The optimal temperature for hatching salmon is about 9 degrees Celsius. For adult salmon it is about 12 degrees Celsius. Although successful salmon spawning has occurred in waters from 2-21 degrees Celsius, streams and rivers should not exceed 18 degrees Celsius. Temperatures above 21 degrees Celsius are considered unacceptable.

The optimal level of dissolved oxygen for salmon is 9 mg/L. A level of 7-8 mg/L is acceptable, while 3.5-6 mg/L is considered poor. Levels below 3.5 mg/L are likely fatal to salmon. A level below 3 mg/L is stressful to most vertebrates and other forms of aquatic life.

Acid rain is detrimental for fish and aquatic macroinvertebrates. If pH declines below 6.5, fewer salmon eggs hatch and aquatic insect levels drop. Natural rainwater actually has a pH of 5.6, but it is filtered through soil and vegetation so that its pH increases before reaching streams and is not a problem for aquatic life. However, when impermeable surfaces are prevalent in a watershed, this filtration is limited the acidity of water entering the streams is more extreme.

Conductivity is a measure of water’s capability to carry an electric current. This ability relates directly to how many ions, or charged atoms, are in the water. These ions naturally get into the water when rocks break down. Ions can also enter the water from storm water runoff. The temperature of water will impact the conductivity measurement. Measuring specific conductivity corrects the reading so that it is as if it was taken at 25 degrees C. This allows for standardized reporting and easy comparison between readings.

Fecal coliform bacteria is present in the intestines of all warm-blooded animals. While not all fecal coliform bacteria are harmful, they can be used as an indicator for the presence of other bacteria or viruses that are harmful to human and animal health, such as E. coli. Freshwater bodies of water should not exceed fecal coliform levels above 100 colonies per 100 mL, with 50 colonies per 100 mL or less being optimal. Healthy drinking water standards are even lower, at 0 colonies per 100 mL. It is safe to swim in water with 200 colonies per mL, and safe to boat in water with 1000 colonies per mL. High levels of fecal coliform bacteria can lead to the closure of shellfish harvesting.

Turbidity is the measure of light scattering in water. Suspended particles scatter, or reflect, light in water- the dirtier the water, the more light scatters and the greater the turbidity measurement. Turbidity generally increases after storm events, especially in watersheds with more impermeable surfaces. High turbidity is bad for salmon because they rely on visual cues to navigate. Spawning adult salmon may delay their migration upstream when stream-water is too turbid. Similarly, juvenile salmon may delay their migration downstream when stream-water is unnavigable. These delays impact the timing of later life cycle stages.

|  |  |
| --- | --- |
| Date | Precipitation over past 48 hours (in) |
| 10/25/2016 | 0.04 |
| 11/15/2016 | 0.65 |
| 12/13/2016 | 0.38 |
| 1/10/2017 | 0.53 |
| 2/14/2017 | 0.19 |
| 3/7/2017 | 0.03 |
| 4/11/2017 | 0.12 |
| 5/2/2017 | 0.01 |