Cost evaluation of desalination and sewage treatment based on plants operated in Oman and use of software models

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ABSTRACT

The performance of desalination and sewage treatment plants operated by contractors at sites of a large company in Oman was evaluated in relation to benchmark costs. Such benchmark costs, which are dependent on plant size and process used, were established based on estimates provided in research literature and based on site-specific estimates made using software models. Desalination economic evaluation program software was used to estimate site-specific costs of desalination and financing for environmental, affordable, and strategic investments that bring on large scale expenditure software was used to estimate site-specific costs of sewage treatment. The estimated site-specific benchmark cost of desalination was 1.20 US$/m³. The desalination cost subject to many variables reported in the literature ranges between 0.52 and 1.30 US$/m³. The estimated site-specific benchmark operational cost of sewage treatment up to the BOD level of 10–15 mg/L of treated water was 0.29 US$/m³. The cost of sewage water treatment, up to the BOD level of 10–15 mg/L of treated water, averages to 0.41 US$/m³ based on studies conducted. The evaluation of costs reveals that the cost of desalination and sewage treatment at the company sites was close to benchmark costs provided in the research literature as well as site-specific estimates made using software models.

Keywords: Cost evaluation; Desalination; Sewage treatment; Oman; DEEP; FEASIBLE