

WFD Objectives: Case Study for an Important Exemption

Please send the case studies to silvia.kerzmar@uba.de until **April, 29**.

Case Study Title:

Acuífero Cabezo de los Pájaros de la masa de agua 7_.32_Mazarrón
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Provided by:

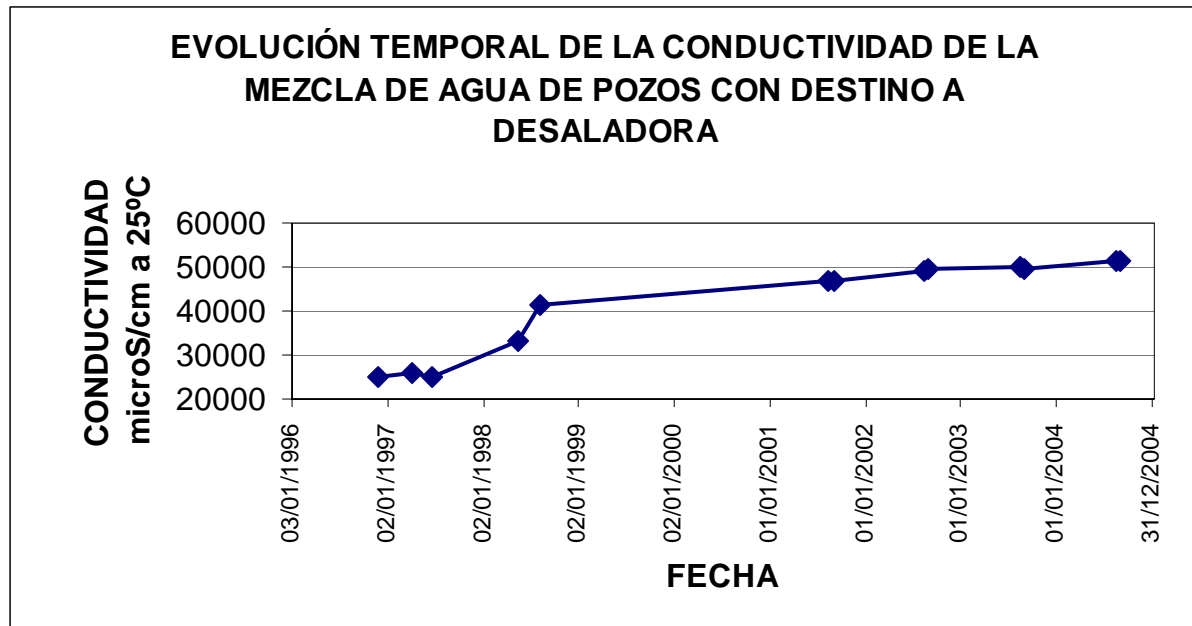
Country/region:	España. Murcia		
Name:			
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1) Description of the problem

Coastal aquifer with declared overexploitation, salinized by marine intrusion caused by the pumping in wells for the desalination plant. The pumping is conveniently authorised by the water commissariat.

2) Problem analysis

The current conductivity values in the aquifer are close to seawater values: between 35.000 and 45.000 $\mu\text{S}/\text{cm}$ at 25°C in water extracted from wells. There is a high marine intrusion induced by the pumping in wells that supply the desalination plant associated to the aquifer. Collection of sea water through wells in order to obtain water resources to provide citizens and irrigators, as an alternative to overexploitation of aquifers in the area (aquifers declared overexploited) and inexistence of alternative superficial resources. Collection through wells to make the most of the filtering capacity, in the aquifer, of harmful sea water components in the desalination process which allow lower exploitation costs.



3) Solutions

The solution to the problem is unviable, as it would mean the ending of the sea water collection through wells, as well as the artificial recharge with fresh water, which is not available in the area as a result of the overexploitation of the aquifers in the region.

Currently, there are not alternative superficial resources.

The ending of the sea water collections would mean, in turn, an attempt to reactivate the intensive exploitation of the aquifers in the area, with the subsequent expansion of the overexploitation to a much larger area than the salinized aquifer, as well as the non-sustainability in the long term of the existing uses. These kinds of actions would be outside the current legislation therefore, in theory they would not be authorised by the basin organisation.

4) Geographic location



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Case Study Title:

Acuífero Águilas-Cala Reona de la masa de agua 7_.33_Águilas
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Provided by:

Country/region:	España. Murcia		
Name:			
Institution:	Confederación Hidrográfica del Segura		
Address:			
E-mail:	Phone:	Fax:	

1) Description of the problem

Coastal aquifer with declared overexploitation, salinized by marine intrusion caused by the pumping in wells for the desalination plant

2) Problem analysis

Current conductivity values in the aquifer between 20.000 and 45.000 $\mu\text{S}/\text{cm}$ at 25°C in water extracted from wells. Marine intrusion caused by the pumping in wells that supply desalination plants. Collection of sea water through wells in order to obtain water resources to provide citizens and irrigators, as an alternative to overexploitation of aquifers in the area (aquifers declared overexploited). Collection through wells to make the most of the filtering capacity, in the aquifer, of harmful sea water components in the desalination process.

