ARCADIS

Bid Contact	**Ulia Loschiavo** **ulia.loschiavo@arcadis-us.com** **Ph 213-486-9884**	Address	**950 W. Elliot Road, Suite 220** **Tempe, AZ 85284**
Bid Notes	**Arcadis U.S., Inc.**		

Item #	Line Item	Notes	Unit Price	Qty/Unit	Attch.	Docs
12721-926--01-01	LEAD AND COPPER RULE REVISION (LCRR) COMPLIANCE PROGRAM	**Supplier Product Code:**	**First Offer -**	1 / project	**Y**	**Y**

Supplier Total **$0.00**

ARCADIS

Item: **LEAD AND COPPER RULE REVISION (LCRR) COMPLIANCE PROGRAM**

Attachments

City of Fort Lauderdale_Lead and Copper Rule Revision LCRR Compliance_10564493.pdf

ARCADIS

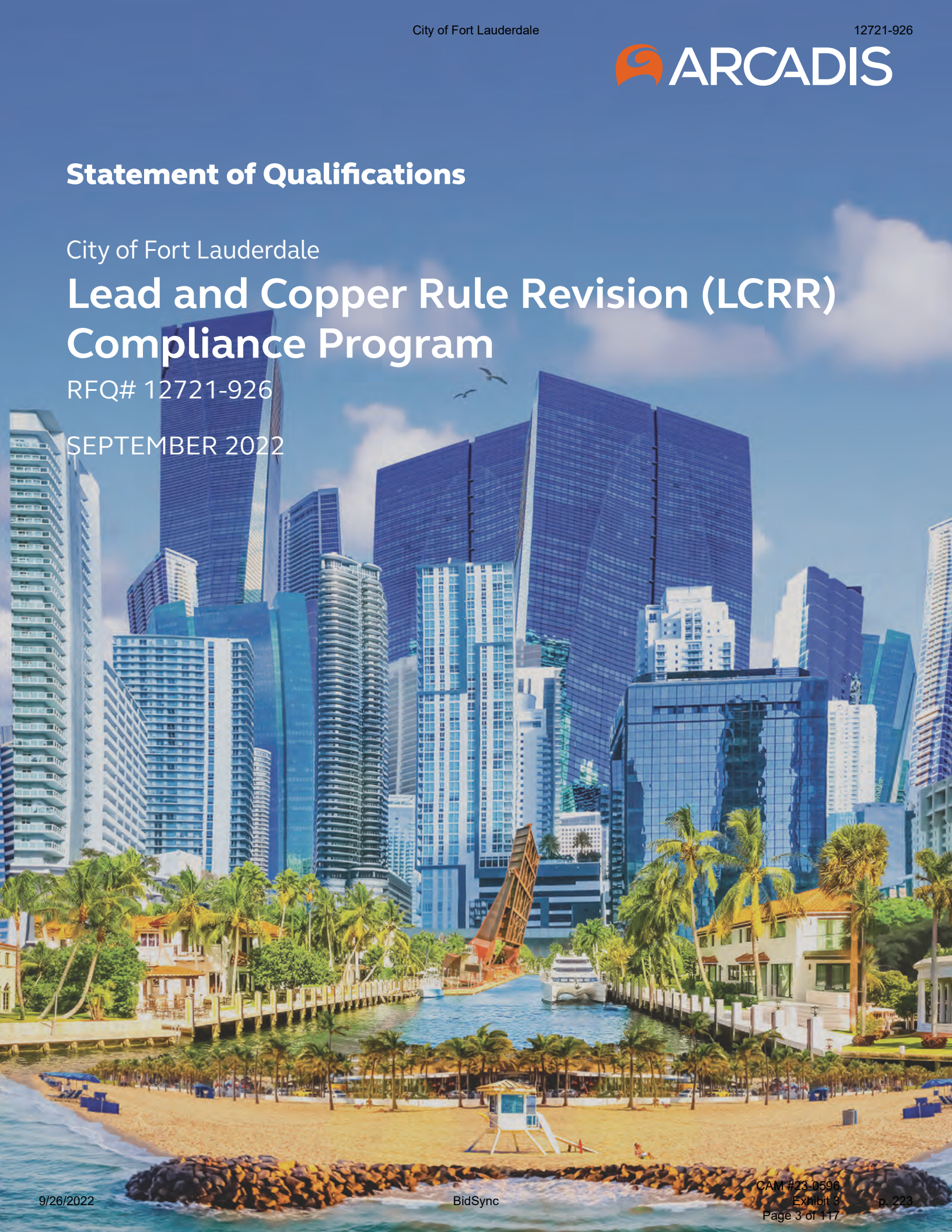
Statement of Qualifications

City of Fort Lauderdale

Lead and Copper Rule Revision (LCRR) Compliance Program

RFQ# 12721-926

SEPTEMBER 2022



Paulette R Hemmings Turner
Procurement Specialist
submitted electronically via:
BIDSYNC.COM

Arcadis U.S., Inc.
150 S. Pine Island Road
Suite 315
Plantation, FL 33324
Phone: 954.761.3460
www.arcadis.com

Date: September 26, 2022
Subject: **Solicitation 12721-926 | Lead and Copper Rule Revision (LCRR) Compliance Program**

Dear Ms. Turner,

Arcadis U.S., Inc. (Arcadis) is pleased to submit this Statement of Qualifications (SOQ) to the City of Fort Lauderdale (City) to provide professional services in support of your Lead and Copper Rule Revision (LCRR) Compliance Program. You can trust that we will deliver exceptional results, meet regulatory acceptance and achieve public confidence given our project team's extensive LCRR experience; our team's expertise; and our understanding of City objectives, challenges, and opportunities. Our team offers the following benefits to the City:

Experienced Lead and Copper Rule Revisions (LCRR) Team Committed to Delivering Comprehensive Solutions. Our project team brings national LCRR experience, including San Antonio Water System (SAWS), multiple Aqua America systems (PA, IL, NC, VA, TX), Erie County and Monroe County Water Authorities (NY), Buffalo (NY), New London (CT), and Appleton (WI). With more than 1,500 service line inventories completed nationwide, we bring this experience to benefit you now.

Industry Leading Project Manager and Technical Lead Backed by both a Nationally Experienced and Locally Responsive Team Ready to Help You Proactively Navigate the Changes Ahead. Our project delivery team will be advised by Rebecca Slabaugh, a trusted advisor to utilities, AWWA, EPA regional administrators and state regulators on the LCRR and Lead and Copper Rule Improvements (LCRI). Rebecca has built a national LCRR team that includes Susan Brownstein as Technical Team Leader and is your designated Project Manager for this project. Susan has an in-depth understanding of and extensive experience with current state and federal requirements in order to provide you with a service line inventory that is fully compliant with the regulations and that you can have confidence in. Susan will be supported by our boots on the ground team including local Deputy Project Manager, Joan Fernandez, and our key subconsultant partners, Chen Moore and Dickey Consulting, who are intimately familiar with the City's system and the community served. Our team's structure will ensure your project is completed with the perfect balance of local responsiveness, proven delivery for the City, and nationally recognized industry leadership in LCRR Compliance.

Value Added Solutions to Accelerate Schedule, Gain Efficiencies, Minimize Costs. Our Arcadis team is relentlessly focused on creating value for our clients and consistently innovating to improve efficiencies, minimize costs for you and your rate payers and limit the impact of new regulatory requirements on your staff. Our program approach includes digital tools and dashboarding, resulting in improved communications to your customers, more valuable field inspections, a larger sampling pool for water quality testing and a more accurate and less expensive program.

We're Community Members Committed to Improving Public Health & Quality of Life. Our entire team lives our passion of improving public health and quality of life at work and at home. We're excited about the opportunity to make a difference for our family, friends and neighbors through this important project.

We appreciate this opportunity to submit our proposal and look forward to working with you on this important project.

Sincerely,
Arcadis U.S., Inc.

Melissa L. Pomales , PE, ENV SP, PMP
Principal-in-Charge
melissa.pomales@arcadis.com

Susan Brownstein
Project Manager
susan.brownstein@arcadis.com

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SECTION 1
Executive Summary

01. Executive Summary

Arcadis has been an active member of the **local community** since **opening our office in the Fort Lauderdale region over 30 years ago.** During this time we have been privileged to collaborate on many local projects to help enable the vision of City and County leaders. Moreover, we have done so by supporting and working alongside local agencies in helping to **build and improve our community.** We are excited for the opportunity to apply our comprehensive and specialized expertise related to your **Lead and Copper Rule compliance**, protecting the public health and welfare of the City's residents and the entire regional community.

Our Value to the City:

- A nationally recognized **Lead and Copper Rule Revisions (LCRR) Team Committed to Delivering Comprehensive Solutions by** bringing experience completing more than than 1,500 service line inventories nationwide to this project.
- **Industry-leading Project Manager and Technical Lead** backed by a nationally experienced team ready to help you proactively navigate the changes ahead.
- **Value Added Solutions** using digital tools and dashboarding to *accelerate schedule, gain efficiencies, minimize costs, and communicate effectively.*

Firm Qualifications and Experience:

Business Entity: Arcadis U.S. Inc. is wholly owned by Arcadis North America, Inc., a Colorado Corporation, whose sole shareholder is Arcadis USA, B.V., a Dutch company.

Background: Arcadis is a leading global natural and built asset design and consultancy firm working in partnership with our clients to deliver exceptional and sustainable outcomes through the application of design, consultancy, engineering, and project management services. We are active in the fields of infrastructure, water, environment, and buildings.

Specialty Subconsultants

cma chen moore and associates
FRALEMAN
VODA.ai
Dickey Consulting

Arcadis has been in business under the present name for 55 years. The roots of the Arcadis organization began operation in 1888, when the organization was founded in the Netherlands as an association for wasteland redevelopment. Arcadis has evolved throughout the 20th century, expanding its global reach and range of service offerings through strategic initiatives and targeted acquisitions.

Main Offices: Our Florida practice is supported by over 270+ professionals among 8 Florida offices, including Plantation, Miami, Boynton Beach, Tampa, Orlando, Jacksonville, Pensacola and Tallahassee, FL.

Office Location that Will Service this Contract: Plantation, FL

Project Team Experience and Qualifications:

Officers/Principals/Key Individuals and Office Locations:
Susan Brownstein: Project Manager | Cleveland, OH
Melissa Pomales: Principal in Charge | Plantation, FL
Joan Fernandez: Deputy Project Manager | Plantation, FL
Rebecca Slabaugh: National Drinking Water Practice Leader Expert - Water | Indianapolis, IN
Kiran Udayakumar: LSL Inventory and Data Management/GIS Support Task Lead | Chicago, IL
Vishakha Kaushik: LSLR Plan Development Task Lead | Houston, TX
Garth White: Field Inspections | Plantation, FL
Victoria Nystrom: Corrosion Control Treatment | Philadelphia, PA
Emily Baca: LCRR Sampling and Procurement | Austin, TX

Key Elements of the Proposal:

Qualifications:

Arcadis is a nationally recognized expert in lead and copper compliance and long-standing member of AWWA Lead and Copper Rule Technical Advisory Workgroup. We have supported regulatory and policy development around the LCR/LCRR for over a decade and are currently leading an AWWA project that will inform the USEPA's development of the Lead and Copper Rule Improvements (LCRI). Our experience with more than 1,500 water systems in the U.S. covers each keycomponent of a Lead and Copper Compliance Program, ensuring all your needs are met and work is successfully planned and executed throughout the entire life of the program.

Responsiveness:

Our Subject Matter Expert, Rebecca Slabaugh, PE, is Arcadis' Drinking Water National Practice Leader and a sought after LCRR compliance expert. Our Project Manager, Susan Brownstein is an Arcadis National Technical Manager leading the LCRR team and brings both utility and regulatory experience to the approach for service line inventories and replacements. Rebecca and Susan are supported by the technical leads who bring National LCRR experience. Our project management team also includes our Principle in Charge, Melissa Pomales, PE to provide local Arcadis leadership and our Deputy Project Manager, Joan Fernandez, PE, to serve as local day to day point of contact and coordinate team activities. Both Melissa and Joan are located in our Plantation office just minutes from the City. Our dedicated subconsultant partners, Chen Moore and Dickey Consulting, bring extensive experience with the City and your residents. ***Our team structure will ensure your project is completed with the perfect balance of local responsiveness, knowledge of the City's system and community, and nationally-recognized industry leadership in LCRR Compliance.***

Innovative Value-Added Tools:

Our Arcadis team is relentlessly focused on ***creating value for our clients and consistently innovating to improve efficiencies, minimize costs for you and your rate payers and limit the impact of new regulatory requirements on your staff.*** Our program approach includes digital tools and dashboarding, resulting in improved communications to your customers, more valuable field inspections, a larger sampling pool for water quality testing and a more accurate and less expensive program.

"The City of Appleton hired Arcadis to help us develop a Lead Service Line Replacement Program. ***Their expertise and enthusiasm have been phenomenal.*** We look forward to every meeting with their team. They have a knack of helping us – even in areas we didn't know we needed assistance! ***With their guidance, we have an approved plan, adopted Ordinance, educational materials, and a $505,000 LSLR Grant.***"

-Paula Vandehey
City of Appleton Director of Public Works

"***Arcadis was hands down the best consultant for helping New London develop and execute a proactive LSLR program.*** Being the first utility to do this in the State of Connecticut, the Arcadis team has walked us and the state regulators through every step with a fully developed program, outreach materials and construction documents in just over six months. Their staff have also been able to fill every resource gap within the City to successfully and seamlessly execute this entire program in our community."

-Joe Lanzafame
City of New London Director of Public Utilities

SECTION 2
Firm Qualifications and Experience

02. Firm Qualifications and Experience

Arcadis offers the City ***forward thinking, cost-effective, and sustainable solutions*** that address today's challenges, and the community's economic and infrastructure future.

Introduction

Arcadis U.S., Inc. is a leading global, natural and built asset design and consultancy firm working in partnership with our clients to deliver exceptional and sustainable outcomes through the application of design, consultancy, engineering, and project management services.

We offer the City the capabilities of a large, diversified firm, with a profound understanding of regional and local circumstances. Our staff are adept at solving the difficult issues that face public utilities and public works departments today, including challenging rehabilitation projects, constrained budgets, future capacity needs, customer expectations, and tight schedules. We work with our clients to overcome these challenges. This experience, coupled with our local personnel, national experts, and pool of specialty subconsultants, will bring fresh ideas to the City.

With more than 29,000 people worldwide, approximately 5,000 U.S. professionals and support personnel, and more than 270 staff members in the State of Florida, Arcadis has the capacity to provide the resources necessary to meet your project's objectives. **This contract will be managed from our office in Plantation, FL.**

ARCADIS FIRM PROFILE

Business Identification:

Business Name: Arcadis U.S., Inc.
Fed ID: 57-0373224
Business address: 150 S. Pine Island Road, Suite 315, Plantation, FL 33324
Telephone #: 954.761.3460
Website address: www.arcadis.com
License: FL - 7917

Primary Contacts:

Name: Melissa Pomales, PE
Address: 150 S. Pine Island Road, Suite 315 Plantation, FL 33324
Telephone #: 787.307.5483
E-mail Address: Melissa.Pomales@arcadis.com

With a local office in Plantation, Arcadis is a national firm serving you with a local presence capable of offering both comprehensive and specialized expertise across a vast range of lead and copper compliance services. *Arcadis has been providing engineering and consultancy services in South Florida for more than 20 years.*

Arcadis At-a-Glance

Over **5,000** U.S. employees

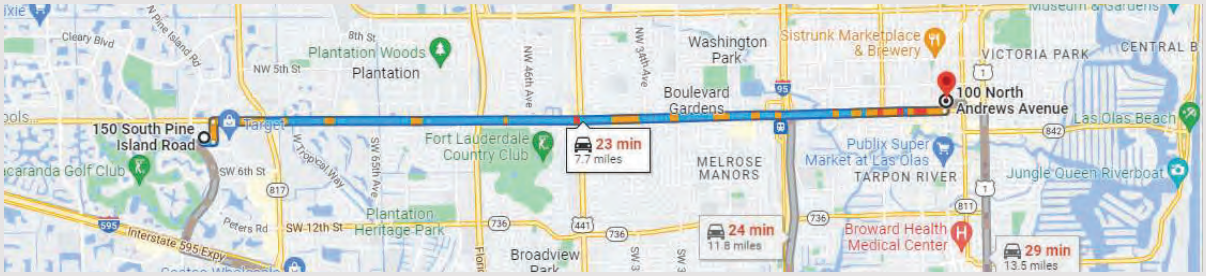
Working in **120+** offices across the U.S.

More than **$4.2** billion in annual revenue

Over **29,000** team members worldwide

A Local, Responsive Office

Less than 8 miles from the City's offices and facilities, the Arcadis team located in our Plantation office includes 20 professionals backed by 270 in the State of Florida. **Arcadis is an agile firm that can respond quickly and deliver projects efficiently.**



Arcadis' Lead and Copper Compliance Expertise

The City can rely on our Team's expertise and practical experience in Lead and Copper Compliance Programs encompassing regulatory and industry best practices around service line inventory development and improvements, lead service line replacement (LSLR) planning, design and construction management, state and federal funding, data management and public education and outreach.

Arcadis is supporting LCRR programs for multiple clients including **Aqua America, San Antonio Water System (SAWS), Erie County Water Authority (NY), Monroe County Water Authority (NY), New London (CT), Appleton (WI), and Louisville Water.** Arcadis has also provided construction management and public outreach for DC Water's lead service line replacement program since 2004 and we continue to provide regulatory compliance support**.** Similarly, Arcadis has been assisting **Chicago Department of Water Management** for over seven years beginning with development and implementation of a lead testing kit program and expanding into lead service line inventory and data management and analysis.

Our experience covers each key component of a Lead and Copper Compliance Program, ensuring all your needs are met and work is successfully planned and executed throughout the entire life of the program. Additional details on several of these components is provided below.

Arcadis Experience

The City can rely on our Team's expertise and practical experience in Lead and Copper Compliance Programs encompassing regulatory and industry best practices around service line inventory development and improvements, lead service lines replacement (LSLR) planning, design and construction management, state and federal funding, data management, and public education and outreach.

What do our clients think of Arcadis' LCRR support

"Arcadis is doing a professional job of efficiently leading our Aqua team through development of Service Line Inventories across our 8 states. They've been programmatic in their approach and responsive to our needs. Their global team is helping with our highest priority systems to quickly and cost- effectively develop inventories using historical records, interviews, field orders, publicly available data and technology. We rely on them as a strategic partner to ensure the success of our inventorying program."

-Deborah Watkins, P.E.
Director of Environmental Compliance Essential Utilities Inc.

"The City of Appleton hired Arcadis to help us develop a Lead Service Line Replacement Program. Their expertise and enthusiasm have been phenomenal. We look forward to every meeting with their team. They have a knack of helping us – even in areas we didn't know we needed assistance! With their guidance, we have an approved plan, adopted Ordinance, educational materials, and a $505,000 LSLR Grant."

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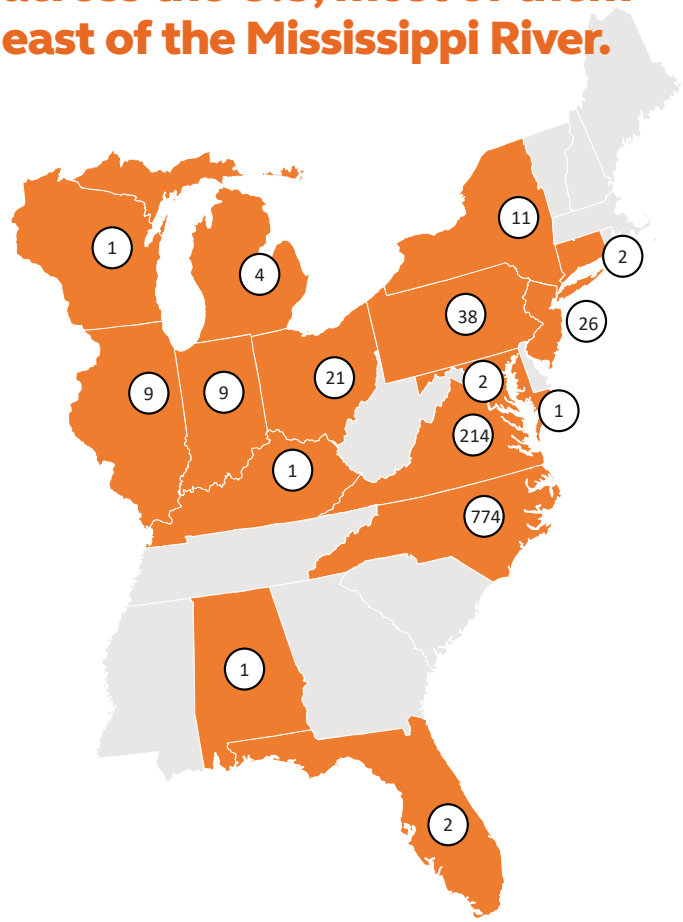
-Joe Lanzafame
City of New London Director of Public Utilities

Arcadis is **nationally recognized for its expertise in lead and copper compliance programs**, having supported **over 1,500 water systems across the U.S, most of them east of the Mississippi River.**



Mastery of Lead and Copper Rule Revisions (LCRR)

A significant factor in successfully completing a Lead and Copper Compliance Program is how well the selected team understands the regulations and industry best practices. ***We have developed a national team of lead and copper specialists.*** Our team members have significant experience providing engineering and technical support to the USEPA and AWWA in support of regulatory development efforts and technical guidance and are led by our National Lead and Copper Expert, Rebecca Slabaugh. She recently led development of a national cost estimate on full LSLRs for AWWA and co-authored the Journal AWWA article explaining the LCRR. She has also contributed to key publications including:

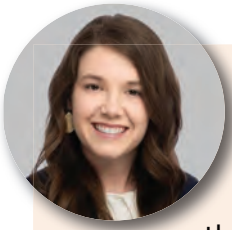
AWWA C810 Standard – Replacement and Cutting of Lead Service Lines. Rebecca was a contributing author to this recent AWWA standard that provides industry best practices for lead service line replacement.

WRF 4713 Flushing Guidance following Full Lead Service Line Replacement (LSLR). Rebecca served as co-principal investigator on this research to provide best practices for full LSLR including high-velocity flushing postreplacement.

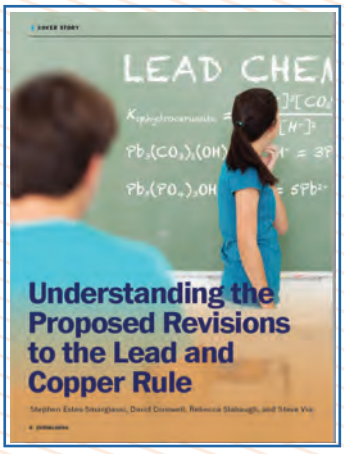
AWWA Comments on the Proposed Lead and Copper Rule Revisions. Rebecca supported AWWA in developing comments, largely around lead services line inventories and replacement, in response to the proposed Lead and Copper Rule Revisions.

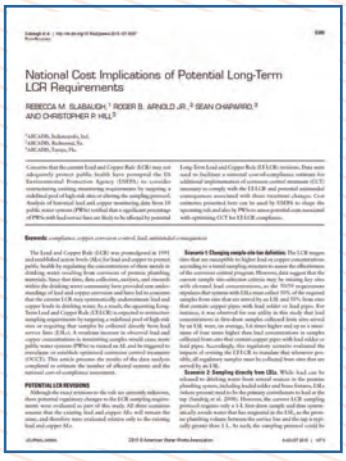
WRF 5032 Analysis of Corrosion Control Treatment (CCT) for Lead and Copper. As a co-principal investigator, Rebecca is developing a guidance document for state regulators and water systems recommending when and how to conduct a corrosion control study in anticipation of a treatment change, water quality change, or a requirement or desire to lower lead levels.

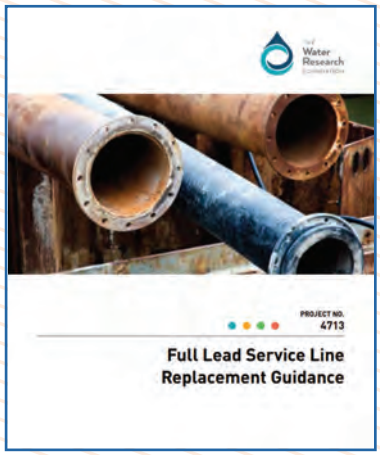
WRF 5081 Guidance for Conducting Pipe Rig Studies. As a co-principal investigator, Rebecca is directing development of a "fit-for-purpose" guidance document that describes how to plan, design, operate pipe rigs, and interpret the results in order to inform water systems on lead and copper CCT decisions and to meet system-specific goals.



Ms. Slabaugh is a nationally recognized expert in lead and copper compliance and a long-standing member of the AWWA Lead and Copper Rule Technical Advisory Workgroup. She has supported regulatory and policy development around the LCR/LCRR for over a decade and is currently leading an AWWA project that will inform the USEPA's development of the Lead and Copper Rule Improvements (LCRI).



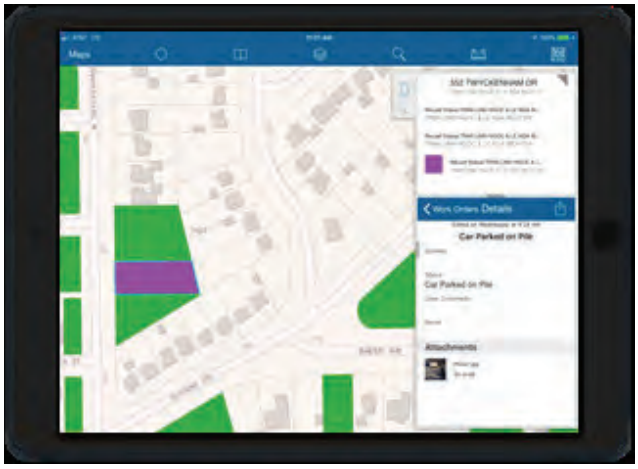

National Cost Implications of Potential Long-Term LCR Requirements



We are at the forefront of LCRR/LCRI and bring this extensive knowledge to the City.

Service Line Inventory

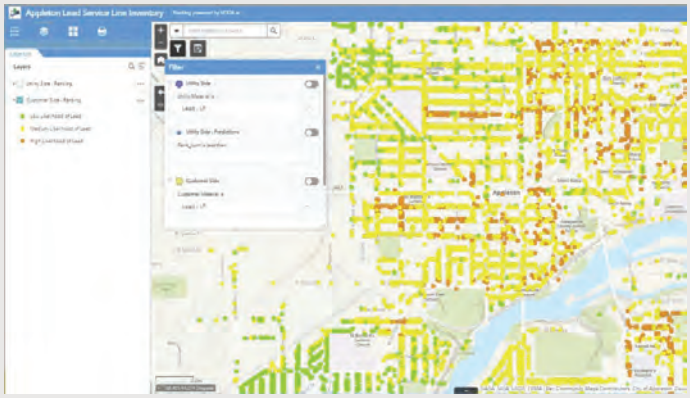
Arcadis has supported over 1, 500 public water systems with development or updates to their service line inventory. We have supported data management improvements including recommended changes to work order management systems, developed SOPs, and evaluated numerous methods for service line identification (e.g., potholing, predictive modeling, water quality sampling, customer surveys, etc.). For the City of New London, where no private-side service line records existed, Arcadis conducted 150+ in-home inspections to verify the private-side service line material, which ultimately fed into a predictive model to estimate the likelihood of lead at each location throughout the City.



Arcadis has also applied mobile solutions, like Field Maps, to increase accuracy, collaboration and productivity. For instance, in Elkhart, IN, we developed mobile applications to track lead identification in the field when performing work on service lines.

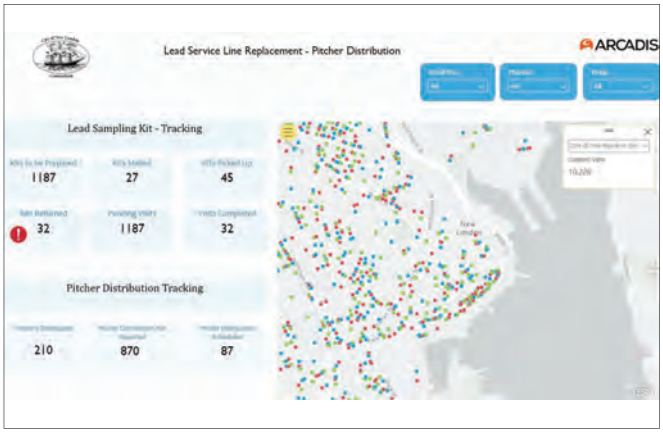
Demonstrated Accuracy in Predictive Modeling

Arcadis, in partnership with Voda.ai, developed a machine learning model to predict the likelihood of lead on both the utility-owned and customer-owned service lines for the City of Appleton, Wisconsin. Of the roughly 29,000 water service lines, the City had over 7,000 customer-owned service lines of unknown material and uncertainty in how many and where any lead service lines might be left. The model estimated that only 5% of the unknown lines had a high likelihood of containing lead and provided specific locations for these across the system, optimizing efforts to verify lead locations and support funding applications to remove the lead quicker.



Lead Service Line Replacement

Arcadis brings experience in planning, program management, design and construction management services for LSLR programs. ***Key team member, Karen Casteloes, is developing guidance for utilities on the LCRR Lead Service Line Replacement (LSLR) Plan as part of the AWWA Lead in Water Subcommittee.*** As part of a joint venture team, Arcadis has been supporting DC Water's LSLR program since 2004, and serving as the current program and construction manager for New London, Connecticut's program. Arcadis has also provided powerful dashboards to support ongoing projects with Chicago DWM, Erie County Water Authority (NY) and others. These dashboards can pull from multiple data sources, including GIS or customer information systems, to deliver a one-stop, real-time update to project stakeholders on the entire program including participation rates, pitcher filter distribution, service line inventory, sample tracking and reporting. In addition, our subconsultant Chen Moore and Associates, has extensive design, permitting and construction management experience for water distribution systems in Broward County including Broward County Water and Wastewater Services, Town of Davie, City of Miramar, City of Dania Beach, City of Pembroke Pines and Wilton Manors.



