ARCADIS

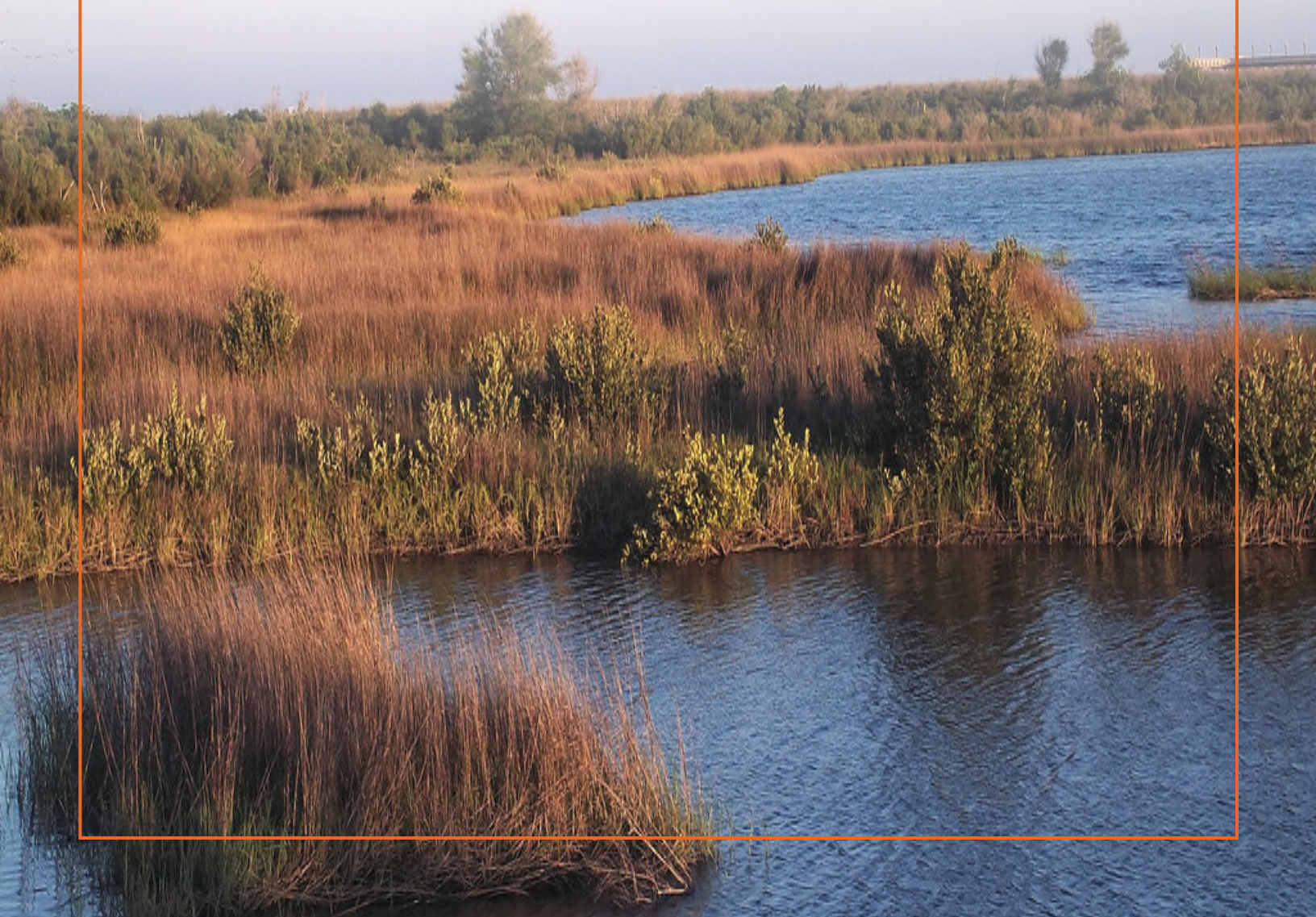
STATEMENT OF QUALIFICATIONS

Jefferson Parish, LA

Coastal Engineering Consulting Services As-Needed Parish-wide

SOQ #24-020

JULY 2024



Mark Buttery
Purchasing Specialist II
Jefferson Parish Purchasing Department
General Government Building
200 Derbigny Street
Suite 4400
Gretna, LA 70053

Arcadis U.S., Inc.
3850 N Causeway Blvd.
Suite 990
Metairie, LA 70002

www.arcadis.com

July 16, 2024

Subject: Coastal Engineering Consulting Services As-Needed Parish-wide (SOQ #24-020)

Dear Mr. Buttery and Evaluation Committee:

Thank you for the opportunity to submit our qualifications for your consideration. Under the prior cycle of this SOQ, Arcadis has been honored to support Jefferson Parish with long-term recovery and resilience building efforts in the coastal communities of the Town of Jean Lafitte and Town of Grand Isle. We are proud of our track record in Louisiana, wherein Arcadis has successfully developed and delivered coastal protection and restoration projects for decades. Arcadis provides Jefferson Parish a trusted team of local experts backed by a national and global bench. We are internationally renowned for expertise in creating holistic and sustainable solutions for coastal challenges, with acute consideration for climate adaptation and utilizing nature based solutions – focal points critical to Jefferson Parish Government, the U.S. Army Corps of Engineers (USACE), and Louisiana's Coastal Protection and Restoration Authority (CPRA), among other state and federal stakeholder agencies.

Arcadis will provide the services for this contract primarily from our Metairie office. Ayan Mehrotra, PE PMP, a Louisiana-licensed Professional Engineer with diverse and extensive experience with soft soils and coastal areas, will serve as the Project Manager. Mr. Mehrotra has experience in leading design and construction teams for a wide range of projects including marsh creation, flood protection, port development, shoreline protection, levee design and construction, and other coastal restoration projects. He will be supported by a team of professionals experienced in hydrologic and hydraulic modeling, design analysis and reports, biological and environmental assessments, technical evaluations, cost estimates, opinions of probable construction cost, field investigations, surveying, and onshore and nearshore geotechnical services.

In addition to our engineering and design expertise, Arcadis provides Jefferson Parish solutions for potential tasks involving planning, grant writing, and community education and outreach. Arcadis has been providing a comprehensive suite of consulting services to CPRA during each of the agency's three previous master planning efforts (2012, 2017, and 2023), and this work is ongoing.

Finally, and perhaps most importantly, we understand that Jefferson Parish is a front-line community facing daily challenges of climate change and sea level rise further complicated by rapid coastal erosion. Jefferson Parish is home to many Arcadis staff members and their families, and we are committed to protecting and restoring coastal Louisiana for generations to come. We stand ready and eager to support Jefferson Parish.

Sincerely,

Arcadis U.S., Inc.

Ayan Mehrotra, PE
Project Manager
Email: Ayan.Mehrotra@arcadis.com
Phone: 225 218 9671

Seth Magden
Principal In Charge
Email: Seth.Magden@arcadis.com
Direct Line: 504 648 3613

TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

Coastal Engineering Consulting Services As-Needed Parish-wide SOQ 24-020

B. Firm Name and Address:

Arcadis U.S., Inc.
3850 N Causeway Blvd.
Suite 990
Metairie, LA 70002

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

Ayan Mehrotra, PE
Arcadis U.S., Inc.
Metairie, LA 70002
Tel no. 225 218 9671
Email: Ayan.Mehrotra@arcadis.com
Professional Engineer: LA - #0040973 Exp. 03/21/2025

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

Ayan Mehrotra, PE
Arcadis U.S., Inc.
Metairie, LA 70002
Tel no. 225 218 9671
Email: Ayan.Mehrotra@arcadis.com
Professional Engineer: LA - #0040973 Exp. 03/21/2025

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

647	Administrative	54	Estimators	2	Specifications Writers
38	Architects (Licensed)	560	Geologists	73	Structural Engineers
67	Chemical Engineers	14	Geotechnical Engineers	0	Graduate Engineers
502	Civil Engineers	2	Interior Designers	563	Project Managers
103	Construction Inspectors	1	Landscape Architects	0	Clerical
66	Ecologists	0	Land Surveyor	0	Grant/Funding Specialist
127	Electrical Engineers	88	Mechanical Engineers	5	Sanitary Engineers
0	Engineer Intern	647	Environmental Engineers	2163	Others
24	Professional Land Surveyors			**5746**	**TOTAL**

F. Is this submittal by a JOINT-VENTURE? Please check: YES _____ NO ✓
If marked "No" skip to Section I. If marked "yes" complete Sections G-H.

TEC Professional Services Questionnaire

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

1. None

2. None

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

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

Name & Address	Specialty	Worked with firm Before (Yes or No)
1. None		
2. None		
3. None		

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

125

TEC Professional Services Questionnaire

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

PROFESSIONAL IN CHARGE OF PROJECT

Name & Title:

Ayan Mehrotra, PE

Project Assignment:

Project Manager / Geotechnical

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

10

Education: Degree(s) / Year/Specialization:

- MS / 2014 / Civil Engineering
- BS / 2011 / Civil Engineering

Active Registration: Year First registered/discipline:

- 2016 / Professional Engineer - LA
- Project Management Professional (PMP)

Other experience and qualifications relevant to the proposed project:

Mr. Mehrotra is a Geotechnical Engineer with more than 10 years of experience working on a wide range of geotechnical projects as well as materials testing projects. He has worked extensively with soft soils and coastal areas. He has performed geotechnical engineering on a wide range of projects including flood protection, industrial development, transportation, power generation and transmission, marsh creation, drainage improvements, port development, and hospitals. Ayan also has a vast array of field experience in overseeing geotechnical field explorations and materials testing such as monitoring deep foundation installation, pile integrity testing (PIT), static axial compressive load tests on deep foundations, and post tension (PT) observation and inspection.

- **W. Metairie Canal – Slope Stability Evaluation | Jefferson Parish, LA.** The project consisted of the evaluation of the stability of the side-slopes of an alignment of W. Metairie Canal extending between N. Lester Avenue and Rooselvelt Blvd. Mr. Mehrotra served as the project manager, Engineer on Record, for the geotechnical services for this project. The W. Metairie canal had experience multiple slope failure along this alignment due to the steepness of the slopes and rapid drawdown events. The stability of the existing side slopes was evaluated, and multiple options were considered/analyzed for improving the stability of the side-slopes. The options analyzed to improve the stability of the side-slopes consisted of re-shaping the canal side slopes, installation of sheet pile wall, placement of rip-rap material near toe, and utilizing of geosynthetic products.
- **Laurel Ridge Levee | GSA, Ascension Parish, LA.** The project involves the construction of an approximately 4-mile-long levee in east Ascension Parish, Louisiana. The geotechnical scope of services included performing 5-inch soil borings, laboratory testing, and geotechnical levee design. Mr. Mehrotra performed settlement analysis to evaluate levee overbuild, and slope stability analysis in accordance with USACE HSDRRS guidelines of proposed levee sections.

- **Port Development | Evans-Graves Engineers, Cameron, LA.** The project consisted of the construction of a new port facility near the existing Calcaseiu Ship Channel in Cameron, Louisiana. The port facility will be created by hydraulically dredging an entrance channel and a slip. The dredging will be performed to about El. -33 feet (existing El. +1 feet) and the slip will be constructed utilizing open-cell sheet walls. Mr. Mehrotra manage the scope of services consisting of performing soil borings to depths of up to 150 feet, field vane shear tests, CPTu testing, laboratory testing, and engineering analyses. Mr. Mehrotra also performed engineering analyses that included creating the dredge profile, foundation analysis, slope stability analysis, pavement recommendations, settlement analysis, ground improvement recommendations, and soil design profiles.
- **Yscloskey to Norco Pipeline Relocation | Design Engineer, Yscloskey, LA.** Mr. Mehrotra performed geotechnical analysis for this project that involved evaluating the stability of a bank of the Mississippi River due to a proposed excavation to relocate an existing pipeline. The pipeline replacement was proposed to be performed using an open trench excavation within 50 feet of the levee toe and a geotechnical stability analysis was needed to help ensure that the excavation would not impact the levee or the bank of the River. Mr. Mehrotra performed the levee/bank stability analysis utilizing LMVD Method of Planes.
- **Sunset Levee | CB&I, Sunset Drainage District Levee – St. Charles Parish, LA.** The project consisted of geotechnical design of proposed improvements to 10 miles of earthen levee. The improvements included increasing the protection height of the existing levee. Mr. Mehrotra worked on this project as a Staff Engineer and was responsible for performing stability analyses of proposed T-Wall sections of the levee. The T-Wall were analyzed for local and global stability utilizing an approach developed by USACE-MVN.
- **Cypremort Point Wave Attenuation System | Royal Engineers, Cypremort Point Park, LA.** The project consisted of the proposed construction of a wave attenuation system (breakwater) at Cypremort Point State Park in St. Mary Parish, Louisiana. The new wave attenuation system will replace a previous one that was damaged during Hurricane Rita. Mr. Mehrotra manage the scope of services consisting of performing soil borings over open water, laboratory testing, and engineering analyses. Mr. Mehrotra also performed engineering analyses that included considering two (2) types of breakwater systems, a rock dike and Oysterbreak™. Engineering analyses was performed to consider both the global stability, and settlement, of both types of systems and aid in selection of the most practical/cost efficient solution.
- **Maxent Levee Rehabilitation | Pond & Company, Bayou Sauvage National Wildlife Refuge, New Orleans, LA.** Mr. Mehrotra served as the Geotechnical Engineer of Record for the design phase of this project. The project consisted of the rehabilitation of an existing approximately 3,200 linear foot earthen levee section. The existing levee was prone to seepage through the existing earthen section and the rehabilitation was designed to reduce the potential for seepage. Several options were considered for improvement of the existing levee section (e.g., using of a slurry cut-off wall, sheet pile seepage cutoff) as well complete reconstruction of the existing levee. Mr. Mehrotra evaluated the stability of the existing levee section and proposed geotechnical recommendation for use of either a sheet pile or slurry cut off wall to reduce the seepage through the levee core.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Seth Magden, Principal

Project Assignment:

Principal in Charge

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

2

Education: Degree(s) / Year/Specialization:

- MA / YEAR / Latin American Studies International Development & Global Health Focus
- BA / YEAR / Political Science & Spanish

Active Registration: Year First registered/discipline:

- 2013 / IS-00319 Tornado Mitigation
- 2013 / IS-00320 Wildfire Mitigation
- 2013 / IS-00321 Hurricane Mitigation
- 2013 / IS-00322 Flood Mitigation
- 2013 / IS-00323 Earthquake Mitigation

Other experience and qualifications relevant to the proposed project:

Based in New Orleans, Louisiana, Mr. Magden brings more than 18 years of experience working with federal funds supporting state and local government, community groups, nonprofit organizations, and private sector partners in developing, implementing, and leading planning, visioning, recovery and community development program initiatives. His work has predominantly involved FEMA (IA, PA, HMGP, BRIC) and HUD (CDBG-DR/MIT) funded programs as well as initiatives funded under the American Rescue Plan Act (ARPA). Seth was heavily involved in the HUD-funded National Disaster Resilience Competition with multiple (awarded) clients in the planning and visioning competition, as well as implementation. He has served the States of California, New York, Louisiana, Florida, and the Puerto Rico Department of Housing, where he led the team to design and implement $20.2 billion in recovery funding, providing full support on grant management and regulatory compliance. For the State of Florida Department of Economic Opportunity (DEO), he served as Principal/Program Director, leading the successful start-up and launch of the Rebuild Florida Michael Housing Repair and Replacement Program (HRRP) from 2020-2021 in the Florida Panhandle. From 2021-2022 he led the start-up and launch of the Homeowner Assistance Fund (HAF) program for the State of Louisiana Office of Community Development.

- **Coastal Jefferson Parish Long-Term Economic Recovery Study | Jefferson Parish, LA**. Project director providing guidance to Parish staff on development of a long-term economic recovery strategy for communities in Coastal Jefferson following Hurricane Ida, inclusive of the Town of Jean Lafitte, Barataria, Crown Point, Town of Grand Isle. Coordinate with elected officials and key stakeholders, develop and implement community engagement materials for business owners and workforce. Identify key case studies with comparable climate adaptation challenges and opportunities for building larger plan in following phase.
- **Louisiana's Strategic Adaptations for Future Environments (LA SAFE) Program | Jefferson Parish, St. Tammany Parish, LA.** Funded through the state's HUD-NDRC award. Served as project manager for this assignment, responsible for Jefferson Parish and St. Tammany Parish. His role includes overall project management and coordination, community engagement, outreach and public meeting facilitation, relationship management with key stakeholders and elected officials, and supporting the state and local government in developing project concepts to fulfill the program's overall approach and vision to adapt to changing climate conditions.

