# Pond A18: What Happens When You Stop Making Salt?

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## Pond A18: Purchased in 2005

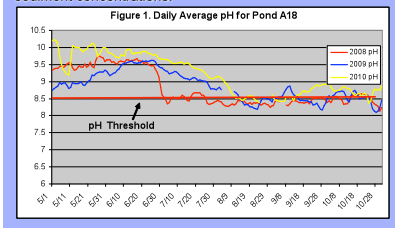
Pond A18 was originally designed to make salt. It has a huge surface area (856 acres) and shallow depth (<2 ft on average). The inlet and outlet gates (figure 10) allow limited exchange of Bay water with the Pond. The Pond was purchased by City of San Jose (City) as a buffer area for the San Jose/Santa Clara Water Pollution Control Plant (Plant).

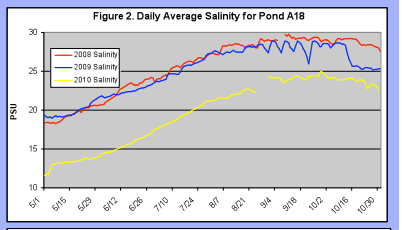
Since 2005, the City has allowed a continuous flow of Bay water through the pond to improve Pond water quality. Initially, Pond discharge was carefully manipulated. The discharge gate was shut to protect water quality in Artesian Slough anytime DO or pH reached unacceptable thresholds. Three years of data demonstrated that Artesian Slough water quality was not measurably affected by Pond discharge. Since 2008, Pond discharge management has been more passive to facilitate maximum circulation – discharge is rarely interrupted. Maximizing circulation has further improved water quality in the former salt pond. This provides opportunities for habitat restoration and flood control as part of the Plant Master Plan.

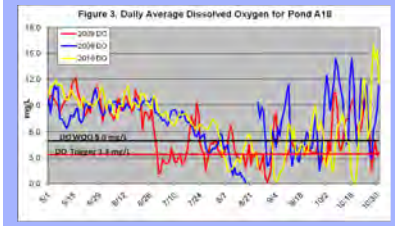
Monitoring for water quality in pond and receiving water (Artesian Slough) occurs annually from May through October (Figure 9). Dissolved oxygen (DO), salinity, temperature, and pH are recorded on a continual basis. Also, monthly depth profiles are taken at four monitoring stations in Artesian Slough to determine the tidal impact on slough water quality. Once per year, Pond sediment samples are analyzed for mercury and methyl mercury.

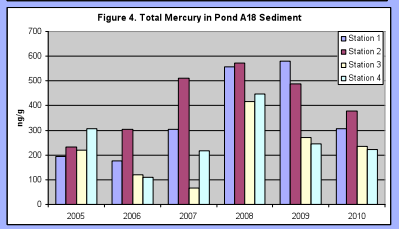
## Pond A18 in 2010

- Initially, pH (Figure 1) was above the threshold level until mid-season, followed by a decline where it remained near the threshold level. This drop in pH is due to seasonal changes in the pond's algal community and is reflected by observed water color and clarity changes and chlorophyll *a* measurements.
- Salinity (Figure 2) remained well below 44 ppt for the 2010 season & was markedly lower than previous seasons.
- DO levels (Figure 3) were well above the Water Quality Objective (5.0 mg/L) and the trigger value (10th percentile of 3.3 mg/L) early in the season, followed by a decline and large fluctuations for the remainder of the season. Pond DO typically drops in late summer as temperature increases.
- Total Mercury in Pond A18 sediment has decreased in recent years (Figure 4) and has remained well below the USEPA threshold (1000 ng/g dry weight).
- Methyl mercury in Pond A18 sediment for 2010 ranged between 0.073-0.618 ng/g dry weight which is comparable to Bay sediment concentrations.