Proven Success: Coordinating Complex LSL Replacement in the Nation's Capital

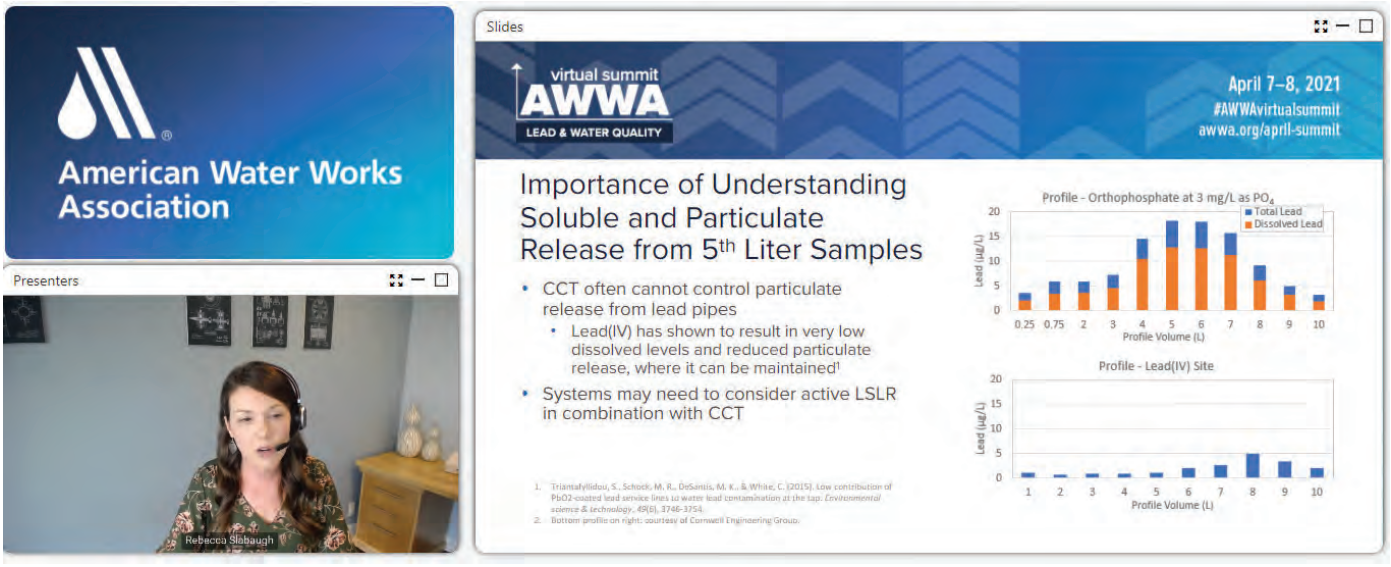
Since 2004, Arcadis, as part of a joint venture (JV) team, has been providing planning, program management, design, or construction management services through several LSLR projects with an estimated construction cost of $400 million to exceed the requirements establish under an USEPA administrative order and achieve the continued goals set forth by DC Water. The initial LSLR effort targeted more than 26,000 public buildings, schools, businesses and homes, and an estimated 15,000 LSLRs were completed under subsequent endeavors.

In planning the streets/areas for LSLR, the project team coordinated extensively with the District of Columbia Department of Transportation (DDOT) so that LSLRs could be achieved prior to planned street paving and subsequent street moratoriums. The team also supported community outreach efforts, which included a telephone hotline manned by specialized community liaisons, printed collateral materials, and attendance at public meetings and presentations.

Corrosion Control Treatment Support

Arcadis has experience developing and conducting Corrosion Control Treatment (CCT) studies to address action level exceedances, optimize or evaluate alternate CCT strategies for all size systems, or evaluate changes in source water and/or treatment. Our team has performed desktop and demonstration studies (i.e., bench, coupon and pipe loop testing) for over 50 utilities across the U.S. We have the capabilities of planning and tailoring a study, depending upon the client's objectives, end goals, distribution system materials, sources and lead and copper levels. Upon completion of testing, we have supported dozens of utilities with recommended next steps, whether that be follow-up testing, design and implementation of CCT, and/or additional water quality analysis. We have also helped clients throughout the U.S. address some of the most challenging and infamous corrosion-related water quality challenges including Flint, MI, Tuscon, AZ, and Washington Aqueduct.

Arcadis recently led development of several CCT training courses as part of a new program for the American Water Works Association and the Association of State Drinking Water Administrators. These courses bring a comprehensive understanding of corrosion control – from the fundamentals to practical recommendations for performing studies – to operators, water quality staff, engineers, and regulators. The first course is available now through AWWA's website.



Arcadis is conducting a comprehensive corrosion control study for the Great Lakes Water Authority (GLWA) that includes the design, construction, and operation of ten pipe loop rigs, which are shown here and include five different testing materials, to identify the optimal corrosion control strategy for GLWA and its 112 member communities.

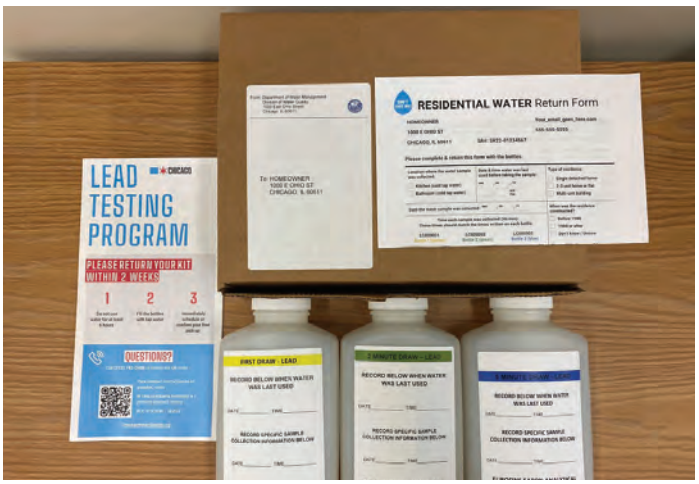
"Arcadis has a deep understanding of corrosion control, federal and state, regulatory requirements. They have the ability to address all aspects of corrosion control, water quality monitoring and pipe loop design operations. They are extremely collaborative which makes for a very successful project. If I had to do the whole job again I would request Rebecca Slabaugh and Victoria Nystrom specifically to be on my project team."

- Vittoria Hogue, GLWA

Sampling & Monitoring

Arcadis has designed, implemented and supported sampling programs both small and large. Our experience includes sample collection, protocol development, tracking, reporting, analysis, real-time dashboards, stakeholder communication and more. We also bring relationships and competitive pricing through our partnerships with certified laboratories for drinking water analysis including TestAmerica (Euorfins) and Pace and comprehensive data management services through our own Portfolio Insights software platform.

In 2016, the City of Chicago allowed residents who were concerned about lead in their drinking water to request a free lead test, which resulted in thousands of sample requests. Arcadis was employed to develop and implement a lead kit testing program. This included a comprehensive analysis of lead testing protocols, development and creation of sampling kits, laboratory testing, reporting SOPs, and training for the Chicago Department of Water Management. Additionally, Arcadis provided assistance with water quality analysis and statistics, and based on results, has provided recommendations to improve data collection methods and improve asset management techniques. The team has the capabilities to also support sampling requirements for compliance tap samples, schools and childcare facilities, and post-lead service line replacement, but also any utility requested sampling (e.g., sequential or profile sampling).



Proven Experience Managing and Executing Complex Sampling Programs

Beginning in 2016, **Arcadis** assisted the New York State Department of Environmental Conservation (DEC) with the installation of over 1,400 Point of Entry Treatment (POET) systems at public and private drinking water supply locations in response to the presence of detectable concentrations of per- and polyfluoroalkyl substances (PFAS) in the groundwater. Since that time Arcadis has been responsible for all site management, including field operations and data management activities. The team performs a range of sampling protocols, treatment system installations and ongoing maintenance, and analytical data management and reporting to both regulators and individual property owners. Sampling includes initial well characterization, treatment system clearance sampling, and sample monitoring events to ensure effective treatment at each location. The Arcadis team also manages communications via a 24/7 call center hotline that interacts with the public to schedule sampling and maintenance events and respond to customer needs and transmits sample results via email and mailings to homeowners. In addition to digital platforms which manage analytical results and site-specific data generated from the field, the group utilizes software to assist in routine scheduling efforts with homeowners, outreach and logistics, coordination with subcontractors and field personnel, and monthly reporting.

Public Education and Outreach

Arcadis understands the importance of implementing whole system solutions to mitigate lead in drinking water. LCR and LCRR compliance is not fully achieved just through studies or engineering analysis, rather it requires a multifaceted and proactive approach to notification, education and outreach. Lead communication programs should include:

- Development of education and outreach materials.
- Communications regarding lead in drinking water and strategies homeowners can implement to mitigate risk.
- Outreach directly to customers serving vulnerable populations, such as schools and daycares, customers with LSLs, or customers within areas known to have lead service lines.
- Partnerships with local organizations who can aid in communications and extend outreach.
- Public access to lead tap monitoring results, lead service line replacements, and similar information to assist customers in taking action.

Arcadis has assisted multiple clients with lead in drinking water outreach programs, including the City of Flint, Louisville Water, City of South Bend and New London, CT. Drawing upon our deep understanding LCRR compliance, Arcadis collaborates with in-house and external graphics and communication professionals to develop outreach messaging and materials (web pages, FAQs, door hangers, flyers, yard signs, multi lingual phone hotlines etc.), and then partners with the water supplier and trusted community members in delivering messaging to the public through open houses, block events, social media, door knocks, and more. We combine technical experience with proven skills that allow for meaningful input resulting in inclusive, multilingual solutions that integrate the needs and interests of all stakeholders.

Arcadis has developed lead related education materials for every aspect of a lead and copper program from a high velocity flushing protocol developed as part of WRF 4713: Full Lead Service Line Replacement Guidance to homeowner guides to managing lead.

Dickey Consulting

Public Relations · Project Management · Strategic Planning · Economic Development
"Sustaining Communities"

Arcadis and our subconsultant, Dickey Consulting, will collaborate closely to assist with the Public Education and Outreach tasks required for the LCCR program. Dickey Consulting has more than 25 years of experience assisting clients in Broward County including the *City of Fort Lauderdale, Broward County Water and Wastewater Services, and the City of Hollywood.*

Data Management, System Integration and Application Development

Over the past two years, Arcadis has assembled a global team to address data management, system integration, and application development solutions specific to the LCRR. *This team is supporting 12 water systems representing over 1 million service connections with modifications to existing technology platforms to incorporate various sampling, service material inventorying, and LSL replacement tracking features.*

Lead Insights, developed by Arcadis, is an LCRR specific data management platform developed based on Arcadis' Portfolio Insights program which has been used for over 20 years to manage, store and visualize data for hundreds of capital improvement, water quality and compliance programs. It has been continually developed, refined and supported by a team of experts within Arcadis, and the Lead Insights application includes the following specific capabilities to support the LCRR:

- *Customer facility information (i.e., sample tier, sample locations, building type, contacts)*
- *Tracking, analysis, and visualization of residential customer sampling data for compliance and find-and-fix assessments*
- *Tracking, analysis, and visualization of school and childcare facility sampling data and remedial activities• Automated email notifications to inform stakeholders of sample collection and results, pitcher filter distribution, and service line materials*
- *Mapping applications that combine existing GIS layers with results from predictive modeling, digitized records, and sampling data*
- *Document management tools related to LSLR, including customer authorization or declination forms, RFI/submittal reviews, progress schedules and payment tracking.*
- *Tracking, analysis, and visualization of residential customer sampling data for compliance and find-and-fix assessments*
- *Tracking, analysis, and visualization of school and childcare facility sampling data and remedial activities*
- *Automated email notifications to inform stakeholders of sample collection and results, pitcher filter distribution, and service line materials*
- *Mapping applications that combine existing GIS layers with results from predictive modeling, digitized records, and sampling data*
- *Document management tools related to LSLR, including customer authorization or declination forms, RFI/submittal reviews, progress schedules and payment tracking.*
- *Dashboards and reporting for service line inventory, LSLR program status and more*
- *Storage of attribute history to support a "single source of truth" for all data sources associated with this program allowing Authority staff to quickly and accurately access a timeline of communications for any customer for regulatory reporting or to answer customer inquiries.*

Additional LCRR service offerings related to data management include the following:

Automation Tools

We have developed trained recognition software using Google OCR, Python and Azure Bot Service to automate the transfer of hard copy information to digital format. *Our experience includes the digitization of over 500,000 tap cards for key fields relating to service line inventory development with over 90% accuracy to reduce unknowns, QC previously entered data, and prepare source data for predictive analytics.*

System Integration

Arcadis has staff knowledgeable in all major enterprise asset management (EAM) platforms (including CityWorks), customer information systems (including AS400), laboratory information management systems and mobile applications (like Field Maps) to guide information technology improvements. We also have a team of GIS experts experienced in both ArcGIS Online and Enterprise solutions for LCRR programs.

Application Development

Arcadis has developed custom tools to support data collection, tracking and visualization efforts related to LCRR programs. Our experts have supported hundreds of clients in the U.S. and globally on all application needs including system implementation, configuration, hosting and platform services, integration, training and support and maintenance. A few examples of applications developed by Arcadis include:

- Mobile applications using Fulcrum and ArcGIS Field Maps to track service line material field verification efforts.
- Development with ArcGIS Web AppBuilder, including service line inventory online maps, dashboards and management of ArcSDE connections to help client leverage the full functionality of ArcGIS Enterprise license agreements.

For Chicago DWM's Lead Program

The **Arcadis team** was able to integrate with City of Chicago's 311 non-emergency service request system and implement a more comprehensive, adaptable, unique solution with the City's new Salesforce system. ***The new integration included data transfer from a work order management system (InforEAM) that stored the entire history of the work, GIS applications which collected data from the field, dashboards for real-time tracking and business intelligent websites that allowed customers to schedule lead sampling, inspections or follow up appointments online instead of phone calls with DWM staff.***

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **1**

21. Title and Location (City, State)
AQUA SERVICE LINE MATERIAL INVENTORY WORK PLANS AND DEVELOPMENT, MULTIPLE STATES

22. Year Completed

Professional Services	Construction
2021-Ongoing	N/A

23. Project Owner's Information

a. Project Owner
AQUA America, Inc.

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

Aqua America, Inc. (Aqua) is a publicly traded water and wastewater utility holding company serving more than 3 million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Indiana and Virginia. Arcadis was retained to assist Aqua on its path to improving its existing service line material inventories by identifying lead service lines (LSLs) and to bring consistency to the hundreds of systems across eight states. The scope of work for this project was authorized under two phases. Phase 1 consisted of the following activities. Arcadis completed work plans for each Aqua state with potential LSLs to provide a framework for each state to identify LSLs for replacement and eliminate unknown materials in the inventory. Work includes: (1) development of a data dictionary that standardized data and maintains historical tracking (such as the original service line material) to guarantee quality data is used and shared across all of Aqua, (2) coordination with the primacy agency for each of the corresponding states (IL, NJ, OH, PA) to guarantee the LSL inventory aligned with expectations and allowable methods as noted in the LCRR and the Primacy Agency goals, and (3) identification of areas for improvement, which could include modifications to databases, systems, verification methods, and workflows.

A pilot service line inventory improvement program was developed for Kankakee, IL. Work included (1) digitizing over 30,000 existing tap cards to create a searchable database for each premise that includes material, diameter, and installation year, (2) identifying prioritized areas and methods for field verification, (3) developing a complete LSL inventory, and (4) preparing a comprehensive LSLR program cost estimate based on the developed inventory.

The final task under Phase 1 included statements with supporting documentation for systems with no LSLs. Arcadis is working with Aqua personnel to: (1) obtain primacy agency requirements for making such statements, (2) identify data/information gaps and make recommendations on additional information that should be gathered to determine presence/absence of LSLs, (3) identify systems that need to be recategorized as potentially having LSLs and thus require an inventory, and/or (4) for those systems which are determined to have no LSLs, draft written statements as per state requirements for LCRR compliance including references to supporting documentation.

Based on the risk assessment activities completed under Phase 1, Arcadis has been retained under subsequent Phase 2 task authorizations to complete service line inventory improvements in Illinois (2 systems), Pennsylvania (7 systems), and New Jersey (25 systems) following an approach similar to the Kankakee, Illinois pilot. Arcadis has implemented the use of trained recognition software to automate the digitization of inventory fields from scanned tap cards. In Pennsylvania, this includes the rapid digitization of tap cards for service line material information for several Aqua water systems in Bucks, Montgomery and Chester counties and a pilot study to identify the most cost effective and compliant approach for inventory development in the largest of Aqua's PA systems.

It is anticipated that additional data source investigations and/or artificial intelligence predictive modeling will be evaluated for remaining locations with unknown service line material designation.

In addition to service line material improvements in Illinois, Pennsylvania, and New Jersey, Arcadis has been retained to evaluate and recommend a prioritized strategy for LCRR compliance for Aqua water systems in Indiana, North Carolina, Texas and Virginia, which are believed to not have LSLs and include 1,296 systems. This includes analysis of publicly available data sets and discussions with Aqua staff to understand institutional knowledge which may reduce unknowns.

Relevant Features
- Tap Card Scanning and Digitization
- Service line inventory approach and prioritization
- Service Line Inventory Development
- Strategies to reduce service lines of unknown material
- Data management and integration
- Lead service line replacement program funding

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **2**

21. Title and Location (City, State)
SAWS LCRR COMPLIANCE PROGRAM, SAN ANTONIO, TX

22. Year Completed

Professional Services	Construction
2022 - Ongoing	N/A

23. Project Owner's Information

a. Project Owner
San Antonio Water System

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

The San Antonio Water System (SAWS) serves 2 million people or over half a million water customers. To reduce customer exposure to lead and proactively achieve compliance with the recently finalized Lead and Copper Rule Revisions (LCRR), SAWS is embarking on a comprehensive LCRR compliance program. Arcadis is providing engineering support in development and execution of that program. Arcadis is responsible for developing their Lead Service Line (LSL) inventory, Data Management Dashboards and reporting system, outreach and education plan, school/day care and business sampling plan, and LSL replacement action plan. Arcadis, in collaboration with our project partners, is:

- Leading coordination withthe Texas Commission on Environmental Quality and other stakeholders.
- Developing a complete service line inventory to support compliance under LCRR requirements, working with Voda. ai to run a machine learning model using SAWS's inventory to predict the likelihood of lead service lines and use those predictions to determine optimal locations for confirmatory field investigations. Bots will be used to digitize tap cards to create an initial inventory and the model will be used to fill in gaps.
- Developing dashboards where LSL inventory data can be viewed and databases where LSL inventory data can be regularly updated. This will be achieved by integrating SAWS' existing database with tools like ArcGIS, MS PowerBI, and Lead Insights.
- Developing a Public Outreach Plan and materials to be used for public engagement and education, including development of a comprehensive stakeholder database.
- Developing an education and sampling plan for business/schools/day cares and private residences. This will include updating monitoring plan sampling sites and adding the sampling protocol for 5th liter sampling, procedures for find and fix assessments, a strategy for pitcher filter distribution, required communication, and a database of schools and day cares.
- Coordinating with the lab to establish a strategy for analytical sample analysis, including providing training on the new 5th liter sampling procedures and developing reporting procedures to allow for efficient upload of lab data into 120 Water's software platform for sampling.
- Developing a Lead Service Line Replacement (LSLR) plan, including strategies to for reducing the number of lead status unknown lines, procedures to conduct full LSLR, funding opportunities, and options for providing financial assistance to customers.
- Preparing construction contract documents for LSLR in accordance with state bidding laws for lead service line replacement on the public and private side.

Relevant Features
- Program Management
- Lead Service Line Inventory and Replacement Plan Development
- Service Line Material Identification
- Public Outreach Plan

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis, U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **3**

21. Title and Location (City, State)
CHICAGO LEAD PROGRAM MANAGEMENT AND SUPPORT, CHICAGO, IL

22. Year Completed

Professional Services	Construction
2015-Ongoing	N/A

23. Project Owner's Information

a. Project Owner
Chicago, IL

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

In support of the Chicago Department of Water Management (DWM) lead program, Arcadis has been providing innovative and equitable solutions starting from a lead kit testing program to easily accessible portals for staff and the public to get up- to-date program information. Activities related to several key program components are described below.

Lead Testing Kits. To support the City's goal of providing free lead testing to all residents, DWM hired Arcadis to develop and implement a lead testing kit program. As part of this program, Arcadis completed a comprehensive analysis of lead testing protocols; created sampling, testing, and reporting SOPs; and supported DWM on interpretation and analysis of the results. Arcadis also developed dashboards for tracking sampling requests, shipment status of kits, and sampling results. In addition, Arcadis provided maps to enhance DWM's accountability and responsiveness to local officials and their constituents. Mobile solutions were implemented and have ultimately increased collaboration and productivity on this project.

Lead Service Line Replacement. It is estimated that the City of Chicago has over 380,000 lead service lines and decided to begin to proactively replace these across the City. The Chicago DWM created two new LSLR programs; an equity-based program and a homeowner- initiated program. Arcadis assisted DWM in the start-up of these programs, including an online application system and creating integrated dashboards for program management. Additionally, Arcadis leveraged census tract data and existing lead sampling results to target areas for notification and outreach for participation in the equity program.

Disturbances. Arcadis collaborated to create a website that allows single- and multi-family residences to register for DWM's first-of- its-kind water testing study that examined the water lead levels before and after a water main or new meter was installed. Arcadis also created an online portal that provided access to reports and enabled DWM to track and monitor test results throughout the city. Following the results of the disturbance study, the city decided to give every resident who has had a meter installed a free water filter. They have shipped over 50,000 filters to date.

Lead Services Line Inventory. Arcadis has also begun work on the City's internal and public-facing lead service line inventory. The inventory includes a map by property of the existing type of service line material throughout the city. This information is required by the Illinois Environmental Protection Agency on an annual basis. This inventory will also guarantee compliance with the Lead and Copper Rule Revisions introduced in 2021. Arcadis developed content for a customer self-reporting service line material identification website and supported implementation.

Arcadis has provided support to the Department of Water Management for other water quality activities including: Public outreach, Lead Service Line Education, Illinois EPA Reporting, development of resident lead service self-identification tool, organize data collection and management, stakeholder updates, coordination between DWM and consultants, water quality analysis reports and statistics, maps to enhance DWM's accountability and responsiveness to local officials and their constituents.

Relevant Features
- Lead Service Line Replacement Program Development
- Service Line Inventory
- Dashboarding and Reporting
- Data Management and Integration
- Lead Sampling Kit Program and Analysis
- Public Education and Outreach

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis, U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **4**

21. Title and Location (City, State)
ECWA PROGRAM SUPPORT FOR LCRR IMPLEMENTATION, ERIE COUNTY, NY

22. Year Completed

Professional Services	Construction
06/2022 - Ongoing	N/A

23. Project Owner's Information

a. Project Owner
Erie County Water Authority (ECWA)

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

The Erie County Water Authority (Authority) serves more than 500,000 customers through roughly 170,000 water services in 36 municipalities in Western New York. Over time, the system has grown through a series of water system consolidations resulting in a range of materials and available records across the system.

To reduce customer exposure to lead and proactively achieve compliance with the recently finalized Lead and Copper Rule Revisions (LCRR), the Authority is embarking on a comprehensive LCRR Compliance Program. Arcadis is supporting the Erie County Water Authority as LCRR Program Managers to maintain a high level of compliance and operational efficiency throughout the full lifecycle of the program.

Tasks to be conducted through 2025:

- Lead Service Line Inventory Development: statistical analysis and predictive modeling will be performed to prioritize locations for field verification; up to 400 test pits will be performed to improve accuracy of the predictive model
- Lead Service Line Replacement Program Development: a comprehensive program will be developed that includes the Authority's goals, best practices and potential solutions, costs, funding opportunities, and schedule
- Program Outreach and Notification: a gap assessment will be performed., which will influence content development; Arcadis will also support the Authority with the overall brand and vision for the content
- Sampling and Monitoring Support, including:
  - Water Quality Parameter Monitoring
  - LCRR Compliance Samples
  - Schools and Childcare Monitoring
  - Find and Fix Assessments
  - Sampling Kit Distribution and Tracking
- Lead Service Line Replacements: technical specifications, drawings, and standard details will be developed and included in the overall replacement program; Arcadis will also support field efforts including pitcher filters and education and notifications
- Overall Data Management: a comprehensive data management platform will be utilized to help record, track, analysis, and visualize data and also support customer notifications

Arcadis is in the initial planning phase and has already held a strategic planning workshop with key internal stakeholders to discuss potential options for a more proactive LCRR program, existing software and data platforms as well as strategies for effective customer communication and outreach.

Relevant Features
- Program Management
- Sampling Support
- LSL Inventory Development
- LSL Replacement Management
- Community Outreach
- Funding Assistance

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **5**

21. Title and Location (City, State)
LSLR PROGRAM MANAGEMENT, WASHINGTON, DC

22. Year Completed

Professional Services	Construction
2021	N/A

23. Project Owner's Information

a. Project Owner
DC Water

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

Arcadis, as part of a joint venture (JV) team, has been providing planning, program management, design, and construction management services for several LSLR projects under a USEPA administrative order and a DC Water LSLR continuation plan with construction cost estimated at $400 million.

The JV team provided a full array of program, construction and design services with a team that included a program manager; design and specifications manager; project engineers; resident inspectors; document control, management information system (MIS) and database specialist; construction schedulers; estimators; public outreach coordinators; geotechnical support; and a program expeditor; as well as technical and specialty staff on an as-needed basis.

Initial LSLR Program

The initial LSLR effort under the USEPA order affected more than 26,000 public buildings, schools, businesses and homes. In planning the streets/areas for LSLR, the project team coordinated extensively with the DC Department of Transportation (DDOT) to address the wide array of needs based on building types and locations so that LSLR replacements could be completed prior to planned street paving and subsequent street moratoriums.

The Community Outreach effort included a telephone hotline manned by specialized community liaisons, printed collateral materials, and attendance at public meetings and presentations. A systematic homeowner notification process was instituted prior to and during construction, including accomplishing LSLR on private property through a DC Water/ homeowner agreement if requested by the homeowner. **The team enabled DC Water to exceed the administrative order compliance requirements and deadlines.**

Continuation Program

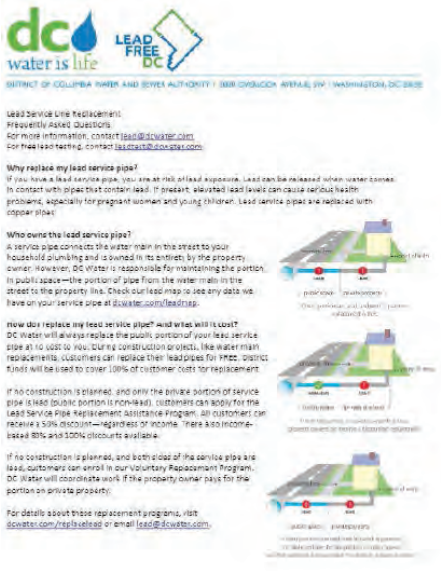
Following the satisfactory completion of the administrative order-driven work, DC Water approved a new program that included only replacement of service lines that included both public and private side segments. The JV team worked with DC Water on this effort under three separate contracts (a three-year contract and two one-year options). During this period, an estimated 15,000 LSLRs were completed under 15 construction contracts.

LSLR Support to DC Water included the following:

- Program Management
- Design and CMI
- Data management
- Surveys and Cost Estimating
- Community Outreach
- Water and Special Testing Program
- Global positioning system (GPS) and geographic information system (GIS) programming

To inform the public about the program, a Frequently Asked Questions (FAQ) document was made available.

Relevant Features
- Program Management
- Design Management
- Full Construction Management and Inspection (CMI) Support
- Community Outreach
- Funding Assistance


dc water is life
LEAD FREE DC

Lead Service Line Replacement
Frequently Asked Questions

Why replace my lead service pipe?

Who owns the lead service pipe?

How does replace my lead service pipe? And what will it cost?

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Joint Venture

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **6**

21. Title and Location (City, State)
CITY OF APPLETON LEAD SERVICE LINE REPLACEMENT PROGRAM SUPPORT, APPLETON, WI

22. Year Completed

Professional Services	Construction
2021 – 2022 (est.)	N/A

23. Project Owner's Information

a. Project Owner
City of Appleton

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

The City of Appleton retained Arcadis to support development of a private-side lead service line replacement (LSLR) program that includes a stream-lined approach for service line material verification. The City estimates that approximately 200 lead service lines (LSLs) remain in the system, largely on the private side, and any identified private-side galvanized service lines.

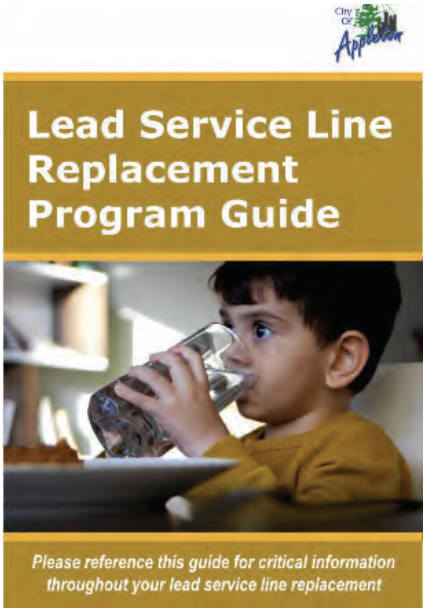
The LSLR program must meet all compliance requirements under the Lead and Copper Rule Revisions (LCRR), while also taking advantage of any available funding mechanisms.

