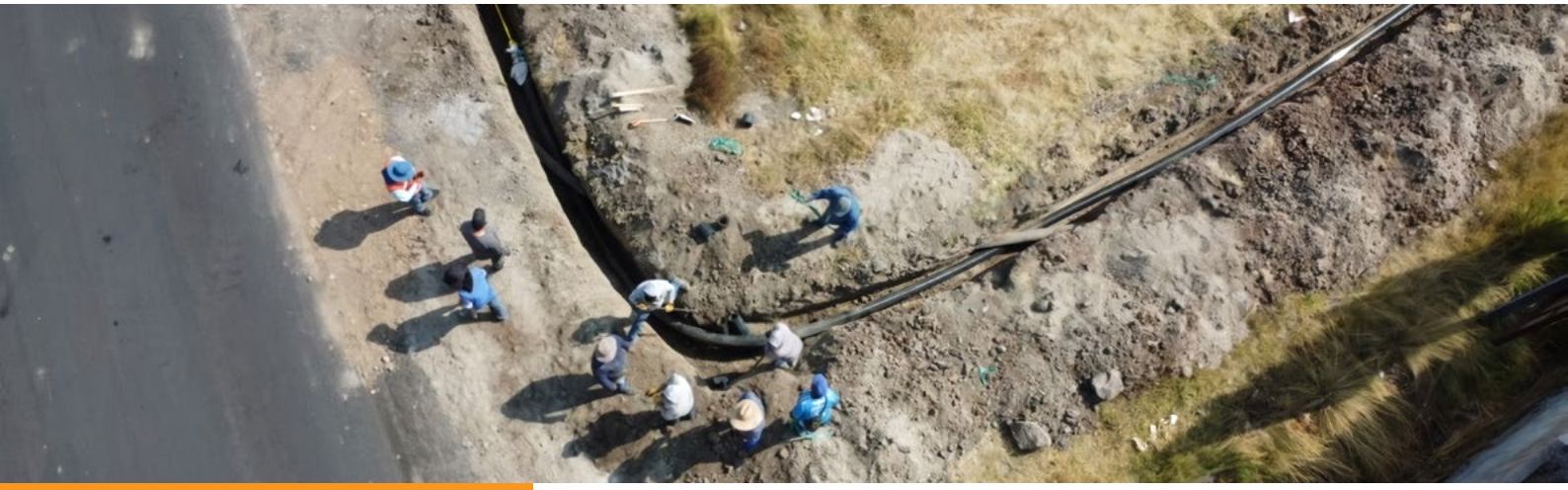
Case Study #188

Optimization of Potable Water Supply for 1,600 residents

Pexgol

Enhanced hydraulic and structural reliability for critical community infrastructure.



Rincón de la Candelaria
Mexico | 2025

- **Working Conditions**

  Temperature: Ambient
  Flow rate: 50 lps (177 m³/h)
  Pressure: 242 psi
  Fluid composition: Groundwater

- **Pexgol Pipe**

  Pexgol 6" SDR 9

- **Application**

  Potable water transport

- **Length**

  630 m / 2066 ft

The Challenge

The Rincón de la Candelaria community, located in the municipality of Atlacomulco, State of Mexico, at 2,614 meters above sea level, relies on a pumping system to supply potable water from a groundwater source, with an operating flow rate of 50 lps (177 m³/h) and working pressure of up to 242 psi.

The existing pipeline, constructed with 6" SDR 9 HDPE 4717 pipe, presented recurring failures at the thermofusion joints.

Despite having protection accessories at the pumping station, the required pipeline route—crossing urbanized areas between houses and roads—prevented the installation of additional surge protection devices.

As a result, the pipeline was exposed to transient pressure increases caused by water hammer phenomena inherent to well operation. These overpressures compromised the structural integrity of the pipeline and caused service interruptions for approximately 1,600 residents.

Additionally, the groundwater contained minerals such as calcium, magnesium, iron, manganese, sodium, potassium, and bicarbonates, which may promote scaling and affect hydraulic performance in conventional systems.

