

COMMERCE PARK WASTEWATER TREATMENT PLANT
Pender County, North Carolina

FIRMWIDE OVERVIEW **WATER + WASTEWATER**



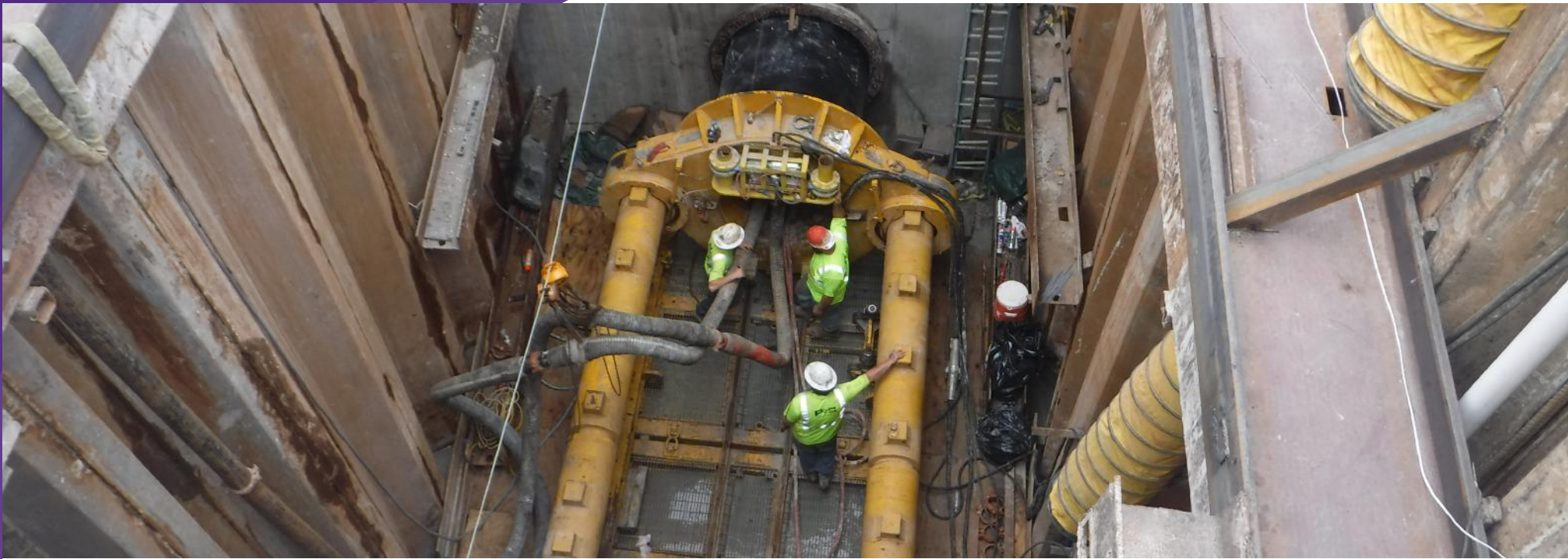
A **WORLD**

without water will

NOT MATTER.

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ONE OF THE LARGEST FIRMS IN THE SOUTHEAST

Our engineers and surveyors provide practical solutions to help power generation clients safety and cost-effectively maintain and operate their facilities.

ENGINEERING

We are engineers—engineered differently. As a nationally ranked Top 150 firm, we have built an outstanding reputation for providing innovative engineering solutions to our clients' challenges. Our project portfolio includes solar, geothermal and advanced water and wastewater treatment technologies to help our clients achieve regulatory compliance and water quality goals.

GEOMATICS

Ranked **FIRST** by ENR Southeast, we apply the power of geomatics solutions to benefit our clients. We offer a diverse portfolio of advanced imaging and remote sensing technologies, backed by powerful modeling, visualization and GIS tools. We've successfully delivered countless projects for our clients.

MCKIM & CREED AT A GLANCE ...

