TITLE: 89-OPTIMIZING WASTEWATER TREATMENT DURING AND AFTER WAR

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ABSTRACT:

While working on special assignment with the U.S. Army Corps of Engineers, the author had the opportunity to provide guidance on the design and construction of wastewater treatment systems for facilities in support of National Army and Police programs as well as for U.S. military bases throughout northern Afghanistan.

This poster focuses on the shortfalls of the wastewater systems that were being installed and changes that were implemented to adapt these systems for local conditions. Unfortunately, many facilities were being built without adequate long-term infrastructure in place. This was the nature of working in a hostile environment, and in particular, a war zone.

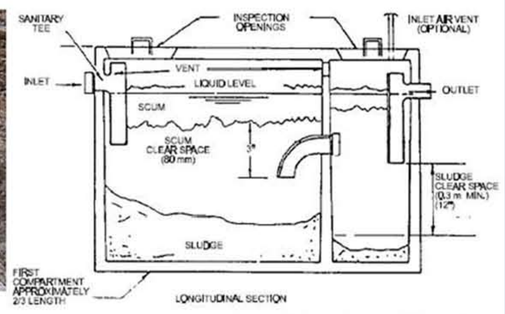
Changes implemented reduced adverse impacts to the environment, allowed more local labor and other resources to be used during construction, and provided more robust systems that will remain in operation long after the U.S. withdraws from the country.

Many wastewater systems being installed include holdings tanks. These tanks had to be pumped out on a frequent basis, sometimes several times per day. Without a cargo manifest system in place, there was no assurances that the wastewater was treated at another location before being safely discharged into the environment.

Wastewater treatment systems were generally one of four types:

1 Septic tank with leach field or chambers

Preliminary — Primary — Secondary — Advanced



2 Package Treatment Plants

Preliminary — Primary — Secondary — Advanced

3 Aerated Lagoons

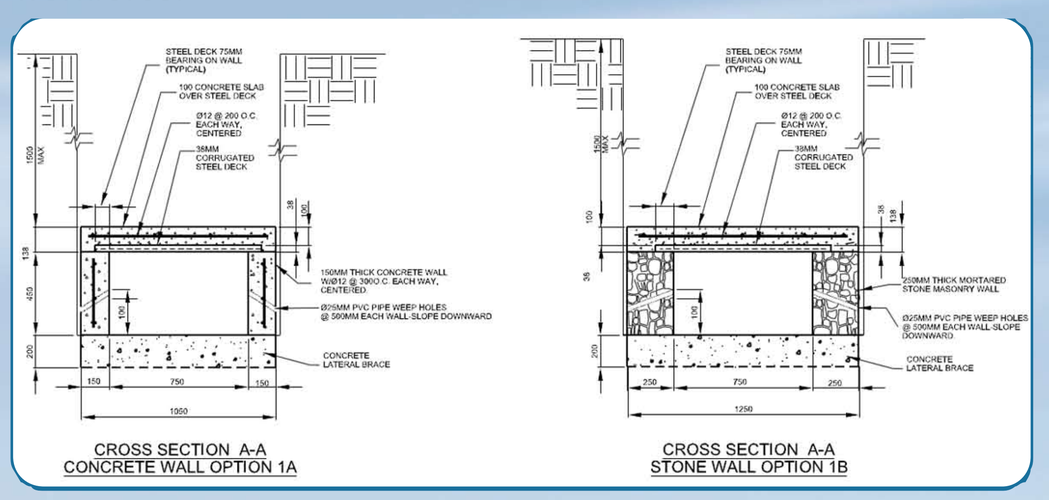
Preliminary — Primary — Secondary — Advanced

4 Full-Scale Treatment Plants

Preliminary — Primary — Secondary — Advanced

Septic tanks were generally installed at remote locations where electricity was not reliable or a skilled labor force was available to operate the facilities.

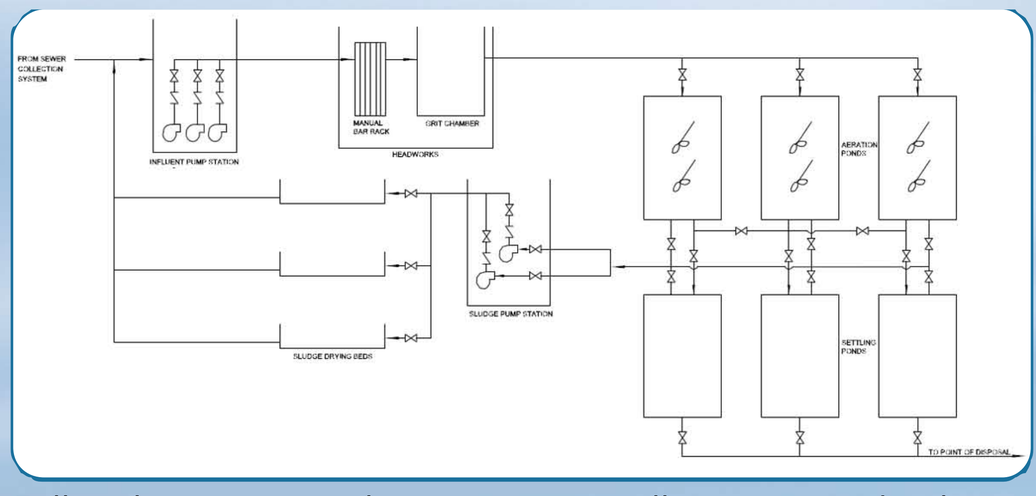
Afghans are skilled masons and a leaching chamber option was developed that allowed construction by the local workforce.



Package treatment plants were generally installed where space was limited, or a system was needed to be up and running quickly. Plants were generally imported whole into the country.

One manufacturer designed and shipped equipment from abroad, and fabricated and assembled their units in country.

Aerated lagoons were generally constructed where space was available. Designs were standardized to help ensure adequate reliability and redundancy.



Full-scale treatment plants were generally constructed at larger facilities that are anticipated to be in use for years to come

Through these efforts, wastewater systems will be left in place that may be easily upgraded or replaced, or continue to be used long after U.S. military operations cease in Afghanistan.