Work performed by the Arcadis team includes:

- Reviewing of the current service line inventory, including practices and available records to identify recommended improvements
- In collaboration with Voda.ai, developed a predictive model to support lead service line estimates and additional investigation efforts for both the utility and customer owned portions of the service line
- Assistance completing the necessary grant applications for submittal to the Wisconsin Department of Natural Resource
- LSLR program planning supporting, including identification of the program structure and replacement goals, funding mechanisms, prioritization approach, and practices pre-, during and post-replacement (including notification and outreach, sampling and pitcher filter distribution)
- Development of a LSLR plan for submittal to the State.
- Assistance developing a mandatory private-side lead and galvanized service line replacement ordinance
- Assistance with technical specifications and drawings for a municipally bid construction contract

The project also includes the creation of LSLR program outreach and communications materials to meet the requirements of the LCRR. Project activities included a review of the current lead related communications materials in use by the City, development of key messages for the overall program, and creation of targeted communications and outreach materials on the topics of lead exposure, LSLR program information (including a program pamphlet shown above), service line material identification, and best practices following lead service line replacement. Numerous workshops with key City staff were conducted to collaboratively develop a recognizable communications program for the City.

Relevant Features
- Program Planning
- Service Line Inventory Support
- Lead Service Line Replacement Plan Development
- Lead Service Line Replacement Ordinance and Construction Document Development Support
- Grant Funding Assistance
- Public Communications Planning
- Development of Public Outreach and Notification Materials



25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **7**

21. Title and Location (City, State)
GLWA COMPREHENSIVE CORROSION CONTROL OPTIMIZATION STUDY, DETROIT, MI

22. Year Completed

Professional Services	Construction
Estimated 2024	N/A

23. Project Owner's Information

a. Project Owner
Great Lakes Water Authority (GLWA)

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

GLWA serves drinking water to 3.8M customers encompassing 112 member communities across eight counties in southeast Michigan. GLWA has been using phosphoric acid as their corrosion inhibitor since 1996 and targets a dose of 0.9 mg/L as orthophosphate.

Michigan's LCR requirements have been consistent with the federal LCR; however, the state elected to move forward with substantial revisions to the LCR ahead of a federal revision. The new requirements were finalized in June 2018 — unique to Michigan, the lead action level will be reduced from 15 µg/L to 12 µg/L starting January 2025. As a result of this regulatory change, GLWA is proactively conducting this comprehensive corrosion control study to evaluate current practices and existing conditions to confirm or further optimize corrosion control provided to member communities' distribution systems.

Arcadis has designed, constructed, installed, and is currently operating ten pipe loop rigs to evaluate the current corrosion control treatment conditions as compared to alternative conditions. The pipe loop rigs consist of materials representative of member community distribution systems, including lead service lines, galvanized pipe, brass, copper with leaded solder, and new copper pipe. Lead service lines and galvanized pipe were harvested from the distribution system and lead service lines were analyzed for metals analysis of the scale. Pipe loop rigs are located at each of the five water treatments and in five select locations across the distribution system.

Additionally, the team developed a regional hydraulic and water quality model to validate the selection of five distribution system pipe loop locations and identify potential improvements to further optimize the corrosion control throughout the regional system.

The team has conducted a thorough review of state and federal regulations and evaluated existing water treatment plant and distribution system water quality data. The team is currently in the conditioning phase of operations, allowing the team to collect a baseline of water qualtiy and metals data. Following conditioning, the team will enter the testing phase where alternative treatment strategies will be evaluated to help determine the best corrosion control treatment strategy for GLWA. Results from the pipe loop study will provide a basis for full-scale conceptual design of an optimized corrosion control program and evaluate any unintended consequences that impact compliance with other drinking water regulations.

Relevant Features
- Pipe scale analysis
- Comprehensive system and water quality evaluation
- Regulatory review
- Hydraulic and water quality modeling

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiplt Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **8**

21. Title and Location (City, State)
SERVICE LINE MATERIAL INVENTORY PROJECT, BLOOMINGTON, IN

22. Year Completed

Professional Services	Construction
2021-Ongoing	N/A

23. Project Owner's Information

a. Project Owner
City of Bloomington Utilities

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

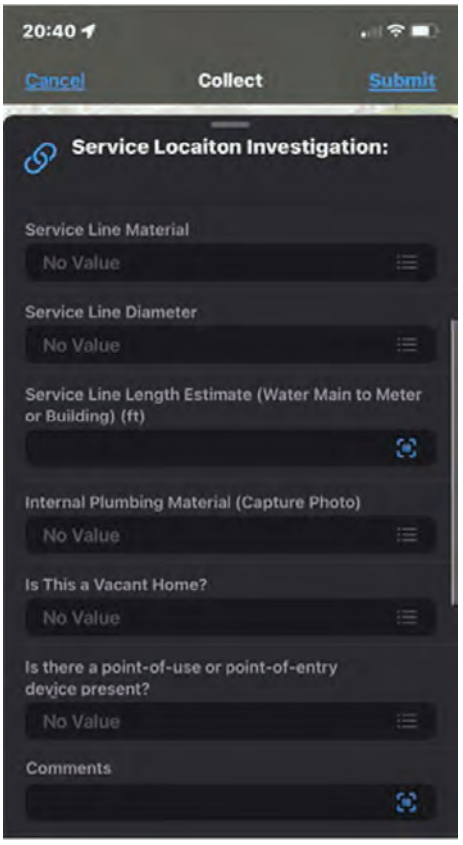
Arcadis is supporting the City of Bloomington Utilities (CBU) to improve its existing service line material inventory. The CBU has approximately 27,000 service lines with no historical written record of the composition of the utility or customer side service line. In a proactive effort, CBU has begun reviewing and compiling all available utility records to support development of the inventory and is in the process of purchasing equipment to perform exploratory field investigations to verify service material across the system. CBU requested assistance from the Arcadis Team, which includes Blue Conduit, to support development of the initial LSL inventory for compliance with the LCRR using a predictive model to estimate the likelihood of lead or galvanized service lines across the system.

To begin the process, Arcadis reviewed and evaluated the existing inventory and data to establish a documented common understanding of all available data sources and for use in the model development. As part of this review, Arcadis evaluated current systems, verification methods, and workflows to identify potential areas for improvement. To build a consistent approach to data management, a data dictionary was developed.

Additionally, Arcadis assisted in the development of new service line feature class in a file geodatabase using Python scripts. All the information collected as part of this review was incorporated into the initial development of the predictive model. For this project, field investigations will need to be conducted from a set of representative, unbiased homes to input into the model. A recommended inspection list was provided to CBU, who will be investigating the service line material on both the CBU and customer side of the service line via potholing. The model will be updated with these data and used to assess the likelihood of lead or galvanized at all unknown locations.

To support data collection efforts by CBU in the field, Arcadis provided a data collection template and assisted with the configuration of a mobile application (i.e., ArcGIS Field Maps) to collect and track field data results (as shown in the image above). This allows for efficient, repeatable, and consistent data collection from the field along with easy integration into the initial inventory. Arcadis will assist CBU with development of a public-facing inventory web-based application by identifying and organizing business units, developing a scope, defining needs and criteria, identifying system integration requirements, establishing a deployment schedule, and finally developing a maintenance program.

Relevant Features
- Lead Service Line Inventory Development
- Public Facing Inventory Development Support
- Service Line Field Investigation Support
- Predictive Modeling



25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **9**

21. Title and Location (City, State)
WRF GUIDANCE FOR USING PIPE LOOPS TO INFORM LEAD AND COPPER CONTROL TREATMENT DECISIONS, DENVER, CO

22. Year Completed

Professional Services	Construction
2021 - 2023	N/A

23. Project Owner's Information

a. Project Owner
Water Research Foundation (WRF)

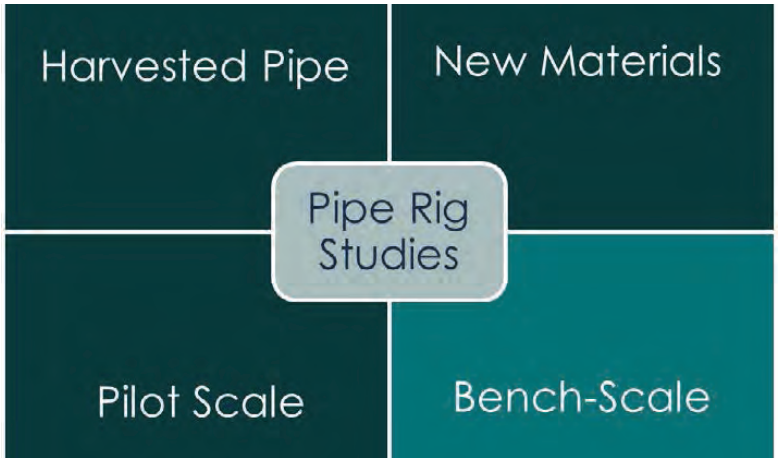
24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

The Lead and Copper Rule Revisions (LCRR) will require and prompt more water systems to conduct pipe loop studies in the event of exceeding the new trigger level of 10 µg/L, or exceeding the existing lead and copper action levels of 15 µg/L and 1.3 mg/L. Water systems will continue to be required to evaluate or re-evaluate corrosion control treatment (CCT) in response to a source water or treatment change (some states already require this) and if they serve more than 50,000 people.

Arcadis along with other team members is developing a "fit-for-purpose" guidance manual for using pipe loops to inform lead and copper CCT decisions that builds upon the literature and industry experience, and accounts for the wide range of drivers and system characteristics influencing the optimal testing approach. The guidance document will provide materials that can be used by systems of various sizes, consultants, regulators, researchers, and other stakeholders.

The guidance document will lay out five key steps under a pipe loop study, as studies are not a one-size-fits-all, and different approaches are likely to be taken by different systems. The key components include 1) drivers, 2) design, 3) operations, 4) data analysis, and 5) costs. Working groups have been established for each component as workgroup leads work directly with participating utilities to understand past experiences and brainstorm tools and deliverables that will be valuable and feasible for the industry.

As part of the project, the team will develop a number of tools that support the planning efforts of a pipe loop study. This will include design template and process and instrumentation diagrams, operation checklist and templates, statistical instructions to assist with data analysis after completion of a pipe loop study, and a digital cost tool to estimate the cost of a pipe loop study based on utility specific inputs and site-specific conditions. Participating utilities are also helping develop informational videos focused on key features of pipe rig design and operations including SCADA integration and chemical feed systems, harvesting and preservation of lead service lines, pipe rig start up, filtering of samples, and sample collection. The guidance manual is expected to be readily available by 2023, a year ahead of the October 2024 LCRR compliance date.



Relevant Features
- Pipe scale analysis
- Comprehensive system and water quality evaluation
- Regulatory review
- Hydraulic and water quality modeling

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Subconsultant

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **10**

21. Title and Location (City, State)
AWWA LONG-TERM LEAD AND COPPER RULE NATIONAL COST ESTIMATE, WASHINGTON, DC

22. Year Completed

Professional Services	Construction
2013-2022	N/A

23. Project Owner's Information

a. Project Owner
American Water Works Association

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

In response to potential changes to the Lead and Copper Rule that United States Environmental Protection Agency (USEPA) was considering, Arcadis evaluated the impacts of potential changes in sampling requirements by estimating the change in observed lead and copper levels and action level exceedances. The results of the data analysis were used to estimate the increase in the number utilities that would exceed an action level. For each regulatory scenario considered, the potential impacts on U.S. utilities, including costs, corrosion control treatment (CCT) changes, and unintended consequences, were assessed. The results were used to prepare a national cost of compliance estimate, which estimated the financial impact to public water systems to achieve compliance with the long-term LCR and an optimized CCT framework intended to aid utilities' planning of corrosion control while avoiding negative unintended consequences. The analysis prepared by Arcadis was used by AWWA during regulatory negotiation of the LCR.

AWWA is interested in informing the USEPA's development of the Lead and Copper Rule Improvements (LCRI) rulemaking and the water utility community. In several communities where there has been a lead action level exceedance, additional precautionary actions are being taken above and beyond the current rule requirement, in particular the provision of filters or bottled water. The goals of this project are to: (1) communicate the cost considerations and implementation hurdles that result from this type of requirement and (2) prepare a model approach for ending a home filter or bottled water delivery program initiated in response to a lead exceedance. The resulting publication is intended to inform and provide improved clarity to USEPA on the challenges and costs associated with potential upcoming revisions under the LCRI.

Relevant Features
- National lead service line occurrence assessment
- Evaluation of the cost and benefit associated with lead service line replacement
- Support for Lead and Copper Rule Improvements regulatory negotiation
- Mastery of the LCR

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **11**

21. Title and Location (City, State)
CITY OF NEW LONDON LEAD SERVICE LINE REPLACEMENT PROGRAM, CITY OF NEW LONDON, CT

22. Year Completed

Professional Services	Construction
2021 – 2024 (Est.)	N/A

23. Project Owner's Information

a. Project Owner
Water and Water Pollution Control Authority - City of New London

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

The City of New London serves 60,000 customers through 14,000 water services and is aware that approximately 1,500 of these services were likely to contain lead. To reduce customer exposure to lead and proactively achieve compliance with the recently finalized Lead and Copper Rule Revisions (LCRR), the City acting through the leadership of the Water & Water Pollution Control Authority (W&WPCA) is embarking on a comprehensive full Lead Service Line Replacement (LSLR) Program.

Arcadis is providing engineering support in development and execution of that program. As the program manager, Arcadis is responsible for developing the LSLR program and overseeing the replacements (including pre- and post-construction activities) at each property. Under the first phase of the program, Arcadis is:

- Overseeing all general program management activities, including establishing and maintaining the program schedule, budget, dashboards, reporting, coordination with Connecticut Department of Public Health, and all stakeholder communication and outreach.
- Developing a complete service line inventory to support compliance under LCRR requirements by establishing the likelihood of lead on the customer portion using a machine learning model developed by Blue Conduit and by conducting confirmatory field investigations and sampling to support the model.
- Developing a LSLR plan, including strategies to ensure homeowner participation in the full lead service line replacement program, pre- and post-LSLR activities, funding opportunities and options for providing financial assistance to customers.
- Preparing construction contract documents in accordance with state bidding laws for lead service line replacement on the public and private side.
- Providing services during the bidding of the construction documents and oversight of multiple contractors for the lead service lines replaced under this program.
- Developing a Public Outreach Plan and materials to be used for public engagement and education, including development of a CX 360 public outreach platform.
- Providing ongoing LCRR compliance support.

Work under Phase 2 of the program began in early 2022 and includes execution of the Public Outreach Plan, including hosting open houses, a website and establishing and maintaining a program hotline, construction management for the replacement of up to 700 lead service lines, CIP updates and progress tracking and funding management. Phases 3 and 4 of the program will continue in 2023 and 2024, respectively, and will include the replacement of an estimated900 additional lead service lines.

Under a separate contract, Arcadis is assisting the City with an update to water, sewer and stormwater Ordinances and corresponding Rules & Regulations. The goal of the update is to two-fold 1) to assure that the Cityhas the legal authority needed under each utility ordinance to effectively enforce permit requirements that the City is obligated to enforce to meet permit and 2) to streamline the Ordinances and separate out Standard Operating Procedures and other guidance material into the Rules & Regulations which pair to the specific utility Ordinance . For the Water Ordinance the City plans to incorporate requirements to incentivize all private property owners to remove lead service lines (on the private property) this is in addition to assuring best practices on the public side.

Relevant Features
- Lead Service Line Inventory Development
- Public Facing Inventory Development Support
- Service Line Field Investigation Support
- Predictive Modeling

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **12**

21. Title and Location (City, State)
PROGRAM SUPPORT FOR LCRR IMPLEMENTATION, LOUISVILLE, KY

22. Year Completed

Professional Services	Construction
2021 - Ongoing	N/A

23. Project Owner's Information

a. Project Owner
Louisville Water Company

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

Louisville Water (LW) has been proactively addressing system lead levels and related infrastructure issues for decades to protect public health, and a dedicated Lead and Copper Rule Revisions (LCRR) team has been assembled and is developing a draft action plan for achieving compliance with the new regulation. However, given the complexity of the rule, the wide range of required activities, the number of internal stakeholders and processes involved, and the volume of information to be collected, managed, and analyzed, this LCRR team recognizes that their staff does not have the background or experience to identify and plan for the countless elements that must be addressed.

Arcadis is applying our experience and lessons learned to support Louisville Water in data-driven decision making, and in the development and implementation of a clear and comprehensive LCRR program. Support is being provided as needed, including in the following areas:

- Holding regular meetings with the LCRR team and other stakeholders to answer questions about LCRR requirements and to provide solutions for meeting compliance.
- Identifying gaps in planning and supporting further development and refinement of the LCRR compliance program.
- Facilitating coordination between the LCRR core team and utility communications staff, including through joint workshops discussing requirements and action items.
- Developing a LCRR communications action plan.
- Reviewing and developing public outreach materials to increase customer understanding, buy-in, and participation.
- Identifying methods and developing procedures for identifying service line materials, including prioritization of unknowns.
- Reviewing and providing feedback on the utility's draft LCRR procedures and action plans.
- Designing a targeted LSLR program for 2022 to refine procedures and communication methods.
- Developing procedures for replacement of public and customer lead service lines (LSLs).
- Developing a methodology for prioritizing private lead service line replacement efforts, incorporating equity considerations.
- Reviewing data management processes and providing recommendations for improvement.
- Refining an information management framework to improve program operations and communications.
- Designing internal and public-facing LSL inventories.
- Exploring alternate funding mechanisms to increase replacement rates.

As part of this project, Arcadis held a 4-hour in-person communications workshop that facilitated collaboration and communication between stakeholder groups within LW. This workshop focused on public communication and outreach but brought together many departments involved in the lead and copper program to illicit feedback, requirements, and comment. A result of this workshop was a roadmap that identified responsible parties and assigned tasks to address "parking lot" items that were gathered throughout the discussion.

Relevant Features
- Program Planning
- Public Communications Planning
- Public Communications Roadmap
- LSLR Best Practices
- Support Developing Lead Action Plan

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **13**

21. Title and Location (City, State)
CITY OF BUFFALO LEAD & COPPER RULE REVISION COMPLIANCE, BUFFALO, NY

22. Year Completed

Professional Services	Construction
03/2022-Ongoing	N/A

23. Project Owner's Information

a. Project Owner
City of Buffalo/Veolia North America

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

As a subconsultant to 120Water, Arcadis is supporting Veolia with the City's Lead & Copper Rule Revisions program management. The 120Water/Arcadis team is supporting the City with the following services:

- Lead Service Line Inventory Development
- Lead and Copper Rule Compliance Sampling (Annually) 1st & 5th Liter
- Surveillance Sampling - Voluntary Customer Sampling
- Public Outreach & Communications
- Lead Service Line Replacements
- Pre & Post Sampling for Lead Service Line Replacements
- Pitcher/Filter Distribution

The program is a multi-year phased approach. Each year includes a minimum of 700 compliance and surveillance samples being drop shipped to residents. The kits specifically include 5 bottles for first- and fifth-liter sampling to inform customers on sampling practices. A central data management platform is being provided to associate all relevant data to an address, including sample logistics, asset data, and communications information. Internal and public facing inventory dashboards are provided with the software, along with automated letter sending for result notifications.

Relevant Features
- Program Management
- Sampling Support
- LSL Inventory Development
- LSL Replacement Management
- Community Outreach
- Funding Assistance

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Subconsultant

ARCADIS

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: **14**

21. Title and Location (City, State)
MONROE COUNTY WATER AUTHORITY SERVICE LINE MATERIAL INVENTORY, MONROE COUNTY, NY

22. Year Completed

Professional Services	Construction
07/2022 - Ongoing	N/A

23. Project Owner's Information

a. Project Owner
Monroe County Water Authority (MCWA)

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

Arcadis is supporting the Monroe County Water Authority with the services outlined below as the Authority works to proactively prepare for compliance with the Lead and Copper Rule Revisions:

- Development of a Lead Service Line Inventory (192,000 service lines)
  - o Comprehensive records review
  - o Initial Service Line Material Inventory
  - o Development of the Lead Status of Unknown Service Lines
  - o Field oversight of SL material identification where applicable
  - o Public-facing inventory (web-based application development)
- Lead Service Line Replacement Plan
- Public Outreach and Education Program

Arcadis will complete the development of the initial service line material inventory before the end of 2022 to provide the MCWA with more than a full calendar year to complete field verification and implement the recommendations developed through the project prior to the LCRR compliance deadline in October 2024.

Relevant Features
- LSL Inventory Development
- Lead Service Line Replacement Plan Development
- Public Outreach and Education Program Planning

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Arcadis U.S., Inc.	Multiple Locations	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: 15

21. Title and Location (City, State)	22. Year Completed	
FORT LAUDERDALE EMERGENCY BYPASS 48" FORCEMAIN, FORT LAUDERDALE, FL	Professional Services: 2021	Construction: 2021

23. Project Owner's Information

a. Project Owner	b. Point of Contact Name	c. Point of Contact telephone
City of Fort Lauderdale	Omar Castellon, P.E.	(954) 828-5064

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

CMA was responsible for the design, permitting, and construction observation of the replacement of the City of Fort Lauderdale's main transmission line going into the wastewater treatment plant. The new line consists of more than 22,000 linear feet of new pipe which will be installed via 11 horizontal directional drills (HDD) that range between 1,700 and 3,500 linear feet each to a depth of up to 70 feet. The new force main is mostly 48" HDPE pipe with some ductile iron pipe sections. The project route includes sensitive ecosystems including the crossing of South Middle River which required Benthic surveys for the subaqueous crossing, dewatering calculations, and permitting for construction within a quarter mile of contaminated areas with high-water table being close to the coastline.

Project Value:
$61 million

Relevant Features
- Permitting
- On Site Inspection
- Contract Administration
- CEI

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) Firm Name	(2) Location	(3) Role
	Chen Moore and Associates	Fort Lauderdale, FL	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. Example Project Key Number: 16

21. Title and Location (City, State)	22. Year Completed	
FT LAUDERDALE FM REHAB, HDD & SWAGELINE (1-4), FORT LAUDERDALE, FL	Professional Services: 2018	Construction: 2018

23. Project Owner's Information

a. Project Owner	b. Point of Contact Name	c. Point of Contact telephone
City of Fort Lauderdale	Omar Castellon, P.E.	(954) 828-5064

24. Brief Description of Project and Relevance to this Contract (include scope, size, and cost)

CMA was the prime consultant for the 30" Emergency Force Main Rehabilitation project in the City of Fort Lauderdale. This innovative design-build project, led by Murphy Pipeline Contractors (MPC), was undertaken to provide both mainline force main replacement for aging infrastructure and to provide additional redundancy in case of future issues.

The contract was divided into four (4) phases within the City of Fort Lauderdale. The nearly 20,000 linear feet of pipeline was rehabilitated through a combination of swagelining, directional drilling, and traditional open cut installation over these four phases. CMA provided planning, design, permitting, and engineering services during construction. Environmental compliance, subaqueous crossing, public involvement, and maintenance of traffic in the busy Sistrunk and Himmarshee Business Districts were some of the additional project complexities. CMA also provided dewatering permitting and groundwater modeling due to contaminated sites within quarter mile of the projects. This project was awarded the 2019 Project of the Year by the ASCE Broward Branch.

Project Value:
$14 million

Relevant Features
- Emergency Renovation
- Planning
- Permitting
- Contract Administration
- CEI
- Modeling

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) Firm Name	(2) Location	(3) Role
a.	Chen Moore and Associates	Fort Lauderdale, FL	Prime

SECTION 3
Qualifications of the Project Team

03. Qualifications of the Project Team

Arcadis understands that the assignment of the most qualified individuals is the single most important factor to delivering successful outcomes for the City. To assist the City in accomplishing its goals for this important program, we have been building a national LCRR Compliance team, which includes many local staff members. In addition, we can use statistical analysis and predictive machine learning models to improve the success rate in locating, inventorying, and removing lead service lines within the distribution system. Our combination of technical experience, knowledge and familiarity with Authority staff, facilities and procedures makes us uniquely qualified to deliver this program efficiently and effectively. This means you can rest easy at night knowing that your LCRR project is industry-leading, being delivered ahead of schedule and minimizing the burden on your staff and customers.

Our Project Manager, Susan Brownstein, PE, is an Arcadis National Technical Manager leading the LCRR team and brings both utility and regulatory experience to the approach for service line inventories and replacements. Our Subject Matter Expert, Rebecca Slabaugh, PE, is Arcadis' Drinking Water National Practice Leader and a sought after LCRR compliance expert. Rebecca and Susan are supported by the technical leads who bring LCRR experience from various utilities across the country as highlighted on the following page and resumes after this section. Our project management team also includes our Principle-in-Charge, Melissa Pomales, PE to provide local Arcadis leadership and our Deputy Project Manager, Joan Fernandez, PE, to serve as local day to day point of contact and coordinate team activities. Both Melissa and Joan are located in our Plantation office just minutes from the City, and will ensure your project is completed with the perfect balance of local responsiveness and nationally-recognized industry leadership in LCRR Compliance.

Arcadis' Dedicated Team of LCRR Specialists

Over the past several years, we have invested in growing our Lead and Copper team across North America under Rebecca Slabaugh's direction. These staff have supported numerous water systems from coast to coast and are actively shaping the current guidance and forthcoming regulatory revisions. With over 40 Arcadis LCRR specialists, an office in Plantation, and a team of local partners that is familiar with field activities for the City, we are ready to support all of your short and long term needs including augmenting your staff to support sampling, field investigations, public outreach and education, data analysis, corrosion control, IT/system integration or any other activities at any point within the program.

40+ Specialists to support all aspects of the LCRR. The City can draw on these staff at any time to support your project needs and goals.

Available Support Staff

LSL Inventory
Tenzing Youdon
Aaron Capelouto
Lydia LaGorga
Digital Support Team (6)

Sampling & Monitoring
Kiran Udayakumar
Devi Thirunarayanan

Public Education and Outreach
Kathryn Edwards, PE
Katie Umberg
Bridget Butterly

Ordinances & Legal Forms
Karen Casteloes
Benjamin Zeier, PE

LSLR Construction Contract Documents
Daniel Seider, PE
Andy Elderbrock

LSLR Construction Management
Chris Remme, CCM, PSP, CCP
Allison Zeoli, PE

Data Management, Dashboards & Reporting
Saga Naik
Brad Kiep, GISP, PMP
Brian Wopershall, PE, PMP
Seth Anderson, GISP
James McCallon

LSLR Plan Development
Karen Casteloes
John Salvagno

Funding & Grant Management
Susan Schell
Timothy Burns, PE
Jordan Gray-Dekraai
Jeannie Krueger

Corrosion Control Treatment
Gwendolyn Kubacki, PE
Ashley Kent, PE
Stephanie Bishop, PE
Alma Beciragic
Kirk Nowack, Ph.D

Technical Advisors
Mark Lenz, PE
Jennifer Lachmayr, PE
Dan Seider, PE
Ertan Akbas

Technical Expertise of Personnel

Our National LCRR team has implemented elements of LCRR programs for more than 1,500 water systems and conducted corrosion control studies for over 70 utilities across the U.S. Our team is leading the industry in all aspects of corrosion — from directing research on flushing after lead service line replacement to providing technical support as part of ongoing LCR revisions to contributing to new AWWA standards and manuals of practice. In short, we understand corrosion control — where we started, how we got to where we are today, where the industry is headed, and how to help utilities implement changes and achieve compliance with current and future regulations.

16 years
LCRR Experience

Susan Brownstein, PE | Project Manager

Ms. Brownstein has a master's degree in environmental engineering and 16 years of LCRR and water quality experience focused on drinking water regulatory compliance, utility capital improvements programs, and water quality. Her experience includes working for Cleveland Water Department leading their Lead Service Line Replacement Programand as a drinking water regulator for the California Water Resources Control Board. She brings a wealth of experience between both regulatory and utility management in the specific areas of water quality, CCT and LCRR as well as drinking water utility project management and capital improvements planning. *As your Project Manager, Susan will oversee each task of your project, leveraging knowledge of your system and best practices from systems across the country, to ensure successful LCRR compliance.*

Joan Fernandez, PE | Deputy Project Manager

Ms. Fernandez is a licensed Professional Engineer with a diverse and broad range of experience in the business consulting, civil, and environmental fields. She has more than 18 years of experience in project management, planning, design, permitting, procurement and construction management. During her professional career, she has worked closely with various internal and external stakeholders' staff at all levels, consultants, and contractors in conducting contract negotiations, presentations, workshops, and project implementation. She continues to be involved in the development and delivery of Capital Improvement Projects for various clients valued at more than $15 million including the City of Sunrise, City of Boynton Beach, City of Hollywood, Miami-Dade Sewer and Water Department (M-D WASD), Orlando Utilities Commission (OUC) and the Puerto Rico Aqueduct and Sewer Authority. *Ms. Fernandez as the Deputy Project Manager will serve as the local day-to-day point of contact and coordinate team activities. She is located in the Plantation office just minutes from the City, and will ensure your project is completed with the perfect balance of local responsiveness and nationally-recognized industry leadership in LCRR Compliance.*

17 years
LCRR Experience

Rebecca Slabaugh, PE | Subject Matter Expert

Ms. Slabaugh is Arcadis's national technical expert for Lead and Copper Rule Revisions (LCRR) compliance. She has supported nearly 1,500 public water system across the U.S on LCR or corrosion related issues and has managed complex lead programs, such as the Great Lakes Water Authority Comprehensive Corrosion Control Program. She is also a longstanding member of the AWWA LCR Technical Advisory Workgroup and has provided technical leadership to AWWA, Water Research Foundation (WRF), U.S. Environmental Protection Agency and multiple states on a range of LCR issues, including regulatory development, treatment selection and implementation, and lead service line inventory and replacement guidance.

