Turning challenge into opportunity

ch2m SM

Where will our story meet yours?

At CH2M, we're excited by tough challenges — the tougher they are, the more excited we get. We love to take on our clients' most complex infrastructure and natural resource problems, turning them upside down and inside out, solving them in ways nobody has thought of before. Together, we create new pathways for human progress, breathing fresh life, energy and enterprise into every community we touch.

Our partners and clients include governments, cities and businesses in more than 50 countries. To meet their biggest challenges, we tap deeply integrated capabilities across our organization — in transportation, water, environmental, nuclear, oil & gas, industrial and urban environments. And we draw on the exceptional skills and creativity of 25,000 teammates with an outstanding track record of expertly executing projects both big and small.

We love what we do, but we care just as much about how we work. Deep respect for our family of employees, our clients and the communities we serve guides us at every step. We aim to meet each day with integrity, an adventurous spirit and dedication to the well-being of people in our lives and work.

Moving ahead, step-by-step

At CH2M, we naturally take pride in the projects we deliver, but we never forget what our work is really about: clean water to drink, affordable energy, sustainable cities for families now and in the future, more closely connected communities and so much more. Every project we take on is a chance to move the world forward one more step, and we think that's an incredible privilege.

What are your challenges? Side-by-side, we can solve them.

At CH2M, everything starts with building relationships of trust and confidence, and with complete commitment to our clients. We begin by listening, by truly knowing our clients and their goals. We take their needs and challenges and make them our own. We anticipate obstacles and spot new opportunities. Above all, we focus all our knowledge, skill and creativity on what our clients need to achieve — big or small, complex or straightforward — and help them find a way to get it done.

Visit www.ch2m.com/who-we-are/company-facts to learn more.

Many clients, many skills, many places

We partner with governments, communities, businesses and organizations all over the world.

Click on any circle to learn more.

Ready when needed for a valued partner

The Shah Gas Development in the United Arab Emirates may be an unprecedented effort to develop very difficult "sour" natural gas, but, for us, it's also the story of a strong and lasting partnership.

To provide energy for the UAE's rapidly growing economy and population, Al Hosn Gas, a joint venture between the Abu Dhabi National Oil Company (ADNOC) and Occidental Petroleum, set out to develop the vast Shah gas field, located in the remote desert about 130 miles (210 kilometers) southwest of Abu Dhabi City. The idea was visionary from the start. Gas from the Shah field is incredibly sour, meaning it has a high sulfur dioxide content and requires extensive processing before it can be used to generate electricity.

No one had ever attempted a sour gas project of this size and complexity before, and it faced a range of unique challenges. That's where CH2M stepped up. "I'm very happy that we were able to be there from day one to support Al Hosn Gas," says Alex Shakarchi, CH2M's Deputy Regional Manager for the Middle East, North Africa & India. "We've been working with the ADNOC group for almost two decades, and we've always been close to them." Working hand-in-hand with Al Hosn Gas, Alex and the CH2M team provided program management expertise, technical know-how and the benefit of our deep relationships and experience in the region to help get this critical project under way.

Ultimately, we performed program management consulting for six out of nine of the EPC (Engineering, Procurement and Construction) packages awarded by Al Hosn Gas. The Shah Development is now complete and the new facility is producing natural gas to power the homes and businesses of the UAE.

"I truly believe that because of CH2M's relationship with ADNOC we were able to support them and meet so many challenges together and ultimately get the project completed.

And the other thing that makes me very proud is that in 50 million hours of work, we had not one Lost Time Injury. This is truly an amazing achievement for everyone."

—

Alex Shakarchi

The world's largest sour gas project

11,000 Olympic-size swimming pools could be filled with the 1 billion ft^3 (28 million m^3) of sand moved

2+ Golden Gate Bridges could be built with the 200,000 tons of steel used

Energy for a growing population

With a population that has almost tripled in the past decade, the United Arab Emirates has targeted energy diversity and sustainability as the key to promoting economic and social growth and development. They can't let the extra complexities associated with sour gas stop their progress.

At CH2M, we know it's a direct connection: we help solve daunting technical and engineering challenges in a remote sour gas field, and that translates into affordable electricity and a strong economy for people and families.