- **CDBG-DR Program Management Support | Jefferson Parish, LA.** Technical assistance lead providing technical assistance to the Community Development staff through evaluating the existing action plan, policies and procedures, and program guidelines to ensure adherence to federal regulations, and assisting the department in developing the optimal framework to administer funds. Mr. Magden provides technical expertise on duplication of benefits reviews, damage estimation, income verification, contractor review, and coordination with HMGP elevation components.
- **Louisiana Office of Community Development Disaster Recovery Unit, Homeowner Assistance Fund (HAF) American Rescue Plan Recovery Act (ARP) | Louisiana Office of Community Development, LA.** Program director responsible for all aspects of the State Administered mortgage relief Homeowner Assistance Fund. This includes oversight of call center staff, case managers, financial review and disbursement team, and IT. Additionally, responsible for providing guidance to over 100 mortgage lenders and providing reporting for the Governor's Office.
- **Gentilly Resilience District - National Disaster Resilience Implementation | City of New Orleans, LA.** Subject Matter Expert. Provided overall project management support and coordinating reporting efforts for working groups and project partners (via prior firm GCR/Civix) as the primary outside advisor to the City of New Orleans for the implementation of its $141 million CDBG-NDR award to develop the Gentilly Resilience District, an initiative focused on water management and economic opportunity in a low-lying area of New Orleans.
- **New Orleans Area Habitat for Humanity | Greater New Orleans Area, LA.** Served as project manager and daily director of jobsite operations for a non-profit organization in a large disaster recovery community reconstruction effort in Orleans, Jefferson, and St. Bernard parishes. As lead on multiple concurrent residential projects, Mr. Magden led hands-on construction of homes from the ground up, inside and out, overseeing as many as 250 volunteers a day. He provided guidance and leadership to large, diverse volunteer groups and partner families of all skill levels, and interfaced daily with community members in low-income, storm damaged areas to initiate participation in the Habitat program. He was responsible for coordinating the build schedule and oversaw all aspects of project, including material take-offs, vendor ordering, sub-contractor coordination, inspections of structural, electrical, mechanical and Sewerage and Water Board.
- **FEMA Individual Assistance (IA) | Greater New Orleans Area, LA.** Housing Inspector. Mr. Magden was contracted by FEMA to conduct residential inspections of Hurricane Katrina-damaged dwellings throughout Southeast Louisiana, inclusive of Orleans, Jefferson, St. Bernard, Plaquemines and other parishes. Responsible for all levels of the inspection process, He performed extensive outreach to locate displaced applicants, and scheduled and conducted over 1200 inspections. Mr. Magden regularly coordinated with local government officials, law enforcement, and utility companies to locate applicants and verify occupancy and/or ownership status of impacted structures. At the end of his service, Mr. Magden was recognized by Parsons Brinckerhoff for outstanding personal attention to applicants, as well as maintaining a high level of efficiency in the field and accuracy of inspections.
- **Queens Flood Mitigation Program - Study of Flood Mitigation for Repetitive Loss Properties in Hamilton Beach, Howard Beach, and Lindenwood | NYC** Emergency Management and Housing Preservation & Development, New York, NY. Project Manager for FEMA-funded study connecting flood-vulnerable property owners in the Howard Beach, Hamilton Beach, and Lindenwood communities with resiliency specialists to create tailored flood mitigation plans for residential properties and provide guidance for future funding applications. Coordinate with key stakeholders and elected officials, present program information at public council meetings. Supporting timely and accurate delivery of project deliverables, client liaising, and developing outreach strategies to reach as many potential project participants as possible.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Dana Lawton, PE | Civil Engineer

Project Assignment:

Quality Control

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

35

Education: Degree(s) / Year/Specialization:

- BS / 1988 / Civil Engineering

Active Registration: Year First registered/discipline:

- 1994 / Professional Engineer – LA
- 2015 / Professional Engineer – NY

Other experience and qualifications relevant to the proposed project:

Ms. Lawton is a Civil Engineer and has been a member of Arcadis Baton Rouge, Louisiana, office since January 1989. Her responsibilities have included project management, project budgeting, development of project work plans, report writing, engineering design, as well as engineering construction quality assurance/quality control (QA/QC). She has assisted in the preparation of numerous remedial investigations and feasibility studies for both Federal and state superfund sites. As a project or technical manager, Ms. Lawton has also prepared remedial designs and plans and specifications required to implement the final remedial actions at both Federal and state superfund sites. In addition to preparing the many work plans associated with the superfund process, she has performed as the technical oversight construction manager for a Federal superfund site and has extensive experience in construction QA/QC. She has also been involved in the development of corrective action plans, closure plans, and Federal Resource Conservation and Recovery Act (RCRA) Corrective Measures Studies, as well as provided on-site construction supervision during site remediation activities. She has been involved in all phases of engineering analysis and design, agency negotiations, and project management.

- **East Side Coastal Resiliency | New York City Department of Design and Construction, New York City, NY.** The East Side Coastal Resiliency project was a design project that expanded the Rebuild by Design winning project concepts that secured $335 million in Community Block Grant Disaster Recovery funding to protect a significant portion of the Lower East Side of Manhattan. In addition to providing flood protection for the area located between Montgomery Street and East 23rd Street along the East River, the East Side Coastal Resiliency project's guiding principal included improving and expanding the community access to two nearby parks. Arcadis, as part of a multidisciplinary subconsultant team prepared a feasibility and conceptual design reports for the project. These reports presented a range of multifunctional engineering solutions integrated with urban design features to improve community access and expand enjoyment of the parks, including a series of green floodwalls, bridging berms and embankments designs all integrated with East River Park amenities to include recreational facilities, pedestrian and bicycle pathways. Served as the Arcadis Project Manager. Responsible for managing the preparation of conceptual and final design of a flood protection system referred to as the East Side Coastal Resiliency (ESCR) Project, in the borough of Manhattan. The ESCR project, developed during Rebuild by Design, is the first phase of a 10-mile line of protection that extends around lower Manhattan, referred to as the "Big U". The study area is two miles of this line, beginning at East 23rd St down to Montgomery St. The final design will include a range of multifunctional engineering solutions integrated with urban design features to improve community access and expand enjoyment of the parks. The project goals will be accomplished through a series of

green floodwalls, bridging berms and embankments designs all integrated with East River Park amenities to include recreational facilities, pedestrian and bicycle pathways.

- **East Side Coastal Resiliency, Task 2 - Value Engineering | New York City Department of Design and Construction, New York City, NY.** Directed a multi-disciplined team of up to 40 staff for the development of feasibility, coastal hydraulics, and conceptual design reports. Led interaction with prime and consultants, establishment of design standards, and integration of design components into a resilient system. Monitored, tracked, and reported costs against project budget, schedule, and key performance indicators. Facilitated coordination with multiple stakeholders. Scope: Development of feasibility and conceptual design reports and final designs for integrating various flood protection schemes into a high-density urban design setting. Work required coordinating designs with city agencies, FEMA, utility providers and community groups to achieve project goals of enhanced community connectivity and access to the waterfront while simultaneously achieving resiliency goals.
- **Emergency Repairs / Texas Gulf Coast Jetties Design-Build | US Army Corps of Engineers (USACE) - Galveston District, TX.** Project Manager for the engineering services necessary to support the repair of five jetties and the Texas City Dike, located along the Texas Gulf Coast. The sites are located in the vicinity of Galveston, Freeport, and Brazos Island Harbors, the Matagorda Ship Channel and the Sabine-Neches Waterway in Texas. The project is considered a restoration of the existing conditions of each system to the original design sections. The jetties and Texas City Dike are rubble-mound construction and consist of filler stone, bedding stone, core and cover stone layers. The project includes the salvage, recovery and replacement of cover stones, when possible. In addition to the engineering plans and project performance based specifications, the project included the following environmental plans Traffic Control, Air Pollution Control Plan, Spill Control Plan and the Biological Resources Plan, particularly avoidance plans for two known threatened and endangered species known to inhabit the project areas, the Kemp's Ridely Sea Turtle and the Piping Plover. OR Led all aspects of project planning, delivery, and tracking/reporting for multidiscipline team and subcontractors. Served as primary client/stakeholder POC; directed staff and project activities; managed cost/schedule, quality, safety, and subcontractors. Scope: Engineer of Record for design and construction phase services to repair of five jetties and one rock dike in Galveston, Freeport and Brazos Island Harbors, Matagorda Ship Channel and Sabine-Neches Waterway.
- **Reservation and Building Post-Hurricane Assessment | USACE - New Orleans District, Los Angeles, CA.** Served as the Project Manager for a multi-disciplined team assembled to inspect the New Orleans District Headquarters and Reservation for damage due to Hurricane Katrina. The team was charged with inspecting and assessing all associated buildings, appurtenances, and features located on the Headquarters site. Upon completion of the inspection, draft and final reports including a cost estimate and photo documentation were produced with recommendations to make the facilities functional such that the District could continue to administer emergency operations in the aftermath of Hurricane Katrina. The inspections and draft and final reports were completed in five days.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

David Fulks, PE, CCCA, CDT

Project Assignment:

Civil/Site

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

27

Education: Degree(s) / Year/Specialization:

- MS / 2020 / Engineering Management
- BS / 1997 / Civil Engineering

Active Registration: Year First registered/discipline:

- 2002 / Professional Engineer (Civil)
- Board-certified Water Resources Engineer
- Project Management Professional
- Envision Sustainability Professional
- Certified Construction Contract Administrator
- Certified Construction Specifier

Other experience and qualifications relevant to the proposed project:

Mr. Fulks serves as a technical expert and supervising engineer for civil engineering staff within Arcadis's Water Management practice delivering civil works engineering projects across the nation. He is a board-certified water resources engineer and has over 25 years of experience in the design of levees, floodwalls and floodgates, drainage control structures, coastal structures, roadways, airfields, and commercial and industrial land developments. His experience encompasses analysis and design of site hydrology and hydraulics; geometric design of levees, dikes, jetties, and beach nourishments; geometric, pavement, and drainage design for highways, streets, runways, and taxiways; and inspection and rehabilitation of dams, levees, locks, and spillways.

- **East Side Coastal Resiliency Project | New York City Department of Design and Construction, New York, NY.** Civil engineering design lead in the development of geometric layout of flood walls and floodgates, roadways, levees, and berms, and retaining walls. Directed civil design and cost estimate development. Developed O&M schedules and budgets. Scope: Design of 2.4-mile coastal flood protection system including floodgates, flood walls, bridging berms and combined sewer overflow system. Complexity: High – due to flood mitigation system along the heavily urbanized shoreline of Manhattan.
- **East Rockaway Inlet to Rockaway Inlet and Jamaica Bay Multi-Purpose Feasibility Study | USACE New York District, New York City, NY.** Developed civil cross sections and geometric layouts of sea walls, flood walls, navigation gates, levees, living shorelines and beach nourishments. Directed civil design and developed MII cost estimate. Scope: Feasibility study for reducing vulnerability to major storms and providing sustainably. Complexity: High – due to complex developing flood damage reduction plans in a dense urban environment.
- **Southwest Coastal Louisiana Multi-Purpose Feasibility Study | Louisiana Coastal Protection and Restoration Authority (CPRA), Southwest LA.** Civil engineer responsible for preparing the engineering MCACES II cost estimate for storm surge risk reduction features. Worked with New Orleans District cost personnel to obtain Cost DX ATR Certification by the Walla Walla District.

Scope: Feasibility design for multi-purpose National Ecosystem Restoration (NER) and hurricane/storm damage risk reduction National Economic Development (NED) project. Complexity: High – coordination between USACE and CPRA as well as developing a multi-purpose project (NER and NED plan).

- **Mecca Water Impoundment Aquatic Restoration Design | South Florida Water Management District, Palm Beach Gardens, FL.** Prepared civil engineering plans and specifications for a key water storage facility. Prepared civil engineering portions of the Design Documentation Report. Scope: Design of restoration to provide supplemental freshwater flows, reduce the impacts of saltwater intrusion, and minimize damaging high discharges on the Loxahatchee River. Complexity: High – due to need to avoid seepage or groundwater impacts to residential development located adjacent to project.
- **Hampton Pump Station / Nobles Branch Sluice Gate | U.S. Army Corps of Engineers - Fort Worth District, Dallas, TX.** Provided independent technical review of the civil design and constructability for the development of three independent construction packages for a new pump station which will accommodate approximately 700,000 GPM. The project includes design of a new drainage pumping station (Hampton 3), electrical upgrades to one of the existing drainage pumping stations, and realignment of a drainage channel including installation of new roadway culverts and sluice gates.
- **Rio Puerto Nuevo Bridge and Channel Improvements |U.S. Army Corps of Engineers - Jacksonville District, San Juan, Puerto Rico.** Provided Independent Technical Review for the civil design and constructability of flood risk management improvements for the Rio Piedras Drainage Basin and its tributaries. The Río Puerto Nuevo Basin drains 24 square miles, 75 percent of which is highly developed with a population of 250,000 persons. The project includes expanding the current channel basin to accommodate a 100-year flood capacity as well as designing and replacing the Roosevelt Avenue Bridge with a new, wider, six-lane bridge.
- **Helena Levee and Floodwall Replacement | U.S. Army Corps of Engineers - Memphis District, Phillips County, AR.** Served as the assistant project manager and led the preparation of civil engineering plans, specifications, design documentation report, and cost estimate for the replacement of 3,700 linear feet of 1920s-era concrete floodwall and two steel roadway flood gates along the Mississippi River at the historic Helena Levee Walk and Municipal River Terminal site. Project challenges included developing foundation solutions to address slope instabilities induced by recently constructed grain storage bins on the site and coordinating project layout and construction sequencing constrained by existing river terminal and railroad assets and to manage the simultaneous operation of an active grain terminal through alternating harvest seasons and seasonal high river conditions.
- **Cross Bayou Drainage Structure | USACE - New Orleans District, New Orleans, LA.** Served as the civil engineering lead for a new access road and bridge, and a drainage control structure in St. Charles Parish. The project involved the geometric design of a 6-bay drainage structure capable of passing 1,400 CFS of flow and floodwalls to provide flood protection, as well as a 2-lane bridge and road to provide access to the Cross Bayou Drainage Structure project site. Performed improvement layout and quantity calculations in support of cost estimates and determination of real estate acquisition.
- **St. Bernard Parish Hurricane Flood Protection Engineering Alternatives | USACE - New Orleans District, New Orleans, LA.** Served as the senior civil engineer overseeing the conceptual design of pile-supported concrete floodwalls, and a concrete girder span bridge and associated highway approaches. This phase of the work was to produce an engineering alternative report presenting the engineering design, calculations, construction schedules and cost estimates for several alternatives.
- **Lower Barataria Sediment Diversion | Coastal Protection & Restoration Authority of Louisiana, Baton Rouge, LA.** Served as the civil engineering lead responsible for preparing the conceptual designs, schematic plans, section drawings, and construction cost estimates for a sediment diversion channel and control structure to divert sediment laden water from the Mississippi River below New Orleans into Barataria Bay.
- **Emergency Repairs / Texas Gulf Coast Jetties Design-Build | USACE - Galveston District, Galveston, TX.** Served as the project civil engineer responsible for providing the design for rehabilitation of the entrance jetties at five ship channels along the Texas Gulf Coast. Prepared limited condition assessment reports, final plans and specifications, and quantity estimates in support of this design-build project.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Garret Keller, PE

Project Assignment:

Civil/Site

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

14

Education: Degree(s) / Year/Specialization:

- BS / 2011 / Civil & Environmental Engineering

Active Registration: Year First registered/discipline:

- 2016 / Professional Engineer – LA

Other experience and qualifications relevant to the proposed project:

Mr. Keller graduated with a degree in civil engineering from Louisiana State University in December 2011. Before graduating, he began working with Arcadis as a technical intern in Arcadis' Metairie and Baton Rouge offices, gaining experience in civil and structural detailing and design. Immediately after graduating, he began working as a Water Resources Engineer in their Metairie office. As an Engineering Intern, his focus of experience includes civil design for levee, floodwall, and pump station projects with similar engagement in roadway geometrics, drainage design, and cost estimating practices.

