

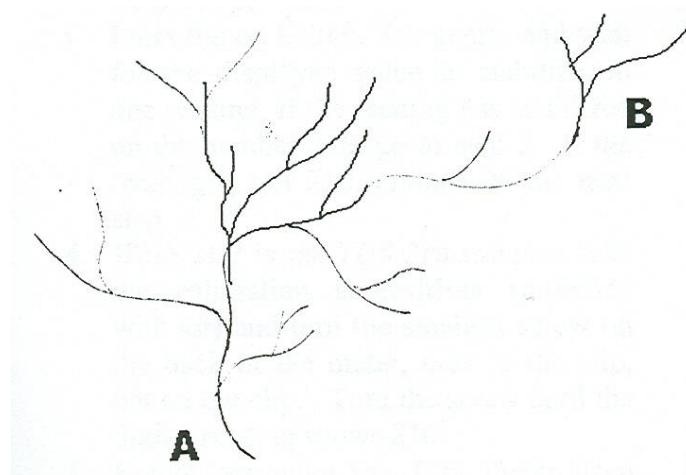
TOTAL DISSOLVED SOLIDS (TDS) FACT SHEET

Definition: The total amount of minerals, organic matter, and nutrients that are dissolved, (not merely suspended) in the water. They are the particles that you can't see in the water.

Dissolved Substances within Water Considered TDS			
<i>Substance</i>	<i>Natural Source</i>	<i>Substance</i>	<i>Natural Source</i>
Calcium (Ca^{+2})	sed./meta. rock	Bicarbonate (HCO^{-})	sed./meta. Rock
Magnesium (Mg^{+2})	sed./ign. rock	Sulfate SO_4^{-2}	sed./ign. Rock
Sodium (Na^{+})	sed./ign. rock	Chlorine (Cl^{-})	all rocks, sea spray
Potassium (K^{+})	sed./ign. rock	Silica (Si^{+4})	all rocks
Hydrogen (H^{+})	sed./ign. rock	Nitrogen (N_2)	N_2 fixation, runoff
Phosphorus (PO_4^{-3})	sed. rocks, runoff	Iron, copper, aluminum	sed. rock, runoff

Background:

- TDS helps regulate the process of osmosis (water flow in and out of an organism's cells).
- Majority of dissolved material in water is from weathering rocks & soil erosion.
- Groundwater, (wells, springs, etc), is high in TDS.
- Typically, the greater the land area of a watershed, the higher the TDS.



If a TDS reading was taken at the mouth of the main stream (Site A) in the watershed to the left, it will be higher than a TDS reading taken at Site B. A smaller land area drains into the stream at site B, and the more contact water has with the land, the greater the concentration of TDS. This is because material is naturally dissolving from rocks and soils into the waterway.

Environmental Impacts:

- Each land region has specific, normal TDS levels. Changes can affect stream life and can indicate a disruption in the watershed.
- Higher TDS values can correspond to low flow periods, when waterway is dominated by groundwater inputs.
- More runoff can increase the TDS concentration because of more soil erosion, (the dissolved particles are carried into the soil).
- Road salt runoff can increase TDS to over 1000 mg/L, which is toxic to life.
- Industrial boiler water inputs can increase TDS.
- Abnormally high or low dissolved solids disturb osmotic balance of native species, (like putting freshwater species in saltwater!).

Water Quality:

- For drinking water, 500 mg/L is the limit.
- For aquatic life, a monthly average of 500 mg/L and a max of 750 mg/L.
- Each component that makes up TDS has water quality limits also.

Links:

1. *Understanding TDS in water*

<http://www.epa.gov/volunteer/stream/vms58.html>

<http://waterontheweb.org/under/waterquality/conductivity.html>