

DEWATS at Quratou IDP- Camp

Quratou, Kalar, Kurdistan Region Iraq

The IDP camp in Quratou is large, with about 1040 families. With so many people living in the camp, a lot of black- and greywater could not be treated. BORDA's solution was to build two independent DEWATS plants; one has a capacity of 37m³ per day, the other has a capacity of 27m³ per day. These plants were built during the second phase of the camp, which had 512 families (3072 residents).

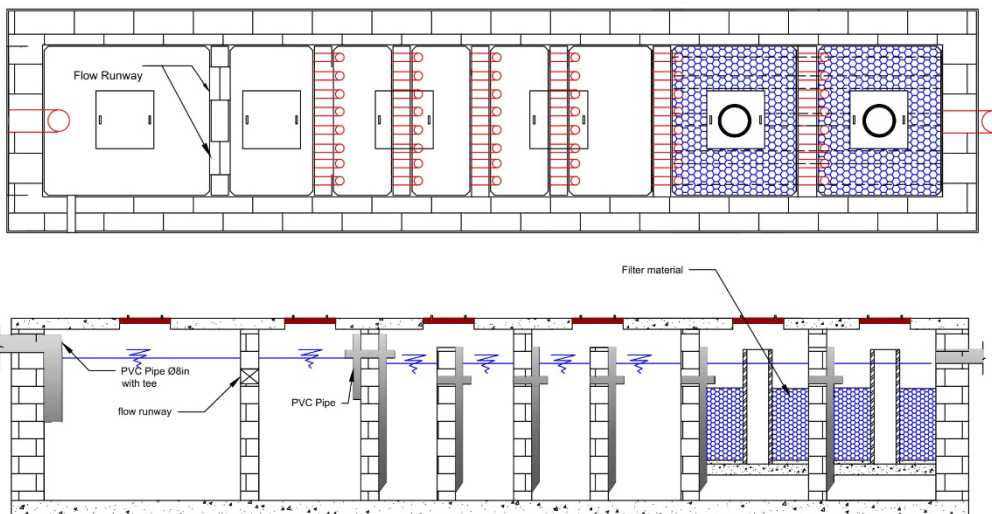
Key facts

Kind of project	: IDP Camp Sanitation
Funding Agency	: BMZ
Location	: Quratou, Kalar, Kurdistan Region Iraq
GPS coordination	: 34° 36' 9" N, 45° 29' 49" E
Construction period	: 3 month
Construction cost	: 49,000 USD
Contractor	: Revan Road Company
Startup date	: Currently not in process

Design specification

Source	: 256 toilets, 256 showers
Design capacity	: 27,37 m ³ /day
No. of users per day	: 3072
Influent quality	: BOD 490 mg/l COD 880 mg/l
Effluent quality	: BOD 50 mg/l COD 95 mg/l

DEWATS Design



Modules adopted(37-27 m³/day)

Settler	
Volume	: 55-24 m ³
Area of construction	: 40-17.28m ²
No. of chambers	: 2-2
ABR	
Volume	: 33-19m ³
Area of construction	: 24.6-12m ²
No. of chambers	: 4-4
AF	
Volume	: 29-17.82m ³
Area of construction	: 19.6-13.3m ²
No. of chambers	: 2-2

Project Photos



Figure 1: Excavation



Figure 2: Laying 10 cm gravel layer and casting



Figure 3: Reinforcement work and casting



Figure 4: Finished wall covered by cement



Figure 5: Finished DEWATS fenced in

DEWATS at Setak Refugee Camp

Setak, Sulaymaniyah, Kurdistan Region Iraq

Before Setak became an IDP camp it was the compound of a construction company. The German Federal Agency for Technical Relief (THW) remodeled the compound into what it is today. 252 people live in the Setak camp; this means there will be about 20m³ of wastewater per day. Before BORDA's project the wastewater was discharged into open rainwater ditches. When the DEWATS was constructed, it was connected to the camp's plumbing system. Now the discharged water is treated wastewater.

