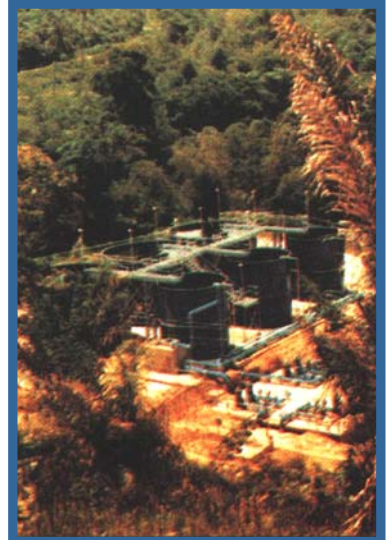
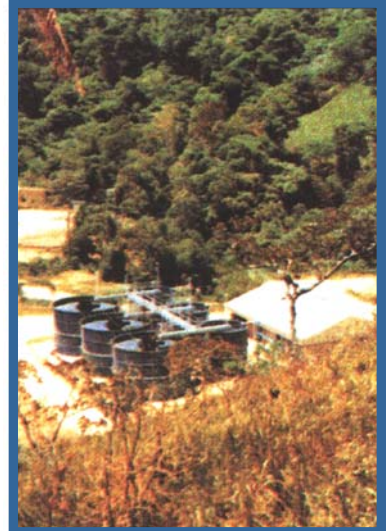


Waterman CP Series

Pre-engineered Water Treatment Plants

Safe, pure, drinking water for 10,000 to 400,000
People (50 to 800 m³/hour output)



Waterman CP Plants

Permanent Installations specifically designed to be:

- ▶ Low in capital and operating costs
- ▶ Low in civil engineering content
- ▶ Easily transported and quickly erected in difficult terrain
- ▶ Simple to operate, simple to maintain
- ▶ Easy to extend as population or demand grows



PCI AFRICA

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Waterman CP Series

The Waterman CP Series is a range of standardised, prefabricated potable water treatment works. It is an extension of the 'packaged plant' concept but the Waterman CP Series begins at flow capacities where 'packaged plants' finish. Waterman CP – a full-size, conventional waterworks that provides a long-lasting solution to your immediate need for safe, pure drinking water from lake, river, well or borehole sources.

Simple civil works

Flat slab bases for clarifier and filter, and a blockwork chemical house, minimise and simplify the civil works associated with the treatment plant. PCI can provide the civil designs.

Low capital and shipping cost, easy overland delivery

The clarifier, filter and clear water tanks are assembled from pack-flat, bolted plates. Shipping space is minimised and overland delivery made easy.

Quick, simple erection

The use of impact-resistant, glass-coated, bolted steel plates ensure that the clarifier, filter and clear water tanks are quickly assembled by unskilled labour and grouted in on the prepared bases.

Low running cost

Chemical flocculation is hydraulic and water flow through the plant by gravity. The only electrical consumption is the low power drives for the chemical metering pumps and the intermittent use of the airscour blower and upwash pump for filter cleaning.

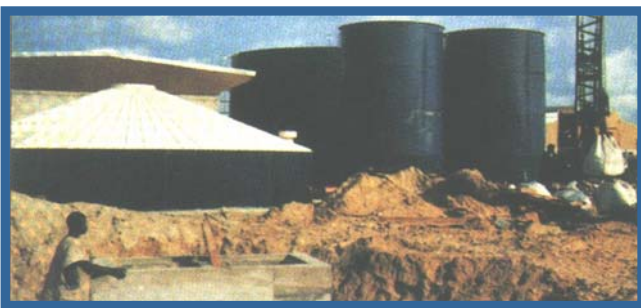
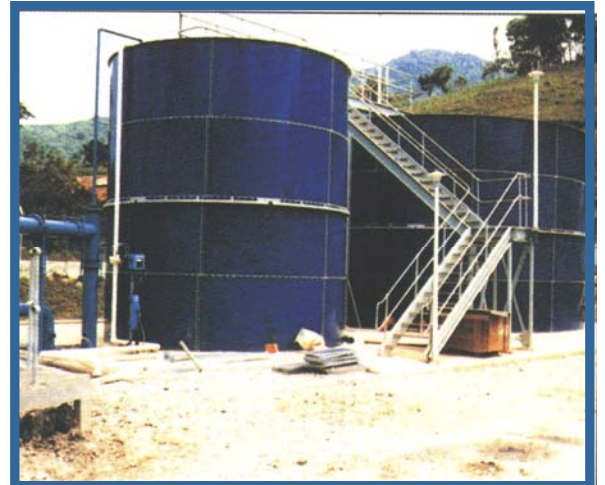
Minimum maintenance, long-lasting

Maintenance of the tank shells is eliminated by the use of a fired glass coating, which is completely rustproof and needs no maintenance during its lifetime. None of the units have any internal moving parts so again maintenance is eliminated.

Electrics, pumping

PCI include all electrics for a working plant - no problems without side contractors. Additionally PCI can supply diesel alternator sets as part of the contract.

Also, PCI can supply high and low lift pumps or hydropneumatic units to suit each individual requirement.