25 OFFICES

+700
EMPLOYEES



LOCAL EXPERTISE

SUPPORTED BY

NATIONAL SUPPORT

TRUSTED PARTNERSHIPS

McKim & Creed's knowledge, organization skills and responsiveness kept our project on time and on budget. It was a pleasure to work with their staff, and I would recommend McKim & Creed for future similar projects.

*Lyssa Lott
Project Manager
Lee County Utilities*

INDUSTRY RANKINGS

149
ENR DESIGN
FIRMS IN THE U.S.

1
SURVEYING &
MAPPING IN
SOUTHEAST

TOP 50
TRENCHLESS FIRM

AWARD-WINNING ENGINEERING SERVICES

As one of the most technologically advanced engineering firms in the U.S., we blend our expertise with ingenuity to solve our client's most complex water and wastewater infrastructure challenges. Our engineers are the brightest in the industry: they are problem solvers and visionaries, pushing beyond what is possible and turning ideas into reality.





WATER RECLAMATION CENTER
Pittsboro, North Carolina

LEADERS IN WATER AND WASTEWATER INFRASTRUCTURE

Wastewater infrastructure in the United States serves 190 million people through more than 16,000 plants and 600,000 miles of pipeline. Ongoing access to clean / safe water is a major focus for our team.

Our award-winning water management engineers consistently strive to develop new and efficient ways to improve, sustain, clean, manage and maintain our nation's water. And we find unique solutions for additional and alternative water sources when supply is an issue.

McKim & Creed plans and designs systems that treat, preserve and conserve the earth's finite water resources. Systems that include water treatment facilities that prevent water loss, meet stringent regulations and improve drinking water quality. Open-source I&C/SCADA systems and hydraulic models that help communities leverage their infrastructure. Water reuse systems that conserve potable water. Stormwater programs that manage entire watersheds. Wastewater treatment plants that produce safe, clean effluent. And survey data for floodplain mapping, surge models, sea level rise studies and pre and post-storm surveys.

SERVICES:

- » Construction administration
- » Construction observation
- » Potable and reclaimed distribution system design
- » Engineering reports
- » Environmental assessments
- » Feasibility studies
- » Funding application
- » Infrastructure rehabilitation
- » Line replacement
- » Master planning
- » Operations support and program management
- » Collection and conveyance system design
- » Permitting
- » Plant start-up
- » Rate studies
- » Regulatory compliance support
- » Storage
- » Supply
- » Surveying and mapping
- » System analysis
- » Treatability studies
- » Water resource development and planning
- » Water resources management
- » Water and wastewater treatment



NORTHEAST WWTP EXPANSION
Brunswick County, NC

WASTEWATER MANAGEMENT

As communities grow, so do their wastewater management needs. Utilities require efficient, reliable and cost-effective collection, conveyance and treatment systems to keep up with population growth, meet increasingly stringent government regulations, and produce clean, safe effluent.

McKim & Creed has completed numerous and diverse wastewater management projects that advance infrastructure and greatly improve the quality of life in cities and communities. We work side-by-side with our clients to find complete solutions to the wastewater management challenges they face, from funding to permitting to implementation and maintenance. We know how to work with multiple entities at local, state and federal levels to make projects happen, and we understand that the wastewater management work we do for you today is an investment in your future.



NORTHEAST WWTP EXPANSION | BRUNSWICK COUNTY, NC



WASTEWATER TREATMENT PLANT | BELMONT, NC



ENO RIVER OUTFALL AND LIFT STATION | DURHAM, NC



CRABTREE VALLEY INTERCEPTOR | RALEIGH, NC



WATER MANAGEMENT



CRAVEN COUNTY WATER TREATMENT PLANT CRAVEN COUNTY, NC

McKim & Creed provided engineering services for a new potable water supply and treatment facility that complies with the State of North Carolina Central Coastal Plain Capacity Use Area (CCPCUA) regulations; allows the fragile Black Creek aquifer to adequately recharge. Castle Hayne is the most productive aquifer in North Carolina, but its water contains high concentrations of minerals, salt and iron. To make it suitable for drinking, bathing and washing, raw water from the Castle Hayne aquifer requires more treatment than water from the Black Creek aquifer. To provide this treatment, the Craven County Water Department implemented the Potable Water Supply and Treatment Facility project. The plant and raw water facilities produce up to 3 million gallons of fresh drinking water every day and can be expanded to produce up to 5 million gallons per day.

