

3A. Marine Water Quality — Dissolve Oxygen — Quartermaster Harbor

Target: Marine water meets water quality criteria

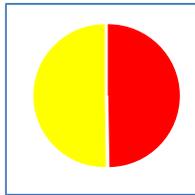
About this indicator: Measures marine water quality at King County’s monitoring locations within Quartermaster Harbor (Figure 1). Quartermaster Harbor has been designated by Washington State as an extraordinary water body

Influencing factors: Water carrying nutrients from septic systems, chemicals from motor vehicles and nitrogen from fertilizers degrade marine water quality and reduce oxygen levels for the animals that live and depend on Puget Sound habitats.

2010 Target: Quartermaster Harbor water quality meets or exceeds the extraordinary marine water quality criteria for dissolved oxygen with no more than 50% of the samples below the criteria within a given year.

2010 Finding:

2 sites. 1 site low DO
 55% of samples below criteria
 1 site moderate DO
 45% of samples below criteria



2010 Status: Both stations (Inner and Outer) in Quartermaster Harbor are of high level of concern in 2010 for low dissolved oxygen levels, Figure 1. The inner harbor station had 55% of the 2010 samples below the extraordinary criteria of 7 mg/L while the outer harbor station had 45% of the 2010 samples below this threshold, Table 1.

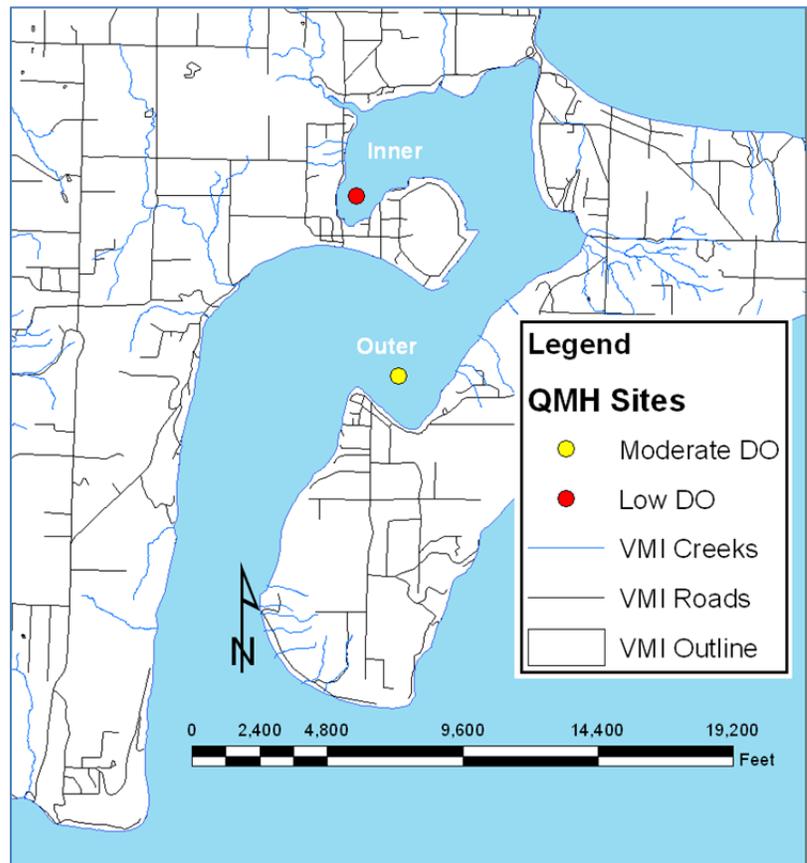
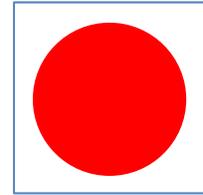


Figure 1. Two locations within Quartermaster Harbor are sampled for dissolved oxygen. The Inner Harbor station had 55% of the 2010 samples below the extraordinary criteria of 7 mg/L while the outer harbor station had 45% of the 2010 samples below this threshold.

2001-2010 Target: All marine monitoring sites have results at or above the state water quality standard (extraordinary criteria of 7 mg/L) on a regular basis.



2001-2010 Assessment:
2 sites; Water Quality in 2010 decreased compared to previous years.

2001-2010 Status: The percentage of samples in 2010 below the water quality criteria increased compared to previous years, Table 1. For the inner harbor station, the 2010 data had more samples below the criteria than any other year. For the outer harbor station, the 2010 data had more samples below the criteria than 3 out of the 4 previous years. The data has been collected since 2006.

Table 1. Dissolved Oxygen data from the bottom values with percentages below the state water quality standard (extraordinary criteria of 7 mg/L) for each year sampled since 2006. Location of each site are shown in Figure 1.

Station	Year	Total Number	Percentage of samples below criteria
Inner	2006	9	22%
	2007	12	25%
	2008	12	17%
	2009	12	25%
	2010	11	55%
Outer	2006	12	25%
	2007	12	50%
	2008	12	42%
	2009	12	17%
	2010	11	45%

Technical Notes: Marine Water Quality – Dissolved Oxygen – Quartermaster Harbor

Data source: The data for this indicator comes from King County DNRP/WLRD Marine Monitoring Group.

Collection frequency: The King County DNRP/WLRD Marine Monitoring Group conducts monthly sampling at the inner and outer harbor since 2006. The Burton Acres County Park station is not used in the assessment of dissolved oxygen.