Melissa Pomales, PE | Principal-in-Charge

Ms. Pomales has a diverse and broad range of experience in the civil, environmental (water and sewer), and structural engineering fields, as well as in management consulting. Her work experience includes program and project management, consulting and business advisory, procurement and strategic planning, feasibility and financial analyses, planning, and design. She is the Florida Area Leader for the Water Business Line and is located in our Plantation office, ensuring the City has ready access to the leadership of Arcadis and that the best resources of the firm are committed to this project.

5 years
LCRR Experience

Kiran Udayakumar | LSL Inventory and Data Management/GIS Support Task Lead

Mr. Udayakumar is a project engineer with Arcadis helping drinking water utilities across the country configure, manage, and optimize consumer lead testing and service line replacement programs. He specializes in analyzing water quality data and developing business intelligence solutions to visualize and report key performance indicators to stakeholders. Kiran has worked on Lead & Copper Compliance and has built service line inventory for over 1,500 Public water systems in the country. Kiran's expertise helps utility clients respond to a changing regulatory landscape by equipping them with the digital tools necessary to create inventory dashboards, plan and track infrastructure improvements, and achieve regulatory compliance.

2 years
LCRR Experience

Vishakha Kaushik, PE | LSLR Plan Development Task Lead

Ms. Kaushik is a project engineer with more than 6 years of professional experience and is supporting drinking water treatment projects across North America. Her experience in the industry has been focused on maintaining drinking water quality in the distribution system including writing the Nitrification Action Plan for the City of Houston, working on drinking water corrosion control issues and helping utilities become compliant with lead and copper rule revisions. She also has experience in delivering design and construction projects for various water treatment plant improvements including, preparation of design and construction packages for various treatment plants, pump stations, lift stations, and related improvements; for municipal, and industrial clients.

Garth White | Field Inspections Task Lead

Mr. White has more than 17 years of experience specializing in civil and mechanical engineering disciplines, with a focus on construction management and oversight. His experience includes construction management and inspection, operations monitoring, cost estimating, and trend analysis for large industrial facilities and infrastructure improvement projects throughout Florida and has served in many roles on a variety of water and wastewater projects. Recent experience includes water/wastewater treatment plant rehabilitation, installation of production wells and deep injection wells, installation of above grade and underground high voltage and medium voltage cables, replacement of large diameter water transmission mains, watermain and force main aerial crossings, including site restoration, trenchless pipeline restoration/replacement, and paving/ drainage projects.

6 years
LCRR Experience

Victoria Nystrom, PE | Corrosion Control Treatment Task Lead

Ms. Nystrom has a master's degree in environmental engineering and five years of industry experience focused on water treatment plant design, water quality, and distribution system corrosion. Her experience includes design of pipe loop rigs for water systems, identification of optimal corrosion control treatment of lead and galvanized iron pipe, and operation of pilot-scale advanced water treatment techniques. She has provided support for numerous systems related to treatment optimization and regulatory compliance.

2 years
LCRR Experience

Emily Baca | LCRR Sampling and Procurement Task Lead

Ms. Baca has a master's degree in public affairs and five years of industry experience focused on environmental regulations and policy. Her experience includes data analytics and processing using software including GIS, R, python, and MS suite to report and visualize data.

Jennifer Smith, PE | LSL Inventory and Data Management/GIS Support

Ms. Smith has over 15 years of engineering experience on public infrastructure projects throughout Broward County. Her project experience includes multiple utility projects for several municipalities in South Florida. Her expertise includes water, sewer and drainage infrastructure design. In addition to design, she has worked on BODRs, hydraulic modeling, utility and stormwater master plans. Ms. Smith also has an expertise in GIS and Mapping and has been the PM for several large-scale utility projects were mapping services and utility inventory was required.

Matt O'Rourke | Field Inspections

Mr. O'Rourke serves as CMA's Senior Construction Specialist with extensive experience with engineering construction projects in Florida. His responsibilities include coordination and monitoring of construction activities for public and private sectors, and serves as liaison to owners, contractors, subcontractors, residents, and governmental agencies. Additional responsibilities include the review and processing of change orders, progress payments and construction related reports, and representing the owners and engineers at pre-construction and various other meetings. In addition to site inspections, he reviews as-builts for accuracy, prepares punch list items, attends final walk-throughs, and assists in project closeout.

Sheryl Dickey | Public Education and Outreach

Sheryl A. Dickey, Founder & President/CEO of Dickey Consulting Services, Inc. (DCS) is a community and economic development professional with more than 40 years' experience. Dickey and her staff bring a high level of energy and the ability to participate in a leadership or team member role to ensure successful completion of projects. Dickey founded DCS in January 1995 and has enjoyed more than 27 years of supporting communities. The firm is headquartered in the Midtown Commerce Center, a Silver LEED certified building near downtown Fort Lauderdale. Dickey is the developer and owner of the building.

Dickey has extensive work experience with infrastructure improvement projects. She also has long-standing relationships with numerous municipalities and governmental agencies in the tri-county area including Broward County, City of Fort Lauderdale, City of Lauderdale Lakes, City of Lighthouse Point, Boca Raton Airport Authority, Port Everglades, and the Florida Department of Transportation.

George Demosthenous | Predictive Modeling

George is the CEO of VODA.ai – an award-winning, artificial intelligence company focused on helping utilities leverage data to reduce waste and effectively serve their communities. Water pipes deliver life's most valuable resource. Wastewater pipes are critical to proper sanitation. VODA.ai is the #1 solution in predicting incidents and assessing business risk for both with a smart platform that has been continuously refined through partnering with some of the largest and most innovative utilities in the world. Prior to founding VODA.ai, George worked at a public company, helping hundreds of utilities managing non-revenue-water and smart metering solutions. George is Harvard educated and based in Boston, MA.

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Susan Brownstein, PE	Project Manager	a. Total 16	b. With Current Firm 1

15. Firm Name and Location

ARCADIS **Cleveland, OH**

16. Education (degree and specialization)
- MS Civil/Environmental Engineering Loyola Marymount University 2005
- BS Biomedical Engineering Boston University 1996

17. Current Professional Registration (State and Discipline)
- Professional Engineer: CA, OH

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Brownstein has a master's degree in environmental engineering and 16 years of industry experience focused on drinking water regulatory compliance, utility capital improvements programs, and water quality. Her experience includes working for Cleveland Water Department and leading their Lead Service Line Replacement Program as a Sanitary Engineer for the California Water Resources Control Board. She brings a wealth of experience between both regulatory and utility management in the specific areas of water quality, corrosion control treatment and Lead and Copper Rule Revisions (LCRR) as well as drinking water utility project management and capital improvements planning.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Lead Service Line Replacement Program Manager
Cleveland Water / OH

(2) Year Completed
Professional Services: 2020
Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Engineer in the CIP division, oversaw staff activities to ensure compliance with the Ohio Environmental Protection Agency's (EPA's) 2018 regulation mandating Lead Service Lines inventory (LSLI) and replacement (LSLR), which formed the basis of several United States Environmental Protection Agency LCRR requirements. Developed strategy to streamline communication between LIMS, customer service, work order, and GIS systems to guarantee timely and accurate notifications; established QA/QC of construction inspection reporting and field operations; developed specifications and procedures for timely replacement of LSLs; and facilitated communication and cooperation among public affairs, plan review, operations, laboratory, contractors, executive management, IT, and field staff.

b.

(1) Title and Location (City and State)
California Lead Sampling in Schools and Lead Service Line Inventory Regulatory Development and Implementation
California Department of Water Resources, Division of Drinking Water / CA

(2) Year Completed
Professional Services: 2018
Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Member of the regulatory workgroups for the Lead Sampling in Schools and LSLI requirements, assisted in development of regulatory requirements and implementation for these programs Authored program documents to explain the statutory authority, permit and sampling requirements, and health risks in accessible language for water professionals, educators, policy makers, parents, and other stakeholders, as well as gave presentations and authored articles on the programs.

c.

(1) Title and Location (City and State)
Lead Service Line Material Inventory and Replacement
Aqua America, Inc. (Various systems) / United States

(2) Year Completed
Professional Services: 2022 - Ongoing
Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Technical Manager for Phase II work that includes development of service line inventories for numerous systems in PA, IL, IN, NJ, NC, TX and VA, support developing workflows and integrating systems, development of dashboards and automated inventory reports for state submittals.

ARCADIS

d.	(1) Title and Location (City and State) **CIP Project Manager** Cleveland Water	(2) Year Completed Professional Services: 2020 Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	As Utility Engineer, was project manager for the following CIP projects: • Nottingham Water Treatment Plant Sedimentation Basin Improvements – Replace sludge collection equipment in the Nottingham WTP sedimentation basins. • Baldwin Water Treatment Plant Underdrain Inspection and Investigation – Investigate the cause of filter underdrain failure and significant media loss at the Baldwin WTP and evaluate repair and replacement alternatives. • Plant Computer Control and SCADA System Evaluation and Upgrade – Perform condition assessment of the computer control and human machine interface systems at CWD's four water treatment plants and distribution system. • Kirtland Intake Crib Rehabilitation and Miscellaneous Improvements – Repair steel supporting beams and building of Cleveland Water's above-water intake structure on Lake Erie, as well as repainting, security, electrical supply, and water quality tasks. • Asset management planning and compliance with Ohio EPA regulations		

e.	(1) Title and Location (City and State) **Systemwide Chloramine Conversion and Optimal Corrosion Control Treatment (OCCT) Evaluation** Los Angeles Department of Water and Power / CA	(2) Year Completed Professional Services: 2014 Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	Regulatory Staff Engineer evaluated and permitted all aspects of systemwide chloramine conversion, which was completed in 2014, including nitrification response plan, operating permits for disinfection facilities, notification and outreach plan, disinfection profiling and benchmarking, and ongoing compliance with LCR OCCT requirements.		

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E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Melissa Pomales, PE	Principal-in-Charge	20	16

15. Firm Name and Location

ARCADIS **Miami, FL**

16. Education (degree and specialization)

- MBA Finance Administration Indiana University Bloomington 2014
- MS Civil Engineering Cornell University 2004
- BS Civil Engineering Cornell University 2003

17. Current Professional Registration (State and Discipline)

- Professional Engineer: FL, PR
- Envision Sustainability Professional
- Project Management Professional
- Construction Documents Technologist

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Pomales has a diverse and broad range of experience in the civil, environmental (water and sewer), and structural engineering fields, as well as in management consulting. Her work experience includes program and project management, consulting and business advisory, procurement and strategic planning, feasibility and financial analyses, planning, and design. She is the Florida Area Leader for the Water Business Line..

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Program Management Consulting/Bond Engineer
Puerto Rico Aqueduct and Sewer Authority (PRASA) / Puerto Rico, PR

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Program Manager of all consulting/bond engineer annual responsibilities, including deliverables as per Master Agreement of Trust with bondholders. Project Coordinator for the preparation of the 2008 Consulting Engineer's Report issued in connection with PRASA's $1,600 million bond issuance. Project manager of the 2009, 2010, 2013, 2014 and 2015 Consulting Engineer's Reports; 2008-2017 annual budget review reports; and 2013-2017 cash disbursement review reports.

b.

(1) Title and Location (City and State)
Wastewater Pump Station Asset Management and Master Plan
City of Plant City, FL

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Quality Assurance and Capital Planning Task Technical Advisor for asset management activities and development of a wastewater pump station master plan, which included condition assessment and process evaluation of pump stations and force mains.

c.

(1) Title and Location (City and State)
Project Manager for Asset Management Framework Development
Miami-Dade Water and Sewer Department / Miami, FL

(2) Year Completed

Professional Services	Construction (if applicable)
2019	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Manager for the development of an enterprise-wide Asset Management Framework to implement across water and sewer with optimized business practices, an effective technology portfolio and high-level organizational awareness for staff knowledge and training.

d.

(1) Title and Location (City and State)
Project Management of Hurricane Sandy Recovery and Resiliency Portfolio Project Controls
NYC Mayor's Office of Recovery and Resiliency (ORR) / New York, NY

(2) Year Completed

Professional Services	Construction (if applicable)
2019	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Manager responsible for embedded team within the New York City Mayor's Office of Recovery and Resiliency charged with providing monitoring and oversight services of the recovery and resiliency program, totaling over 1,000 projects with a combined program budget of $23 billion. Managed a team of five full-time and eight part-time (remote) employees. Supported client in development of strategy and plan for transitioning program tracking, controls and monitoring activities to internal ORR team.

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E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Rebecca Slabaugh, PE	Subject Matter Expert	a. Total 17	b. With Current Firm 15

15. Firm Name and Location

ARCADIS **Indianapolis, IN**

16. Education (degree and specialization)
- MS Environmental Engineering Virginia Polytechnic Institute and State University 2007
- BS Civil Engineering Purdue University-Main Campus 2005

17. Current Professional Registration (State and Discipline)
- Professional Engineer: IN
- Construction Documents Technologist (CDT)

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Slabaugh is Arcadis's National Technical Expert for Lead and Copper Rule Revisions (LCRR) compliance. She has supported nearly 1,500 public water system across the U.S. on Lead and Copper Rule (LCR) or corrosion related issues and has managed complex lead programs, such as the Great Lakes Water Authority Comprehensive Corrosion Control Program. She is also a longstanding member of the American Water Works Association (AWWA) Lead and Copper Rule Technical Advisory Workgroup and has provided technical leadership to AWWA, Water Research Foundation, United States Environmental Protection Agency and multiple States over the past decade on a range of LCR issues, including regulatory development, treatment selection and implementation, and lead service line inventory and replacement guidance. She not only brings extensive LCR qualifications but also experience with Los Angeles Department of Water and Power's (LADWP's) water system. She has provided guidance and management for LADWP's disinfection integration strategy, chloramines conversion and nitrification planning work for compliance with Stage 2 Disinfection Byproducts Rule and continued nitrification control support.

19. RELEVANT PROJECTS

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
a.	**Lead and Copper Rule Revisions Program Management** Erie County Water Authority / Buffalo, NY	2022 - Ongoing	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Program Manager overseeing the development and implementation of a compliance program for the LCRR. Program covers all aspects of the LCRR including the lead service line inventory, lead service line replacement, school and childcare sampling, tap and water quality parameter monitoring, and public education and outreach.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
b.	**Lead and Copper Rule Revisions (LCRR) Compliance Plan** Birmingham Water Works (BWW) / AL	2021 - Ongoing	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Technical Expert for initial risk and compliance assessment of BWW's operations and practices as compared to the LCRR requirements, a desktop corrosion control study, and creation of a public communication plan and development of public education materials around lead and LCRR activities.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
c.	**Lead Service Line Replacement (LSLR) Program** City of New London / New London, CT	2021 - Ongoing	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Technical Advisor for development and execution of a full lead service line replacement program. Work includes LSL inventory development levering machine learning, design and bidding services, public outreach and communication, program management, construction management, and stakeholder coordination.		

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d.	(1) Title and Location (City and State) **Lead Service Line (LSL) Material Inventory and Replacement** Aqua America, Inc. (Various Systems) / United States	(2) Year Completed Professional Services 2021 - Ongoing	 Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Technical Expert and Program Manager for initial (Phase I) risk assessment and development of LSL work assessment and development of LSL work plans for 53 systems across Aqua's four priority states (PA, OH, IL, NJ), development of complete service line inventory for one of their systems (~32,000 service connections), and assessment of service line records for over 150 remaining systems which have no lead service lines and development of written statements to satisfy public facing inventory requirements. Phase II work includes development of service line inventories for numerous systems in PA, IL, IN, NJ, NC, TX and VA, support developing workflows and integrating systems, development of dashboards and automated inventory reports for state submittals.		

e.	(1) Title and Location (City and State) **Support for Lead and Copper Rule Long-Term Revision Process** American Water Works Association / Washington, DC	(2) Year Completed Professional Services 2015 - 2018	 Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Project Manager for the collection and analysis of data and information necessary to support AWWA activities to inform the LCR implementation and revision development. Arcadis, part of a team led by Cornwell Engineering, lead: (1) costs for several potential rule scenarios including lowered lead action levels of 10 ppb and 5 ppb and a mandatory lead service line replacement program, (2) compilation of lead occurrence data.		

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E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Joan Fernandez, PE	Deputy Project Manager	18	5

15. Firm Name and Location

ARCADIS **Plantation, FL**

16. Education (degree and specialization)

— MS Environmental Engineering Florida International University 2007
— BS Environmental Engineering Sciences University of Florida 2004

17. Current Professional Registration (State and Discipline)

— Professional Engineer: FL, MD
— PACP/MACP/LACP Certified
— Institute of Asset Management Certification

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Joan Fernandez is a licensed Professional Engineer with a diverse and broad range of experience in the business consulting, civil, and environmental fields. She has more than 18 years of experience in project management, planning, design, permitting, procurement and construction management. During her professional career, she has worked closely with various internal and external stakeholders' staff at all levels, consultants, and contractors in conducting contract negotiations, presentations, workshops, and project implementation. She continues to be involved in the development and delivery of Capital Improvement Projects for various clients valued at more than $15 million including the City of Sunrise, City of Boynton Beach, City of Hollywood, Miami-Dade Sewer and Water Department, Orlando Utilities Commission (OUC) and the Puerto Rico Aqueduct and Sewer Authority.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)

Escape and Valencia Water Main Pipe Bursting
City of Sunrise, FL

(2) Year Completed

Professional Services	Construction (if applicable)
2017	2018

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Manager. Prepared construction documents and associated permits for the replacement of over 31,000 LF of water main in communities of Escape and Valencia. The project consisted of pipe bursting existing aging water mains and replacing with 4-inch, 6-inch and 8-inch pressure tested HDPE perchlorinated pipe. Post design services included Construction Observation assistance, assistance with certificate of completion and assistance with requests for information during construction.

b.

(1) Title and Location (City and State)

OUC Engineering Services for Water Mains and Sewer Replacement Projects along City of Orlando Brick Streets Restoration Program
Orlando Utilities Commission / Orlando, FL

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	Ongoing

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Manager. The team is providing professional engineering services including the design of replacement water main, permitting, bidding assistance, and limited construction administration for approximately 14,500 LF of water mains (ranging in size from 2-inch to 20-inch in diameter). The water main replacement program includes the replacement of up to 12 individual portions of water mains (or projects) that will be replaced during this multi-year professional engineering services authorization.

c.

(1) Title and Location (City and State)

Water Main Replacement Program - Joint Agency Project Coordination with City of Orlando, Orange County Government and FDOT
Orlando Utilities Commission, FL

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Manager. As-needed professional services to assist OUC with the development of a joint agency program with the City of Orlando, Orange County and FDOT to identify water main replacement projects for agencies to participate jointly by sharing costs and minimizing disruptions to the residents. The work includes coordination meetings, GIS evaluations, development of opinion of probable construction costs, and the development of technical memorandums summarizing information about the selected projects.

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E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Kiran Udayakumar	LSL Inventory and Data Management/GIS Support	5	5

15. Firm Name and Location

ARCADIS **Chicago, IL**

16. Education (degree and specialization)

— MS Environmental Engineer Michigan Technological University 2018
— BS Tech Civil Engineering University of Kerala 2014

17. Current Professional Registration (State and Discipline)

— N/A

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Mr. Udayakumar is a Project Engineer with Arcadis helping drinking water utilities across the country configure, manage, and optimize consumer lead testing and service line replacement programs. He specializes in analyzing water quality data and developing business intelligence solutions to visualize and report key performance indicators to stakeholders. Kiran has worked on Lead & Copper Compliance and has built service line inventory for over 1,500 Public water systems in the country. Kiran's expertise helps utility clients respond to a changing regulatory landscape by equipping them with the digital tools necessary to create inventory dashboards, plan and track infrastructure improvements, and achieve regulatory compliance.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Lead and Copper Rule Sampling and Sequential Sampling Support for Various Systems in Illinois Aqua Illinois / Kankakee, IL	Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — Ongoing

Project Engineer compiled current and historical Lead and Copper Rule (LCR) sampling data from Aqua. Conducted site visit, interviewed, and held meetings with Aqua Engineers and field staff on existing LCR sampling locations, methods, and results. Ran analysis on collected data to identify eligible sites, utilized Environmental Protection Agency water watch for verification of selected sites, utilized county property data for identification of potential sites and helped in providing LCR sampling pool for sever different systems.

b.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Service Line Inventory Initiative Chicago Department of Water Management (DWM) / Chicago, IL	Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Worked with the client to achieve the goal of having a service line inventory for the entire service area (Over 550,000 service lines) and meet the state regulatory requirements of submitting a comprehensive service line inventory. Coordinated with different bureaus within the department to incorporate service line identification within the existing workflows and incorporate into GIS apps and/or work order management system. Had office administrator digitize tap cards and old water service permits. Connected all the different data sources into Power Bi and overlayed over BANNER System (Billing system) to achieve a comprehensive and live service line inventory solution that gets updated as work progress.

c.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Power BI Initiative and Mobile Environment for Water Quality Chicago Department of Water Management / Chicago, IL	2021	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Worked with the client to determine program needs, expectations and goals. Designed and created Power BI dashboards utilizing Power BI software for the existing water quality programs integrating data from different sources to provide a single interactive dashboard for data interactive dashboard for the lead kit program and water quality disturbance research study, created graphical reports and prepared documentation and training, analysis, problem solving and decision making. Also created mobile view interactive dashboard for the lead kit program and water quality disturbance research study, created graphical reports and prepared documentation and training.

d.	(1) Title and Location (City and State) **Consumer Initiated Water Lead Testing Program** Chicago Department of Water Management / Chicago, IL	(2) Year Completed Professional Services 2022	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Currently manages the city-wide lead testing program with Chicago DWM. Performs daily data analysis on testing locations and lab results to identify the current state. Assisted the information technology team to create or improve currently existing mobile applications and create a new data management system for both Water Quality and other groups within DWM. Worked with the Water Quality Department to optimize currently existing workflows, create new workflows and improve processes. Interfaced daily with City officials, client, and other contractors on current and estimated future status of the program, data analysis, planning and problem resolution and assists the client in decision making.		

e.	(1) Title and Location (City and State) **Consumer Initiated Service Line Self-Identification** Chicago Department of Water Management / Chicago, IL	(2) Year Completed Professional Services 2022	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Worked with client to put forward with a solution to identify services by a certified plumber abiding covid restrictions. Created an online website for consumers to identify services coming inside homes and submit the identified service to the website along with a picture of the services. The submitted entry is added with location details and unique identification numbers and then the submission along with picture is reviewed by a certified plumber.		

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E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Brad Kiep, GISP, PMP	LSL Inventory and Data Management/GIS Support	18	8

15. Firm Name and Location

ARCADIS **Fort Wayne, IN**

16. Education (degree and specialization)

— Post BA Certificate GIS Pennsylvania State University 2006
— BA Geography University of Illinois 2004

17. Current Professional Registration (State and Discipline)

— Geographic Information System Professional (GISP)
— Project Management Professional (PMP)

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Mr. Kiep is a production and experienced Geographic Information Systems (GIS) professional with more than 18 years of experience working with spatial datasets. His project work history has a wide-ranging focus including wind energy constraint analysis, transmission line routing, and water/wastewater utility mapping. Most recently, he has worked as the administrator of a highly available GIS Enterprise serving over 800 users consuming spatial data through web/mobile applications. His goals include using his technical experience to showcase GIS as a major platform in his client's digital journey.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Lead Program Management and Support Chicago Department of Water Management / Chicago, IL	2022	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

GIS Developer developed components of both their lead testing program and their Lead Service Line Inventory (LSLI). For the lead testing program, built mobile applications for field crews to either complete the test or simply pick up the test. This application was integrated in near real time with both the department's work order management system and the website used by residents to schedule their test or pickup. To assist with the development and management of the city's LSLI, multiple points of entry were developed and tied together to keep the inventory as accurate as possible. This included a mobile application for city staff to enter information in the field, a web application for office staff to add records, and multiple integration workflows to keep these and other sources constantly updating the inventory. With this inventory, a public facing application is currently in development.

b.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Lead Service Line Inventory Support City of Bloomington Utilities / Bloomington, IN	Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

GIS Technical Lead overseeing development of an initial lead service line inventory using machine learning to predict the likelihood of the service line material at each parcel. Created automations to build utility side service line feature classes in GIS including calculated attributes and relationship classes. Work also includes development of data collection templates, configuration of mobile applications and assistance with development of a public-facing inventory.

c.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Lead Service Line Inventory Support City of Mishawaka / Mishawaka, IN	Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

GIS Technical Advisor providing guidance and best practices to Mishawaka as they develop an action plan for achieving compliance with all aspects of the Lead and Copper Rule Revisions. Services include review of draft content and methodologies, identification of gaps and needed resource, and direct support for development and implementation of all program elements.

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d.	(1) Title and Location (City and State) **Water and Sewer Utility Data** Chicago Department of Water Management / Chicago, IL	(2) Year Completed Professional Services: 2020 Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Co-created utility data editing workflows to ensure the asset data was kept up to date in a manageable and sustainable editing process. The data schema evolved over the years to reflect changes in technology allowing for a better editing experience and easier database management. Used quality assurance measures such as version control and detailed database design (datatypes, domains, etc.) to reduce number of errors made while editing. Used automated logic and spatial data checks and peer reviews as quality control methods. All these efforts lead to high quality trusted data that all other program efforts rely on.		

e.	(1) Title and Location (City and State) **Mobile Application Development** Chicago Department of Water Management / Chicago, IL	(2) Year Completed Professional Services: 2018 Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Designed several mobile applications for ArcGIS Collector and utilized the mobile device management (MDM) software employed by the department to manage its over 500 devices. As part of this program, dozens of Collector applications were designed to interact with both integrated and non-integrated GIS SQL Server databases using the ArcGIS Enterprise. Once each application was ready for deployment, conducted trainings with end users and completed setups within the MDM software. During the lifecycle of each application, provided additional trainings, user documentation, and MDM services.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Jennifer Smith, P.E.	Inventory and Data Management GIS Support	a. Total 16	b. With Current Firm 16

15. Firm Name and Location

Fort Lauderdale, FL

16. Education (degree and specialization)	17. Current Professional Registration (State and Discipline)
— BS Civil Engineering Florida Atlantic University 2006	— Professional Engineer, Florida, 72232, 2011

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Smith has over 16 years of engineering experience on public infrastructure projects throughout Broward County. Her project experience includes multiple utility projects for several municipalities in South Florida. Her expertise includes water, sewer and drainage infrastructure design. In addition to design, she has worked on BODRs, hydraulic modeling, utility and stormwater master plans. Ms. Smith also has an expertise in GIS and Mapping and has been the PM for several large-scale utility projects were mapping services and utility inventory was required.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
Broward County Projects UAZ 110, 111 & 113 Water Sewer Improvements Broward County / Lauderdale Lakes, FL	Professional Services 2020	Construction (if applicable) 2022
(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	

Principal Engineer. The Water and Sanitary Sewer Improvements for the UAZ 110/111 & 113 Project included design of the improvements to the existing water distribution system, sanitary sewer system, and transmission systems. All three (3) projects combined a total area of over 1000 acres within multiple Cities. The existing system being replaced consists of approximately 168,100LF of water mains, 122,100 LF of sanitary sewer mains and 23,600 LF force main. There are 8 Broward County lift stations in these UAZ areas and 1 private lift station which sanitary sewer systems will need to connect to. Chen Moore provided construction administration services during the construction phase. Geographic Information System (GIS) mapping technology was utilized to track daily construction progress, quantities and generate daily field reports. GIS was also used for as-built review and verification and for certification processes. As part of field services, Chen Moore was responsible for verifying hydrant and valve operation of the system prior to acceptance of the improvements by the Client. The improvements were incorporated into a GIS data base for Broward County.

b.

