

2. Stream Water Quality Index

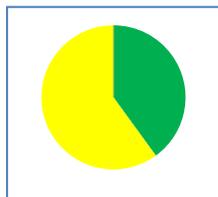
Target: Good Stream Water Quality

About this indicator: Water Quality Index (WQI) integrates key factors into a single number that can be compared over time and across locations. This index compares monthly data of temperature, pH, fecal coliform bacteria, dissolved oxygen, turbidity, total suspended solids, and nutrients (phosphorus and nitrogen) relative to state standards and guidelines.

Influencing factors: Overall stream water quality in King County is impacted by increased development in our region — primarily stormwater runoff. The reduced scores may have resulted from intense rainfall events.

2010 Target: Stream water quality index for the majority of the sites are “low concern” reflecting good water quality within those basins annually.

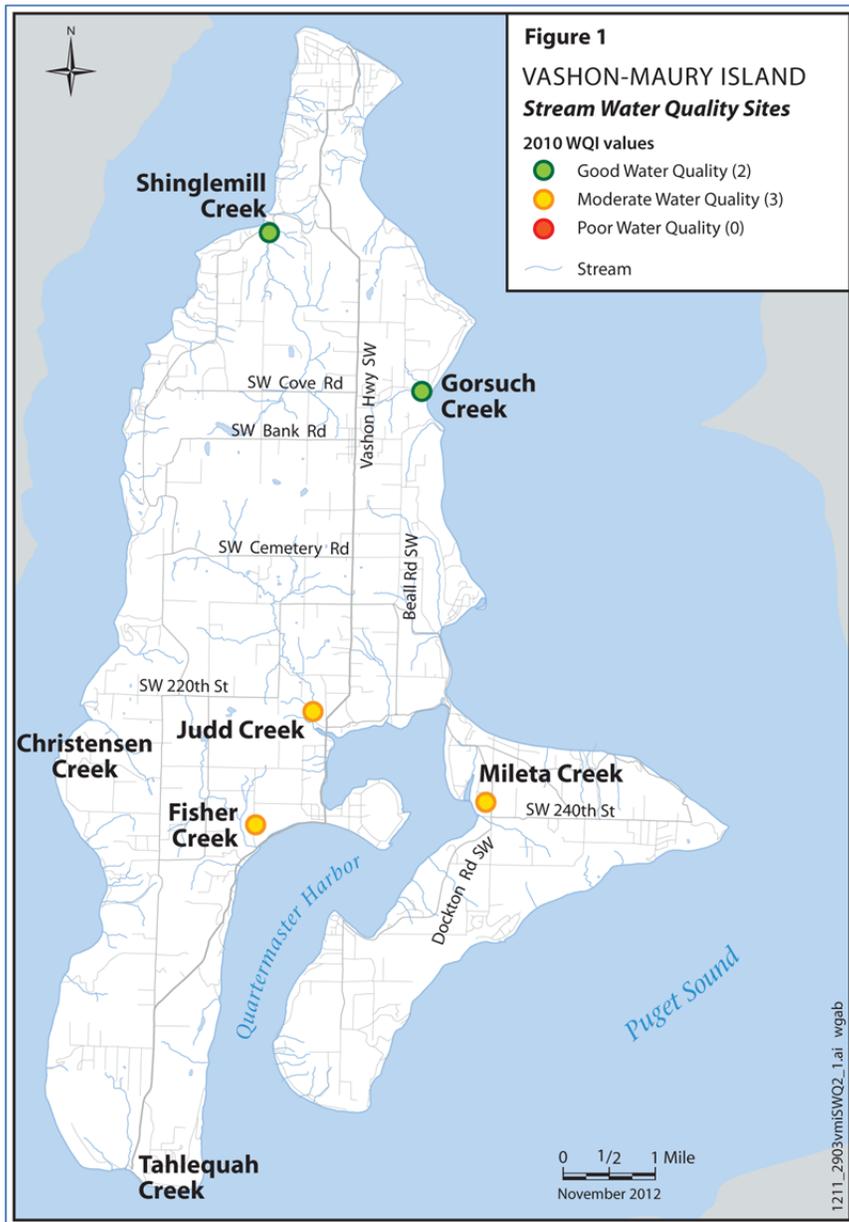
2010 Finding:
2 sites with Good water quality; 3 sites with Moderate water quality



2010 Status: The Water Year 2010¹ WQI scores indicated that 2 of the 5 sampling sites were of low concern (good water quality) while the remaining 3 sites had moderate concern (moderate water quality). No sites were rated of high concern with low water quality, Figure 1 and Table 1. Rating for scores are explained in the technical notes section.

