs for a 72-inch, six-mile conveyance pipeline considering both open cut and trenchless conditions, plus a new energy dissipation/flow control structure at the outlet.
01/11-12/11	**San Clemente Dam Removal | Carmel Valley, CA** Principal Estimator. Prepared detailed Class 3 and Class 2 cost estimates to support alternative analysis for the removal of a thin arch dam and upstream sediment deposits in the Carmel River including a river re-route bypass option.

16. **Staff Experience:**

FIRM EMPLOYED BY	**T. Baker Smith, LLC**		
NAME	**Rene Hebert** PLS	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**14**
TITLE	**Lead Professional, Survey**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**2**

DEGREE(S) / YEARS / SPECIALIZATION		**BS / 2008 / Geomatics**	
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE		**5070 / LA / 3/31/2022**	
YEAR REGISTERED	**2011**	DISCIPLINE	**Survey**

MEETS MINIMUM LADOTD PERSONNEL REQ.

Contract role(s) / brief description of responsibilities	Survey Lead. Will lead survey services. Meets MPR #5.
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
04/19-Ongoing	**Bayou Dularge Marsh, Ridge, and Hydrologic Restoration | Terrebonne Parish, LA** Project Surveyor. The project will create 660 acres of marsh, 4+ miles of ridge and a partial closure of Grand Pass. TBS is responsible for hydrodynamic monitoring; topographic, bathymetric, magnetometer, and UAS surveys; oyster surveys; and coastal engineering support for the project.
04/21-Ongoing	**Goodbee Pond | St. Tammany Parish, LA** Survey Lead Professional-Coordinated the collecting of all the required survey data, verified the collected data for accuracy, and produced the final survey deliverables.
04/21-Ongoing	**Colonial Club Pump Station | Jefferson Parish, LA** Survey Lead Professional. Coordinated the collecting of all the required survey data, verified the collected data for accuracy, and produced the final survey deliverables.
12/18-Ongoing	**Harrison Improvements US190-LA59 | St. Tammany Parish, LA** Survey Lead Professional. Responsible for overseeing topographic surveys, crew coordination, oversight of data processing, surface generation for use in existing drainage maps, deliverable preparation, title take off, property surveys, prepared base and final right of way maps for the improvements along Harrison Ave. that includes approximately 13,200 feet of roadway widening along existing alignment including the installation of single lane roundabouts at Marigold Drive and Falconer Drive.
07/18-08/19	**Nashville Wharf Terminal Survey Services | Orleans Parish, LA** Lead Professional. Oversaw all the topographic and hydrographic survey services at the Ports America facility at Port NOLA. Detailed topographic survey was performed, including under the wharf to collect the mudline topography from the face of the wharf to the bulkhead. Hydrographic side-scan and multibeam survey was performed from immediately in front of the wharf to hundreds of feet into the Mississippi River to record the contour of the river bottom for use in design of the proposed improvements to the facility.

16. **Staff Experience:**

FIRM EMPLOYED BY	**T. Baker Smith, LLC**			
NAME	**Adam D. Meche** PLS	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**16**	
TITLE	**Survey Lead Professional**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**6**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2005 / Industrial Technology**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**5079 / Louisiana / 9/30/2022**			
YEAR REGISTERED	**2012**	DISCIPLINE	**Survey**	
Contract role(s) / brief description of responsibilities	Survey. Will support survey services.			

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
03/13-04/19	**Mississippi River Re-introduction into Bayou Lafourche-Phase 2, Lafourche, Assumption | Ascension Parishes, LA** Principal in Charge. Supervised drafting services and the production of storm water pollution prevention plats generated for the project.
01/14-05/14	**Bayou Dupont Phase III Survey (BA-164) | Plaquemines & Jefferson Parishes, LA** Principal in Charge. Oversaw topographic, bathymetric, and magnetometer survey services for the Bayou Dupont sediment marsh creation #3 (BA-164) project in Plaquemines Parish and Jefferson Parish, LA.
06/16-12/16	**Bioengineered Oyster Reef Demonstration Project LA-08 | Cameron Parish, LA** Principal in Charge. Oversaw monitoring services which included topographic/bathymetric surveys and hydrodynamic data collection and monitoring. This project is located along the Gulf shoreline of Cameron Parish, so the data collection system was designed to withstand the harsh open water wave environment.
03/15-03/15	**Maintenance for the Sabine Pass Gas Plant and Marine Terminal Access Channel | Cameron Parish, LA** Project Surveyor. Provided bathymetry surveys, construction positioning, hazard surveys, and side scan sonar surveys to aid Chevron with maintenance efforts. Chevron’s maintenance regimen required TBS to provide services to assist with quality control of dredge operations, buoy replacements, and range marker replacements to provide safe navigation to and from its facility.

16. **Staff Experience:**

FIRM EMPLOYED BY	**ECM Consultants Inc.**		
NAME	**John Rasi** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**9**
TITLE	**Senior Hydraulic Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**29**

DEGREE(S) / YEARS / SPECIALIZATION		**B.S. / 1978 / Civil Engineering; B.S. / 1975 / Construction**	
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE		**20841/ LA / 3/31/2022**	
YEAR REGISTERED	**1983**	DISCIPLINE	**Civil Engineer**

MEETS MINIMUM LADOTD PERSONNEL REQ.

Contract role(s) / brief description of responsibilities	Hydraulics and Hydrology. Will support the hydraulics and hydrology team with modeling, studies, and assessments. Meets MPR #4.
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
01/18- Ongoing	**DOTD Inspection of State-Regulated Dams | Statewide, LA** Project Engineer for this statewide retainer contract inspection and engineering of publicly and privately owned dams to identify deficiencies, perform analysis for hazard categories, and make recommendations for remediation so that dams and the attendant water control devices function adequately and safely. Project scopes also includes hydraulic modeling for preparation of EAPs to includes dam breach analysis and impact on downstream including inundation maps.
09/16-10/17	**DOTD Safety Inspections of State Regulated Dams | Statewide, LA** Senior Hydraulic Engineer for this Retainer Contract for past three years, for which ECM has provided 525 inspections for 289 publicly and privately owned dams across Louisiana under the State Dam Safety Program. This includes hydrologic and hydraulic modeling of watersheds using LiDAR survey data and preparation of EAP reports for several dams throughout Louisiana. John prepares the models and reports involving field reconnaissance, dam breach analysis, and preparation of inundation maps. John utilizes ArcGIS, HEC-RAS and HEC-GeoRAS computer programs for this project. Reviewed EAPs for dams, some of which include: Smithport Lake Dam, Chicot Lake Dam, Turkey Creek Dam, Betty Taylor Dam, Bayou D'Arbonne Dam Reservoir, TL James No. 2 Dam, Caney Creek Dam, Lake Bistineau, Grand Bayou Reservoir, Kepler Creek Dam, and Ivan Creek Dam, among others. Additionally, he served as engineer for the inspection team where he observed and documented deficiencies of all features of the dams, including spillway, weir, buoys, embankment and grass, retaining and wing walls, baffle blocks, stilling basin, discharge channel, and other structural features. John reviewed data, performed analysis, and prepared reports for the dams. A few of which include: • Pleasant Valley No. 1 Dam, Washington Parish: a 22-foot-high structure which consists of an earthen embankment, 1,108 feet long and an adjoining 130-foot auxiliary spillway. • Bayou Cocodrie Dam, Rapides & Evangeline Parishes: a 28-foot high, 1,700-foot-long earthen embankment with primary spillway ogee weir and earthen broad-crested weir auxiliary spillway. • Lower Anacoco Dam, Vernon Parish: 37 feet high, 5,170-foot-long earthen embankment with 500-foot-wide concrete bi-level ogee weir. • Saline Lake Dam, Natchitoches Parish: a 23-foot-high dam with 850-foot-long earthen embankment on the south side of the spillway and 400-foot-wide concrete spillway with about 15,050 feet of earthen embankment on the north and west sides.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
06/12-07/13	**DOTD Safety Inspections of State Regulated Dams | Statewide, LA** Senior Hydraulic Engineer for this Retainer Contract where ECM conducted 908 safety inspections of more than 550 publicly and privately owned dams throughout Louisiana. Work included hydrologic and hydraulic modeling of watersheds using LiDAR survey data, breach analyses using HEC-RAS, ArcGIS, and HEC-GeoRAS, and preparation of EAP reports. John reviewed the models and prepared and reviewed reports which also involved field reconnaissance, dam breach analysis, and preparation of inundation maps. Reviewed the dam breach analysis and evaluation reports for Bayou Dupont No. 8 and 9, TL James Pond No. 2, Bear Creek No.3, Upper Bayou Nepique No.3, Betty Taylor Dam, Lake Choctaw Dam and Feliciana Lake. The breach analysis was done using HEC-RAS computer program.
01/17-12/17	**DOTD Longville Lake Dam (DOTD Dam Safety Program) | Beauregard Parish, LA** H&H Engineer. Provided H&H engineering services for this dam, which is 2,300 feet long, 10 feet in height with a 100-foot-wide ungated saddle spillway. It is a high hazard dam. He performed analysis for dam breach, prepared inundation map and reviewed Emergency Action Plan. The dam breach analyses were performed using an abridged engineering analysis method and utilized 5-meter digital elevation model (DEM) and the US geological Survey (USGS) topographic maps. U.S. Army Corps of Engineer’s HEC-RAS and ARC GIS software were used for modeling. For this model, an overtopping scenario was selected as allowed by the Louisiana Dam Safety Rules and Regulations.
02/14-12/14	**DOTD Loch Carden Dam (DOTD Dam Safety Program) | St. Tammany Parish, LA** H&H Engineer. Provided H&H engineering for this earthen dam which is 770-feet long with an attached 40-foot-wide earthen spillway, and crest elevation of 146.5. The lake has a maximum pool surface area of approximately 33.7 acres, a watershed of 1.08 square miles, and a maximum pool storage of 320 acre-ft. ft. He performed hydrologic and hydraulic modeling of watershed, H&H analysis for dam breach, prepared inundation maps and reviewed EAP report

16. **Staff Experience:**

ECM

FIRM EMPLOYED BY	**EMC Consultants, Inc.**		
NAME	**Chris Capretto** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**7**
TITLE	**Project Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**5**

DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2009 / Civil Engineering** **FHWA-NHI-130091 Underwater Bridge Inspection; LPA Core Training Module; ATSSA Work Zone Traffic Control Flagger, Technician & Supervisor**
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**38641/ LA / 9/30/2022**
YEAR REGISTERED: **2014** / DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Structural Engineering. Will support the structural engineering team.

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
11/13-11/17	**DOTD Safety Inspections of State Regulated Dams | Statewide, LA** Project Engineer. Performed inspections of several dams under this Retainer Contract for detecting and documenting evidence of deficiencies of dams and attendant water control devices. His duties included inspecting both upstream and downstream sides of the earthen and concrete dam structures including spillways, bell-mouth spillways, weirs (ogee and sharp-crested), galleries, embankments, drawdown structures, stilling basins, chute blocks and baffle blocks etc. He checked dams for condition of the structural elements such as evidence of erosion, settlement, depression, leakage, seepage, cracking, etc., as well as tree and plant growth on or within ten feet of the embankments, presence of animal burrows, soil slips or other signs of potential failure, maintenance status of the dams, and checking downstream conditions for scour and channel slope erosion. Some of the dams Chris inspected include: 5L Ranch Pond (700 ft), Beauregard No. 1 (1,625 ft), Beauregard No. 2 (930 ft), Valentine Lake (770 ft), Dr. Charles Ashwell Lake (1,410 ft), Miller Lake Dam (5,640 ft), Goodyears Pond (1,720 ft), Money Hill Pond No. 1 (4,595 ft), and Money Hill Pond No. 2 (550 ft.).
08/14-12/16	**DOTD Retainer Contract for Underwater Bridge Inspection Services | Statewide, LA** Project Engineer. Performed inspection of bridges substructure from water level to superstructures. Inspection of the substructure above water. Below water was performed by divers. Inspection included documentation of damaged and deteriorated structural elements of the bridges. He was involved in inspection of over 200 of total of 400 bridges under this contract. he was responsible for field inspection and preparation of the final reports to have a national bridge inventory component rating. Scope included: Level 1 inspection, which was visual and tactile inspection of all bridges requiring underwater inspection in water above 4 feet; Level 2 inspection, which was detailed and included partial cleaning of all steel elements; and Level 3 inspection which was highly detailed inspection with non-destructive testing or partially destructive testing. Bridges included concrete and steel bridges on timber and concrete pile foundations, and inspections included piles, girders, abutments, deck, and checking for cracking, spalling, exposed rebars, rusting of steel girders, missing hardware, and all other related features.
01/14-12/17	**Veterans Blvd. Drainage Pump Stations | Jefferson Parish, LA** Project Engineer. Provided project coordination and civil engineering design services for design of two new drainage pump stations that discharge into the 17th Street Canal. Projects include one 60 cfs pump station and one 80 cfs drainage pumping station with axial flow pumps, concrete wet well and 32" and 38" discharge piping systems.

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
08/16-05/18	**DOTD Rafe Meyer Bridges | Baker, LA** Project Engineer. Providing construction engineering support and contract administration for this project involving demolition and construction of two off-system bridges for DOTD in East Baton Rouge Parish. This project includes precast concrete pile driving, cast-in-place concrete bents, decks, approach slabs and asphaltic concrete roadway transition. He is assisting the project manager in submittal management, coordination and communication with inspectors, resolution of field issues and site visits as directed by the project manager.
06/08-06/09	**Inspection and Structural Evaluations, Tammany Trace Bridges | St. Tammany Parish, LA** Project Engineer. Performed inspection of 28 timber, steel, and concrete bridges on a railroad system converted to a pedestrian and bicycle trail. He inspected damage and documented structural condition and necessary repairs. He prepared reports for each bridge, including description and photos of existing conditions, list of suggested improvements and repairs, and prepared detailed CAD drawings.
04/16-09/18	**Gravier Street Improvements (S. Galvez to S. Broad), City of New Orleans DPW | New Orleans, LA** Project Engineer. Provided construction engineering and construction contract administration services for this $5.8 million PCC roadway construction project including major drainage, water, and sewer mains replacement project. As Assistant Project Engineer, his responsibilities included attending weekly progress meetings, preparing, and distributing minutes of meetings, coordination with various agencies, review and response to all RFIs in consultation with Design Engineer, submittal reviews and management, prepare plan changes, maintaining all documents and assist Project Engineer in resolution of field issues.

16. **Staff Experience:**

FIRM EMPLOYED BY	**ECM Consultants, Inc.**			
NAME	**Blake Guidry** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**2**	
TITLE	**Civil/Construction Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**8**	
DEGREE(S) / YEARS / SPECIALIZATION	**BS / 2012 / Civil Engineering**			
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**41362 / LA / 09/30/2023**			
YEAR REGISTERED	**2017**	DISCIPLINE	**Civil Engineering**	
Contract role(s) / brief description of responsibilities	Utility Identification. Will serve as the utility relocation engineer.			
Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).			
03/17-07/19	**DOTD LA 3034: Sullivan Rd (Wax-Hooper)(C&G) | East Baton Rouge Parish, LA** DOTD Project Engineer for the clearing and grubbing, sewer installation and utility relocations project. He was responsible for relocating all existing utilities to the edge of the state owned right of way in order to facilitate the future project to widen Sullivan Road (LA 3034). Concurrent with the relocations, sewer lines installation was done and was coordinated to avoid conflicts with other work in the area. Coordinated the utility relocation efforts and held monthly relocation meetings and public relation meetings with the City of Central and the residents and business on the Sullivan Road corridor.			
10/15-12/16	**DOTD Essen Lane Bridge Widening Perkins to I-10 Widening over Ward’s Creek | Baton Rouge, LA** DOTD Asst. Project Engineer. Oversaw the widening of the existing bridge over Ward’s Creek located on Essen Lane in East Baton Rouge. Work included driving 16” precast concrete piles adjacent to the existing bridge and widening the deck and relocating all existing utilities that would conflict with the future widening of Essen Lane in state project number H.010560. The utilities included gas, water, underground electric, fiber, and sewer. The existing deck was removed via hydro-demolition and tied to the newly widening sides once piling was complete. The project also included weekly public relation meetings due to the proximity of the hospitals in Baton Rouge’s medical district and construction taking place under live traffic. Worked on utility relocations and conflicts on Project No. H.010560 which consisted of widening Essen Lane from Perkins Road to Interstate 10 when an accounted fiber optic duct bank came into conflict with catch basin installation. He managed the relocation and construction work when the fiber optic line had to be relocated and worked around without disrupting construction.			
10/17-07/19	**DOTD LA. 73: Government St., East Blvd-Lobdell | East Baton Rouge Parish, LA** DOTD Project Engineer. Involved in Project Design and Development, Public Outreach, working with City officials, Public Meetings, and Design and Constructability reviews for this roadway rehabilitation project. Work included several phases where traffic lanes were adjusted to allow for the completion of the project section by section. The project includes rehabilitating the existing pavement and implementing a “road diet” and access management to incorporate bicycle and pedestrian friendly concepts and safety improvements including a roundabout installation at the intersection of Lobdell and Government Street. The transition to ADA compliant facilities required extensive adjustments to existing utilities and coordination with the DOTD District Utility Relocation technician and the representatives of the utility companies.			

