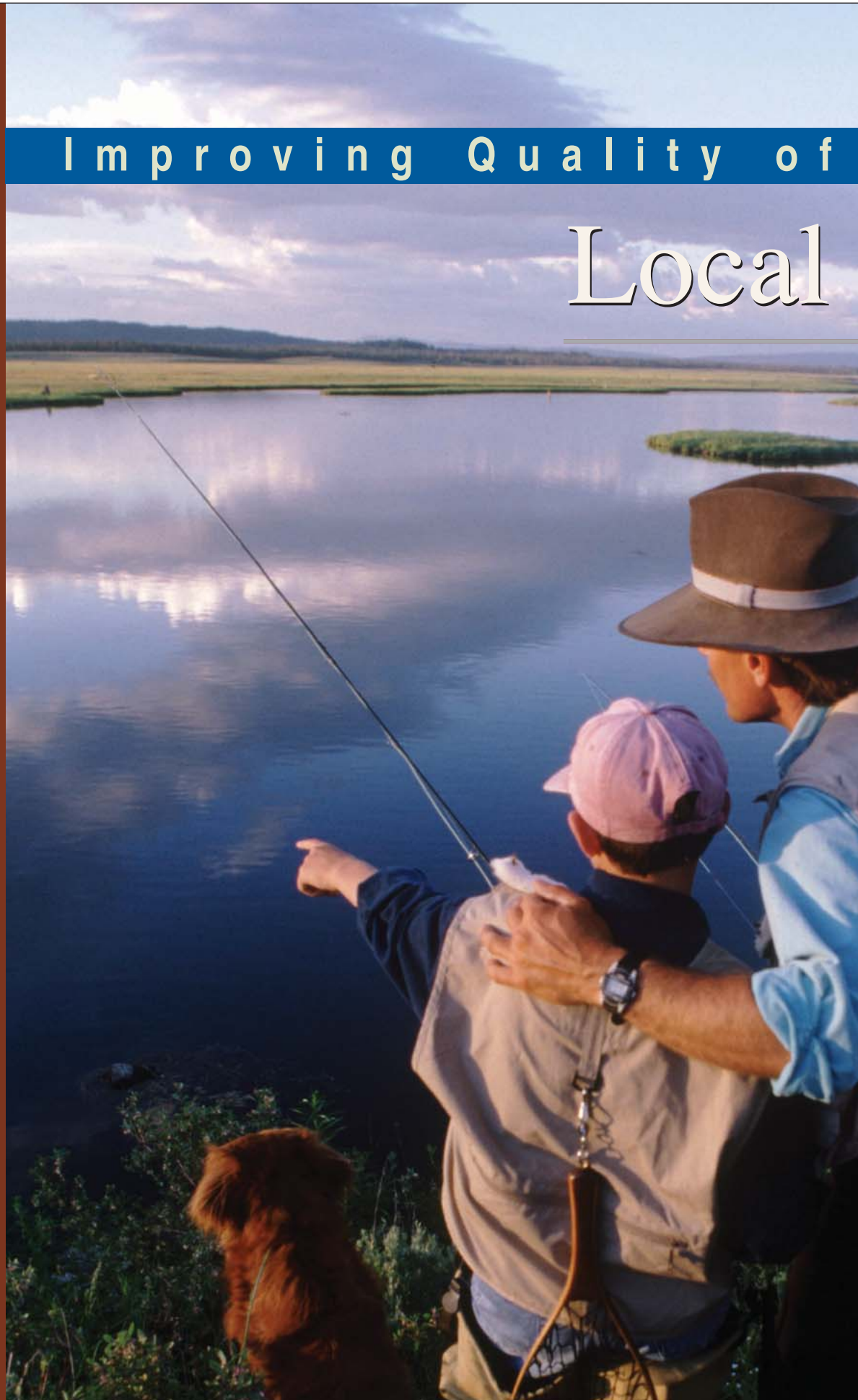


Improving Quality of

Local





Life

Expertise Nationwide

Improving the quality of life was the founding vision of Clinton Burns & Robert E. McDonnell. Over a century ago, they set up shop providing basic water and power services to Midwestern U.S. communities.

Today, Burns & McDonnell is helping clients improve the quality of life in ways our founders never imagined.

Securing Critical Assets

Security for municipal utilities is a modern-day concern. And securing critical infrastructure is a challenge facing cities in the U.S. and around the world.

Recent incidents underline the danger. In early October 2004, two American Transmission Company electrical transmission towers near Milwaukee, WI, fell after a saboteur removed supporting bolts. The effect caused a temporary loss of service to 17,000 residents — and to the international airport. The Department of Homeland Security has also reported several attempts to tamper with towers in the Northwest.

For Burns & McDonnell client JEA, the electric utility for a large portion of northern Florida, protecting critical transmission assets is particularly daunting. The JEA system includes more than 500 miles of transmission lines in the city of Jacksonville alone, and serves a busy port and naval base.



