

Water Testing

Water Quality Index (WQI)

Water Quality Index

- Water quality index is a 100 point scale that summarizes results from a *total of nine different measurements* when complete:
- Temperature, pH, Dissolved Oxygen
Turbidity, Fecal Coliform
Biochemical Oxygen Total (BOD),
Phosphates
Nitrates, Total Suspended Solids (TSS)

Factors and Weights

Water Quality Factors and Weights

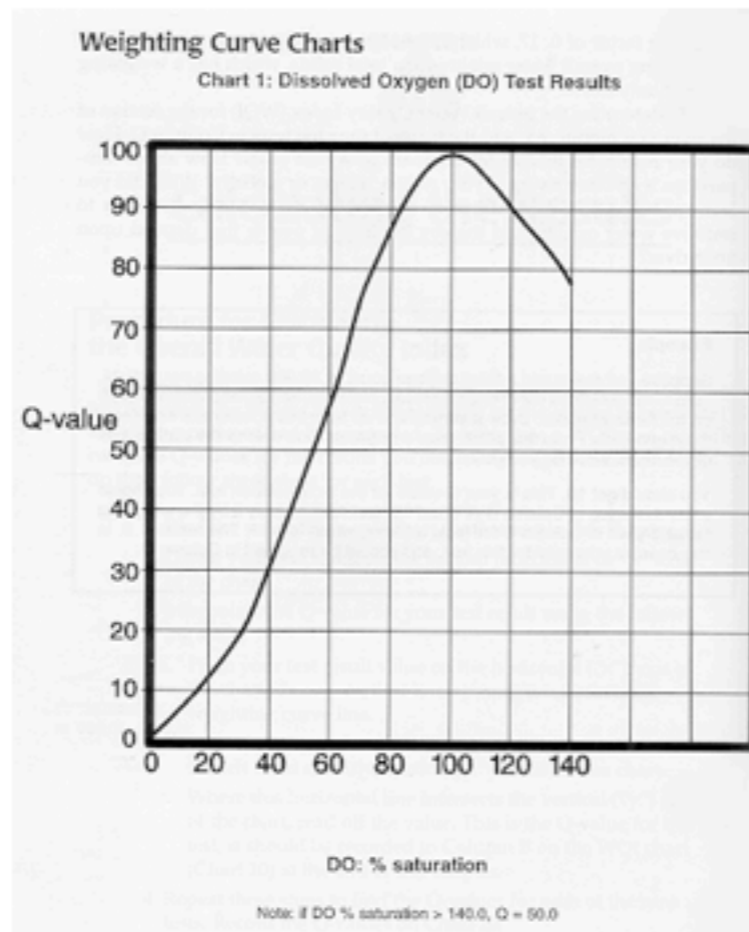
Factor	Weight
Dissolved oxygen	0.17
Fecal coliform	0.16
pH	0.11
Biochemical oxygen demand	0.11
Temperature change	0.10
Total phosphate	0.10
Nitrates	0.10
Turbidity	0.08
Total solids	0.07

DO

- The dissolved oxygen test measures the amount of life-sustaining oxygen dissolved in the water. This is the oxygen that is available to fish, invertebrates, and all other animals living in the water. Most aquatic plants and animals need oxygen to survive; in fact, fish will drown in water when the dissolved oxygen levels get too low. Low levels of dissolved oxygen in water are a sign of possible pollution.

Dissolved Oxygen

Water Quality Index: DO sat (%)