16. **Staff Experience:**

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., “Designed drainage”, “designed girders”, “designed intersection”, etc. Experience dates should cover the time specified in the applicable MPR(s).
10/15-12/16	**DOTD LA 410 – Blackwater Bayou Bridge	Baton Rouge, LA** DOTD Assistant Project Engineer. Assisted the project engineer on this construction inspection project involving the removal and replacement of a concrete slab span bridge located on LA 410 in East Baton Rouge Parish. The construction included removing the existing bridge, driving 16” precast concrete piles for a new slab span bridge across Blackwater Bayou, base repair, asphaltic concrete approaches, guardrail installation, and drainage improvements to properties adjacent to the bridge site. Due to the complete closure of the roadway, public outreach and relations were important to keep the local residents and impacted motorists informed.
12/15-11/17	**DOTD Rafe Meyer Bridges	Baton Rouge, LA** DOTD Coordinator. Served in the Project Engineer’s office for the Off-System Bridge replacement of two slab span bridges located on Rafe Meyer Road in East Baton Rouge Parish. Served as contract administrator over the construction inspection and engineering being performed by a consulting firm. Was present at all project updates and included on all discussions regarding changes or problems occurring in the field. He also made independent site visits as well as having inspector’s present during the critical phases of construction. Was involved in the decision with the DOTD Secretary, Contractor, and local government officials to postpone bridge 2’s removal until the debris disposal was complete in the aftermath of the August 2016 flood.
05/17-05/18	**DOTD Pecue/I-10 Interchange Embankment and Clearing and Grubbing	Baton Rouge, LA** DOTD Assistant and Project Engineer. Provided construction inspection oversight for this project involving the clearing and grubbing for the future interstate ramps and the embankment installation for the future Pecue Lane overpass over I-10. Work included 404’ of 36” cross drain installation and dirt installation and monitoring via settlement plates. The clearing and grubbing portion of the project allowed for existing utility companies to begin relocation of the existing services to avoid any conflicts in Phase II & III of the project. Routinely met with DOTD Utility Representatives and Utility Company Representatives to ensure everything was moved to avoid the future construction.

16. **Staff Experience:**

GeoEngineers

FIRM EMPLOYED BY	**GeoEngineers, Inc.**		
NAME	**David Sauls** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**26**
TITLE	**Senior Principal Geotechnical Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**10**

DEGREE(S) / YEARS / SPECIALIZATION		**BS, MS / 1982, 1984 / Civil Engineering**	
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE		**23270 / LA / 03/31/2023**	
YEAR REGISTERED	**1989**	DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Geotechnical Field Services Lead. Will lead on-site geotechnical investigations and materials testing.		

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
03/08-12/08	**White Castle Levee Stability Emergency Repair Response | White Castle, LA** When a pipeline client was notified by the USACE of an impending catastrophic failure of the Mississippi River levee related to its pipeline armoring creating a scour washout, the client engaged David to work around the clock to develop contingency repair measures. A variety of possible repairs for articulated concrete mattress blankets and rip rap were pursued to determine which could be deployed the fastest. Simultaneously, engineering analysis of the levee stability were being performed to understand the loss of bank being washed out by the scour.
04/90-12/94	**Wesley Center Lake and Dam | Woodworth, LA** GeoEngineers' predecessor firm Louis J. Capozzoli & Associates, Inc. provided engineering of the Wesley Center Lake and dam from site selection, feasibility, exploration, design, construction, and documentation for operation, and registration with the state dam safety program. David was the engineer-of-record for the hydrological and hydraulics design. This analysis provided the simulation of dam and emergency spillway design responses for topping and breach for design and probable maximum precipitation events. These findings went into the operation manual the firm prepared for the dam and filed with the state dam safety program.
06/89-12/92	**Iron Bridge Dam | Rains and Van Zandt Counties, TX** Constructed across the Sabine River in Rains and Van Zandt Counties, Texas to impound Lake Tawakoni. Total length of the dam, including the spillway, is approximately 5.5 miles. The embankment has a maximum height of 75 feet and a crest width of 22 feet. David worked to (1) evaluate the strength of the foundation shales beneath the spillway, (2) develop information on piezometric conditions, (3) assess the sliding stability of the spillway, and (4) develop information needed for final design of remedial measures employing tensioned anchors.
02/89-08/92	**Brazos River Authority's Morris Sheppard Dam (Possum Kingdom Lake) | Mineral Wells, TX** The tallest concrete slab-and-buttress dam in the United States. Morris Sheppard Dam impounds a 570,000-acre-foot lake. The dam is a 188-foot-highwith a crest length of 2,740 feet. A 5-year Federal Energy Regulatory Commission (FERC) inspection, revealed signs of movement and structural distress. Buttresses along the spillway had moved downstream, enough to crack the hearth and deflector toe wall. This required immediate corrective actions, which included stabilizing and strengthening the slab-and-buttress section of the dam. The plan lowered the lake 13 feet to increase the factor of safety and drilling 145 relief wells to alleviate the hydrostatic pressure. David developed strength parameters for the shale foundation using the dam's performance as a full-scale, long-term load test to back figure realistic strength parameters. The team evaluated the use of additional vertical load from ballast placed in the interior of the dam in conjunction with the reduction of piezometric pressures from grouting to seal the upstream key.

16. **Staff Experience:**

GeoEngineers

FIRM EMPLOYED BY	**GeoEngineers, Inc.**		
NAME	**Blake Cotton** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**8**
TITLE	**Senior Principal Geotechnical Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**22**

DEGREE(S) / YEARS / SPECIALIZATION		**MS / 1992 / Civil Engineering; BS / 1989 / Architectural Engineering**	
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE		**28039 / LA / 03/31/2023**	
YEAR REGISTERED	**1998**	DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Geotechnical Field Services. Will support on-site geotechnical investigations and materials testing.		

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
01/13-12/14	**Permanent Canal Closures and Pumps (PCCP); New Orleans, LA** Lead Geotechnical Engineer. The USACE has built three permanent canal closure and pump station structures to block hurricane storm surges at the Lake Pontchartrain mouths of the 17th Street, Orleans Avenue, and London Avenue drainage canals in New Orleans. The geotechnical engineering services included exploring subsurface soil conditions at each one of the sites and providing laboratory test results in technical reports. Blake oversaw field exploration, laboratory testing, and engineering recommendations to guide the geotechnical aspect, and reporting while he was with a previous firm. While at GeoEngineers, Blake was retained to provide Independent Technical Review (ITR) for geotechnical portions of the pump stations excavation designs.
09/17-12/17	**Texas Department of Transportation, Matagorda Intercoastal Waterway Bridge Replacement; Matagorda County, Texas** Principal-in-Charge. Blake was Principal-in-Charge overseeing GeoEngineers' team to provide geotechnical engineering services for this bridge replacement project. Work will include reviewing geotechnical information and the current pile design and evaluating alternatives for the pile design concepts for performance and constructability.
01/07-12/14	**US Army Corps of Engineers, ID/IQ | New Orleans, LA** Program Director. With a previous firm, Blake served as Program Director for this project. The firm was the lead partner of the FFEB joint venture that was providing geotechnical services under an ID/IQ contract related to the design of storm protection enhancements throughout the New Orleans District. Assignments under the contract were focused on 350 miles of Federal levees; hundreds of miles of supplementary and non-Federal levees; and a multitude of pump stations, floodwalls, floodgates, and erosion armor. The geotechnical program includes drilling of several hundred borings, cone penetrometer testing (CPT), installation of piezometers, extensive laboratory testing, engineering analyses, and construction quality assurance (QA) services.
06/89-12/92	**Iron Bridge Dam | Rains/Van Zandt counties, TX** Geotechnical Engineer. Constructed across the Sabine River in Rains and Van Zandt Counties, Texas to impound Lake Tawakoni. Total length of the dam, including the spillway, is approximately 5.5 miles. The embankment has a maximum height of 75 feet and a crest width of 22 feet. Blake supported evaluation of the strength of the foundation shales beneath the spillway, development of information on piezometric conditions, assessment of the sliding stability of the spillway, and development of information needed for final design of remedial measures employing tensioned anchors.

16. **Staff Experience:**

GeoEngineers

FIRM EMPLOYED BY	**GeoEngineers Inc.**		
NAME	**Larry D. Sant** PE	YEARS OF RELEVANT EXPERIENCE WITH THIS EMPLOYER	**20**
TITLE	**Associate Geotechnical Engineer**	YEARS OF RELEVANT EXPERIENCE WITH OTHER EMPLOYER(S)	**2**

DEGREE(S) / YEARS / SPECIALIZATION	**BS, MS / 2001, 2001 / Civil Engineering, Civil Engineering**		
ACTIVE REGISTRATION NUMBER / STATE / EXPIRATION DATE	**35625 | LA | 9/30/2022**		
YEAR REGISTERED	**2010**	DISCIPLINE	**Civil Engineer**
Contract role(s) / brief description of responsibilities	Geotechnical Engineering. Will support geotechnical engineering team.		

Experience dates (mm/yy-mm/yy)	Experience and qualifications relevant to the proposed contract; i.e., "Designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).
01/11-12/16	**EPA-Mandated Dam Safety Inspections and Ash Basins Levee Maintenance; Big Cajun II Generation Site | Pointe Coupee Parish, LA** Project Manager of EPA-mandated semi-annual dam safety inspections and several related geotechnical engineering services for levee maintenance design and recommendations. This included: reconnaissance of the entire impoundment (298 acres of the property from outside toe to outside toe) inclusive of scheduling, notification and reporting; an evaluation of slope stability and hydrologic/hydraulic safety of the five Ash Basins/Wastewater Treatment Ponds; and recommendations regarding repair for the reported appearance of sloughing in isolated areas during several separate events during these years.
09/02-12/02	**Horseshoe Lake Dam | Chewelah, WA** Project Manager for this geotechnical engineering evaluation to design a new dam that will impound 30-acre feet of water. Completed subsurface exploration along the proposed dam alignment and laboratory testing as a basis for characterizing soil beneath the proposed earth-fill dam. GeoEngineers completed engineering analyses and provided design recommendations for the 150-foot long dam with clay core cross-section keyed into the subgrade, chimney drain soil filter design, downstream drainage blanket and interceptor trench design, liquefaction analysis, groundwater flow net, stability analysis, and borrow source materials evaluation.
02/08-10/08	**Upriver Dam Fuse Plug Restoration | Spokane, WA** Project Manager for this geotechnical engineering evaluation to restore the fuse plug spillway at Upriver Dam because the fuse plug had settled several inches below the original design elevation and the breach point had moved away from the fuse plug. We explored subsurface soil and groundwater conditions and complete limited laboratory testing as well as engineering evaluation of the fuse plug and crest grading and provided design recommendations to repair the fuse plug.
08/12-07/15	**DOTD I-210 at Cove Lane Interchange | Lake Charles, LA** Geotechnical Task Lead during this fast-track design and construction project supporting the I-210 at Cove Lane Interchange performed with Stantec as Prime. Completed engineering analyses for design and construction of about 8,000 driven pile foundations, MSE walls, and wick-drain/surcharge settlement. The GeoEngineers' team completed 126 fast-track explorations with five rigs in varying access conditions including over water with casing. The team also monitored MSE wall construction, provided PDA evaluation of the piles during installation, installed liquid settlement sensors to monitor embankment settlement, and provided detailed records for critical construction activities.

17. **Firm Experience:**

Identify the team's project experience most relevant to the scope in the advertisement. The projects should be limited to a total of 30, with no more than 10 projects being represented by a single firm on the team. If more than 30 projects are identified, all projects identified after the first 30 will not be evaluated. If more than 10 projects are identified for a single firm, all projects identified after the first 10 from that firm will not be evaluated. Include no more than one page per project. Projects identified shall only include work performed by firms on the team. The projects identified do not necessarily need to have been DOTD projects.

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**City of Newport News Waterworks On-Call Dam Inspection and Engineering On-call Services (2016-2021)**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**City of Newport News**
PROJECT LOCATION	**Newport News, Virginia**	OWNER'S PROJECT MANAGER	**Eric Nice**
OWNER'S ADDRESS, PHONE, EMAIL	**437 Water Works Way, Newport News, VA 23608 | 757-897-5319 | enice@nnva.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**03/16**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$1,500 (to date)**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$937 (to date)**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Stantec provides Waterworks with dam safety inspections and engineering services for six dams which are primarily earthen structures with concrete and steel spillways and other appurtenances. Services include: performing studies, evaluations, geotechnical exploration, inspections, watershed modeling, modifications, improvements, and reporting on an as-needed basis. Most significantly, Stantec is working to solve ongoing seepage and internal erosion issues at Little Creek Dam that started in 1982. Our initial task order, issued in 2016, was to provide data review and field review, including the inspection of the toe drain system and the outfall conduit and riser tower, to identify seepage issues. Lacking available geotechnical data, we executed geotechnical exploration, instrumentation, and analyses, which included rotary drill borings with standard penetration testing by our drill crew. Based on lab results, we conducted engineering analyses consisting of static and pseudostatic slope stability, seepage modeling, liquefaction potential, and internal erosion susceptibility assessment. Identified deficiencies were summarized in a basis of design (BOD) report, together with proposed alternatives for mitigation.

PROJECT RELEVANCE

- H&H Evaluation
- Geotechnical Evaluation
- Design
- Construction Cost Opinions
- Specifications
- Risk Assessment
- Dam Safety Programmatic Services

In early 2020, a sand boil appeared at the toe of the dam, spurring Stantec to begin daily monitoring. After a large plume was observed within the tailwater, we recommended activating the Emergency Action Plan (EAP) to implement interim risk reduction measures–sandbag ring dikes and controlled reservoir drawdown. This event compelled Waterworks to expedite Little Creek Dam improvements. The proposed solution from the BOD report, constructing a berm at the downstream toe, would have a significant impact on tidal wetlands. The environmental permit process for rehabilitating the dam requires a formal alternatives analysis to select an appropriate rehabilitation method based on avoidance and minimization of environmental impacts. Stantec performed this analysis to consider less-common alternatives, as well as expand the criteria used in the BOD report, to meet the regulatory expectations.

Stantec collaborated with Waterworks throughout the alternatives analysis to incorporate operations, maintenance, and other business considerations into the decision framework. We performed surveys and environmental field studies to support decision making and the design process. The alternatives analysis report included conceptual designs and cost estimates for the four highest ranked alternatives. Preliminary and detailed design of the selected alternative, along with environmental permitting support, will be performed in the next phase and Stantec's contract has been renewed for 2022-2026. In addition to this contract, Stantec is also working with Waterworks to include risk informed decision making processes into their overall dam safety program.

