

EUWP Expeditionary Unit Water Purification

The Department of Defense uses reverse osmosis (RO) to desalinate water and make potable water for long-term consumption of field water supplies on land and ships. The RO technique provides potable water from any fresh, brackish, or salt water source and also removes most chemical, biological, and radiological contaminants. The primary military concerns for water purification systems are ease of deployment, mobility, and logistics support. There is a need for advanced technology that reduces system energy consumption, size, and weight, and improves distribution capabilities. The Office of Naval Research, through the Expeditionary Unit Water Purification (EUWP) science and technology program, is addressing these issues.

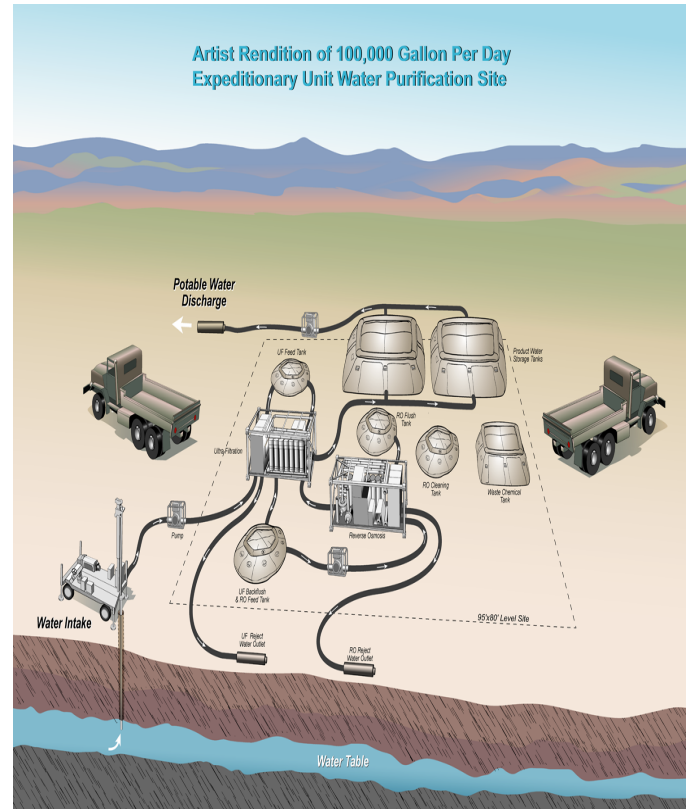
There are two major aspects to this program, the first of which is the development of two demonstrators. The Generation I EUWP Demonstrator will be a 100,000 gallon-per-day (GPD) C-130 aircraft-transportable water purification system. This system could provide support for a variety of strategic and operational missions, including humanitarian and homeland security operations. The demonstrator will be fielded to the Tularosa Basin National Desalination Research Facility in Alamogordo, New Mexico. The Generation II Demonstrator will be a 300,000 GPD aircraft carrier water purification engineering prototype.

The second major aspect of the program is focused on stimulating discovery and invention in science and technology to push well beyond the present state of the art in water purification and distribution technologies. This aspect of the program seeks to identify, develop, and transition alternative technologies that will significantly improve midterm (5-10 years) and longer term (10-20 years) technological capabilities.

The Science and Technology portion of the program is divided into short- and long-term objectives. The short-term goal is to develop technologies that will transition directly into the next generation of portable water desalination systems and provide significant results in performance, weight savings, and size reduction. The long-term goal is to discover disruptive technologies that will dramatically reduce the costs and energy for desalination. Additionally, the high-risk, high-payoff science and advanced technology aspects of the program may eventually lead to the reduction in the domestic cost per gallon to desalinate water, and provide other alternative solutions to conserve and protect this vital resource.

Functioning as the overall program coordinator, the Office of Naval Research has joined with the following organizations to draw upon their expertise and special skills to accomplish the EUWP objectives:

- US Bureau of Reclamation (Department of Interior)
- US Army Tank –Automotive, Armaments Research Development and Engineering Center
- Naval Sea Systems Command (US Navy) – Carderock (Philadelphia, PA)
- Environmental Protection Agency
- National Aeronautic and Space Administration





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