The Solution

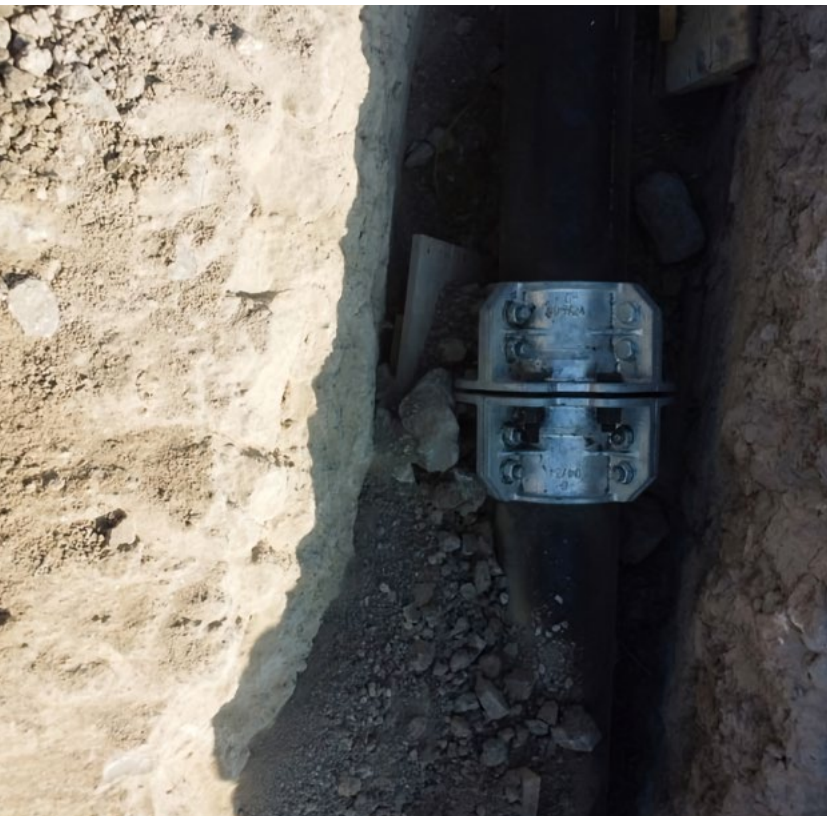
A total of 630 meters of 6" SDR 9 Pexgol pipe were installed, integrating into the system a flanged coupling, with the objective of ensuring greater hydraulic stability against water hammer events generated by well operation.

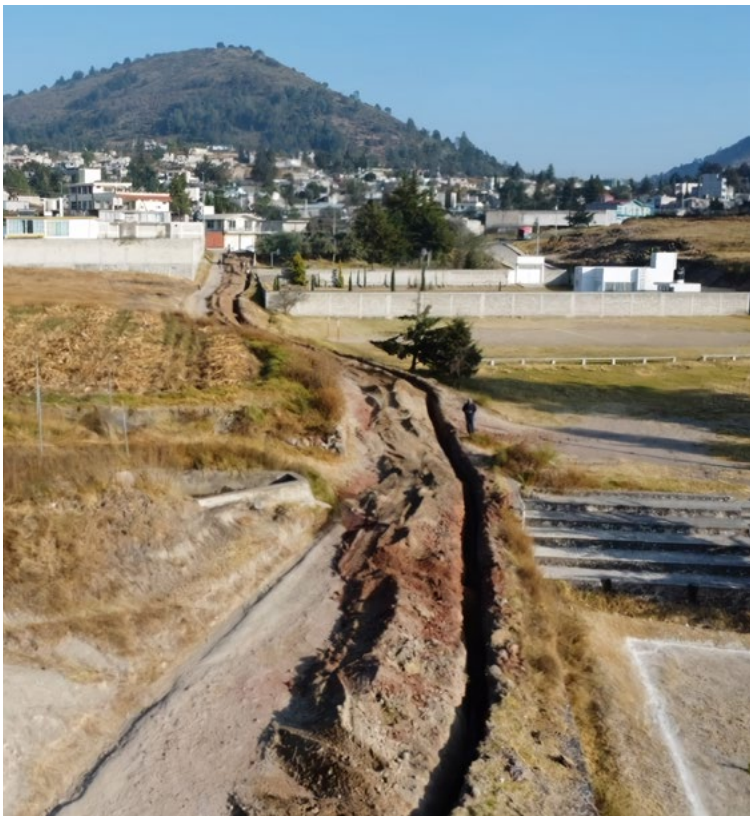
Thanks to its crosslinked molecular structure (PE-Xa), Pexgol provides superior resistance to transient overpressures and dynamic stresses, reducing the risk of failure compared to the previously installed HDPE pipe. This allowed improved operational reliability without modifying the existing route or incorporating additional protection devices.