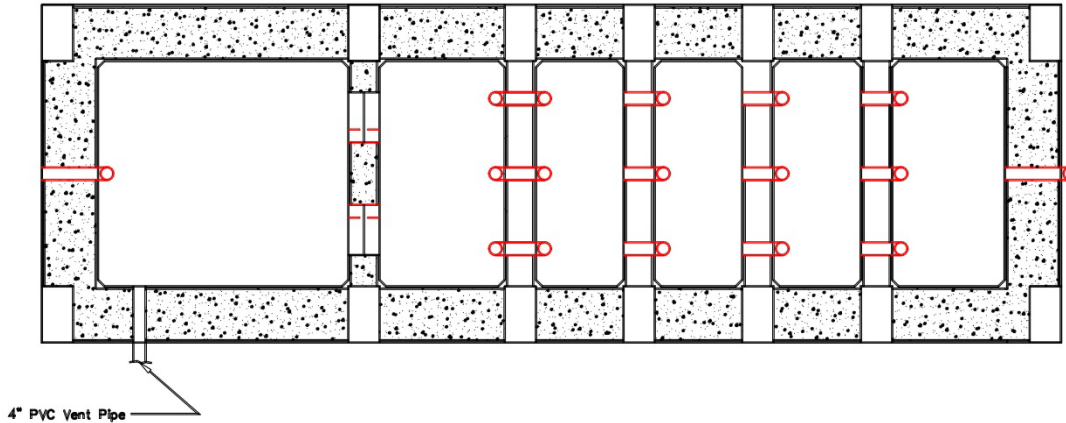
Key facts

Kind of project	: IDP Camp Sanitation
Funding Agency	: BMZ
Location	: Setak, Sulaymaniyah, Kurdistan Region Iraq
GPS coordination	: 35° 38' 8" N, 45° 31' 1" E
Construction period	: 2 month
Construction cost	: 20,897 USD
Contractor	: Al-Pasha Company
Startup date	: March 2015

Design specification

Source	: 41 toilets, 37 showers
Design capacity	: 20 m ³ /day
No. of users per day	: 252
Influent quality	: BOD 490 mg/l COD 880 mg/l
Effluent quality	: BOD 50 mg/l COD 95 mg/l

DEWATS Design



Modules adopted

Settler	
Volume	: 11.8 m ³
Area of construction	: 7.83m ²
No. of chambers	: 1
ABR	
Volume	: 30.6m ³
Area of construction	: 20m ²
No. of chambers	: 6

Project Photos



Figure 1: The procedure of casting the concrete of the foundation then starting the solid block wall, installation of 4" pipe and covering the external faces of the wall with cement plaster.

Prefab-DEWATS at Soran-IDP Camp

Soran District, Erbil, Kurdistan Region Iraq

During a meeting with the Mayor of Soran, BORDA was told about the urgent need for an IDP container camp in the city. The containers (made from sandwich panels) had been delivered by a NGO a few days before the meeting, with no connections to electricity, a water supply or sewerage system. Without those connections the containers could not be used. The cold and snowy winters of the location made the problem more urgent. One container would be provided for each family (5-7 people). The camp was planned to have 23 families. The Christian IDPs, who were staying in a kindergarten in the Soran area, came from the city of Mosul. BORDA built a DEWATS plant to treat the wastewater from the camp.

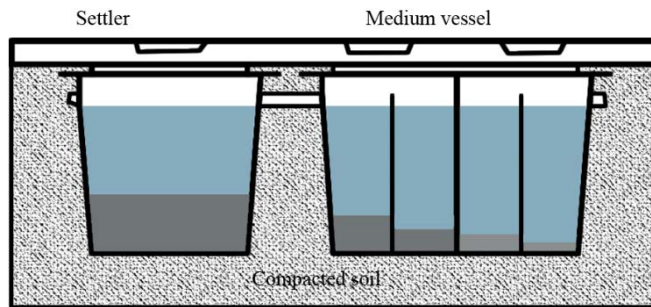
Key facts

Kind of project	: IDP Camp Sanitation
Funding Agency	: BMZ
Location	: Soran District, Erbil, Kurdistan Region Iraq
GPS coordination	: 36° 40' 5" N, 44° 33' 2" E
Construction period	: 1 month
Construction cost	: 16,000 USD
Contractor	: AL-Pasha Company
Startup date	: December 2015