Related indicator: Indicator #7 is another indication of stream health by assessing the Benthic Index of Biological Integrity (BIBI) of the islands creeks

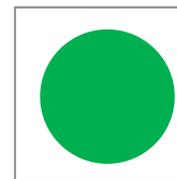
Figure 1. Stream water quality locations shown with WY 2010 WQI scores. Five sites were sampled. In 2010, two sites had scored “Good” water quality; three sites had scored “Moderate” water quality and zero sites had “Poor” water quality. Two inactive sites (Tahlequah and Christensen Creeks) are shown for reference.



¹ Water Year (WY) is a 12 month period starting October 1 and ending September 30 in the following year. Example given: WY2010 is from October 1, 2009 until September 30, 2010. Most hydrologic data are reported by the water year.

2001-2010 Target: Maintaining or improved good water quality for stream sites through time.

2001-2010 Assessment:
5 sites; All scores improved in 2010.



2001-2010 Status: Five of 5 sites had WQI scores in the good to moderate water quality range in 2010 which improved from the previous year, Figure 2 & Table 1. The data has been collected since November 2006. Gorsuch Creek only had 6 samples collected in water year 2010.

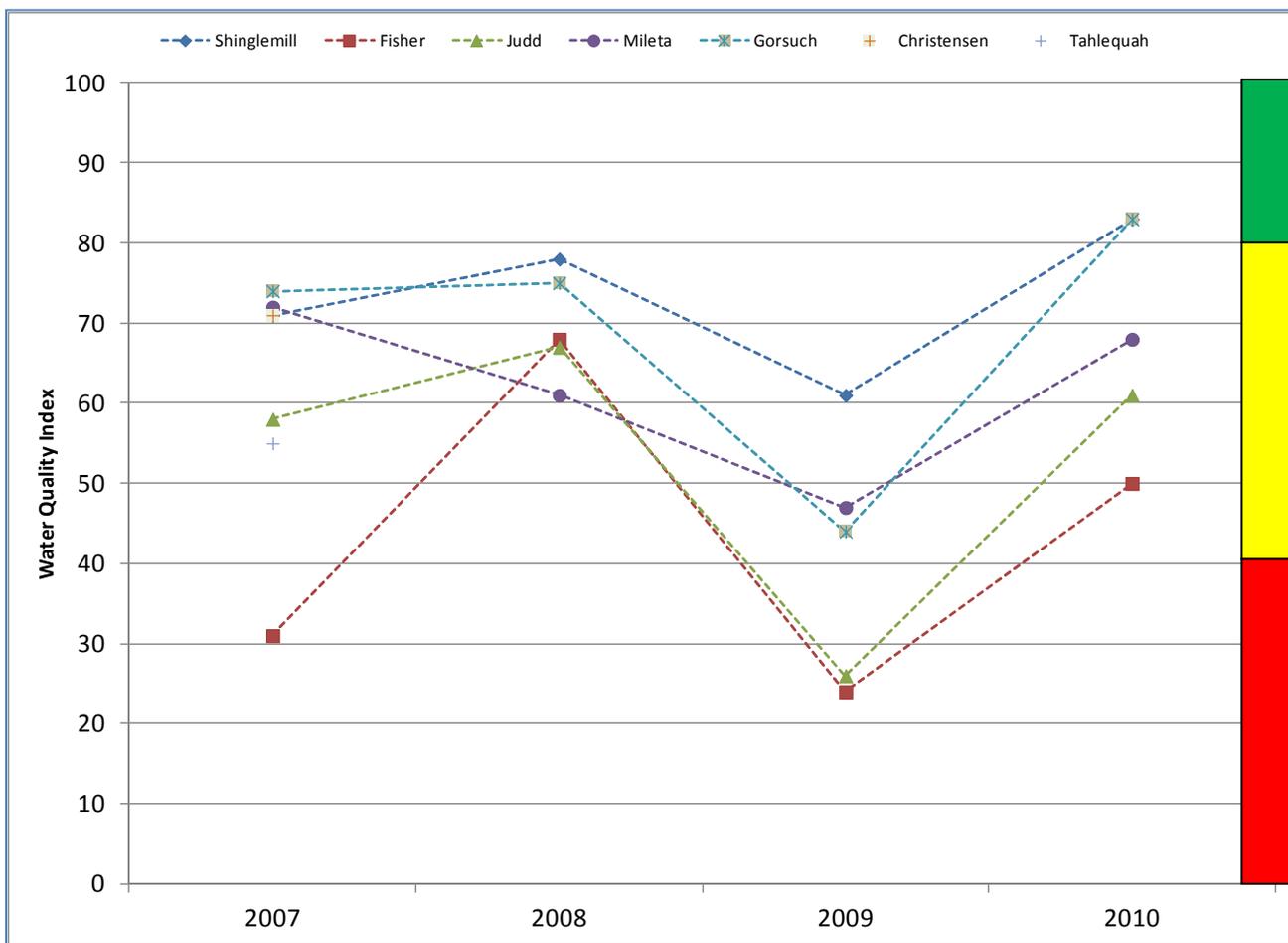


Figure 2. Water Quality Index (WQI) scores for Vashon-Maury Island creeks by water year (October to September). Scores 80 or higher are for sites of low concern – good water quality (green color); Scores 40 or less are for sites of high concern – poor water quality (red color) and scores between 40 and 80 are for sites with Moderate concern with a mix of good and poor water quality (yellow color). Christensen and Tahlequah creeks were only sampled in water year 2007. NOTE: colors above are for VMI indicators and are not ‘typical’ for reporting WQI scores

Technical Notes: Water Quality Index for Vashon-Maury Island Creeks

Data source: The data for this indicator comes from the King County DNRP/WLRD Science, Monitoring and Data Management Section.

Collection frequency: King County has been monitoring stream water quality monthly at five locations on Vashon-Maury Island since November 2006. Recent budget changes to the program required a removal of one site (Gorsuch Creek) from the monitoring program in April 2010.