TEAM MEMBERS INVOLVED: **J. KEELING, B. WEBSTER, M. MEEHAN, A. RAUCH, D. GILBERT, R. BISNETT, T. GREENWELL**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**City of Elizabethtown High Hazard Dam Safety Services**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**City of Elizabethtown**
PROJECT LOCATION	**Elizabethtown, Kentucky**	OWNER'S PROJECT MANAGER	**Rita Davis**
OWNER'S ADDRESS, PHONE, EMAIL	**200 West Dixie Avenue, Elizabethtown, KY 42702 | 270-763-4217 | rita.davis@elizabethtownky.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**07/98**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$2,350**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$2,250 (to date)**

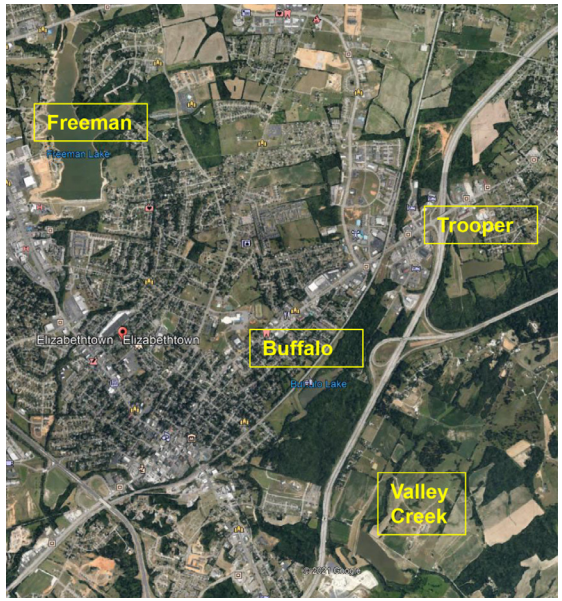
Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Stantec has served as a trusted partner for the City of Elizabethtown's dam safety program, consisting of four high hazard dams within in city limits, since 1998. In addition to our support of multiple reconstruction and restoration projects during this time, we have also provided annual maintenance and inspection services since 2007. These evaluations involve coordination of field reconnaissance and reporting efforts, with reviews of dam operations, maintenance, and design records.

PROJECT RELEVANCE
- H&H Evaluations
- Geotechnical Evaluations
- Design
- Bid Documents
- Construction Administration
- Programmatic Needs Assessment

Key projects performed by Stantec include:

- Freeman Lake Reconstruction Project
- Buffalo Lake Restoration Project
- Annual dam safety field reconnaissance of dams
- Piezometer instrumentation monitoring/evaluation
- Geotechnical evaluation/drilling/lab testing
- Comprehensive needs assessment for lakes/dams
- Development of template O&M Manual for dams
- Development of EAP template for dams
- Partnership with KDOW for monitoring pilot project
- Hydrographic surveying/sediment surveys



TEAM MEMBERS INVOLVED: **J. KEELING, A. RAUCH, B. WEBSTER, D. GILBERT, M. MEEHAN, B. TUCKER**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**White Rock Dam Spillway Capacity Evaluation and Maintenance Repair Design**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Dallas Water Utilities**
PROJECT LOCATION	**Dallas, Texas**	OWNER'S PROJECT MANAGER	**Mark Mihm**
OWNER'S ADDRESS, PHONE, EMAIL	**2121 Main Street, Suite 300, Dallas, TX 75201 | 214-670-4271 | mark.mihm@dallascityhall.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**11/19**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$503**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**12/21**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$382**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

White Rock Lake is one of the most heavily used lakes in the Dallas metro area and is surrounded by residential neighborhoods and businesses. White Rock Dam, located at the southwest corner of this lake, was constructed in 1911 and has lasted over 100 years with minor upkeep and improvements. Due to it's age, no original as-built information was available and site access during repair design was limited due to heavy pedestrian traffic.

PROJECT RELEVANCE
- H&H Evaluations
- Structural Evaluations
- Design
- Bid Documents
- Construction Administration

Stantec performed a hydrologic and hydraulic evaluation of the existing concrete spillway at the White Rock Dam in support of Dallas Water Utilities' dam safety program. The evaluation was to determine current spillway capacity considering the 2016 updates to the Probable Maximum Precipitation (PMP) for the state of Texas. The project involved review of current watershed conditions and updating land-use and runoff parameters, application of the updated PMP to the existing hydrologic model, hydraulic routing of the PMP event through the spillway, and development of a report to document results. Stantec also provided recommendations of conceptual alternatives for the spillway to meet required capacity. This work was performed in coordination with TCEQ Dam Safety.

Stantec also provided value engineering to DWU during design by bringing our skilled experts to the site and performing enhanced inspections with minimal public impacts which mitigated risks for injuries and disruptions to the public while acquiring site details to proceed with engineered solutions.

Stantec's scope includes inspection, state coordination, bid services, and 90% to final design of maintenance repairs to address safety drivers of the aging dam's components and extend its operational life. The last repair-related project for White Rock Lake was in 2004. Stantec coordinated permitting requirements with the Texas Commission on Environmental Quality (TCEQ), performed a topographic and tree survey, and reviewed constructability during the design phase. Stantec's design included repairs for the service spillway, upstream and downstream embankments, dike rehab, soil stabilization, tree and vegetation control management, and post construction renovations and maintenance improvements for White Rock Dam.

Stantec provided construction services with our geotechnical, structural, and civil engineers. Notable services include inspections and guidance for both piezometer installation and abandonment, weir inspection and repair recommendation, in addition to submittal, information requests, and progress meeting engineer services.

TEAM MEMBERS INVOLVED: **J. KEELING, B. WEBSTER, B. TUCKER, M. MEEHAN, P. SMITH, B. DEATON**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**Lookout Lake Dam Rehabilitation**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Dade County**
PROJECT LOCATION	**Dade County, Georgia**	OWNER'S PROJECT MANAGER	**Ted Rumley**
OWNER'S ADDRESS, PHONE, EMAIL	**71 Case Avenue, Trenton, GA 30752 | 706-657-4625 | trumley@dadecounty-ga.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**06/17**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$270**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**01/21**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$270**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Stantec supported Dade County in the rehabilitation of Lookout Lake Dam. Stantec's role evolved from providing initial reconnaissance and alternatives analysis to design and construction.

PROJECT RELEVANCE
- Surveying
- Permitting
- H&H Analysis
- Dam Break Analysis
- Geotechnical Analysis
- Design
- Construction Administration

At the onset of the project, Stantec performed a review of available historical site information, previous geotechnical explorations, slope stability and dam breach analyses, and dam classification and permitting correspondence. A report was developed outlining the regulatory history, existing site conditions, previous analyses and recommendations, and data gaps.

Stantec then provided the owner with potential alternatives for a path forward given the known deficiencies and hazard classification of the dam. These included modifications to meet Category I requirements, pursuit of reclassification of the dam to a lesser hazard category, or intentionally breaching the dam and taking the reservoir out of service. The selected alternative was lowering the dam to reduce potential risk and re-categorize the dam as Category II.

After the alternative was selected Stantec then supported Dade County with environmental evaluations and permit coordination with the United States Army Corps of Engineers (USACE) and the Georgia Safe Dams Program (SDP). Stantec's design to improve the condition of the dam included a new self-priming siphon system serving as a principal spillway; a double 8'x3' concrete box culvert and rip-rap down chute for the auxiliary spillway; grouting for the abandonment of the existing, inoperable principal spillway pipe; design of a graded filter diaphragm on the downstream toe to reduce seepage; and lowering the dam by approximately 4 feet. The design included detailed hydraulic evaluations and construction drawings and specifications.

After SDP approval of the design, Stantec supported Dade County in the self-performance of the construction by providing Construction Quality Assurance (CQA) services which has included review of submittals, requests for information (RFIs), on-site CQA services, and providing daily field reports. Construction was completed early in 2021, and Stantec provided as-built drawings and a certification letter to SDP documenting construction conformance with the design. The dam was recategorized by SDP as Category II in March 2021.

TEAM MEMBERS INVOLVED: **J. KEELING, B. WEBSTER, M. SCHILLINGER, M. MEEHAN, M. HOY, D. GILBERT, A. RAUCH**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**Bachman Lake Dam and Spillway Improvements Project**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Dallas Water Utilities**
PROJECT LOCATION	**Dallas, Texas**	OWNER'S PROJECT MANAGER	**Mark Mihm**
OWNER'S ADDRESS, PHONE, EMAIL	**2121 Main Street, Suite 300, Dallas, TX 75201 | 214-670-4271 | mark.mihm@dallascityhall.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**07/19**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$8,497**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$6,118**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Bachman Lake Dam, located next to Dallas Love Field Airport, is currently classified as an Intermediate Size, Significant Hazard Dam by the Texas Commission of Environmental Quality (TCEQ). Dallas Water Utilities (DWU) decided to maintain Bachman Lake, and a project to address critical dam and spillway safety improvements began by Stantec.

PROJECT RELEVANCE
- Surveying
- H&H Analysis
- PFMA
- Geotechnical Analysis
- Hydraulic Structures Analysis
- Permitting
- Design
- Bid Documents
- Specifications
- Construction Administration

The project involved several stages including field investigations, exploration, studies, and other research activities which supplement later phases for design, bid, and construction services. The project in its current scope is described as: 1) dam and spillway improvement design and 2) dredging construction.

Dam and Spillway Design. Early studies work included review of the Emergency Action Plan (EAP), production of a five-year inspection report, development of the design criteria, and initiating TCEQ consultation.

Following the evaluation of the embankment, condition assessments of the service and emergency spillway, hydraulic and hydrologic (H&H) study, environmental considerations, and other field studies, a Potential Failure Mode Analysis (PFMA) was managed. The PFMA supplied early project considerations for the design approach by establishing a Basis of Design for the dam and spillway. The findings confirmed the urgency and necessity of the project.

Stantec is providing detailed design and bid services associated with the Bachman Dam and Spillway. These services include the completion of the final design package and bid documents to meet the design flood from the hazard classification and project performance requirements.

Dredging. Dredging of Bachman Lake is being performed to reducing sediment buildup and increasing water depth for recreational activities. Stantec worked with DWU to develop an off-site dewatering location to minimize public impacts at Bachman Park while providing means to increase the efficiency of dredging operations. Stantec managed the planning, design, permitting, and bid services for the dredging of Bachman Lake. Stantec will provide construction phase services which include permitting, submittal & information request reviews, contract administration, and on-site inspections.

TEAM MEMBERS INVOLVED: **J. KEELING, B. WEBSTER, B. DEATON, A. RAUCH, K. NEFF, P. SMITH, M. MEEHAN, B. ESENWEIN, D. GILBERT**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**Gwinnett County DWR Dam Safety Programmatic Services**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Gwinnett County Department of Water Resources**
PROJECT LOCATION	**Gwinnett County, Georgia**	OWNER'S PROJECT MANAGER	**Jeffery Holland**
OWNER'S ADDRESS, PHONE, EMAIL	**684 Winder Hwy, Lawrenceville, GA 30045 | 678-376-6939 | jeffery.holland@gwinnettcounty.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**01/17**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$1,000 (to date)**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$1,000 (to date)**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

In 2016, Stantec was awarded an on-call contract with the Gwinnett County Department of Water Resources (GCDWR) to provide Specialized Technical Support Services. Task orders under this contract have included a wide variety of as needed Dam Safety related support services such as inspection, evaluation, dam removal design, design of dam rehabilitation/improvements, and construction observation services. Since 2017, Stantec has successfully completed numerous task orders under this on-call contract. Select relevant examples are highlighted below.

PROJECT RELEVANCE
- Outlet Structure Assessments
- H&H Analysis
- Design
- Bid Documents
- Specifications
- Construction Administration

Bird Lake Dam Removal Evaluation and Design. Stantec has assisted GCDWR in the hydrologic, hydraulic and geotechnical evaluation of the existing dam, as well as development of rehabilitation and repair concepts for Bird Lake Dam. Stantec prepared design and permitting documents for the selected option of dam removal. This included development of construction drawings, technical specifications, and figures to support permit applications to USACE, and local authorities. Future work will include providing bid documents and construction observation services.

Joy Lane Dam Improvements. Stantec performed a dam safety evaluation of the dam to assist GCDWR in addressing concerns at this dam, including slope stability, seepage, and surface erosion issues. Services included field reconnaissance, evaluation of CCTV inspection of the principal spillway, development of a repair plan and report. Based on the findings, Stantec then developed design plans and specifications for repairs to the dam to address the issues noted during the field reconnaissance, including addressing animal burros, removal of trees and brush from the embankment, various concrete repairs to drainage structures, and placement of wave wash rip-rap on the upstream slope. Finally, programmatic operations and maintenance recommendations were provided, including regular mowing, vegetation establishment for bare areas on the embankment slopes, and completing spillway pipe inspections.

Dam Outlet Works Inspections, Evaluation and Rehabilitation (10 dams). Stantec is currently assisting GCDWR in rehabilitation design for the outlet works structures of ten NRCS watershed dams operated and maintained by GCDWR. The project has involved performing interior and exterior inspections of the outlet control structure of each dam, performing an engineering evaluation, and providing a report detailing recommendations for rehabilitation improvements at each dam. During the current phase of the project, Stantec is developing plans for the rehabilitation improvements, preparing technical specifications, and developing permit documents associated with the work. The project will also include bid support services and engineer of record services during construction for the repair and rehabilitation of the structures.

TEAM MEMBERS INVOLVED: **J. KEELING, B. WEBSTER, M. SCHILLINGER, M. MEEHAN, P. SMITH, B. TUCKER**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**System-wide Assessment Study for Kentucky River Locks and Dams**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Kentucky River Authority**
PROJECT LOCATION	**Various Locations, Kentucky**	OWNER'S PROJECT MANAGER	**David Hamilton**
OWNER'S ADDRESS, PHONE, EMAIL	**403 Wapping St., Suite 105, Frankfort, KY 40601 | 502-564-3773 | david.hamilton@ky.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**07/21**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$399**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**12/21**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$310**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Stantec led a team to assess the condition of the Kentucky River Authority's 14 locks and dams and to recommend which structures should receive priority consideration for future repairs and/or replacement. The age of the existing structures and the degradation of the facilities were such that KRA sought to identify the most serious problems and efficiently spend the limited funds available to protect the water resources of the river. In order to prioritize repairs, Stantec developed a methodology that incorporate risk factors related to potential loss of pool in the event of a structural failure.

PROJECT RELEVANCE
- Geotechnical Analysis
- Structural Assessments
- Risk Assessments
- Concept Design
- Construction Cost Opinions

Field personnel inspected physical condition of various elements, but also on their ability to retain the pool, potential failure modes that could threaten pool retention, and the possibility that emergency repairs could be required. To aid the field teams in performing comprehensive above and below water observations of the targeted elements, standardized field report forms were developed to help ensure that certain features were checked before leaving the site. Before leaving the site, the engineers assigned a stability/integrity rating, called a Condition Index, to each element.

Stantec employed a risk-based system to take into account factors that relate to the potential loss of pool at each site. Although not a rigorous risk assessment, this method of analysis considered (from a qualitative point of view) not only the condition of an element, but also the probability of failure (loss of pool), and some on-site consequences of the loss of pool.

Conceptual repair schemes were developed that would provide at least a short-term improvement in condition and/or reduction in risk, with an associated budget level cost for each repair. Repair schemes were developed for defects that appear at multiple sites and where applicable, costs were generated in terms of unit rates that could be easily applied at multiple sites. When possible, derivations of costs were based on available data from previous Kentucky River projects.

The final deliverable for the project was a comprehensive report for the sites with overall findings and priority ranking of conceptual repairs, with costs, for each element. An appendix included site drawings annotated with condition assessment findings, results of the risk-based integrity analyses, site photos, repair cost derivations, and field notes/sketches.

TEAM MEMBERS INVOLVED: **J. KEELING, P. SMITH, A. RAUCH, D. GILBERT, B. WEBSTER**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**Programmatic Dam Safety Services for Mobile Area Water and Sewer System**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Mobile Area Water & Sewer System**
PROJECT LOCATION	**Mobile, Alabama**	OWNER'S PROJECT MANAGER	**Doug Cote**
OWNER'S ADDRESS, PHONE, EMAIL	**4725 Moffett Rd, Mobile, AL 36618 | 251-694-3187 | dcote@mawss.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**09/16**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$795**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$795**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Since 2016, Stantec selected by the Mobile Area Water and Sewer System (MAWSS) to support of their dam safety program. Our services have included performing field reconnaissance, evaluations, analyses, risk analysis, spillway gate rehabilitation design and other dam safety services for Big Creek Dam. The dam consists of an earthen embankment (about 5,000 feet long and 75 feet high) and a reinforced concrete chute spillway.

