

A Geospatial Approach to Facility and Vertical Asset Management

Turning Reality into
Intelligence with ArcGIS





Foreword

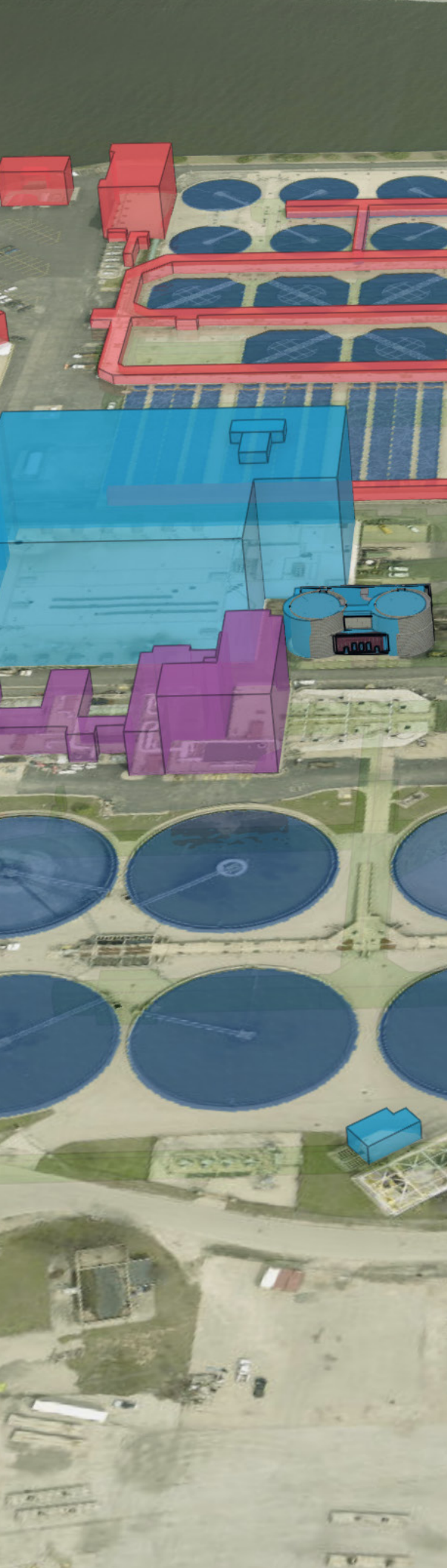
This ebook brings the realities of modern facility and vertical asset management into focus, showing how leading water and wastewater utilities are moving beyond fragmented systems and outdated practices. Through real-world case studies, readers will learn how ArcGIS® software-based systems of record, indoor mapping, and facility digital twins are being deployed to preserve institutional knowledge, improve operational control, and elevate safety across treatment plants and critical facilities.

These customer stories demonstrate what is possible when BIM, reality capture, and operational data are brought together in a scalable, geospatial platform. This interconnection of technology through a geographic information system (GIS) platform enables organizations to anticipate risk, optimize resources, and act with confidence. This is not incremental improvement; it is a fundamental shift in how water utilities operate and lead in an increasingly complex world.

These examples illustrate the tangible benefits of modernization:

- Improved operational efficiency through integrated asset inventories and maintenance workflows
- Enhanced safety and preparedness with spatially accurate indoor maps and emergency equipment visualization
- Reduced downtime and rework via BIM-enabled project planning and reality capture
- Scalable, future-ready platforms capable of integrating the Internet of Things (IoT), predictive analytics, and real-time monitoring

The strategies outlined in this ebook empower utilities to unify people, data, and operations into a cohesive framework. By adopting a business-driven, geospatial approach, organizations can make informed capital investment decisions, extend asset life cycles, and ensure continuity of service for the communities they serve. ■



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Introduction

Across the water industry, facilities are no longer just operational sites—they are at the heart of delivering water and maintaining the essential water supply in a safe, resilient, and efficient manner. Treatment plants, pump stations, and vertical assets must now perform under growing regulatory scrutiny, workforce transition, climate uncertainty, and rising expectations of transparency and reliability. Yet many organizations are still managing these critical environments with fragmented systems, static documentation, and limited visibility into real-time conditions. The result is unnecessary risk, slower decisions, and constrained ability to adapt.

Leading organizations are transforming how facilities are understood, managed, and operated. They are establishing a spatial, digital foundation for vertical asset management that unifies engineering design, real-time operations, and long-term planning into a single, trusted operational view.

Through GIS-based systems of record, indoor mapping, and facility digital twins, complex plants are evolving into connected, intelligent environments—driving operational excellence; improving maintenance performance; and enabling faster, more confident decision-making.

Modernization is not just about technology; it is about building a resilient foundation for the future. This ebook equips utility leaders, engineers, and operations managers with the insights and tools needed to operationalize facilities, accelerate projects, and scale digital twins across the enterprise. The result is a smarter, more connected, and more sustainable utility. ■





Establishing a System of Record for Facilities

For water and wastewater utilities, facilities are among the most complex and critical assets in the organization. Treatment plants, pump stations, reservoirs, and vertical infrastructure operate at the intersection of safety, compliance, reliability, and cost. Yet many utilities still manage these assets through fragmented records, spreadsheets, PDFs, a legacy computerized maintenance management system (CMMS), and undocumented institutional knowledge. Establishing a GIS-based system of record brings order, visibility, and confidence to facility management.

A geospatial system of record creates a single, authoritative view of facility and asset information within a spatially accurate environment. It unifies engineering data, operational context, and asset documentation into one map-based platform that can be accessed by operations, maintenance, engineering, and leadership alike. This shared foundation replaces disconnected systems and isolated workflows with a trusted source of truth that supports day-to-day operations and long-term capital planning.