"McKim & Creed provided a high quality of service to Craven County during our recent water treatment plant construction project. The staff provided unparalleled professionalism accompanied by far-reaching expertise to provide a superior end product to the citizens of Craven County. McKim & Creed showed great concern and put great effort into controlling costs and, at the same time, providing a quality, well-designed product we can all be proud to have in our county." Jack Veit, Craven County



CFPUA 54-INCH PARALLEL RAW WATER MAIN DESIGN SERVICES WILMINGTON, NC

The current capacity of Kings Bluff facility is limited to approximately 48 mgd by the existing 14-mile, 48-inch transmission main. However, projections indicate that customer demand will exceed this capacity within the next three to eight years. Therefore, CFPWA, LCFWSA and Brunswick County have implemented a regional approach to managing raw water resources that is beneficial and cost-effective for all customers of the respective systems. The agencies have collaborated to design and build a 54-inch pipeline that will extend approximately 14 miles from the Kings Bluff facility to a ground storage tank in Brunswick County, thereby expanding raw water capacity, providing redundancy and reliability, and supporting regional growth. As the consulting engineer on the project, McKim & Creed established the basis of design that included water demand needs, design capacity, transmission main size, hydraulics, materials of construction, valving and interconnection concepts, specialty trenchless crossings, permit needs, cost considerations, impacts on the existing pump station and pump operations, etc. McKim & Creed's design services involved surveying, geotechnical analysis of soil conditions and hydrology, wetlands delineation, subsurface utility engineering, additional property/easement identification, detailed design, permitting, opinion of probable construction costs, contract documentation, contractor prequalification and project management/coordination.

WATER ASSET MANAGEMENT

Water asset management is a complicated process, but our job is to simplify and empower you with a comprehensive approach to bring transparency and accountability to your water utilities—ensuring every gallon reaches its intended point of use.

Efficient water management is a crucial tool for businesses. We give companies the ability to become sustainable stewards—ensuring water loss is not only detected but eliminated.

WATER. THE SITUATION.

In America alone, over 6 billion gallons of water are lost each day due to leakage and accounting issues. That's a shocking amount of waste, especially for a resource no one can live without. Water leaks, typically occurring underground, are not always apparent. In fact, 70% of leaks are not evident without a proactive leak detection system. Infrastructure is aging and leakage is occurring at staggering numbers—an estimated 2.1 trillion gallons per year. That's why we are here—to provide the solutions for overcoming this unifying issue.





TO BETTER SUPPORT OUR CLIENTS AND KEEP OUR PROJECTS ON SCHEDULE, WE HAVE AN IN-HOUSE SERVICE CENTER WHERE ALL EQUIPMENT IS FULLY CHECKED AND TESTED BEFORE IT IS DELIVERED TO THE END USER.

SERVICES:

- #1 Infrastructure Assessment/Planning

- #2 Network Monitoring and Data Analytics

- #3 Leak Detection Services

- #4 Respective Products

- #5 Support and training necessary for the stewardship efforts of those that produce, deliver, and consume water.



WET WEATHER PROGRAM

Wastewater infrastructure in the United States serves 190 million people through more than 16,000 plants and 600,000 miles of pipeline. But much of that infrastructure is in disrepair and/or in need of replacement.

McKim & Creed's engineers and technicians can help you address your buried and aging infrastructure issues and develop affordable solutions that can restore structural integrity, reduce I/I situations, and reinstate system capacity and regulatory compliance.

For assessing wastewater or stormwater gravity piping and structures, McKim & Creed's closed circuit TV (CCTV) inspection systems makes it possible to look inside your collection systems and evaluate the relative condition and severity of deterioration in your system. It also provides a full, 360-degree interior view of your aging infrastructure. And because the technology provides the best imagery at higher production rates, your dollars can be spent fixing your aging infrastructure issues, rather than simply studying the problem. The unique flat tile format allows McKim & Creed to analyze the results of the aging

infrastructure inspections in about half the time of traditional CCTV review methods. Initial defect observations can be tracked and monitored to help provide a clearer picture when performing failure risk analysis. This saves money as repairs are performed only where and when needed, and based on clear assessments instead of the typical "what if" wet weather program approach.

