



Well Maintenance Technology (patented)

The AQUA GARD® permanent in-well device significantly improves well maintenance

AQUA GARD® Well Maintenance Systems include the permanent placement of energy injection equipment into the well to allow the well to be cleaned effectively, maintaining quantity and quality, without having to remove the pumping or injection equipment. AQUA GARD provides a “proactive”, rather than reactive, cleaning and has proved to be more effective and much more economical for the client.

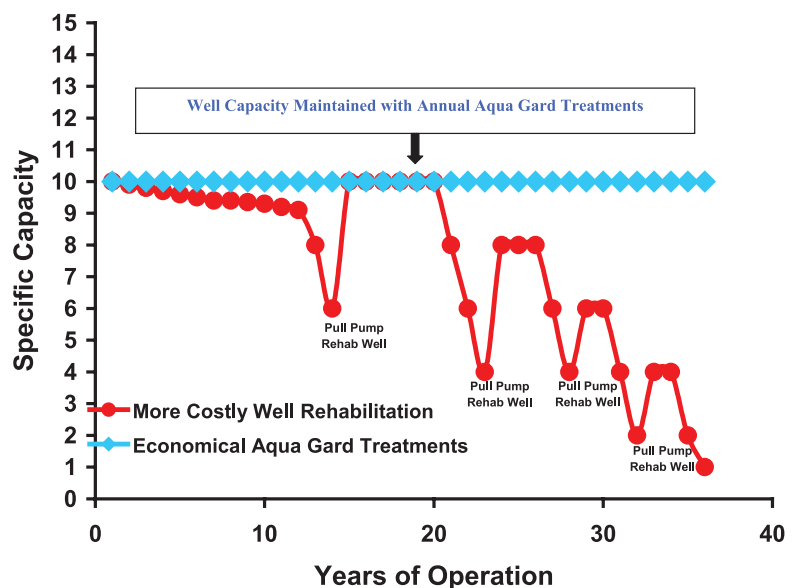
Many wells experience loss of production and water quality problems as a normal process of aging.

When your well is equipped with an AQUA GARD™ system, energy is delivered into the well to remove mineral and biological deposits, before they become hardened, making them much more difficult to remove. Subsurface Technologies use of carbon dioxide in thousands of wells during the past two decades has proven to be the most effective method of delivering energy into the well and water bearing formation during a rehabilitation process. CO2 continues to be the energy of choice, because of its superior effectiveness and environmental friendliness. The scheduled periodic cleaning service is usually performed in one to two days, dramatically reducing down time and cost, while ensuring that the well surfaces are kept clean for improved raw water quality, increased flow capacity, higher efficiency and lower pumping energy costs.



AQUA GARD Well Maintenance

Regular AQUA GARD Treatments Maintain Well Capacity





The Benefits of AQUA GARD®

- ✓ Improved Well Performance
- ✓ Lower Cost for Well Maintenance
- ✓ No need to pull the pump
- ✓ Lower Energy Costs
- ✓ Less "unsafe" bacterial results
- ✓ Minimizes the effects of "Iron Related Bacteria"
- ✓ Increases the life of a well
- ✓ Maintains the Pore Volume of the Well and Aquifer
- ✓ Maintains Well Production
- ✓ Provides for scheduled preventative well maintenance

If you are experiencing any or all of the following problems, AQUA GARD may be your long-term solution

- Well experiences lost capacity quickly and/or frequently
- Well has water quality problems
- New wells in areas where deposition of material is known to occur
- Well has periodic "unsafe" bacterial results

AQUA GARD Applications

- Water Supply Wells
- Horizontal Wells
- Collector Wells
- Barrier Injection Wells
- Remediation Wells

CASE STUDIES

Study 1 — Taconic Farms, Germantown, NY

A 9 well industrial site in the northeast required rehabilitation every 6 months to restore lost capacity caused by very high levels of biological activity and producing extremely poor water quality, rendering the wells un-potable. In 2001 AQUA GARD was installed in 5 of the 9 wells, followed by quarterly Aqua Gard preventative scheduled maintenance. The result; increased yield, sustained higher pumping levels & efficiencies, and significantly reduced cost. Plant demand was then fully met by the 5 wells equipped with AQUA GARD, reducing maintenance and energy costs during the following 3 year period as shown in the cost benefit analysis below. Water quality was also greatly improved, thereby lowering treatment costs.

Taconic Farms	36 Month Period without AQUA GARD	36 Month period with AQUA GARD	
Item	10/98 to 10/01	10/01 to 10/04	Savings
Well Rehabilitation	\$ 9,200.00	\$ 9,200.00	
Aqua Gard Installation		\$ 2,595.00	
Cleaning Cost Per Event	\$ 9,200.00	\$ 2,520.00	
Number of Events During Cycle	5	11	
Cleaning Cost During Cycle	\$ 46,000.00	\$ 27,720.00	
Number of Wells Serviced	9	5	
Energy Cost	\$\$\$	\$	
Supplemental Water	\$\$\$	0	
3 year Total Per Well	\$ 55,200.00	\$ 39,515.00	\$ 15,685.00
3 year Total for System	\$ 496,800.00	\$ 197,575.00	<u>\$ 299,225.00</u>

Study 2 — Aqua America, Forest, PA

In November of 2004, AQUA GARD was installed on 1 of a 5 well potable water supply system. The well was completed to 540' and produced 160 GPM with a pumping level of 259'. Almost immediately well yield and efficiency began a steady decline. Within 6 months the well had lost 35% of its yield and 37% of its efficiency. The well was cleaned and AQUA GARD installed. Based on the historical performance the well would have required cleaning at 6 month intervals to minimize lost yield and reduced efficiency. The following represents the cost benefit to the installation of an AQUA GARD preventative maintenance system.

Forest, PA (5) well site	Without Aqua Gard	With Aqua Gard	Savings
Well Rehabilitation	\$ 19,000.00	\$ 19,000.00	
Aqua Gard Installation		\$ 7,000.00	
Service Events During 3 Year Cycle	5.00	11.00	
Cost per service	\$ 19,000.00	\$ 3,400.00	
Energy cost			
Supplemental water cost			
Total per well cost for 36 months	\$ 114,000.00	\$ 53,400.00	\$ 60,600.00
Cost per site during 3 year term	\$ 570,000.00	\$ 267,000.00	<u>\$ 303,000.00</u>

