

From the Source to Consumption— Operation H₂O is Moving Full Steam Ahead

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The U.S. Army is fast-tracking Expeditionary Water Packing Systems (EWPS) to Iraq and Afghanistan, providing bottled water in theater for distribution to Soldiers. The systems are being delivered in response to an Operational Needs Statement from commanders in combat and are scheduled to arrive in Afghanistan by August 2010.

PFC Kashif McCormick, ROWPU operator with the 102nd Quartermaster Co., attaches hoses that direct raw water into the ROWPU where it is then purified and treated into potable water. (U.S. Army photo by SPC Michael Camacho.)



It is essential for Soldiers to receive at least 1–3 gallons of water per day to prevent dehydration. If you add personal hygiene, combat meal preparation, and emergency medical treatment to the mix, a single Soldier may need up to six gallons of water per day.

The EWPS produces 1-liter bottles at forward operating bases and is designed to take bulk water from the Army's Hippo water storage tanks (2,000-gallon deployable water storage tanks designed to work in tandem with several mobile water purification systems). During the process, the water is checked periodically to ensure that it meets Army quality assurance standards.

“Purified water is placed in the Hippo and held for 12 hours, and is then pumped through additional filters to remove chlorine and improve taste. Pre-forms are loaded, heated, and expanded into 1-liter bottles. The bottles are then filled, capped by an automated system, palletized, and wrapped to await distribution,” said LTC Dariel Mayfield, the Army's Product Manager Petroleum and Water Systems (PM PAWS). “Four times every 2 ½ hours, the water is checked to make sure it meets Army standards,” added Bob Schulkins, Water Systems Acquisition Manager, PM PAWS.

The EWPS can reliably produce 600–700 1-liter bottles per hour. In theater,

the EWPS is producing more than 500 bottles of water per hour and operates 6 days a week; that equates to more than 30,000 bottles per week per EWPS.

The Army's PAWS water systems—the 600 and 3,000 Reverse Osmosis Water Purification Units (ROWPUs), the Tactical Water Purification System, the Lightweight Water Purifier, and the EWPS—are being used for various missions worldwide. They are being used extensively in Afghanistan and Iraq to support *Operations Enduring* and *Iraqi Freedom*, as well as in the Haitian disaster relief effort. Additionally, these systems were invaluable assets to the Hurricane Katrina relief effort in 2005.

“Anytime there is a natural disaster, [Project Manager] Force Projection gets a call asking ‘What can you give?’ When disaster strikes, water is usually the first thing that is destroyed,” said Project Manager Patricia Plotkowski.

Potable H₂O—A Soldier’s Necessity

All of the Army’s water purification systems use RO as the primary method of treatment, and the purification systems work on the same basic principles. A raw water pump is used to draw water from any source, fresh or salt water. The water is delivered to the system where it enters the “pretreatment” filters. “This is where all of the suspended solids are removed,” added Plotkowski.

From there, the water is delivered to a high-pressure pump where it is pressurized enough to overcome the osmotic pressure of the RO membranes and all of the dissolved solids are removed. If nuclear, biological, or chemical contaminants are present, the treated water enters a series of activated carbon and resin exchange filters, which work to remove those contaminants.

“After that, the water is delivered to a product water storage tank where calcium hypochlorite is added to disinfect the water. Enough disinfectant must be added to maintain a constant and adequate residual,” said Schulkins.



The EWPS can reliably produce 600–700 1-liter bottles per hour. In theater, the EWPS produces more than 500 bottles of water per hour and operates 6 days a week. (U.S. Army photo.)

The Army’s PM PAWS is revolutionizing the battlefield, providing the most critical necessity to our Soldiers.

The water is checked for quality assurance to ensure that it is potable and safe for Soldiers. Strict water quality is directed by the U.S. Army Public Health Command.

The initially deployed EWPS produced more than 1 million 1-liter bottles of water without any incidents of quality. “Soldiers in Iraq said the best thing the Army could have done was get [them] bottled water,” added Mayfield.

Keeping our warfighters hydrated is imperative to the success of missions—both day-to-day operations and while in combat. The Army’s PM PAWS is revolutionizing the battlefield, providing the most critical necessity to our Soldiers. PM PAWS is managed under the leadership of Project Manager Force Projection within Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS).

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The 2,000-gallon Hippo water storage tank works with several of the Army’s water purification systems. (U.S. Army photo.)