The operational impact is immediate. Asset data that was once locked in drawings or dependent on operator familiarity is now visible in context, visualized in 2D, 3D, or digital twin environments. Staff can quickly locate equipment; understand relationships within a facility; and access drawings, manuals, and maintenance history directly from the map. This improves

response times, reduces downtime, enhances safety, and allows utilities to manage vertical assets with the same rigor they apply to linear networks.

A system of record also protects institutional knowledge. Water facilities often reflect decades of modifications and upgrades, many of which are known only to long-tenured personnel. Capturing this knowledge in GIS ensures that it is preserved, shared, and scalable, supporting workforce transitions, accelerating onboarding, and strengthening operational resilience.

Most importantly, using GIS to establish a system of record lays the foundation for modernization. Once facilities are accurately mapped and governed, utilities can integrate reality capture, BIM, SCADA and real time sensor data, predictive analytics, and advanced visualization. GIS becomes the connective platform that links systems, enables proactive maintenance, and supports data-driven decision-making as regulatory and operational pressures grow.

Implementing a GIS for facilities is not simply a technology upgrade but a strategic investment in resilience, reliability, and long-term performance. The following example from Eastern Municipal Water District highlights the practical steps and tangible benefits of moving from fragmented records to a unified, spatially accurate platform. ■



Case Study

Mapping the Invisible

How EMWD Modernized Plant Management with GIS

Eastern Municipal Water District (EMWD) provides water, wastewater, and recycled water service to nearly one million people within a 682-square-mile area. EMWD has four active regional water reclamation plants, two water filtration systems, and three groundwater desalination plants.

EMWD had no compiled record of plant piping and facility installation details to aid in project planning and plant management. Much of the information about the treatment and water filtration systems was not systematically documented and instead resided as institutional knowledge with the plant workforce.

To address the lack of documentation, staff developed a plan that included mapping and visualization capabilities to support plant operations management. As the plan was defined, demonstrations were provided by consultants showcasing 2D and 3D visualizations, digital twins, and virtual reality. This helped staff determine what type of system the district could realistically maintain and benefit from.

EMWD staff started with a pilot project focused on the Temecula Valley Regional Water Reclamation Facility. They adopted ArcGIS Utility Network, customized it with new asset groups and types, and migrated existing AutoCAD plans into GIS. A thorough quality control process was conducted for each plan set to ensure that all features and attributes were within the GIS and that drawings and operational manuals were linked correctly.

The resultant 2D system enables staff to easily access drawings, operational manuals, and asset information, streamlining workflows and reducing knowledge loss. This ongoing initiative is already improving efficiency and is set to further enhance plant management as more facilities are mapped and integrated with asset management tools. ■

Return on Investment

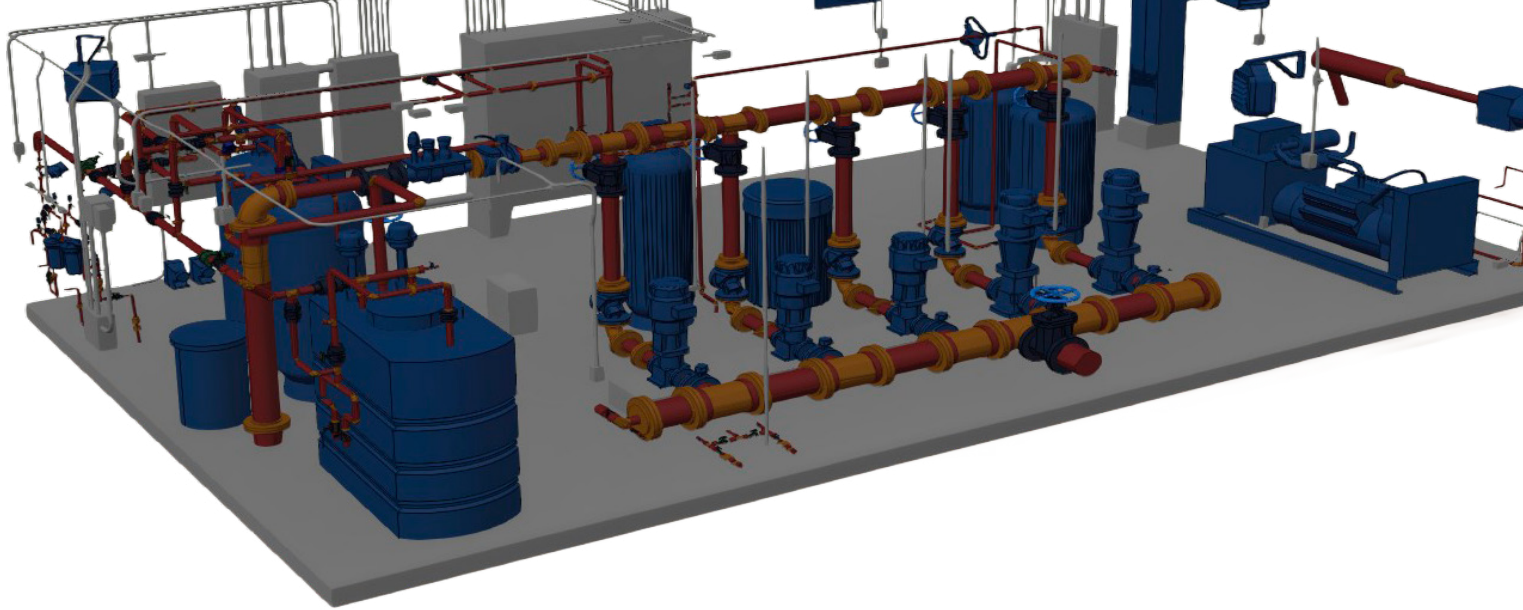
- Minimized institutional knowledge loss
- Decreased staff training requirements
- Improved operational and maintenance planning
- Enhanced collaboration and efficiency
- Saved time and resources for project planning and design

“Adding our plant facilities to our GIS system provides significant benefits to different stakeholders within our organization. [Benefits range] from our engineering team utilizing the information to design rehabilitation and expansion projects—facilitating our field engineering team’s ability to know what type, size, and material of existing utilities are during construction—to our operations team being able to quickly identify locations for different systems and possible isolation points.”