Excited by the challenges we tackle. Inspired by the opportunities we see.

Our people are the secret to our strong history of firsts. Hard problems energize us, and fresh solutions delight us. If we have to invent new tools, methods and processes to find a solution, so much the better! This approach has defined us for more than 60 years, and it will drive us for the next 60 and beyond.

People who think and work this way come to CH2M because we prize those traits, and they find kindred spirits here. Close collaboration among so many skilled and creative problem solvers gives us the power to safely and successfully execute almost any client project.

Syinyi Phoon

Syinyi Phoon joined CH2M in 2013 as a Senior Hydrologist. She is currently an Innovation Programme Coordinator for Transcend on the UK's Crossrail railway program.

Syinyi Phoon's basic passion to fix things took her from her native Malaysia halfway across the world to Birmingham, UK, where she studied the effect of climate change on river flows for her PhD in civil engineering. After several years working as a hydrologist, her current role on Crossrail's Innovation Programme is a distinct change. "We gather ideas from the bottom up," she explains. "How to do things better, or quicker or safer. And we try to appreciate what they are, nurture them and champion them if they're worth it."

Syinyi came to CH2M from a much smaller firm. "People told me that in a bigger company I would only be a number," she remembers. "And that wasn't true at all. That's very cool — the level of friendliness here. If I need help, I know it's not more than a phone call away."

She also discovered that every meeting at CH2M begins with a safety discussion. "I really, really love it because it makes me think. And the more you do it, you realize you become subconsciously more safety aware, and it's contagious."

Dyan Foss

A geologist by training, Dyan started at CH2M in 1997. She is Global Managing Director of the Nuclear sector.

"I love a blank page," says Dyan Foss. "There's nothing I find more tantalizing." That's exactly what she got when she joined CH2M and was sent to Rocky Flats, Colorado, USA. The project was the first of its kind — the decommissioning of over 700 extremely polluted former nuclear weapons facilities.

Nobody knew exactly how it could be done, and the job was initially estimated to take 70 years. Dyan and her colleagues did it in 10 years, and when they were finished, they had turned Rocky Flats into a wildlife refuge. "I think this work tends to attract hyper-creative people, people who really love to problem solve," Dyan says. "They like nothing more than someone telling them, 'well, that can't be done' or 'that's never been done before.'"

Dyan took the expertise that CH2M pioneered at Rocky Flats to other nuclear decommissioning projects, including Hanford, Washington, USA. When she started at Hanford, a large plume of contaminated groundwater ran along the edge of the Columbia River. "Normally, when you do groundwater remediation, it takes many years to see any changes," she says. "We designed and constructed three new pump-and-treat facilities, and within only about three years, you could see that we were shrinking the plume. I'm a bit of a science nerd, it has to be said, and it's pretty thrilling to see with your own eyes that you're making an impact on the environment — for this generation and for future generations."

Ozzie Gonzalez

Ozzie Gonzalez has been with CH2M for four years. He is the Global Sustainability Director for Industrial & Advanced Technology.

Ozzie Gonzalez says that his childhood, split between urban Los Angeles and rural Mexico, is what led him to earn degrees in environmental science and architecture — he dreamed of blending the benefits of natural environments with built human habitats like cities. "It was very clear to me that nature does not stop because you pave a road through a piece of land," he says.

In his current role, Ozzie drives a broader, deeper understanding of sustainability across CH2M. "I'm trying to give a whole new spin to how we communicate about sustainability, about what it could mean to our clients. For me, innovation can mean not just the next greatest gizmo but giving people a fresh perspective or shining light on something that was previously in the shadows, helping them see an opportunity that really wasn't on their radar previously."

Energizing local economies

At CH2M, we know that our strengths are global, but we're always mindful that our impacts are local. By actively looking to partner with local businesses we can help them create jobs now and build skills for the future.