For assessing pipeline conditions, our technicians perform leak detections, structural assessments and corrosion analysis even if the piping is not active. If rehabilitative actions are determined to be necessary, McKim & Creed has the in-house technical expertise to successfully perform the required renewal and/or replacement using a variety of project delivery systems and trenchless installation methods.

FORCE MAIN CONDITION ASSESSMENT PROGRAM

Force mains are a critical component of a functioning sewer system. But like so much of the United State's water and wastewater infrastructure, force mains are aging, making



FORCE MAIN MANAGEMENT PROCESS

PROJECT GOALS

Assess project goals, such as minimizing force main failures, I&I and SSO reduction and regulatory compliance.

ANALYSIS

Analyze drawings, reports, history of repairs or failures. Conduct staff interviews to determine likelihood of failure. Perform dynamic modeling of pump station and force main if needed.

RISK ASSESSMENT

Perform a risk assessment to prioritize force main inspections, rehabilitation and repair.

SITE RECONNAISSANCE

Perform site reconnaissance to observe accessibility, traffic conditions, other nearby utilities, etc. to determine the best technology required to assess current pipeline conditions.

PIPELINE ASSESSMENTS

Determine assessment methodology needed. Assessment methodologies include:

- Corrosivity survey
- Leak detection surveys
- Excavation and external testing
- Internal testing using free-swimming and tethered inspection tools

CONVERTING DATA TO ACTION

Develop and deliver a comprehensive report that compiles collected data and identifies force main deficiencies, prioritizes improvements, recommends rehabilitation methodologies and projects costs.

them more vulnerable to failure. And failures can result in loss of service and substantial environmental, financial and public perception challenges.

McKim & Creed provides the in-house services needed to fully execute a successful force main management program. Our subsurface utility engineers (SUE) can perform a full array of nondestructive evaluation services, ranging from gathering information from existing utility records (Quality Level A) to exposing underground utilities (Quality Level A). Our hydraulic modeling engineers can calibrate dynamic models to develop effective rehabilitation and operational strategies. And our wastewater engineers can develop a customized force main management program based on data collected from your system.

McKim & Creed's proven program can help protect your utility's infrastructure from corrosion, reduce I&I, restore structural integrity, maintain regulatory compliance and improve water quality.

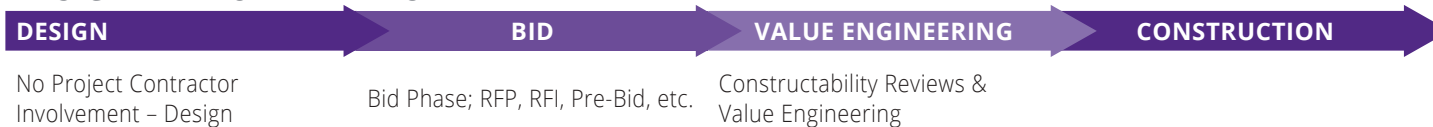
LEADERS IN DESIGN-BUILD DELIVERY

As leaders in the design-build project delivery method, McKim & Creed brings together professionals with strong design-build expertise to implement best practices, lessons learned, trends and technology to benefit our clients. As you can see in the design-build best value approach image below, the design-build delivery method provides various benefits to the owner. Within design-build teams McKim & Creed can function in the roles of prime, owner's advisor, owner's representative, designer and/or engineer. Our design-build services include:

- » Project Development
- » Design
- » Estimating
- » Procurement
- » Scheduling
- » Budget Management
- » Safety
- » Construction
- » Commissioning
- » Operations
- » Project Management
- » Program Management