—Abdiel Picazo, Senior Engineer, EMWD



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Indoor Facility Mapping

Indoor GIS is redefining how water and wastewater utilities manage their most complex operational environments. While utilities have long relied on GIS to map linear networks such as pipes, valves, and hydrants, many of the most critical assets reside inside facilities, treatment plants, pump stations, laboratories, and administrative buildings. Indoor GIS brings these vertical assets into the same spatial system of record, delivering the visibility, consistency, and operational insight required for modern facility management.

By extending GIS indoors, utilities can represent rooms, floors, equipment, and operational spaces within a precise spatial context. Assets are no longer isolated in drawings, spreadsheets, or maintenance systems; they are contextualized within the facilities where work occurs. This allows operations and maintenance teams to navigate complex interiors; locate assets quickly; and execute standardized workflows using a common, map-based interface, bridging the gap between traditional GIS and day-to-day facility operations.

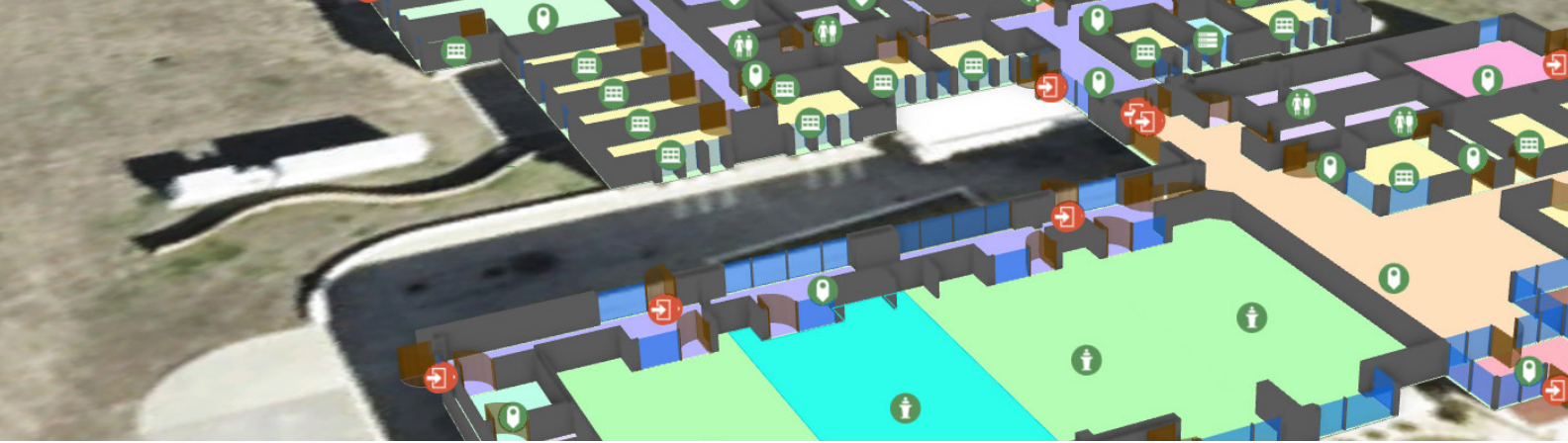
The business value of indoor mapping is immediate. Converting existing facility drawings into 2D and 3D indoor maps and linking them to a GIS-based asset inventory enables utilities to assign work directly to assets in their exact indoor locations. Integration with a computerized maintenance management system (CMMS) allows staff to view work orders in real time; route themselves efficiently through large facilities; and access asset history, documentation, and safety information at the point of work. If connected with building management systems (BMS), real-time and indoor GIS can also provide spatial context for facility-system alerts; equipment status; and ambient environmental characteristics such as temperature, ventilation, lighting, or access-control events. What was once static, tabular asset data becomes a dynamic, spatially

intelligent system that improves productivity, reduces downtime, and supports better capital investment decisions.

Indoor GIS also strengthens safety, preparedness, and collaboration. Using indoor maps, staff can instantly locate emergency equipment, understand evacuation routes, and maintain situational awareness during incidents. Operations, engineering, IT, and management teams use a common view of facility conditions, improving coordination and decision-making across departments. As utilities onboard new staff, indoor maps accelerate training and reduce reliance on undocumented institutional knowledge.

From an infrastructure life cycle management perspective, indoor GIS is foundational for operational digital twins. ArcGIS Indoors™ enables indoor map creation from floor plans—using CAD, BIM, PDF, point clouds, and more—and turns indoor spatial data into a comprehensive living system of record for facility operations. This integrated model unifies indoor and outdoor environments, supports predictive maintenance, visualizes construction progress, and enables long-term infrastructure planning. Utilities gain a scalable, future-ready platform that adapts as operational needs evolve.

Ultimately, indoor mapping moves facility management from reactive to proactive. It enables water utilities to manage vertical assets with the same rigor applied to distribution and collection networks, improving efficiency, enhancing safety, and building more resilient operations. The following case study highlights how Raleigh Water applied indoor mapping to connect GIS-based asset inventories with facility operations, delivering measurable operational value and a repeatable model for enterprise facility management. ■



Case Study

Combining Spatially Contextualized Assets and Real-World Building Spaces

Enables a Vertical Asset Management Program at Raleigh Water

Raleigh Water needed a vertical asset management program focused on preventative maintenance and reactive work activities that could integrate with the utility's existing computerized maintenance management system (CMMS). Staff were tasked with delivering a solution that allowed the assignment and tracking of work activities—including inspections, preventive maintenance, and reactive work orders—to individual assets throughout two water treatment facilities and three wastewater treatment facilities.