PROJECT RELEVANCE
- H&H Analysis
- Geotechnical Analysis
- Spillway/Gate Analysis
- PFMA
- Programmatic Support
- Design
- Bid Documents
- Specifications
- Construction Administration

The initial phase of the project involved performing an updated engineering assessment and assisting MAWSS in developing a formalized dam safety program. As part of the assessment, Stantec provided a historic records review; field reconnaissance; screening-level slope stability analyses; needs assessment (data gap analysis); Potential Failure Mode Analysis (PFMA); screening-level risk evaluations; development of a Dam Safety Program Manual; and dam safety training for MAWSS staff. A subsequent geotechnical study included field drilling and sampling, installation of piezometers, in-situ slug testing of piezometers, and geotechnical laboratory testing.

In Phase II, Stantec addressed data gaps at the dam. Services included development of seepage weir monitoring plans for toe drain outlets of the dam and chute spillway, detailed slope stability and seepage analyses, internal erosion evaluation of the dam and spillway, updated hydrologic analysis of the watershed to confirm current design storm events, and updated hydraulic modeling of the chute spillway to evaluate current spillway capacity and existing erosion protection measures installed along each spillway wall. We also evaluated the spillway slab underdrains and wall drainage system as part of an overall risk assessment. Stantec also updated the following: risk evaluation and PFMA, dam breach analysis and inundation mapping, Emergency Action Plan (EAP), dam safety manual and operations and maintenance manual. Stantec also developed dam safety training materials, conducted dam safety training sessions, and facilitated a tabletop EAP exercise.

Most recently, Stantec provided design services to automate the seven tainter gates at the chute spillway with independently controlled "torque-tube" wire rope hoists. These can be manually or remotely controlled/operated on site, at a new control building, or at MAWSS's office. Other design features include replacement of the gate guide rollers, installation of a new pre-fab control building, construction of a gravel lot site access, installation of a stand-by generator with canopy, utility boring/coordination, permanent lighting, HD cameras for monitoring of gate operations, various site security features, and SCADA communications. Stantec developed design and bid documents, as well as permit coordination for the gate automation project. Stantec is currently providing construction administration and site observation services.

Stantec's ancillary services to support of MAWSS' dam safety program include monthly inspection data review, annual instrumentation assessments, and performance of a 5-year formal inspection of the dam and spillway. Future work is anticipated to include design of a stability toe berm for the dam, and updates to the dam safety program manual, and the operations and maintenance plan for the dam.

TEAM MEMBERS INVOLVED: **J. KEELING, A. RAUCH, D. GILBERT, P. SMITH, M. MEEHAN, K. GANJI, M. MORGAN**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**TVA Dam Safety Assurance Program**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Tennessee Valley Authority**
PROJECT LOCATION	**Tennessee, Alabama, North Carolina, Georgia, and Virginia**	OWNER'S PROJECT MANAGER	**Karen Officer-Bell**
OWNER'S ADDRESS, PHONE, EMAIL	**400 West Summit Hill Drive, Knoxville, TN 37902 | 423-751-6384 | kaobell@tva.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**09/12**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$57,500**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**12/21**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$42,500**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

In August of 2012, the Tennessee Valley Authority (TVA) initiated a program to perform global stability and internal erosion evaluations of all 49 facilities in its river operations portfolio. The evaluations were the initial phase of an improvement campaign to make sure TVA's dams meet today's stringent dam safety standards. Stantec has supported TVA since 2012 performing evaluations, analysis refinements and designing dam modifications.

PROJECT RELEVANCE
- Data Gap Analysis
- H&H Analysis
- Geotechnical Analysis
- Outlet Structure Assessments
- Risk Assessments (PFMA, SQRA)
- Design
- Construction Documents

Our global stability and internal erosion evaluations included stability analyses and internal erosion evaluations for 22 of TVA's 49 dams. Stantec evaluated more than 50 dam structures, including saddle dam structures. Structures at these facilities were comprised of concrete gravity dams, earth embankments, and rockfill dams. The dams lie within the Tennessee River Valley watershed, and range in size up to 330-feet-tall and over 8,000-feet- long.

As part of the evaluations, Stantec performed data mining and historical records review, screening level stability analyses, data gap assessments, field studies, laboratory testing, developed task analysis criteria, performed stability analyses, calculations, probable failure mode analyses (PFMA), internal erosion evaluations, and detailed reporting. Additional evaluations included tainter gates, chute spillways, inlet/outlet works, floodwalls, and ancillary structures. These evaluation projects were performed on aggressive schedules as part of the nuclear licensing requirements of Watts Bar Nuclear Plant Unit 2. The majority of the evaluations were performed within an 11 to 13 month time-frame. In many instances, little to no post construction data or instrumentation was available for these facilities, resulting in significant data gaps that had to be addressed.

Our evaluations provided the foundation for TVA's risk informed decision making process. As part of this, Stantec supported TVA in performing Issue Evaluations at numerous sites which in turn supported semi-qualitative risk assessments (SQRAs). Issue Evaluations were performed for seismic issues, internal erosion, instability, and overtopping potential failure mode analyses (PFMs). Stantec supported the SQRAs by assembling information and serving as technical support.

TVA used the findings from our global stability, internal erosion, and Issue evaluations to identify dam safety risks and prioritize design modifications. Stantec supported TVA in addressing these risks across their portfolio of dam facilities. Stantec designed and provided construction quality assurance services for the mitigation of probable failure modes involving probable maximum flood (PMF) overtopping, seismic instability, concrete gravity dam global and lift joint instability, embankment dam instability, internal erosion, gate instability, spillway capacity, seepage management, and heave/blowouts at the toe of the dam.

TEAM MEMBERS INVOLVED: **A. RAUCH, D. GILBERT, M. MEEHAN, B. TUCKER, B. WEBSTER, M. HOY, K. GANJI**

17. **Firm Experience:**

FIRM NAME	**Stantec Consulting Services Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**Chatuge Dam Spillway Evaluation and Risk Assessment**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Tennessee Valley Authority**
PROJECT LOCATION	**Clay County, North Carolina**	OWNER'S PROJECT MANAGER	**Dolly Novak**
OWNER'S ADDRESS, PHONE, EMAIL	**1101 Market Street, Chattanooga, TN 37402 | 423-751-4053 | dnovak@tva.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**03/19**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$2,300**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**12/21**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$2,100**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

TVA has adopted risk-informed decision-making (RIDM) to assess the safety, recommend safety improvements, and prioritize capital improvements for it's portfolio of dams. Based on lessons learned from the Oroville Dam spillway incident in 2017, they initiated a multi-phase spillway assessment program at Chatuge Dam to determine if similar flaws exist.

PROJECT RELEVANCE
- Data Gap Analysis
- H&H Evaluation
- Geotechnical Evaluations
- Hydraulic Structure Evaluations
- Risk Assessment (PFMA, QRA)
- Alternatives Evaluation
- Repair Design
- Construction Documents
- Construction CQA Services

Phase 1: Stantec performed 1-D and 2-D hydraulic modeling of the existing 1,350-ft long concrete chute spillway to assess capacity and overtopping potential considering updated hydrology previously performed by TVA. The modeling was performed using a 1-D water profile program developed by the USBR (ZProf), a 1-D supercritical flow model for prismatic channels (SpillwayPRO), as well as HEC-RAS. Model results were compiled into a hydraulic study report and provided to the assessment team. Results indicated cross waves and significant potential for spillway overtopping during high flow events, and an increased risk of associated PFMs that pointed to a need for better understanding of overall spillway risks.

Phase 2: A QRA was performed by a Joint Project Team (JPT) comprised of subject matter experts (SMEs) from Stantec and TVA. Issue evaluation investigations were conducted to improve understanding of the spillway, reduce uncertainty and improve confidence in risk estimates. Evaluations included structural and geotechnical investigations; hydraulic, erosion, and uplift calculations; spillway drainage modeling; level-pool routing and application of flood frequency modeling (RMC-RFA and RMC-BestFit in lieu of HEC-SSP); downstream consequences estimation performing dam-breach modeling (HEC-RAS) and consequences modeling (updated HEC-FIA model parameters for use in HEC-LifeSim); and developing and stochastically simulating event trees in @Risk-PrecisionTree models.

The JPT identified PFMs, developed event trees, estimated failure probabilities (by expert elicitation), and estimated failure consequences for the existing spillway, including the downstream consequences associated with the higher risk PFMS. The JPT also identified interim risk reduction measures (IRRMs) and estimated the risk reduction that could be gained by implementation. These activities completed in a series of project workshops. Stantec facilitated a PFM Analysis and several QRA workshops and provided an SME from structural, geotechnical, civil, and H&H engineering disciplines to participate in the risk assessments.

Concurrent with the second phase, selected IRRMs related to repair of the spillway were evaluated. Stantec prepared conceptual repair alternatives, performed an alternatives analysis, and designed the preferred alternative. Following review and concurrence with the JPT, Stantec completed construction documents for the selected IRRM. TVA initiated construction of the interim repairs in 2021, and work is anticipated to be complete in early 2022. Stantec is the Engineer of Record for the project and is providing full-time CQA services. Final deliverables will include record drawings, field reports, and a construction completion report.

TEAM MEMBERS INVOLVED: **J. KEELING, B. WEBSTER, D. GILBERT, A. RAUCH, B. TUCKER, M. MEEHAN, K. NEFF, R. BISNETT, P. SMITH**

17. **Firm Experience:**

FIRM NAME	**ECM Consultants, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Data Collection, Hydraulic and Hydrology**
PROJECT NAME	**Dam Breach Analysis, Inundation Mapping & Development of Emergency Action Plans for LA State Regulated Dams**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**LADOTD**
PROJECT LOCATION	**Various Locations**	OWNER'S PROJECT MANAGER	**Ed Knight, PE**
OWNER'S ADDRESS, PHONE, EMAIL	**P.O. Box 94245, Baton Rouge, LA 70804 | 225-379-3007**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**01/13**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$4,050**
SERVICES COMPEED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$4,050**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Our team prepared comprehensive breach analyses, prepared inundation maps, and EAPs for 35 dams with high or significant hazard classifications as required by the State Dam Safety Rules and Regulations and the Federal Emergency Management Agency (FEMA).

The analyses were performed to update the flood inundation maps and EAPs for each dam. The projects have involved developing HEC-RAS models to establish the magnitude of the inundation area, peak flood elevations, arrival times of the peak flood, and elevations at critical locations. This was done under an IDIQ contract with LADOTD. Our team has been providing inspections and dam engineering services to DOTD for the past 10 years under three consecutive retainer contracts. The following are two examples of significant hazard dams for which breach analysis, inundation maps and EAPs were prepared.

Notable dams are:

Loch Carden Dam is located in St. Tammany Parish near 554 Tartan Trace in Covington. The construction of Loch Carden Dam was completed in 1980. The dam consists of an earthen embankment 770-feet long with an attached 40-foot-wide earthen spillway located at the north end of the embankment. The approximate crest elevation of the dam is 146.5 ft. The lake has a maximum pool surface area of approximately 33.7 acres, a watershed of 1.08 square miles, and a maximum pool storage of 320 acre-ft. Loch Carden Dam was constructed for recreational purposes.

Our team performed field reconnaissance, dam breach analysis, hydrologic and hydraulic modeling of watersheds using LiDAR survey data, prepared inundation maps and EAP report as required by the State Dam Safety Rules and Regulations and FEMA. The dam breach analysis was calculated from "sunny day" conditions with resulting flow routed downstream. ArcGIS, HEC-RAS, and HEC-GeoRAS software was used in the analysis. We prepared the dam breach analysis using Simplified Engineering Analysis Method and prepared an Emergency Action Plan report following Federal Guidelines for Emergency Action Planning for Dams (FEMA Publication No. P-64).

Longville Lake dam in Beauregard Parish is 2,300 feet long, 10 feet in height. The structure includes a 100-foot-wide ungated saddle spillway across Solar Loop and 2,200 feet of embankment to the south of the spillway and below Solar Loop Road. It is high hazard dam and Solar Loop Road runs on top the dam. It was designed and constructed by L.O. Fletcher and completed in 1950. ECM performed an inspection, breach analysis, and prepared an Emergency Action Plan for the Longville Lake dam. The dam breach analyses was performed using an abridged engineering analysis method and utilized 5-meter digital elevation model (DEM) and the US geological Survey (USGS) topographic maps. U.S. Army Corps of Engineer's HEC-RAS and ARC GIS software was used for the modeling. For this model, an overtopping scenario was selected as allowed by the Louisiana Dam Safety Rules and Regulations and an Emergency Action Plan was prepared conforming to DOTD format and conforming to Federal Guidelines for Emergency Action Planning for Dams (FEMA Publication No. P-64).

TEAM MEMBERS INVOLVED: **JOHN RASI, PE**

17. **Firm Experience:**

FIRM NAME	**ECM Consultants, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Hydraulic and Hydrology**
PROJECT NAME	**Louisiana Watershed Initiative**	FIRM RESPONSIBILITY (prime or sub?)	**Sub**
PROJECT NUMBER	**20429**	OWNER'S NAME	**State of Louisiana OCD**
PROJECT LOCATION	**East Baton Rouge Parish, LA**	OWNER'S PROJECT MANAGER	**Michael Donahue**
OWNER'S ADDRESS, PHONE, EMAIL	**1201 N. Third Street, Suite 7-210, Baton Rouge, LA, 70802 | 734-646-4638 | michael.donahue@aecom.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**01/21**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**N/A**
SERVICES COMPEED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$127**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

ECM is providing policy and program development and watershed modeling support for the Louisiana Watershed Initiative (LWI) which is a state program that was created to address Louisiana's continuing problems with flooding.

The great flooding of 2016 demonstrated how susceptible our communities are to sever flooding. The frequency of severe flooding and damages as the result of storm and hurricane events have been on the rise in the past years and has affected every parish in our state. LWI goal is to proactively plan against future flood risk.

The LWI management program is based on statewide floodplain watersheds tied to land use, policies, infrastructure improvements and priorities among all parishes in the state of Louisiana. The goal of the LWI to coordinate effort by state, federal, or parish governments as a group to address the ongoing flooding issues within the state. That includes multiple state departments and agencies that operate independently of each other in addressing flooding issues unique to their agency and local communities.

Louisiana Watershed initiative currently creating accurate hydraulic and hydrologic one and two-dimensional computer models to better understand flood risk and help with selection of projects for each watershed region.

ECM is serving as a subconsultant to AECOM for program management of $1.2 billion from US HUD Community Development Block Grant mitigation for the Louisiana Watershed initiative to identify watershed improvements, planning, policy and fund qualified project for design and construction.

ECM will continue to provide policy and program development, technical support and evaluation, project management for data and modeling activities and coordination.

TEAM MEMBERS INVOLVED: **JOHN RASI, PE**

17. **Firm Experience:**

FIRM NAME	**ECM Consultants, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Environmental, Hydraulic and Hydrology**
PROJECT NAME	**Lake Bennett Water Shed Hydraulic Analysis & Modeling for Development of Watershed Plan & Environmental Documentation**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**USDA-NCRS**
PROJECT LOCATION	**Faulkner County, AR**	OWNER'S PROJECT MANAGER	**Chris King**
OWNER'S ADDRESS, PHONE, EMAIL	**501-301-3156 | Chris.king@ar.usda.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**09/20**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$519**
SERVICES COMPEED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$143**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Under a $10 million, 5 year IDIQ prime contract with USDA-NRCS, ECM in association with AECOM and M&E is providing planning, H&H analysis and modeling services for the complete development of a Watershed Plan – Environmental Document (Plan-ED) for the approximately 2,500 Acre area of Lake Bennett Watershed.

This watershed is located upstream of Arkansas State Highway 285. ECM Team formulating recommendation with most technically, economically, socially, and environmentally acceptable alternatives with defensible rationale. The project also involves the guiding Natural Resources Conservation Service (NRCS) in determining the appropriate environmental document needed for this federal action – Environmental Assessment or Environmental Impact Statement

ECM is responsible for all hydraulic and hydrologic analysis of this task. ECM has developed all the necessary hydrologic and hydraulic characteristics of the Lake Bennett drainage basin necessary for the design of a new dam. This included the obtaining data via ArcGIS, development of the Stage – Area curve upstream of the dam and the determination of the drainage area. After determining the land use for the drainage basin, the CN value for the drainage basin was calculated. Finally, ECM determine both the Time of Concentration (Tc) and the Lag Time, Tlag, that was used in the SCS Unit Hydrograph.