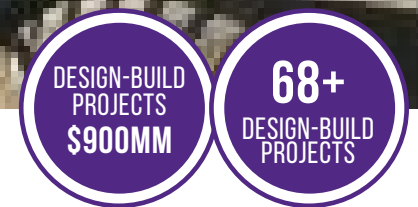
DESIGN-BUILD DELIVERY SPEED TO MARKET CONSIDERATIONS:

DESIGN-BID-BUILD METHOD



DESIGN-BUILD METHOD





DESIGN-BUILD MODEL BEST VALUE APPROACH:



SINGLE POINT OF RESPONSIBILITY

- » Early owner input
- » Early design and cost estimating
- » Project scheduling
- » Specific expertise in infrastructure projects



COLLABORATION

- » Team work
- » Partnering
- » Early contractor selection
- » Early equipment procurement
- » Project phasing



CLEAR CONFLICT MANAGEMENT

- » Open communication
- » Leadership meetings



RISK MANAGEMENT

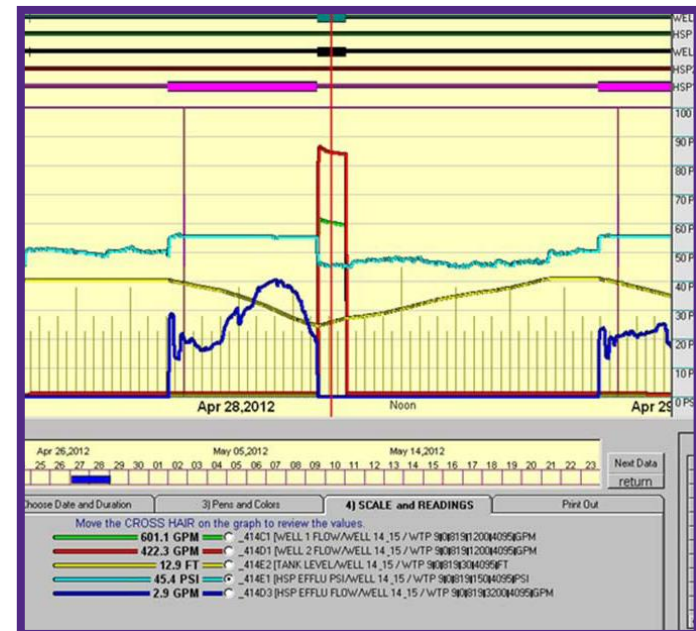
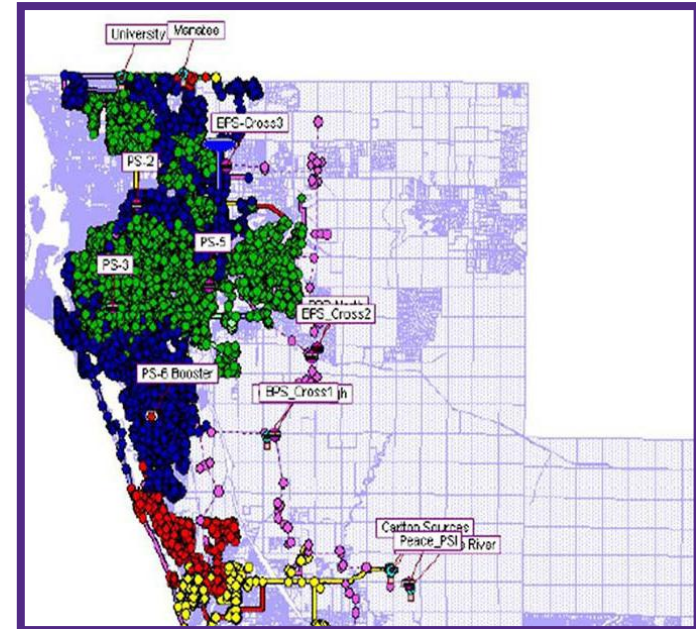
- » Single contract with trusted partner
- » Contingencies



HYDRAULIC MODELING

Imagine being able to predict the future—to identify in advance how new construction will impact infrastructure. To know how and when customers will be affected by a foreign substance introduced into a municipal water system. To detect and repair deficiencies before system hydraulic failure.