Staff faced several challenges: There was no GIS inventory of vertical assets within treatment facilities, and none of the indoor spaces within the facilities had been mapped. Also, staff needed to identify a solution that would integrate an asset inventory with indoor spaces.

To address these challenges, utility members, analysts, maintenance program staff, plant operators, and members of the technology teams worked together to identify the data schema needed to build an asset inventory in GIS. They worked with the City of Raleigh IT GIS team to deploy a web form enabling rapid collection of assets. ArcGIS Indoors was chosen to map indoor spaces and bring together asset data, indoor spaces, and the CMMS.

By leveraging Esri solutions, Raleigh Water was able to generate 2D and 3D representations of its facilities, connect asset data to location, and integrate with the utility's CMMS. Work activities generated in the CMMS are displayed within the ArcGIS Indoors app, allowing maintenance staff and facility operators to have a real-time view of ongoing maintenance activities. The shift from a tabular inventory to a detailed visualization has provided personnel a real-time view of upkeep activities, supporting budget decisions for maintenance and capital improvements. ■

Return on Investment

- Replaced fragmented tabular records, enabling precise asset identification and location
- Improved maintenance planning and execution
- Saved time and money using routing and real-time navigation
- Increased utilization of space within facilities
- Improved safety and situational awareness
- Enhanced budgeting and capital improvement planning

“ArcGIS Indoors is an exciting solution that allows users to experience and develop [one of] the next advancements of GIS, indoor mapping. This powerful solution allows Raleigh Water to maximize the potential of GIS by combining spatially [contextualized] assets and real-world building spaces.”

—Charles Lee Kimmel, Technology Analyst, Raleigh Water



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Work and Performance Optimization

For water and wastewater utilities, optimizing facilities by integrating work and performance is critical to achieving safety and long-term sustainability. Facilities such as treatment plants, pump stations, and booster stations contain complex networks of vertical assets that must work together seamlessly to deliver essential services. Many utilities manage these environments with limited spatial visibility, relying heavily on operator expertise and manual processes. By integrating facility mapping, asset inventories, and maintenance workflows into a unified GIS-based platform, utilities can connect operational tasks directly to the assets they affect, enabling real-time tracking, routing, and performance monitoring. This transformation shifts asset management from static lists to dynamic, spatially contextualized systems, allowing staff to visualize equipment in its exact location, understand operational relationships, and make faster, more informed decisions.

The business value of this integration is amplified when combined with advanced technologies such as 3D modeling, digital twins, and reality capture. These tools create highly accurate representations of facilities, enabling operators to see work orders, inspections, and maintenance history in context from the field or inside a plant. Leveraging indoor mapping, staff can navigate complex environments more efficiently, locate critical safety equipment instantly, and collaborate across departments using a shared operational view. Linking these models to computerized maintenance management system (CMMS) and other operational systems ensures that performance data, maintenance records, and asset conditions are accessible in one place, reducing downtime, improving safety preparedness, and streamlining workflows.

Optimizing facilities through integrated work and performance management provides utilities with a unifying framework that connects people, data, and operations. It enhances asset visibility, supports predictive maintenance, and strengthens decision-making for capital improvements. This approach not only fills a long-standing gap in facility management but also lays the foundation for ongoing innovation, scalability, and resilience. With a robust system in place, utilities can adapt to evolving demands while maintaining high service quality and operational excellence.

The advantages of integrating work and performance management with GIS are clearly demonstrated in real-world utility operations. The following case study from SCV Water illustrates how a unified GIS-based approach can break down silos, streamline workflows, and empower staff to optimize both linear and vertical asset management. ■





Case Study

A Unified Approach to Asset Management

Transforming SCV Water's Management of Linear and Vertical Assets



Santa Clarita Valley Water Agency (SCV Water) was formed by a merger of three retail water agencies and one wholesale agency. Staff faced a significant challenge following its formation, as each agency brought distinct practices for managing assets and infrastructure. These disparate approaches created a fragmented environment in which asset information was scattered across various systems and used different formats and processes.

SCV Water implemented Esri ArcGIS technology as a unified framework to manage linear assets, such as distribution and transmission networks, with the goal of streamlining processes and enhancing data integration. This included adopting Esri's ArcGIS Utility Network for linear asset management. It also presented an opportunity to extend the technology's capabilities to vertical assets. However, the project team soon realized that the stakeholders managing vertical assets differed significantly from the GIS experts typically responsible for linear assets, requiring a tailored approach to ensure successful implementation.

To address this challenge, SCV Water partnered with DCSE to develop GEAR ("GIS-enabled asset registry"), a user-friendly solution tailored for non-GIS professionals. GEAR empowered asset managers with limited GIS expertise with an intuitive, web-based interface. Users can view, locate, and interact with assets across over 90 pump stations, more than 60 tank sites, and over 50 wells. The solution provides stakeholders

with access to critical information, streamlining workflows and enhancing team collaboration while significantly improving operational efficiency. ■

“The adoption of [ArcGIS] Utility Network has allowed us to not only streamline the management of our linear assets but also extend these powerful capabilities to vertical assets. With GEAR, our non-GIS staff can manage these assets without needing to know GIS. The integration of 3D visualization and drone-based reality capture gives us a truly comprehensive view of our facilities, helping transition and empower our next generation of water professionals.”