- **Bayou St. John, Fairgrounds, 7th Ward Group C | New Orleans Department of Public Works, New Orleans, LA.** Civil engineer for drainage improvement and street replacement for numerous streets within the Bayou St. John neighborhood. The streets included improvements to Leda Court, Verna Court, Marie Street, St. Vincent Street, Toulouse, N Lopez, Galvez, and Florida Ave. The design included complete drainage calculations for the upgraded stormwater infrastructure, roadway geometrics, and utility coordination and design. Existing water and sewerage lines are to be replaced as part of the project, as well. The updated design is critical to reducing street flooding within the neighborhood.
- **Gardena Street Rehabilitation | New Orleans Department of Public Works, New Orleans, LA.** Civil designer for drainage improvements and the complete street rehabilitation for Gardena Street from St. Bernard Avenue to Paris Avenue (2,500 feet) that includes drainage calculations and design for the surrounding area (approximately 20 acres). Design includes runoff determination, catch basin locating, stormwater replacement, and water line replacement. This included a managed drainage approach as to not to overwhelm the existing culvert at the downstream tie-in at Paris Avenue.
- **Chef Menteur Bridge and Approaches Environmental Assessment | LADOTD, Orleans Parish, LA.** Responsible for geometry and roadway design for a high-priority environmental assessment for the bridge replacement. Movable and fixed-span designs are under consideration. Key issues included minimizing impacts to Bayou Sauvage National Wildlife Refuge, avoiding Fort McComb historical site, avoiding the existing bridge that is eligible for the NRHP, and providing alternatives that comply with the Complete Streets Policy.
- **LA 594 (Millhaven Rd.) Stage 0 Compliant Study I-20 | Economic Development Corporation, Ouachita Parish, LA.** Primary designer: roadway intersection and roundabout improvement alternatives for a LADOTD Stage 0 study to improve LA 594 between Garret Road and Russell Sage Road in Monroe, Louisiana. Both a curb and gutter and shoulder UA-2 alternatives were developed, abutting the KCS right of way. Two roundabouts were evaluated in compliance with LADOTD EDSM

V.1.1.6 (Design).

- **Elmwood Parkway Drainage Improvement | Jefferson Parish Department of Capital Projects, Metairie, LA.** Civil engineer responsible for the replacement of 2500 linear feet of stormwater piping and the associated roadway restoration. The project included the replacement of waterlines at each cross-street for reduction of future water main maintenance and future street demolition. The contract included the development of plans, specifications, construction cost estimate, and bid documents.
- **C-139 Flow Equalization Basin Design | South Florida Water Management District, Hendry County, FL.** Civil Engineer whose role involved the civil site design, construction drawing development, coordination of construction cost estimate based on management of borrow material, unsuitable material, and offsite stockpiled material. This project encompassed the design of an 11,000-acre-foot shallow impoundment and water control structures, aimed at effectively managing source basin runoff. The complex project included an accelerated schedule and avoided impacts on surrounding properties.
- **East Side Coastal Resiliency| New York City Dept. of Design and Construction, New York City, NY.** Served as Senior Project Engineer for conceptual design of flood mitigation features in lower Manhattan between Montgomery Street and 23rd Street encompassing East River Park, Con- Edison Pier and Stuyvesant Cove Park. Technical duties included civil design and layout of the flood protection berms, floodwalls, and the numerous proposed floodgates, as well as, the geometric design of the East River Park pathways, analysis of the existing stormwater conditions, and determining beneficial options for utility conflicts. Designs were closely coordinated with city agencies, FEMA, Con-Edison and other utility providers, community groups, adjacent projects, and other stakeholders to achieve project goals of enhanced community connectivity and access to the waterfront while simultaneously achieving resiliency goals.
- **Mecca Water Impoundment Design | South Florida Water Management District, Palm Beach Gardens, FL.** Civil Engineer responsible for the evaluation of construction methods and developing a production rate-based construction cost estimate for all aspects of the future project in compliance with AACE 17R-97. Assisted in the development of the Design Documentation Report. The project included design of a 7,200-acre-foot aboveground reservoir to restore flows to the Loxahatchee River. The design needed to avoid seepage or groundwater impacts to a residential development located adjacent to the project.
- **Rio Puerto Nuevo Channel (2D/2E) and Roosevelt Avenue Bridge (2B) Modification Design | USACEJacksonville District, San Juan, PR.** Civil Engineer responsible for civil site design, constructability review, and sequencing for the complex requirements of maintaining channel bypass and traffic requirements. Led development of plans, specifications, and design documentation report for the civil discipline. Scope included the design and construction of improvements for a 1.1-mile-long channel to accommodate a 100-year flood and a bridge design and replacement. The project required the construction to maintain conveyance during construction in a dense urban area, as well as seismic bridge and channel requirements. Cost: $150M (const.)
- **Seabrook Engineering During Construction | USACE - New Orleans District, New Orleans, LA**. As part of the IHNC – Seabrook closure complex, a 95-foot-wide Sector Gate, two 50-foot-wide Vertical Lift Gates, and tie-in Twalls on both sides of the bank are being designed. Project responsibilities include detailed engineering and design (E&D), preparation of a Design Documentation Report (DDR), preparation of plans and specifications (P&S), and support during construction. The current construction cost of the project is estimated around $170 million U.S.
- **Cut-off/Pointe-Aux-Chenes Levee Reach L Final Plans Coastal Protection & Restoration | Authority of Louisiana, Baton Rouge, LA.** Civil Designer for preparation of plans for improvement of an existing levee to meet federal standards and increase its level of protection. Civil designs of earthen levee, sheet pile floodwalls, borrow pits, access ramps and utility crossings. Improvements to an existing bulkhead and pump station discharge pipes. Quantity calculations in support of cost estimates.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Muhammad “Badre” Enam, PhD, PE | Water Resources Engineer

Project Assignment:

Structural

Name of Firm with which associated:

Arcadis U.S., Inc.

Years’ experience with this Firm:

15

Education: Degree(s) / Year/Specialization:

- PhD / 2008 / Structural Engineering
- MS / 2001 / Structural Engineering
- BS / 1998 / Structural Engineering

Active Registration: Year First registered/discipline:

- 2013 / Professional Engineer – LA
- 2015 / Professional Engineer – NY
- 2016 / Professional Engineer – VA

Other experience and qualifications relevant to the proposed project:

Dr. Enam has more than 21 years of experience as a structural engineer. His professional experience includes design of flood resiliency structures such as flood walls, roadway flood gates, sector gates and vertical lift gates, stability analysis of dams for extreme flood and seismic loading, dynamic effects analysis from ship/barge impact on hydraulic structures and bridge piers, reinforced concrete roadway and rail road bridges, steel plate girder bridges including moveable spans, sewer and waste water pump station design, temporary and permanent soil retaining structures and deep foundations, and concrete and steel design of residential and commercial buildings.

- **Seabrook Floodgate – Engineering Alternative Report – USACE (2016) | USACE – New Orleans, New Orleans, LA.** As one of the design alternatives, performed structural design of a navigable/ closeable sector gate at the north end of the IHNC that will provide a storm barrier and prevent the potential breaching of the line of levee and floodwall protections along the IHNC. The sector gate provided flood protection for a 95-foot-wide opening with a sill elevation of -16.0 and a top of gate elevation of +18.0 when closed. The fast-tracked Phase I included design of the steel gate structure, reinforced concrete gate monolith including gate bay walls, vertical thrust block and thick base slab. The conceptual-level design also included T-wall tie-in construction and relevant cost estimates.
- **Lower Barataria Sediment Diversion Project | Coastal Protection and Restoration Agency (CPRA), South Louisiana,** LA. Performed conceptual level structural design for a sediment diversion structure at southern Louisiana near Barataria Bay. The diversion structure shall be capable of accommodating 50,000 cfs flow and will divert sediment from the Mississippi River to the Barataria Bay side for potential land building. The structural design included two 60 ft. wide and steel tainter gate and associated monolith, utilizing stoplogs for dewatering. Other design work included two vertical lift gate structures on the bay side, concrete transition channels and tie-in walls. Conceptual structural design work included steel and reinforced concrete design, pile foundation design, flood wall design, temporary retaining structure, quantity estimation and cost calculation.
- **Design-Build for Flood Mitigation at the Hugh L. Carey Tunnel and Queens Midtown Tunnel | Triborough Bridge and Tunnel Authority (TBTA), Metro Transit Authority (MTA), New York, NY.** Worked as Principal Structural Engineer and Designer of Record, he provided Design-Build services

for flood mitigation at the Hugh L. Carey Tunnel (HLCT) and Queens Midtown Tunnel (QMT). The design work includes a comprehensive flood mitigation program to protect the entrance and exit plazas of the HLCT.

- **Lower Barataria Sediment Diversion Management and Design Services | CPRA, Plaquemines Parish, LA.** Structural engineering for the Lower Mississippi River Sediment Diversions as part of a critical system of diversions to restore wetlands and marshes that have been lost to natural erosive forces and to man's intervention in the ecosystem.
- **St. Bernard Parish Flood Management (2015) | USACE New Orleans District, New Orleans, LA.** Project engineer for structural design of sector gate control structure and tie-ins within the project area. Other responsibilities include preparation of Design Documentation Report, construction cost estimate for all measures, and estimate of costs to perform engineering services during construction of the project. These final P&S will be used for solicitation of bids, contract administration, construction, and inspection.
- **Bayou Dupree Sector Gate Control Structure | St. Bernard Parish, LA.** The bayou flows into the Mississippi River Gulf Outlet and the control structure serves as an essential component of the New Orleans Hurricane Protection System (HPS) in St. Bernard Parish. The project features to provide the 100-year protection include building the steel sector gate structure, T-wall tie-ins to the flood control levees that flank the existing structure, scour protection for the transition zones, mechanical control system for the operation of the sector gates, a generator power supply system to operate gates and light the facility, and a pontoon bridge structure to allow vehicular access to the Lake Pontchartrain and Vicinity (LPV) Reach 145 of the HPS.
- **Storm Surge Suppression Feasibility Study | Gulf Coast Community Protection and Recovery District (GCCPRD), Upper Texas Coast, TX.** Preliminary structural design, quantities and cost estimate for a flood barrier across Houston Ship Channel in Galveston, including various alternative analysis, steel gate modeling using STAAD Pro, preliminary design of support islands and tie-in connections and generating reports. Flood barrier alignment structural features included 1200 ft. wide & 72 ft. tall floating Sector Gate, 200 ft. wide Barge Gates, tie-in Combi-walls and T-walls.
- **Jamaica Bay - Rockaway Inlet to East Rockaway Inlet Reformulation Study | USACE New York District, Jamaica Bay, NY.** Responsible for concept level design of flood wall, sector gate, vertical liftgate and other flood closure structures. Performed analysis and preliminary design of structures including shallow and deep foundation leading to quantity estimation and preliminary cost calculations. Feasibility level study was conducted under the SMART Planning Framework to reduce the vulnerability to storms for the natural coastal ecosystem and communities.
- **30% Level Design of Lock Structures Upper Ohio – Montgomery Lock and Dam | Inland Navigation Design Center (INDC), USACE.** As Structural Engineering Lead, worked on the 30% level P&S design of a new 110 ft. wide lock chamber, replacing an existing auxiliary lock. Design effort included stability analysis of highly vulnerable existing lock wall that will remain in-service during construction. Also performing analyses and designs for the new lock chamber walls, Miter Gtes, sills, bulkheads, cofferdams etc. Design alternatives included multiple construction sequences that feature both in-the-wet, in-the-dry and mixed condition constructions to identify most cost-effective solution. All alternatives and plans were prepared using Revit, Navisworks and BIM360 for client coordination.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Sharear Kabir, PE | Civil Engineer

Project Assignment:

Structural

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

7

Education: Degree(s) / Year/Specialization:

- MS / 2008 / Civil Engineering

Active Registration: Year First registered/discipline:

- 2012 / Professional Engineer – LA

Other experience and qualifications relevant to the proposed project:

Mr. Kabir is a professional engineer with more than 13 years of experience in civil engineering field ranging from structural design and analysis to construction management and field supervision. He possesses good understanding of LADOTD, AASHTO, ASCE, ACI, AISC, and HSDRRS design standards and demonstrated proficiency in structural analysis and design of bridges, hydraulic structures, earth-retaining structures, highway sign structures, etc. His experience also includes the quantity estimation, QA/QC support, preparation and revision of project proposals, draft reports, shop drawings, plans, and specifications.

- **Alphonse Forbes Road Over Sandy Bayou | City of Baton Rouge, Parish of East Baton Rouge, LA.** The scope of this project is to replace an existing bridge structure composed of seven span 134' concrete deck bridge placed over timber beams and timber piles with a 9-span, 180-foot-long and 30'-6" wide concrete slab span bridge supported by 18-inch square prestressed concrete piles and cast-in-place concrete pile bents. The bridge site is located approximately 7.7 miles northeast of the City of Central, LA in East Baton Rouge Parish where Alphonse Forbes Road crosses Sandy Bayou. Worked as the Structural design engineer for this project. The engineering responsibilities include the development of General Plans, foundation layouts, superelevation diagrams in addition to structural design, detailing and load ratings of various bridge components such as: slab spans, bent caps, approach slabs, etc.
- **US 90 Business Signing Upgrade LADOTD | Jefferson and Orleans Parishes, LA.** Project Structural Engineer responsible for designing the overhead and roadside signing structures following LADOTD and AASHTO design standards for the US 90 Business corridor for a length of approximately 9.8 miles. Actively participated in structural design of sign support structures, structural quantity calculations, and preparation of structural drawings. Investigated the as-built plans for the types, sizes and clearances of existing bridge girders, barrier, parapets, and deck overhangs to specify the sign-support attachments.
- **East Side Coastal Resiliency DDC, New York City, NY.** Project Structural Engineer for the design of flood mitigation features in lower Manhattan area along the East River between Montgomery Street and 23rd Street. Technical responsibilities include the structural design of ten steel swing gates and roller gates, RCC columns and support monoliths for flood gates, T-walls, L-walls. The scope of the project also includes the structural design of regulator chambers and pipe networks for sewer and storm-water system. Assisting Lead structural engineer in project coordination, structural drawing reviews, and materials quantity take off.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Kirk Lowery, PE, BC, GE | Technician / Analyst

Project Assignment:

Geotechnical

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

11

Education: Degree(s) / Year/Specialization:

- BS / 1987 / Civil Engineering
- MS / 2000 / Civil Engineering

Active Registration: Year First registered/discipline:

- 1994 / Professional Engineer – LA
- 2014 / Professional Engineer –NY
- 2014 / Professional Engineer – VA
- 2014 / Professional Engineer – TX
- 1995 / Professional Engineer – MS
- 2018 / Professional Engineer – FL

Other experience and qualifications relevant to the proposed project:

Mr. Lowery is a geotechnical engineer with 30+ years of design and construction experience. Mr. Lowery's background includes performing field services; assessing; analyzing; and managing projects on a variety of environmental, civil construction, and geotechnical issues. Most recently, Mr. Lowery has been the lead geotechnical engineer, and in some instances, the Project Manager for the design and upgrade of new and existing flood protection systems.

- **Mecca Impoundment Project | South Florida Water Management District (SFWMD) Palm Beach County, FL.** Geotechnical Lead for the analysis and development of the design for a proposed aboveground water storage reservoir to benefit the Loxahatchee River, a national Wild and Scenic River in northern Palm Beach County. The project site is a 1,900-acre former orange grove adjacent to the west leg of the SFWMD C-18 Canal that was identified and included as an aboveground storage component in the USACE Loxahatchee River Watershed Restoration Project. The Mecca Impoundment is proposed to be a 7,200-acre-foot aboveground reservoir that will provide pumped diversion and storage of excess flows from the adjacent C-18W Canal and release water back to the canal, as needed and available, during low-flow periods for delivery to the Loxahatchee River to support target flows for river restoration and reduce exceedances and violations of the minimum flow levels criteria. Project responsibilities included overseeing the delivery of the geotechnical data report, geotechnical technical memoranda, and a final geotechnical engineering report that summarized the technical memoranda. The field investigation included 24 initial and four supplementary borings, 44 piezometers/wells, field permeability testing, and geotechnical laboratory testing. The six technical memoranda summarized the reservoir's seepage analyses modeling, stability and settlement analyses, geotechnical analyses of seepage canal and canal slopes, erosion protection, water control structure foundations, and embankment analysis.
- **C-139 Flow Equalization Basin | SFWMD Hendry County, FL.** Geotechnical Lead for the analysis and design for a proposed aboveground Flow Equalization Basin (FEB) to assist water flow into the existing Everglades Stormwater Treatment Areas (STAs). The C-139 FEB project consists of the construction of a new 2,800-acre FEB with associated perimeter levees and canals to store a maximum of 11,000 acre-feet of water. The current project is being constructed that allows inflow from the Deer Fence Canal into the FEB and to discharge water to be conveyed into STA 5/6 for

water quality treatment. The geotechnical design was determined based on existing geotechnical and groundwater modelling data that were enhanced with 100- to 170-foot deep borings, geotechnical laboratory testing, installation of piezometers, and slug tests of the piezometers. Geotechnical analysis of the proposed FEB included the seepage, slope stability, and erosion protection of the internal and external containment berms; the allowable filling rate; design of recirculation channels for the seepage under the external containment berms; and the foundation design of the inlet/outlet structures.

