

# InvisiHead diffusion of brine discharge from seawater reverse osmosis desalination plants

In the AES Elmosa Seawater Intake and Outfall Systems, natural intelligence and site recognition capabilities are integrated into the InvisiHead intake and diffuser systems. An AES data collector gathers site characteristics and operation condition data to enable the integration.

When the InvisiHead gets flow pluses, it commences flow management accordingly. In case of diffusion, the InvisiHead diffuser disperses, mixes, and dilutes the RO brine in a round surround, up, sideways, and down, funneling out in a 4-D space and time fashion. It perfectly utilizes a huge amount of surface area that dilution requirements are satisfied within the vicinity of the diffuser structure. For example, a 60,000 ppm brine reaches 43,050 ppm 10.34m away from the point of release. The ambient salinity is 43,000 ppm.

The area of brine influence is 25.64m in diameter around the InvisiHead diffuser. For a 1,000,000m<sup>3</sup>/d SWRO plant, two rows of IH diffuser system can cover an area 130m wide and 210m long. The area of effluence of the brine is therefore less than 30,000m<sup>2</sup>.

The US EPA VP model was used to get those figures. The brine effluent simply fades away into the ambient within a short distance from the point of release. Please see:  
[http://www.amecosys.com/elmosa/The InvisiHead for reverse osmosis desalination.jpg](http://www.amecosys.com/elmosa/The_InvisiHead_for_reverse_osmosis_desalination.jpg)  
[http://www.amecosys.com/elmosa/The InvisiHead for reverse osmosis RO desalination brine disposal.jpg](http://www.amecosys.com/elmosa/The_InvisiHead_for_reverse_osmosis_RO_desalination_brine_disposal.jpg)  
[http://www.amecosys.com/elmosa/The Area of Influence of SWRO Brine Dispersal.jpg](http://www.amecosys.com/elmosa/The_Area_of_Influence_of_SWRO_Brine_Dispersal.jpg)