—Cris Pérez, Director of Technical Services, SCV Water



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GIS + BIM to Operationalize Facility Management

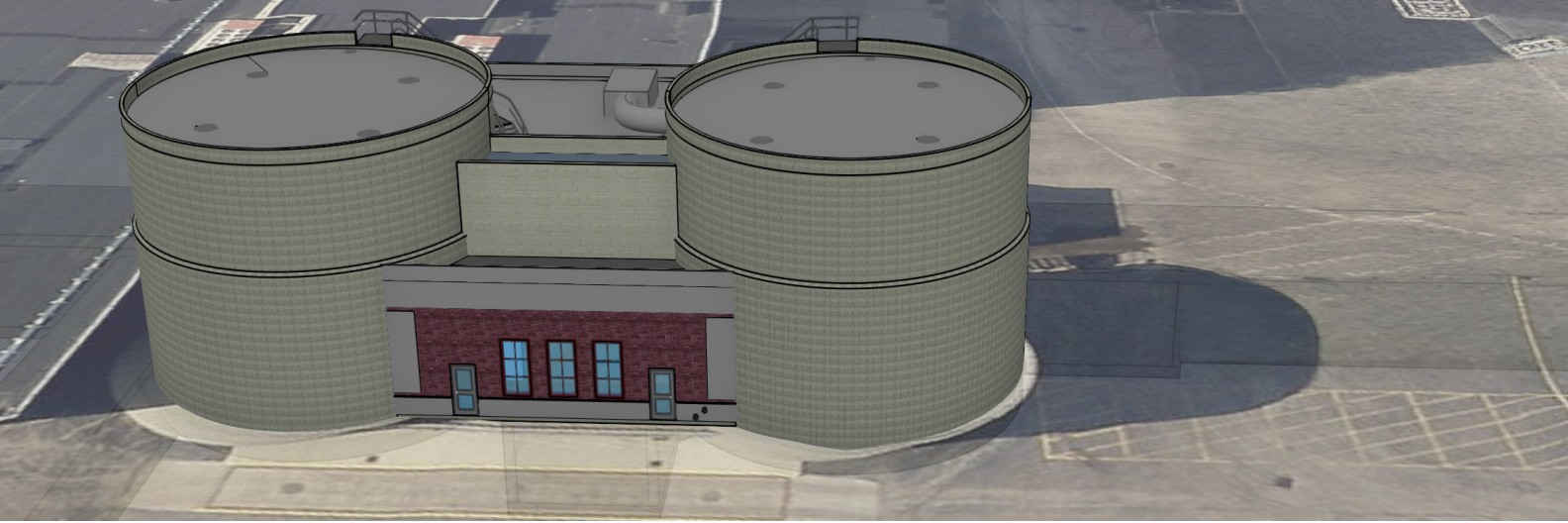
Complex facilities such as treatment plants, pump stations, and lift stations contain numerous interconnected vertical assets. Without accurate, accessible, and integrated information, project teams risk delays, errors, and costly redesigns. By adopting modern, GIS-centric solutions that integrate asset data, 3D modeling, and intuitive visualization tools, utilities can streamline project planning, execution, and maintenance workflows. These technologies provide a single source of truth for asset information, eliminating the need to search through disconnected systems or outdated paper records. They also enable stakeholders to see how proposed design changes interact with existing infrastructure, identify potential conflicts early, and make informed decisions that prevent unnecessary rework.

The use of building information modeling (BIM) and GIS integration creates highly accurate digital representations of facilities, linking assets directly to operational records, maintenance histories, and design documents. This allows project teams to quickly access all relevant information, not only reducing time spent on data gathering but also improving communication between internal staff, contractors, and consultants. Similarly, intuitive, web-based platforms tailored for nontechnical users ensure that all stakeholders, from operations to engineering, can efficiently locate, manage,

and update asset data. This democratization of access strengthens collaboration, enhances quality control, and ensures that asset hierarchies and component details are consistently maintained.

By consolidating linear and vertical asset management into unified systems, utilities remove silos, improve data accuracy, and create a foundation for predictable project outcomes. The ability to visualize assets in 2D and 3D, integrate reality capture, and link directly to maintenance and operational systems empowers teams to anticipate issues and optimize resource allocation. It also helps accelerate project delivery. These integrated approaches reduce the risk of costly rework, shorten project timelines, and enhance operational readiness while delivering both immediate and long-term business value for water and wastewater utilities.

The advantages of integrating 2D/3D visualization and BIM-enabled workflows into facility and asset management are best understood when seen in practice. The following case study from Milwaukee Metropolitan Sewerage District illustrates the benefits of integrating BIM and GIS to optimize workflows, improve data accessibility, and lay the groundwork for a future driven by digital twins. ■



Case Study

Integrating GIS and BIM Transforms Plant Management at MMSD

For senior construction manager Megan Dressel, finding and compiling information for a pump replacement project at Milwaukee Metropolitan Sewerage District's South Shore water reclamation facility (WRF) was time intensive and challenging. She spent many hours visiting the WRF's records library to find older hard-copy operation and maintenance documents, as well as searching huge databases for other asset information.

Although MMSD has a comprehensive ArcGIS Enterprise system for horizontal assets (e.g., sewer system), the organization relied on 2D drawings and paper-based workflows to support over 14,000 vertical assets in 120 buildings and structures at its two water reclamation facilities.

Staff identified the need to establish accessible WRF data, improve digital-based workflows, and create mobile-friendly solutions to reduce operating costs, avoid data silos, and facilitate underground and aboveground vertical asset life cycle management.

MMSD staff developed a WRF building information modeling vision to address their needs. Autodesk software and Esri software were used to bring their vision to life. Staff now have access to a three-dimensional Scene Viewer application displaying equipment, including links to related information. This has resulted in greater efficiency and accuracy, established an authoritative source of information, enhanced access to related data, and strengthened communication.

The pump replacement project that Dressel was working on has since been modeled and is included in MMSD's South Shore WRF BIM. The next time there is a project in that building, Dressel won't have to spend hours looking for asset data; it will all be accessible with a few clicks. ■

Return on Investment

- Enabled proactive asset management
- Reduced project risks and costs
- Improved access to information
- Increased stakeholder engagement
- Created long-term value with a solution that supports ongoing modernization and integration with business systems

“Integrating BIM and GIS at MMSD helps drive smarter asset management of our water reclamation facilities, reducing project costs, improving emergency response, and proactively preparing our organization for a digital twin future.”