- **Tiger (Spanish) Pass Beneficial Use of Dredged Material (BUDMAT) Program, Plaquemines Parish, LA.** Mr. Lowery was the geotechnical task leader of the selected option of this project to construct roughly 80 acres of marsh and ridge via hydraulic dredging, transport over 10 miles, and placement of approximately 1.7 million cubic yards of material from the Mississippi River near Spanish Pass. As part of the evaluation and design, borings were taken to determine an excavation plan for routing the dredge pipe under Tide Water Road in Venice, Louisiana. Mr. Lowery assessed the civil layout based on right-of-way, overhead clearance, and the existing structures along the roadway, and then he analyzed the required sheeting needed to keep the excavation open.
- **Helena Levee / Floodwall Design | USACE Memphis (Phillips County, AR).** Led the geotechnical evaluation of an existing approximate 3,680-ft floodwall, that included three distinct sections. The most critical was a cracked portion due to the loading of grain tanks proximate to the wall that caused slope instability. Historical borings were reviewed, and a more thorough geotechnical investigation was undertaken to determine the seepage and shear strength properties for the project area. Seepage, slope stability and settlement analysis were performed at six sections to determine depth of sheet pile needed and to mitigate the unstable slope. Deep soil mix columns were designed, but it was determined the placement of a large berm using wick drains to increase the time rate of consolidation for the soils would provide acceptable stability for the tanks. This geotechnical design was incorporated into the final plans, specifications, design documentation report, costs for the construction of floodwalls, flood gates, embankments, wick drains, paving, drainage, subsurface utilities, and complex site logistics.
- **East Side Coastal Resiliency (ESCR) Design | New York City Department of Design and Construction, New York City, NY.** Lead Geotechnical Engineer to design and evaluate flood protection alternatives starting at Montgomery Street and extending all the way to the northern end of East River Park and extending northward along the FDR Drive to East 25th Street. The flood protection systems for the ESCR project were designed to withstand the impacts of climate change and a 100-year storm event while still providing ecological and recreational benefits, including improvements to access to East River Park. After completing the conceptual design using historical borings, a geotechnical field investigation and geotechnical data report were completed. The resilient design included using natural park features and fill options as flood protection. The geotechnical design and recommendations include calculating pile capacities, evaluating earthquake effects on the foundations, determining the amount of seepage, evaluating slope stability, and determining embankment settlement, designing wick drains to accelerate the settlement, support embankments with deep soil mix columns. Currently, the project floodwalls are in construction and the wick drains are being installed.
- **CPRA: Lower Barataria Sediment Diversion Management and Design, LA.** Geotechnical task lead for the Lower Barataria Diversion project which was envisioned to have a design capacity of 50,000 cfs and create between 9,000 and 12,000 acres of wetlands over a 50-year period. The Lower Mississippi River Sediment Diversions are part of a critical system of diversions to restore wetlands and marshes that have been lost to natural erosive forces and to man's intervention in the ecosystem.
- **CPRA: Cut-off/Pointe-Aux-Chenes Levee Flood Control Project, Baton Rouge, LA.** Geotechnical task lead for the elevation of two sections of existing earthen levee between Cut Off and Pointe-Aux-Chenes, located 20 miles southeast of Houma in the coastal marsh area within the Pointe-Aux-Chenes Wildlife Management Area. Initially, over 6.5 miles of levee was designed and constructed by the USACE while another 2.1 miles of levee was constructed by the local levee district. Led the geotechnical team to drill and sample 58 soils boring and advance 22 CPTs to characterize the soil strength profiles and quantify usable fill. The special marsh equipment and barge equipment was mobilized to access the sites and to drill in the existing Grand Bayou. Used the geotechnical information to analyze levee sections for seepage, slope stability and settlement. An I-wall was designed to protect an existing pumping station. Compiled the plans and specifications to construct the new levee sections.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Heather Sprague, PE | Civil Engineer

Project Assignment:

Water Resources

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

8

Education: Degree(s) / Year/Specialization:

- MS / 2017 / Civil and Environmental Engineering
- BS / 2013 / Biosystems Engineering C

Active Registration: Year First registered/discipline:

- 2022 / Professional Engineer – LA

Other experience and qualifications relevant to the proposed project:

Ms. Sprague specializes in hazard analysis and process automation in the Arcadis resiliency group. Her educational background has provided her with a strong understanding of sustainable design practices and the importance of ecological reconciliation. While with Arcadis, Heather has focused on a variety of projects involving risk and vulnerability assessments, economic analyses, storm surge modeling, and levee overtopping analyses. She has co-authored numerous technical memoranda and reports and has used a variety of engineering software and programming languages throughout her academic and professional career.

- **San Francisco Seawall Resiliency | Port of San Francisco, San Francisco, CA.** Developed a geospatial inventory of structure attributes for more than 12,000 buildings in the project area; upgrading and automating a spreadsheet-based economic impact model to evaluate the potential costs of inaction due to sea level rise; and leading a team of three on tasks above. The analysis will gauge potential damages to structures and critical infrastructure, as well as long-term regional economic impacts due to loss of major transportation systems, reduced tourism during restoration and other revenue-generating assets on Port property.
- **New York City Climate Adaptation Roadmap | New York City Mayor's Office of Resiliency, New York, NY.** Using Python-based model for assessing economic damages to more than 800,000 structures within the entire city of New York for present-day and future flood risk due to sea level rise. This project aims to develop the City's adaptation strategy for near- and long-term climate risk, including stormwater flooding, coastal flooding and wind damage.
- **Automation of Model for Calculating Economic Damages | Arcadis, San Francisco, CA.** Creating a Python-based tool to calculate and annualize economic damages and social impacts after flood events; primary software architect and developer; and leading team of three on model development. This tool is being developed to perform more accurate economic analyses for larger study areas and more flood events than permitted by limitations in previous spreadsheet models.
- **East Side Coastal Resiliency (ESCR) | New York City Department of Design and Construction, New York, NY.** Automated an Excel-based tool for cost estimation of coastal resilience features using VBA; updated a benefit-cost analysis model used for assessing economic damages to structures within the project area; and performed geospatial analysis to compile the latest data from multiple city agencies and flood models. ESCR is an integrated flood protection system for the east side of Manhattan that includes a combination of earthen berms, floodwalls, closure structures, and

deployable systems, along with infrastructure improvements that will significantly reduce the risk of impact of coastal storm surge flooding and mitigate stormwater runoff concerns within the project area.

- **Climate Ready Boston | City of Boston, MA.** Compiled and analyzed geospatial data from various agencies for use in climate vulnerability assessment. This assessment provides an evaluation of potential impacts from extreme heat, stormwater flooding and coastal/riverine flooding while identifying climate resilience initiatives to enable Boston to address these risks in the face of climate change.
- **Climate Ready South Boston | City of Boston, MA.** Estimated costs for more than 20 unique alignments of flood protection features along the South Boston waterfront. This cost-benefit analysis served to inform public policy decision makers on flood protection features that have been proposed for the South Boston waterfront as part of the effort to protect the area from future sea level rise and storm surge risks.
- **Boston Harbor-wide Barrier | City of Boston, Boston, MA.** Estimated costs for three large-scale flood protection alternatives features in Boston Harbor. This preliminary assessment of the feasibilities and potential benefits, costs and environmental impacts of three harbor-wide barrier configurations found that adaptable, shore-based solutions can provide the same level of protection as a barrier system at a lower cost and can contribute to neighborhoods through co-benefits in a way that a harbor-wide barrier cannot.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Nancy Powell, PE | Hydraulic Engineer

Project Assignment:

Hydraulic / Coastal Modeling

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

9

Education: Degree(s) / Year/Specialization:

- MS / 1986 / Civil Engineering
- BS / 1978 / Civil Engineering

Active Registration: Year First registered/discipline:

- 2001 / Professional Engineer - LA
- 2009 / Diplomate, Water Resource Engineering
- 2011 / Diplomate, Navigation Engineer

Other experience and qualifications relevant to the proposed project:

Ms. Powell serves as a water resources technical specialist and engineering consultant on flood risk reduction, coastal defense, and navigation projects for Arcadis. As former Chief of the Hydraulics and Hydrologic Branch of the USACE New Orleans District, Ms Powell provided management of 30 to 40 engineers, hydrologists, and technicians conducting hydrologic, hydraulic, sedimentation, river engineering, water quality, and water control activities related to the planning, design, construction, and operation of large scale flood control, navigation, and coastal protection projects, and the planning and design of environmental and recreational projects. Her responsibilities included program and project integration at the District and regional level. She also served as consultant and technical advisor for the District on all matters pertaining to hydraulics, hydrology, and water control activities and on the IPET post Katrina team.

- **SELA 76 Pump Station #13 Expansion, USACE - New Orleans District, New Orleans, LA.** Provided technical expertise to engineers and modelers performing HEC-RAS modeling in support of the ongoing design of 1,800 cfs pump expansion of the existing pump station that pumps rainwater from the Algiers portion of Orleans Parish into the Intracoastal Waterway.
- **Hampton 3 Pump Station, Forth Worth District USACE, Forth Worth, TX.** Provided technical expertise to engineers and modelers performing HEC-RAS modeling in support of the ongoing design of 1,500 cfs Hampton 3 pump station. This pump station will be part of the Hampton Pumping Plant in Dallas, Texas. Performed independent technical review of the draft Design Documentation Report and 35% Plans.
- **Nobles Branch Sump Improvement, Forth Worth District USACE, Forth Worth, TX.** Provided technical expertise to engineers and modelers developing Operations and Maintenance Manual for four 60-inch gated culverts to be constructed in the Nobles Branch Sump draining into the Hampton Pumping Plant. Performed independent technical review of the draft Design Documentation Report and 65% Plans.
- **New Orleans Lakefront Airport Floodwall, South Louisiana Flood Protection Authority East, LA.** Provided initial top of wall elevations and scour protection designs for multiple alternatives to achieve flood damage risk reduction from hurricane storm surge. The recommended project consists of a floodwall and gate system for the airport that would meet FEMA accreditation requirements. Assessed potential pumping requirements. Prepared hydraulic design portion of the feasibility report. Prepared time and cost estimates for detailed hydraulic design of floodwall system and interior drainage features to be conducted in the next phase of design.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Brian Bandy, PE | Modeler

Project Assignment:

Hydraulic / Coastal Modeling

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

19

Education: Degree(s) / Year/Specialization:

- BS / 1995 / Civil Engineering

Active Registration: Year First registered/discipline:

- 2001 / Professional Engineer - GA

Other experience and qualifications relevant to the proposed project:

Mr. Bandy specializes in watershed improvement studies and design, floodplain management, FEMA floodplain/floodway modeling, multi-purpose river basin studies, and water supply planning. He has worked with clients and stakeholders to select BMPs, including green infrastructure practices, and evaluate BMPs based on pollutant load reductions, cost and feasibility. He has managed a variety of watershed improvement projects, riverine hydrologic and hydraulic modeling studies for the State of North Carolina Floodplain Mapping program, statewide unimpaired flow development and consumptive use assessments for sixteen river basins in Georgia for the state water plan, Georgia statewide groundwater availability assessments for the state water plan and technical support for the Governor of Georgia's Water Supply program.

- **Watershed Improvement Plan Implementation (Stream Restoration) | Gwinnett County, GA.** Project water resources engineer supporting engineering of stream restoration and construction of BMPs. Gwinnett Watershed Improvement Plan work has involved Collins Hill High School and Lake Haven. All projects involve the design and construction management of streambank restoration measures and BMPs to reduce channel erosion, improve water quality, and control urban runoff.
- **North Fork Peachtree Creek | Gwinnett County, GA.** Developed HEC-HMS and HEC-RAS floodplain/floodway models of North Fork Peachtree Creek, updated floodplain and floodway mapping in accordance with Gwinnett County and FEMA requirements. Summarized results in technical report.
- **Westside Creeks/ Elmendorf Lake Park Restoration Project | San Antonio River Authority, San Antonio, TX.** Refined hydrology and hydraulic models and analyze alternatives to mitigate flooding around Elmendorf Lake including Elmendorf dam and enhance Elmendorf Lake Park and Rosedale Park. Models included HEC-HMS, HEC-RAS SWMM 2D. Participated in meetings with stakeholders including City of San Antonio, Bexar County, SARA, and local University to develop masterplan. Managed team in peer review of multiple hydrologic and hydraulic models within the Upper San Antonio River basin. Team includes park planners, stream restoration designers, water quality specialists, dredging experts, and landscape architects.
- **Village Creek Comprehensive Watershed Planning | City of Birmingham, AL. S**enior engineer supporting development of City's first comprehensive watershed plan for the largest of its 5 watersheds that lie within the city limits. Village Creek is a 99 square mile urban watershed consisting primarily of heavy industrial and residential land uses. Supported development of a HEC-HMS and HEC-RAS model simulating flood conditions and a SWMM model simulating pollutant load conditions. Helped develop 17 projects in the watershed consisting of green and gray infrastructure aimed at improving water quality and reducing flood risks in the watershed.

- **Medina River Holistic Watershed Master Plan | San Antonio River Authority, San Antonio, TX.** Developed hydraulic models, including HEC-RAS and SWMM 2-D of the Medina River from Medina Dam 25 miles downstream to the San Antonio River including Medio Creek. Identified damage centers (flood damage) as well as reaches prone to channel and overbank scour and reaches with known water quality problems. Developed holistic solutions to mitigate flooding, protect reaches from scour improve water quality. Managed team in the development of hydraulic models, including HEC-RAS and SWMM 2-D of the Medina River from Medina Dam 25 miles downstream to the San Antonio River including Medio Creek to observe the floodplain extents. Identified damage centers (flood damage) as well as reaches prone to channel and overbank scour and reaches with known water quality problems. Developed holistic solutions to mitigate flooding, protect reaches from scour and improve water quality. Supported SARA in meetings with stakeholders.
- **Georgia Statewide Surface Water and Groundwater Availability | Georgia Environmental Protection Division, State-wide GA.** Project Manager providing GAEPD technical support. Developed unimpaired flows in 16 river basins at 78 locations in Georgia from 1937-2007. Developed HEC-5, HEC-ResSim, and Georgia Tech's River Basin Planning Tool modeling to support surface water assessments. Assisted in preparing presentations to planning councils. Team developed steady state and transient groundwater models to assess water availability. Assessed current and future water availability and evaluated management practices to meet future demands for in-stream and off-stream needs.
- **Northrup Creek-Long Pond Green Infrastructure Rapid Assessment Plan and Allen Creek Stormwater Assessment and Action Plan | Monroe County, NY.** Developed watershed-based plans to assess current and potential water quality conditions to achieve water quality goals. Collected water quality, water quantity, and GIS data to characterize watershed. Developed watershed models to estimate current baseline water quality conditions and pollutant loads. Sited variety of potential structural Best Management Practices (BMPs), including Green Infrastructure (GI) and Low Impact Design (LID) practices, using GIS data interpretation techniques. Modelled BMPs to assess future water quality conditions and pollutant loads. Ranked BMPs based on protocols, including water quality benefits, cost, and feasibility. Co-authored final reports (water quality assessments and action plans), describing assessment purpose, methods, results, and recommendations.
- **Clifton Terminal Yard Conveyance/Surge Study | Metropolitan Transportation Authority, New York, NY.** Flood study of St. George and Clifton facilities on Staten Island. Coordinated with surveyors to collect information at yards, review of engineering drawings of existing stormwater conveyance systems in and around the yards. Supported development of a hydrologic model for storm durations of 1, 2, 3, 6, 12, and 24 hours for frequencies of 1, 2, 5, 10, 25, 50, and 100 year storm events. Additionally, a hydraulic model of the existing yard's conveyance system was developed using PCSWMM 2D. A hydraulic analysis was performed for the 100-year, 24-hour rainfall (TP-40) assuming high tide conditions in the New York Harbor, 100-year Federal Emergency Management Agency (FEMA) storm tide event with associated maximum rainfall, CAT 1 and CAT 2 hurricane with associated maximum historical rainfall.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

John Atkinson, PhD | CFD Modeler

Project Assignment:

Hydraulic / Coastal Modeling

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

16

Education: Degree(s) / Year/Specialization:

- PhD / 2002 / Civil Engineering
- MS / 1995 / Civil Engineering
- BS / 1992 / Civil Engineering

Active Registration: Year First registered/discipline:

- None

Other experience and qualifications relevant to the proposed project:

Dr. Atkinson's education and experience are in the areas of computational fluid dynamics, including storm surge modeling and water transport. He is proficient in the use of ADCIRC and has conducted hurricane storm surge modeling for FEMA and the USACE. His doctoral research was developing prognostic baroclinic computations of 3D flow in coastal seas; his research was sponsored by the Office of Naval Research.

