SWE SYSTEMS

# Sand Water Extraction Systems

**PRODUCT PROFILE**

## LEADER IN SAND WATER EXTRACTION

The Sand Water Extraction (SWE) System is a unique patented product, designed and built in South Africa, for the drought-stricken areas in response to the effects of the global warming that are drying the valuable water resources. The SWE System extracts water up to ten times faster than normal infiltration rates through the sand, is fully concealed within the sand and allows year-round extraction even during floods or when no surface water is to be found in the river. The system is quick and easy to install, is automated and easy to maintain.

## WHAT ARE THE ADVANTAGES OF SAND RIVERS?

Sand rivers have the following advantages:

- Sand rivers acts as storage vessels (dams) and have the ability to store large volumes of water which reduces the need for expensive dam constructions.
- The water we extract is already filtered by the sand with minimal silt, E.coli and other contaminants.
- The water stored within the sand is protected against evaporation, so water losses are significantly reduced compared to open sources like dams.

## THE SYSTEM OPTIONS AVAILABLE:

### Supply a rural community with clean water:

The system can supply water to a community without a reliable and constant water source. Many communities are close to rivers but cannot use these rivers as water sources due to the contamination of the water on the surface and the rivers regularly drying up. This forces the communities to be

dependent on boreholes or purchasing water from water vendors at extremely high costs. With the SWE System we can ensure that the community has sufficient water on a daily basis.

The rural system includes the following sections:

- Water extraction from the sand
- Purification of the water
- Storage of the purified water

**Supplying a municipality with filtered water from river sand**

The advantage of water supplied from river sand is that it is significantly cleaner than the surface water due to the filtration of the water through the sand. This reduces the load on the water treatment works of the town and reduces the cost of water treatment. The photo below is an example of water extracted from the sand and being pumped past all the treatment stages to the final stage where a small amount of chemicals is added.

The municipal system includes the following sections:

- Water extraction from the sand
- Purification plant (If required)
- Water storage (If required)
- Supply of water into municipally systems:
  - Raw water into final treatment phase of the water treatment plant
  - Purified water directly into the distribution network

**Supply of water for agriculture:**

Emerging farmers can be given a year-round water supply through the use of the SWE System. This will enable these farmers to move from subsistence farming to commercial farming. The cleanliness level of the water supplied is also beneficial for systems like drip irrigation and will reduce clogging up of

the irrigation system. The extracted water from the sand can be pumped into holding tanks from which the water can be distributed to the required areas.

The agricultural system includes the following sections:

- Water extraction from the sand
- Storage of the water extracted from the sand

**Supply of water for game reserves:**

The unique design of the SWE System allows for full concealment of the SWE Units in the sand. This means that the system is protected against animals and has minimal ecological or esthetical disturbance in the game parks. The systems can be powered by solar systems and can be a valuable water source for animal during drought or to lodges and camps in need of a reliable water source which can deliver quality water.

## PROJECT EXAMPLE: Supply into town infrastructure

### KwaZulu Natal

A project currently being completed in KwaZulu Natal is to deliver 5 mega litres of raw water to an existing water plant with the plan to increase the volume to 15 mega litres in the next phase of the project.

The challenged faced by the plant was the inability to get water from the river when the water levels on the surface are low. The quality of the water delivered to the plant was also putting strain on the purification process. Both problems are addressed by the SWE System. The turbidity of the water supplied is under 0.8 NTU.

*Water from the SWE System (Left) vs. water from the surface (Right)*

**Free State**

A purification plant was not able to get any water from the river during parts of the winter causing the town to require water tankers to take water from boreholes to community members.

- The SWE System with delivering capacity of 10.3 million litres per day, enough to supply one hundred and three thousand people with 100 litres per person per day, was installed in 2017 to elevate the drought problems of the town.

- Another system in the same Municipality with capacity of 1.7 million litres per day, enough to supply 17 000 people with 100 litres per person per day, was installed in 2017.

**PROJECT EXAMPLE: Supply of purified water to villages**

Two systems have been installed at villages in Limpopo and are supplying water to the communities. The systems are designed to supply purified water to communities in need of water.

Sekhiming Village system with capacity of 700,000 litres per day:

*Sekhiming SWE Systems Plant*

Ga-Kuranta system with capacity of 300,000 litres per day:

*Ga-Kuranta SWE Systems Plant*

The systems were launched by Minister Lindiwe Sisulu (Minister of Human Settlements, Water and Sanitation) in December 2020 and clean water is being delivered into the taps of the communities.

*Water extracted from the sand flowing into the tanks*

*Minister Sisulu during the site launch*

*Community members enjoying clean water from their taps*

**PROJECT EXAMPLE: Supplying seawater to desalination plants**

A SWE system has been installed at the Bushman's River Reverse Osmosis Plant to extract water from sea sand and deliver the water into the RO Plant. The project was done in conjunction with the Water Research Commission and Amatola Water. The challenge experienced at the RO Plant was the lack of water which their current extraction methods could supply, and the quality of water extracted from the estuary. The SWE System can supply consistent volumes as well as cleaner water to the RO Plant.


*Location of the SWE Units in the estuary*

One of the main capital contributors to a desalination plant is the collection of water from the sea. It is expensive to install pipelines into the ocean and normal methods to extract water from sand are not effective. The SWE System can extract water from the beaches in large volumes and reduce the costs of these systems.

## WHY CHOSE THE SWE SYSTEM?

The main advantages of the SWE System are:

- It extracts water from sources previously unobtainable in large quantities.
- It supplies sediment free water.
- No dam construction is needed to collect water within rivers.
- It is low in maintenance and automated with proper training and after sales service.
- The system is quick and easy to install and cost-effective.
- The system can be solar powered for remote areas.
- The system is concealed and well-protected against floods, damage, and theft.
- It extracts water even during floods.
- It can be used to irrigate crops throughout the year with non-polluted water.
- The already filtered water by the sand reduces bacteria and increases purification costs.

## CONTACT DETAILS

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