—Emily Champagne, GISP, Geospatial Services and Solutions Manager, Milwaukee Metropolitan Sewerage District



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Scaling to Digital Twins

The business value of digital twins for water and wastewater utilities is evident across the industry. Digital twin technologies enhance operational awareness and efficiency by providing real-time, context-rich visualizations of facilities. Staff can navigate complex indoor environments quickly, visualize asset locations and relationships in 2D and 3D, access operational manuals and maintenance history instantly, and plan work before arriving on-site.

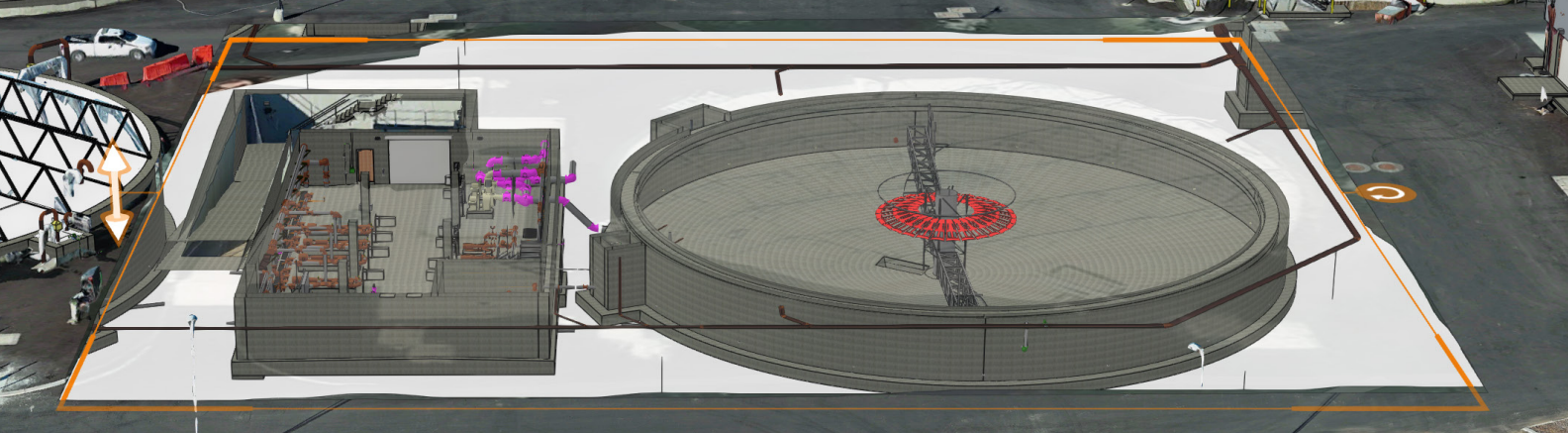
This results in faster decision-making, reduced downtime, and improved productivity. Digital twins also preserve and transfer institutional knowledge by capturing detailed asset and facility information that was previously only known to experienced staff, reducing training time, minimizing reliance on individual expertise, and ensuring continuity of operations. Safety and security are improved through proactive management, with indoor maps showing emergency equipment and evacuation routes, enabling remote assessment of hazardous areas and supporting rapid response.

Asset management and maintenance are streamlined through integration with systems like SCADA, CMMS, and BMS, allowing direct linking of spatial assets to maintenance history, operational status, alarms, environmental conditions, and work orders. This also allows modeling connectivity without mapping every line and enables predictive maintenance. Reduced costs and optimization of asset life cycles are a direct benefit of integrating critical business systems.

For planning, design, and construction, digital twins combine BIM models, drone imagery, laser scans, and GIS layers to monitor progress, provide contractors with verified infrastructure locations, and support design accuracy, thereby reducing delays and risks. Cross-departmental collaboration is strengthened as unified platforms connect operations, engineering, IT, and management. Access to a single source of information facilitates shared situational awareness and coordinated decision-making.

Scalability and future-readiness are key benefits, with many utilities viewing digital twins as a foundation for innovation. Implementing digital twins at scale centralizes and visualizes complex infrastructure data in interactive, spatially accurate formats; bridges the gap between physical and digital worlds; transforms operations from reactive to proactive; and lays the groundwork for smart utility systems capable of integrating the Internet of Things (IoT), predictive analytics, and real-time monitoring.

Digital twins reveal their greatest value when utilities put them into practice at scale. The following case studies highlight how leading utilities are leveraging digital twin technology to enhance operational efficiency; preserve institutional knowledge; and build smarter, more resilient infrastructure. Explore how organizations like Clark County Water Reclamation District and Gwinnett County Department of Water Resources are turning the promise of digital twins into real-world results. ■



Case Study

Clark County Water Reclamation District Transforms Wastewater

Operations with ArcGIS Indoors and Digital Twin Technology

Clark County Water Reclamation District (CCWRD) is Nevada's largest wastewater agency, serving more than 260,000 accounts across southern Nevada, with over 2,400 miles of pipeline and six treatment facilities.

While CCWRD had long relied on GIS for utility mapping, the organization needed deeper visibility into indoor environments and a way to integrate diverse spatial data sources. By adopting ArcGIS Indoors and expanding the use of Esri's 3D and imagery tools, CCWRD is building a comprehensive digital twin of its flagship treatment facility, enhancing safety, operational efficiency, and cross-departmental collaboration.