3) Solutions

The solution to the problem is unviable, as it would mean the ending of the sea water collection through wells, as well as the artificial recharge with fresh water, which is not available in the area as a result of the overexploitation of the aquifers in the region.

The ending of the sea water collections would mean, in turn, an attempt to reactivate the intensive exploitation of the aquifers in the area, with the subsequent expansion of the overexploitation to a much larger area than the salinized aquifer, as well as the

non-sustainability in the long term of the existing uses. These kinds of actions would be outside the current legislation therefore, in theory they would not be authorised by the basin organisation.

4) Geographic location



Case Study Title:

Zona oriental de la masa de agua 7_24 a .- Vegas Media y Baja del Segura

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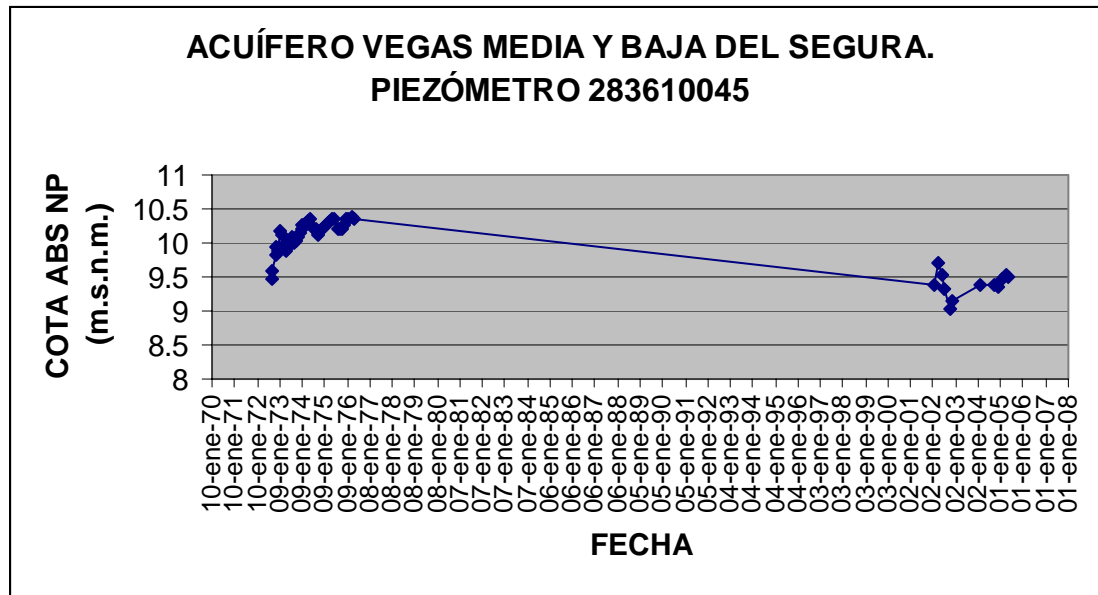
Country/region:	España. Murcia		
Name:			
Institution:	Confederación Hidrográfica del Segura		
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1) Description of the problem

Alluvial detrital aquifer with salt water in the coastal area, as a result of the lixiviation of salts existing in sediments.

2) Problem analysis

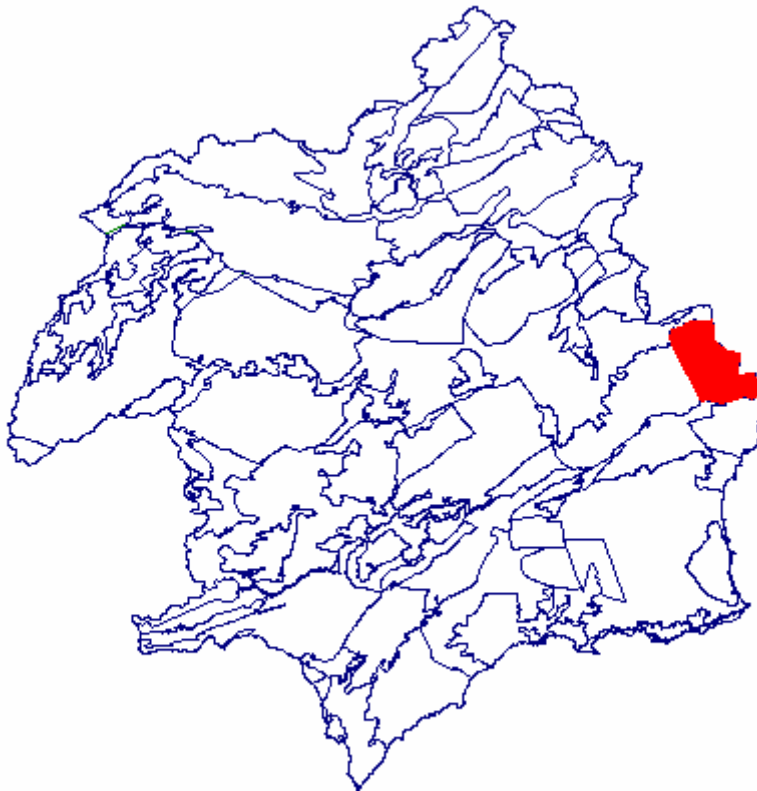
Salt water in deep quaternary levels, on the East of a fossil interface fresh water- salt water, direction NW-SE, which goes past Almoradí. The position of this interface would correspond to the limit of an old marine transgression, which took place in the Quaternary period. This transgression caused the sedimentation of marine deposits together with marine salts in quaternary detrital sediments of alluvial origin of the Vega of the Segura, which is older. Salinity severely increases towards the East, starting from the mentioned interface, going from less than 5 up to 15 g/l showing hydro-chemical facies predominantly chlorided. The exploitation by pumping is much reduced on the East of the interface, as a consequence of the bad chemical quality.