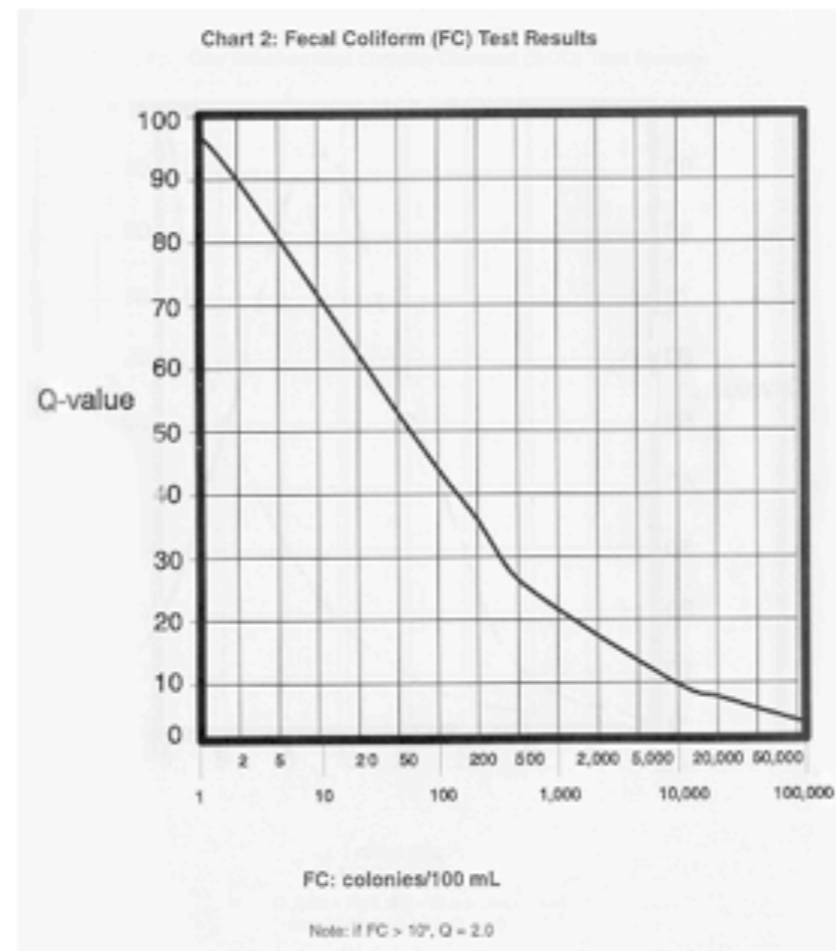
Note: If dissolved oxygen is greater than 140%, the quality index equals 50.

Fecal Coliform

- Fecal coliform is a form of bacteria found in human and animal waste.

Fecal Coliform

Water Quality Index: Fecal Coli



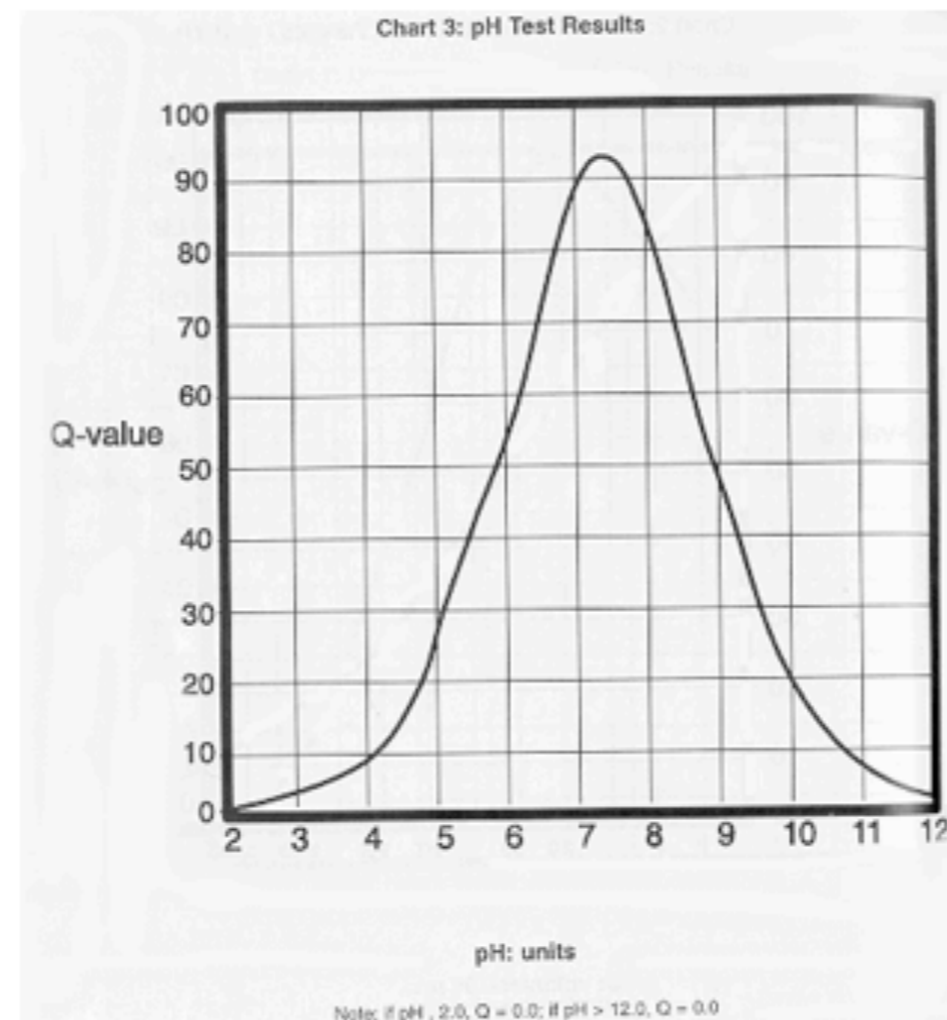
Note: If the number of fecal coliform colonies is greater than 100,000, the quality index equals 2.

