

**Blackstone River Coalition  
Watershed-wide Volunteer Water Quality Monitoring Program  
Procedure for Developing 2006 Monitoring Season Report Card**

1. Samples are collected and tested on the second Saturday of the month from April to November. Sites must be sampled at least 6 times out of 8 possible monitoring events. Monthly raw data is color coded by parameter according to guidance provided by MA DEP. See chart below.

<b>Category/Indicator</b>	<b>Units</b>	<b>Excellent <i>green</i></b>	<b>Good <i>yellow</i></b>	<b>Fair <i>orange</i></b>	<b>Poor <i>red</i></b>
<b>AESTHETICS</b>					
Turbidity	NTU	0-1	greater than 1, less than 5	5 - 50	>50
<b>CHEMICAL</b>					
Dissolved Oxygen	Cold water	≥8 mg/l	>6 – 7 mg/l	5 – 6 mg/l	<5 mg/l
	Warm water	≥6 mg/l	5 – < 6 mg/l	4 – <5 mg/l	<4 mg/l
	% Saturation	91 – 110 %	71 – 90 %	50 – 70 %	< 50%
Temperature	Cold water	< 15°C (<59°F)	15°C - <20°C (59°F - <68°F)	20°C – 24°C (68°F – 75.5°F)	>24°C (>75.2°F)
	Warm water	< 24°C (<75.2°F)	24°C - <27°C (75.2° - <80.6°F)	27°C – 28°C (80.6°F – 83°F)	>28°C (>83°F)
<b>NUTRIENTS</b>					
Orthophosphate as P	mg/l	<.025	.025 - <.05	.05 - .1	>.1
Nitrate as N	mg/l	<0.3	0.3 - <.6	0.6 – 0.9	>0.9

*Adapted from: MA DEP's SMART Monitoring Watershed Report Card Criteria, Kimball, Warren.2005.unpublished. DEP, Worcester.*

2. Parameters are grouped into the following categories: aesthetics, water temperature, dissolved oxygen (DO), DO % saturation, and nutrients
  - aesthetics includes the following measurements: turbidity, water appearance, water odor, nuisance aquatic vegetation, erosion, presence of trash a visual assessment of turbidity and knowledge of the site
  - water temperature
  - dissolved oxygen
  - water temperature
  - nutrients includes the following parameters: nitrate and orthophosphate

3. The report card includes an overall grade for each category (for each site monitored)
- aesthetics
    - using best professional judgment all measurements are assessed to determine an overall grade. This is the most subjective category.
  - water temperature
    - for sites designated as a cold water fishery the grade is determined by the lowest grade received even if it is a one time occurrence. For other sites if there is one outlier (low grade) the results are evaluated as a whole and best professional judgment is used to determine grade
  - dissolved oxygen
    - if one or more monitoring event includes a DO grade in the red (poor), the site receives a red (poor) overall grade
    - if one or more monitoring event includes a DO grade in the orange (fair), the site receives an orange (fair) overall grade
    - if one or more monitoring event includes a DO grade in the yellow (good), the site receives a yellow (good) overall grade
    - if every monitoring event results in a DO grade in the green (excellent), the site receives a green (excellent) overall grade
    - if the site experiences one or more no flow events it receives a red (poor) overall grade
  - DO % saturation
    - for sites designated as a cold water fishery the grade is determined by the lowest grade received even if it is a one time occurrence. For other sites if there is one outlier (low grade) the results are evaluated as a whole and best professional judgment is used to determine grade
  - nutrients
    - averages are calculated for both nitrate (as nitrogen) and orthophosphate (as phosphorous)
    - overall site grades are assigned primarily based on the phosphorous average, due to phosphorous being the limiting nutrient in fresh water.
    - if the average phosphorous grade falls into the orange (fair) or yellow (good) category, but more than one monitoring event has a phosphorous red (poor) rating (excluding wet weather events\*), the site is given an overall grade of red (poor)

*\* April, May and June were considered wet weather events*

4. Report card includes the following notations
- \*cwf indicates designated cold water fishery, which means cold water standards for DO and water temperature were used
  - \*\*in the site location column indicates the site experienced no flow conditions during one or more sampling events during the season

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