Methods for analysis: This water quality index will generate a number ranging from 1 to 100. Higher numbers reflect better water quality. The index uses data for temperature, pH, fecal coliform bacteria, dissolved oxygen, turbidity, total suspended solids, and nutrients (phosphorus and nitrogen) relative to state standards required to maintain beneficial uses. The multiple water quality parameters are combined and results aggregated over the water year to produce a single score for each sample station. In general, stations scoring 80 and above meet expectations and are of "low concern" with good water quality, scores 40 to 80 indicate "moderate concern and water quality", and stations with scores below 40 do not meet expectations and are of "high concern" with poor water quality. Analysis done using Washington Department of Ecology - Water Quality Index for Washington State Streams (version 5).

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 Resources Evaluation Project – Data Report 2007-2010.

Washington Department of Ecology - Water Quality Index for Washington State Streams (version 5); http://www.ecy.wa.gov/programs/eap/fw_riv/docs/WQIOverview.html.

Table 1. Water Quality Index (WQI) for stream on Vashon-Maury Island. Data are presented as Water Year since data collected started in November 2006. WQI scores are explained in the Technical Notes section. Scores 80 or higher are for sites of low concern – good water quality; Scores 40 or less are for sites of high concern – poor water quality and scores between 40 and 80 are for sites with Moderate concern with a mix of good and poor water quality. NOTE: colors below are for VMI indicators and are not 'typical' for reporting WQI scores.

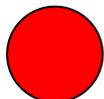
Creek Name	Locator	WY07	WY08	WY09	WY10
Shinglemill	VA12A	71	78	61	83
Fisher	VA41A	31	68	24	50
Judd	VA42A	58	67	26	61
Mileta	VA45A	72	61	47	68
Gorsuch	VA65A	74	75	44	83*
Christensen	VA23	71	—	—	—
Tahlequah	VA37A	55	—	—	—
Total Low Concern – Good WQ		0	0	0	1
Total Moderate Concern & WQ		6	5	3	3
Total High Concern – Poor WQ		1	0	2	0
Total Streams		7	5	5	4

"*" = Gorsuch Creek only has 6 samples (Oct-Mar) in WY10.

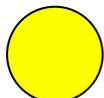
"—" = Not sampled during that water year.

Legend

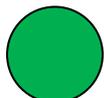
2010 Finding



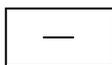
Poor Conditions: Reported data are above Maximum Contaminant Level (MCL) and/or fails to meet the state standard or criteria for a given indicator; needs improvement.



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

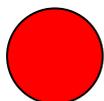


Good Conditions: Reported data are below MCL and/or meet the state standard or criteria for a given indicator.



No Annual Assessment

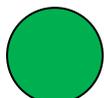
2001-2010 Status



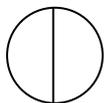
Downward Trajectory: 2001-2010 data shows decreasing or worsening conditions



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

