

Brine discharge optimization study WEB Aruba

Aruba, 2017-2018

Client info:

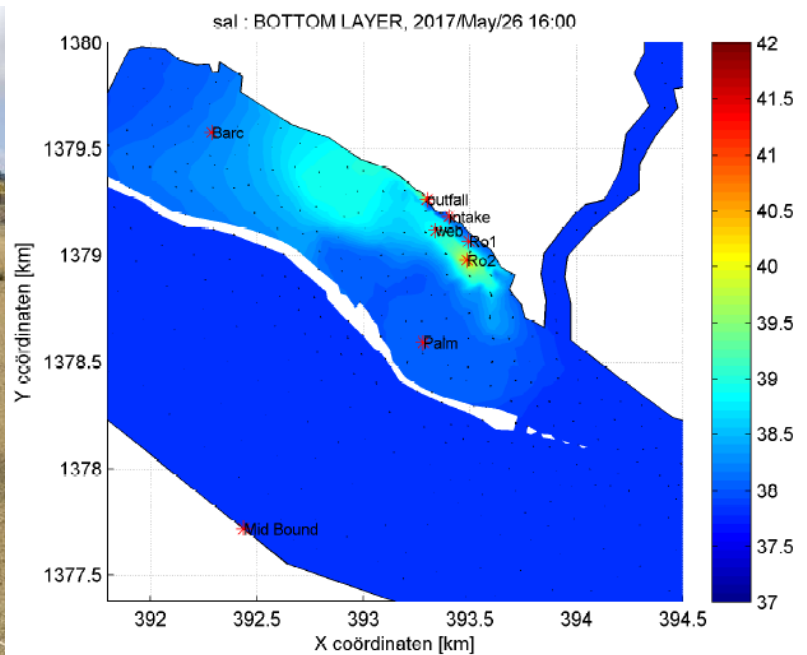


Name: Water en Energie Bedrijf Aruba (WEB)

Sector: Power/Utility

Location: Aruba

WEB is the Aruban production company for electricity and drinking water.



Rationale: The goal of the project was to investigate the current brine dispersion in the lagoon and to give recommendations for optimization of the brine disposal. The main aspect is to prevent the possible occurrence of a stratified situation in the lagoon, especially during low wind season, since the occurrence of a layer of brine (stratified situation), which hardly dilutes and spreads over a large area, negatively affects benthic flora and fauna.

Approach: The study consisted of the following activities:

- Conducting an initial brine dispersion assessment;
- Calculating and modelling the brine dispersion for the current situation;
- Conducting a field inventory of near-field and far-field dispersion using a CTD sensor (conductivity, temperature and depth);
- Evaluating possible preventive and mitigating options using a multi criteria analysis;
- Designing optimal brine outfalls for all 3 RO-units;
- Calculating/modelling of near-field and far-field dispersion in case of optimal design;
- Designing final brine output solution;

Outcome: A combined option of discharging brine via the cooling water channel and via an outfall pipe with duckbills is preferred, since this clearly showed the best dispersion. WEB will use the results for the engineering of the new brine discharge.