This information was used to the size up a new spillway using NRCS' SITES software. ECM is also developing the flood profile downstream of the dam for storms from 1 year to 500 years. HEC-HMS software is being used to develop the peak flow discharge values along the discharge stream, Black Fork, which was later used in HEC-RAS. The analysis required the development of two separate scenarios. These scenarios included the existing and the new conditions.

The results of the HEC-HMS and HEC-RAS study for storms from 1 year to 500 years will be used by the economics member of the team to develop a benefit cost study. The economic study should provide benefits that exceed the cost of a new dam

TEAM MEMBERS INVOLVED: **JOHN RASI, PE**

17. **Firm Experience:**

FIRM NAME	**ECM Consultants, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Environmental, Hydraulic and Hydrology**
PROJECT NAME	**Drainage Study & Design for flood mitigation in Sims Creek and Haven Subdivision**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**4277**	OWNER'S NAME	**Tangipahoa Drainage District #1**
PROJECT LOCATION	**Tangipahoa Parish, Louisiana**	OWNER'S PROJECT MANAGER	**Kiley Bates**
OWNER'S ADDRESS, PHONE, EMAIL	**48571 Hwy 51, Tickfaw, LA 70466 | 985-542-4292**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**03/19**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$136**
SERVICES COMPEED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$136**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

ECM is performing engineering study and design for flood mitigation of the Haven subdivision which is located just south of Interstate 12 and off LA 445 in Tangipahoa Parish.

The results have been in the and now ECM completed final H&H analysis and modeling and presented findings to Parish administration and public meeting to recommend alternatives for selection. The subdivision is located adjacent to Sims Creek which ultimately flows into the Tangipahoa River. Streets and homes near Sims Creek experience frequent and significant flooding

The drainage basin just upstream of the subdivision and north of Interstate 12 on Sims Creek is between 700 to 800 acres. This upstream sub-catchment has a significant slope which produces a quick runoff. Sims Creek at the Haven subdivision has a relativity flat slope. As a result, the headwater arrives with no place to go which pushes into the subdivision. The subdivision experiences both head water issues within the subdivision caused by the swales, and it experiences serious backwater flooding from Sims Creek which causes significant flooding of homes and streets especially those near Sims Creek

Based on modeling and H&H analysis and public input there are two possible solutions. The first solution would be to improve Sims Creek downstream of the Haven subdivision. The second solution would be to isolate the Havens subdivision with a ring levee and a pump station.

The existing Sims Creek is undersized and overgrown with trees and all road crossings downstream cause significant backwater problems upstream. Currently, Sims Creek for a 10-year rain return event with no improvements overtops about fifty percent of the streets within the subdivision. The initial study shows that improvements to Sims Creek, road crossings over Sims Creek, right-of-way acquisition, and the removal of several homes too close to Sims Creek downstream of the Haven. These improvements would drop the water surface of Sims Creek near the Haven subdivision about 2.5'.

Another alternative solution is construction of ring levee with a pump station. There is an existing lake within the subdivision that can be used as sump for the pump station. The lake can be enlarged for the pump station. The soil from the enlarged lake can be used to create the levee.

TEAM MEMBERS INVOLVED: **JOHN RASI, PE**

17. **Firm Experience:**

GeoEngineers

FIRM NAME	**GeoEngineers, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**United Methodist Church Conference Center Dam and Lake Construction**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Barron, Heinburg & Brocato**
PROJECT LOCATION	**Woodworth, Louisiana**	OWNER'S PROJECT MANAGER	**Thilo Steinschulte, A.I.A./Jay Lynch**
OWNER'S ADDRESS, PHONE, EMAIL	**437 Water Works Way, Newport News, VA 23608 | 757-897-5319 | enice@nnva.gov**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**04/90**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**12/94**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$333**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

Feasibility Study
GeoEngineers' work began with a Feasibility Study for the creation of a 38-acre scenic and recreational lake in Woodworth, Louisiana. The study evaluated soil conditions along the proposed lake bottom and at the proposed levee locations for permeability, seepage and potentially required soil amendments. The preliminary geotechnical investigation was comprised of 7 borings.

Geotechnical Investigation
75 additional borings and associated laboratory testing were conducted to evaluate and characterize the site's soil for lake and dam design. The final lake was designed at the 82-foot contour to provide adequate consistent depth greater than 6 feet and avoid weed growth. The final dam design considered soil bearing pressure, settlement, dam seepage and under seepage and dam stability. Dam seepage and under seepage was based upon a 100-year event which amounted to 11 inches of rain over a 24-hour period or 8 inches of rain during a 6-hour event. An interlocking steel sheet pile cutoff wall was recommended beneath the entire dam length to reduce under seepage and connectivity with the underlaying clay layer. The lake design resulted in the development of cut-to-fill ratio and identified 4 potential borrow sites within the project area to supply the necessary clay soil fill.

Hydrological and Hydraulics Investigation
GeoEngineers conducted HEC-1 model simulations of the proposed dam design in accordance with provisions of the Louisiana State Dam Safety Program and submitted it for review and approval of LA DOTD. The models evaluated up to 100-year events based upon probable maximum precipitation during both 24-hour and 6-hour rainfall events. Scenarios evaluated included the design storm routing, a 100-year event with a safety factor of 1.3; a "fair weather" dam breach; PMP topping/breach analysis and PMP topping/breach analysis with an emergency spillway. The simulation analysis showed the proposed design of the dam and spillway to be adequate for a variety of catastrophic conditions. GeoEngineers concluded the dam should be considered a low hazard category since a failure would neither jeopardize human life nor create damages beyond the owner's financial capabilities. The church owned the property downstream of the dam, so the structure was determined to be a low impact facility.

As-Built Drawings, Construction and Post Construction Monitoring
The team conducted on-site monitoring during and after construction of the lake and dam. Deficiencies were noted, evaluated and when applicable, a remediation plan was developed and executed. (100 % of work performed in Louisiana. Team Members: Sauls)

17. **Firm Experience:**

GeoEngineers

FIRM NAME	**GeoEngineers, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**White Castle Bank Stabilization**	FIRM RESPONSIBILITY (prime or sub?)	**Sub**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**El Paso Corporation**
PROJECT LOCATION	**White Castle, Louisiana**	OWNER'S PROJECT MANAGER	**Chris Odom (Pyburn & Odom)**
OWNER'S ADDRESS, PHONE, EMAIL	**8178 GSRI Avenue, Bldg. A, Baton Rouge, LA 70820; (225) 766-6330; codom@pyodom-mca.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**03/08**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**12/08**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$327**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

GeoEngineers conducted geotechnical analyses for Pyburn & Odom, Inc., the lead consulting engineer, to evaluate slope stability of the Mississippi River levee, in the scoured condition and provide analyses for recommended solutions.

We used existing USACE soil data to evaluate different alternatives to cover pipelines and increase the Mississippi River Levees safety factor to meet USACE requirements. The improvements were immediately designed and approved by the USACE and the repairs were initiated in March, 2007. The repairs, consisting of over 100,000 tons of riprap were completed in a few weeks with no impact, to the Federal Levee Protection.

(100 % of work performed in Louisiana. Team Members: Sauls)

17. **Firm Experience:**

GeoEngineers

FIRM NAME	**GeoEngineers, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**L'Auberge Casino and Hotel**	FIRM RESPONSIBILITY (prime or sub?)	**Sub**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Dallas Water Utilities**
PROJECT LOCATION	**Baton Rouge, Louisiana**	OWNER'S PROJECT MANAGER	**Mark Mihm**
OWNER'S ADDRESS, PHONE, EMAIL	**777 L'Auberge Ave., Baton Rouge, LA 70820; (225) 765-7400; steve.boudreaux@stantec.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**08/10**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**2012**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$1,650**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

GeoEngineers was the lead geotechnical engineer for the L'Auberge Casino project in Baton Rouge, Louisiana. Pinnacle's design called for placing the floating casino building on the Mississippi River batture, a strip of land between the levee and main channel that is subject to annual flooding. GeoEngineers provided geotechnical investigation and engineering for the entire site as well as construction monitoring for design aspects in proximity or on the Mississippi River levee. Geotechnical design challenges included:

- Design a stable, water-tight earthen dike and T-wall containment basin on the **Mississippi River batture**, in which the casino barges float during low river levels.Design a T-wall along the river side of the basin to maintain adequate **river bank stability** by narrowing the basin.
- Design and installation of 135-foot-long, 42-inch-diameter steel pipe piles to anchor the three barges.
- Design and installation of hundreds of 18-inch-diameter auger-cast piles on the batture and on the protected side of the levee for a hotel, 800-car parking garage, facilities adjacent to the floating casino and utility/support facilities.
- Determine a degraded batture section to provide the required **stability factors of safety at the river bank (remove natural alluvial deposits from the batture).**
- Evaluate bearing capacity and slope stability factors of safety with construction of a ground-supported concrete circular access ramp over the levee supported by shallow foundations bearing on the levee.
- Estimate settlement and design fill heights to maintain the design levee elevation after construction of the circular access ramp bearing on the levee.
- Placement and compaction of earthen fill for realignment of River Road in accordance with Louisiana Department of Transportation and Development Requirements.
- GeoEngineers worked closely with multiple parties, including L'Auberge, the site civil engineer, contractors, the levee board, CPRA, the USACE, and other entities involved with this complex project in a marine environment.

Added Value: There were significant design challenges associated with supporting the circular access drive on shallow foundations **directly bearing on the levee**. Settlement, a complex curved geometry crossing a straight levee, an **excavated basin adjacent to the levee toe**, and varying river level conditions required multiple iterations of slope stability, including mass balance evaluations to reflect the three-dimensional problem geometry. Ultimately GeoEngineers was able to work with all parties to establish a design section that met USACE standards and project requirements. An extensive inclinometer monitoring program with remote monitoring was established, and GeoEngineers was **retained through construction to monitor levee integrity**. (100 % of work performed in Louisiana. Team Members: Sant, Sauls)

17. **Firm Experience:**

GeoEngineers

FIRM NAME	**GeoEngineers, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**USACE, Permanent Canal Closures and Pumps, Route LA 10**	FIRM RESPONSIBILITY (prime or sub?)	**Sub**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**PND Engineers, Inc.**
PROJECT LOCATION	**New Orleans, Louisiana**	OWNER'S PROJECT MANAGER	**Mike Huggins**
OWNER'S ADDRESS, PHONE, EMAIL	**PO Box 94245, Baton Rouge, LA 70816; (225) 379-1821; mhuggins@pndengineers.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**2013**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**2014**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$377**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

GeoEngineers provided numerical modeling of the cofferdam constructed at the 17th Street Canal, London Avenue Canal and Orleans Avenue Canal sites for the Permanent Canal Closure and Pump (PCCP) project in New Orleans, Louisiana. The PCCP project includes **constructing a pump station** at each project site that will move rainwater out of the canal and into Lake Pontchartrain during a tropical weather event. The construction of the pump station requires an excavation up to 54 feet deep completed under water and the cofferdam is designed to resist up to 47 feet of differential water pressure when the excavation is fully dewatered during the construction of the pump station. **This is the deepest shored excavation attempted in New Orleans.**

GeoEngineers completed **extensive three-dimensional numerical modeling** using the PLAXIS 3D to evaluate the performance of the cofferdams under fully dewatered conditions and to evaluate the impacts of the cofferdams deformations to the adjacent existing structures and future buildings that will be constructed adjacent to the cofferdams. The results of our PLAXIS 3D analyses provide information that incorporates the soil-structure interaction effects such as the design earth pressure, estimated soil and sheet pile deformation and the estimated sheet pile stresses for consideration by designer of the cofferdams. Our analyses were peer reviewed by two third-party reviewers, one retained by the US Army Corps of Engineers, and the other retained by the design-build project team. Contractors successfully constructed the cofferdams and the actual performance has performed in line with our numerical modeling results and predictions.

(100% of work performed in Louisiana. Team Members: Cotton)

17. **Firm Experience:**

GeoEngineers

FIRM NAME	**GeoEngineers, Inc.**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Geotech**
PROJECT NAME	**EPA-Mandated Dam Safety Inspections & Ash Basins**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**NRG Louisiana Generating**
PROJECT LOCATION	**Point Coupee Parish, Louisiana**	OWNER'S PROJECT MANAGER	**Gary Ellender (NRG Energy, Inc.)**
OWNER'S ADDRESS, PHONE, EMAIL	**10431 Hwy 981, New Roads, LA 70760; (225) 638-3773; gary.ellender@nrgenergy.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**2011**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**2016**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$55,700**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

GeoEngineers provided EPA-mandated, semi-annual dam safety inspections and several related geotechnical engineering services for levee maintenance design and recommendations at the Big Cajun II Generation Site. This included: reconnaissance of the entire impoundment (298 acres of the property from outside toe to outside toe) inclusive of scheduling, notification and reporting; an evaluation of slope stability and hydrologic/hydraulic safety of the five Ash Basins/Wastewater Treatment Ponds; and recommendations regarding repair for the reported appearance of sloughing in isolated areas during several separate events during these years. The Big Cajun II plant includes five industrial Solid Waste Surface Impoundments that impoundments occupy approximately 298 acres of the property (outside toe to outside toe) including: Fly Ash Basin; Bottom Ash Basin; Primary Treatment Pond; Secondary Treatment Pond; and the below-grade Rainfall Surge Reservoir. This initial design was based on several hundred geotechnical borings, laboratory testing and engineering analyses for the design and construction recommendations.

(100% of work performed in Louisiana. Team Members: Sant, Sauls)

17. **Firm Experience:**

FIRM NAME	**T. Baker Smith, LLC**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Survey**
PROJECT NAME	**St. James Parish, LA**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**TE-113**	OWNER'S NAME	**St. James Parish Council**
PROJECT LOCATION	**Terrebonne Parish, LA**	OWNER'S PROJECT MANAGER	**Blaise Gravois**
OWNER'S ADDRESS, PHONE, EMAIL	**PO Box 106, Convent, LA 70723; 225.562.2262; Blaise.Gravois@stjamesla.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**08/16**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**01/17**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$275**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

PROJECT RELEVANCE
- Topographic Survey
- ROW Map

TBS analyzed the proposed pilot pump station project for the Lutcher area along Woods Canal (Lutcher Ave.) in Lutcher, LA. The Parish was considering a pilot pump station(s) north of LA 3125 to help drain the Lutcher area in high backwater events. The proposed drainage area encompassed approximately +/- 520 acres from 3rd Street along the eastern boundary, to Lionel Washington Street at the western boundary and the CN Railroad to LA 3125.

TBS provided site reconnaissance and topographic surveying of major drainage structures along LA 3125, cross sections on major channels/structures, major structures under the CN Railroad, and topography at locations needed to analyze storm water runoff and model the area for pumping analysis. Once the analysis for the pilot pump station project was conducted and the proposed project cost estimate was prepared, anticipated benefits and alternate considerations were evaluated and presented in a report and discussed with St. James Parish stakeholders.