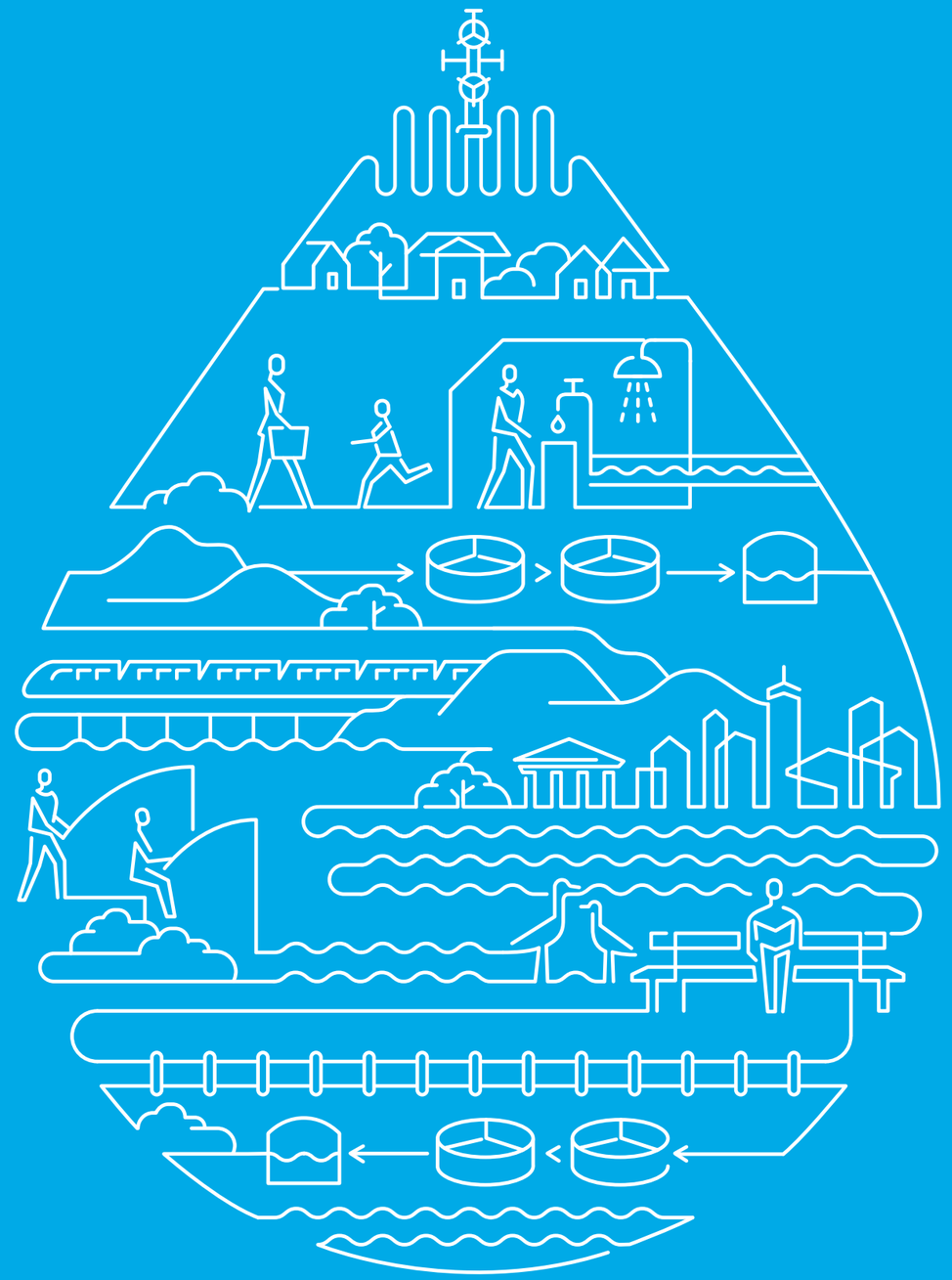
Ozzie Gonzalez works to engage local small businesses as partners in CH2M projects in the Pacific Northwest of the U.S. "In many cases, these are minority-owned, women-owned, emerging businesses. So we're hiring people from within the region where we're working, mentoring them along the way, and helping them come out at the tail end as a stronger company."

"It's those little stories that I know ripple across households and turn into revitalized, more robust local economies. That's a big thing for me — it makes me smile."

Skills to solve the hardest problems.

