Reviving a Municipal Lifeline: A 1-2 Punch Restores a major Florida drinking water well

Client: Municipal Utility in Northeast Florida

Well: 630’ deep, 18” diameter open limestone well supplying drinking water

Prime Contractor: Complete Services

The Challenge

A major community-owned utility in Northeast Florida provides water to over 391,000 customers from 134 wells drawing from the Floridan aquifer. Placed into service 25 years earlier, this deep, open limestone well was originally a strong performer, with a specific capacity of up to 71 gpm/ft. However, two decades of operation, along with a dramatic structural modification needed to block salt water intrusion in the most productive zone, caused a staggering 71% drop in specific capacity to 5.4 gpm/ft.

An acid treatment immediately following the cement sealing provided a temporary boost in performance to 19.4 gpm/ft, but the success was fleeting. The underlying physical blockages remained, and over the next seven years, specific capacity fell back to 8.0 gpm/ft. This relapse demonstrated that athat a more powerful, physical intervention was needed to address the severe plugging in the well's remaining 200-foot production zone.

The AirBurst Solution

The project team, led by Justin Merritt and Blake Hare at Complete Services and validated by a major multinational engineering consulting firm, designed a multi-phase rehabilitation strategy grounded in a "Physical First" philosophy to enhance the performance of the acid treatment.

Phase 1: AirBurst Physical Rehabilitation

The process began with AirBurst technology. This involved lowering the 35-SL AirBurst gun into the well and releasing controlled, high-pressure pulses of gas. The resulting energy waves propagated deep into the Ocala Limestone formation to fracture brittle mineral scale, break up resilient biofilm, and reopen the network of fractures that were obstructed. This critical first step physically cleared the deep-seated blockages that chemical treatments alone could not reach.

Phase 2: Complete Services Proprietary Acidization

Following the AirBurst treatment, Complete Services applied its proprietary acidization method, applying 32% hydrochloric acid, which is standard practice in the open limestone wells in Florida.

This chemical phase was strategically sequenced to capitalize on the work done by AirBurst. With the deep physical blockages cleared, the acid could penetrate farther and more uniformly into the formation, reaching a vastly increased surface area. This "chemical penetration" step efficiently dissolved the remaining mineral encrustations. This synergistic sequence—physical energy followed by chemical polishing—ensured both technologies were deployed under optimal conditions to produce a superior result.

The Results: An 83% Improvement Validated

The effectiveness of the strategy was rigorously quantified by pump tests monitored by the client's consulting engineers at each stage. The data provides a clear comparison of the well's recovery.

Performance Stage	Pumping Rate (GPM)	Specific Capacity (GPM/Ft)	Improvement (from prior stage)
1. Pre-Rehabilitation	740	8.0	-
2. Post-AirBurst / Pre-Acid	728	11.9	**+48.8%**
3. Final Post Rehabilitation	819	14.7	**+23.5%**

Conclusion: A New Standard for Well Rehabilitation

The rehabilitation of this deep limestone is a model for restoring complex and chronically failing groundwater assets. The results affirm the "Physical First" principle, proving that using AirBurst's physical energy to clear deep-seated blockages creates the ideal conditions for subsequent chemical treatments to perform at their peak potential. Removing blockages opens up a broader "path of least resistance" to get chemicals where they are needed to most, while also reducing the amount of fill it needs to interact with before it gets to its desired end point.

This project demonstrates that even a severely damaged and structurally compromised well can be brought back to productive life with the right technology and strategy. It proves that a proactive, intelligent asset management approach can restore value, ensure reliability, and promote the sustainable stewardship of our most precious natural resources.

For more information, please visit AirBurst Technology at www.airbursttechnology.com. To learn more about Complete Service's expert drilling, repair, and rehab services in Florida and Georgia, visit them at www.jaxwelldrilling.com.