TEAM MEMBERS INVOLVED: **MATTHEW LEDET, PLS; RENE HEBERT, PLS**

17. **Firm Experience:**

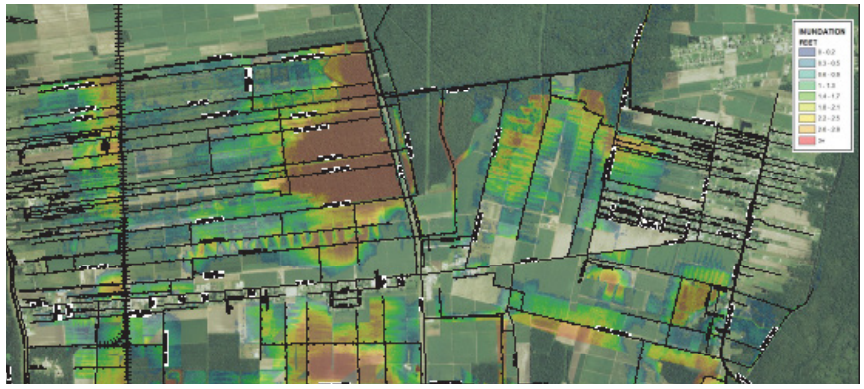
FIRM NAME	**T. Baker Smith, LLC**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Survey**
PROJECT NAME	**Vacherie Area Drainage Study and Improvements**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**St. James Parish Council**
PROJECT LOCATION	**St. James Parish, LA**	OWNER'S PROJECT MANAGER	**Jody Chenier**
OWNER'S ADDRESS, PHONE, EMAIL	**PO Box 106, Convent, LA 70723; 225.562.2262; Jody.Chenier@stjamesla.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**08/14**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**Unknown**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**04/16**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$255**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

PROJECT RELEVANCE
- Topographic Survey

The purpose of this drainage study was to outline the existing drainage system of the project area and recommend improvements to the area's drainage system in an effort to alleviate flooding. The objective was to develop a drainage improvements plan for the study area in Vacherie, LA located along the Mississippi River on the West Bank of St. James Parish, Louisiana. The entire drainage area encompasses approximately 12.75 square miles (8,160 acres) of land that drains via gravity flow to several major canals namely Bayou Lassene, Coteau (Brazan) Canal, Vacherie Canal, the Dredge Boat Canal, and Bayou Chevreuil - all of which ultimately drain into Lac Des Allemands to the southeast. The Vacherie area floods in certain locations from high-intensity, short duration storms that exceed the design capacity of the current drainage system. TBS was engaged by the St. James Parish Government in August, 2014 to evaluate the existing drainage system and recommend improvements to the system in order to help reduce the flooding within the study area.

TBS collected survey data throughout the study area for nearly all major drainage features using RTK GPS survey equipment. Six major drainage basins were established for the area of study using existing topographical features as drainage boundaries (LA 20, LA 3217, and the UP Railroad). The major drainage basins were then divided into a total of 103 sub basins. After reviewing the results from the existing conditions HEC-RAS model and comparing it to the known problem areas, TBS developed a list of proposed improvements and entered them into the model. The recommended improvements to the study area were based on analyzing the 10, 25, 50, and 100-year storm events.



TEAM MEMBERS INVOLVED: **MATTHEW LEDET, PLS**

17. **Firm Experience:**

FIRM NAME	**T. Baker Smith, LLC**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Survey**
PROJECT NAME	**Bayou Chene Flood Control**	FIRM RESPONSIBILITY (prime or sub?)	**Sub**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**St. Mary Levee District**
PROJECT LOCATION	**St. Mary Parish, LA**	OWNER'S PROJECT MANAGER	**Tim Matte**
OWNER'S ADDRESS, PHONE, EMAIL	**7327 Hwy 182 E, Morgan City, LA 70380, 985.380.5500, timmatte@smld.org**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**12/18**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$1,461**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**Ongoing**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$1,461**

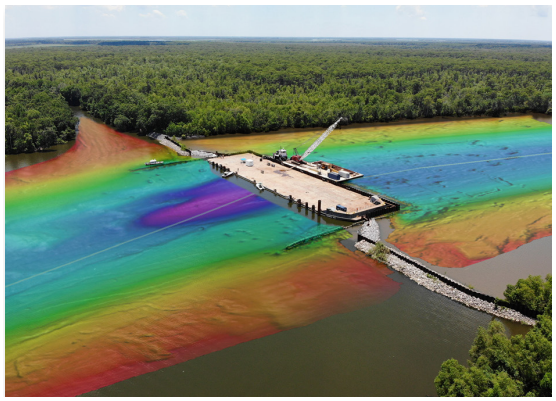
Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

The eastern portion of St. Mary Parish, along with portions of Terrebonne, Assumption, Lafourche, and St. Martin Parishes, required a permanent solution to backwater flooding at times of high water in the Mississippi and Atchafalaya Rivers. The proposed project consists of levee alignments and water control structures on Bayou Chene in the vicinity of Amelia, Louisiana.

PROJECT RELEVANCE
- Topographic & Bathymetric Survey

Following the success of the emergency closure project on Bayou Chene in 2011, St. Mary Levee District decided to utilize nearly an identical alignment for a permanent flood control project. The proposed system includes a steel barge gate at Bayou Chene, three canal closures/water control structures, and approximately nine miles of flanking levees and floodwalls, which will connect the structure with the Bayou Boeuf locks. T. Baker Smith (TBS) was responsible for planning floodwall and levee design, water control structures, pipeline canal closures, dredging, demolition of existing structures, and shoreline stabilization. TBS also acquired permits for restoration work associated with the initial emergency structure; approximately 300 cypress seedlings were planted on Avoca Island.

TBS is providing the following services for this project:
- Initial site inspection
- Topographic surveys
- Multi-beam bathymetric surveys
- Pipeline surveys
- Engineering drawings
- Cost estimates
- Geotechnical oversight
- Permit acquisition
- Right-of-way mapping
- Landowner coordination
- Wetlands delineation study
- Agency coordination
- Project administration



TEAM MEMBERS INVOLVED: **RENE HEBERT, PLS**

17. **Firm Experience:**

FIRM NAME	**T. Baker Smith, LLC**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Survey**
PROJECT NAME	**Morgan City Levee & Pump Station Improvements**	FIRM RESPONSIBILITY (prime or sub?)	**Prime**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Consolidated Gravity Drainage District No. 2 of St. Mary Parish**
PROJECT LOCATION	**St. Mary Parish, LA**	OWNER'S PROJECT MANAGER	**Jean-Paul Bourg**
OWNER'S ADDRESS, PHONE, EMAIL	**P.O. Box 48, Morgan City, LA, 985.380.5511, jbourg@stmaryparishla.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**09/13**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$1,730**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**08/20**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$1,730**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

PROJECT RELEVANCE
- Topographic & Bathymetric Survey

The recent changes in the National Flood Insurance Program, brought about by the Biggert Waters Act of 2012, are expected to have a tremendous impact on the Flood Insurance rates for properties located in and around Morgan City. The existing forced drainage levee system has been shown to be inadequate for protection of coastal flooding from the 1% annual storm event. The City of Morgan City, along with support from Drainage District No. 2, St. Mary Parish Government, and St. Mary Levee District, propose to reconstruct and elevate this forced drainage system to provide protection from the 1% annual storm and ultimately provide FEMA-accredited levee protection system for the residents of Morgan City.

T. Baker Smith (TBS) provided a preliminary project report, funded by St. Mary Drainage Dist. No. 2, to identify the most cost effective alignments and features for an accredited levee system surrounding Morgan City. The report was completed in March of 2013. The report presented system-wide improvements which could be completed within the total available project funds. This analysis ultimately provided a path forward for local government entities. In October 2013, TBS entered into a design contract with St. Mary Levee District and St. Mary Parish Government for the first two phases of the levee improvements project. These phases include approximately seven miles of levee reconstruction from the East Atchafalaya Basin protection levee to the Siracusaville Levee, which ties into the existing railroad tracks in Morgan City. The levee design consisted of a combination of earthen levees, flood walls, and elevating LA Hwy 70 to the proposed grade. In addition to the levee protection, TBS is performing an interior H&H analysis of the drainage to submit to FEMA and designing a 1,600 cfs pump station which includes six (6) 60" pumps with the option to add two (2) future 60" pumps. TBS will ultimately design 100% of the improvements and has completed construction on approximately 75% of the protection system around Morgan City.

TBS is providing the following services for this project:
- Preliminary Feasibility Study
- Topographic / Bathymetric Surveys
- Levee Design
- Flood Wall Design
- Pump Station
- Roadway Design Improvements
- H&H Modeling
- Environmental Surveys
- Regulatory / Permitting
- Bidding / Construction Admins

TEAM MEMBERS INVOLVED: **MATTHEW J. LEDET, PLS**

17. **Firm Experience:**

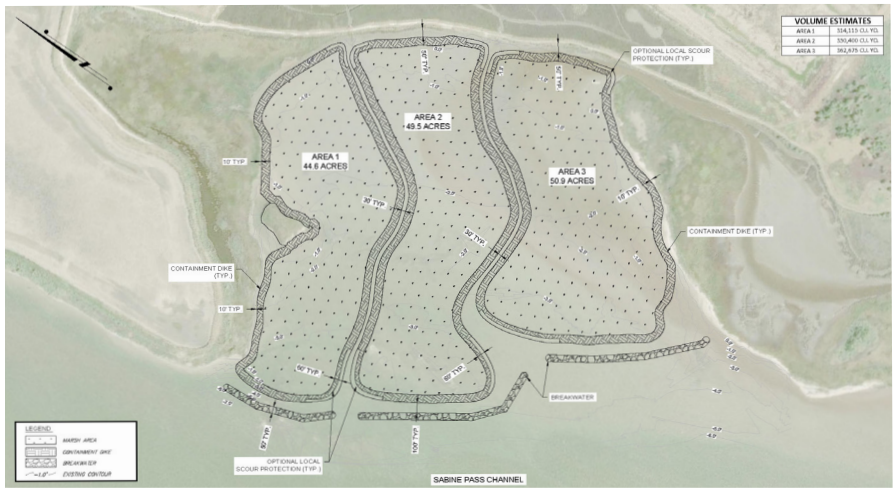
FIRM NAME	**T. Baker Smith, LLC**	PAST PERFORMANCE EVALUATION CATEGORY(IES)*	**Survey**
PROJECT NAME	**Sabine Pass LNG Third Berth Expansion**	FIRM RESPONSIBILITY (prime or sub?)	**Sub**
PROJECT NUMBER	**N/A**	OWNER'S NAME	**Sabine Pass LNG, L.P.**
PROJECT LOCATION	**Cameron Parish, LA**	OWNER'S PROJECT MANAGER	**Catherine Mayhew**
OWNER'S ADDRESS, PHONE, EMAIL	**9243 Gulf Beach Hwy, Cameron, LA 70631, 713.375.5000, Catherine.Mayhew@cheniere.com**		
SERVICES COMMENCED BY THIS FIRM (MM/YY)	**12/18**	TOTAL CONSULTANT CONTRACT COST ($1,000's)	**$451**
SERVICES COMPLETED BY THIS FIRM (MM/YY)	**08/20**	COST OF CONSULTANT SERVICES PROVIDED BY THIS FIRM ($1,000's)	**$451**

Describe the project including the firm's role and members involved. (Highlight members to be used in this proposal.)

PROJECT RELEVANCE
- Topographic & Bathymetric Survey

Cheniere Energy, Inc. (Cheniere) is building a new third marine berth for the Sabine Pass LNG Terminal. The project will impact approximately 27 acres of wetlands which will be mitigated through a proposed beneficial use of dredged material (BUDM) marsh creation site. The new berth will be adjacent to the Sabine Pass Channel and will generate approximately 3.6 million cubic yards of dredged material. The project is proposing to construct nearly 150 acres of marsh within Lighthouse Bayou utilizing over 1 million cubic yards of material with the remainder of the dredged material being pumped to Louisiana Point as beneficially to enhance marsh and beach habitats.

TBS provided the following services for the project:
- Topographic, bathymetric, geophysical, and hazard surveys
- Alternatives Assessment
- Mitigation Plan
- Permitting support
- Circulation Modeling
- Marsh Inundation Assessment
- Dredge Engineering
- Breakwater Design (Lightweight Aggregate Core)
- Construction Plans & Specifications
- Construction Admin
- Construction Representation



TEAM MEMBERS INVOLVED: **ADAM MECHE, PLS**

18. **Approach and Methodology:**
Provide a description of how the work will be performed and provide the proposed project schedule. Include any additional information or description of unique resources that are planned to be used to produce the deliverables. Include any proprietary technologies, methods or approaches that will be used on this project to improve quality or efficiency. If the proposal is for an IDIQ contract, the consultant should review the scope of services in Attachment A to the advertisement to obtain a general understanding of what a typical task order would entail. Based upon that understanding, the consultant should provide a sample schedule that identifies the major milestones, deliverables, tasks, etc., to demonstrate sufficient understanding of a typical task order. The duration of the task order is not required. This section shall be limited to four pages. If more than four pages are included, all pages after the fourth page will not be evaluated.

If the consultant has information it believes is proprietary, label it accordingly.

Stantec will work with DOTD to develop a phased approach to meet the anticipated project objectives to: (i) reduce/mitigate recurrent flooding primarily due to extreme rainfall events; and (ii) reduce the risk of catastrophic dam failure by modifying the structures at Black Bayou, Caney Lake, Bayou Cocodrie, Iatt Lake, and Turkey Creek to comply with current standards. We have utilized this approach working with numerous dam owners over the past 20 years to assess conditions, identify and address uncertainties, assess risk, develop and implement long-term risk reduction measures.

Our project team will support DOTD with our local presence in Louisiana who have flood control and DOTD experience. The local team will be supplemented with a deep, regional dam safety bench with experience programmatically assisting owners with their dam assets. We understand the need to advance the planning and design aspect of the schedule to advance the construction implementation phase of the project. As such, we have developed an efficient approach through the assessment and planning phase to initiate design services early in the project. The approach provides the ability to assess design alternatives earlier in the schedule based on costs, risks, environmental impacts, and constructability feasibility where that may include (i) dam hardening, spillway management, and debris management protection measures at Iatt Lake Dam; (ii) spillway improvements, embankment grading, and shoreline riprap protection at Black Bayou Dam; or (iii) where unique environmental or fishery requirements may need to be considered such as at Bayou Cocodrie Dam. Stantec also provides a large resource base of dam safety and applicable disciplines to advance the design on an aggressive schedule and execute each project in parallel. We will develop the project schedules to stagger project deliverables to reduce resource strain on DOTD in oversight of multiple parallel projects and prioritize working sessions (in-person or virtual) to review findings, design elements and deliverables.

Stantec has experience delivering both standards-based and risk-informed designs as well as working with dam owners to optimize dam safety risk reduction across their portfolio. Stantec has significant experience on similar structures to support DOTD prioritizing risk reduction measures within a fixed capital budget. We approach these projects collaboratively, using an efficient approach and decision-making framework, to consider the key elements of evaluating risk reduction across multiple facilities including project cost, environmental impacts, and risk during construction. There are benefits to using a unified risk-informed approach across both contracts in terms of consistency. We propose working with DOTD to develop a common framework to work across contracts and will collaborate across the joint team to support a portfolio risk-informed approach. Because we see opportunity for cost, schedule, and resource efficiency in execution of these projects, Stantec is submitting on both contracts.

Our project approach considers four major tasks: (i) planning; (ii) permitting support; (iii) design; and (iv) construction support. We intend to incorporate several workshops and review meetings during execution of the projects to support project execution, engage and incorporate DOTD input, discuss key issues, streamline reviews and support project decision making. Deliverables discussed in the following sections will go through a quality assurance/quality control (QA/QC) and independent technical review (ITR) process, which is part of Stantec's project delivery and quality management framework. All electronic deliverables will be submitted through the DOTD ProjectWise repository system, which the project team has experience using for past DOTD projects.

Task 1 – Planning

Work Planning

The initial task for the project includes a project kickoff meeting with DOTD and key stakeholders. After the meeting, work planning documents will be developed in collaboration with DOTD that will drive the success of each project and the program. The work plan will define lines of communication, quality assurance and quality control procedures, safety considerations and processes, and permitting strategy. An initial project baseline schedule will be developed in association with DOTD.

Data Review, Collection, and Gap Analysis

Stantec will review available existing data, which may include as-built drawings, inspection reports, topography, precipitation data, utility data, historical flood history, existing hydraulic and hydrologic models, geotechnical data or studies, and other relevant information. The intent of the literature review is to identify data gaps and identify where additional data collection and analysis is required to support subsequent

phases of the work. To limit duplication of effort, a tracking document will be developed to summarize the data acquired and files received from DOTD. The tracking document will also include a description of the relevancy to the project and who reviewed the information. The findings from the data gap analysis will be provided as a memorandum including recommendations on additional information to be obtained and its benefit to the project.