pH

- The pH level is a measure of the acid content of the water. Most forms of aquatic life tend to be very sensitive to pH. Water containing a great deal of organic pollution will normally tend to be somewhat acidic. Water with a pH of 7 is considered neutral. If the pH is below 7, it is classified as acidic, while water with a pH greater than 7 is said to be alkaline. The pH of tap water in the U.S. is usually between 6.5 and 8.5.

pH

Water Quality Index: pH



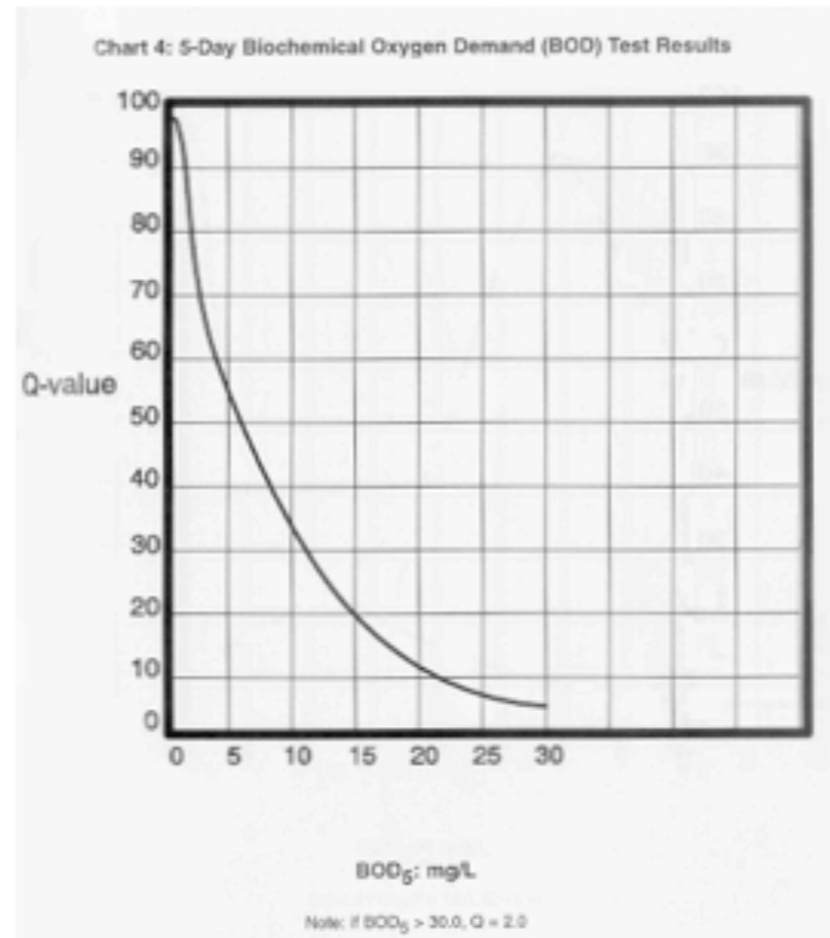
Note: If pH is less than 2.0 or greater than 12.0, the quality index equals 0.