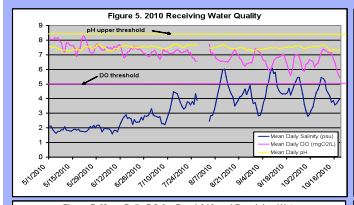



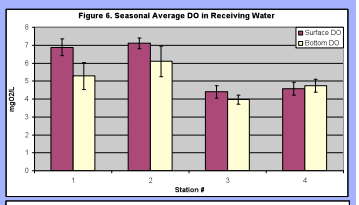



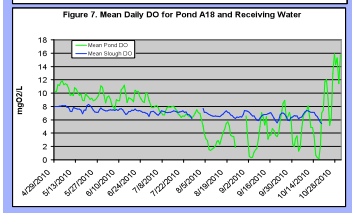

## Receiving Water Results

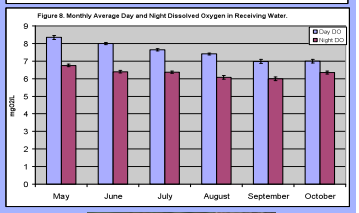
- Water quality in Artesian Slough for 2010 was generally within threshold levels during the earlier part of 2010 (Figure 5).
- Surface DO is substantially higher upstream (near the treatment plant's effluent), due to the effluent's relatively high oxygen content (Figure 6).
- Receiving water DO does not appear to be strongly influenced by Pond A18 discharge (Figure7).
- Receiving water pH and DO is heavily influenced by bay water and incoming tides: changes coincided with tidal & diurnal cycles (Figure 8).

* **Pond Management Strategy**: Years of water quality monitoring have shown that receiving water quality is dominated by tidal effects and bay water, not by pond discharges. Therefore, the current strategy is passive management. Pond discharge and Artesian Slough water quality is monitored for weekly DO "trigger" values. The discharge gate (Figure 9) is only closed if receiving water surface DO < 5.0 mg/L or < 3.3 mg/L at the bottom. This strategy maintains consistent circulation in Pond A18 throughout the dry season, while minimizing environmental stressors on biota within the pond. There were no gate closures in 2010. Also, there were no observations of stressed fish or negative effects to the receiving water as a result of regular discharges from the pond during low-DO periods.



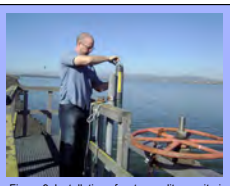



Figure 9. Installation of water quality monitoring equipment at the discharge gate of Pond A18.


Figure 10. Map of Pond A18 showing where water enters the pond and exits into receiving water.

## What lies ahead…..

## Plant Master Plan

The future of A18 is being planned as part of the Plant Master Plan effort (visit www.rebuildtheplant.org for more information). The recommended alternative (Figure 11) opens A18 to tidal action with a terraced habitat on the outboard side of a new levee (Figure 12). The mudflats and salt marsh are intended to increase flood protection for the Plant and provide habitat refugia as sea levels rise (figure 13). Resource agencies (including the saltpond restoration project and the Shoreline study), stakeholders, and the public are helping shape this alternative which will be analyzed for CEQA after April 2011.

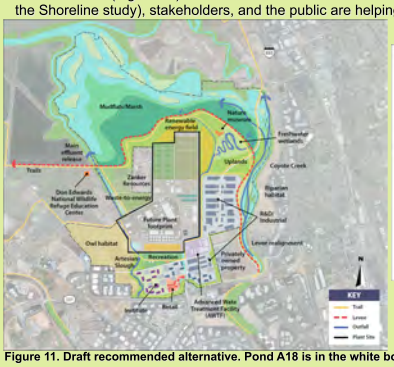



**Figure 11. Draft recommended alternative. Pond A18 is in the white box.**

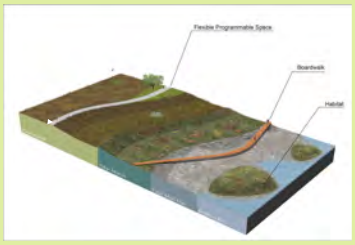


Figure 12. Terraced habitat.

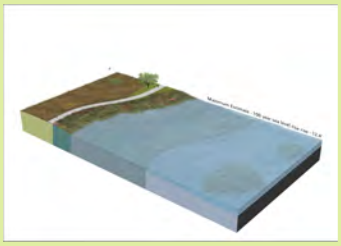


Figure 13. Terraced habitat with sea-level rise.

Figure 14. Marsh mudflat rendering.