- **Research of Surge and Wave Attenuation by Landscape Features | Coastal Protection and Restoration Authority (CPRA), Baton Rouge, LA.** Performed new research for CPRA in effort to improve understanding of the potential surge suppression and wave attenuation benefits that geomorphic features may provide. The initial phase of the research was to perform a thorough review of the existing scientific literature regarding attenuation and to compile an inventory of available data. The second phase of the research was to construct a novel set of numerical experiments to methodically evaluate the surge/wave attenuation potential for a wide variety of habitat and landscape types. The resulting experimental data provided a new level of understanding for the interaction between storm surge/waves and regionally variable topographic and vegetative landscapes across the Louisiana coast.
- **Modeling of Inner Harbor Navigation Canal Storm Surge Barrier | United States Army Corps of Engineers (USACE) – New Orleans District, New Orleans, LA.** Participated on the storm surge and wave modeling team for the largest civil works design-build contract in USACE history. Utilized the Advanced Circulation Model (ADCIRC) hydrodynamic model and STWAVE model, investigated the effects of storm surge and nearshore waves on the Louisiana and Mississippi coasts caused by the proposed IHNC closure structures from various design-build firms. Analysis included the creation of a high-speed, area- specific ADCIRC mesh in order to produce accurate results quickly for multiple design alternatives. A second phase of the project included the reanalysis of the awarded design in order to engineer a more proficient and cost-effective design of the closures.
- **East Land Bridge Hurricane Protection Project | Southeast Louisiana Flood Protection Authority, New Orleans, LA.** Developed a coupled ADCIRC and SWAN model to explore the potential impact of a proposed levee along the East Land Bridge (ELB). A subset of storms from the original FEMA/LACPR JSS suite of synthetic storms were selected to approximate the 100-year surge and the 400 year surge in the ELB region. Performed modeling for several proposed levee configurations. Simulations were also performed with a degraded ELB and with a maintained ELB to explore the

impact of the ELB in contributing to surge suppression. All of the project simulations will be compared to future 2060 no-action simulations to establish the efficacy of the proposed levee. Evaluation of the levee included computing maximum surge and wave differences in Lake Pontchartrain, in Lake Borgne, at the IHNC Barrier, within the areas of Slidell, St Bernard Parish, and New Orleans East, in the Pearl River Basin, and along the Mississippi coastline.

- **Estimation of Future Storm Surge Response in Biscayne Bay | South Florida Water Management District (SFWMD), West Palm Beach, FL**. Developed a storm surge modeling system using several well-known coastal modeling tools including ADCIRC, SWAN, and D-Flow (the flexible mesh version of Delft3D). The coupled models are used to compute present-day and future storm surge water levels within Biscayne Bay and within the canals leading up to the L-31E levee and gate structures for a variety of hurricane scenarios. The coupled modeling system is used to evaluate storm surge sensitivity to sea level rise scenarios derived from projections provided by the Southeast Florida Reginal Climate Change Compact. Results are used to provide crest elevation requirements needed to defend against storm surge overtopping for a range of return periods and for each of the hypothetical sea level rise scenarios.
- **Sea Level Rise Impact Analysis | The Nature Conservancy, Gulf Coast of Texas and Eastern Shore, VA.** To better understand resiliency to sea level rise and the increased risk to coastal communities, hydrodynamic and near shore wave models were developed to account for three scenarios of sea level rise, subsidence and land loss via marsh degradation. The nonlinear spatial impacts on storm surge and waves were mapped to critical infrastructure, population centers and threatened ecosystems.
- **Development of Coupled Rainfall, Riverine, and Surge Model | Department of Homeland Security, Boulder, CO.** Assisted in Arcadis' effort to develop attributes for several hundred ecosystem restoration and flood risk reduction projects to facilitate numeric modeling and prioritization analysis. This effort included geographic information system analysis, cost estimation, planning-level design, data and document production automation, and regular interdisciplinary team coordination of roughly 20 internal staff and external partners such as The Water Institute of the Gulf, the RAND Corporation, USGS, academia, and local governmental partners. He also assisted in planning and executing numerous public outreach engagements with local and regional stakeholders.
- **Southwest Brooklyn Waterfront Study of Wave Attenuation | Port Authority of New York and New Jersey, New York, NY.** Developed hydrodynamic and wave modeling to evaluate proposed natural shoreline and green infrastructure technologies for wave and flood protection within an urban waterfront. Proposed features included constructed wetlands, ridges, breakwater, and barrier islands, all to be primarily constructed from recycled dredge spoil materials. Modeling explored the feasibility of the green technologies for wave attenuation.
- **Flooding and Sea Level Rise in Norfolk | City of Norfolk, Norfolk, VA.** The City of Norfolk is experiencing increased flooding as a result of subsidence and sea level rise. In some neighborhoods, storm water systems no longer function at high tide, resulting in rainwater ponding on roadways and in residential properties during relatively minor rain events. Arcadis has been awarded an IDIQ contract to assist Norfolk with evaluating options and regional strategies to deal with a variety of flooding issues and to improve the City's resilience to future precipitation and storm surge events. To date, several task orders have been issued; to support hosting the Hampton Roads Dutch Dialogues, to review and critique previous work performed to date by others, and to support the City's efforts to develop an application to the National Disaster Resilience Competition. Arcadis is working with the City to integrate Urban Planning, Storm Water Management, Flood Modeling, and Coastal Engineering for a holistic response to flooding issues.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Joseph Marrone, PE | Technical Expert

Project Assignment:

Hydraulic / Coastal Modeling

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

4

Education: Degree(s) / Year/Specialization:

- MSc / 1990 / Ocean Engineering
- BSc / 1987 / Naval Architecture and Marine Engineering

Active Registration: Year First registered/discipline:

- 2004 / Professional Engineer (Civil) - NY
- 2003/ Professional Engineer (Civil) - CT
- 1992 / Professional Engineer (Civil) - NH
- 2007 / Professional Engineer (Civil) - ME
- 2009 / Professional Engineer (Civil) - SC
- 2013 / Professional Engineer (Civil) - OH
- 2011 / Professional Engineer (Civil) - GA

Other experience and qualifications relevant to the proposed project:

Mr. Marrone is a Technical Expert with more than 35 years of experience in the planning and design of urban and coastal resiliency projects, waterfront facilities, coastal engineering and offshore structures. Throughout his career, he has specialized in the design of unique resilient solutions in the challenging marine environment. He has also taught a graduate level course in Coastal Engineering at the University of New Hampshire. He has been responsible for all aspects of the planning, evaluation and design of urban and coastal resiliency projects, industrial, coastal protection projects, and commercial and military waterfront structures, including conceptual design studies, structural evaluations, final design plans and specifications, cost estimates, and construction administration.

- **Financial District & Seaport Climate Resilience Master Plan | New York, NY.** The project developed a blueprint for comprehensive flood defense infrastructure to protect Lower Manhattan from the urgent threat of climate change. The plan, projected to cost $5 to $7 billion, reimagines the shoreline of Lower Manhattan and creates a resilient waterfront to withstand severe coastal storms and rising sea levels. Nearly one million people work in, live in, and commute through the low-lying Financial District and South Street Seaport neighborhoods. Responsible for engineering feasibility, costs, constructability and phasing. Developed innovative and reliable coastal protection features that integrate with the urban and landscape design elements, navigate complex subsurface infrastructure and transportation links and support maritime activities, public access and ecological enhancements.
- **East Side Coastal Resiliency Project | New York City Department of Design and Construction, New York, NY.** Technical Expert for design of resiliency features on the east side of Manhattan. The project consists of an approximately 2.5-mile-long coastal flood defense system along the East River beginning near East 23rd Street and extending to Montgomery Street. Specific tasks have included gate evaluation, operation and maintenance plan development, Federal Emergency Management Agency (FEMA) map revision evaluation and coordination, and sea level rise impact evaluation.
- **Living Breakwaters Project | Staten Island, Staten Island, NY.** Project Principal / Chief Project Manager for the coastal engineering and 30% design of a "living breakwater" under the Department of Housing and Urban Development (HUD's) Rebuild by Design project to create innovative solutions

for resiliency. The living breakwaters project is one of 10 projects selected by HUD across the Sandy-affected region to be pursued in the final stage of the design competition. Living breakwaters will combine offshore breakwaters with shellfish habitat to enhance ecological benefit of the structure. Technical Expert for the 60% and 95% design phases including overseeing the coastal modeling (numerical and physical) program.

- **Program Management and Engineering Services for Bay Park Sewage Treatment Plant (STP) Hurricane Sandy Recovery | Nassau County Department of Public Works, East Rockaway, NY.** Technical Expert for the review and compliance check of the berm, flood wall and gate system installed to protect the Bay STP which was damaged by Super Storm Sandy.
- **Breezy Point Coastal Resiliency Project Preliminary Design | New York City Department of Design and Construction, New York, NY.** Project Manager and Technical Expert for the design of a coastal flood risk reduction system for the communities of Breezy Point and Roxbury. Work includes evaluation of risk reduction strategies, analysis of coastal conditions, consideration of potential interior drainage and groundwater impacts, design of flood walls, gates and dunes, field work coordination, environmental review assistance, and community outreach.
- **Sustainable Shoreline Design | Port Authority of New York and New Jersey, Confidential Location, NY.** Technical Expert for the concept development and design of sustainable shoreline elements to help enhance a traditional steel sheet pile seawall project. Proposed use of environmentally enhanced materials and structures to reduce scour, wave reflection and erosion of existing marsh areas. Evaluated site conditions including regional and nearshore wave modeling, developed concepts and preliminary designs, determined design parameters, prepared plans and specifications, and provided cost estimates.
- **Bay Park STP Perimeter Flood Protection Berm and Flood Wall | Nassau County, Nassau County, NY.** Technical Expert for the review and compliance check of the berm, flood wall and gate system installed to protect the Bay Park STP which was damaged by Super Storm Sandy.
- **Resilient Bridgeport Project | City of Bridgeport, Bridgeport, CT.** Project Manager and Technical Expert for the National Disaster Resilience Competition project to provide flood risk reduction from both infrequent coastal storms as well as from more frequent rainfall events, while promoting economic development and community benefit. Project components include raised street for dry egress, flood walls and gates, interior drainage improvements and a “resilience trail”. Technical Expert and Engineer of Record for the concept design of a green infrastructure and community storm water improvement project as part of the Rebuild by Design effort. Components include raising streets for dry access, infiltrations/ retention/detention strategies, green infrastructure and an improved drainage system. Community and stakeholder outreach and engagement were key to developing and refining the project. Both project components include robust community and stakeholder outreach programs. Work includes supporting the environmental review process and field data acquisition.
- **Climate Ready South Boston | City of Boston, Boston, MA.** Technical Expert for the feasibility, implementation, constructability and cost estimate review related to the development of a detailed district level strategy and implementation plan to address sea level rise and recurrent flooding in the Seaport and Southie neighborhoods of the City of Boston, including both technical and policy recommendations.
- **Rockaway Crossings Master Plan and Resiliency Need Study | Triborough Bridge & Tunnel Authority, Jamaica Bay, NY.** Technical Expert for the review of sea level rise and climate change impacts for two bridges crossing Jamaica Bay, NY. Reviewed historic storm records and frequency projections as well as condition reports, geotechnical information and as-built drawings as part of the impact evaluation.
- **FEMA Coastal Flood Mapping Revisions | FEMA, Various Locations, New England.** Responsible for FEMA coastal flood zone mapping and revision projects including flood map updates for 10 counties in New England. Directly responsible for meeting schedule and budget and for Quality Assurance/Quality Control (QA/QC) on all deliverables. All work was completed in accordance with FEMA’s “Guidelines and Specifications for Flood Hazard Mapping Partners” including recommendations for evaluating coastal structures. Directly responsible for all coastal modeling including developing technical approaches, providing QA/QC, and ensuring compliance with FEMA and project requirements.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Danica Adams | Funding / Management Expert

Project Assignment:

Arcadis Planning / Funding

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

3

Education: Degree(s) / Year/Specialization:

- MS / 2013 / Sustainable Design
- MS / 2013 / Communication and Regional Planning
- BS / 2006 / Environmental and Sustainable Resources

Active Registration: Year First registered/discipline:

- None

Other experience and qualifications relevant to the proposed project:

Ms. Adams has extensive experience translating water management needs into policy initiatives and planning objectives, and evaluating the efficacy of regional stormwater management, low impact development and green infrastructure programs. She also specializes in community engagement, regional and environmental planning, and start-to-finish program concept, design, administration and close-out for disaster mitigation and recovery.

She worked in the public sector for over a decade before moving into the private sector and brings with her a deep understanding of state and local government processes. Danica is a member of the Arcadis Urban and Coastal Resilience Planning, Policy, and Funding team.

- **Louisiana Watershed Initiative | Louisiana.** Program Manager to transition Louisiana to watershed-based planning and floodplain management. Planned and implemented high-profile state-wide and unified vision, goals, and new program framework in coordination with program partners. Led extensive stakeholder engagement, coordination, and consensus building across multiple disciplines, and with state, federal, local, private, and not-for-profit groups, including the office of the Governor. Managed multiple contracts and consultants and developed scopes of services to achieve program goals. Established working groups and technical advisory committees to help solve key problems. Supervised Local Disaster Recovery Managers in five Planning Districts.
- **Puerto Rico CDBG-DR Grant Management | Puerto Rico.** Managed a team responsible for statewide administration and implementation of more than $260 million in federal grant funds designated for recovery planning programs. Supported development of Mitigation Action Plan for use of $8.2 billion. Drew on best practices in Mitigation and Planning to design and deliver effective and responsive recovery programs. Coordinated and collaborated with the client, the Managing Partner, as well as Senior Project Managers and other teams to ensure that the client's needs were anticipated and met on schedule, that program deliverables were of exceptional quality, and continued forward progress was both sustained and effectively communicated. Performed overarching program management activities, including program development, workflow management, and communication support for the four programs within the planning portfolio. Monitored compliance with the Puerto Rico CDBG-DR Action Plan and 2 CFR 200 Office of Management and Budget Uniform Administrative Requirements.

- **Data Planning and Implementation | Various Locations.** Conceptualized, researched and drafted the Puerto Rico GeoSpatial Framework (GeoFrame), a soup-to-nuts, comprehensive program, funded through leveraged CDBG-DR and CDBG-MIT funds, to create a complete cadastral database for the Island of Puerto Rico. Her team drafted detailed program guidelines and implementation roadmap for the GeoFrame Program to include new data collection efforts for property boundaries, property ownership and tenure, occupancy, use, addressing, permitting, and road and structure mapping. Focused on forecasting state entity cadastral data needs and utilizing best available technology to collect new datasets, the cadastral database is aimed at disaster risk reduction, including floodplain management. The GeoFrame effort centered on extensive state agency collaboration and the development of new or revised data collection protocols to maintain the GeoFrame database as a "centralized, living database".

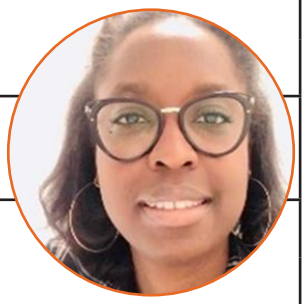
  Collaborated with regional planning commissions in Louisiana to understand flood mitigation and harm reduction requirements for consistent, high accuracy hydrologic monitoring and measuring. Incorporated these requirements into the Louisiana Watershed Initiative (LWI), a comprehensive flood mitigation program funded through leveraged assets from five participating state agencies, and the state and federal funds funnelled through their various programs. Incorporated federal entities such as the National Weather Service (NWS), the National Oceanic and Atmospheric Administration (NOAA) and the United States Geologic Survey (USGS) as allies in the local data collection and flood stage monitoring efforts.
- **Community Engagement | Various Locations, LA.** Conducted state-wide community engagement listening tour to inform the structure and content of the Louisiana Watershed Initiative (LWI). Worked closely with the Louisiana regional planning commissions and collaborated with the five participating LWI state agencies to ensure the unique needs of each region and agency are incorporated into the program methodology and outcomes. Shaped a state agency participation and engagement plan that incorporated more than 50 Puerto Rican state agencies, aimed at generating buy-in and ownership of the Puerto Rico Geospatial Framework (GeoFrame) Program. Formed relationships with mayors, county commissioners and other local officials in the Texas Coastal Zone to provide technical assistance related to compliance with coastal zone stormwater runoff requirements. Initiated and led citizen campaign to preserve a 100-acre greenspace in Lafayette, Louisiana for use as a public park. Managed a team of citizens with a variety of personalities and skills to run a positive, constructive, inspiring campaign that brought people from diverse backgrounds into the civic planning process with the University, and the City-Parish Government resulting in the purchase of the property by the City for $6.8 mil using tax dollars. Built the volunteer and citizen engagement culture related to watershed-based stewardship and education in the Vermilion-Teche Watershed, located in southwest Louisiana.
- **Stormwater Management and Administration | New Orleans, LA.** Created cross-departmental systems supporting the implementation of stormwater regulations as described in the New Orleans, Louisiana Comprehensive Zoning Ordinance. This included the creation of application-to-permit, inter-departmental workflows and supporting the development of a fee-in-lieu system. In this capacity I conducted stormwater consultations and performed reviews of building and site plans for the City of New Orleans. In role with the University of Texas at Austin, Center for Research in Water Resources, designed and implemented a technical assistance strategy to provide stormwater management assistance for 45 target non-MS4 municipalities in the Texas Coastal Zone. Worked closely and collaboratively with Mayors, County Commissioners, and other regional leaders to provide ongoing support for implementation of stormwater management practices and accomplish program objectives.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Makadi Zackery, PE | Planning Specialist



Project Assignment:

Arcadis Planning / Funding

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

3

Education: Degree(s) / Year/Specialization:

- MA / 2008 / Urban and Regional Planning
- BA / 2005 / English

Active Registration: Year First registered/discipline:

- None

Other experience and qualifications relevant to the proposed project:

Ms. Zackery has more than 15 years' experience in grant and program management. Over the course of her career, she has worked in both State and local government overseeing the development and implementation of federally funded programs and projects. Prior to joining the Arcadis team, her endeavors have included working as a Senior Grant Manager assisting in the development of research related projects, a Senior Project Manager where she managed many of the more complex disaster recovery programs, and as the technical lead for outreach and engagement for the implementation of FTA (public transit) programs and project. She is the proud recipient of the Community Service Award and Leadership Award from the Mississippi Public Transit Association.