BOD

- The Biochemical Oxygen Demand (or BOD) is a measure of the amount of food for bacteria that is found in water. Bacteria utilize organic matter in their respiration and remove oxygen from the water. The BOD test provides a rough idea of how much biodegradable waste is present in the water. (Biodegradable waste is usually composed of organic wastes, including leaves, grass clippings, and manure).

BOD

Water Quality Index: BOD



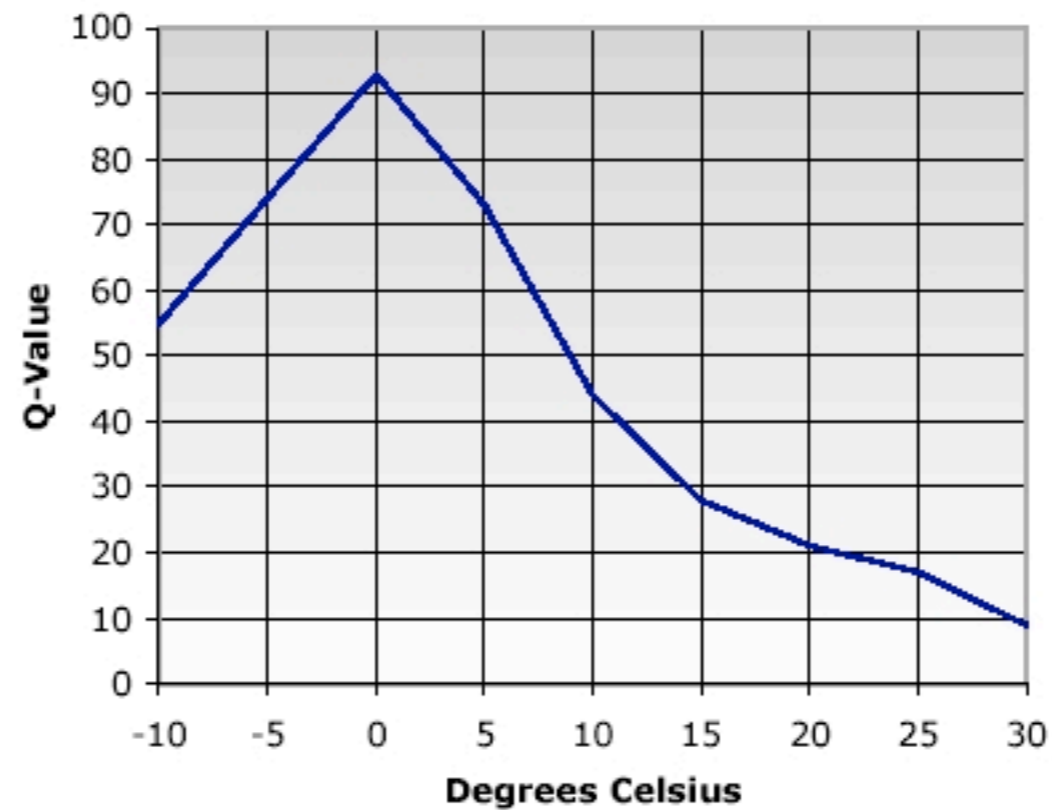
Note: If biochemical oxygen demand is greater than 30 ppm, the quality index equals 2.

- The water temperature of a river is very important, as many of the physical, biological, and chemical characteristics of a river are directly affected by temperature. Most waterborne animal and plant life survives within a certain range of water temperatures, and few of them can tolerate extreme changes in this parameter. Using the same thermometer, the water temperature should be checked at the test site and at a similar site one mile upstream.