CCWRD implemented a modern, multisource geospatial workflow centered on Esri technology. At the core of this transformation is ArcGIS Indoors. It enables detailed interior mapping, wayfinding, and real-time employee location and routing, greatly enhancing staff navigation and collaboration. Site Scan for ArcGIS was used to process drone imagery, providing up-to-date visualizations of construction progress, while high-resolution terrestrial laser scans and BIM data from Autodesk Revit are integrated into ArcGIS Pro for precise spatial detail and visualization. These technologies collectively support the creation of a digital twin of the Flamingo Water Resource Center, offering a unified, interactive representation of the facility. This digital twin initiative promptly delivered significant benefits, including improved staff navigation, enhanced safety and security awareness, stronger IT infrastructure management, better visualization of construction and site conditions, and increased operational efficiency. ■

Return on Investment

- Improved staff navigation and onboarding
- Enhanced safety and security
- Optimized IT infrastructure management
- Increased cross-departmental collaboration
- Reduced maintenance costs
- Maximized the use of existing BIM assets
- Created a foundation for smart infrastructure

“By integrating ArcGIS Indoors, drone imagery, BIM models, and laser scanning into a single unified environment, we're giving our teams something we've never had before: a precise, living digital picture of our facilities. It marks a major step forward in how we manage and visualize critical infrastructure, and it's opening the door to a smarter, more connected future.”

—Jason Hall, GIS Supervisor,
Clark County Water Reclamation District



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Case Study

Gwinnett County Explores Benefits of Digital Twins at Pump Station

On top of challenges related to maintaining and upgrading a vast network of mains, pump stations, and treatment facilities, Gwinnett County Department of Water Resources (GCDWR) has an operations and maintenance workforce that is approaching retirement. Outgoing staff often possess decades of institutional knowledge of system operations and asset locations at GCDWR facilities. Managers and new staff need modern tools to operate, monitor, and locate assets for maintenance when personnel with embedded, experienced-based proficiency and awareness retire.

To preserve institutional knowledge and better serve staff, GCDWR and KCI Technologies engaged in a joint pilot project to assess both the ArcGIS technology-based digital twin development process and the value of the solution.

An ArcGIS technology-based digital twin has enabled operations managers and staff to locate and monitor assets within a rich 3D, spatially accurate environment. It can also be incorporated with work management systems, allowing staff to identify the location and specifications of assets prior to visiting the site. With data available via a web browser, digital twins enable access to information 24/7 on the user's platform of choice, including desktop, tablet, or mobile devices. Dashboard metrics provide valuable insights that can be used to reduce maintenance issues, extend asset life cycles, and achieve new levels of optimization.

Throughout the pilot project, GCDWR staff members gained insight into how to leverage the benefits of 3D GIS to enhance their asset management programs. ■

Return on Investment

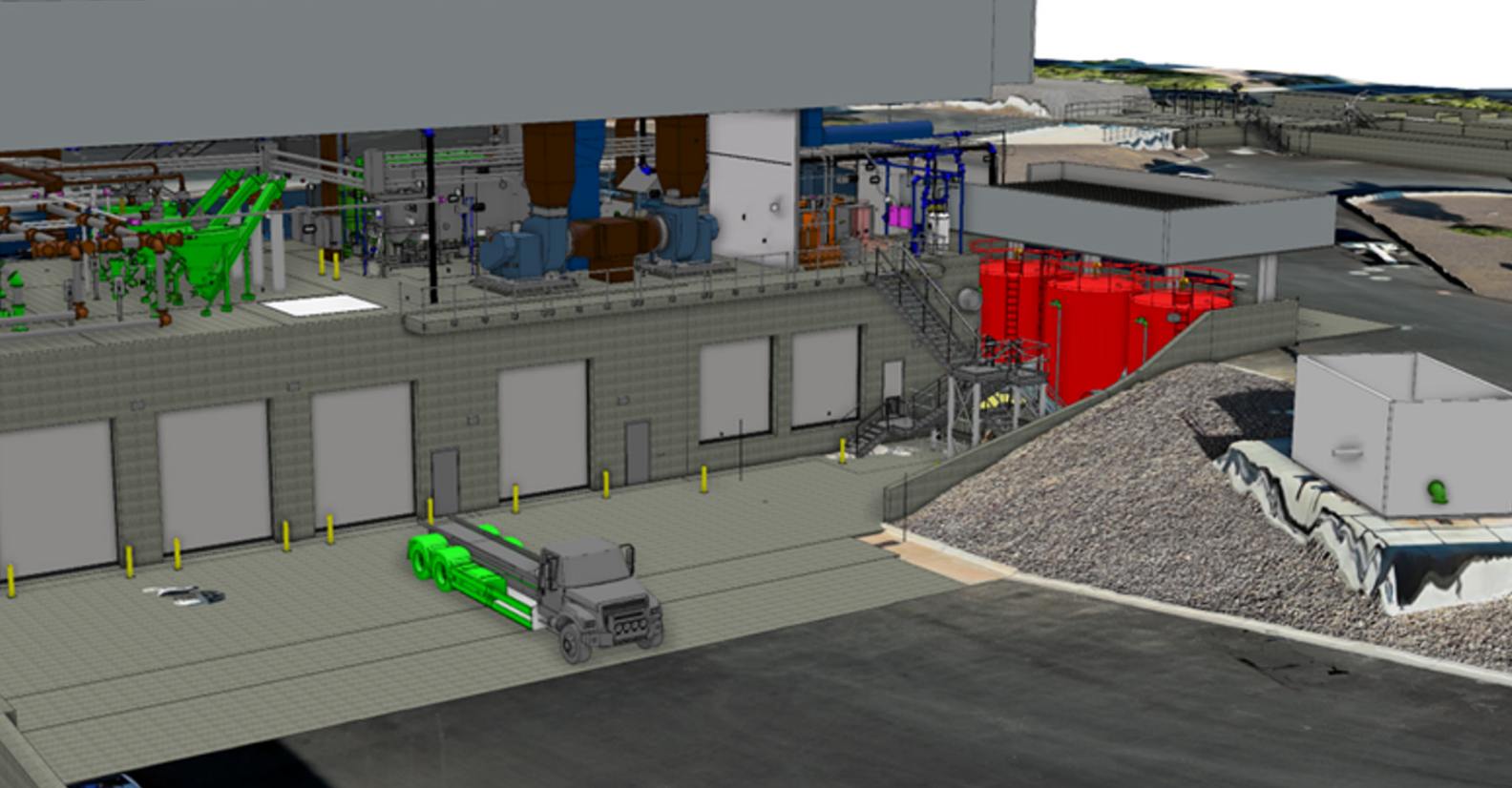
- Preservation of institutional knowledge amid workforce transition
- Reduced downtime and improved reliability at plants and pump stations
- Improved safety, security, and emergency response
- Elimination of data silos between engineering, operations and maintenance, and IT/GIS

“The model that was produced by KCI Technologies during this project proved that this type of information is not just for design engineers anymore. The model, as detailed and as complex as it is, can be made available in the field to frontline employees who benefit from it the most.”

