



**Description of River Water Quality Parameters**

**Below are brief descriptions of common water quality parameters monitored in rivers by DES and a description of what certain levels may mean in terms of river quality. Please note the categories are provided only as general guidance. Also, the text is based on DES protocols and may not be completely applicable to data submitted by other agencies.**

**PARAMETER:** CHLOROPHYLL *a* (abbreviated as Chlor *a*)

**Unit of Measurement:** micrograms/liter (abbreviated as µg/l)

**Description:** An estimate of the biomass of planktonic algae in the river. The technical term "biomass" is used to represent "amount by weight". Chlorophyll *a* can be strongly influenced by phosphorus, which is derived by natural and human activities.

**Visual observation:** Green, suspended particles

**Class A NH surface water quality standard:** No numeric standard

**Class B NH surface water quality standard:** No numeric standard

<b>Categories</b>	
< 3	Excellent
3 - 7	Good
7 - 15	Less than desirable
> 15	Nuisance

**PARAMETER:** COLOR (no abbreviation)

**Unit of Measurement:** units (no abbreviation)

**Description:** A visual measure of the color of the water. Color is generally caused by decaying organic matter and by naturally occurring metals, such as iron and manganese, in the soils. A highly colored river generally may have extensive wetlands along the shore or within the watershed.

**Visual observation:** See Categories below

**Class A NH surface water quality standard:** No numeric standard; As naturally occurs

**Class B NH surface water quality standard:** No numeric standard; No color in such concentrations that would impair any existing or designated use, unless naturally occurring.

<b>Categories</b>	
0 – 25	clear
25 – 40	light tea-color
40 – 80	tea color
> 80	dark tea color



**Description of River Water Quality Parameters (continued)**

**PARAMETER:** CONDUCTIVITY or SPECIFIC CONDUCTANCE  
(abbreviated as Cond or SpCond)

**Unit of Measurement:** micromhos per centimeter or microsiemens per centimeter (abbreviated as  $\mu\text{mhos/cm}$  or  $\mu\text{S/cm}$ , respectively)

**Description:** Conductivity is a numerical expression of the ability of water to carry an electric current at 25°C. The difference between conductivity and specific conductance is specific conductance accounts for the actual water temperature rather than 25°C. Conductivity and specific conductance levels are influenced by human sources, such as stormwater runoff, or natural sources, such as bedrock. Conductivity and specific conductance can indicate the presence of chloride, nitrate, sulfate, phosphate, or other ions. Mountain streams typically have low conductivity and freshwater coastal streams typically have high conductivity.

**Visual observation:** None

**Class A NH surface water quality standard:** No numeric standard

**Class B NH surface water quality standard:** No numeric standard

Categories (excluding regional natural variations)	
0 - 100	Normal
101 - 200	Low impact
201 - 500	Moderate impact
> 501	High impact

**PARAMETER:** DISSOLVED OXYGEN (abbreviated as DO)

**Unit of Measurement:** concentration (milligrams per liter) and saturation (percent); (abbreviated as mg/L and %, respectively)

**Description:** A measure of the amount of oxygen in the water: concentration is a measure of the amount of oxygen in a volume of water; saturation is a measure of the amount of oxygen in the water compared to the amount of oxygen the water can actually hold at full saturation. Oxygen is introduced into the water from the atmosphere through turbulence from wind and wave action or from rocky, steep, or uneven stream beds. Aquatic plants and algae produce oxygen in the water during the day, but consume oxygen during the night. Dead and decaying organic matter in the water consumes oxygen, day or night.

**Visual observation:** None

**Class A NH surface water quality standard:** Unless naturally occurring, 75% minimum daily average; 6 mg/L at any place or time

**Class B NH surface water quality standard\*:** Unless naturally occurring, 75% minimum daily average; 5 mg/L instantaneous minimum

\*Contact DES or refer to NH Code of Administrative Rules Env-Ws 1703.07 for standards relative to lakes, ponds, and impoundments and coldwater fisheries



**Description of River Water Quality Parameters (continued)**

**PARAMETER:** *ESCHERICHIA COLIFORM* (abbreviated as *E. coli*)

**Unit of Measurement:** counts per 100 ml (abbreviated as cts/100 ml)

**Description:** An indicator of the potential for the presence of pathogens in fresh water. *E. coli* is almost always found in the intestinal tracts of humans and warm-blooded animals, and can be excreted in their fecal material.

**Visual observation:** Typically none

**Class A NH surface water quality standard:** Unless naturally occurring, shall contain not more than either a geometric mean of 47 *E. coli* cts/100 mL based on at least three samples obtained over a sixty-day period, or greater than 153 *E. coli* cts/100 mL in any one sample

**Class B NH surface water quality standard:** Unless naturally occurring, shall contain not more than either a geometric mean of 126 *E. coli* cts/100 mL based on at least three samples obtained over a sixty-day period, or greater than 406 *E. coli* cts/100 mL in any one sample

\*Contact DES for criteria that applies at designated beaches.