Using the latest hydraulic modeling technologies, the engineers at McKim & Creed enable you to predict the future with astounding accuracy. We create customized systems that allow you to optimize infrastructure sizing, system configuration and operational strategies to stretch your capital investment. With modeling like this, who needs a crystal ball to predict the future?






STATE-OF-THE-ART UNMANNED AERIAL SYSTEMS

For the last 7 years, McKim & Creed has built an Unmanned Aerial Systems (UAS) program with the stated purpose of providing high-accuracy and quality UAS data. It has been our experience that high quality data for mapping applications requires both ground control and ground verification similar to how we approach our traditional remote sensing systems. We have more than 250 geomatics employees and 31 Part 107 certified pilots.

Our UAS program offers the expertise to address all aviation, safety, remote sensing and market-specific requirements. We have a highly-trained team of certified photogrammetrists, licensed surveyors and FAA Part 107 remote pilots who work together to create a state-of-the-art program that fully encapsulates the needs of UAS collections for GIS, engineering and emergency response.



SUBSURFACE UTILITY ENGINEERING

At McKim & Creed, we specialize in the accurate location of underground utilities to help engineers and contractors alike manage the inherent risks associated with underground utilities.

QUALITY SERVICES YOU CAN TRUST

Using a variety of techniques and equipment, McKim & Creed's SUE technicians can meet the needs of any size project. We provide all quality levels of SUE services:

D

QUALITY LEVEL D

Quality Level D uses data gathered solely from existing utility records.

C

QUALITY LEVEL C

Quality Level C involves surveying visible, above-ground utility facilities and correlating this data with existing utility records.

B

QUALITY LEVEL B

Quality Level B applies surface geophysical techniques to determine the existence and horizontal position of underground utilities.

A

QUALITY LEVEL A

Quality Level A employs non-destructive digging equipment at critical points to determine the precise horizontal and vertical position, as well as size and type, of underground utilities.

MECHANICAL, ELECTRICAL, PLUMBING (MEP) ENGINEERING SERVICES

Mechanical, electrical, plumbing (MEP) and fire protection engineering services can help you conserve energy, reduce water consumption, and improve overall efficiencies in your buildings and central energy plant systems. Incorporating effective MEP system solutions minimize environmental impacts while maximizing functionality.

McKim & Creed's award-winning team of MEP professional engineers, fire protection specialists and LEED® certified professionals focus on technology, innovation and

excellence to improve living and working environments on colleges and universities; healthcare facilities; industrial, research, laboratory and research facilities; K-12 schools; government and defense buildings; and offices and commercial buildings. Additionally, McKim & Creed's engineers provide engineering solutions for central energy plants (chilled water, hot water, steam, and medium voltage distribution systems) as well as large scale solar photovoltaic (PV) projects. Our solar PV experience includes over 20 projects ranging from 500 kw to 30 MW.





RESILIENCY

Recent storms have had increasing impact on our coastal communities. In a report published in June 2020, the Geophysical Fluid Dynamics Laboratory concludes that “the vulnerability of coastal regions to storm surge flooding is expected to increase with future sea-level rise and coastal development.” So, how can communities create climate-resilient water and wastewater infrastructure? And how do they pay for it?

McKim & Creed engineers analyze, design and upfit resilient infrastructure that is built to accommodate storm-surge flooding. In our water, wastewater and reclaimed water project designs we address issues like saltwater intrusion, ground water contamination and reduced stormwater system capacity. We consider how to best protect water and

wastewater treatment systems as well as power supplies. We evaluate monitoring and control system with respect to communications infrastructure reliability. And we determine the rate of infrastructure deterioration and account for access to critical infrastructure facilities during times of emergency.

We also develop budget resilience measures and support our clients’ efforts to gain FEMA/HMGP funding for recovery projects as well as funding through various other agencies for proactive enhancement and resiliency projects. McKim & Creed has helped 25+ utilities secure nearly \$60 million in State Revolving Fund (SRF) and Clean Water State Revolving Fund (CWSRF) funding.





McKIM & CREED

ENGINEERS SURVEYORS PLANNERS

WWW.MCKIMCREED.COM