At CH2M, we've been getting the engineering right for more than half a century, going all the way back to our founding by four passionate problem solvers looking for new ways to tackle water resource challenges. Their dedication to technical excellence has driven every project we've worked on since, and we bring it to every new challenge we take on.

It comes alive in keen attention to detail, an organization-wide sense of ownership of every project and a determination to solve any problem, no matter what. It explains our history of creating new processes and technologies that are now industry standards in many different fields. It's led us to pioneering innovations in safety and in program and project management. It drives us, side-by-side with our partners, to continue setting new standards for project delivery excellence and quality.



Setting a sustainability benchmark

Our four-decade relationship with the Upper Occoquan Service Authority (UOSA) has been an enduring, trusted collaboration that established a global benchmark in the history of water reuse.

CH2M first joined up with UOSA in 1971 when several communities in northern Virginia, USA, discovered their water was at risk. Inadequately treated municipal sewage was seriously degrading the water quality of the Occoquan Reservoir, the most important source of drinking water for more than a million people.

As the engineering consultant for UOSA, we recommended and designed a new system to clean the wastewater to drinking water standards and then release it to the Occoquan Reservoir for reuse. The centerpiece of the plan was a new regional plant using advanced wastewater treatment methods and processes that we developed. The first facility of its kind anywhere, the UOSA plant began operating in 1978, designed to meet the most stringent wastewater treatment requirements in the U.S. It is now considered an industry milestone for purifying wastewater for drinking water and continues to serve as a technology and management model for other water reuse facilities around the world.

As the population served by UOSA grew, we worked alongside the authority to keep pace with the community's needs. We engineered the expansion of the plant's capacity twice, nearly doubling it in the 1980s and then doubling it again in the early 2000s. At each expansion, we also introduced improved water treatment processes, and we continue to work alongside UOSA to maintain and renew the plant and delivery system infrastructure.

Today, the UOSA plant is one of the most reliable sources of high quality water for over a million people in Virginia, providing up to 90% of inflows into the Occoquan Reservoir in times of drought. The water it produces is actually far cleaner than the natural stream water that flows into the reservoir.

Letter in support of CH2M's nomination for the 2015 Stockholm Industry Water Award

"UOSA selected [CH2M] as its engineering consultant in July 1971, and we've had a long, productive, close working relationship ever since. Over our more than 43-year continuous working relationship, CH2M has exceeded our expectations and has not only provided top-quality service, but also demonstrated an unwavering focus on meeting our needs as well as a continual willingness to work as part of a cohesive team."

—

Charles Boepple
Executive Director
Upper Occoquan Service Authority

UOSA by the numbers

1 day + 1 hour — the time it takes UOSA to purify enough water to wrap around the earth in one-liter bottles, laid end-to-end (35 million gallons [132 million liters] per day)

35+ consecutive years of meeting the most stringent water-quality standards in the U.S.

Clean water

More than 700 million people around the world lack a reliable supply of safe, clean water. It's the #1 global risk based on impact to society, according to the World Economic Forum, January 2015.

We've been working to advance the engineering, science and technology of water purification and reuse for more than 60 years. It's in our DNA. We love that some of our most innovative and technologically challenging projects provide this most basic necessity for human health and well-being.

And we know our own work is just one part of a much larger whole — we've sent employees to 25 countries to work on critical infrastructure projects sponsored by Water For People and Engineers Without Borders USA.

Helping a great city thrive.

Like many cities, London faces an imposing list of large, complex infrastructure and sustainability challenges. The city is meeting these challenges with a newly confident spirit, undertaking a range of ambitious projects that are transforming the capital.

