



Majadahonda DWTP

The integrated water cycle • Water treatment

Majadahonda DWTP

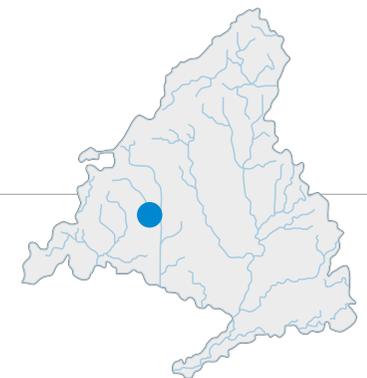
The Majadahonda Drinking Water Treatment Plant (DWTP) entered into service in 1967. It has been modified and remodelled a number of times since then:

- 1989** Modifications to the filtration system and process automation.
Replacement of wash water pipes and incorporation of reagent storage silos.
- 2002/03** Replacement of the disinfection system (chlorine and ammonia in containers) for sodium hypochlorite and ammonia solutions.
- 2006/09** Incorporation of settling tanks.
Installation of chlorine dioxide.
Installation of sludge treatment.
Installation of granular activated carbon filters.
Ozonation and permanganate dosage system.
Modification and expansion of liquid reagents storage.



Watch a video about the Majadahonda DWTP

Maximum treatment capacity
3.8 m³/s
Settling tanks
4
Sand filters
20
Carbon filters
9



Water treatment process

The DWTP has a treatment capacity of 3.8 m³/s that treats the water coming from the Picadas reservoir, on the River Alberche, and from the Guadarrama wellfield.

The treatment process phases included in the water treatment are the following:

- Pre-oxidation-pre-chlorination.
- pH adjustment (reduction).
- Coagulation-flocculation.
- Subsidence.
- Rapid filtration over sand.
- Intermediate ozonation.
- Filtration over activated carbon.
- Final pH adjustment.
- Disinfection.



Relevant technical data

Number, type and dimensions of settling tanks

4 lamella static settling tanks with dimensions: 45 m long, 9 m wide and 4 m deep.

Number of filters and surface area

20 filters formed by beds of silica sand, with individual surface areas of 125 m² and a total area of 2,500 m².

9 carbon filters with an individual surface area of 108.78 m² and 978 m² in total.

Treated water transport canal

Supplies the drinking-water reservoirs in El Plantío, Retamares and Majadahonda.

Reagents used

- Sodium hypochlorite and chlorine dioxide for pre-oxidation and pre-chlorination.
- Ozone and potassium permanganate in pre-oxidation.
- Acid for decreasing pH (arsenic precipitation).
- Aluminium salts in the coagulation phase.
- Flocculation aids in the flocculation phase.
- Ozone.
- Calcium hydroxide in the final pH adjustment phase.
- Hypochlorite and ammonia solutions in the final disinfection phase.



Sludge line

This line involves the treatment of the sludges deriving from the waters arising from the washing of filters and purging of settling tanks. It has a total treatment capacity of 6,360 m³/day - 5,208 m³/day from filter washing and 1,152 m³/day from purging settling tanks.

The treatment process phases included in the sludge line are the following:

- Desanding.
- Homogenisation.
- Flotation.
- Mechanical dehydration (centrifugation).
- Storage in a silo with a capacity of 80 m³.



[Watch a drinking water treatment video](#)



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Relevant technical data

• Number and characteristics of flotation thickeners

2 floats with dimensions 6.65 x 3.20 x 3.80 m and individual capacities of 260 m³/h.

• Number and characteristics of centrifuges

2 centrifuges of 15 m³/h.

• Final sludge water content

15-20%.



Canal 
de Isabel II