- **Louisiana Watershed Initiative | State of Louisiana Office of Community Development, LA.** Assistant Program Manager for the Community Development Block Grant Mitigation/Community Development Block Grant Disaster Recovery (CDBG-DR) Watershed Initiative program created in response to the historic floods that occurred statewide in 2016. Designed this program to address flood risk and implement mitigation measures to prevent future flooding. Role included coordinating due diligence, guaranteeing compliance with all applicable laws, rules and regulations. Provided training and technical assistance. Developed training, outreach and informational materials and presentations. Facilitated meetings with stakeholders. Evaluated and prepared grant applications and budgets.
- **Public Infrastructure Improvement Program | City of New Orleans, New Orleans, LA.** Project Manager for the City of New Orleans CDBG-DR preconstruction program which is aimed to provide environmental testing and remediation assistance for projects located on City-owned properties. Negotiated project contracts, agreements, and budget and guaranteed all deliverables met compliance standards. Conducted monitoring and site visits to ensure compliance with regulations and contract benchmarks.
- **Commercial Corridor Revitalization Program(s) | City of New Orleans, New Orleans, LA.** Project Manager for the City of New Orleans CDBG-DR gap financing program which was created to assist new & existing local businesses (with acquisition and rehabilitation/construction support) in an effort to reduce blight and incentivize economic development in underserved areas (ex. OC Haley Commercial Corridor and the St. Claude Commercial Corridor). Coordinated due diligence (procurement, contracting, design and environmental clearance, etc.). Ensured compliance with all applicable laws, rules and regulations. Provided training and technical assistance to subrecipients. Reviewed and approved budgets, loan applications, reimbursement requests.

- **Fresh Food Retailer Initiative | City of New Orleans, New Orleans, LA.** Project Manager for the City of New Orleans CDBG-DR gap financing program designed to assist/incentivize local grocers (with acquisition and rehabilitation/ construction support) to open and operate grocery stores in designated underserved areas. Coordinated due diligence (procurement, contracting, design and environmental clearance, etc.). Guaranteed compliance with all applicable laws, rules and regulations. Provided training and technical assistance to subrecipients. Reviewed and approved budgets, loan applications, reimbursement requests.
- **Lot Next Door Program | City of New Orleans, New Orleans, LA.** Project Manager for the City of New Orleans CDBG-DR blight reduction program aimed to reduce lot vacancy by providing acquisition and redevelopment assistance to homeowners to create (private) garden/green space on a residential lot. Prepared and submitted all necessary grant compliance documentation (reports, amendments, requests, etc.). Created and monitored individual awards and agreements. Guaranteed compliance with all applicable laws, rules and regulations. Provided training and technical assistance to applicants. Reviewed and approved budgets, applications, reimbursement requests.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

George Cook, PG | Geologist

Project Assignment:

Construction Administration

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

32

Education: Degree(s) / Year/Specialization:

- BS / 1980 / Geology

Active Registration: Year First registered/discipline:

- 2015 / Professional Geologist - LA
- 2014 / Professional Geologist - MS
- 2003 / Professional Geologist - TX

Other experience and qualifications relevant to the proposed project:

Mr. Cook is a geologist and a construction manager with the firm. He has managed and participated in numerous subsurface assessment investigations for soil and groundwater conditions in Mississippi, Louisiana, Texas, and Ohio. His level of project participation includes development of project budgets for field activities as well as site supervision for field programs. These field supervisory programs have included: soil boring, sampling, and monitor well installation (utilizing both hollow stem and mud rotary drilling methods) to facilitate the collection of soil and groundwater chemical analytical data for subsurface contamination assessments. He has provided construction oversight for numerous construction activities in Texas, Louisiana, Florida, and North Carolina. Some of his responsibilities were to ensure that remediation projects were implemented in accordance with the engineering plans and specifications that all applicable regulatory requirements.

- **E.I. Dupont: Flood Wall Design.** Provided construction oversight for fast-track design-build effort for a new sheet pile floodwall and floodgate closure at facility located on the Gulf Coast. In addition to the wall, this project included a pressure relief system and scour pad designed as integral parts of the flood protection system. DuPont's facility was inundated by more than 6 feet of water from Hurricane Katrina.
- **Union Pacific Railroad: Emergency Response.** One of lead support geologists with response team to assess potential impacts near the scene of a train derailment. Worked with surveyors to establish potential impacted areas, construction of water treatment system, and subsurface and surface water investigation.
- **Huntsman Corporation: Design of Outfall Canal.** Site manager for implementation of an interim corrective measure activity, which included supervision of the construction of an alternative inverted cap for a drainage outfall. The cap consisted of an underdrain system to relieve the stress exerted by the groundwater, a synthetic liner, and concrete surface. Sludge in the bottom of the impoundment was solidified in place, covered with clay, synthetic liner, and concrete. Provided construction oversight, site training on potential hazards and daily logs to client representatives. Prepared report at end of project detailing construction activities.
- **Huntsman Corporation: Landfill Interim Corrective Measure.** Site manager for implementation of an interim corrective measure activity for a 10-acre landfill. Duties included supervision of construction crew, supervised installation of approximately 500,000 square feet of geosynthetic clay liner, ecosynthetic 60-mil liner, gas collection system, clay cap, and installation of vibrating beam cutoff wall. Supervised collection of geotechnical samples and surveying points. Provided daily reports to client and prepared document at end of project detailing construction activities.

- **Huntsman Corporation: Landfill Interim Corrective Measure.** Site manager for implementation of an interim corrective measure activity for a 10-acre landfill. Duties included supervision of construction crew, supervised installation of approximately 500,000 square feet of geosynthetic clay liner, eosynthetic 60-mil liner, gas collection system, clay cap, and installation of vibrating beam cutoff wall. Supervised collection of geotechnical samples and surveying points. Provided daily reports to client and prepared document at end of project detailing construction activities.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Jason Morrell | Environmental

Project Assignment:

Environmental

Name of Firm with which associated:

Arcadis U.S., Inc.

Years' experience with this Firm:

8

Education: Degree(s) / Year/Specialization:

- BS / 1999 / Environmental Economics & Management

Active Registration: Year First registered/discipline:

- 2013 / Professional Wetland Scientist

Other experience and qualifications relevant to the proposed project:

Mr. Morrell has more than 20 years of experience in ecology and environmental planning, including over 16 years of consulting experience. Prior to joining Arcadis, he served as a NEPA Planner and Ecologist with the Georgia Department of Transportation (GDOT) evaluating environmental effects and completing permitting and environmental documentation for transportation projects. His area of expertise includes wetland delineation, biological assessment, and environmental permitting, with a focus on Clean Water Act Section 404 permitting and Section 7 Endangered Species Act (ESA) consultation. He is experienced working with the Federal Highway Administration (FHWA), US Army Corps of Engineers (USACE), US Fish & Wildlife Service (USFWS), and state resource agencies. Since 2011, Mr. Morrell has focused primarily on Transportation Ecology and is an active member of the Transportation Research Board Committee on Environmental Analysis and Ecology.

- **Alphonse Forbes Road at Sandy Bayou Bridge Replacement | East Baton Rouge City- Parish; Watson, LA.** Planner: The Alphonse Forbes Road bridge was closed and Arcadis was selected by the City-Parish to complete a design study, topographic survey, and preliminary and final designs. Mr. Morrell managed and provided technical review of a delineation of wetlands and other waters of the U.S. and associated reporting for the project. He also worked with Design staff to avoid impacts from bridge replacement and coordinated with USACE to verify that no permit was required for the project.
- **North Bayou Black Drive/Hanson Canal Bridge (OSBP) | LADOTD, Terrebonne Parish, LA.** Ecologist: Completed a technical review of the Biological Resources and Wetland Findings Report, including required exhibits, prepared for replacement of an off-system highway bridge. Findings from the wetland delineation report were used for a USACE Jurisdictional Determination and Section 404 permit application.
- **Pete's Highway Interchange Alternative and Environmental Assessment | LADOTD, Livingston Parish, LA.** Ecologist: Led a wetland delineation and protected species habitat assessment along Range Road in the vicinity of the I-12 interchange for the proposed interchange improvement project. Provided technical review of a Biological Resources and Wetland Findings Report, including required exhibits, in support of the NEPA Environmental Assessment.
- **Environmental Support Services IDIQ Contract | GDOT, Statewide, GA.** Project Manager and Ecology Lead: Responsible for management of embedded (support services) ecology and NEPA staff managing environmental studies on behalf of GDOT, including review of consultant documents. Design and develop ecology initiatives for the GDOT Office of Environmental Services (OES) including

guidebooks and toolkits to update the Environmental Procedures Manual, training materials for contractor prequalification, applications to streamline National Marine Fisheries Service Section 7 ESA and Essential Fish Habitat consultations, and other research initiatives.

- **I-285 at Riverside Drive | GDOT, Fulton County, GA.** Lead Ecologist: Led ecology surveys and reporting for the proposed conversion of signalized intersections at I-285 eastbound and westbound ramp termini and Riverside Drive to single lane roundabouts. Responsibilities included wetland delineation and protected species habitat assessment. Completed technical review of findings report, including required exhibits, and agency coordination to support NEPA documentation for the federally funded project.
- **SR 234 at Chickasawhatchee Creek Bridge Replacement GDOT | Calhoun and Dougherty Counties, GA.** Lead Ecologist: Responsible for ecology reporting, Section 404 permitting, and Section 7 Endangered Species Act (ESA) consultation for replacement of a load-limited, structurally deficient bridge over Chickasawhatchee Creek 8 miles north of Leary, GA. Prepared a Biological Assessment for the federally listed mussel species and designated critical habitat including development of special provisions to be included in contract documents for species protection. Based on this Biological Assessment, USFWS issued a Biological Opinion concurring with the recommended biological determination to support project NEPA documentation. Successfully obtained an Individual Section 404 Permit for stream and wetland impacts associated with bridge replacement and roadway improvements, including review and coordination of permit sketches.
- **Statewide Ecology Services IDIQ Contract | GDOT, Statewide, GA.** Deputy Project Manager: Responsible for managing embedded ecologists assigned management of ecology studies, permitting, and biological assessment for GDOT projects. Negotiated a menu of services task order for on-call environmental studies providing the client the flexibility to complete tasks quickly to meet project delivery schedules. Managed preparation and provided technical review of supporting NEPA documentation for federally funded infrastructure development and improvement projects. Developed ecology toolkits, guidance documents, and templates for GDOT use and publication in collaboration with regulatory agencies and GDOT staff. Managed a research project evaluating the effectiveness of migratory bird mitigation measures on transportation projects and providing recommendations to GDOT for best management practices.
- **Railroad Bridge Replacements | Confidential Class I Railroad Client, LA and TX.** Lead Ecologist: Responsible for wetland delineation and protected species habitat assessments for replacement of two structurally deficient railroad bridges. Completed wetland findings report, including required exhibits, and calculated impacts to streams and wetlands for bridge replacements. Coordinated with design for impact avoidance and minimization and provided technical review of a Nationwide Permit (NWP) 14 Pre-Construction Notification (PCN), including permit sketches, submitted to the USACE Fort Worth District.

TEC Professional Services Questionnaire

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

PROJECT NO. 1

Project Name, Location and Owner's contact information:	Firm's Responsibility
Coastal Program Management Consulting **St. Bernard Parish Government, LA** John Lane Executive Director of Coastal Operations St. Bernard Parish Government 8201 W. Judge Perez Dr. Chalmette, LA 70043 jlane@sbpg.net Ph: (504) 278 4200	Arcadis is currently providing the St. Bernard Parish Government (SBPG) Coastal Division with a wide range of coastal program management consulting services, including the following: • Developing the parish's 2021 Coastal Strategy Document, a comprehensive local coastal master plan focused on coastal restoration, economic development, and community education and outreach opportunities in coastal St. Bernard Parish; • Developing and maintaining the parish's RESTORE Act Multiyear • Implementation Plan, which includes a series of coastal restoration and economic development projects focused on St. Bernard Parish's ongoing recovery from the Deepwater Horizon event; • Providing SBPG with ongoing RESTORE Act Direct Component project development, grant writing, and grant management services; • Developing and maintaining the parish's 2019 Federal Fishery Disaster Spending Plan, a disaster recovery document focused on the ecological and economic rehabilitation of local fisheries impacted by the recent Gulf of Mexico Freshwater Flooding (2019) fishery disaster; • Providing SBPG with ongoing Natural Resource Damage Assessment (NRDA) project and proposal development services and actively submitting projects to the Louisiana Trustee Implementation Group for funding consideration; and • Providing the parish with ongoing National Fish and Wildlife Foundation (NFWF) project development, grant writing, and grant management services.

Completion Date (Actual or estimated)	Estimated Cost:	
	Entire Project	Work for which Firm was Responsible
2020 - 2023	$125,000.00/annually	Data Analysis & Management Environmental Characterization, Compliance, & HTRW Environmental Studies & Reports Natural Resources Socioeconomics Water Resources Planning, Project, & Program Management

TEC Professional Services Questionnaire

PROJECT NO. 2		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Tiger (Spanish) Pass Beneficial Use of Dredged Material (BUDMAT) Program Plaquemines Parish, LA USACE New Orleans District Darrel Broussard PO Box 60267 New Orleans, LA 70160 Ph: (504) 862 2702	Arcadis provided planning and engineering services in the development of project alternatives, analysis, and selection of the selected plan. This project is scheduled to construct roughly 80 acres of marsh and ridge via hydraulic dredging, transport over 10 miles, and placement of approximately 1.7 million cubic yards of material from the Mississippi River near Spanish Pass. Services provided include planning, alternatives analysis, geotechnical analysis, environmental impact analysis, and design.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2019	$1 million	Prime Firm Planning Engineering Design

TEC Professional Services Questionnaire

PROJECT NO. 3		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Plaquemines Parish Vegetative Ridge and Marsh Creation Plaquemines Parish, LA Plaquemines Parish Government Robert Spears Coastal Program Manager 333 F Edward Hebert Boulevard Building 100 Belle Chasse, LA 70037 rspears@ppgov.net Ph: (504) 934 6158	The Parish underwent wetland loss due to subsidence, sea level rise, and salt water intrusion. The wetland habitat was showing severe signs of stress and deterioration and was being replaced with open water. Without sediment enrichment and a stable platform, the open water areas will continue to increase. To address this problem the Parish has developed an innovative and creative plan, a portion of which includes constructing vegetative ridges and marsh area along the lower Mississippi River. The plan comprises of approximately 34 miles of vegetative ridges adjacent to the right descending bank of the river and about 31 miles adjacent to the left descending bank. The proposed projects used dredged material from the Mississippi River and adjacent borrow. The vegetative ridges was created sustainable habitat for wildlife. Salt water marshes was restored in open water where they have been lost.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2015	$250,000.00	Prime Firm Design Modeling Data Analysis Geotechnical Land Rights Design Drawings Permitting Final Plans & Specs

TEC Professional Services Questionnaire

PROJECT NO. 4		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Buras Living Shoreline **Buras, Plaquemines Parish, LA** Plaquemines Parish Government 8056 Highway 23, Suite 200 Belle Chasse, LA 70037 Ph: (504) 297 5000	Arcadis design for the Buras Living Shoreline project incorporated the EcoShape program. The restoration project will have two main factors: • The potential use of a pre- existing sediment pipeline two miles north of the site, which conveys dredged Mississippi River sediment (built for the CWPPRA BA- 40 Scofield Island Project) • The use of EcoShape Building with nature principles for most of the project design. The EcoShape approach, in very general terms, places sediments updrift in a restoration site, and allows natural processes (waves, winds, currents) to distribute the materials and restore the site. There are essentially four restoration areas in and around the Buras marina, and each one will be treated in a slightly different manner.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2013	$104,000.00	Prime Firm Design Permitting Post-Construction Activities