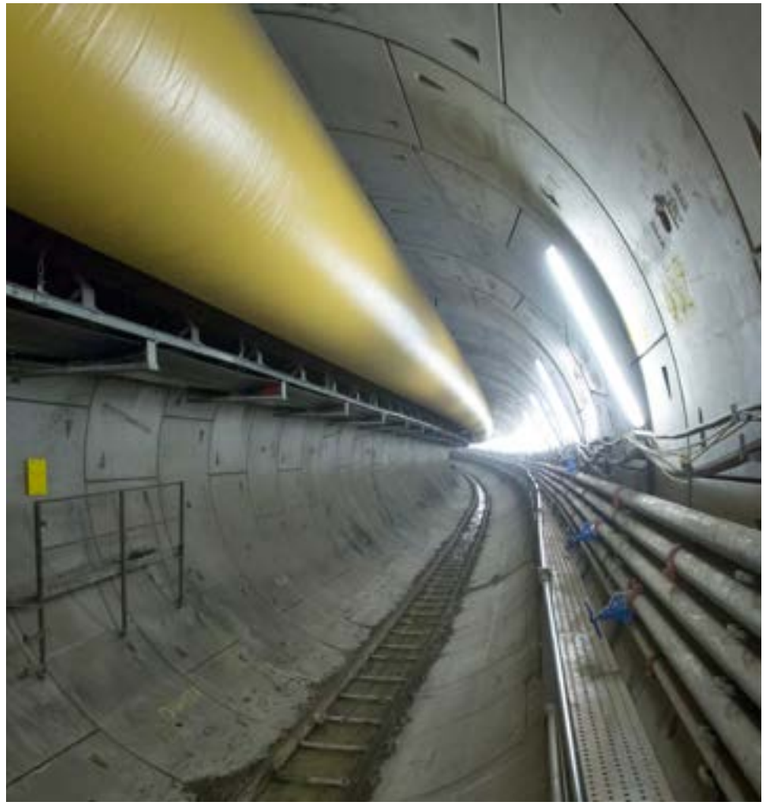
Working on these projects side-by-side with public authorities, partner companies and our neighbors and fellow citizens, CH2M employees are helping to create a vision for London's future and touching the life of the city in many places and ways.

Making connections

At one of those places, Chad Legere is working on **Crossrail**, a project that is just the kind of exciting, incredibly complex opportunity we love. Europe's largest construction project, Crossrail is a visionary new railway linking London and its eastern and western suburbs. "It's key to London's plan to ensure we stay competitive with other world-class cities," Chad says.

Crossrail will build nearly 26 miles (42 kilometers) of new tunnels beneath central London, and that's where Chad fits in. In his fifth year with CH2M, Chad is an Area Business Manager for part of the central tunnel length, responsible for two new tunnel sections and two new stations.

When it opens in 2018, Crossrail will bring an extra 1.5 million people within 45 minutes of central London, ease congestion, reduce automobile traffic and bolster the economy of one of the world's great cities. Chad puts it clearly: "It's about people being able to connect with their work and being able to connect with their families."



Courtesy © Crossrail Ltd

"For me, the biggest highlight is just the sheer scale of it, of this very technically challenging project. It's about being able to continuously think, 'Ok, how can we do this better than we did in the last project or the last underground rail system?'"
—
Chad Legere

Europe's largest construction project

How we're helping

CH2M is key member of the Transcend Programme Partner team, helping Crossrail fulfill its obligations to safely deliver the overall program on time, to the desired standard and within budget.

26 mi (**42** km)
new tunnels

10
new stations

A historic river's cleaner future

Not far from where Chad Legere works on Crossrail, Jim Otta has been working on two other tunnels. A 38-year veteran of CH2M, Jim was until recently the development phase Programme Director for the **London Tideway Improvements**, a fascinating project to literally meld engineering's newest advances with a landmark achievement from its past. The aim: to create a cleaner River Thames and strengthen London's future resiliency and sustainability.

The main structures of London's existing sewers were built almost 150 years ago, in Victorian times, and designed for half the city's current population. "They are a brick arch construction," says Jim with an engineer's keen appreciation. "They are like cathedrals underground, and they are in immaculate condition. But they're out of capacity." As a result, untreated sewage overflows into the River Thames 50-60 times annually, fouling the great waterway that has been the city's lifeblood for 2,000 years.

The London Tideway Improvements project will augment the existing sewers with nearly 25 miles (40 kilometers) of new tunnels beneath London, as well as upgrading London's five major sewage treatment works. CH2M's Peter Shipley is now the construction phase Programme Director for the tunnel projects.

When completed in 2023, the tunnels will dramatically reduce the last major source of pollution in the Thames, bolstering the river's ongoing recovery as an important ecosystem and nursery both for wildlife and for commercial fisheries.