(1) Title and Location (City and State)	(2) Year Completed	
BCWWS Bid Pack 1 District 3C Septic Tank Elimination Broward County /, Miramar, Hollywood, Pembroke Pines, FL	Professional Services 2021	Construction (if applicable) 2022
(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	

Principal Engineer. This project included the design of a wastewater system consisting of gravity sewer main and force main. The 250-scre project area consisted of UAZ 364 and 365 within the Cities of Miramar, City of Hollywood and City of Pembroke Pines. The design consisted of 37,000 LF of gravity sewer main ranging from 8" PVC to 18" PVC and 54,000 LF of forcemain ranging from 12" DIP to 16" DIP. The design also included a new triplex lift station which sanitary sewer system connects to and three horizontal directional drills. Chen Moore also provided permitting assistance for this project. CMA incorporated the design into a GIS data base meeting County mapping requirements.

c.	(1) Title and Location (City and State) Broward County UAZ 110/111 & 113 Water Sewer Improvements 113B (RFP No. R1356803P1) Broward County, Lauderdale Lakes, FL	(2) Year Completed Professional Services: 2019 Construction (if applicable): 2022	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Principal Engineer. Broward County UAZ Water Sewer Improvements 113B, Lauderdale Lakes, FL. The UAZ 113B project included the improvements to the existing water distribution and sanitary sewer system within the City of Lauderdale Lakes, along with restoration of surface areas disturbed for the construction of the improvements. The project had a total area of 350 acres and included the installation of 42,700 linear feet of gravity sewer, 1,500 linear feet of forcemain, and 66,200 linear feet of watermain. The total project included 110,400 linear feet of pipe. Pipe installation took place along local city roads, as well as County and FDOT jurisdiction roadways including NW 31st Avenue, West Oakland Park Boulevard, and US-441. The existing water main consists of asbestos cement, cast iron, ductile iron, galvanized steel, and polyvinyl chloride pipe ranging from 2" - 24" in diameter size. The sanitary sewer consists of vitrified clay, fold and form liner, cured in place liner, and ductile iron pipe ranging from 8" – 18" in diameter size. The force main consists of asbestos cement, cured in place liner, ductile iron, and polyvinyl chloride pipe ranging from 6" – 8" in diameter size. County lift station 50M1 was rehabilitated as part of this project. The restoration of roadways, sidewalks, driveways, and landscape areas will need to be performed as needed for water and sanitary sewer improvement construction. CMA performed CEI services during construction and the project is currently in the close-out phase.		

d.	(1) Title and Location (City and State) Country Club Ranches Water Main Project with City of Miramar - RFQ 19-10-03 City of Miramar, Miramar, FL	(2) Year Completed Professional Services: Ongoing Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Project Manager. CMA is providing professional engineering services for the Country Club Ranches Water Main Project. CMA is completing the design and construction of 20,000 linear feet of a new water distribution system to services the Country Club Ranches community. Country Club Ranches is a developed, semi-rural, residential community, and is primarily served by private water wells and septic tanks. The project includes new water distribution system to include fire hydrants, valves, water services, air release assemblies and required appurtenances throughout the Country Club Ranches community in order to supply municipal water service to the residents.The scope of services includes planning, engineering reporting, engineering design, technical specifications, contract preparation, permitting and construction management.		

e.	(1) Title and Location (City and State) District 2 Wastewater Study BCWWS, Fort Lauderdale, FL	(2) Year Completed Professional Services: Ongoing Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Project Manager. BCWWS has contracted Brown and Caldwell (B&C) and CMA to perform a study to identify areas throughout the District 2 sanitary sewer system that exhibit elevated chloride levels, which could potentially be caused by inflow and infiltration (I&I). BCWWS has noticed elevated chloride levels in wastewater effluent and wishes to proactively review potential sources. CMA will perform a study of the existing sewer system to determine if the source of the excess levels of chloride concentrations in the NRWWTP are caused by the salinity inflow and infiltration. Tasks will include the following:Preliminary review of existing GIS sewer atlasPerform Testing at the master pump stations including installing data loggers and collecting grab samples to be sent to a lab to be analyzed for chloride concentrationAnalyze potential infiltration sites based on initial testing results and preliminary investigation of sanitary sewer systemPerform additional testing with dataloggers and grab samples within the gravity sewer system in an effort to narrow the specific location of possible I&IPrepare Analysis Report to include all testing results with recommendations		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Charmaine Emanuels, E.I.	Inventory and Data Management GIS Support	a. Total 3	b. With Current Firm 3

15. Firm Name and Location

Fort Lauderdale, FL

16. Education (degree and specialization)	17. Current Professional Registration (State and Discipline)
— BS Civil Engineering Florida International University 2019	— Engineer In Training, 2019

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Emanuels serves as an Associate Engineer for CMA's engineering team and has experience working on various aspects of civil engineering design, plan preparation, permitting efforts, and construction oversight while leading segments of the project design. Her experience includes utility water distribution systems; sanitary sewer collection systems; lift station design and utility infrastructure rehabilitation. Ms. Emanuels has an expertise on GIS and Mapping of utility projects and has worked on the mapping and inventory of large-scale Broward County infrastructure projects.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
Broward County Projects UAZ 110, 111 & 113 Water Sewer Improvements Broward County / Lauderdale Lakes, FL	Professional Services 2020	Construction (if applicable) 2022
(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	

Associate Engineer. The Water and Sanitary Sewer Improvements for the UAZ 110/111 & 113 Project included design of the improvements to the existing water distribution system, sanitary sewer system, and transmission systems. All three (3) projects combined a total area of over 1000 acres within multiple Cities. The existing system being replaced consists of approximately 168,100LF of water mains, 122,100 LF of sanitary sewer mains and 23,600 LF force main. There are 8 Broward County lift stations in these UAZ areas and 1 private lift station which sanitary sewer systems will need to connect to. Chen Moore provided construction administration services during the construction phase. Geographic Information System (GIS) mapping technology was utilized to track daily construction progress, quantities and generate daily field reports. GIS was also used for as-built review and verification and for certification processes. As part of field services, Chen Moore was responsible for verifying hydrant and valve operation of the system prior to acceptance of the improvements by the Client. The improvements were incorporated into a GIS data base for Broward County.

b.

(1) Title and Location (City and State)	(2) Year Completed	
BCWWS Bid Pack 1 District 3C Septic Tank Elimination Broward County /, Miramar, Hollywood, Pembroke Pines, FL	Professional Services 2021	Construction (if applicable) 2022
(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	

Associate Engineer. This project included the design of a wastewater system consisting of gravity sewer main and force main. The 250-scre project area consisted of UAZ 364 and 365 within the Cities of Miramar, City of Hollywood and City of Pembroke Pines. The design consisted of 37,000 LF of gravity sewer main ranging from 8" PVC to 18" PVC and 54,000 LF of forcemain ranging from 12" DIP to 16" DIP. The design also included a new triplex lift station which sanitary sewer system connects to and three horizontal directional drills. Chen Moore also provided permitting assistance for this project. CMA incorporated the design into a GIS data base meeting County mapping requirements.

c.	(1) Title and Location (City and State) Broward County UAZ 110/111 & 113 Water Sewer Improvements 113B (RFP No. R1356803P1) Broward County, Lauderdale Lakes, FL	(2) Year Completed Professional Services: 2019 Construction (if applicable): 2022	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Associate Engineer. Broward County UAZ Water Sewer Improvements 113B, Lauderdale Lakes, FL. The UAZ 113B project included the improvements to the existing water distribution and sanitary sewer system within the City of Lauderdale Lakes, along with restoration of surface areas disturbed for the construction of the improvements. The project had a total area of 350 acres and included the installation of 42,700 linear feet of gravity sewer, 1,500 linear feet of forcemain, and 66,200 linear feet of watermain. The total project included 110,400 linear feet of pipe. Pipe installation took place along local city roads, as well as County and FDOT jurisdiction roadways including NW 31st Avenue, West Oakland Park Boulevard, and US-441. The existing water main consists of asbestos cement, cast iron, ductile iron, galvanized steel, and polyvinyl chloride pipe ranging from 2" - 24" in diameter size. The sanitary sewer consists of vitrified clay, fold and form liner, cured in place liner, and ductile iron pipe ranging from 8" – 18" in diameter size. The force main consists of asbestos cement, cured in place liner, ductile iron, and polyvinyl chloride pipe ranging from 6" – 8" in diameter size. County lift station 50M1 was rehabilitated as part of this project. The restoration of roadways, sidewalks, driveways, and landscape areas will need to be performed as needed for water and sanitary sewer improvement construction. CMA performed CEI services during construction and the project is currently in the close-out phase.		

d.	(1) Title and Location (City and State) Country Club Ranches Water Main Project with City of Miramar - RFQ 19-10-03 City of Miramar, Miramar, FL	(2) Year Completed Professional Services: Ongoing Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Associate Engineer. CMA is providing professional engineering services for the Country Club Ranches Water Main Project. CMA is completing the design and construction of 20,000 linear feet of a new water distribution system to services the Country Club Ranches community. Country Club Ranches is a developed, semi-rural, residential community, and is primarily served by private water wells and septic tanks. The project includes new water distribution system to include fire hydrants, valves, water services, air release assemblies and required appurtenances throughout the Country Club Ranches community in order to supply municipal water service to the residents.The scope of services includes planning, engineering reporting, engineering design, technical specifications, contract preparation, permitting and construction management.		

e.	(1) Title and Location (City and State) District 2 Wastewater Study BCWWS, Fort Lauderdale, FL	(2) Year Completed Professional Services: Ongoing Construction (if applicable): N/A	
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Associate Engineer. BCWWS has contracted Brown and Caldwell (B&C) and CMA to perform a study to identify areas throughout the District 2 sanitary sewer system that exhibit elevated chloride levels, which could potentially be caused by inflow and infiltration (I&I). BCWWS has noticed elevated chloride levels in wastewater effluent and wishes to proactively review potential sources. CMA will perform a study of the existing sewer system to determine if the source of the excess levels of chloride concentrations in the NRWWTP are caused by the salinity inflow and infiltration. Tasks will include the following:Preliminary review of existing GIS sewer atlasPerform Testing at the master pump stations including installing data loggers and collecting grab samples to be sent to a lab to be analyzed for chloride concentrationAnalyze potential infiltration sites based on initial testing results and preliminary investigation of sanitary sewer systemPerform additional testing with dataloggers and grab samples within the gravity sewer system in an effort to narrow the specific location of possible I&IPrepare Analysis Report to include all testing results with recommendations		

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Vishakha Kaushik, PE	LSLR Plan Development	a. Total: 6	b. With Current Firm: 1

15. Firm Name and Location

ARCADIS **Houston, TX**

16. Education (degree and specialization)
- MS Civil Engineering Texas A&M University 2016
- BS Environmental Engineering Delhi Technological University, India 2014

17. Current Professional Registration (State and Discipline)
- Professional Engineer: TX

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Kaushik is a project engineer with more than six years of professional experience and is supporting drinking water treatment projects across North America. Her experience in the industry has been focused on maintaining drinking water quality in the distribution system including writing the Nitrification Action Plan for the City of Houston, working on drinking water corrosion control issues and helping utilities become compliant with lead and copper rule revisions. She also has experience in delivering design and construction projects for various water treatment plant improvements including, preparation of design and construction packages for various treatment plants, pump stations, lift stations, and related improvements; for municipal, and industrial clients.

19. RELEVANT PROJECTS

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
a.	**Drinking Water Treatment and Distribution Technical Optimization Sustainability Support** City of Houston / Houston, TX	2021	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	Project Engineer. The project is aimed to support City of Houston's goal of delivering safe and good quality water to all its customers. Contract included obtaining Texas Commission Environmental Quality permits for improvements in water quality, assisting with colored water issues, nitrification, blending waters, updating monitoring plan and preparing the City's Emergency Preparedness Plan. Engineer of Record for City's updated NAP for the Belleau Woods area.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
b.	**Nitrification Action Plan** City of Houston / Houston, TX	2018	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	Primary Author and Project Engineer for City of Houston's updated Nitrification Action Plan. Responsibilities included performing scientific data analysis of water quality parameters using American Water Works Association's (AWWA) Process Control Charts tool to determine alert levels for the Surface Water Treatment Plants, re-pump stations and distribution system. In addition to that, creating an Excel tool for assessing the chlorine equipment capability at the City's repump stations; recommending response to alert and actions levels as triggered per the plan which included unidirectional flushing, performing diagnostic testing, development of nitrification parameter profiles of the surface water treatment plants, etc.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
c.	**Drinking Water Optimization Program** City of Houston / Houston, TX	2019	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	Project Engineer for the City of Houston's Self-Assessment Evaluation Project with AWWA's Partnership for Safe Water. The project assessed design, operation and administration of the City's distribution system by providing answers to over 150 questions categorized into 85 variables for broad categories including operational performance improvement variables, design evaluation of distribution system and administration. Project responsibilities included drafting the report for self-assessment; evaluating the City's status on each of the 85 variables based on the data analysis conducted; developing supporting literature for workshops and recording workshop summaries.		

ARCADIS

	(1) Title and Location (City and State)	(2) Year Completed	
	Water Distribution System Hydraulic Modelling North Harris County Regional Water Authority (NHCRWA) / Houston, TX	Professional Services 2017	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
d.	Project Engineer created a WaterGEMS model for NHCRWA. The model involved laying down pipes and associated information on length, the Hardy Road, Spears Road and 249 re-pump stations; adding demand nodes where the central authority took water from the NHCRWA and adding contractual values of flows and pressures at take points for the NHCRWA. Modelling involved computing scenarios like failure of delivery of water from one source and calculating the feasibility of the rest of the system to supply water to customers. Model also involved looking at if the proposed sizes of pipes in the system will be appropriate from a water-age standpoint. Modeling also involved checking the usability of lines proposed to be constructed to add redundancy in the system.		

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Karen Casteloes	LSLR Plan Development	6	6

15. Firm Name and Location

ARCADIS **Indianapolis, IN**

16. Education (degree and specialization)
- MS Civil & Environmental Engineering Purdue University 2016
- BS Environmental Engineering San Diego State University 2014

17. Current Professional Registration (State and Discipline)
- Engineer in Training
- Construction Documents Technologist

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Casteloes is a Water Quality Engineer with Arcadis. She brings experience with high-profile drinking water projects, including drinking water treatment selection and optimization and regulatory compliance. She supports systems in developing lead service line inventories, service line materials identification, lead sampling programs, and demonstration studies. She is proficient in data management and analysis for water contaminants, such as lead.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)

Lead Program Management and Support
Chicago Department of Water Management (DWM) / Chicago, IL

(2) Year Completed

Professional Services	Construction (if applicable)
2022	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Implemented a large, city-wide lead testing program with Chicago DWM. Performed data analysis on lab results and applied geographic information system (GIS) to improve process efficiency. Assisted the GIS team to create or improve mobile applications for both Water Quality and other groups within DWM. Worked to improve workflows and processes within the Water Quality department. Interfaced on a daily basis with client stakeholders for planning, goal setting, expectation management, and problem resolution. Developed Water Quality and other reports as well as organized and maintained historical information.

b.

(1) Title and Location (City and State)

City of New London - Lead Service Line, Replacement Program
Water and Water Pollution Control Authority / City of New London, CT

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Engineer for full lead service line (LSL) replacement program. Work includes LSL inventory development leveraging machine learning, LSL replacement plan, public outreach and communication, program development, and stakeholder communication.

c.

(1) Title and Location (City and State)

Service Line Inventory and Lead Service Line Replacement Project
Aqua America, Inc. / IL, OH, NJ, PA

(2) Year Completed

Professional Services	Construction (if applicable)
2022	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Reviewed fifty-three (53) systems with suspected LSLs to improve their existing service line material inventories by identifying and locating LSLs and to bring consistency across the company. Developed work plans to improve the existing inventories that considered system size, available data, regulatory requirements, and system practices. As a Project Engineer, created a data dictionary, performed a gap analysis, facilitated state regulator discussions, and presented service line material identification alternatives.

d.	(1) Title and Location (City and State) **Lead Service Line Replacement Plan** City of Appleton / WI	(2) Year Completed Professional Services 2022	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Assisted the City of Appleton in a review of their existing service line inventory and the development of the lead service line replacement (LSLR) plan for compliance with the Lead and Copper Rule Revisions (LCRR). A review of their inventory will include their initial assumptions, data managements systems, and inventory update practices. Additionally, the creation of the LSLR plan will consist of an assessment of existing practices around LSLR, identification of funding mechanisms for private-side replacements, recommended LSLR goal rate, and a review of outreach and communication materials and procedures.		

e.	(1) Title and Location (City and State) **Full Lead Service Line Replacement (FLSLR) Guidance (#4713)** Water Research Foundation / Denver, CO	(2) Year Completed Professional Services 2021	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Assisted with a research project to evaluate strategies to reduce lead exposure after conducting FLSLR. The study identified trends and lessons among Public Water Systems who have established a LSLR program, including a review of LSLR practices, funding (both public and private side), sampling procedures, flushing procedures, filter selection, inventorying efforts, data collection, and public notification and outreach.		

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Garth White	Field Inspections	18	18

15. Firm Name and Location

ARCADIS **Plantation, FL**

16. Education (degree and specialization)

— BS Mechanical Engineering California State University 2002

17. Current Professional Registration (State and Discipline)

— N/A

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Mr. White has more than 18 years of experience specializing in civil and mechanical engineering disciplines, with a focus on construction management and oversight. His experience includes construction management and inspection, operations monitoring, cost estimating, and trend analysis for large industrial facilities and infrastructure improvement projects throughout Florida and has served in many roles on a variety of water and wastewater projects. Recent experience includes water/wastewater treatment plant rehabilitation, installation of production wells and deep injection wells, installation of above grade and underground high voltage and medium voltage cables, replacement of large diameter water transmission mains, watermain and force main aerial crossings, including site restoration, trenchless pipeline restoration/replacement, and paving/drainage projects.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Springtree Deep Injection Well Flow Delivery System Springtree Water/Wastewater Treatment Plant / Sunrise, FL	2020	2020

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Construction Manager. CMS services include facilitating bi-weekly construction progress meetings, preparing RFI, RFQ, and change orders, coordinating logistics of all contracting entities, and project closeout activities. The project consisted of furnishing and installing 400-hp treated effluent pumps with VFDs; inspection of stored equipment/materials, 300 LF of 30-inch-diameter effluent piping to existing injection wells; piping of RO concentrate to chlorine contact basin; demolition and replacement of existing plant water pumping system; furnishing and installing 2-MW standby generator; installed over 200 LF of duct banks that included conduits for medium voltage cables and control wiring, furnishing and installing pad drain lift station and install force main, replaced various sections of the sodium hypochlorite line; and start-up and commissioning for all the systems.

b.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
Escape and Valencia Force Main Pipe Bursting Improvements City of Sunrise Utilities Department / Sunrise, FL	2019	2019

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Construction Management. Services related to the replacement of over 25,000 LF of aging potable polyvinyl chloride, asbestos-cement, and ductile iron water mains located in the Escape and Valencia residential neighborhood areas within the City's service area. The project also included installation of over 700 service saddles and connections to the existing residential water meters. The site restoration included installation of D curbs, roadway milling and resurfacing activities, new wheel stops and parking lot striping.

c.

(1) Title and Location (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
NW 44th Street/Pine Island Road Water Transmission Main Improvements City of Sunrise Utilities Department / Sunrise, FL	2019	2019

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Lead Inspector. Provided construction management services for the replacement of approximately 5,000 LF of 36-inch DIP water transmission main from NW 44th Street to the Springtree Water Treatment Plant. This included several onsite design changes due to unforeseen conditions as a result of abandoned in-place utilities. The project activities also included close coordination with the State and County Regulatory agencies, City Utility Department and local residents. The final stage of construction activities included installation of WM/FM aerial crossing of C-13 canal, exfiltration trench on Springtree Drive, start-up of system, and roadway improvements. The roadway restoration consisted of backfilling and compacting the excavated trench with the appropriate lifts per the County's standard, which follows the FDOT requirements. In addition, 13,000 square yards of asphalt milling and asphalt overlay was installed on two lanes of high traffic roadway, including 2,000 LF of F and D curbs.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Matthew O'Rourke	Field Inspections	a. Total	b. With Current Firm
		15	3

15. Firm Name and Location

Fort Lauderdale, FL

16. Education (degree and specialization)	17. Current Professional Registration (State and Discipline)

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Mr. O'Rourke serves as CMA's Senior Construction Specialist with extensive experience with engineering construction projects in Florida. His responsibilities include coordination and monitoring of construction activities for public and private sectors, and serves as liaison to owners, contractors, subcontractors, residents, and governmental agencies. Additional responsibilities include the review and processing of change orders, progress payments and construction related reports, and representing the owners and engineers at pre-construction and various other meetings. In addition to site inspections, he reviews as-builts for accuracy, prepares punch list items, attends final walk-throughs, and assists in project closeout.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
Broward County Projects UAZ 110, 111 & 113 Water Sewer Improvements Broward County / Lauderdale Lakes, FL	Professional Services 2017	Construction (if applicable) 2017
(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	

Senior Field Inspector. The Water and Sanitary Sewer Improvements for the UAZ 110/111 & 113 Project included design of the improvements to the existing water distribution system, sanitary sewer system, and transmission systems. All three (3) projects combined a total area of over 1000 acres within multiple Cities. The existing system being replaced consists of approximately 168,100LF of water mains, 122,100 LF of sanitary sewer mains and 23,600 LF force main. There are 8 Broward County lift stations in these UAZ areas and 1 private lift station which sanitary sewer systems will need to connect to. Chen Moore provided construction administration services during the construction phase. Geographic Information System (GIS) mapping technology was utilized to track daily construction progress, quantities and generate daily field reports. GIS was also used for as-built review and verification and for certification processes. As part of field services, Chen Moore was responsible for verifying hydrant and valve operation of the system prior to acceptance of the improvements by the Client. The improvements were incorporated into a GIS data base for Broward County.

b.

(1) Title and Location (City and State)	(2) Year Completed	
Fort Lauderdale Emergency Bypass 48" Forcemain City of Fort Lauderdale /Fort Lauderdale, FL	Professional Services 2021	Construction (if applicable) 2021
(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	

Senior Construction Specialist. CMA was responsible for the design, permitting, and construction observation of the replacement of the City of Fort Lauderdale's main transmission line going into the wastewater treatment plant. The new line consists of more than 22,000 linear feet of new pipe which will be installed via 11 horizontal directional drills (HDD) that range between 1,700 and 3,500 linear feet each to a depth of up to 70 feet. The new force main is mostly 48" HDPE pipe with some ductile iron pipe sections. The project route includes sensitive ecosystems including the crossing of South Middle River which required Benthic surveys for the subaqueous crossing, dewatering calculations, and permitting for construction within a quarter mile of contaminated areas with high-water table being close to the coastline.

c.	(1) Title and Location (City and State) Jenada Isles Utility Improvement Project City of Wilton Manors/ Wilton Manors, FL	(2) Year Completed Professional Services 2021	Construction (if applicable) 2021
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Senior Construction Specialist. CMA is providing site investigation, topographic survey, utility coordination, design services, regulatory permitting, bidding assistance, and limited construction administration for the Jenada Isles Utility Improvement Project. CMA is responsible for the development of the design documents for the proposed utility improvements within the Jenada Isles neighborhood. The proposed utility improvements within the Jenada Isles neighborhood include the following:• Replace existing Lift Station #2 at northeast corner of NW 29th Street and NW 10th Avenue. The project includes the demolition of the existing lift station and the installation of a new submersible lift station adjacent to the current location. The proposed lift station will have duplex submersible pumps, which are installed within a new wetwell. The project will also include a new valve vault, new valves, new bypass piping connections, new instrumentation, new control panels, new telemetry, and associated sanitary piping to connect to the existing gravity sewer and existing force main.• Replace existing 4-inch force main (approximately 350 LF) along NW 29th Street from Lift Station #2 to existing sanitary manhole at NW 9th Terrace. The proposed force main will be HDPE pipe with same diameter, which will be installed via either pipe bursting or directional drilling depending on the conditions at the existing canal crossing.• Replace existing 4-inch AC water main (approximately 5,150 LF) throughout the neighborhood. The proposed water main will be HDPE pipe with 6-inch diameter installed via pre-chlorinated pipe bursting. The proposed improvements will also include the interconnections to the existing water main to remain at intersections along NE 11th Avenue and NW 9th Terrace, the the replacement of the existing fire hydrants as necessary to ensure appropriate fire coverage, and the reconnection of the existing water services to the new water main.		

d.	(1) Title and Location (City and State) CMA19-05 NE 22nd Ave Force Main Phase 2 - Broward County Project 9347-104736 - Contract PNC2117097P1_1 - PO WWE2000045 Broward County / Lighthouse Point, FL	(2) Year Completed Professional Services 2022	Construction (if applicable) 2022
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Senior Construction Specialist. CMA provided design services and services during construction on behalf of Broward County Water and Wastewater Services (BCWWS) for the installation of new force main along NE 39th Street between Federal Highway and NE 21st Way and NE 22nd Avenue from NE 21st Way to north of NE 41st Street within the City of Lighthouse Point. The new force main along NE 22nd Avenue and NE 39th Street includes the replacement of approximately 1,600 linear feet of 20-inch DIP force main. CMA teams provided Topographic Survey; Subsurface Utility Engineering; layout of the proposed utility improvements; Regulatory Permit Submittal; Bidding Assistance; Public Outreach; and Construction Observations.		

e.	(1) Title and Location (City and State) South County Reclaimed Water Transmission Pipeline Phase 1A (R2018-0296) with PBCWUD - WUD 18-022 PBCWUD / Broward and Palm Beach Counties, FL	(2) Year Completed Professional Services 2019	Construction (if applicable) 2022
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Senior Construction Specialist. Palm Beach County and Broward County have an Interlocal Agreement related to the construction, ownership, operation, and maintenance of a Regional Reclaimed Water System to deliver reclaimed water from Broward County's northern wastewater treatment plant to the Palm Beach County Water Utilities Department (WUD) service area. The service initiation to Palm Beach County will be 2 MGD of annual average daily flow by April 2021. The expansion was being designed in phases for multiple competitively bid construction sub-projects. Detailed construction documents and related permits were provided to allow the construction of approximately 3.7 miles (19,500 linear feet) of reclaimed water pipeline and related facilities to be completed and placed into service before April 2021. The design included pipe of various size and material, with the transmission main being 24-inch ductile iron pipe and the service lines varying from 10-inch to 12-inch, with some sections designed to use C-900 PVC due to corrosion potential. The design also included a 500 linear-foot horizontal directional drill to cross Glades Road and a private lake. Preliminary field investigations included as-built records review, site investigation, and photo study; environmental assessments; subsurface utility engineering; geotechnical investigation; a cultural resources investigation; and survey. The design included lake discharge facilities to meet irrigation demand at each golf course being served. The permitting process required a Hillsboro Canal Crossing with the South Florida Water Management District (SFWMD), permitting for impacts to County roads, permitting for impacts to trees and wellfields, permitting of reclaimed pipeline, and permitting for dewatering during construction. In addition to design, permitting, and construction services, CMA will be applying for ENVISION Certification (Institute for Sustainable Infrastructure) on behalf of Palm Beach County.		

FRALEMAN

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Tony Diaz	Subsurface Utility Engineering	a. Total 24	b. With Current Firm

15. Firm Name and Location

FRALEMAN **Miami, FL**

16. Education (degree and specialization)	17. Current Professional Registration (State and Discipline)
— High School Diploma	— FDOT — OSHA, Confined Space Entry Training Program

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Smith has more than 15 years of engineering experience on public infrastructure projects throughout Broward County. Her project experience includes multiple utility projects for several municipalities in South Florida. Her expertise includes water, sewer and drainage infrastructure design. In addition to design, she has worked on BODRs, hydraulic modeling, utility and stormwater master plans. She also has an expertise in GIS and Mapping and has been the PM for several large-scale utility projects were mapping services and utility inventory was required.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
E15-DTPW-07: Underground Utility Locating for WASD Gravity Sewer for PCTS Miami, FL	Professional Services 2020	Construction (if applicable) N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

SUE Manager. This is the 1st project that 3D Test Hole Reports were ever provided on a WASD contract. FRA provided emergency 3D SUE services for the NW 27th Ave Waste Collection/Transmission System Expansion & Water Distribution System Improvement D2-A1 Phase 2 project. This included locating identified utilities and designating sufficient locations to delineate the existing underground utilities along1.6 miles of NW 27th Ave (5,300' of new gravity sewer and 3,130' of lateral gravity sewer lines). The designation and location were performed via 3D GPR. When designating utilities, FRA marked the presence and approximate horizontal location and depth. Subsurface utilities were located by digging a total of 113 test holes via vacuum excavation. The project was located in a high traffic area. FRA designed and carried out their own TTC/MOT and obtained all required permits. To avoid dangerous traffic, minimize interruptions, and comply with an accelerated schedule, FRA performed numerous test holes at night. Designated/marked lines were surveyed and incorporated into the Survey File. Our hybrid survey/SUE field crews used cloud-based smart devices with ArcGIS-based Survey123 to collect real-time data. 3D Test Hole Reports with thorough utility information, such as a description, pipe size, utility owner, condition, horizontal and vertical location, a sketch of the surrounding area, photos, and GPS coordinates were provided to the client. All work was coordinated directly with the WASD Survey department. Tony was responsible for overseeing all SUE activities; coordinating with the designer, contractor, and the County; acquiring permits; ensuring timely submittals; and performing final QA/QC of all deliverables.

b.

(1) Title and Location (City and State)	(2) Year Completed	
E15-WASD-03B: Design Survey of Water Main on Turnberry Island Miami, FL	Professional Services 2023	Construction (if applicable) N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

SUE Manager. FRA provided SUE services to locate identified utilities and designate sufficient locations to delineate the existing underground utilities, via GPR and vacuum excavation test holes. A total of 22 test holes were dug to provide the horizontal and vertical location of each utility. Several of the proposed test hole locations had saltwater intrusion. To overcome this challenge, FRA used 16" PVC pipes to perform the test holes. Several of the requested locations included empty conduit runs. To help detect utilities in these areas and verify their exact underground locations, FRA inserted a high frequency sonde into the empty conduits. Designated/marked lines were surveyed and incorporated into the Survey File. Our hybrid survey/ SUE field crews used cloud-based smart devices with GIS-based Survey123 to collect real-time data. 3D Test Hole Reports with thorough utility information, such as a description, pipe size, utility owner, condition, horizontal and vertical location, a sketch of the surrounding area, photos, and GPS coordinates were provided to the client. Tony was responsible for overseeing all SUE activities; coordinating with the designer and the County; acquiring permits; obtaining maintenance of traffic plans; ensuring timely submittals; and performing final QA/QC of all deliverables. Tony went the extra mile by personally meeting and delivering the required plans and forms to expedite the permit approvals.

FRALEMAN

c.

(1) Title and Location (City and State)

DB16-WASD-02: Construction of a New Drinking Water Laboratory Building at the Alexander Orr, Jr. Water Treatment Plant, Design- Build

Miami, FL

(2) Year Completed

Professional Services	Construction (if applicable)
2021	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

SUE Manager. This design-build project involves the construction of a new drinking water laboratory to replace the existing undersized and deteriorated laboratory. FRA provided SUE services to locate identified utilities and designate sufficient locations to delineate the existing underground utilities, via GPR and vacuum excavation test holes. A total of 24 test holes were dug to provide the horizontal and vertical location of each utility. These facilities were made of asbestos cement pipe. To verify these utilities, Tony ordered a special frequency 250 MHz GPR antenna to verify several non-conductive underground utilities, including a water main and a force main. This specialized GPR unit increased the efficiency and accuracy of utility designation to provide accurate test hole information. Designated/marked lines were surveyed and incorporated into the Survey File. Our hybrid survey/SUE field crews used cloud- based smart devices with GIS-based Survey123 to collect real-time data. 3D Test Hole Reports with thorough utility information, such as a description, pipe size, utility owner, condition, horizontal and vertical location, a sketch of the surrounding area, photos, and GPS coordinates were provided to the client. Tony was responsible for overseeing all SUE activities; coordinating with the designer, contractor, and the County; acquiring permits; ensuring timely submittals; and performing final QA/QC of all deliverables.

d.