TEC Professional Services Questionnaire

PROJECT NO. 5		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
2023 Louisiana Coastal Master Plan **Baton Rouge, LA** Coastal Resources Senior Scientist CPRA Sam Martin 150 Terrace Avenue Baton Rouge, LA 70802 Sam.martin@la.gov Ph: (225) 342 9025	The 2023 Coastal Master Plan aims to advance our scientific understanding of the coast and how coastal Louisiana will need to adapt to future conditions, while establishing a clear vision for the future. It refines past plans by improving the methods used to ensure projects are evaluated as efficiently, consistently, and effectively as possible. Arcadis, RAND, Purdue, Denise Reed, and SCAPE have been supporting the development of Louisiana's 2023 Coastal Master Plan in many capacities. The Arcadis team has streamlined project attribute generation, data management, and geographic information system (GIS) support for the proposed coastal restoration and protection projects through creation of the innovative python-based Project Costing Tool. The RAND and Purdue teams have led the effort to assess the associated risk reduction potential, while also continuing to improve the Planning Tool to help prioritize the proposed projects. SCAPE has played an essential role in the design of master plan communication materials, including basemaps and fact sheet layouts. In addition, consultants on our project team have supported Coastal Protection and Restoration Authority (CPRA) in thought leadership and technical advisory capacities, as well as with technical communication. **Key Challenges:** The 2023 Coastal Master Plan tackles the analysis of broader, more complicated projects than previous plans. This undertaking has required significant improvements to modelling, data management, and communication practices. **Innovation/Best Practice** The team has embraced digital solutions to improve model quality assurance/ quality control (QAQC) methods through integration with the newly developed QAQC portal, developed by the Pittsburgh Supercomputing Center (PSC). Additionally, the Arcadis team has developed a new system for storing project attribute data, estimating project costs, disseminating project information to modeling teams, and managing data via a web-based interface integrated into the PSC system.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2018 - Ongoing	$1,101,606 (Arcadis)	Prime Firm Data Analysis & Management Environmental & Risk Assessment Modeling Environmental Studies & Reports Water Resource Planning, Project & Program Management

TEC Professional Services Questionnaire

PROJECT NO. 6		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Brady Canal Hydrologic Restoration Project **Terrebonne Parish, LA** Coastal Protection and Restoration Authority 150 Terrace Avenue Baton Rouge, LA 70802 Ph: (225) 342 4127	Preparation of plans, specifications, and quantity estimates for the restoration of the earthen levee and armoring of weir structures around the rim of Jug Lake forming a portion of the southern boundary of the 7,653 acre vegetated marsh in coastal Louisiana aimed at halting salt water intrusion and reintroducing freshwater into the project area.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2013	$2,000,000.00	Prime Firm Plans and Specifications Civil Engineering Bid Documents

TEC Professional Services Questionnaire

PROJECT NO. 7		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Chenier Au Tigre Shoreline Protection **Vermilion Parish, LA** Coastal Protection and Restoration Authority Russ Joffrion 150 Terrace Avenue Baton Rouge, LA 70802 Ph: (225) 342 4127	A demonstration project, designed by the LDNR to assess the potential of the breakwaters to strengthen the shoreline against the erosive actions of the Gulf of Mexico, is located along the shore of the Chenier plain, south of Intracoastal City, LA. The beach along the Chenier plain protects thousands of acres of interior wetlands and is critical to diverse communities of fish and wildlife populations. This project area includes portions of a wildlife sanctuary and a state refuge. This project demonstrated the effectiveness of segmented rock breakwaters to trap sediment from gulf tides in this part of the gulf shoreline, potentially stabilizing the existing shoreline on Chenier Au Tigre. Increased sediment accretion on the Gulf of Mexico side of the Chenier is expected to act as an area of defense between the higher salinity seawater and the brackish marsh that lies immediately behind the Chenier. Segmented rock dikes were constructed approximately 200 feet off the shoreline to intercept wave energy before it impacted the beach and caused erosion.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2006	$1,000,000.00	Prime Firm Construction Oversight and Management Survey Management Project Coordination Contractor Management Documentation Report

TEC Professional Services Questionnaire

PROJECT NO. 8		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Innovative Dredging Initiative Coastal Louisiana Coastal Protection and Restoration Authority Rudy Simoneaux, Project Manager 150 Terrace Avenue Baton Rouge, LA 70802 Ph: (225) 342 6750 rudy.simoneaux@la.gov	The State of Louisiana, through the Office of Coastal Protection and Restoration (OCPR), contracted with Arcadis to prepare a feasibility report/guidance document that satisfied the OCPR's Innovative Dredging Initiative. CPRA researched historical projects and bid data and discovered the cost associated with hydraulic dredging for restoration projects includes a significant premium. The primary purpose of their Innovative Dredging Initiative was to pursue new contracting techniques and bidding methods that could reduce the costs as well as investigate ways to streamline design. The intent of this study was to build upon the research already conducted by the OCPR in addition to conducting more extensive investigations and facilitating communication with dredging experts throughout the industry. CPRA's primary purpose for this study was to potentially pursue new contracting techniques, new bidding methods, and to improve the methods to streamline design in an effort to reduce the overall cost of restoration projects by hydraulic dredging.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2010	$424,000.00	Prime Firm Feasibility Report/Guidance Document Dredging

TEC Professional Services Questionnaire

PROJECT NO. 9		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Cat Island Restoration Project Design **Plaquemines Parish, LA** Vincent Frelich Plaquemines Parish Government 8056 LA-23 #200 Belle Chasse, LA 70037 Ph: (504) 297 5629	Arcadis performed permitting, surveying, civil design, geotechnical design, dredge borrow source identification, modeling, and permitting services for the preliminary design of Cat Island in Barataria Bay, La. The island is important as it provides essential nesting habitat for a variety of birds, including Brown Pelicans (Pelecanus occidentalis), Reddish Egrets Egretta rufescens), and Roseate Spoonbills (Platalea ajaja). The work consisted of identifying several alternatives for the construction of the island, including containment systems for dredge material disposal, access routes for large equipment, borrow source identification, construction sequencing, geotechnical analysis for bearing capacity and settlement analysis, and shoreline armoring design. Cost-effective and sustainable alternatives were developed, from which preliminary plans and a permit application were generated. Arcadis obtained the USACE Section 404 Permits, LADNR Coastal Use Permits, and Louisiana State Lands Office Class A Permits for the reclamation of lands lost due to the Macondo oil spill and erosion.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2016	$377,000.00	Prime Firm Permitting Surveying Civil, Geotechnical design Environmental Studies and Reports Program Management Environmental Surveys Hydraulic and Hydrodynamic modeling Dredge design

TEC Professional Services Questionnaire

PROJECT NO. 10		
Project Name, Location and Owner's contact information:	**Firm's Responsibility**	
Cut-Off Pointe-Aux-Chenes Levee Design **Coastal Louisiana** Russ Joffrion 150 Terrace Avenue, Baton Rouge, LA. 70802 Ph: (225).342 412	The Cut Off to Pointe Aux Chenes Levee Project consists of Reaches K and L of the Morganza to the Gulf Hurricane Protection System authorized in the Water Resources Development Act (WRDA) of 2007. The purpose of the project was to evaluate elevating two sections of existing earthen levee between Cut Off and Pointe-Aux-Chenes (Reaches K and L) and develop preliminary designs and cost estimates for both reaches in order to assist CPRA, Lafourche Parish, South Lafourche Levee District, and Terrebonne Levee and Conservation District (local stakeholders) in project prioritization based on available funding. From this analysis, CPRA and the local stakeholders decided to move forward with the final design and construction for Reach L with the available CDBG funding. Final plans and specifications are near complete and this project is scheduled to go to construction in the spring of 2014. The estimated construction value of this contract is $7,500,000.	
Completion Date (Actual or estimated)	**Estimated Cost:**	
	Entire Project	**Work for which Firm was Responsible**
2020	$825,000.00	Prime Firm Permit Assistance and Coordination Geotechnical Drilling and Testing Oversight and Coordination Geotechnical Design Survey Coordination Civil Design Plans and Specifications Bid Package Preparation

TEC Professional Services Questionnaire

PROJECT NO. 11	
Project Name, Location and Owner's contact information:	**Firm's Responsibility**
Coastal Jefferson Preliminary Long-Term Economic Recovery Study (Phases I & II) **Jefferson Parish** Michelle M. Gonzales, CFM | Director Ecosystem and Coastal Management Jefferson Parish Government 1221 Elmwood Pk Blvd Suite 310 | Jefferson, LA 70123 o: 504.736.6653 | c: 225.223.2719 mgonzales@jeffparish.net	Arcadis is highly specialized in helping communities understand and quantify the economic impacts from the climate risks they face, and to prioritize and make informed investment decisions based on risk quantification but also on the value created. In 2023, Arcadis was selected by the Jefferson Parish Ecosystem and Coastal Management to provide Planning support in their efforts to develop a long-term strategy for economic recovery for the Town of Grand Isle and Lafitte. Coastal Jefferson Parish has experienced number of back-to-back catastrophic natural disasters within the last several years. The most recent event to cause significant flood related damage to the island's infrastructure, and subsequently the local economy, was Hurricane Ida of 2021. As the Island, much like the rest of Louisiana, was slowly emerging from the chaos and disruption caused by the COVID-19 pandemic, a series of Hurricane's swept through the region making it nearly impossible for the town to fully recover after each proceeding event. The Long-Term Economic Recovery Study Arcadis is selected to complete is a result of the ongoing recovery efforts Grand Isle is working to implement in a post-Ida and post-COVID environment. Our work for the Phase I of the Coastal Jefferson Preliminary Study and Strategy for Long-Term Economic Recovery – 2023 includes establishing a long-term development and recovery strategy, in alignment with the goals outlined in the RESTORE ACT action plan. The goal of this preliminary study and strategy development is to investigate the needs of Coastal Jefferson, by gathering data and information to support potential future investments focused on economic development such as job creation and tourist attractions. As part of the stakeholder engagement process, the Arcadis Team has provided support to Jefferson Parish and the communities of Lafitte and Grand Isle by identifying high priority, high impact projects that are anticipated to restore value and provide resources to these coastal communities. This recovery strategy is intended to serve as a catalyst for continued coordination and engagement between Jefferson Parish Government (council members and parish president) and local elected officials in Grand Isle and Lafitte, and link prior recovery and economic development efforts. Final outcomes of this project will result in a suite of development and recovery projects that are a high priority for funding, as well as action items and next steps needed to secure additional funding. In 2023, Arcadis was again selected by the Parish to continue the work of the Long-Term Economic Recovery Study – Phase II for Communities in Coastal Jefferson Parish which builds from and is a continuation of the Phase I efforts. This Phase II task specifically focuses on conducting a targeted asset inventory for Grand Isle. Arcadis is currently working with the Parish to provide a detailed analysis of land use on the island which includes an analysis of all vacant and occupied properties to help establish a set of economic recovery strategies to implement to help advance the overall long term recovery efforts. Data and information gathered will be used to inform the recommendation and actions in the LTER Study.

TEC Professional Services Questionnaire

This phase II land use investigation includes a mixed methodology of in-person assessments and GIS analysis as we work with the Parish to gather and review data related prior and existing use of all registered and unregistered properties in Grand Isle. This effort includes:

- Conducting inventory and gap analysis for parcel/property data
- Researching property/land use and revenue generation associated with business parcels/properties
- Researching zoning parameters and regulatory considerations associated with parcels/properties
- Coordinating data alignment with Jefferson Parish
- Coordinating with departments and key stakeholders of Jefferson Parish
- Conducting field-based research, site visits and local stakeholder engagement

This work will enable our team to obtain and develop an accurate land use profile of the Island. Final outcomes of this project will result in: an expanded asset inventory data for Grand Isle, usable data sets to enable and empower future planning activities, recommendations and best practices to gather and collect data, and engagement strategies for conducting future fieldwork/site visits for data validation. The aforementioned projects highlighted are just a few examples of our successful and effective approaches to working with vulnerable communities to establish strategies that promote and enhance resilience and long-term sustainability.

Completion Date (Actual or estimated)	Estimated Cost:	
	Entire Project	Work for which Firm was Responsible
2023 - Ongoing	$100,000	Arcadis

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

Parties		Status/Result of Case
Plaintiff	**Defendant**	
1. Arcadis U.S., Inc. has no litigation with the client, Jefferson Parish		
2.		
3.		
4.		

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

Introduction to Arcadis

Arcadis has more than a century-long history of consulting with a concentration on water and the environment. We are devoted exclusively to water and wastewater engineering and management consulting to enhance the performance of public and private organizations in meeting their environmental responsibilities.

Arcadis is an international leader in the fields of infrastructure, environment and buildings. The firm's multidisciplinary staff provides consulting, design, engineering and management services across the U.S. and around the world to enhance mobility, sustainability and quality of life.

What we Do

Hydraulic Modelling and Mapping

Engineering of Solutions

- Coastal protection;
- Breakwater design;
- Metocean studies;
- Flood defence structures;
- Water management;
- Storm surges and tsunamis;
- Coastal structures;
- Detailed Design works
- Hydrodynamic Modelling;
- Hydrological analysis;
- Flood Risk Assessments;
- Flood map challenges;
- Flood Hazard mapping;
- Wide range of 1D to 3D modelling tools for modelling waves, water levels, currents, sediment transports and water quallity;
- Feasibility Studies;
- Flood evacuation plans;
- Flood resilience & resistance advice;
- Seafront developments
- Land drainage consents;
- Marine licensing;
- Water environment assessments for EIA;
- Habitat restoration and river conservation;
- Ecological assessments;
- Expert witness; and
- Contract, documentation and construction supervision.

In addition to our work developing qualitative driven analysis, Arcadis also offers a proven and refined methodology and has developed industry-leading tools to quantifying risk and consequences to assets and systems across a multitude of hazards and modeling associated economic impacts. Fundamentally understanding how risk and the consequence of risk affects and drives resilience is at the heart of understanding the economic costs from hazard events, and both the costs and benefits from action

taken to mitigate these risks. Our highly skilled team of subject matter experts are able to evaluate risk for all hazards by applying a detailed quantitative economic modeling assessment based on exposure, vulnerabilities and potential consequences of impact.

An example of the innovative tools we've developed and apply when evaluating hazard risk is the **Arcadis Flood Risk Calculator (FRC)**. One of the main threats the Parish faces is flood risk. The FRC has allowed us to evaluate the compounding impacts of individual current and future flood events on buildings and infrastructure at multiple scales from neighborhood to regional. The tool provides quantitative data on losses in terms of expected annual damages for each asset assessed over a range of impacts and especially social and economic impacts. Our approach to economic modeling and risk quantification has been used to support decision-making, secure funding and drive policy change around that nation and beyond. Arcadis has helped communities across the country to quantify billions of dollars and avoided losses for project and policy alternatives allowing them to make the best investment decisions for resilience, and to more effectively communicate and substantiate these decisions to gain and retain community buy-in.

Consistent Focus on Value to the Client

Our clients tell us that they want a consulting relationship that offers several key advantages:

- Specialized knowledge of issues that affect the client's particular organization, not generalized, broad-brush consulting or a narrow project focus
- Project staff who pay attention to the client's unique needs, can adapt to local situations and promote trust and confidence
- Consistent effort to develop a relationship with the client and act in the client's best interests

Arcadis places the utmost priority on meeting these requirements to build strong partnerships with our clients across our entire wide range of service offerings.

We take a "total systems" approach to the array of challenges that our client faces. We begin by assembling the right team from the staff of our national practice, supplemented as needed with the specialized expertise of our many associate individuals and firms. We maintain a strong focus on implementation throughout the team selection process so that individuals with the appropriate expertise are involved from the start. The project team considers all aspects of the client's organization from management to infrastructure, processes, operations and maintenance. Participation of the appropriate experts facilitates the smooth progress of the project from initial assessment through implementation of the optimal solutions.

Past Performance on Similar Projects

To the best of our knowledge, Arcadis has not been removed from a contract or failed to complete a contract as assigned, due to time delays, cost overruns and/or design inadequacies in prior projects for which Arcadis was to be held at fault.

A challenging economy means now, more than ever, we must focus on delivering excellence from day one of every assignment. Tight budgets mean limited resources to change directions or correct mistakes. We understand that it isn't just what we deliver – how we get there matters, too. That is why we will continue to clearly define your expectations for every project and then work efficiently to exceed them. We prefer to develop a complete scope of work, plan the work carefully, price the scope appropriately and then manage the project to meet the schedule and budget. We do not like to request change orders. We focus instead on delivering excellence on every project and doing so with great efficiency.