**PARAMETER:** pH (no abbreviation)

**Unit of Measurement:** units (no abbreviation)

**Description:** A measure of the hydrogen ion activity in the water or, in general terms, the acidity of the water. pH is measured on a logarithmic scale of 0 to 14, with 7 being neutral. A high pH is indicative of an alkaline or basic environment, and a low pH is indicative of an acidic environment. pH is influenced by geology and soils, organic acids (decaying leaves and other matter), and human-induced acids from acid rain.

**Visual observation:** Some clear rivers can be highly acidic

**Class A NH surface water quality standard:** No numeric standard; As naturally occurs

**Class B NH surface water quality standard:** Between 6.5 and 8, unless naturally occurring

<b>Categories</b>	
$< 5.0$	High impact
5.0 - 5.9	Moderate to high impact
6.0 - 6.4	Normal; Low impact
6.5 - 8.0	Normal; Within NH water quality standards
8.0 - 9.0	Low to moderate impact



**Description of River Water Quality Parameters (continued)**

**PARAMETER:** SECCHI DISK TRANSPARENCY

**Unit of Measurement:** feet

**Description:** A naked-eye measure of water clarity generally correlated with the amount of planktonic algae in the river, but can also relate to the turbidity from suspended soil particles.

**Visual observation:** Clear, green, brown

**Class A NH surface water quality standard:** No numeric standard

**Class B NH surface water quality standard:** No numeric standard

<b>Categories</b>	
< 4	Poor
4 - 15	Good
> 15	Excellent

**PARAMETER:** TOTAL KJELDAHL NITROGEN (abbreviated TKN)

**Unit of Measurement:** milligrams per liter (abbreviated mg/L)

**Description:** A measure of the amount of ammonia and organic nitrogen in the water,. High nitrogen can increase the amount of algae and chlorophyll *a* levels in the river, but is generally of less concern in fresh water when compared to phosphorus. Nitrogen can indicate the presence of sewage, animal waste, fertilizer, erosion, or other types of pollution.

**Visual observation:** None

**Class A NH surface water quality standard:** No numeric standard; As naturally occurs

**Class B NH surface water quality standard:** No numeric standard; Unless naturally occurring, shall contain no nitrogen in such concentrations that would impair any existing or designated uses

<b>Categories</b>	
< 0.25	Ideal
0.26 - 0.40	Average
0.41 - 0.50	More than desirable
> 0.51	Excessive (potential nuisance concentration)



**Description of River Water Quality Parameters (continued)**

**PARAMETER:** TOTAL PHOSPHORUS (abbreviated as TP)

**Unit of Measurement:** micrograms/liter (abbreviated as µg/l)

**Description:** A measure of all forms of phosphorus in the water, including inorganic and organic forms. Phosphorus is generally the plant nutrient that is limiting in New Hampshire's rivers. In other words, the amount of phosphorus present in the water column determines the amount of planktonic algae that will grow in the river. High phosphorus can increase the amount of algae and chlorophyll *a* levels in the river. Phosphorus can indicate the presence of sewage, animal waste, fertilizer, erosion, or other types of pollution.

**Visual observation:** None

**Class A NH surface water quality standard:** No numeric standard; As naturally occurs

**Class B NH surface water quality standard:** No numeric standard; Unless naturally occurring, shall contain no phosphorus in such concentrations that would impair any existing or designated uses

<b>Categories</b>	
< 0.010	Ideal
0.011 - 0.025	Average
0.026 - 0.050	More than desirable
> 0.051	Excessive (potential nuisance concentration)

**PARAMETER:** TURBIDITY

**Unit of Measurement:** Nephelometric turbidity units (abbreviated as NTU)

**Description:** An indicator of the amount of suspended material in the water, such as clay, silt, algae, suspended sediment, and decaying plant material. A high degree of turbidity can scatter the passage of light through the water and inhibit light from reaching important areas. Rain events often contribute turbidity to surface waters by flushing sediment, organic matter, and other materials from the surrounding landscape into surface waters. Turbidity is usually very high during springtime snowmelt.

**Visual observation:** Brown, green, grey suspended particles

**Class A NH surface water quality standard:** As naturally occurs

**Class B NH surface water quality standard:** Shall not exceed naturally occurring conditions by more than 10 NTU

<b>Categories</b>	
0 - 5	Desirable and typical for most NH rivers
6 - 10	Low impact
11 - 50	Moderate impact; potentially observable with the naked eye
51 - 100	Moderate-high impact; observable with the naked eye
> 101	High impact; easily observable with the naked eye