Hydraulic and Hydrologic Analysis

Hydrologic and hydraulic (H&H) analyses will be performed as part of the planning stage, and in parallel with the data gap analysis to streamline the project. A range of discharge events will be analyzed up to the event where the dam breach would not increase downstream hazards but no larger than the Probable Maximum Flood (PMF) event. Existing models developed by the Federal Emergency Management Agency (FEMA), the Louisiana Watershed Initiative's (LWI) Technical Design and Quality (TDI) group, and others will be used as applicable to limit duplication of effort for developing H&H models. Existing dam breach models, where available, will be used to select the largest flood modeled as part of the H&H analysis. If new dam breach evaluations are necessary, these will be performed based on criteria established from the Louisiana Dam Safety Rules and Regulations Manual.

A memorandum will be provided to DOTD prior to the start of modeling that details the software, methods, and existing data, models, and other pertinent information to be used. The general approach is anticipated to include the following:

Hydrologic Considerations –

- Modeling performed using Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS).
- LWI Guidance on Modeling Methodology used.
- Data from publicly available information and existing engineering reports/drawings acquired, which may include, probable maximum precipitation (PMP) data, National Resource Conservation Service (NRCS) hydrologic soil groups, topography, land use types, stage-storage relationship, and rating curves.

Hydraulic Considerations –

- Modeling performed in Hydraulic Engineering Center River Analysis System (HEC-RAS) v6.0.0.
- 1D modeling performed in less critical areas and 2D modeling performed in locations near the dam.
- LWI Guidance on Modeling Methodology used.

A draft Hydrologic and Hydraulic Analysis report summarizing the findings for each site will be provided. After DOTD review, the report will address DOTD review comments and be finalized.

Risk Assessment

To provide consistency across the program (Group 1 and 2 dams), we suggest using a common risk framework across both contracts. Stantec is an industry leader in dam safety and risk informed decision making (RIDM) and are confident we can support DOTD in implementing a risk-based approach to prioritize risk reduction measures across the dam groupings. Our approach to risk assessments is to tailor the framework to fit the needs of DOTD and program needs. Our experience will provide DOTD value through leveraging previously developed frameworks, tools and decision-making criteria.

Stantec has successfully facilitated numerous in-person and virtual risk analysis workshops in support of RIDM by using tools like Microsoft OneNote and SharePoint which allow participants easy access to relevant information and discussions. Questionnaires can be completed electronically using Microsoft Forms. Microsoft OneNote can be used to set up Probable Failure Mode (PFM) templates, including sketches of the PFM. Report content is easily summarized from the information documented, presenting a complete record of the discussion for each PFM and associated simi-qualitative risk assessments (SQRAs). Stantec is committed to working with DOTD to establish RIDM processes that fit within your existing program frameworks.

After completion of the PFMs, consequence assessments are performed which incorporate inundation mapping, dam breach analyses, and emergency action planning. We anticipate using LifeSim methodology and software to evaluate incremental dam breach consequences (population at risk, life loss, property damages) for selected base scenarios and estimate order of magnitude life loss and property damages for the failure modes considered.

Throughout the RIDM process, discussions, analyses, and conclusions from the Probable Failure Mode Analysis (PFMA) and consequence assessments will be documented and summarized in a Risk Assessment report. The Risk Assessment report will be utilized to inform the Alternatives Analysis and subsequent design.

Alternatives Analysis

Based on the risk assessment results, it is our understanding that DOTD requests an alternative analysis for each dam. Stantec has recent experience performing such analyses to support dam safety programs for clients like TVA, Newport News Waterworks, Dallas Water Utilities, and Mobile Area Water and Sewer System. The alternative analysis will involve first confirming constraints and concerns to be considered in the analysis with DOTD key stakeholders. Afterwards, several alternatives will be developed with preferred alternatives recommendations from an appropriate selection of technical specialists and the environmental team. As part of scope and budget development, estimated construction costs will be developed to provide a comparative range across alternatives. A high-level constructability review will also

be performed to confirm viability of each alternative. After collaboration with DOTD, Stantec will recommend a preferred alternative. As part of the selection of the preferred alternative, Stantec will support DOTD at public or stakeholder meetings, as necessary. Stantec routinely provides engagement/outreach on dam safety issues for dam owners.

Environmental Evaluation

Stantec personnel with NEPA experience will follow the requirements of DOTD's "Stage 1 Planning/Environmental Manual of Standard Practice" for the alternatives recommended. As the projects are anticipated to be partially funded by the Department of Housing and Urban Development (HUD), environmental reviews will be completed in accordance with Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities", 24 Code of Federal Regulations (CFR) Part 58. Early engagement with environmental professionals will streamline the overall permitting effort, limit surprises on the path to permitting, and provide more open discussions on potential permitting and evaluation exclusions [ex: categorical exclusions under 24 CFR 58.35(a)(1) for rehabilitation and improvements of public facilities]. After initial regulatory discussions, desktop evaluations, and development of a regulatory coordination plan, field studies categorical exclusion (preferred), environmental assessment (EA), or environmental impact statement (EIS) will be completed. If an EA or EIS is completed, Stantec will discuss with the regulatory agencies about completing the EA or EIS for all the sites instead of individually to streamline coordination and review. The potential need for environmental mitigation will also be evaluated as part of this stage – with the intent of avoiding the need for environmental mitigation to the extent possible. Field studies (such as stream delineation and threatened and endangered species), where necessary, will be performed by qualified scientists with experience in Louisiana.

Scope and Budget Development

Schedules and Opinion of Probable Construction Costs (OPCCs) incorporating design, utility relocations, construction, and potential environmental mitigation costs will be provided at key project stages (ex: Alternatives Analysis, Final Design) with schedules developed to execute projects and tasks in parallel where feasible. The OPCCs will be led by professionals with formal cost estimating training and experience in dam construction.

Task 2 – Permitting

Permitting efforts will use the results of the planning analysis, including the permitting strategy language, initial environmental evaluations, and selected alternatives to advance permitting in conjunction with the design. Permitting discussions with regulatory agencies will initially occur in the planning stage to inform field studies and alternatives development. Engagement with the regulatory agencies will be advanced concurrently with design. The permitting team will work closely with the Project Manager (PM), Project Technical Lead (PTL), and design team to leverage efficiencies in communication and preparation of permitting documents. Typical permits associated with dam and spillway resilience projects include USACE 404 permits and State 401 Water Quality Certifications. Based on the federal funding for the project, NEPA compliance is anticipated to occur in conjunction with the 404 permit process. DOTD dam safety, floodplain permitting, and local erosion and sediment control or land disturbance permitting will also be required. Improvements/rehabilitation measures at each dam site will likely be considered a single project, and some or all may be eligible to use a USACE Nationwide Permit 3 for Maintenance. If the scope of the improvements fits the requirements of this permit, it is likely a pre-construction notification will be required. If applicable, the use of USACE Nationwide permits for each site is recommended over multiple Individual Permits, and it will streamline the overall permitting process. If the project is not anticipated to impact the 100-yr floodplain elevation, a floodplain exemption letter will be provided to local floodplain administrators instead of going through a more involved no-rise certification or FEMA LOMR/LOMA process.

Task 3 – Design

Design Support Services

Based on the outcome of the data gap analysis, additional activities may be required including detailed inspections of existing dam components, acquisition of additional geotechnical data, and surveys, including topographic, bathymetric, and utility information. Inspections (if necessary) will be completed by Stantec or ECM personnel, who have experience on similar dams and will leverage the appropriate discipline expertise based on the element being inspected. If geotechnical investigations are necessary, GeoEngineers will utilize local staff and equipment to perform the on-site work and material testing. The lab results will be utilized by Stantec engineers during design. Surveying of utilities, topography, and bathymetry (where necessary) will be performed by T. Baker Smith surveyors overseen by a surveyor licensed in Louisiana in accordance with DOTD's Location and Survey Manual. Stamped and sealed survey drawings will be provided by the licensed surveyor. Design reports summarizing the design criteria (primarily from Louisiana Administrative Code for dam safety), analysis, design and permitting will be provided at a preliminary level along with supporting calculations. The design report will be finalized when the Final Plans are submitted.

Preliminary Plans

Prior to development of the preliminary plans, an initial sheet list and specification list will be provided to DOTD for review and concurrence prior to development of the

preliminary plans. Afterwards, preliminary plans will be developed in MicroStation and in accordance with DOTD CADD standards, of which the project team has extensive experience and knowledge. The technical specifications will also be developed to a preliminary level. The OPCC will be advanced from the previously completed OPCC provided as part of the Alternatives Analysis to incorporate the preliminary design and knowledge from the permitting and analysis efforts. Following DOTD review, site visits attended by the PTL, PM, and Deputy PM and DOTD will be completed as part of plan-in-hand inspections.

Final Plans

The final plans, design report, specifications, and OPCC will be updated based on comments received from the preliminary review and regulatory comments during permitting. The final plans will go through the Advanced Check Print (ACP) review process. After incorporation of the ACP comments, final drawings and specifications will be signed and sealed by the PTL as Issued for Construction documents following the QA/QC process.

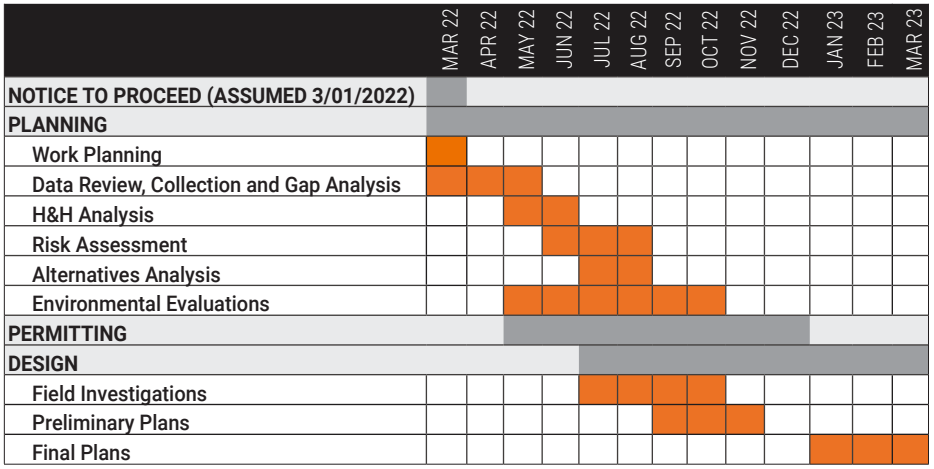
Task 4 – Construction Support

Project team members well versed in construction design and administration will support DOTD as needed in the development of bid documents. Stantec has supported dam owners with many aspects of bidding including: (i) responding to bid questions; (ii) development of bid qualifications; (iii) bid review; (iv) technical and cost review memorandums and rating criteria; (v) maintaining bid logs; and (vi) organizing on-site bid meetings.

During construction, the design team will respond to requests for information (RFIs) within 48 hours, make plan revisions within seven (7) days, and review contractor submittals and shop drawings within seven (7) days. The project team will have one individual responsible for organizing and tracking RFIs, plan requests, submittals, and shop drawings, and to coordinate the review and responses by the appropriate technical team. A final review will then be completed by the PTL.

The project team is well staffed in Louisiana and will be available to provide on-call support services as needed under the direction of our Deputy PM and local representative Dennis Passman. Construction support services are routinely performed by the project team for a diverse array of dam owners, and we will bring that experience to bear for DOTD on this important project.

Conceptual Schedule



Why Stantec?

Our proposed team offers Louisiana-based staff with **local flood control experience**, as well as **a deep bench of regional and national dam safety staff** to support your entire Louisiana Watershed Initiative for Dam and Spillway Resiliency.

Stantec can execute dam safety projects individually, but we encourage that these projects be considered in a risk informed decision making (RIDM) framework. **Stantec's significant amount of RIDM experience will bring the "big picture" perspective** we believe LADOTD is looking for. That's why we are submitting on both Group 1 and Group 2 contracts.

Our up front, collaborative approach to project and program planning means these projects can get off to the right start, and **decisions can be made considering DOTD's programmatic needs** as well as the needs of your stakeholders.

Our use of constructability reviews as part of the **QA/QC and ITR processes** helps identify conceptual design elements that may present construction issues and **helps avoid** those **issues for final design.**

19. **Workload:**
For all contracts where a firm on the team is a prime consultant or sub-consultant and where a) the consultant selection was made by DOTD, and b) a contract was executed by the consultant and the contracting entity by the date the advertisement for this proposal was posted, list all work meeting the following criteria:
1) one of the team's firms is responsible for the performance of the work;
2) authorization to perform the work has been provided, as provided in the contract between the consultant and the contracting entity;
3) the work has not yet been performed and invoiced; and
4) the work is not currently suspended for an indefinite period of time.
For indefinite delivery/indefinite quantity (IDIQ) contracts, list open Task Orders individually. List only the portion of the fees attributable to the firms on the team.

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
Stantec Consulting Services Inc.	Bridge	S. P. No. 700-99-0430	Retainer Contract for Bridge Preservation [Statewide, Louisiana]	
			T.O. 701-65-1018 Bayou Tech Bridge	$1,053
Stantec Consulting Services Inc.	Road, Traffic	S. P. No. H.011295.5	LA 73 (Gov't St.) East Blvd. - Lobdell Ave. [East Baton Rouge Parish]	$1,563
Stantec Consulting Services Inc.	Bridge, Traffic	S. P. No. 700-10-0153	Nelson Road Ext. Bridge [Lake Charles, Louisiana]	$0
Stantec Consulting Services Inc.	Road	S. P. No. H.005967.5	Nelson Road Ext. Bridge - Roadway (Sub to Shread-Kuyrkendall & Assoc.)	$2,680
Stantec Consulting Services Inc.	Planning	S. P. No. 4400004128	Lafayette Regional Airport to I-10/I-49/US 167 Interchange [Lafayette Parish]	$1,979,696
Stantec Consulting Services Inc.	Traffic/ITS	S. P. No. 4400010670	Retainer Contract for Intelligent Transportation Systems (ITS) Design and Implementation Services [Statewide, Louisiana]	
			H.004104.5 Pecue Lane/I-10 Interchange Phase 3 [East Baton Rouge Parish]	$35,803
			H.011152.4 I-12 US 190 to LA 59 [St. Tammany Parish]	$36,927
			H.013482.4 I-10 WBR Queue Warning System Design [Iberville and West Baton Rouge]	$896
			H.013261.6 I-110 ITS Deployment/Constr. [East Baton Rouge Parish]	$16,263
			H.013866.6 I-12: LA 21 to US 190 Roadway Widening [St. Tammany Parish]	$25,201
			H.014511 Houma ITS Regional Architecture Update [Terrebonne and Lafourche Parishes]	$435
			H.014529.1 Baton Rouge Regional ITS Architecture Update [EBR & WBR Parishes]	$10,458
Stantec Consulting Services Inc.	Road, Bridge, ITS, Traffic, Other (Lighting)	S. P. No. H.011670	Loyola Dr./I-10 Interchange to New Airport Terminal Design Build (Sub to Gilchrist Co., LLC) [Jefferson Parish]	$71,843

19. **Workload:**

Stantec Consulting Services Inc.	Traffic/ITS	S. P. No. 4400017922	IDIQ Contract for Intelligent Transportation Systems (ITS) System Design, Integration and System Verification Services [Statewide, LA]	
			H.014515.1 ATMS and 511 Upgrade SEA [Statewide]	$28,154
Stantec Consulting Services Inc.	Traffic/ITS	S. P. No. 4400020058	IDIQ Contract for Intelligent Transportation Systems (ITS) Design and Implementation Services [Statewide, LA]	
			H.012374.5 I-12: Essen Ln. to Walker Rd. ITS Ramp Meter Upgrades [EBR & Livingston Parishes]	$15,656
			H.013710.6 I-10: US-61 to Laplace ITS Deployment [Ascension, St. James & St. John Parishes]	$19,849
			H.013842.5 I-10: WBR Queue Warning System Design [Iberville & WBR Parishes]	$88,872
			H.001234.6 LA 1: Port Allen Canal BR REPL (PHI) (HBI) [West Baton Rouge Parish]	$20,288
Stantec Consulting Services Inc.	Road/Bridge	S. P. No. 4400020064	IDIQ Contract for Electrical Services [Statewide, LA]	
			H.005967.5 I-12: Nelson Road Ext. & Bridge Roadway Lighting Engineering [Calcasieu Parish]	$32,562
			H.014286.5 I-10: LA 26 (Jennings) Interchange Lighting [Jefferson Davis Parish]	$139,756
DO NOT SUM				

(Add rows as needed)