(1) Title and Location (City and State)

DB14-WASD-03: Design-Build Services for the Installation of a 48" Diameter Transmission Main for Area N

Miami, FL

(2) Year Completed

Professional Services	Construction (if applicable)
2020	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

SUE Manager. This design-build project was for the installation of a new 6.7-mile-long (35,376') 48" water transmission main from SW 152nd St at SW 127th Ave. The new water main connected to a proposed 36" water transmission main on SW 152nd St at SW 127th Ave and to an existing 60" PCCP water transmission main on North Snapper Creek Drive. Construction included 1,700' of micro-tunneling under the CSX Railroad. FRA provided SUE services to locate identified utilities and designate sufficient locations to delineate the existing underground utilities, via GPR and vacuum excavation test holes. A total of 156 test holes were dug to provide the horizontal and vertical location of each utility. The project was located along a high traffic roadway, so SUE services were performed at night to increase the safety of the field crews and minimize disruptions to local commuters (at no additional cost to our client). Designated/ marked lines were surveyed and incorporated into the Survey File. Test hole reports were prepared detailing the utility information, including diameter, material, station, offset, and the depth of the top and bottom pipe cover. Tony was responsible for overseeing all SUE activities; coordinating with the designer, contractor, and the County; acquiring permits; obtaining maintenance of traffic plans; ensuring timely submittals; and performing final QA/QC of all deliverables.

e.

(1) Title and Location (City and State)

DB14-WASD-05: 48" Force Main along N Miami Ave from NW 8th St to 36th St & along NE 36th St from N Miami Ave to NE 2nd Ave

Miami, FL

(2) Year Completed

Professional Services	Construction (if applicable)
2019	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

SUE Manager. This design-build project included the installation of a 3.5- mile (18,500') 48" force main along N Miami Ave and NE 36th St and of a 0.5-mile (2,700') 12" DIP water main along N Miami Ave from NE 14th St to NE 29th St. Installation of these pipelines included 3 micro-tunnels. FRA provided SUE services to locate identified utilities and designate sufficient locations to delineate the existing underground utilities, via GPR and vacuum excavation test holes. This included designation of the critical points along the proposed 48" force main's congested route and the 12" water main. A total of 125 test holes were dug to provide the horizontal and vertical location of each utility. Designated/marked lines were surveyed and incorporated into the Survey File. The project was located in an old urban area with high traffic, which presented some challenges. Test holes were performed at night from 11:00 pm to 5:00 am. Tony was there every night to supervise the handling of MOT. The roadway pavement was 18"-24", which required renting core drills to cut the pavement more efficiently. These extra efforts allowed FRA to complete the project 5 days ahead of schedule. Part of the project included micro-tunneling a 60" steel casing pipe under CSX railroad tracks. FRA provided safe clearance for the tunneled pipe under CSX R/W. This required coordinating with CSX security and their assigned flagman. To verify an abandoned underground AT&T telephone duct in the railroad R/W, FRA used a 650 MHz GPR antenna. This high frequency device uses an image to find non-conductive utilities like this. Test hole reports were prepared detailing the pipe (utility) information, including diameter, material, station, offset, and the depth of the top and bottom pipe cover. FRA also provided survey grade information of the utility targets. Tony was responsible for overseeing all SUE activities; coordinating with the designer, contractor, and the County; acquiring permits; obtaining maintenance of traffic plans; ensuring timely submittals; and performing final QA/QC of all deliverables.

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Victoria Nystrom, PE	Corrosion Control Treatment	6	5

15. Firm Name and Location

ARCADIS **Arlington, VA**

16. Education (degree and specialization)

— MS Environmental Health Engineering Virginia Polytechnic Institute and State University 2017
— BS Agricultural Biological Engineering and Bioengineering Virginia Polytechnic Institute and State University 2015

17. Current Professional Registration (State and Discipline)

— Professional Engineer: NY (in process)

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Nystrom has a master's degree in environmental engineering and six years of industry experience focused on water treatment plant design, water quality, and distribution system corrosion. Her experience includes design of pipe loop rigs for water systems, identification of optimal corrosion control treatment of lead and galvanized iron pipe, and operation of pilot-scale advanced water treatment techniques. She has provided support for numerous systems related to treatment optimization and regulatory compliance.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Lead and Copper Rule Revisions Program Management
Erie County Water Authority / Buffalo, NY

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Deputy Program Manager overseeing the development and implementation of a compliance program for the Lead and Copper Rule Revisions (LCRR). Program covers all aspects of the LCRR including the lead service line inventory, lead service line replacement, school and childcare sampling, tap and water quality parameter monitoring, and public education and outreach.

b.

(1) Title and Location (City and State)
Comprehensive Corrosion Control Optimization Study
Great Lakes Water Authority (GLWA) / Detroit, MI

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Deputy Project Manager and lead designer of pipe loops rig representing distribution system materials found in member community systems supplied by GLWA to evaluate the effects of a change in corrosion control treatment (i.e., orthophosphate dose) on metals release and pipe integrity. Pipe loop rigs will be located at their water treatments and in the various locations across the distribution system. Conducted a review of existing and proposed federal and state regulations affecting corrosion control and the potential impacts to GLWA.

c.

(1) Title and Location (City and State)
Advanced Treatment Evaluation and Corrosion Pipe Loop Study
USACE - Baltimore District / Washington, DC

(2) Year Completed

Professional Services	Construction (if applicable)
2021	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Chief Advanced Treatment Pilot Plant Operator that oversaw ozone and biofiltration skid operations and maintenance. Managed operations of pipe loop rigs, collecting water quality samples, and maintaining site safety of the pilot plant. Performed an extensive corrosion evaluation rig desktop study focused on previous corrosion pipe loop rig designs to evaluate impacts of water treatment changes on the release of metals in a water distribution system. Designed a pipe loop rig suitable to best represent a distribution system supplied by Washington aqueduct facilities to evaluate the effects of ozone, biofiltration, and UV-treated water on metals release and pipe integrity.

d.	(1) Title and Location (City and State) **Guidance for Using Pipe Loops to Inform Lead and Copper Corrosion Control Treatment (CCT) Decisions (WRF #5081)** Water Research Foundation / Denver, CO	(2) Year Completed Professional Services Ongoing	 Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Assistant Project Manager and Project Engineer assisting with the development of a "fit-for-purpose" guidance document for using pipe loops to inform lead and copper CCT decisions. Assisting with the efforts to document challenges and successes around pipe loop operations that will be summarized in the guidance document and developing practical standard operating procedures for utilities.		

e.	(1) Title and Location (City and State) **Vista Ridge Corrosion Control Study** San Antonio Water System / San Antonio, TX	(2) Year Completed Professional Services 2021	 Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Conducting a desktop study to confirm the current corrosion control strategy for blending a new water source to the distribution system is effective and efficient. Using statistical methods and models to evaluate existing finished water conditions and potential impacts of water quality changes in the distribution system. Evaluating distribution system service line materials and the impacts of reduced hardness on scale stability in areas most susceptible to corrosion.		

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Gwendolyn Kubacki, PE	Corrosion Control Treatment	9	9

15. Firm Name and Location

ARCADIS **Novi, MI**

16. Education (degree and specialization)

— MS Environmental Engineer University of Michigan 2013
— BS Environmental Engineer University of Florida 2008

17. Current Professional Registration (State and Discipline)

— Professional Engineer: MI
— Construction Document Technologist – Construction Specifications Institute
— OSHA Construction 16-hr

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Kubacki is a registered Professional Environmental Engineer specializing in water quality and treatment. She has worked with large and small municipal clients assisting with planning, preliminary and detailed designs for groundwater and surface water plants, including corrosion control, chemical feed systems, regulatory compliance, and treatment selection and optimization, and has assisted with bench, pilot and full-scale testing for municipal and industrial clients.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Comprehensive Corrosion Control Optimization Study
Great Lakes Water Authority (GLWA) / Detroit, MI

(2) Year Completed

Professional Services	Construction (if applicable)
Ongoing	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Deputy Project Manager working with GLWA to optimize their existing corrosion control treatment strategy. Lead for several tasks including service line harvesting and scale analysis, which includes extensive coordination with GLWA's member communities and multiple subconsultants. Providing support and oversight of the design, construction, installation and operation of pipe loop rigs that will be used to test alternative corrosion control treatment strategies.

b.

(1) Title and Location (City and State)
Conceptual Design for Emerging Contaminants Treatment
Del-Co Water Company / Delaware, OH

(2) Year Completed

Professional Services	Construction (if applicable)
2021	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Manager for the conceptual design of GAC treatment for the removal of emerging contaminants including PFAS. Overseeing rapid small scale column testing for GAC to determine removal efficiencies of contaminants and total organic carbon in the source water. Project includes conceptual design of GAC filtration and funding assistance.

c.

(1) Title and Location (City and State)
Water Distribution System Optimization Program
City of Flint, MI

(2) Year Completed

Professional Services	Construction (if applicable)
2018	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Worked with the City of Flint to optimize chemical dosing and operation practices for their drinking water distribution system following the 2014- 2016 destabilization event. Led the coordination of expanding the existing number and type of distribution monitoring locations to achieve regulatory compliance. Developed standard operation procedures for a variety of distribution practices, including chemical dosing, collection and analysis of samples, and storage facility operation. Assisted with project management of pipe loop operation to determine optimal corrosion control treatment.

d.

(1) Title and Location (City and State)
Desktop Corrosion Control Study
City of Lancaster, OH

(2) Year Completed

Professional Services	Construction (if applicable)
2021	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Project Engineer for desktop corrosion control study evaluating the impact of a new reverse osmosis water treatment plant on the City's existing corrosion control treatment. Analyzed raw, finished, and distribution system water quality to determine the efficacy of the existing corrosion control treatment and evaluate any secondary impacts from the new water treatment plant. Evaluated impacts of the most recent federal lead and copper rule revisions as well as state primacy agency requirements.

ARCADIS

e.	(1) Title and Location (City and State)	(2) Year Completed	
	Water Distribution System Assessment Citizens Energy Group / Indianapolis, IN	Professional Services 2020	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Project Engineer for evaluation of alternative water supplies for the City of Indianapolis. Specially analyzed wellfield yield, plant production data and population growth estimates to gauge future demand in various distribution areas. Reviewed long-term water supply solutions, including reservoir creation and storage options and worked to troubleshoot ongoing challenges to meet level of service requirements.		

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Emily Baca	LCRR Sampling and Procurement	a. Total: 5	b. With Current Firm: 1

15. Firm Name and Location

ARCADIS **Austin, TX**

16. Education (degree and specialization)
- MPA Indiana University 2020
- BS Geography Texas State University 2015
- BA History Texas State University 2015

17. Current Professional Registration (State and Discipline)
- N/A

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Baca has a master's degree in public affairs and five years of industry experience focused on environmental regulations and policy. Her experience includes data analytics and processing using software including GIS, R, python, and MS suite to report and visualize data.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Senior Program Consultant, Data Practice Lead, LSLI Practice Lead
120Water / Zionsville, IN

(2) Year Completed: Professional Services 2022 | Construction (if applicable) N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Developed and codified data analysis processes, organized QA/QC programs, and lead data deliverables and visualizations for 100 clients. Performed extensive data analysis using R and GIS to assemble data-driven lead service line inventories and used results to strategize compliance efforts with community water systems in over 25 states. Implemented data deliverables using project management software and strategize with clients to meet programmatic and compliance needs.

b.

(1) Title and Location (City and State)
Environmental Protection Agency – Scientific Analytical Support
Oak Ridge Associated Universities / Oak Ridge, TN

(2) Year Completed: Professional Services 2020 | Construction (if applicable) N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Maintained, developed, and participated in software springs to refine the single database that serves as the workflow processing tool for all Office of Research and Development scientific research. QA/QC software capabilities to improve data response call quality and strengthen information management integrity.

c.

(1) Title and Location (City and State)
Stormwater Specialist
City of Bloomington Utilities / Bloomington, IN

(2) Year Completed: Professional Services 2019 | Construction (if applicable) N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Conducted cost-benefit analyses to evaluate water sample lab processing and efficacy for LCRR compliance. Designed, implemented, and managed utility infrastructure inventories to main regulatory compliance. Used R, QGIS, and ArcGIS to deliver reports and data visualizations of water infrastructure.

d.

(1) Title and Location (City and State)
Environmental Specialist
James Environmental Management, Inc. / Round Rock, TX

(2) Year Completed: Professional Services 2017 | Construction (if applicable) N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

Check if project performed with current firm

Assisted in the supervision of the stormwater management and water quality programs for over 1,000 clients. Designed and managed the customer relationship management system that serves as a database for all client, water quality, and regulatory information.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Carla Hankerson	Public Education and Outreach	a. Total: 30	b. With Current Firm: 18

15. Firm Name and Location: Dickey Consulting — **Fort Lauderdale, FL**

16. Education (degree and specialization)	17. Current Professional Registration (State and Discipline)
— AD Business Economics	— Certified Florida Notary Public

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Hankerson is a client relations professional with 30 years' experience. She is an organized initiative-taker with excellent interpersonal and presentation skills. Her experience includes working with government agencies at the local, state, and federal levels, working with municipalities in the tri-county area, and working with private organizations. She joined Dickey Consulting Services, Inc. (DCS) in 2004. She works in the DCS Fort Lauderdale office.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)	(2) Year Completed	
Broward County Utility Analysis Zone Projects Broward County, FL	Professional Services: Ongoing	Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Broward County Water & Wastewater Services began implementing local utility improvement projects called Utility Analysis Zones (UAZ's) in mid-2009. The UAZ projects cover 1,479 acres and include installation of approximately 54 miles of pipeline at a cost of nearly $1 billion. The projects focus on replacement of sanitary sewer systems, installation of storm drains, restoration of roadways, etc. DCS provides public information and community liaison services to property owners, residents, businesses, and other stakeholders relative to the impact of the Project. Services include develop and maintain a tracking system for community concerns and project team responses, prepare and distribute construction notices, distribute Traffic Impact Reports, etc. Serves as Project Manager.

b.

(1) Title and Location (City and State)	(2) Year Completed	
Broward County Water and Wastewater Services Reclaimed Water Transmission System Expansion Broward County, FL	Professional Services:	Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

Broward County Water & Wastewater Services implemented the project to make water and sanitary sewer improvements, i.e., replacement of sanitary force mains, in communities throughout Broward County. DCS provides public outreach services on behalf of the County, Consultant, and Contractor. Services include attend meetings with property owners, residents, businesses, and other stakeholders in the Project area; distribute construction notices, road closure notices, etc.; and receive/manage stakeholders concerns through a 24-hour call line. Serves as Project Manager.

c.

(1) Title and Location (City and State)	(2) Year Completed	
City of Fort Lauderdale Bayshore Drive Intracoastal Force Main Crossing Fort Lauderdale, FL	Professional Services:	Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role — ☒ Check if project performed with current firm

The City of Fort Lauderdale owns, maintains, and operates a wastewater force main which includes approximately 500 feet of subaqueous crossing under the Atlantic Intracoastal Waterway. After experiencing several pipeline failures over the years, the City determined the force main needed to be replaced and implemented the Project. DCS provided Public Outreach services which included developing and distributing construction notices; scheduling and attending meetings with stakeholders; and addressing stakeholder concerns and questions. Served as Project Coordinator.

d.

(1) Title and Location (City and State)
City of Fort Lauderdale Stormwater Master Plan Modeling and Design Implementation Program
Fort Lauderdale, FL

(2) Year Completed
Professional Services:
Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

The Stormwater Master Plan is a $16 million comprehensive three phased approach to address chronic flooding issues in the City of Fort Lauderdale. The project covers approximately 23,000 acres and consists of 37 localized stormwater projects. DCS provides public outreach services. In this role, DCS developed a Community Awareness and Stakeholder Communication Plan to educate stakeholders (residents, property owners, businesses, etc.) about the project. DCS informs stakeholders of project updates, traffic impacts, meetings, etc. DCS also receives, logs, and resolves stakeholder inquiries/complaints. Served as Project Coordinator.

e.

(1) Title and Location (City and State)
City of Fort Lauderdale NE/NW 6th Street (Sistrunk Boulevard) Infrastructure Improvement Project
Fort Lauderdale, FL

(2) Year Completed
Professional Services:
Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

The City of Fort Lauderdale initiated the capital improvement project to upgrade infrastructure, stimulate redevelopment and economic growth, and revitalize the Sistrunk Boulevard Corridor from US1/Federal Highway to NW 24th Avenue with the support of local, state, and federal funding at a cost of approximately $15 million. Infrastructure improvements include water and sanitary sewer installation, roadway modifications, underground utilities, and sidewalks. DCS developed and implemented the Public Involvement Program; provided development/redevelopment planning services for businesses along and surrounding the Corridor; provided community involvement and outreach services; composed a comprehensive database of stakeholders and a tracking system for public correspondence; coordinated community visioning workshops, informational meetings, and public hearings; and conducted surveys and compiled the final report for the project. Served as Project Coordinator/DBE Program Liaison.

f.

(1) Title and Location (City and State)
City of Fort Lauderdale Water & Wastewater Capital Improvements Program (WaterWorks 2011)
Fort Lauderdale, FL

(2) Year Completed
Professional Services:
Construction (if applicable): N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

WaterWorks 2011 was a $768 Million Capital Improvement Program designed to provide modernization of the City of Fort Lauderdale water and wastewater infrastructure over a 20-year period. The Program included water main replacement, wastewater collection and treatment, sanitary sewer installation, pump stations rehabilitation, and utilities upgrades. DCS provided professional project management and public outreach services to foster understanding of the Program and to inform the public about construction activities in their communities. Served as Public Outreach Coordinator.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
Sheryl Dickey	Public Education and Outreach	a. Total 40	b. With Current Firm 27

15. Firm Name and Location

Fort Lauderdale, FL

16. Education (degree and specialization)
— BS Social Work Ohio State University

17. Current Professional Registration (State and Discipline)
— Charrette Planner and Public Meeting Facilitator, National Charrette Institute

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

Ms. Dickey, Founder & President/CEO of Dickey Consulting Services, Inc. (DCS) is a community and economic development professional with more than 40 years' experience. She and her staff bring a high level of energy and the ability to participate in a leadership or team member role to ensure successful completion of projects. She founded DCS in January 1995 and has enjoyed more than 27 years of supporting communities. The firm is headquartered in the Midtown Commerce Center, a Silver LEED certified building near downtown Fort Lauderdale. Dickey is the developer and owner of the building.
Ms. Dickey has extensive work experience with infrastructure improvement projects. She also has long-standing relationships with numerous municipalities and governmental agencies in the tri-county area including Broward County, City of Fort Lauderdale, City of Lauderdale Lakes, City of Lighthouse Point, Boca Raton Airport Authority, Port Everglades, and the Florida Department of Transportation.

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Broward County Water and Wastewater Services Utility Analysis Zones
Broward County, FL

(2) Year Completed

Professional Services	Construction (if applicable)
	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Broward County Water & Wastewater Services began implementing local utility improvement projects called Utility Analysis Zones (UAZ's) in mid-2009. The UAZ Project focuses on replacement of sanitary sewer systems, installation of storm drains, restoration of roadways and sidewalks, and landscaping. Dickey and her staff provide public information and community awareness services to residents, property owners, and businesses. DCS developed and maintains a database tracking system for community concerns and project team responses; prepares and distributes construction notices, letters, etc.; attends meetings with property owners, residents, and elected officials; and provides coordination assistance during construction. Serves as Principal.

b.

(1) Title and Location (City and State)
Broward County Water and Wastewater Services Sample Road Subaqueous Water Main Crossing
Broward County, FL

(2) Year Completed

Professional Services	Construction (if applicable)
	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Broward County Water & Wastewater Services implemented the project to install a water main via directional drilling along Sample Road in the City of Lighthouse Point. The project also involves restoration of sidewalks, asphalt, sod, and pavement markings, as well as tree protection wherever possible. DCS provides public outreach services on behalf of the County, Consultant, and Contractor. DCS services include distribute Notices to property owners, residents, businesses, and other stakeholders in the Project area, and receive/record stakeholders concerns. Serves as Principal.

c.

(1) Title and Location (City and State)
Broward County Water and Wastewater Services Reclaimed Water Transmission System Expansion
Broward County, FL

(2) Year Completed

Professional Services	Construction (if applicable)
	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Broward County Water & Wastewater Services implemented the project to make water and sanitary sewer improvements, i.e., replacement of sanitary force mains, in communities throughout Broward County. DCS provides public outreach services on behalf of the County, Consultant, and Contractor. Services include attend meetings with property owners, residents, businesses, and other stakeholders in the Project area; distribute construction notices, road closure notices, etc.; and receive/manage stakeholders concerns through a 24-hour call line. Serves as Project Director.

d.	(1) Title and Location (City and State) **City of Fort Lauderdale Bayshore Drive Intracoastal Force Main Crossing** Fort Lauderdale, FL	(2) Year Completed Professional Services	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	The City of Fort Lauderdale owns, maintains, and operates a wastewater force main which includes approximately 500 feet of subaqueous crossing under the Atlantic Intracoastal Waterway. After experiencing several pipeline failures over the years, the City determined the force main needed to be replaced and implemented the Project. Served as Project Director.		

e.	(1) Title and Location (City and State) **City of Fort Lauderdale Stormwater Master Plan Modeling and Design Implementation Program** Fort Lauderdale, FL	(2) Year Completed Professional Services	Construction (if applicable) N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	The Stormwater Master Plan is a $16 million comprehensive three phased approach to address chronic flooding issues in the City of Fort Lauderdale. The project covers approximately 23,000 acres and consists of 37 localized stormwater projects. DCS provides public outreach services. In this role, DCS developed a Community Awareness and Stakeholder Communication Plan to educate stakeholders (residents, property owners, businesses, etc.) about the project. DCS informs stakeholders of project updates, traffic impacts, meetings, etc. DCS also receives, logs, and resolves stakeholder inquiries/complaints. Serves as Project Director.		

VODA.ai

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
George Demosthenous	Predictive Modeling	a. Total: 16	b. With Current Firm: 5

15. Firm Name and Location
VODA.ai Boston, MA

16. Education (degree and specialization)
- MA Management Harvard University – Cambridge, MA 2017
- BSBA Double Major: Management Information Systems and Industrial and Operations Management University of North Carolina – Charlotte, NC 2009

17. Current Professional Registration (State and Discipline)
- Pragmatic Marketing – PMC-III
- Certified Scrum Product Owner & Scrum Master

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)
George Demosthenous lead VODA.ai to win industry awards, including 2022 Best Smart Water Solution at the Smart Water Summit. This award was a result of 100+ utility executives from across the country casting their votes in September 2022 to select the best overall solution in the industry.

19. RELEVANT PROJECTS

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
a.	**CEO and Team Leader** VODA.ai / Boston, MA	2017-Current	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Helping water utilities find lead, prioritize pipe replacements, conserve water, and minimize risk. Responsible for the strategy, and team execution. Over the last five years, George worked in dozens of projects with utilities across the country, including, Las Vegas Valley Water District, Tucson Water, San Jose Water, Aquarion Water, Boston Water and Sewer Commission, Greenville Water, Denver Water, and City of Appleton, WI.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
b.	**Product Management** Mueller Systems / Middleboro, MA	2014-2017	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	George managed all software product lines (14 products) for water utilities with attention to maintaining simplicity and ease of use. These solutions were deployed in over 100 water utilities across the country to help them manage their GIS, AMI, and AMR systems. Projects ranged from $5,000 to over $10,000,000.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
c.	**Manager, Network Operations** Mueller Systems / Middleboro, MA	2012-2014	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	☒ Check if project performed with current firm	
	Responsible for building the company's technical support team with talented individuals with focus on water utilities. Effectively managed day-to-day operations to ensure AMI systems and water utility software across the country were running smoothly. Projects ranged from $100,000 to over $10,000,000.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
d.	**Systems Analyst** Mueller Systems / Middleboro, MA	2011-2012	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	Worked closely with Project Management, Engineering, Product Management, and Sales to effectively design, deploy, improve, and maintain AMI Systems. Technical support, system simulations, network design and maintenance. Projects ranged from $100,000 to over $10,000,000.		

	(1) Title and Location (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
e.	**Software Specialist** Mueller Systems / Cleveland, NC	2010-2011	N/A
	(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role	Check if project performed with current firm	
	Improved the overall customer service experience and helped design the next generation custom software for Automated Meter Readings. Projects ranged from $5,000 to over $1,000,000.		

ARCADIS

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. Name	13. Role in this Contract	14. Years Experience	
		a. Total	b. With Current Firm
Melissa Hew, CFM	Grants & Funding	10	1

15. Firm Name and Location

ARCADIS **Miami, FL**

16. Education (degree and specialization)

— M.S. Water Resource Management, Towson University
—BA, Environmental Studies, Tulane University

17. Current Professional Registration (State and Discipline)

— Certified Floodplain Manager (CFM)

18. Other Professional Qualifications (Publications, Organizations, Training, Awards, etc.)

- Experienced in program and project management and leading multi-disciplinary teams in the areas of floodplain management, urban and coastal resilience, climate adaptation, sustainability, and environmental protection
- Extensive experience in partnership and capacity building, stakeholder engagement, and FEMA Hazard Mitigation Assistance (HMGP/FMA/BRIC) programs
- Served as City of Miami's resilience and community engagement subject matter expert for City's capital projects, stormwater infrastructure and stormwater master plan
- WEDG

19. RELEVANT PROJECTS

a.

(1) Title and Location (City and State)
Comprehensive Resilience Services
City of Portsmouth, VA

(2) Year Completed

Professional Services	Construction (if applicable)
2022	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Resilience Specialist. Currently providing completed various resilience services to address the City of Portsmouth's increasing risk from coastal storms, tidal flooding, extreme precipitation, and other hazards. Services include comprehensive FEMA HMA grant management services and successfully funded HMA grant application development; resilience program data inventory and gap analyses; stakeholder engagement; hazard mitigation strategy development for critical facilities and infrastructure; and hazard mitigation plan updates.

b.

(1) Title and Location (City and State)
Engineering Evaluation, Design and Construction Services for Generator Installation
Dayton, OH

(2) Year Completed

Professional Services	Construction (if applicable)
2022	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Grant Compliance Specialist. Providing support to ensure that project schedule and timelines comply with Economic Development Agency grant requirements. Further ensuring that EDA requirements are met during evaluation, design, bid, construction, and inspection phases of project.

c.

(1) Title and Location (City and State)
Engineering Services for Business Advisory, Grant Preparation, Grant Management, Procurement And Other Engineering Services
Little Rock, AR

(2) Year Completed

Professional Services	Construction (if applicable)
2022	N/A

(3) Brief Description (Brief scope, size, cost, etc.) and Specific Role

☒ Check if project performed with current firm

Resilience and Funding Specialist. Providing support, preparation and submittal of ARPA grant application with emphasis on the alignment of evaluation criteria, program priorities, budgetary considerations, compliance features and regulatory requirements, and relevant policies.

SECTION 4
Approach to Scope of Work

04. Approach to Scope of Work

The City serves approximately 182,000 customers through almost 64,000 water service connections. The City wishes to prepare for the new Lead and Copper Rule Revisions (LCRR) through the development of a lead service line inventory and replacement plan, as well as an updated LCRR tap sampling plan, corrosion control optimization study, and public outreach and education.

Successful LCRR Programs require flexibility and a continuous improvement mindset to adapt to changing conditions and information. With that context, we have structured your program as a continuous process. Each component is discussed as a separate task below in the order presented in the RFP along with an added task for ongoing program assistance.

Project Management

This project is critical to achieving compliance with the LCRR. As such, we will initiate the work with a Kick-off Meeting to introduce key team members to the City, establish lines of communication, confirm objectives, and review the proposed scope and schedule. Arcadis will use the Project Kick-off Meeting as a time to establish clear expectations for the project, while also providing an open forum for City staff to provide input on the project, such as individual staff member's goals, objectives, concerns, and questions. Given the critical timelines in the schedule, immediately after receiving the notice-to-proceed, we will schedule the kick-off meeting.

Throughout the duration of the project, our project management team will host monthly workshops with the City to discuss key topics, provide regular updates, and coordinate any information needs or scheduling. Technical leads or other key Arcadis team members will participate as needed.

Task 1. Lead Service Line Inventory

The CIty is looking to reduce unknown service line materials and develop a complete service line inventory. Arcadis proposes a two-step process to cost effectively validate the full LSL inventory – on both the City and customer portions – such that the City can enhance communication to their customers, develop a successful lead service line replacement strategy, and identify locations for funding.

Step 1: Review of Existing Inventory and Supporting Information

The Arcadis Team will review the existing service line inventory and available service line records to establish a documented common understanding of all available data sources and how those records were or were not used to develop the inventory. Step 1 will begin with a thorough review of existing information, followed by a call with key City staff conducted by core members of our Team to discuss/confirm the following:

- **Available records/information**
  - Historical records
  - Tap/service cards
  - Permits for new services
  - Publicly available information (i.e., tax records for home age, plumbing codes or ordinances)
- **Current inventory**
  - Format: Record information in ESRI ArcGIS database.
  - Documented data fields: Fields that are available for data and the percentage of information known.
  - Assumptions: Understanding which assumptions could be applied to current inventory (i.e., designate all utility and customer owned service lines installed after 1987 [effective date of the Federal lead ban] as non-lead).

  - Workflows: General procedure for collecting information and storing in central database.

- **Ongoing practices to verify unknown materials, such as:**
  - Identification of the material on public-portion as part of capital improvement projects or emergency repairs, or other ongoing work.
  - Identification of the material on private portion as part of the meter replacements program or temporary shutoffs.

The Team will work with the City to identify any gaps in the data and recommendations on the service line inventory. This may include, but are not limited to, digitization of hard copy records that are missing from the current inventory that are valuable for the inventory development, additional fields to be added or modified in the current inventory or improved workflows or data management practices.