Temperature (C)

**Temperature (Water Quality Index Calculator)
Based On Temperature Change from a Reference Site**

Temperature Results



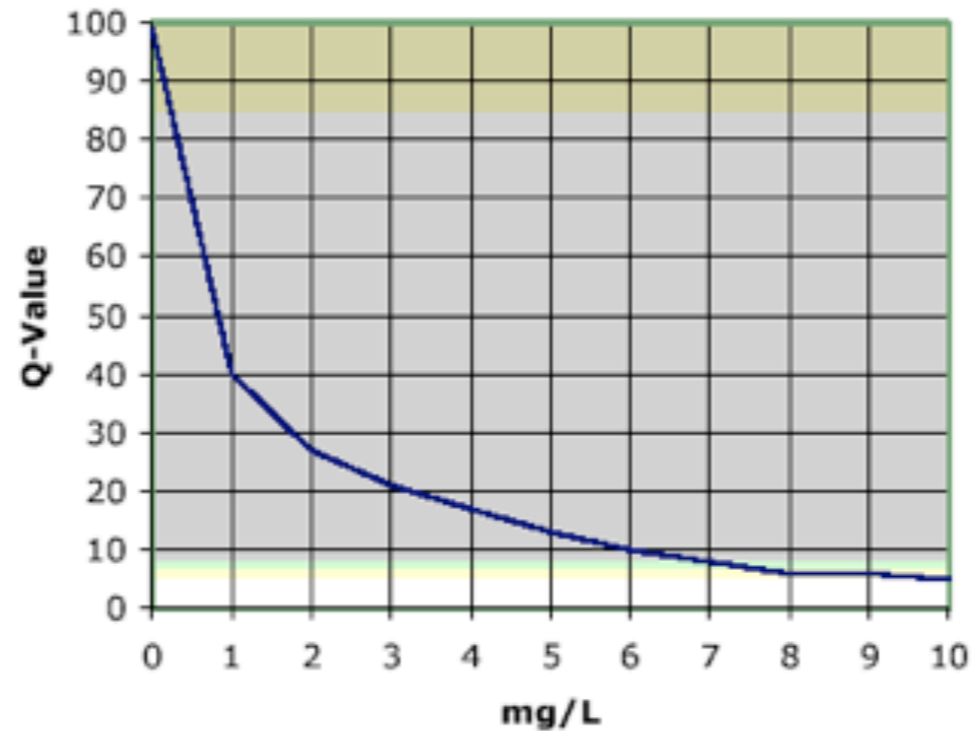
Phosphates

- Phosphates are chemical compounds made from the elements phosphorous and oxygen; they are necessary for plant and animal growth. Phosphates can be present in water in many forms, so total phosphate gives an estimate of the total amount of phosphate potentially available in a given water supply.

Phosphates

Water Quality Index: Total Phosphate

Phosphate Results



(Note: If phosphate > 10.0, Q=2.0)

Note: If total phosphate is greater than 10 ppm, the quality index equals 2.