St. Louis and Atlanta BMcD offices teamed to solve the problem. Tobias Whitney, Critical Infrastructure Security practice leader, along with security expert Quinn Hill (STL), partnered with Atlanta office transmission specialist Art Smith. Working with other experts throughout the company, they developed a plan to harden JEA's transmission assets and to identify federal funds to implement security-related technology.

Technological Defenses

“JEA is interested in new technology,” says Whitney, program manager for the JEA T-line security project. “They are constantly seeking new methods to provide the most reliable services. We’re helping them develop cutting-edge solutions for infrastructure security.”

Components of the JEA program have included new technology for mobile and metro-based WI-FI service, aerial surveys of JEA transmission lines for GIS mapping, and interviews of system vendors. “We’re addressing operational, cyber, and physical aspects of security,” Whitney says. “For example, there are products such as infrared video cameras that can see for several kilometers, even in fog or darkness.” Cyber security measures are also being developed to protect SCADA systems — one of the most serious areas of vulnerability.

Advancing Research

Scientific research may hold the biggest promise — and biggest challenge — of our age. The need for medical, biochemical, and other specialized lab facilities is rapidly growing. Burns & McDonnell is designing sterile product production labs, as well as labs for medical, chemical, biological, silicon wafer, and avionics research. Clients include Searle, Monsanto, Tyco/Mallinckrodt, IBM, U.S. Air Force, NASA, and Boeing.



Two recent projects include a new \$10 million forensic lab for the St. Louis Police Department and a new Biosafety Level Three Laboratory (BSL-3) for the county of San Diego, CA.

“Probably fewer than 5 percent of the laboratories built in this country meet BSL-3 standards,” says Gerry Williams,

“From the first day of working with Burns & McDonnell, I was impressed with their professionalism and cooperation.”

***Mr. Steve Durban,
Project Director,
Searle/Pharmacia***

a Burns & McDonnell expert in critical environments and project manager in the St. Louis office. “BSL-3 labs are required for handling dangerous or exotic agents that can cause serious or even lethal disease through

inhalation, such as Mycobacterium tuberculosis, West Nile virus, yellow fever, and anthrax.”

Award-winning Performance

Burns & McDonnell lab facilities are winning design and construction awards, including a Consulting Engineers Council Engineering Excellence Award for work on the

Memorial Veterans Hospital’s nuclear medicine research lab in Columbia, MO. The lab expansion project included glassed-in clean rooms that allow researchers to safely work with radioactive materials in a mixed-use facility.

The lab work quality-of-life payoff is big — better treatments for cancer, better protection against bio-terrorism, improved methods of crop production, more powerful defense — even potential applications of nanotechnology that could change medicine as we know it.

21st-Century Transportation

From a window near the top of Chicago’s Sears Tower, the lights of the city stretch farther than the eye can see. A daily torrent of commuters stream to downtown Chicago via highways, tollways and Metra Rail. Nationwide, population growth is creating similar transportation challenges.

Faster Flow

In Chicago, Burns & McDonnell is helping keep traffic moving — by assisting with planning and design of open road tolling throughout the Illinois tollway system, helping revamp the expressway system, and providing services to Metra Rail.



Open road tolling will allow Illinois “I-Pass” holders to move through toll points more quickly. As project manager, Burns & McDonnell is overseeing retrofit of 11 existing toll plazas and construction of nine new plazas — all within the existing right-of-way.

For Chicago’s Dan Ryan Expressway, one of the largest ongoing transportation projects in the U.S., Burns & McDonnell is overseeing 30 separate contracts totaling more than \$117 million. The work includes installation of new lighting and surveillance, removal and replacement of ramps and retaining walls and frontage road reconstruction.

“It’s essential to have a local firm overseeing this project,” says BMcD transportation department manager Mike Folta.

IDOT is convinced the Burns & McDonnell Chicago office is the right “local” firm for the project. IDOT chose the Chicago team to receive its annual Exceptional Service Award for a previous project — construction inspection services of the I-55 Franklin Connector to the Dan Ryan Expressway in Chicago’s Chinatown.

Commuting Comfort

In addition to improving traffic flow, Burns & McDonnell mechanical engineering expertise is making Metra repair crews and passengers more comfortable during the biting cold of Chicago winters.



“We’re replacing boilers for steam, improving ventilation, and revamping exhaust systems for welding and other repair operations,” says BMcD project manager Laura Ludwig. Facilities being upgraded include repair terminals, ticketing terminals, and passenger platforms.

Protecting Water Resources

Providing basic services for clean water was one of the cornerstones Burns & McDonnell was founded upon in 1898. That basic human need is still at risk today — even in the United States.

