

# FOUR MEN IN THE GROUND

## OBSERVATIONS ON PUBLIC WORKS STAFF REPLACING A 50-YEAR-OLD WATER MAIN VALVE

By Kathleen Baxter, City of Everett public works public information officer. Author's note: Thanks to industry commitment and adherence to robust safety practices, including preconstruction safety planning, lock out-tag out and controlled energy release, working conditions for Public Works crewmembers is the safest it's ever been. This account of a real crew is dedicated to all those who do this difficult work.

### IN A HOLE 12 FEET DOWN

As I stand at street level, looking down into scaffolding and shoring, the men lower themselves one by one into the hole. Not long past the crack of dawn on a dry spring morning, the temperature is colder than I want it to be. The forecast the day before promised low 60 degree temps; at 7 a.m., it's only 48 degrees. I start to shiver in my thin jacket within minutes.

The guys don't seem to care. Their arms bare past the short sleeve, they give no indication that weather is of concern. Once in the hole, the tempo of their movement and the tenor of their voices picks up. The dozen or so other guys up street-side jockey for position around the edges of the excavation, eyes and ears attuned to the activity in the hole.

A single man sits in the excavator, ready to operate the machine when needed. Others scurry here and there, ferrying tools and supplies. A notable some stay in one spot, their specific task to ensure a singular aspect of safety, which requires their eyes to stay on their man in the hole.

These four men in the hole are about to remove and replace a 24-inch subterranean water main valve. That means taking out the device that controls flow of about 20,000 gallons of water a minute running at 113 pounds of pressure per square inch. Even though crews shut off the water flow up the line, there's an inherent uncertainty about how much residual water remains in the intervening pipe until you pull that ring out.



Underground water pipe work will always come with some amount of risk, but public works professionals drive those risks to minimal or non-serious through safety protocols. The team plans and prepares and follows the safety regulations by the book and then double and triple checks them.

### LOCK OUT – TAG OUT

I first heard about engulfment risk when I attended one of those planning meetings and heard the term “lock out, tag out.” After the meeting, I asked the Safety Officer what that means. He explained that each person who goes into the hole is assigned a lock; they place their assigned lock on the valve-key box (a key that is needed to turn the upstream valve back to an open position) before descending into the hole. They wear their keys on their belts. This guarantees that no one could accidentally open the valve while people are in the hole. Think about that.

On with the task at hand, though. No time to dwell on the danger. The ones below are geared up in their PPEs -- personal protective equipment -- from head to toe. Hard hats, hip waders, steel-toed rubber boots. But, their arms can't be constrained. Their bare forearms reveal the vulnerable humanity that bright-orange material conceals everywhere else. And, those arms have work to do.



Three of the men follow the direction of the lead. It all seems so routine to him, moving around and calling for action like he's done this a thousand times before. He's been on the job for more than a decade, so it's possible his total is near that number.



The guys below and up top are all business. No fooling around. The ones in the hole move in concert, performing each step in the exact sequence needed to proceed to the next one. Some of the steps require two or three at a time to perform, like preparing to remove the bolts attaching the valve to the pipes using a massive hexagonal wrench. It takes a man on one side of the pipe to start the motion by pushing and another man on the other side to finish the semicircle by pulling toward him. This valve has been in place so long, at times it takes striking it with a sledgehammer with the force needed to hit the bell in the classic carnival strongman game. Or using leg strength instead of upper body strength to push it forward. In a few cases, the guys resort to a reciprocating saw like I've never seen to just tear the thing clean off.

This goes on for more than an hour, and it starts to resemble something more than four guys in a hole. I am struck by the magical quality it takes on as they selflessly use their whole bodies as tools, bending and reaching, applying their prodigious strength and skill to make this happen. The precision and teamwork is reminiscent of a surgical suite. I continue to wax poetic in my mind, and allow myself to think of the many historical images I've seen filled with people who built our country – like the ones of men eating their lunches on steel girders suspended hundreds of feet above the ground. With no safety net. These guys 12 feet below me are following in the tradition of workers who have put themselves on the line throughout civilization.

Finally, it's time to see what happens when the valve is removed. The guys climb up to the upper portion of the hole, and the excavator operator gets his turn. Very slowly, he pulls the lever back, and the haul chain goes taut. The tension reaches its maximum, and the old valve starts to slide ever so slowly. Almost imperceptibly at first. Suddenly, it releases from its members, and water pours out of the pipe, swirling furiously in the hole as the valve is lifted away. All attention is on the hole and the guys just feet above it. It's only a matter

of seconds before the water settles down, and the flow recedes. It was only a relatively small amount of water remaining in the line, and the danger has passed.

The guys get to work guiding the bright shiny new valve into place, where it slides in like a knife through warm butter I think to myself. Now there's a little time for some chatter and cheering and giving each other some grief as guys do. And there's time for relief. Another day on the job. And no one got hurt. That's a good day.