—Charlie Roberts, Deputy Director,
Gwinnett County Department of Water Resources



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ArcGIS—Leveraging Geospatial Technology for Facility and Vertical Asset Management

Across the water and wastewater industry, modernization is redefining how utilities manage their most complex and critical environments. From treatment plants and pump stations to buildings and vertical assets, success increasingly depends on a unified, intelligent platform that connects people, data, and operations. ArcGIS provides that foundation.

ArcGIS enables utilities to establish an authoritative, spatial system of record for facilities and assets, bringing mapping, analytics, asset context, and collaboration together in a single enterprise platform. By consolidating facility data into a geospatial environment, utilities eliminate silos; replace manual and paper-based workflows; and ensure that every team operates from a shared, trusted source of truth. Assets can be visualized in 2D, 3D, and digital twin environments, delivering the spatial context needed to improve decision-making, operational awareness, and safety.

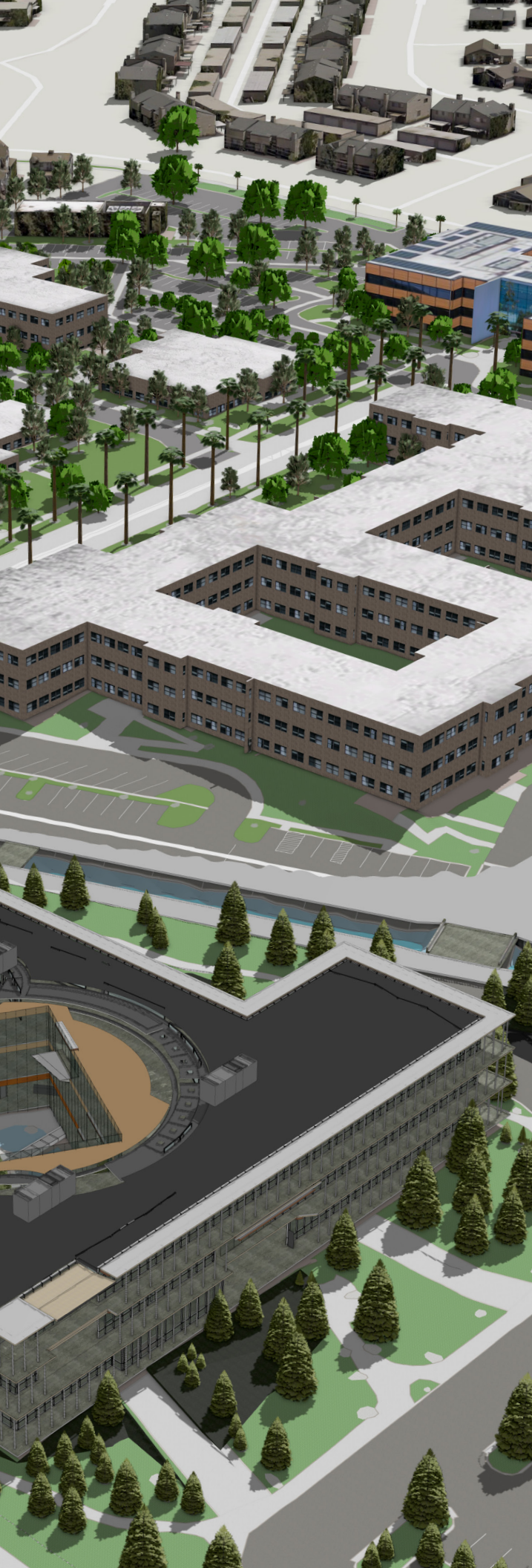
As an open and interoperable platform, ArcGIS seamlessly integrates with CMMS, SCADA, IoT sensor, CAD, BIM, and reality capture technologies. This allows utilities to connect maintenance history to asset location, link real-time operational data to facilities, and align design and construction data with

operations. The result is improved capital planning, more efficient maintenance, reduced downtime, and greater confidence in investment decisions.

ArcGIS also strengthens collaboration across the organization. With indoor mapping and advanced visualization, staff can navigate complex facilities, locate assets and safety equipment, and respond more effectively to incidents. Operations, engineering, IT, and leadership share a common operational picture, bridging the gap between physical infrastructure and digital systems.

Ultimately, ArcGIS is more than a technology platform; it is a strategic enabler. It allows utilities to preserve institutional knowledge, scale innovation, and prepare for a future in which using digital twins, predictive analytics, and automated workflows becomes standard practice.

By adopting ArcGIS as the enterprise platform for facility and vertical asset management, water utilities can move from reactive management to proactive leadership, meeting today's demands while laying the foundation for what comes next. ■



About Esri

Esri, the global market leader in geographic information system (GIS) software, location intelligence, and mapping, helps customers unlock the full potential of data to improve operational and business results. Founded in 1969 in Redlands, California, USA, Esri software is deployed in hundreds of thousands of organizations globally, including Fortune 500 companies, government agencies, nonprofit institutions, and universities. Esri has regional offices, international distributors, and partners providing local support in over 100 countries on six continents. With its pioneering commitment to geospatial technology and analytics, Esri engineers the most innovative solutions that leverage a geographic approach to solving some of the world's most complex problems by placing them in the crucial context of location.

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