Methods for analysis: The dissolved oxygen (bottom station) data is compared to the extraordinary quality criteria of 7 mg/L, Figure 2. The total number of annual samples and the number of monthly samples below the criteria are used to calculate the percentage of samples below the criteria

Data Reliability and Quality: The data quality of this indicator is high based on the KC SAP/SOP of sampling collection. The reliability is good based on the consistent and regular collection of the data.

Data Reference: King County, Water and Land Resources Division, Science, Monitoring and Data Management Section

Fecal Coliform (3B) is another marine water quality indicator for overall health of Quartermaster Harbor.

A collaboration of Vashon-Maury Island Groundwater Protection Committee and King County

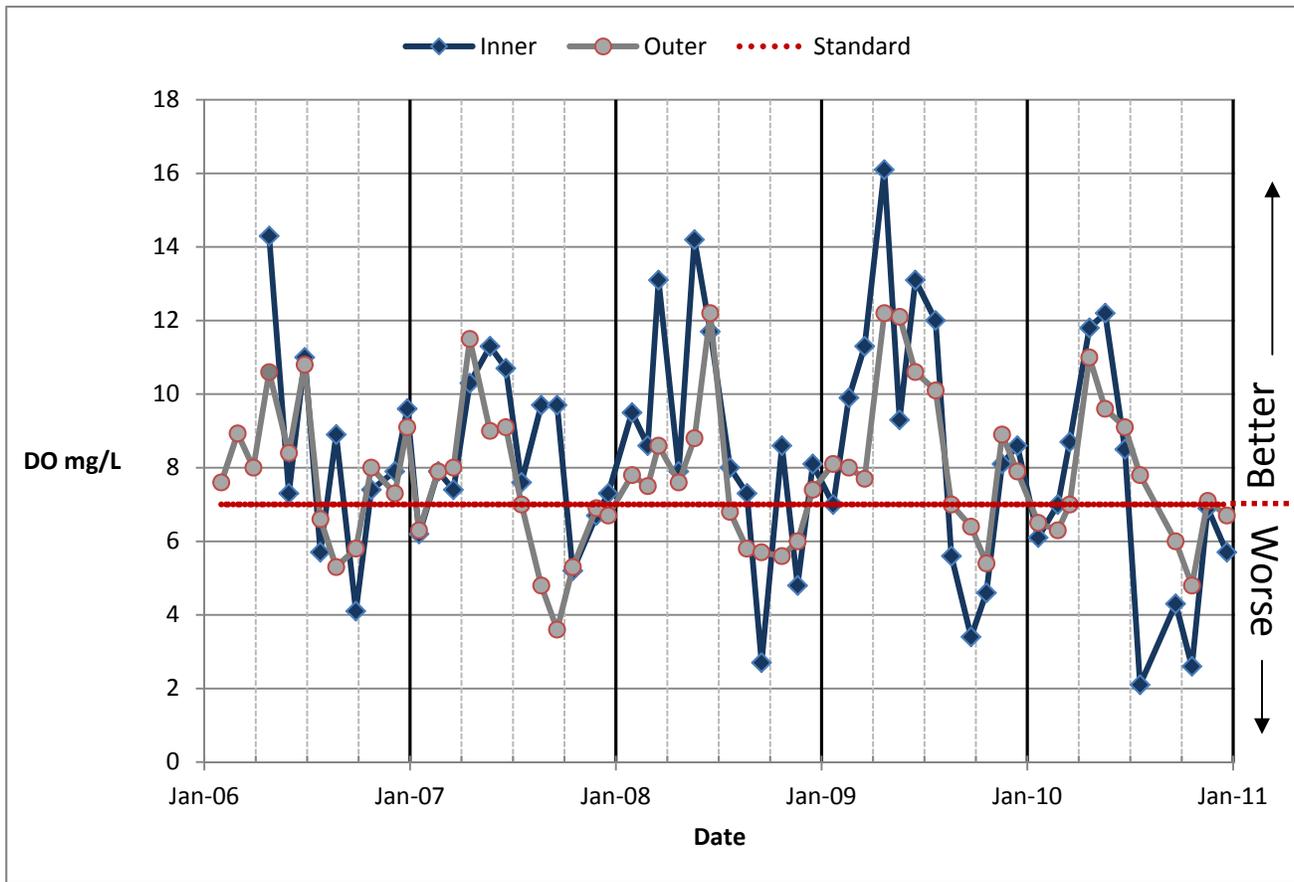
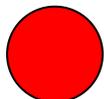


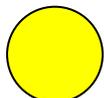
Figure 2. Dissolved Oxygen data (bottom values) for the Inner and Outer Quartermaster Harbor. The extraordinary quality criteria for DO in marine water is 7.0 mg/L - above the line is better

Legend

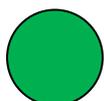
2010 Finding



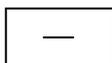
Poor Conditions: Reported data are above Maximum Contaminant Level (MCL) and/or fails to meet the state standard or criteria for a given indicator; needs improvement.



Fair Conditions: On average, data fell between the standard or criteria for “poor” and “good” and may be variable.

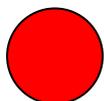


Good Conditions: Reported data are below MCL and/or meet the state standard or criteria for a given indicator.

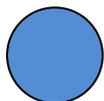


No Annual Assessment

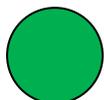
2001-2010 Status



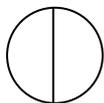
Downward Trajectory: 2001-2010 data shows decreasing or worsening conditions



No Change: 2001-2010 data shows no change with time.



Upward Trajectory: 2001-2010 data indicate increasing or improving conditions



Insufficient Data: reported data has too few data points and/or too short a period