Lower Colorado River Crisis

BMcD client Lake Havasu City, AZ, faced a problem now being repeated in hundreds of other communities. Within two decades, Lake Havasu City, an unincorporated recreation area with few year-round residents, had grown to become a city of more than 50,000. Increased levels of nitrates and other pollutants in the aquifer were traced to the city’s outdated system of septic tanks.

Bob Schulz, Burns & McDonnell Phoenix office manager, helped Lake Havasu City develop a master plan and a campaign for a \$463 million bond issue to pay for the improvements needed. When residents understood that septic tank leakage was contaminating the Colorado River aquifer that runs underneath the city, they overwhelmingly approved the measure.

Widespread Problem

Lake Havasu City's former water quality issue is prevalent along the lower Colorado River. Rapid population growth, inadequate wastewater systems, and increasing levels of pollutants are the rule rather than the exception. Like Lake Havasu City, these communities are projected to see 60 percent population growth by 2020.

"The lower Colorado runs from below the Hoover Dam to Mexico," says Schulz. "It travels through mostly small towns and Indian reservations. All have enormous wastewater issues, and no wastewater systems other than septic tanks."

Finding Solutions

Schulz provides technical assistance to the Colorado River Regional Sewer Coalition (CRRSCo), a nonprofit corporation consisting of local governments, tribal governments, and others concerned with protecting and improving water quality along the Colorado. "This is a huge problem," Schulz says. "More than 20 million residents of Arizona, California, and Nevada take their drinking water from the Colorado River."

The Arizona office performed a study that armed coalition members with facts about the problem. The report documents ongoing nitrite contamination, the exacerbating effects of continuing drought, and the increase in costs resulting from inaction. The report also details a watershed-prioritized, multiyear approach to solving the problem and identifies possible opportunities for funding the solution. In cities across the nation, Burns & McDonnell is also applying the latest in water treatment technology to purify water for drinking (See story pg 6-7).

Aviation Issues — From the Ground Up

Constant changes in the aviation industry require understanding of current issues, creative problem-solving, and the ability to get the job done.

Case in point: Aramco, an oil exploration company, recently upgraded to a 767 jet for corporate travel. That meant

Aramco's private hangar at Bush Intercontinental Airport in Houston also had to be upgraded — with an additional 10,000 square feet of space, a high-expansion foam system, and a five-piece, interdirectional door.

"Aramco needed an engineering firm with knowledge of local contractors and ability to provide a full-time, on-site project construction resident," says Houston office manager John Lionberger. "We were able to provide that."

Emergency Response

On-call engineering expertise paid off when a critical component specified by a subcontractor started showing signs of distress during installation of the new door.

"Late one Friday night, we got an emergency call to get a structural engineer on site immediately," Lionberger says. "The 205-foot-long space frame that makes up the bulk of the structure collapsed as the crew was setting the truss for the new doors. As a crane held the frame in the air, we pored over the plans to find the problem." Burns & McDonnell engineers worked with the original designer to solve the problem, and construction resumed. "This was a case when having local presence saved the client money — and kept a bad situation from getting worse."

Local Know-how

Miami is a city with the grit of a major international port and the glamour of a vacation resort. It is a city that celebrates Latin and Caribbean influence in food, music, and manners. It's also a city where diplomacy is paramount.





“You definitely need local knowledge of how to do business here,” says Miami office manager James Kanter. “In many situations, you have to be sort of a diplomat.”

That’s been especially true of Burns & McDonnell involvement in the \$5 million Miami International Airport South Terminal Project. The project, under direction of BMCD project manager Ronald Colas, is a three-story, steel-clad structure that extends across the Miami skyline like a shining jet wing. In addition to the terminal building itself, the project includes a 140-foot gate-control tower, 15 international gates, roadway realignment, modification of civil infrastructure, concrete apron, and the premise distribution system for voice and data.

“The design is brilliant,” Kanter says. “It’s a very complex building without a constant shape — the roof interface bends. There were issues that had to be worked out during construction.” To complicate matters, the original AE firm lost the construction-phase engineering services to Burns & McDonnell — a situation that called for all the diplomacy the Miami team could muster.

Diplomatic Tightrope

“Construction was stalled,” Kanter relates. “There were close to 1,000 RFIs outstanding — hundreds of shop drawings with details that needed to be resolved. We needed to interface with the original team that lost against us, without delay. The AE was understandably apprehensive. We had to work very hard to gain their trust, and retained two people from the original team’s office to serve as a bridge.”

Construction had begun in July 2001, but the Burns & McDonnell team was not involved until March 2004. “We developed a work plan for an initial three-month ramp-up effort to allow us to catch up on the ongoing project,” says project manager Colas. “Then we got the project under control. Our local office team was effective because of the support provided by the entire Burns & McDonnell Aviation Group. Our project approach has now been adopted as a model by the Miami-Dade Aviation Department for other upcoming projects.”