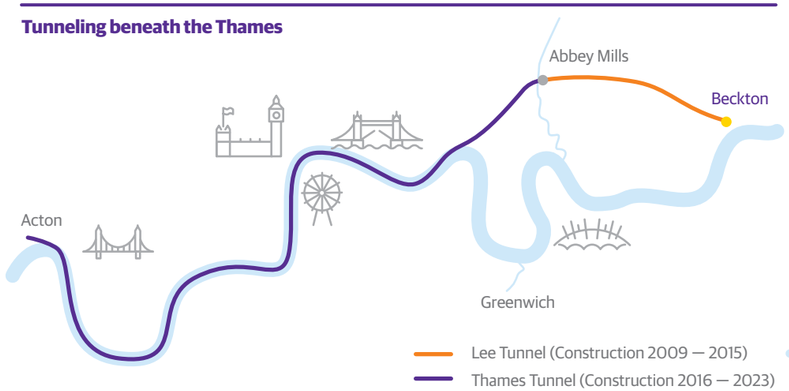
"Many people I've talked to didn't think this project would ever go forward. Just think about trying to get a project of this size built across central London and through 14 different municipalities. But ultimately we reached agreements across the diverse group of stakeholders and the project is now proceeding. That's been probably our biggest accomplishment.

As far as the legacy we'll leave, we're running a number of programs for employment within the boroughs. Several of our construction sites will become new public spaces. In the Thames itself, there should be a return of species that haven't been seen in the river for awhile, and it will help the health of the river overall, and the whole North Sea fishery."

—

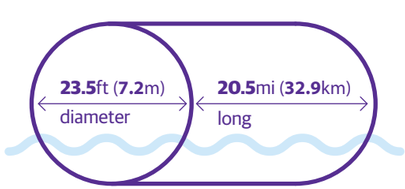
Jim Otta

Tunneling beneath the Thames



How we're helping

As the program management partner for London Tideway Tunnels, the CH2M team is overseeing the planning, design and construction of the tunnels.



A sum greater than its parts

While Jim was helping to get London Tideway Improvements started, Paul Walters was also working near the river at **20 Fenchurch St.**, a new 38-story city landmark widely known as the "Walkie Talkie Building" because of its distinctive and innovative shape, designed by architect Rafael Viñoly. "A unique feature of the building is that it actually curves out towards the top," explains Paul, who was CH2M's Project Director on 20 Fenchurch St. On the top floor, the building houses a public "sky garden," which is irrigated with harvested rain water and recycled gray water, and the structure as a whole has a minimum rating of "very good" on the BREEAM scale, a leading assessment method for sustainable buildings.

How we're helping

For 20 Fenchurch St., CH2M oversaw the intricate structural and facade engineering for the building.

Working beside HS2 Ltd, we are assisting with the develop of the program through until Royal Assent for the planned 140-mile high speed rail network from London to West Midland.

Across town, the London Euston rail station is slated to be the southern terminus of **High Speed 2** (HS2). A CH2M team is already at work on this ambitious program, which will build a high speed rail line from London to major cities in the West Midlands and further north. Scheduled to be fully completed in 2033, HS2 will transform the way people travel across the U.K., significantly cutting travel times, reducing carbon emissions, and adding an estimated 50,000 jobs to the West Midlands economy.

Individually, these projects — and others going on elsewhere in London — are meant to meet specific needs, and each has its own challenges. But together, they add up to a larger vision, a picture of a city transforming. Piece by piece, all across the capital, London is tackling its future, and we're excited and inspired to be helping in so many different ways.

Flourishing cities

As engineers and project managers, we think of our work in terms of tunnels to dig, tracks to lay, water to clean, buildings and bridges to build, and the many other intellectual challenges that always delight us.

But we are also neighbors and members of our communities, and we need to see the purpose behind what we build. Better transportation, a cleaner environment, healthier public spaces, more sustainable infrastructure — these things knit communities more closely together, improving economic and social opportunities for everyone.

Click here to watch our video

Working side-by-side with partners all around the world, we are laying the foundation for human progress by turning challenge into opportunity.

Visit us at **www.ch2m.com** to learn more.

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