Leveraging her relationships with USEPA, AWWA, and other organizations, Rebecca Slabaugh will provide regular updates on forthcoming LCRR guidance or LCRI regulatory developments during routine progress meetings to the Project Team. Any requirements that are likely to impact the City's LCRR Program will be discussed, and solutions will be incorporated into the appropriate task(s).

Data Confidence

We will also develop confidence (or "source") values and confirm the hierarchy of the data sources. Lower values (i.e., 100) have a higher degree of confidence (i.e., field verified data) compared to higher values (i.e., 500) with a lower degree of confidence (i.e., assumed non-lead based on the home build date). The LSLI data will follow this numeric hierarchy with the highest confidence level data assigned first followed by the next highest level and so forth. By categorizing the various sources of service line information, this workflow can adapt to changes such as regulatory modification to the categories for submittal.

Step 2: Updated Service Line Inventory with Model Predictions to Reduce Unknowns

Arcadis will identify feasible methods to determine service line material for unknown services, which may include, but are not limited to those outlined in Table 1. As a value-added service, Arcadis has partnered with Voda.ai to support statistical analysis and predictive modeling to help identify the material of unknown service lines. Our Team will also review relevant procedures and workflows including methods for tracking and updating materials as part of any LSLR work. For viable options, Arcadis will summarize the estimated costs, pros/cons and schedule impacts. If needed, Arcadis can assist with development and implementation of any of the proposed strategies, such as conducting in-home inspections and documentation of results using our ready to go field data collection template configured in ArcGIS Field Maps *(see figure on page 6)*.

Predictive Modeling

The USEPA recently released LSL Inventory guidance on August 4, 2022. It is unknown if the Primacy Agency will accept predictive modeling as part of LCRR inventory; however, as part of monthly workshops we will discuss and align with State requirements for investigating and classifying service lines.

Table 1. Strategies to Verify Service Line Material

Strategy	Public	Private
Predictive models that determine the probability of a given material	X	X
Inspection by utility staff during water main or service line replacements or breaks	X	X
Verification inside the customer's home near the meter through visual observation, scratch tests, magnetic tests, and/or lead swabs and self- reporting by the customer		X
Inspection inside the customer's home near the meter by the utility staff or at shutoff valves	X	X
Traditional excavation methods such as potholing	X	X
Emerging techniques like electrical resistance measurement, acoustic wave, eddy current	X	X

Traditional excavation methods such as potholing performed at the curb stop allows the utility to understand both public and private side materials, however, this method this costly and may be contingent upon available funding.

Emerging techniques like electrical resistance measurement, acoustic wave, eddy current requires access to the curbstop and requires specialized equipment and calibration, which can also be a costly method.

These strategies will be further discussed during a monthly workshop.

☑ **Deliverables:** Arcadis will provide final service line inventory results, databases, and relationship tables to store and maintain the inventory in ESRI ArcGIS for implementation and a standard operating procedure (SOP) to enable future City updates. **Our partner, ChenMoore, has extensive knowledge of and experience with the City's GIS, providing our team with a headstart in developing a service line inventory.**

As part of the service line inventory, we can also review the City's LCR tap sampling sites and if needed provide suggestions on additional verified LSL sites that City should consider for their 2025 sampling to meet the new rule requirements.

Task 2. Lead Service Line Replacement Planning Support

Once the inventory is solidified, the Arcadis team will support the prioritization approach and planning process for lead service line replacements that meets the City's goals and aligns with industry best practices and LCRR requirements. To do this, we will:

1. Confirm existing practices around LSLRs, including typical replacement costs, policies and procedures,
2. Facilitate up to two workshop(s) to discuss program goals, schedule, best practices, potential approaches or solutions, costs, funding, and communication strategies,
3. Evaluate and support the selection of the appropriate option(s)

Table 2 provides a list of key components of a LSLR Program and potential solutions that will be reviewed with City staff as part of the planning process.

As program manager for Cleveland Water's LSLR Program, Project Manager Susan Brownstein understands that developing a Lead Service Line Replacement Plan for a large water utility requires buy-in from many parts of the organization, cooperation among contractors and customers, and robust systems for tracking inventory, contacts, work orders, photos, signatures, and agreements.

The capabilities and experience of the Arcadis team will ensure that these relationships, roles, and responsibilities are clearly defined, documented, and implemented in the City's LSLR Plan.

Table 2. Key Components of a LSLR Program and Potential Solutions

Category	Arcadis Solution
LSLR prioritization strategy	• Leverage the results of the inventory in combination with other factors for replacement prioritization such as low income / disadvantaged communities, homes with vulnerable populations, and alignment with other capital projects (replacement of aging watermains) • Identify vulnerable areas using the U.S. Centers for Disease Control and Prevention (CDC)/ Agency for Toxic Substances and Disease Registry (ASTDR) Social Vulnerability Index (SVI), which indicates the relative vulnerability of a census tract based on socioeconomic status, household composition and disability, minority status and language, and housing type and transportation and/or the Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool (also known as Justice40 tool)
Funding strategies considering customers that are unable to pay for their portion	• Maximize State & Federal grants to help support replacements • Evaluate other sources like Community Development Block Grants, private foundations, or advertisement or cell tower space, line-item assessments • Develop an application to prioritize funding for low-income families
Strategies to ensure homeowner (including landlords and renters) participation to achieve full LSLRs	• Use grant funding to cover a portion or all of the cost of the private-side replacement • Develop a proactive education and outreach campaign • Develop ordinance requiring customers to replace their LSL. Example requirements include: (1) within a specified timeframe, (2) where high lead levels are present, (3) when the water utility is replacing its side of the service line
Procedures to conduct full LSLRs	• Assist/oversee development and bidding a municipal contract and/or, • Assist/oversee issuing and reviewing received Request for Qualifications/Proposals for qualified plumbers and/or contractors (e.g., landscapers) to replace LSLs on the customer-owned portion • Support development of the necessary authorization documents to permit City personnel or selected contractors to perform the work
Strategies for informing customers before a full or partial LSLR	• Develop and implement a multi-faceted communication approach that includes: a virtual, interactive web-based platform, written materials (such as program pamphlets, post cards and/or door hangers), social media posts, block meetings, and door-to-door communication • Develop partnerships with trusted community members
Recommended LSLR goal rate in the event of a lead trigger level (TL) exceedance	• Develop an accurate LSL inventory to minimize the number of service lines with unknown materials, as these would have to be counted in the overall replacement goals. • Identify the appropriate annual replacement goals based on available resources (i.e., human and financial), the overall time period for replacing all lead service lines, and other ongoing work in the system (e.g., water main replacements)
Procedure for customers to flush service lines and premise plumbing of particulate lead	• Utilize the flushing procedures and infographics developed by this team as part of the WRF Project #4713: Full Lead Service Line Replacement Guidance • Host training session(s) with the selected contractor(s) to review the appropriate flushing procedures and customer outreach materials
Procedure for pitcher filter distribution/ maintenance	• Hand delivery as part of the contractor pre-LSLR activities and/or establish select customer pick up centers, leveraging mobile devices to allow real-time tracking, or mail filter kits via Lead Insights and track distribution
Procedure for tap sampling post replacement	• Mail or drop off kits to residents post-LSLR and provide results to customers through autogenerated mailers or third-party services • Monitor tap sampling requests, status, and results using Lead insights with Power BI dashboards
Legal materials for accessing property and documenting refusals	• Review customer water service agreements for conducting work on private property when service line replacements are required • Develop voluntary forms for access agreements
Data Management, Dashboards and Reporting	• Collect field data, including data from the contractor, using mobile solutions (such as ArcGIS Field Maps) and automate workflows to manage the review process of the collected data • Leverage dashboards for internal and external reporting on service line verification efforts, replacement status and schedule, status of customer agreements, and more • Utilize Lead Insights, which also includes construction management support for LSLRs, to help manage the program from start to finish

Arcadis, as a subconsultant, assisted with the development of guidance for public water systems (PWSs) when planning and conducting full lead service line replacements (FLSLR) to reduce lead exposure. This study included three main components:

1. Evaluating the effectiveness of whole-house high velocity flushing (HFV) to reduce particulate levels of lead,
2. Documenting experiences from 16 PWSs who have previously embarked on LSLR, to identify trends, best practices, successes, challenges, and lessons learned,
3. Developing a FLSLR Guidance Toolbox for water systems to use to plan and conduct FLSLRs, including communication with customers before, during, and after these efforts.

A final report and a webcast outlining findings from the project are available on WRF's website.

☑ **Deliverables:** Arcadis will summarize the prioritization approach along with the strategies for conducting and funding replacement of the customer owned portion of the service line in PowerPoint format for discussion with the City at a monthly workshop.

Task 3. LCRR Sampling Program Development

One of the continual challenges in assessing the effectiveness of lead and copper corrosion control efforts is where and how to sample. The LCRR established new sampling tiers (shifting from three tiers to five tiers) and modified the sampling protocol for LSL sites (i.e., LCRR Tier 1 and 2 sites), requiring a 1st liter sample for copper and a 5th liter sample for lead for those homes served by an LSL. Our team has assisted utilities in reviewing LCR sampling pools, sample collection procedures, chain-of- custody, sample collection forms, and regulatory reporting as well as developing monitoring programs for assessing CCT effectiveness and regulatory compliance. Under this task, the Arcadis team will:

- Review the existing sampling pool, and if needed, recommend modified locations for compliance monitoring based on the final inventory to align with the new LCRR tiering system and provide a robust and representative set of sites.
- Provide an updated sampling protocol for 5th liter sampling at sites served by an LSL and conduct training for key staff.
- Review any existing water quality parameter (WQP) sites, and if needed, recommend modified locations to support any likely find-and-fix assessments.
- Develop a strategy for pitcher filter distribution that will allow tracking and monitoring of this important aspect of compliance.
  - » This will include selection of appropriate filter(s) that are NSF certified (or equivalent) for lead removal along with the appropriate number of replacement cartridges based on the manufacturers estimated filter life.
- Update the existing LCRR sampling plan.

Task 4. Corrosion Control Treatment Optimization

Corrosion control is complex and influenced by system specific factors including water quality and treatment, system materials, distribution system operations and maintenance practices as well as residential plumbing configurations and usage. As such, we would begin with a desktop study to assess CCT current performance and identify opportunities for improvement or additional study. Each major task is described further below.

Desktop Evaluation

The Arcadis Team will begin with a review of available data and information to establish a documented common understanding of the system's history and current CCT practices and performance. This will focus on several critical questions including, but limited to:

1. Are target conditions (i.e., inhibitor residual, pH, alkalinity, chlorine residual) achieved at each point of entry and maintained throughout distribution system? Are the targets consistent with the corrosion control strategy?
2. Are changes in the raw water source, treatment, or operations leading to deviations from the target?
3. Is there significant variability in key parameters? If so, is it site-specific or system-wide? Short and/or long-term variations?
4. What are the key sources of lead in each source zone?
5. What scales are present (based on completed scale analyses) or are likely to be present given the distribution system water quality?
6. How do 5th liter lead sampling results, if available, compare to 1st liter sampling results at homes with lead service lines?

Changes in water quality and operations such as a change in pH or decrease in chlorine residual can directly impact corrosion related WQPs, existing scale structures and stability or cause physical disturbances or increased microbial growth which can lead to increased metals release. As such, we will conduct a comprehensive review of your treatment systems and historical water quality and operational data, provided as part of the initial RFI. This includes items such as:

- Treatment plant process flow diagrams.
- Chemical usage for the last five years.
- Raw and finished water quality data for the last five years.
- Individual lead and copper tap sampling results by monitoring period, including Tier designation and information on service line and/or premise plumbing materials.
- Distribution system water quality parameter sampling results by monitoring period.
- Distribution system data for the key parameters, including but not limited to, alkalinity, calcium, total chlorine residual, and pH.
- Complaint data (e.g., colored water issues).
- Results of investigative and sequential sampling.
- Inventory of water mains, service lines and premise plumbing materials.
- Understanding of distribution system water flow paths, influence zones for both plants and water age.
- Distribution system practices (e.g., flushing and cleaning).

In addition to historical 90th percentiles for lead and copper, we will examine min., max, 25th, 50th and 75th percentile and site-specific trends to assess current CCT performance and potential compliance concerns with the lead action or trigger levels, if sufficient data are available.

Our team will analyze the data by examining trends in various percentiles including 10th, 25th, 50th, 75th, and 90th as well as minimum and maximum values both system-wide and by site. Seasonal and diurnal variations, particularly leaving the reservoirs, will also be examined. For lead and copper, we will also take a deeper dive into samples above the lead and copper action levels, and any sites where frequent elevated levels have been observed. Finally, where 5th liter data are available, we will evaluate impacts to the 90th percentile to determine if there is an increased potential for exceeding the action or new trigger level for lead, both of which could trigger a CCT evaluation.

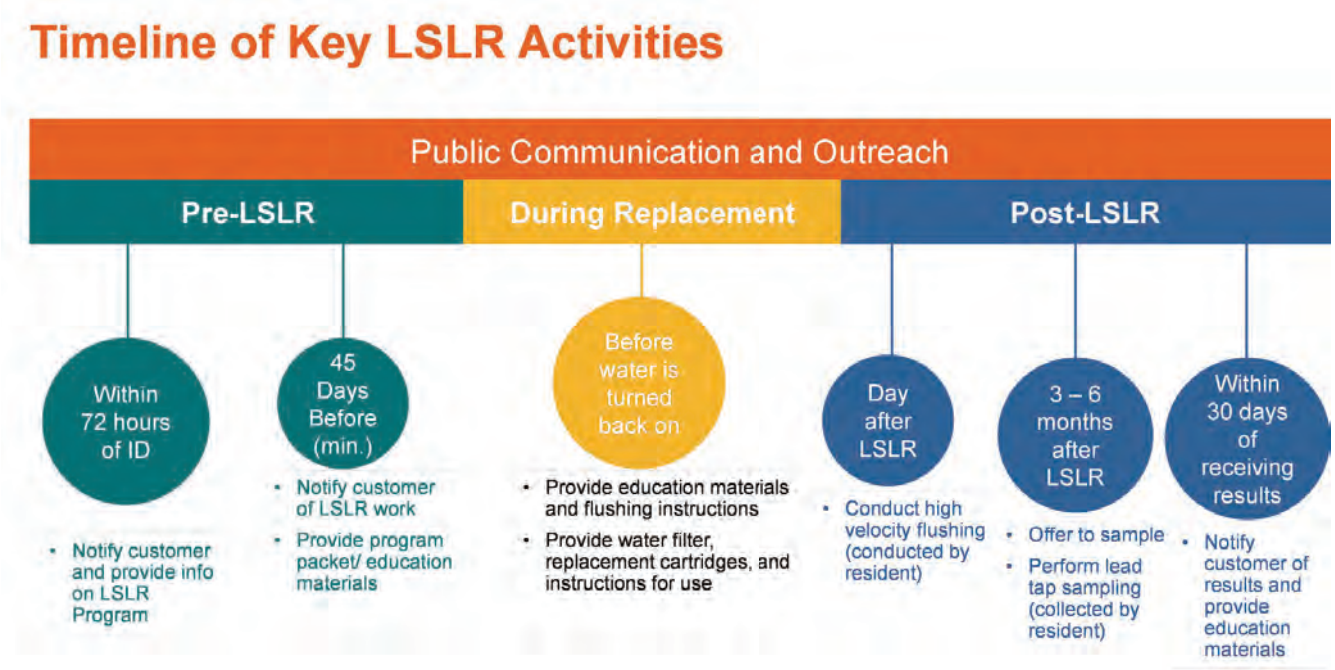
Arcadis has performed desktop, bench/coupon and/or pipe loop studies for dozens of water systems across the U.S. We are currently leading one of, if not the most, comprehensive corrosion control studies for Great Lakes Water Authority (GLWA). In effort to optimize their CCT, GLWA is evaluating higher orthophosphate doses at each of the five plants and at five select locations in the distribution system, one supplied by each plant. Materials commonly found in the GLWA distribution system are being tested which includes harvested lead pipe and galvanized iron pipe, new copper pipe, new copper pipe with lead solder, and brass pipe. Our team has completed a comprehensive desktop study, developed a regional hydraulic model to evaluate water quality, performed harvesting of over 150 lead and galvanized service lines, and designed and constructed ten pipe rig systems. We will also be operating the rigs, as well as providing conceptual designs.

Our team is leading the industry in all aspects of corrosion control treatment — from developing the recent ASDWA/AWWA training series to providing technical support as part of ongoing LCRR implementation guidance and potential upcoming LCRI revisions to contributing to AWWA standards and WRF guidance including Projects 5081 (Guidance for Conducting Pipe Loop Studies) and Analysis of CCT for Lead and Copper). In short, we understand corrosion control — ***where we started, how we got to where we are today, where the industry is headed, and how to help utilities implement changes and achieve compliance with current and future regulations.***

Task 5. Public Education and Outreach Assistance

The communications, outreach and education strategy will play a role in every element of the program. Arcadis can conduct a public outreach planning workshop with key City staff to share example outreach materials and lessons learned from other projects, identify key messages and engagement strategies, brainstorm audiences and potential partners, and discuss utility preferences, delivery methods, and resources. A review of the City's current outreach and notification materials will also be completed as part of the preparation for the meeting. Arcadis can:

- Develop a Public Outreach and Education Plan summarizing goals, strategies including content purpose and delivery method, responsible parties, partnering organizations, stakeholders and timelines for each element of the LCRR.
- Develop key messaging regarding the LCRR targeted to different audiences or program elements
- Develop a comprehensive stakeholder database including but not limited to:
  - » Elected officials at the municipal, state and federal levels
  - » Other officials at the city, county, state and federal levels
  - » Community groups and neighborhood associations
  - » Community leaders who might act as champions
  - » Business groups, including groups likely to include owners and managers of single-and multi-family residential properties
  - » Nonprofit, health care and other groups with an interest in public health
- Develop collateral pieces in both English and Spanish to be used for public outreach and education. These may include:
  - » Bill inserts
  - » Fact sheets for elected officials and other audiences
  - » Frequently asked questions
  - » Door hangers
  - » Direct mail pieces
  - » Maps
  - » PowerPoint presentations
  - » Ads for traditional and digital media
  - » Graphics for social and digital media
  - » Directional signage and displays for public meetings
  - » Yard signs



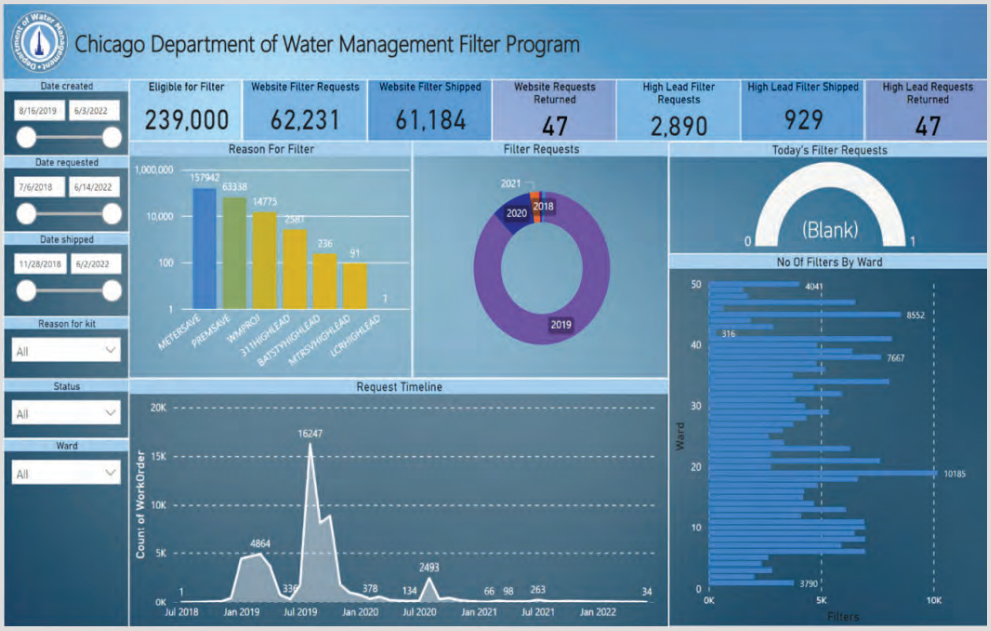
Project Schedule

Our team stands ready for a quick start on this important project. Our approach and proposed schedule provide sufficient time to execute the project and meet 40 CFR 141.84 LCRR inventory deadline requirement. Below we present a high-level schedule of activities with a brief synopsis of monthly activities. For the purposes of this proposed schedule, we are assuming project Notice to Proceed will occur in October 2022.

LCRR Compliance & LSL Replacement Program Support	2022				2023		
	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Project Management and Other Services	◆						
Task 1 – SL Inventory		◆		◆	◆	◆	
Task 2 – LSL Replacement Plan						◆	
Task 3 – LCRR Sampling Plan							◆
Task 4 – Corrosion Control Optimization							◆
Task 5 – Public Outreach and Education			◆				

Arcadis proposes to host monthly workshops with key topics listed below:

- ☑ **Oct** - Kick-Off Workshop including existing SL Inventory review and data transfer/management (incl. mobile tools)
- ☑ **Nov** - Data Dictionary for SL Inventory
- ☑ **Dec** - Public education and outreach plan
- ☑ **Jan** - Strategy for reducing unknowns in SL inventory
- ☑ **Feb** - Draft SL Inventory
- ☑ **Mar** – SL inventory training, LSLR plan
- ☑ **Apr** – LCRR Sampling Plan, Corrosion Control Optimization Recommendations



As part of the **Lead Program Management and Support for the City of Chicago,** Arcadis developed an online dashboard to track all phases of Chicago's filter program including requests from eligible customers and from customers who had a high lead sample and filters shipped for customers based on each request. The dashboard can track the data over time and sort by date and ward, allowing the team to identify areas of the city where filters are most requested due to high lead samples. The dashboard is integrated with Chicago's existing platforms including Salesforce and GIS.

SECTION 5
Past Experience and References

05. Past Experience and References

01 | AQUA America, Inc.

Arcadis was retained by Aqua to assist with service line inventory improvements by identifying and locating lead service lines (LSLs) and to bring consistency across the hundreds of systems Aqua serves in Pennsylvania, Ohio, North Carolina, Illinois, Texas,
New Jersey, Indiana, and Virginia. Work across the eight states included:

- Developing a work plan for each Aqua state with potential LSLs that provides a framework for each state to identify LSLs for replacement and eliminate unknown materials in the inventory.
- Developing a pilot service line inventory program through a review of available records, identifying high priority areas for field verification within the system, and developing cost estimates for LSL replacements.
- Gathering appropriate statements and supporting documentations for systems with no LSLs that meet the requirements of primacy agency.

Deborah Watkins
Director of Environmental Compliance

762 W. Lancaster Ave.
Bryn Mawr, PA 19010

610.645.4216

DMWatkins@essential.co

Completion Date: Ongoing
Total project cost:
Estimated: $459,000
Actual: N/A

02 | City of New London

The City of New London retained Arcadis as a program manager to develop and execute a full lead service line replacement (LSLR) program and to oversee the replacements (including pre- and post-construction activities) at each property. The project includes developing a complete service line inventory through reviewing available records and using a machine learning model to locate areas with a likelihood of lead present. Also included is developing a public outreach plan which will include the creation of materials to be used for public engagement and education, establishing and maintaining a program hotline, and hosting open houses for community discussions and education.

Joseph Lanzafame
Director of Public Utilities

15 Masonic Street
New London, CT 06320

860.437.6365

jlanzafame@newlondonct.org

Completion Date: Ongoing
Total project cost:
Estimated: $497,000
Actual: N/A

03 | City of Appleton

The City of Appleton retained Arcadis to support the development of a lead service line replacement (LSLR) program and create outreach and communication materials that meet the requirements of the LCRR. LSLR program planning support included the review of Appleton's current service line inventory, identifying all available records to improve material designations, identification of the program structure and replacement goals, review of funding mechanisms, and development of practices pre-, during and post-replacement. Arcadis also created lead related communications materials, including an LSL Replacement Program pamphlet, post cards notifying the customer of the service line material, letter to customers with lead service lines, and best practices following LSLR.

Paula Vandehey, PE
Director of Public Works

100 N. Appleton Street
Appleton, WI 54911

920.832.6474

paula.vandehey@appleton.org

Completion Date: Ongoing
Total project cost:
Estimated: $75,000
Actual: N/A

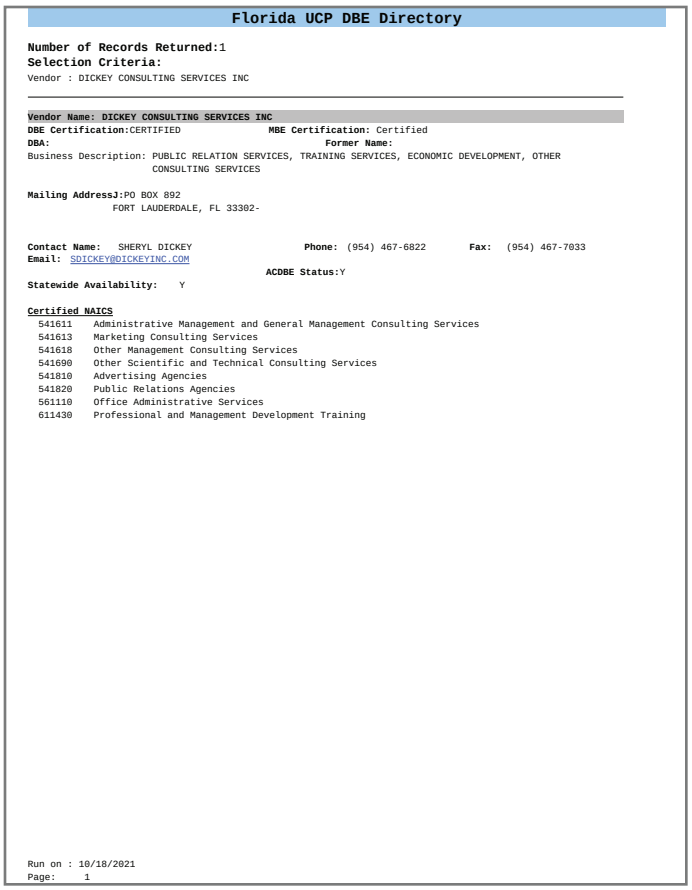
SECTION 6

Minority/Women (M/WBE) Participation

06. Minority/Women (M/WBE) Participation

Arcadis implements a M/S/W/DBE program that creates value for our clients as well as benefits our partners, our employees and our communities through the enhanced economic environment that the success of these businesses brings. Arcadis fully subscribes to the proposition that a climate conducive to the development, growth and expansion of M/S/W/DBE businesses is vital to the economic health. **We also believe in being an active participant in the community by providing mentorship to its students, building relationships with its community leaders, and promoting community M/S/W/DBE firms embody the Arcadis core value of entrepreneurship.** To encourage and support this value, Arcadis aggressively pursues subcontracting opportunities with small, disadvantaged, woman-owned, minority-owned, and service-disabled veterans' concerns in accordance with the laws and regulations of the U.S. government. Arcadis has partnered with the following minority subconsultants for this contract:

- **Dickey Consulting Services (DCS):** Public Outreach
- **F.R. Aleman & Associates, Inc.:** Subsurface Utility Engineering



Florida UCP DBE Directory

Number of Records Returned:1
Selection Criteria:
Vendor : DICKEY CONSULTING SERVICES INC

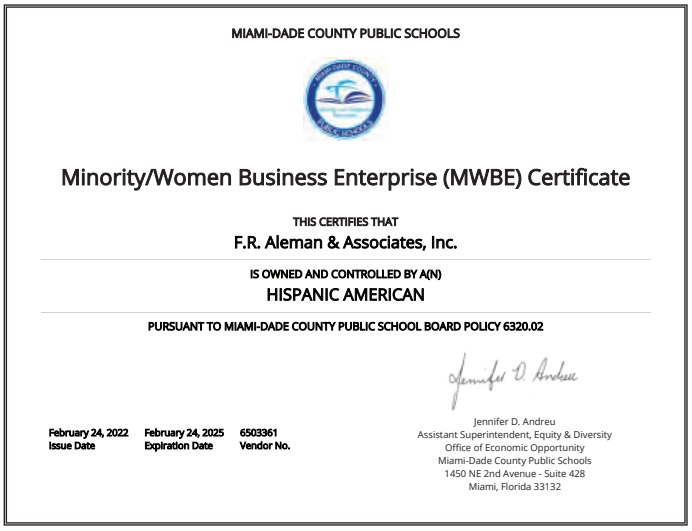
Vendor Name: DICKEY CONSULTING SERVICES INC
DBE Certification:CERTIFIED MBE Certification: Certified
DBA: Former Name:
Business Description: PUBLIC RELATION SERVICES, TRAINING SERVICES, ECONOMIC DEVELOPMENT, OTHER CONSULTING SERVICES

Mailing AddressJ:PO BOX 892
FORT LAUDERDALE, FL 33302-

Contact Name: SHERYL DICKEY Phone: (954) 467-6822 Fax: (954) 467-7033
Email: SDICKEY@DICKEYINC.COM
ACDBE Status:Y
Statewide Availability: Y

Certified NAICS
541611 Administrative Management and General Management Consulting Services
541613 Marketing Consulting Services
541618 Other Management Consulting Services
541690 Other Scientific and Technical Consulting Services
541810 Advertising Agencies
541820 Public Relations Agencies
561110 Office Administrative Services
611430 Professional and Management Development Training

Run on : 10/18/2021
Page: 1



MIAMI-DADE COUNTY PUBLIC SCHOOLS

Minority/Women Business Enterprise (MWBE) Certificate

THIS CERTIFIES THAT
F.R. Aleman & Associates, Inc.