Top : A Model CP600 (3 clarifiers, 3 filters) in Trinidad.
 Centre : Waterman CP65, smallest model in the standard range.
 Left : A Waterman CP plant, with a small treated-water storage tank, under construction in Nigeria.

Model	m ³ /hr	Output Lit/sec	Million gal/d	Approx. population served, at a daily per capita consumption of:	
				110 lit (25 gal)*	45 lit (10 gal)*
CP65	65	18	0.34	14,000	34,000
CP100	100	28	0.52	21,000	52,000
CP150	150	42	0.78	32,000	80,000
CP200	200	56	1.0	43,000	105,000
CP300	300	83	1.5	65,000	150,000
CP400	400	110	2.0	85,000	200,000
CP600	600	170	3.1	130,000	310,000
CP800	800	220	4.2	170,000	420,000

*110 lit (25 gal) assumes piped supply to most households, remainder standpipes, plus some light industry.

*45 lit (10 gal) assumes mostly standpipe supplies.

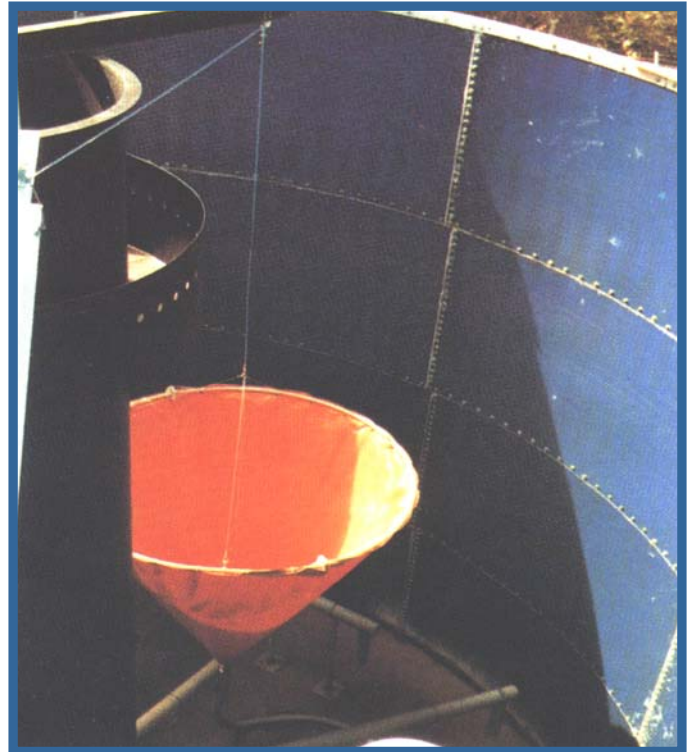
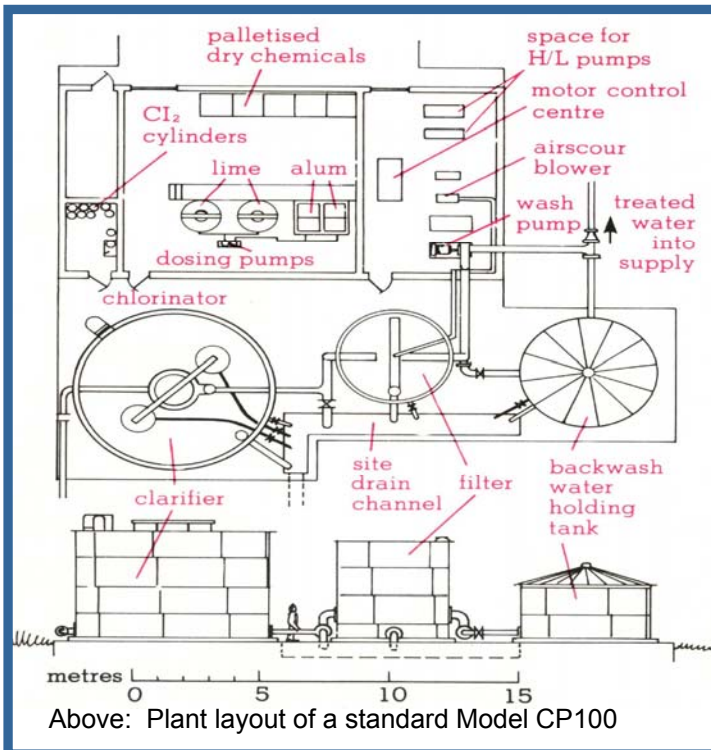
Process