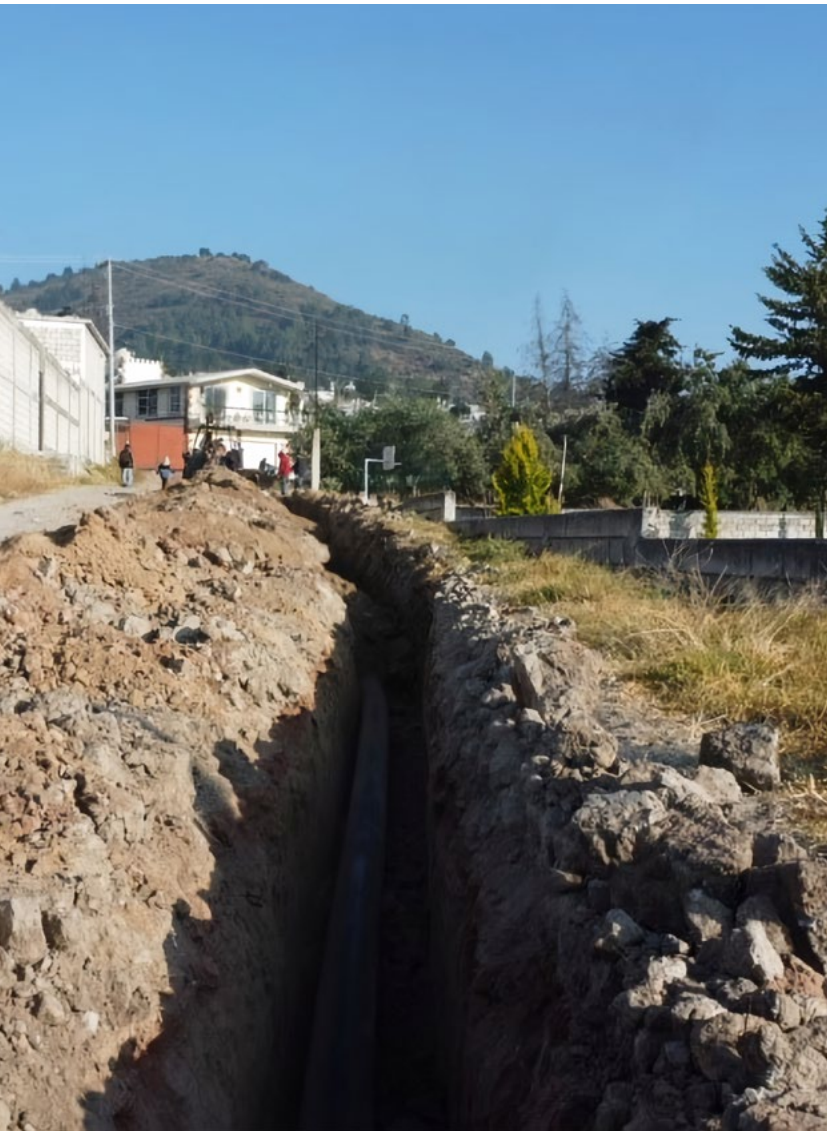
The installation was carried out with limited resources and with the support of community personnel, under specialized technical supervision. Despite logistical constraints, water supply was restored in just two days, minimizing the impact on the community.