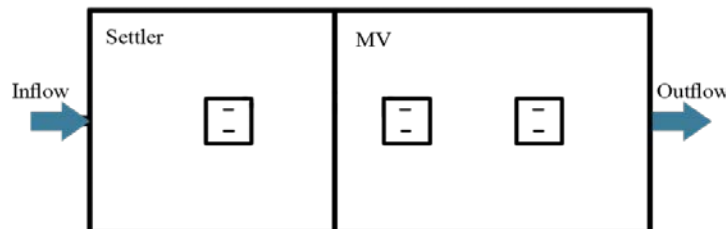
Design specification

Source	: 23 toilets, 23 sinks, 23 showers
Design capacity	: 10 m ³ /day
No. of users per day	: 150
Influent quality	: BOD 490 mg/l COD 880 mg/l
Effluent quality	: BOD 45 mg/l COD 95 mg/l

DEWATS Modules



Top view:



Modules adopted

Medium Vessel

Settler

Volume	: 6 m ³
Area of construction	: 7m ²
No. of chambers	: 1

ABR

Volume	: 7 m ³
Area of construction	: 9 m ²
No. of chambers	: 4

Project Photos



Figure 1: Excavation and crushed stone layer



Figure 2: Casting concrete for foundation and installation of prefab-DEWATS



Figure 3: Low slope governs the installation of DEWATS 1.5m lower than natural ground level



Figure 4: Because of the rainy season we prepared an iron shed with drainage for rainwater

Prefab-DEWATS at Zergwez IDP Camp

Zergwez, Sulaymaniyah, Kurdistan Region Iraq

The Zergwez Camp was the first place a prefabricated DEWATS plant was used in an IDP camp in the Kurdistan Region. The main reason for using the prefabricated units is that it is cheaper and faster to build. The small and medium sized vessels allow mixed wastewater (grey and black) of about 250 IDPs to be treated. The plant was built above ground because of the slope and stony subsoil. To protect the plant, it was surrounded with solid concrete blocks and covered with the remaining material from the excavation. When the plant was finished, it was handed over to UNICEF (who later passed it on to the local authorities) with the corresponding documents (technical drawings and photos) and instructions for operation and maintenance.

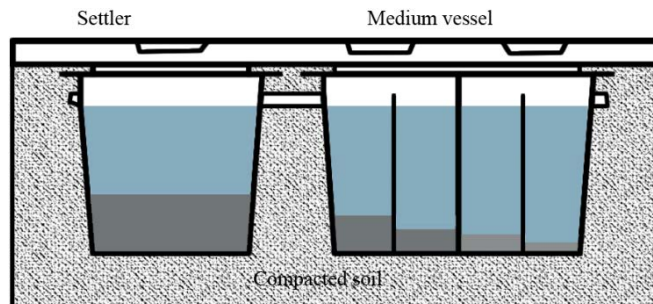
Key facts

Kind of project	: IDP camp Sanitation
Funding Agency	: BMZ
Location	: Zergwez, Sulaymaniyah, Kurdistan Region Iraq
GPS coordination	: 35° 24' 28" N, 45° 27' 53" E
Construction period	: 1 month
Construction cost	: 35,816.25 USD
Contractor	: Al-Pasha Company
Startup date	: March 2015

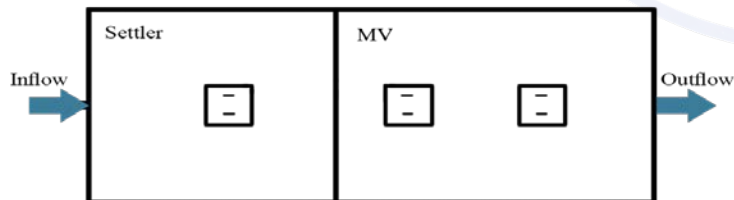
Design specification

Source	: 25 toilets, 25 showers
Design capacity	: 10 m ³ /day
No. of users per day	: 250
Influent quality	: BOD 490 mg/l COD 880 mg/l
Effluent quality	: BOD 50 mg/l COD 95mg/l

DEWATS Design



Top View:



Modules adopted

Medium Vessel

Settler

Volume	: 6 m ³
Area of construction	: 7m ²
No. of chambers	: 1

ABR

Volume	: 7 m ³
Area of construction	: 9 m ²
No. of chambers	: 4

Project Photos

Prefab-DEWATS at Zergwez IDP Camp

Zergwez, Sulaymaniyah, Kurdistan Region Iraq



Figure 1: Casting of concrete foundation



Figure 2: Unloading of prefabricated DEWATS



Figure 3: Construction of concrete block wall



Figure 4: Installation of 4 inch outflow pipes