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19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
GeoEngineers	Geotech	H.004791	P3 Belle Chasse Bridge & Tunnel	$302,641
GeoEngineers	Geotech	H.011670	Loyola Dr/I-10 Interchange	$1,104
GeoEngineers	Geotech	H.013256	ITS Scott to Lake Charles	$8,000
GeoEngineers	Geotech	H. 001820	LA 143 Bayou D'Arbonne Phase II	$3,254
GeoEngineers	Geotech	H.001779	Jimmie Davis Bridge	$421,232

DO NOT SUM

(Add rows as needed)

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19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
T. Baker Smith, LLC	CE&I/OV	H.004113	LA 3241: LA 435 to LA 40/41	$102,556
T. Baker Smith, LLC	CE&I/OV	H.011152	I-12: US 190 to LA 59	$70,805
T. Baker Smith, LLC	Road	H.001344	US 190: LA 437 - US 190 BUS (PH1)	$11,324
T. Baker Smith, LLC	Bridge	H.001344	US 190: LA 437 - US 190 BUS (PH1)	$6,069
T. Baker Smith, LLC	Road	H.012812	US 190 at Northshore and Camp Villere	$154,201
T. Baker Smith, LLC	Road	H.013942	LA 9: Middle Fork Bayou and Creek Bridges	$5,836
T. Baker Smith, LLC	Bridge	H.013942	LA 9: Middle Fork Bayou and Creek Bridges	$7,962
T. Baker Smith, LLC	Road	H.013979	LA 518, Local: Bridges Near Athens	$19,843
T. Baker Smith, LLC	Bridge	H.013979	LA 518, Local: Bridges Near Athens	$16,286
T. Baker Smith, LLC	Environmental	H.013979	LA 518, Local: Bridges Near Athens	$3,482
T. Baker Smith, LLC	Road	H.013988	LA 534: Bridges (LA 2 to Haynesville)	$73,961
T. Baker Smith, LLC	Bridge	H.013988	LA 534: Bridges (LA 2 to Haynesville)	$35,390
T. Baker Smith, LLC	Environmental	H.013988	LA 534: Bridges (LA 2 to Haynesville)	$11,628
T. Baker Smith, LLC	Survey	H.013988	LA 534: Bridges (LA 2 to Haynesville)	$6,166
T. Baker Smith, LLC	Road	H.013987	LA 521: Bridges Near Dykesville	$4,325
T. Baker Smith, LLC	Bridge	H.013987	LA 521: Bridges Near Dykesville	$945
T. Baker Smith, LLC	Road	H.013986	LA 155: Bridges Near Coushatta	$40,012
T. Baker Smith, LLC	Bridge	H.013986	LA 155: Bridges Near Coushatta	$26,089
T. Baker Smith, LLC	Survey	H.013986	LA 155: Bridges Near Coushatta	$10,334
T. Baker Smith, LLC	Environmental	H.013986	LA 155: Bridges Near Coushatta	$4,578
T. Baker Smith, LLC	Road	H.013995	LA 507, LA 514, Local: Bayou and CR BRS	$89,922
T. Baker Smith, LLC	Bridge	H.013995	LA 507, LA 514, Local: Bayou and CR BRS	$45,025
T. Baker Smith, LLC	Environmental	H.013995	LA 507, LA 514, Local: Bayou and CR BRS	$20,946
T. Baker Smith, LLC	Road	H.013947	Atkins Road over Joes Bayou	$542
T. Baker Smith, LLC	Bridge	H.013947	Atkins Road over Joes Bayou	$165

19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
T. Baker Smith, LLC	Road	H.013990	LA 132: Bridges Near Mangham	$45,730
T. Baker Smith, LLC	Bridge	H.013990	LA 132: Bridges Near Mangham	$31,781
T. Baker Smith, LLC	Environmental	H.013990	LA 132: Bridges Near Mangham	$9,031
T. Baker Smith, LLC	Road	H.013953	McManus Road over Cypress Creek	$1,223
T. Baker Smith, LLC	Bridge	H.013953	McManus Road over Cypress Creek	$648
T. Baker Smith, LLC	Road	H.013992	LA 151: Creek and Relief Bridges	$43,432
T. Baker Smith, LLC	Bridge	H.013992	LA 151: Creek and Relief Bridges	$21,686
T. Baker Smith, LLC	Environmental	H.013992	LA 151: Creek and Relief Bridges	$7,598
T. Baker Smith, LLC	Road	H.013994	Oak Hall Road over Bayou Boeuf	$1,250
T. Baker Smith, LLC	Bridge	H.013994	Oak Hall Road over Bayou Boeuf	$901
T. Baker Smith, LLC	Road	H.013985	Local: Prairie Bayou and Drainage Bridges	$1,590
T. Baker Smith, LLC	Bridge	H.013985	Local: Prairie Bayou and Drainage Bridges	$516
T. Baker Smith, LLC	Road	H.013948	LA 1183: Turner Canal Bridge	$988
T. Baker Smith, LLC	Bridge	H.013948	LA 1183: Turner Canal Bridge	$1,257
T. Baker Smith, LLC	Road	H.013949	LA 1226: Bayou Chevreuil Bridge	$796
T. Baker Smith, LLC	Bridge	H.013949	LA 1226: Bayou Chevreuil Bridge	$201
T. Baker Smith, LLC	Environmental	H.013949	LA 1226: Bayou Chevreuil Bridge	$949
T. Baker Smith, LLC	Road	H.013954	Pleasant Ridge Rd Over Rabbit Branch	$1,179
T. Baker Smith, LLC	Bridge	H.013954	Pleasant Ridge Rd Over Rabbit Branch	$542
T. Baker Smith, LLC	Road	H.013199	Country Estates Dr. Over St. Louis Bayou	$12,000
T. Baker Smith, LLC	Bridge	H.013199	Country Estates Dr. Over St. Louis Bayou	$18,979
T. Baker Smith, LLC	Road	H.013080	Pine Bluff Rd. & Tack Allen Road Bridges	$600
T. Baker Smith, LLC	Bridge	H.013080	Pine Bluff Rd. & Tack Allen Road Bridges	$678
T. Baker Smith, LLC	Road	H.014271	LA 537: Bridges Near Plain Dealing	$133,075
T. Baker Smith, LLC	Bridge	H.014271	LA 537: Bridges Near Plain Dealing	$66,414

19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
T. Baker Smith, LLC	Environmental	H.014271	LA 537: Bridges Near Plain Dealing	$31,290
T. Baker Smith, LLC	Road	H.014218	LA 2A: Thorny Branch & Indian Creek Brs	$100,943
T. Baker Smith, LLC	Bridge	H.014218	LA 2A: Thorny Branch & Indian Creek Brs	$40,746
T. Baker Smith, LLC	Survey	H.014218	LA 2A: Thorny Branch & Indian Creek Brs	$90,967
T. Baker Smith, LLC	Environmental	H.014218	LA 2A: Thorny Branch & Indian Creek Brs	$27,634
T. Baker Smith, LLC	Road	H.014219	LA 507: Creek Bridges Near Simsboro	$118,471
T. Baker Smith, LLC	Bridge	H.014219	LA 507: Creek Bridges Near Simsboro	$71,563
T. Baker Smith, LLC	Environmental	H.014219	LA 507: Creek Bridges Near Simsboro	$33,751
T. Baker Smith, LLC	Road	H.014222	LA 516: Poland Branch Bridge	$47,822
T. Baker Smith, LLC	Bridge	H.014222	LA 516: Poland Branch Bridge	$19,279
T. Baker Smith, LLC	Environmental	H.014222	LA 516: Poland Branch Bridge	$10,521
T. Baker Smith, LLC	Road	H.014225	LA 528: Clark Bayou Bridge	$52,323
T. Baker Smith, LLC	Bridge	H.014225	LA 528: Clark Bayou Bridge	$41,978
T. Baker Smith, LLC	Survey	H.014225	LA 528: Clark Bayou Bridge	$14,494
T. Baker Smith, LLC	Environmental	H.014225	LA 528: Clark Bayou Bridge	$11,700
T. Baker Smith, LLC	Road	H.014228	LA 159: Bridges Near Shongaloo	$174,401
T. Baker Smith, LLC	Bridge	H.014228	LA 159: Bridges Near Shongaloo	$55,064
T. Baker Smith, LLC	Environmental	H.014228	LA 159: Bridges Near Shongaloo	$45,165
T. Baker Smith, LLC	Road	H.014231	LA 153: Topy Creek Relief & Drain Brs	$176,126
T. Baker Smith, LLC	Bridge	H.014231	LA 153: Topy Creek Relief & Drain Brs	$94,010
T. Baker Smith, LLC	Environmental	H.014231	LA 153: Topy Creek Relief & Drain Brs	$37,648
T. Baker Smith, LLC	Road	H.014233	LA 160: Cypress Bayou and Relief Bridges	$74,243
T. Baker Smith, LLC	Bridge	H.014233	LA 160: Cypress Bayou and Relief Bridges	$46,835
T. Baker Smith, LLC	Environmental	H.014233	LA 160: Cypress Bayou and Relief Bridges	$25,333
T. Baker Smith, LLC	Road	H.014236	LA 3008: Bridges Near Cotton Valley	$279,556

19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
T. Baker Smith, LLC	Bridge	H.014236	LA 3008: Bridges Near Cotton Valley	$134,417
T. Baker Smith, LLC	Environmental	H.014236	LA 3008: Bridges Near Cotton Valley	$58,391
T. Baker Smith, LLC	Road	H.014238	LA 818: Barnet Springs & Creek Bridges	$99,570
T. Baker Smith, LLC	Bridge	H.014238	LA 818: Barnet Springs & Creek Bridges	$64,931
T. Baker Smith, LLC	Survey	H.014238	LA 818: Barnet Springs & Creek Bridges	$81,664
T. Baker Smith, LLC	Environmental	H.014238	LA 818: Barnet Springs & Creek Bridges	$25,811
T. Baker Smith, LLC	Road	H.014239	LA 589: Lyon Bayou Bridge	$71,306
T. Baker Smith, LLC	Bridge	H.014239	LA 589: Lyon Bayou Bridge	$30,472
T. Baker Smith, LLC	Survey	H.014239	LA 589: Lyon Bayou Bridge	$40,561
T. Baker Smith, LLC	Environmental	H.014239	LA 589: Lyon Bayou Bridge	$16,338
T. Baker Smith, LLC	Road	H.014264	LA 556: Bridges Near Choudrant	$282,718
T. Baker Smith, LLC	Bridge	H.014264	LA 556: Bridges Near Choudrant	$178,496
T. Baker Smith, LLC	Survey	H.014264	LA 556: Bridges Near Choudrant	$55,486
T. Baker Smith, LLC	Environmental	H.014264	LA 556: Bridges Near Choudrant	$84,706
T. Baker Smith, LLC	Other	H.003931	Calcasieu River Bridge	$530,440
T. Baker Smith, LLC	Other	H.014670	LA 1270: LA 77 to End of Control Section	$19,840
T. Baker Smith, LLC	Other	H.014747.5	Southern University Ravine Protection	$25,602

DO NOT SUM

(Add rows as needed)

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19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
ECM	CE&I/OV	H.0012479.6-1	Retainer Contract for Safe Routes to Schools (SRTS) and Local Road Safety Program (LRSP), Districts 03, 07, & 61, LA (Safe Routes – Audubon Ave & Ardoyne Dr. Mini-Roundabout)	$1,386
ECM	CE&I/OV	H.011767.6-1	Retainer Contract for Construction Engineering Management & Staff Augmentation Services for District 61, West Feliciana, East Feliciana, Pointe Coupee, West Baton Rouge, East Baton Rouge, Iberville, Ascension, St. James & Assumption Parishes (Bayou Crab Road Bridge Assumption Parish)	$120,450
ECM	CE&I/OV	H.013579.6	Retainer Contract for Construction Engineering Management & Staff Augmentation Services for District 61, West Feliciana, East Feliciana, Pointe Coupee, West Baton Rouge, East Baton Rouge, Iberville, Ascension, St. James & Assumption Parishes (DOTD I-10 Pecue Lane I-10 Interchange Phase II)	$166,124
ECM	CE&I/OV	H.013114.6	Retainer Contract for Construction Engineering Management & Staff Augmentation Services for District 61, West Feliciana, East Feliciana, Pointe Coupee, West Baton Rouge, East Baton Rouge, Iberville, Ascension, St. James & Assumption Parishes (Southern University Erosion Road Improvements)	$262,187
ECM	CE&I/OV	H.003370	I-220/I-20 Interchange Imp & Barksdale Airforce Base (BAFB) Access Road. Design-Build Project. Bossier Parish, LA.	$709,082
ECM	CE&I/OV	H.0044791	Belle Chasse Bridge & Tunnel Replacement Public-Private Partnership Project	$3,648,117
ECM	CE&I/OV	H. 009175.6	IDIQ CE&I for Safety Projects Statewide with Majority of Work in District 03, 07, and 08 (St. Bernard Signing and Striping Local Road Safety Program)	$110,139
ECM	CE&I/OV	H.011949.6	IDIQ CE&I for Safety Projects Statewide with Majority of Work in District 03, 07, and 08 (RWD Signing Plaquemines Parish Local Road Safety Program)	$156,121
ECM	CE&I/OV	H.012682.6	IDIQ CE&I for Safety Projects Statewide with Majority of Work in District 03, 07, and 08 (Pedestrian Crosswalk Enh [NO PH2])	$424,653
ECM	CE&I/OV	H.007233.6	IDIQ CE&I Inspection Services Statewide with Majority of Work in District 03 (Lafayette MPO Non State Pavement Marking Lafayette Parish)	$35,955

19. **Workload:**

FIRM	WORK TYPE(S)*	STATE PROJECT NUMBER	PROJECT NAME AND LOCATION	REMAINING UNPAID BALANCE*
ECM	CE&I/OV	4400020842 Task Order 1	IDIQ Contract for Engineering & Inspection of State Regulated Dams with Majority of work in District 03, 07, 61, & 61 Statewide	$128,717

DO NOT SUM

(Add rows as needed)

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20. **Certifications/Licenses:** If the advertisement requires submission of licenses and/or certificates, include them here. Otherwise, leave this section blank.

The American Traffic Safety Services Association

Hereby recognizes that

Joseph Lefante

has attended

Traffic Control Supervisor Refresher-LA State Specific Training Course

07/27/2018
Date

Baton Rouge, LA
Location

ATSSA
SAFER ROADS SAVE LIVES

Jessica Shingler
Training & Products Dept. Director

Ryan A. Wentz
President, CEO

20. **Certifications/Licenses:** If the advertisement requires submission of licenses and/or certificates, include them here. Otherwise, leave this section blank.

The American Traffic Safety Services Association

Hereby recognizes that

Christopher Capretto

has attended

Traffic Control Supervisor Refresher-LA State Specific Training Course

09/07/2018 to 09/07/2018
Date

New Orleans, LA
Location

ATSSA
SAFER ROADS SAVE LIVES

Jessica Shingler
Training & Products Dept. Director

Ryn A. Wentz
President, CEO

21. **QA/QC Plan and/or Work Plan:**
If the advertisement requires submission of a QA/QC plan or Work plan, include them here. Otherwise, leave this section blank.

22. **Sub-consultant Information:**
If one or more sub-consultants will be used, provide the name, address, point of contact and phone number for each. Otherwise, leave this section blank.

Firm Name (as registered with Louisiana's Secretary of State)	Address	Point of Contact and Email Address	Phone Number
GeoEngineers, Inc.	11955 Lakeland Park Blvd., Suite 100 Baton Rouge, Louisiana 70809	Larry Sant, PE LSant@geoengineers.com	225.663.1522 (Office); 509.570.6081 (Cell)
T. Baker Smith, LLC	17927 Old Jefferson Hwy, Prairieville, LA 70769	Rene Hebert, PLS Rene.Hebert@tbsmith.com	985.857.3011
EMC Consultants, Inc.	1301 Clearview Parkway, Suite 200 Metairie, LA 70001	Kazem Alikhani, PE kazem@ecmconsultants.com	504-885-4050

23. **Location:**
If location is an evaluation criterion for this advertisement and the prime consultant intends to establish a local presence, describe the plan for doing so. Otherwise, leave this section blank.