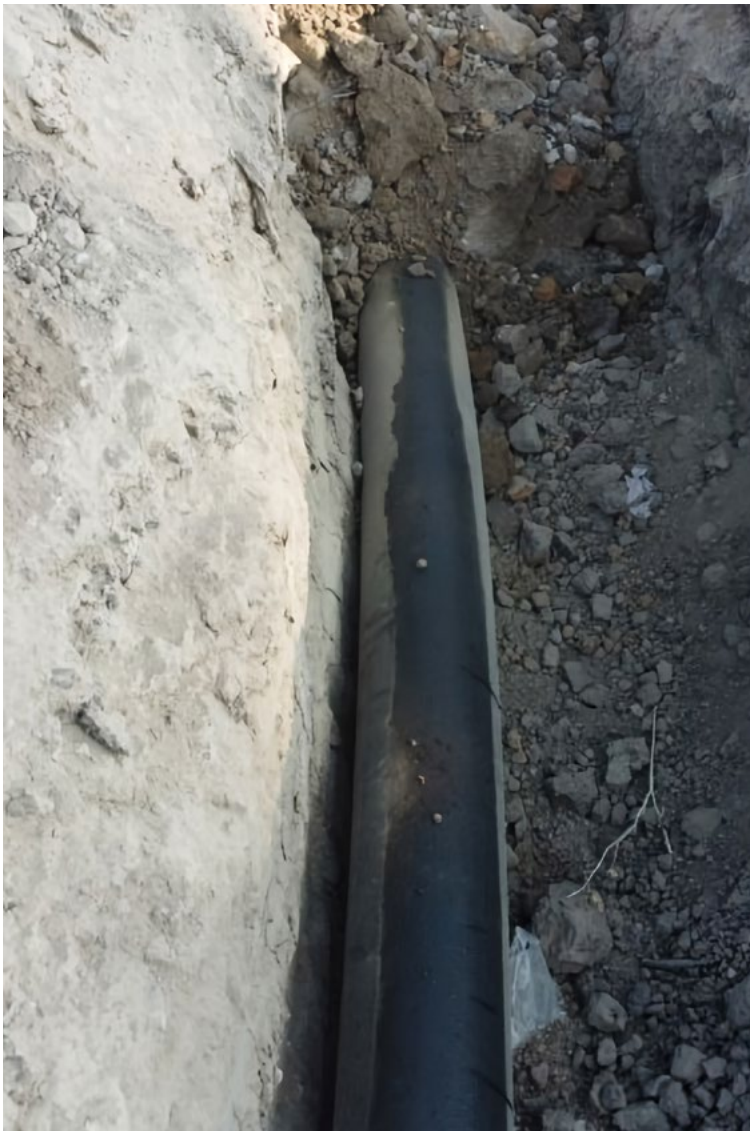
Additionally, the reduced trench depth requirement (0.60 m) allowed installation along the original route, avoiding deep excavations and additional infrastructure removal work. The result was a faster, more efficient solution with extended service life for the potable water system.