Information/Data Management System

Arcadis understands that consultant-client communication is of utmost importance to our clients. We have successfully tracked the status of countless projects, while delivering exceptional results to our clients. The Information/Data Management System (IDMS) tool, a web-based project status reporting and information sharing tool, allows Arcadis to post updates to task assignments and share documents with clients in real time.

In addition, the IDMS serves as a digital liaison among all parties in work authorization contracts involving multiple assignments for project managers. The capabilities of the IDMS allow user settings to be customized

based upon the level of the staff member and, in turn, provides for consistent data input. Anyone assigned viewing permission by the IDMS administrator will be also assigned a tier of user authority. By assigning these tiers, we protect site security and integrity. Tier authorizations vary from read-only to data uploading/downloading and commenting.

These functions centralize data stewardship while maximizing data accuracy, staff communication and work efficiency.

Document Tracking and Control

Arcadis uses Primavera Expedition® software for document control of City projects. Document control is critical on assignments and this software offers exceptional capabilities for filing, document control, document tracking and reporting.

The Arcadis Team

Your local office. The Metairie, LA office will perform any services requested by the Parish of Jefferson, LA.

Arcadis U.S., Inc.
3850 North Causeway Boulevard
Suite 990
Metairie, Louisiana 70002
Phone: 504 648 3601
Fax: 504 832 2145
www.arcadis.com
Manager: Ayan Mehrotra, PE

National Resources/Size of Firm

With more than 150 offices and 5,000 employees nationwide, Arcadis has the depth of resources from which to complement the local Metairie, LA office as-needed. The Arcadis Team has a water focused practice both locally and nationally that has a full breadth of wastewater and sewer utility engineers, designers and operations professionals. The Metairie office is a full service engineering & design office located in the heart off Jefferson parish. This office, in addition to being an industry provider of water resources engineering projects, managed and delivered $2 billion of engineering and design for the USACE for the Hurricane Protection Office for levees, floodwalls and flood control structures in St. Bernard, Plaquemines, Orleans and Jefferson Parishes.

In addition to the Metairie location, the Arcadis Team has office in New Orleans and Baton Rouge that can support the Metairie location as-needed.

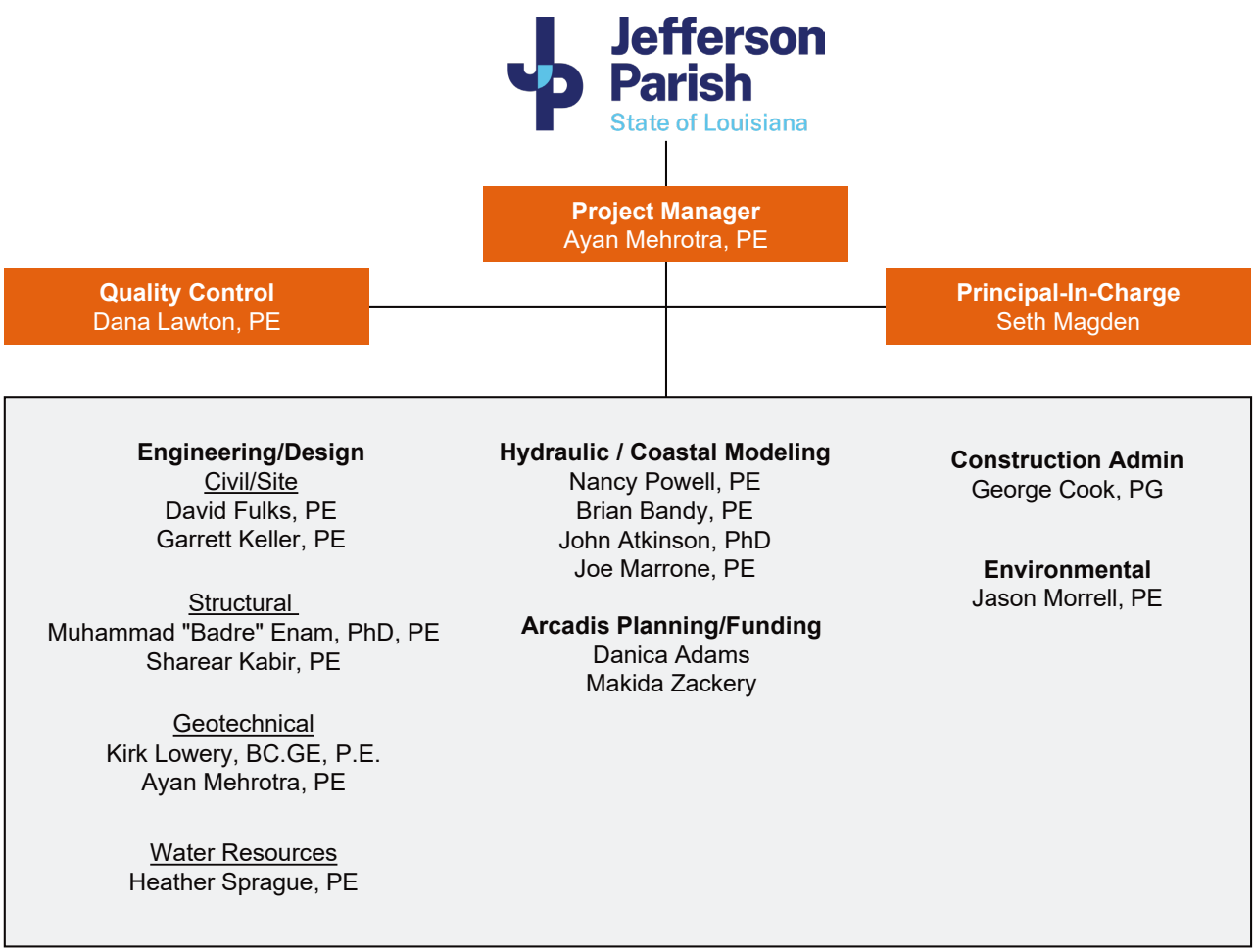
Scheduling and Capacity

Arcadis team members consistently and effectively complete multiple work orders simultaneously on-time. With a large pool of professionals both locally and nationally to pull from, we have the ability to perform your project efficiently and effectively no matter the circumstance. Throughout the region, the Arcadis Team has a number of water resources professionals that have specific expertise to support Jefferson Parish in all of the areas required to run a world-class wastewater and sewer utility. Critical to any project's success is the ability to meet deadlines and schedules, with the appropriate staff availability. Arcadis has a proven project management protocol to track work authorization progress at every level. As a result, we enjoy a reputation that matches or exceeds that of any firm in the industry for completing work authorizations on schedule. This is the approach that delivered more than $2 billion in projects for the USACE over the past 7 years.

Arcadis uses Primavera® Project Planner (P6), SureTrak® Project Manager and Microsoft Project®, as appropriate, for planning and scheduling projects. We will select the application that is most appropriate for the task, leading to a consistent level of success and deadlines. Arcadis establishes scheduling measures as part of every project to provide a consistent level of success. Our project planning process involves dividing the scope of services into smaller, well-defined and more manageable elements. Through the use of a Work Breakdown Structure (WBS), these services can be illustrated and used in a manner that promotes organization and effective communication in order to succeed in a project.

Organization Chart

The proposed organizational chart for the team is shown below.



TEC Professional Services Questionnaire

Quality Assurance / Quality Control

Whether performing design work under a task order or serving Jefferson Parish as an owner's representative, QA/QC is a critical aspect of our work under this contract. QA/QC is the ultimate responsibility of the local project manager on each project under this contract. It will be the Arcadis management team's responsibility to make certain that the proper people are conducting quality reviews.

QA/QC reviews can take several forms, including:

- Quality Assurance Reviews
- Quality Control Reviews
- Executive Project Reviews

The extent and type of project reviews will be defined in the Project Plan for each task order according to the nature, size and complexity of the project.

Quality Assurance Reviews

Quality Assurance Reviews are performed by the Quality Consultants to assist the team in producing the deliverable. These Reviews should be performed early in the project or their impact is lost. Reviews performed early also minimize cost to the project as input at this stage can provide direction without significant re-work.

Quality Control Reviews

Quality Control Reviews are the responsibility of every person involved on a project. At a minimum, every product or deliverable must be reviewed by the Project Officer and/or Project Manager before submittal.

Executive Project Reviews

Executive Project Reviews are project reviews where technical and business representatives audit a project to help improve team performance. These reviews help us identify good performance and needed improvements in the firm's processes and systems

Health & Safety

Arcadis has developed and currently implements a comprehensive health and safety (H&S) program and management system, focused on proactive project planning and identification and assessment of job hazards early in the planning and design stage. Appropriate controls are then determined and implemented to prevent and eliminate said hazards. Once a task or activity starts, the project team has the tools and processes necessary to address changing situations to stay ahead of hazards and prevent adverse impacts. Arcadis project teams have successfully applied these tools to maintain a high degree of operational safety in a variety of environments including terminals and refineries.

In addition to maintaining a strong internal safety program, Arcadis also addresses the H&S needs of our clients by offering on-site health and safety oversight. Whether it be on-site construction or remediation sites, or the development of an H&S management system, our staff can effectively handle a wide range of H&S needs.

Our H&S staff has oil and gas industry experience and includes Certified Industrial Hygienists (CIH) and Certified Safety Professionals (CSP).

Arcadis teaches and uses the TRACK method to reduce or eliminate Health & Safety incidences. Think through the task, Recognize the hazards, Assess the risks, Control the hazards, Keep health and safety first in all things.

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

Signature	**Print Name**
Ayan Mehrotra	Ayan Mehrotra, PE
Title	**Date**
Project Manager	July 16, 2024

Statement of Qualifications

AFFIDAVIT

STATE OF Louisiana

PARISH/COUNTY OF ORLEANS

BEFORE ME, the undersigned authority, personally came and appeared: Seth Magden, (Affiant) who after being by me duly sworn, deposed and said that he/she is the fully authorized Principal of Arcadis U.S., Inc. (Entity), the party who submitted a Statement of Qualifications (SOQ) to Jefferson Parish SOQ 24-020 Coastal Engineering Consulting Services (Briefly describe the services the SOQ will cover), to the Parish of Jefferson.

Affiant further said:

Campaign Contribution Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A _____ Attached hereto is a list of all campaign contributions, including the date and amount of each contribution, made to current or former elected officials of the Parish of Jefferson by Entity, Affiant, and/or officers, directors and owners, including employees, owning 25% or more of the Entity during the two-year period immediately preceding the date of this affidavit or the current term of the elected official, whichever is greater. Further, Entity, Affiant, and/or Entity Owners have not made any contributions to or in support of current or former members of the Jefferson Parish Council or the Jefferson Parish President through or in the name of another person or legal entity, either directly or indirectly.

Choice B X there are **NO** campaign contributions made which would require disclosure under Choice A of this section.

Affiant further said:

Debt Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A _____ Attached hereto is a list of all debts owed by the affiant to any elected or appointed official of the Parish of Jefferson, and any and all debts owed by any elected or appointed official of the Parish to the Affiant.

Choice B ___X___ There are **NO** debts which would require disclosure under Choice A of this section.

Affiant further said:

Solicitation of Campaign Contribution Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A _____ Attached hereto is a list of all elected officials of the Parish of Jefferson, whether still holding office at the time of the affidavit or not, where the elected official, individually, either by **telephone or by personal contact,** solicited a campaign contribution or other monetary consideration from the Entity, including the Entity's officers, directors and owners, and employees owning twenty-five percent (25%) or more of the Entity, during the two-year period immediately preceding the date the affidavit is signed. Further, to the extent known to the Affiant, the date of any such solicitation is included on the attached list.

Choice B __X__ there are **NO** solicitations for campaign contributions which would require disclosure under Choice A of this section.

Affiant further said:

Subcontractor Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A _____ Affiant further said that attached is a listing of all subcontractors, excluding full time employees, who may assist in providing professional services for the aforementioned SOQ.

Choice B ___X___ There are **NO** subcontractors which would require disclosure under Choice A of this section.

Affiant further said:

That Affiant has employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for Affiant; and

[*The remainder of this page is intentionally left blank.*]

That no part of the contract price received by Affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for Affiant.

Signature of Affiant

Seth Magden
Printed Name of Affiant

SWORN AND SUBSCRIBED TO BEFORE ME
ON THE 9 DAY OF July, 2024.

Notary Public

Printed Name of Notary

SCOTT R. SIMMONS
Notary Public
State of Louisiana
LA Bar Roll No. 23304
My Commission is for Life

Notary/Bar Roll Number

My commission expires _____.

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
05/17/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Aon Risk Services South, Inc. Franklin TN Office 501 Corporate Centre Drive Suite 300 Franklin TN 37067 USA	PHONE (A/C. No. Ext): (866) 283-7122	FAX (A/C. No.): (800) 363-0105
	E-MAIL ADDRESS:	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
Arcadis U.S., Inc. 630 Plaza Drive Suite 200 Highlands Ranch CO 80129 USA	INSURER A: Indian Harbor Insurance Company	36940
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 570105766919 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	
							MED EXP (Any one person)	
							PERSONAL & ADV INJURY	
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	
	OTHER:							
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	
	☐ ANY AUTO						BODILY INJURY (Per person)	
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	
	☐ DED ☐ RETENTION							
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						☐ PER STATUTE ☐ OTH-ER	
	ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ N/A (Mandatory in NH)						E.L. EACH ACCIDENT	
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE-EA EMPLOYEE	
							E.L. DISEASE-POLICY LIMIT	
A	Contractors Pollution Liability			US00101061E024A Professional & Pollution SIR applies per policy terms & conditions	06/01/2024	06/01/2025	Each Claim Annual Aggregate	$2,000,000 $2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Evidence of Insurance. For Professional Liability coverage, the Aggregate Limit is the total insurance available for claims presented within the policy period for all operations of the insured. The Limit will be reduced by payments of indemnity and expense.

CERTIFICATE HOLDER

Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch CO 80129 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services South Inc

Holder Identifier :

Certificate No : 570105766919

AGENCY CUSTOMER ID: 570000005571
LOC #:

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED
Aon Risk Services South, Inc.	Arcadis U.S., Inc.
POLICY NUMBER: See Certificate Number: 570105766919	
CARRIER: See Certificate Number: 570105766919 / NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: ACORD 25 **FORM TITLE:** Certificate of Liability Insurance

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER	
INSURER	
INSURER	
INSURER	

ADDITIONAL POLICIES If a policy below does not include limit information, refer to the corresponding policy on the ACORD certificate form for policy limits.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
	OTHER							
	[X] Claims-Made							
	[X] Professional Liability							
	[X] and Contractors							
	[X] Pollution Liability							

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
09/25/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Services South, Inc.
Franklin TN Office
501 Corporate Centre Drive
Suite 300
Franklin TN 37067 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 **FAX (A/C. No.):** 800-363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Twin City Fire Insurance Company	29459
INSURER B:	Hartford Fire Insurance Co.	19682
INSURER C:	Hartford Casualty Insurance Co	29424
INSURER D:	Hartford Accident & Indemnity Company	22357
INSURER E:		
INSURER F:		

INSURED
Arcadis U.S., Inc.
630 Plaza Drive
Suite 200
Highlands Ranch CO 80129 USA

COVERAGES **CERTIFICATE NUMBER:** 570101700819 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE X OCCUR X Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC OTHER:			20ECSOL5318 SIR applies per policy terms & conditions	10/01/2023	10/01/2024	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $1,000,000 $10,000 $1,000,000 $2,000,000 $2,000,000
B	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY			20 UEN OL5319	10/01/2023	10/01/2024	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
C	X **UMBRELLA LIAB** X OCCUR **EXCESS LIAB** CLAIMS-MADE DED X RETENTION $10,000			20XHUOL5322	10/01/2023	10/01/2024	EACH OCCURRENCE AGGREGATE	$5,000,000 $5,000,000
D A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		20WNOL5323 AOS 20WPROL5321 MA, WI	10/01/2023 10/01/2023	10/01/2024 10/01/2024	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Evidence of Insurance.

CERTIFICATE HOLDER

Arcadis U.S, Inc.
630 Plaza Drive, Suite 200
Highlands Ranch CO 80129 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services South Inc.

Holder Identifier :

Certificate No : 570101700819

About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are more than 36,000 people, active in over 30 countries that generate $6.5 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

www.arcadis.com

Supporting our clients in their quest to become Fit-for-Future.

Utilities must plan for unprecedented scenarios while navigating a changing workforce, but where should leaders focus?

Use the QR code below to explore the five fundamentals of becoming a fit-for-future water utility and the common thread that unites them.

Arcadis. Improving quality of life