IS OWNED AND CONTROLLED BY A(N)
HISPANIC AMERICAN

PURSUANT TO MIAMI-DADE COUNTY PUBLIC SCHOOL BOARD POLICY 6320.02

February 24, 2022 Issue Date
February 24, 2025 Expiration Date
6503361 Vendor No.

Jennifer D. Andreu
Assistant Superintendent, Equity & Diversity
Office of Economic Opportunity
Miami-Dade County Public Schools
1450 NE 2nd Avenue - Suite 428
Miami, Florida 33132

SECTION 7
Subconsultants

07. Subconsultants

We assembled a team of partners with whom, if needed, we can leverage our respective capabilities to provide the City with the best in local knowledge and experience combined with national technical prowess and industry-leading capabilities.

Founded in 1986, Chen Moore and Associates (CMA) specializes in civil engineering, water resources, water and sewer, landscape architecture, electrical engineering, transportation, planning and irrigation, environmental and construction engineering services. With the recent addition of Fred Wilson and Associates (opened in 1962) during the 3rd quarter of 2021, the combined firm has now officially been in business for over sixty (60) years. The firm commits to providing responsive quality services while meeting the schedules and specific project needs of our clients. The firm has its headquarters in Fort Lauderdale. CMA has regional offices in Miami, West Palm Beach, Orlando (Maitland), and Jacksonville, with additional offices in Sarasota (Nokomis), Gainesville, Tampa, and Atlanta, GA. The firm commits to providing responsive quality services while meeting the schedules and specific project needs of their clients.

CMA's key market groups are as follows: Water and Sewer; Transportation; Water Resources; Parks and Recreation; Energy and Land Development.

Dickey Consulting Services (DCS) is an economic development, government relations, project management and communications consulting firm. The organization provides services such as coordinating, implementing and promoting projects related to economic and community development, government relations, business development, housing, public relations, public involvement, and other marketing initiatives.

DCS holds minority certification wiht the State of Florida M/WBE. DCS has extensive experience working with the City of Fort Lauderdale. DCS also provides public outreach and public relations services for Broward County Water & Wastewater Services (BCWWS) Utility Analysis Zone Projects and BCWWS Neighborhood Improvement Projects.

VODA.ai helps water utilities prioritize their infrastructure with Software as a Service (SaaS) powered by Artificial Intelligence that is up to 65 times more accurate than traditional methods. VODA.ai was founded in 2017 in Boston and is now used by many of the Leading Utilities of the World as their go-to infrastructure prioritization and planning tool. Their Artificial Intelligence engine – daVinci – is also used to find lead pipes, create inventories, and plan for replacements. Data has shown that daVinci is twice as accurate in finding lead pipes, when compared with using installation year.

FR Aleman & Associates (FRA) is a locally headquartered, technology-driven geo-spatial and engineering SBE/DBE/MWBE firm, with a rock-solid base of historical knowledge, having a long and successful history of providing innovative, professional Surveying and Mapping services to our valued Clients. Their team has the performance, efficiency, and capabilities necessary for safe and integrated field operations and processing approach.

FRA offers Sub-Surface Utility Engineering (SUE) Services providing surface geophysical techniques to determine existence and horizontal position of underground utilities using GPR, electromagnetic locating/ground penetrating radar, and state-of-the-art vacuum excavation equipment. FRA locates identified utilities and designates sufficient locations to delineate the existing underground utility. This service includes:

- Designate the horizontal location of existing utilities using GPR with paint and flags.
- Program and calibrate electromagnetic utility locating equipment.
- Perform horizontal locations of existing conductive utilities using electromagnetic techniques.
- Mark selected targets on the ground surface, as necessary.
- Interpret field data and perform on-site designating field sketches.

SECTION 8
Required Forms

08. Required Forms

a. Sample Insurance Certificate
Demonstrate your firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the Insurance Companies' names for both Professional Liability and General Liability, and the dollar amounts of the coverage.

b. Local Business Preference Certification
Complete and provide copies of Business Tax Receipt(s)

c. Disadvantaged Business Enterprise Preference Certification *(not applicable)*
Complete and provide copies of Certification and Business Tax Receipt(s)

d. Non-Collusion Statement
Complete and submit with proposal

e. Non-Discrimination Certification Form
Complete and submit with proposal

f. E-Verify Affirmation Statement
Complete and submit with proposal

g. Contract Payment Method
This form must be completed and returned with your proposal. Proposers must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

h. Bid/Proposal Certification
Complete and submit with proposal

Sample Insurance Certificate

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY) 10/08/2021

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:	Hartford Fire Insurance Co.	19682
INSURER B:	Hartford Casualty Insurance Co	29424
INSURER C:	Hartford Accident & Indemnity Company	22357
INSURER D:	Twin City Fire Insurance Company	29459
INSURER E:		
INSURER F:		

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

COVERAGES **CERTIFICATE NUMBER:** 570089832643 **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,

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	10/01/2021	10/01/2022	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
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY X Property Damage to Oth			20 UEN OL5319	10/01/2021	10/01/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
B	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED / X RETENTION $10,000			20XHUOL5322	10/01/2021	10/01/2022	EACH OCCURRENCE AGGREGATE	$1,000,000 $1,000,000
C D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER (Mandatory in NH) Y/N: N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		20WNOL5323 AOS 20WPROL5321 WI	10/01/2021 10/01/2021	10/01/2022 10/01/2022	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 : 570089832643

ACORD 25 (2016/03) The ACORD name and logo are registered marks of ACORD

Local Business Preference Certification

City of Fort Lauderdale Bid 12721-926

LOCAL BUSINESS PREFERENCE CERTIFICATION STATEMENT

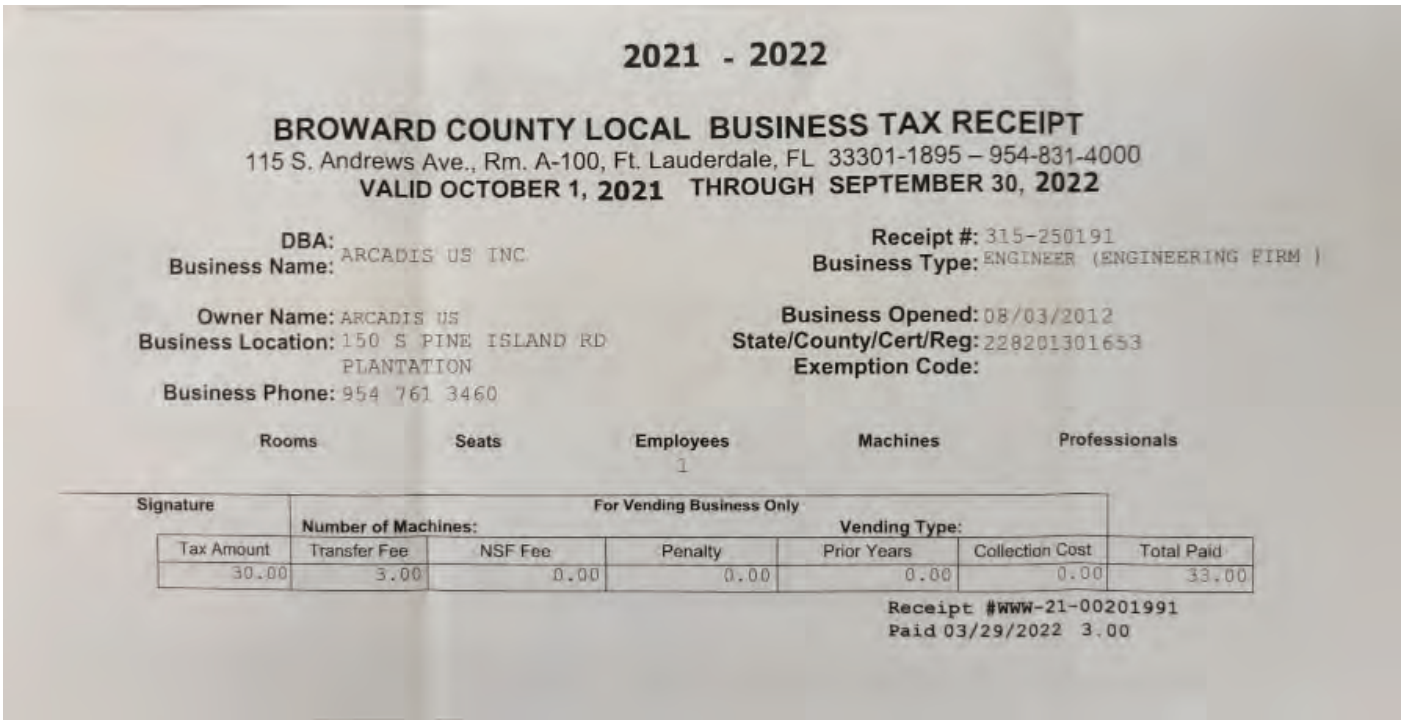
The Business identified below certifies that it qualifies for the local business preference classification as indicated herein, and further certifies and agrees that it will re-affirm its local preference classification annually no later than thirty (30) calendar days prior to the anniversary of the date of a contract awarded pursuant to this bid/proposal. Violation of the foregoing provision may result in contract termination.

(1)	(Business Name)	is a **Class A** Business as defined in City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186. A copy of the City of Fort Lauderdale current year Business Tax Receipt **and** a complete list of full-time employees and evidence of their addresses shall be provided within ten (10) calendar days of a formal request by the City.
(2)	(Business Name)	is a **Class B** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186. A copy of the Business Tax Receipt **or** a complete list of full-time employees and evidence of their addresses shall be provided within ten (10) calendar days of a formal request by the City.
(3)	Arcadis U.S., Inc. (Business Name)	is a **Class C** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186. A copy of the Broward County Business Tax Receipt shall be provided within ten (10) calendar days of a formal request by the City.
(4)	(Business Name)	is a **Class D** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186, and does not qualify for Local Preference consideration.
(5)	(Business Name)	requests a **Conditional Class A** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.
(6)	(Business Name)	requests a **Conditional Class B** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.

BIDDER'S COMPANY: Arcadis U.S., Inc.

AUTHORIZED COMPANY PERSON:		
Melissa Pomales, PE		09/20/2022
PRINT NAME	SIGNATURE	DATE

Copy of Arcadis' Broward County Local Business Tax Receipt



2021 - 2022

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2021 THROUGH SEPTEMBER 30, 2022

DBA:
Business Name: ARCADIS US INC

Receipt #: 315-250191
Business Type: ENGINEER (ENGINEERING FIRM)

Owner Name: ARCADIS US
Business Location: 150 S PINE ISLAND RD PLANTATION
Business Phone: 954 761 3460

Business Opened: 08/03/2012
State/County/Cert/Reg: 228201301653
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		1		

Signature

For Vending Business Only
Number of Machines: **Vending Type:**

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	3.00	0.00	0.00	0.00	0.00	33.00

Receipt #WWW-21-00201991
Paid 03/29/2022 3.00

Disadvantaged Business Enterprise Preference Certification

City of Fort Lauderdale Bid 12721-926

DISADVANTAGED BUSINESS ENTERPRISE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the disadvantaged business enterprise preference classification as indicated herein, and further certifies and agrees that it will re-affirm its preference classification annually no later than **thirty (30)** calendar days prior to the anniversary of the date of a contract awarded pursuant to this solicitation. Violation of the foregoing provision may result in contract termination.

(1)	N/A (Business Name)	is a disadvantaged **Class 1** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the City, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
(2)	N/A (Business Name)	is a disadvantaged **Class 2** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the City with full-time employee(s) and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
(3)	N/A (Business Name)	is a disadvantaged **Class 3** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
(4)	N/A (Business Name)	is a disadvantaged **Class 4** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that does not qualify as a Class 1, Class 2, or Class 3 business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City's Procurement Manual.
(5)	N/A (Business Name)	requests a **Conditional Class 1** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.
(6)	N/A (Business Name)	requests a **Conditional Class 2** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.

BIDDER'S COMPANY: Arcadis U.S., Inc.

AUTHORIZED COMPANY PERSON:	Melissa Pomales, PE		09/20/2022
	PRINT NAME	SIGNATURE	DATE

Non-Collusion Statement

City of Fort Lauderdale Bid 12721-926

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

> 3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).
>
> 3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS
N/A	

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

Authorized Signature	Senior Vice President
	Title
Melissa Pomales, PE	09/20/2022
Name (Printed)	Date

Rev 05-2020

Non-Discrimination Certification Form

City of Fort Lauderdale Bid 12721-926

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to the City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").

2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.

5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Authorized Signature

Melissa Pomales, PE | Senior Vice President
Print Name and Title

09/20/2022
Date

E-Verify Affirmation Statement

City of Fort Lauderdale Bid 12721-926

E-VERIFY AFFIRMATION STATEMENT

RFP/Bid /Contract No: Solicitation 12721-926

Project Description: The City of Fort Lauderdale, FL (City) is actively seeking qualified, experienced, and licensed firm(s) to provide, Lead and Copper Rule Revision (LCRR) Service Line Inventory Services for the City's Utilities Department as further described in Section III – Scope of Services.

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

(a) all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,
(b) all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Name: Arcadis U.S., Inc.

Authorized Company Person's Signature:

Authorized Company Person's Title: Senior Vice President

Date: 09/20/2022

Contract Payment Method

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale to receive your payments fast and safely. No more waiting for checks to be printed and mailed.

In accordance with the contract, payments on this contract will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. The City reserves the right to revise this program as necessary.

By signing below you agree with these terms.

Please indicate which credit card payment you prefer:

☑ MasterCard

☑ Visa

Arcadis U.S., Inc.
Company Name

Melissa Pomales, PE
Name (Printed)


Signature

09/20/2022
Date

Senior Vice President
Title

Bid/Proposal Certification

BID/PROPOSAL CERTIFICATION

Please Note: It is the sole responsibility of the bidder to ensure that his bid is submitted electronically through www.BidSync.com prior to the bid opening date and time listed. Paper bid submittals will not be accepted. All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration) Arcadis U.S., Inc. EIN (Optional):

Address: 150 S. Pine Island Road Suite 315

City: Plantation State: FL Zip: 33324

Telephone No.: 787-307-5483 FAX No.: N/A Email: melissa.pomales@arcadis.com

---

Delivery: Calendar days after receipt of Purchase Order **(section 1.02 of General Conditions)**: N/A

Total Bid Discount **(section 1.05 of General Conditions)**: N/A

Check box if your firm qualifies for MBE / SBE / WBE **(section 1.09 of General Conditions)**: ☐

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

Addendum No.	Date Issued	Addendum No.	Date Issued	Addendum No.	Date Issued

---

VARIANCES: If you take exception or have variances to any term, condition, specification, scope of service, or requirement in this competitive solicitation you must specify such exception or variance in the space provided below or reference in the space provided below all variances contained on other pages within your response. Additional pages may be attached if necessary. No exceptions or variances will be deemed to be part of the response submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. **You must also click the "Take Exception" button.**

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal.

I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, that in no event shall the City's liability for respondent's direct, indirect, incidental, consequential, special or exemplary damages,

City of Fort Lauderdale Bid 12721-926

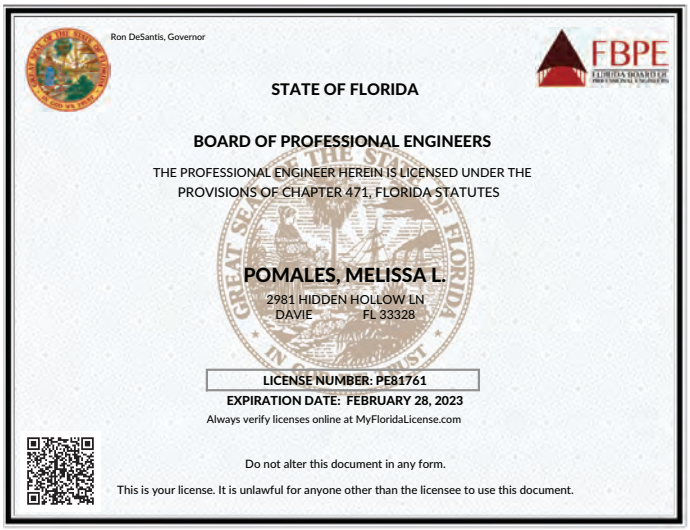
expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Melissa Pomales, PE	
Name (printed)	Signature
9/20/2022	Senior Vice President
Date	Title

Revised 4/28/2020

Licenses



Ron DeSantis, Governor

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

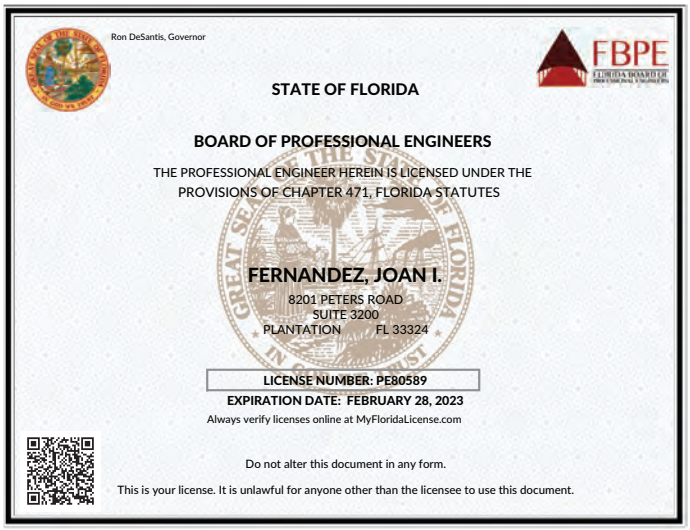
POMALES, MELISSA L.

2981 HIDDEN HOLLOW LN
DAVIE FL 33328

LICENSE NUMBER: PE81761
EXPIRATION DATE: FEBRUARY 28, 2023
Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.



Ron DeSantis, Governor

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

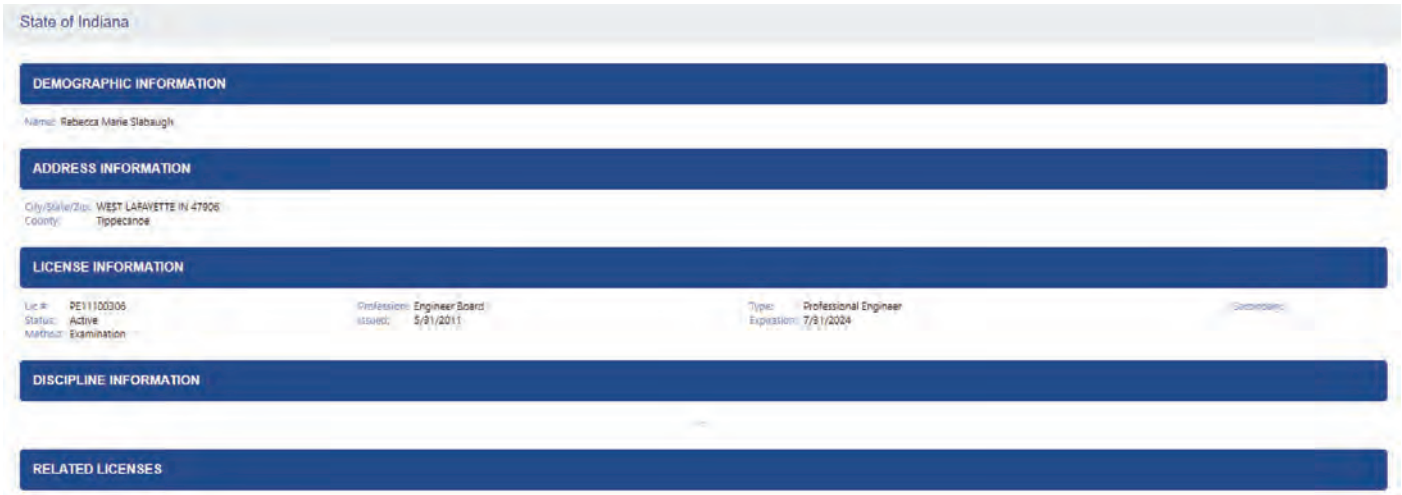
FERNANDEZ, JOAN I.

8201 PETERS ROAD
SUITE 3200
PLANTATION FL 33324

LICENSE NUMBER: PE80589
EXPIRATION DATE: FEBRUARY 28, 2023
Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.



State of Indiana

DEMOGRAPHIC INFORMATION

Name: Rebecca Marie Slabaugh

ADDRESS INFORMATION

City/State/Zip: WEST LAFAYETTE IN 47906
County: Tippecanoe

LICENSE INFORMATION

Lic #: PE11100306
Status: Active
Method: Examination
Profession: Engineer Board
Issued: 5/31/2011
Type: Professional Engineer
Expiration: 7/31/2024

DISCIPLINE INFORMATION

RELATED LICENSES

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 29,000 people, active in over 70 countries that generate $4.2 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 to the right 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

BID/PROPOSAL CERTIFICATION

Please Note: It is the sole responsibility of the bidder to ensure that his bid is submitted electronically through www.BidSync.com prior to the bid opening date and time listed. Paper bid submittals will not be accepted. All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration) **Arcadis U.S., Inc.**EIN (Optional):

Address: **150 South Pine Island Road, Suite 315**

City: **Plantation**State: **FL**Zip: **33324**

Telephone No.: **9547613460**FAX No.: **-**Email: **melissa.pomales@arcadis.com**

Delivery: Calendar days after receipt of Purchase Order **(section 1.02 of General Conditions)**: **N/A**

Total Bid Discount **(section 1.05 of General Conditions)**: **N/A**

Check box if your firm qualifies for MBE / SBE / WBE **(section 1.09 of General Conditions)**: ☐

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

Addendum No.	Date Issued	Addendum No.	Date Issued	Addendum No.	Date Issued
N/A	**N/A**				

VARIANCES: If you take exception or have variances to any term, condition, specification, scope of service, or requirement in this competitive solicitation you must specify such exception or variance in the space provided below or reference in the space provided below all variances contained on other pages within your response. Additional pages may be attached if necessary. No exceptions or variances will be deemed to be part of the response submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. **You must also click the "Take Exception" button.**

N/A

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal.

I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, that in no event shall the City's liability for respondent's direct, indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Melissa Pomales Name (printed)	**Melissa Pomales** Signature
9/26/2022 Date	**Senior Vice President** Title

Revised 4/28/2020

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to the City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").

2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.

5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Authorized Signature Print Name and Title

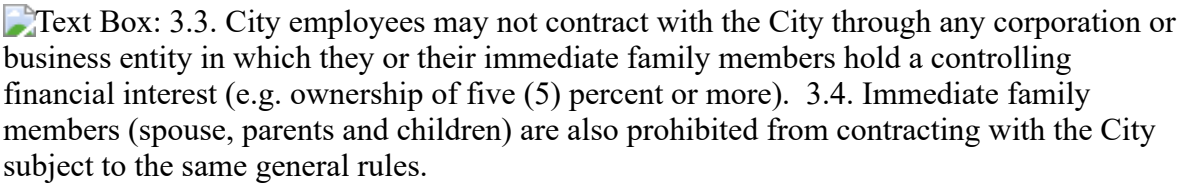
Date

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any Cityof LauderdaleFL officeror intowriting of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.



In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

Name	Relationships

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

Authorized Signature	**Title**
Name (Printed)	**Date**

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PREFERENCE

Section 2-185, Code of Ordinances of the City of Fort Lauderdale, provides for a disadvantaged business enterprise preference.

In order to be considered for a DBE Preference, a bidder must include a certification from a government agency, as applicable to the DBE Preference class claimed **at the time of bid submittal**.

Upon formal request of the City, based on the application of a DBE Preference the Bidder shall, within **ten (10)** calendar days, submit the following documentation to the DBE Class claimed:

a) Copy of City of Fort Lauderdale current year business tax receipt, **or** Broward County current year
business tax receipt, **or** State of Florida active registration **and/or**

b) List of the names of all employees of the bidder and evidence of employees' residences within the
geographic bounds of the City of Fort Lauderdale or Broward County, as the case may be, such as current Florida driver license, residential utility bill (water, electric, telephone, cable television), or other type of similar documentation acceptable to the City.

Failure to comply at time of bid submittal shall result in the bidder being found ineligible for the disadvantaged business enterprise preference.

THE COMPLETE DBE PREFERENCE ORDINANCE MAY BE FOUND ON THE CITY'S WEB SITE AT THE FOLLOWING LINK: h ps://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH2AD_ARTVFI_DIV2PR_S2-185EQOPDIBUEN&showChanges=true

Definitions

a. The term "disadvantaged class 1 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the City, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

b. The term "disadvantaged class 2 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the City with full-time employees and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

c. The term "disadvantaged class 3 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

d. The term “disadvantaged class 4 enterprise“ shall mean any disadvantaged business enterprise that does not qualify as a Class 1, Class 2, or Class 3 business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City’s Procurement Manual.

DISADVANTAGED BUSINESS ENTERPRISE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the disadvantaged business enterprise preference classification as indicated herein, and further certifies and agrees that it will re-affirm its preference classification annually no later than **thirty (30)** calendar days prior to the anniversary of the date of a contract awarded pursuant to this solicitation. Violation of the foregoing provision may result in contract termination.

(1)	**N/A** (Business Name)	is a disadvantaged **Class 1** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the City, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
(2)	**N/A** (Business Name)	is a disadvantaged **Class 2** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the City with full-time employee(s) and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
(3)	**N/A** (Business Name)	is a disadvantaged **Class 3** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.
(4)	**N/A** (Business Name)	is a disadvantaged **Class 4** enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that does not qualify as a Class 1, Class 2, or Class 3 business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City's Procurement Manual.
(5)	**N/A** (Business Name)	requests a **Conditional Class 1** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.
(6)	**N/A** (Business Name)	requests a **Conditional Class 2** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.

BIDDER'S COMPANY: **Arcadis U.S., Inc.**

AUTHORIZED PERSON:	COMPANY	**Melissa Pomales**	**Melissa Pomales**	**9/26/2022**
		PRINT NAME	SIGNATURE	DATE

Forms Non-Iso – revised 7/2/2021

LOCAL BUSINESS PREFERENCE CERTIFICATION STATEMENT

Section 2-186, Code of Ordinances of the City of Fort Lauderdale, (Ordinance No. C-17-26), provides for a local business preference.

In order to be considered for a local business preference, a bidder must include the Local Business Preference Certification Statement of this bid/proposal, as applicable to the local business preference class claimed **at the time of bid submittal.**

Upon formal request of the City, based on the application of a Local Business Preference, the Bidder shall, within ten (10) calendar days, submit the following documentation for the Local Business Preference Class claimed:

a) Copy of City of Fort Lauderdale current year business tax receipt, **or** Broward County current year
business tax receipt, **and**

b) List of the names of all employees of the bidder and evidence of employees' residences within the
geographic bounds of the City of Fort Lauderdale or Broward County, as the case may be, such as current Florida driver license, residential utility bill (water, electric, telephone, cable television), or other type of similar documentation acceptable to the City.

Failure to comply at time of bid submittal shall result in the bidder being found ineligible for the local business preference.

THE COMPLETE LOCAL BUSINESS PREFERENCE ORDINANCE MAY BE FOUND ON THE CITY'S WEB SITE AT THE FOLLOWING LINK:
h ps://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH2AD_ARTVFI_DIV2PR_S2-186LOBUPR&showChanges=true

Definitions: The term "Business" shall mean a person, firm, corporation or other business entity which is duly licensed and authorized to engage in a particular work in the State of Florida. Business shall be broken down into four (4) types of classes:

1. Class A Business – shall mean any business that has established and agrees to maintain a permanent place of business located in a non-residential zone and staffed with full-time employees within the limits of the City, **and** shall maintain a staffing level for the proposed work of at least fifty percent (50%) who are residents of the City of Fort Lauderdale.

2. Class B Business - shall mean any business that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the City, **or** shall maintain a staffing level for the proposed work of at least fifty percent (50%) who are residents of the City of Fort Lauderdale.

3. Class C Business - shall mean any business that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of Broward County.

4. Class D Business – shall mean any Business that does not qualify as either a Class A, Class B, or Class C business.

LOCAL BUSINESS PREFERENCE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the local business preference classification as indicated herein, and further certifies and agrees that it will re-affirm its local preference classification annually no later than thirty (30) calendar days prior to the anniversary of the date of a contract awarded pursuant to this bid/proposal. Violation of the foregoing provision may result in contract termination.

(1)	(Business Name)	is a **Class A** Business as defined in City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186. A copy of the City of Fort Lauderdale current year Business Tax Receipt **and** a complete list of full-time employees and evidence of their addresses shall be provided within ten (10) calendar days of a formal request by the City.
(2)	(Business Name)	is a **Class B** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186. A copy of the Business Tax Receipt **or** a complete list of full-time employees and evidence of their addresses shall be provided within ten (10) calendar days of a formal request by the City.
(3)	**Arcadis U.S. Inc.** (Business Name)	is a **Class C** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186. A copy of the Broward County Business Tax Receipt shall be provided within ten (10) calendar days of a formal request by the City.
(4)	(Business Name)	is a **Class D** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec. 2-186, and does not qualify for Local Preference consideration.
(5)	(Business Name)	requests a **Conditional Class A** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.
(6)	(Business Name)	requests a **Conditional Class B** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent to meet the requirements shall be provided to the City within three (3) months of entering into a contract with the City.

BIDDER'S COMPANY: **Arcadis U.S., Inc.**

AUTHORIZED PERSON:	COMPANY	**Melissa Pomales**	**Melissa Pomales**	**9/26/2022**
		PRINT NAME	SIGNATURE	DATE

Forms Non-ISO – Revised 7/2/2021

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale to receive your payments fast and safely. No more waiting for checks to be printed and mailed.

In accordance with the contract, payments on this contract will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. The City reserves the right to revise this program as necessary.

By signing below you agree with these terms.

Please indicate which credit card payment you prefer:

- [x] MasterCard
- [x] Visa

Arcadis U.S., Inc.
Company Name

Melissa Pomales
Name (Printed)

Melissa Pomales
Signature

9/26/2022
Date

Senior Vice President
Title