Pexgol

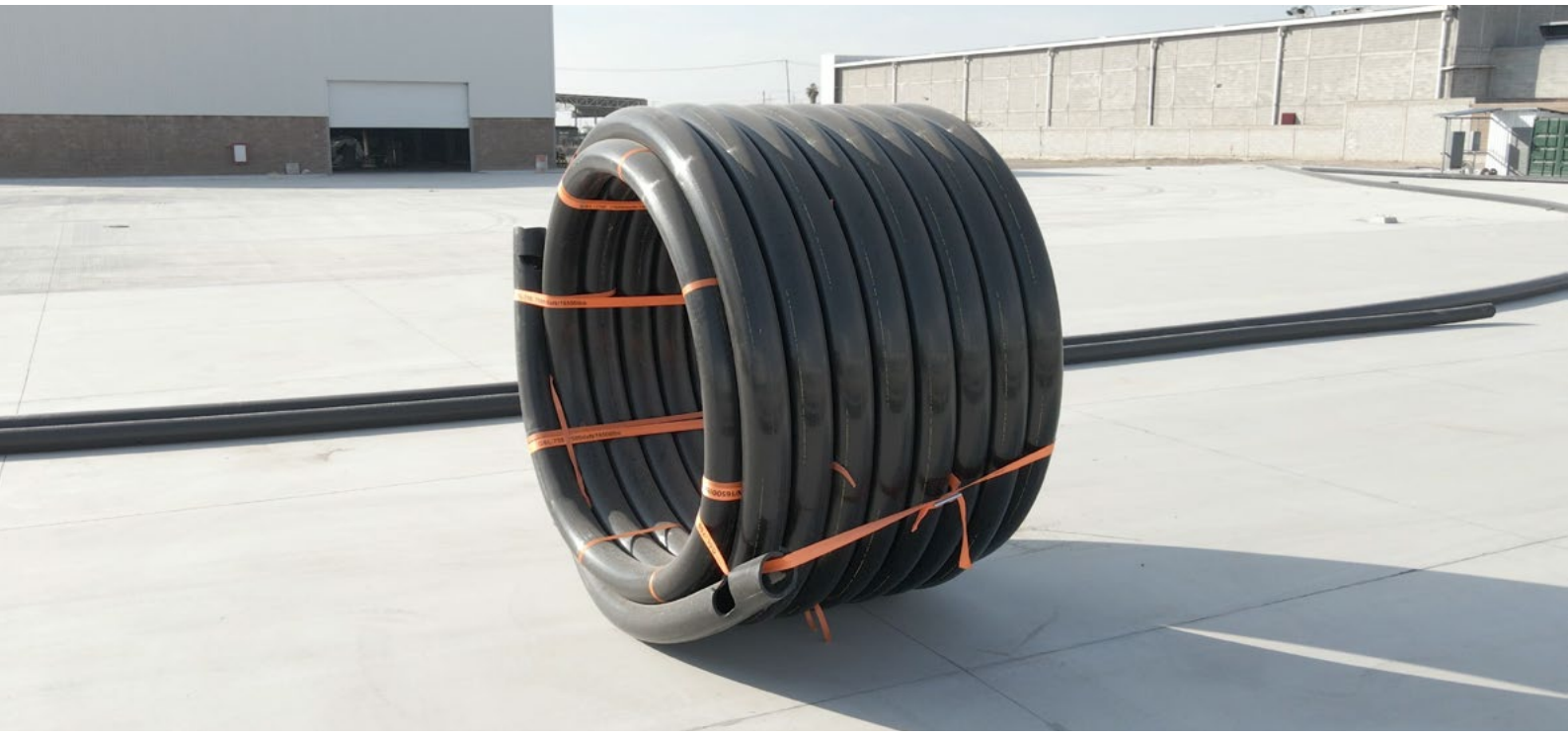








The Advantages of Pexgol Pipe Systems



High resistance to wear
Pexgol is the preferred solution for abrasive materials transportation. Typically resists three times more than HDPE and twice more than steel.

Excellent chemical and corrosion resistance
Pexgol pipes can resist a wide range of chemical agents, slurries, toxic and radioactive materials.

High temperature resistance
Working temperatures can range from -50°C / -58°F up to 110°C/230°F.

Superb internal and external corrosion resistance
Our pipes are proven to withstand decades of exposure to corrosive environments, with nonstop performance in some of the world's harshest environments.

Long pipe sections
Pexgol pipes can be supplied in long coil lengths, reducing number of joints, installation time and risks.

Creep and impact resistance
Pexgol pipes can withstand high amounts of axial and radial stresses and are highly resistant to impact, fracture and fatigue. Furthermore, Pexgol pipes are completely resistant to cracks even when dragged over sharp rocky terrain and coagulated salt crystals.

For more information please visit:
pexgol.com