3) Solutions

The problem of the insufficient quality of the aquifer in this area has no solution as the salinization has not occurred due to an antropic activity, but to a degradation process of the water quality through natural mechanisms, to be exact, through the lixiviation of the salts in the sediments.

4) Geographic location



Case Study Title:

Masa de agua 7_.48 .- Terciario de Torrevieja

Provided by:

Country/region:	España. Murcia		
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1) Description of the problem

Coastal aquifer with salt water and affected by declaration of overexploitation.

2) Problem analysis

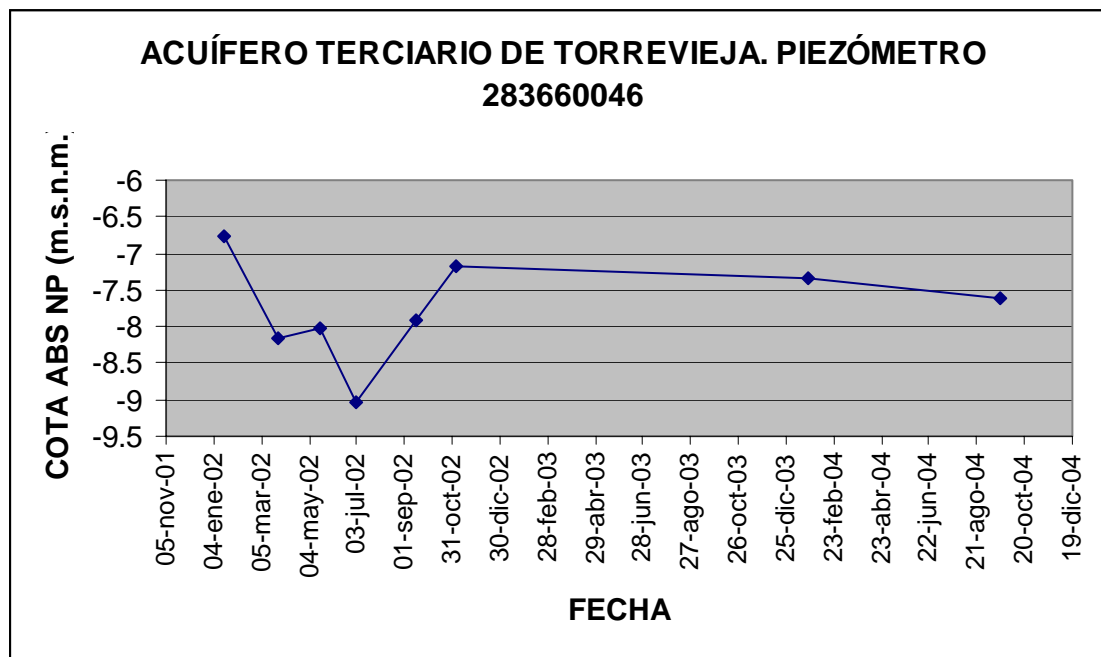
Coastal aquifer of detrital formation from the Pliocene and the Quaternary periods.

Existence of salt water in the above mentioned aquifer. Salinity with an average value between 4000 and 4400 $\mu\text{S}/\text{cm}$ at 20°C.

The renewable resources of this aquifer are 1,54 hm³/year (1,4 of rainwater infiltration and 0,14 surplus from irrigation), while the extractions go up to 3,55 hm³/year, 2,1 of which go under desalination processes and come from wells further than 5km from the coast. The aquifer has a deficit balance recharge-pumping by 2,1 hm³/year. The number of extractions has been established for a situation of high degree of superficial resources availability, which is why, if a situation of drought decreased this availability, an increase in the extractions of groundwater could occur. The volume of registered uses reaches 6 hm³/year.

There are doubts on the aquifer's salinization mechanisms. There can be three possibilities:

- Marine intrusion induced by pumping.
- Existence of salt in the sediments, or congenital salt waters, caused by natural mechanisms.
- Infiltration of salt water in lakes near the salt lakes of Torrevieja and la Mata.



3) Solutions

The solution to the problem is unviable, as it would mean the ending of groundwater uses, even more if we consider the possibility of degradation of the water quality due to natural processes.

4) Geographic location