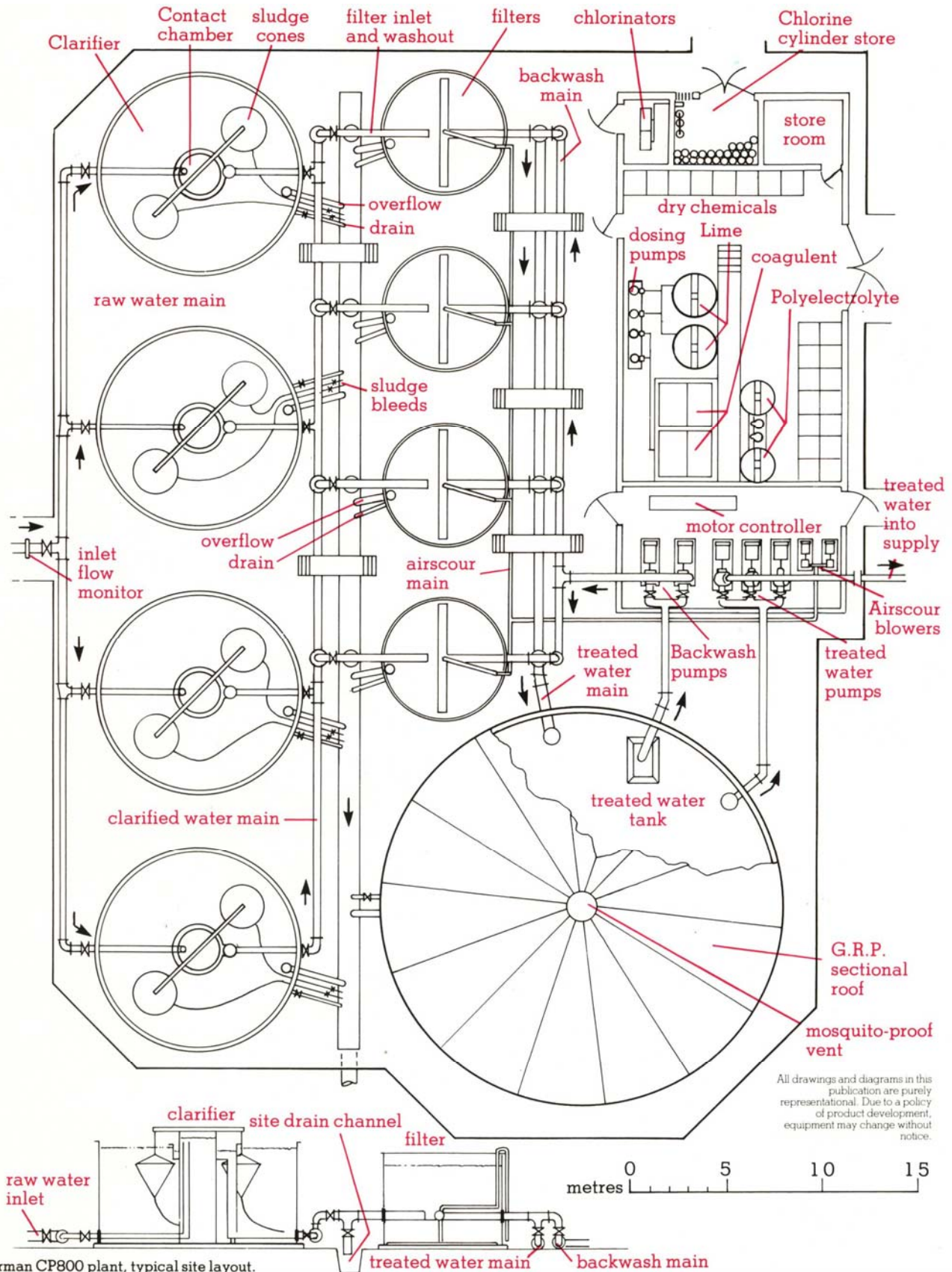
After pH correction and the dosing of a coagulant, flocculation and settlement of the raw water occurs in a simple, flat-bottomed, up-flow, sludge-blanket clarifier.

Coagulated raw water first enters a central contact/flocculation chamber in the clarifier and then passes into the body of the tank. Microfloc particles in the slowly rising water are captured by the mature floc forming the established blanket. Surplus floc spills over the rim of suspended sludge cones to settle and concentrate, while clarified water passes into a decanting trough. The sludge collected in the cones is drained to waste.

The Waterman CP filter, like the clarifier, employs a simple flat slab base. A nozzled lateral system collects filtered water, and distributes scour air and backwash water during the filter cleansing cycle. The lateral system sits within a gravel-packing layer beneath the filter sand and enables the filter to be constructed, like a water storage tank, from a simple ring wall erected on a plain concrete base slab.

Filtered water receives a final pH-correction dose, and a disinfectant dose, before gravitating to a wash-water storage tank and hence into supply. A backwash pump draws from this tank to wash the filter. Alternatively, a much larger tank can be supplied which provides treated water storage, as well as storage for filter washing.





Waterman CP800 plant, typical site layout.

Waterman CP plants are essentially pre-engineered units with standardised pipework, ancillary equipment, site layout, etc. This brings the benefits of speedy, manufacture, fast delivery and simple site erection. However, the intrinsic flexibility of the CP range of process tanks can be tailored to meet individual process or operational needs and site space limitations – especially in the instance of larger more complex plants. In the illustration above, high lift pumps, a large treated water tank and coagulant aid dosing have been incorporated. Additionally, raw water aerators, alternative disinfection systems, diesel generators, etc. can be provided; or the clarification stage can be omitted when treating many borehole waters.