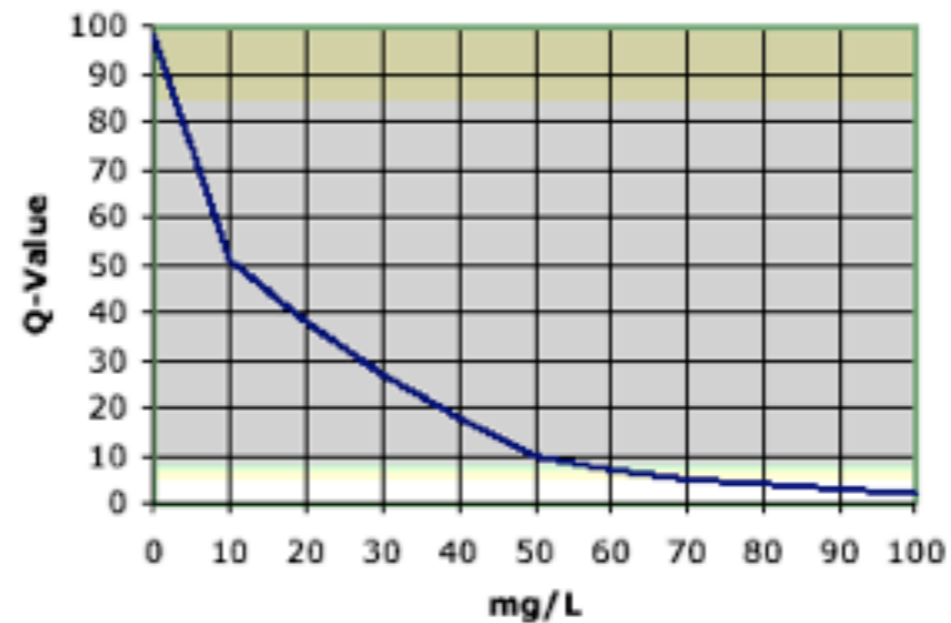
Nitrates

- Nitrates are a measure of the oxidized form of nitrogen and are an essential macronutrient in aquatic environments. Nitrates can be harmful to humans, because our intestines can break nitrates down into nitrites, which affects the ability of red blood cells to carry oxygen. Nitrites can also cause serious illnesses in fish.

Nitrates

Water Quality Index: Nitrate

Nitrate Results



(If Nitrates > 100.0, Q=1.0)

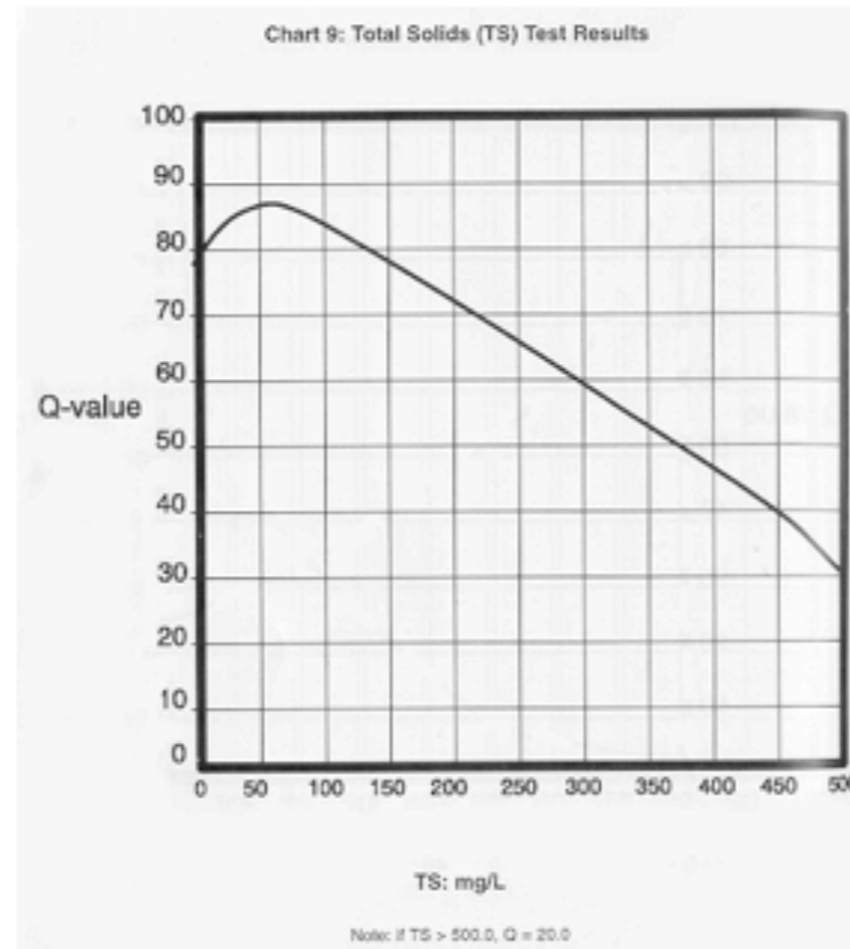
Note: If nitrate nitrogen is greater than 100 ppm,
the quality index equals 1.

TDS

- This is a measure of the solid materials dissolved in the river water. This includes salts, some organic materials, and a wide range of other things from nutrients to toxic materials. A constant level of minerals in the water is necessary for aquatic life. Concentrations of total dissolved solids that are too high or too low may limit growth and lead to the death of many aquatic life forms.

Total Dissolved Solids

Water Quality Index: Total Solids



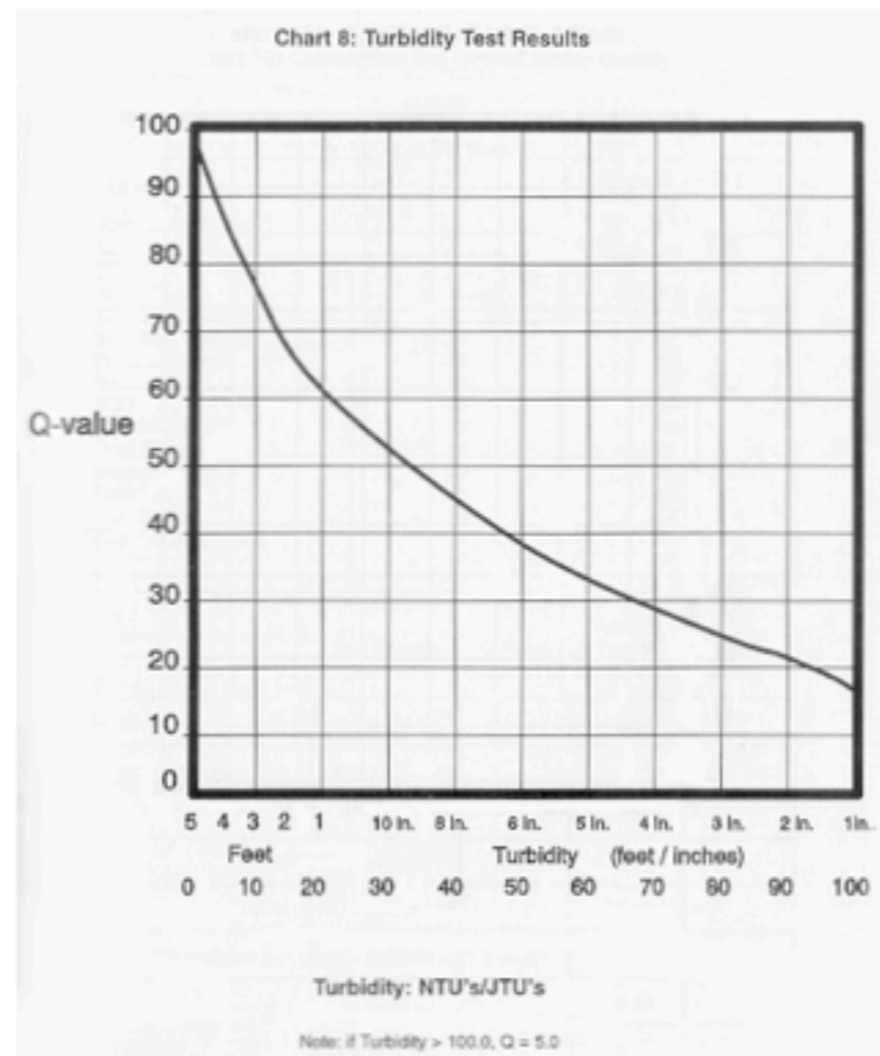
Note: If total solids is greater than 500 ppm, the quality index equals 20.

Turbidity

- Turbidity is a measure of the dispersion of light in a column of water due to suspended matter. The higher the turbidity, the cloudier the water appears. If water becomes too turbid, it loses the ability to support a wide variety of plants and other aquatic organisms.

Turbidity

Water Quality Index: Turbidity



Note: If turbidity is greater than 100 ntu, the quality index equals 5.