



Volunteer Monitoring Quarterly Data Report

Beaver Lake Watershed - Benton, Washington and
Madison counties in Arkansas

August 2018

Monitoring Period: August 6-22, 2018

A project of Ozarks Water Watch in Arkansas

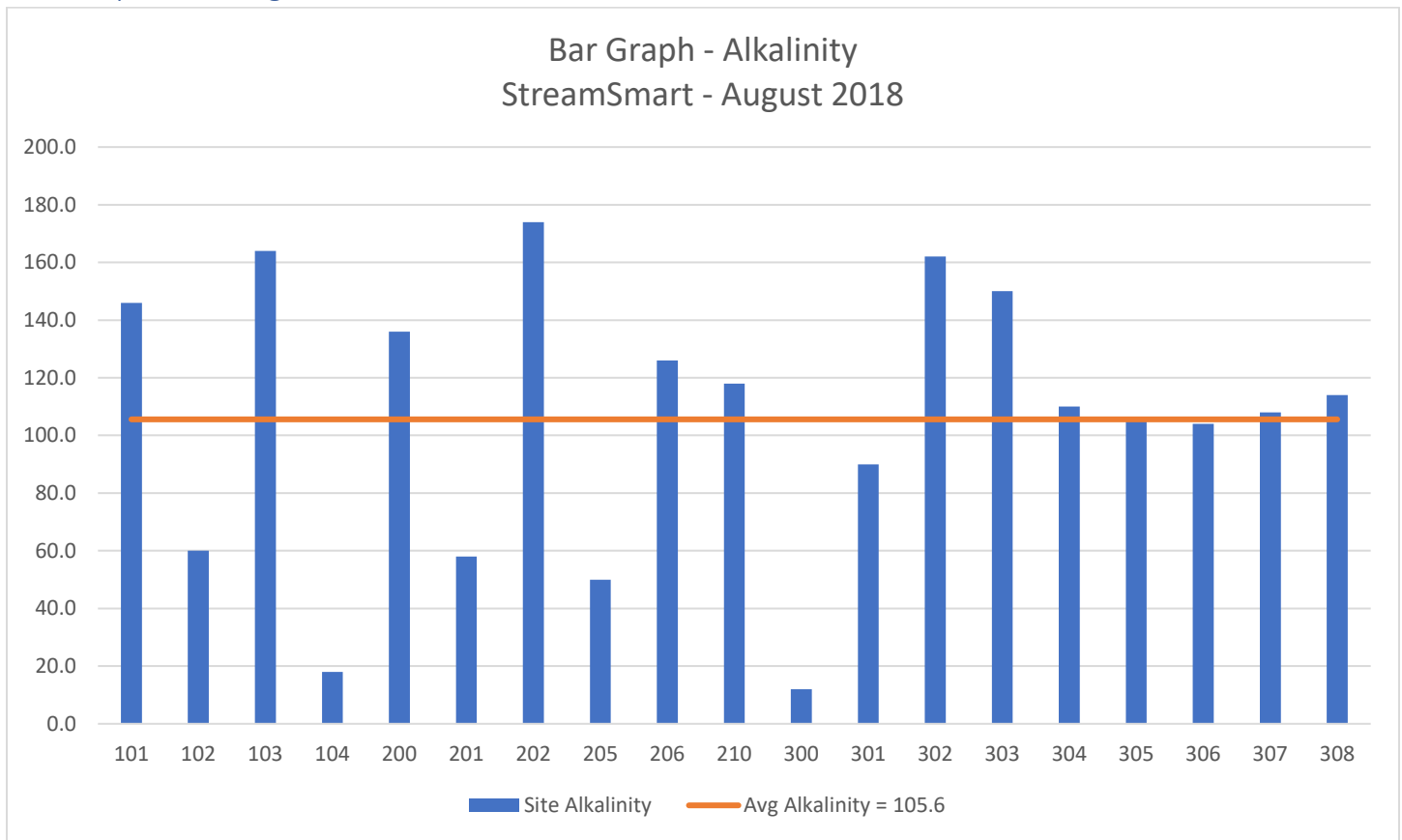
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Ozarks Water Watch
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Rogers, AR 72745*



StreamSmart Monitoring Sites – 2018

Site Number	Site Name	Lat/Long	Watershed
101	West Fork (Baptist Ford Bridge)	35.982714, -94.173129	West Fork
102	West Fork (Brentwood Park)	35.865723, -94.117257	West Fork
103	Baldwin Creek Near St. Paul	35.822256, -93.758937	Headwaters
104	White River Near St. Paul	35.818676, -93.779774	Headwaters
107	War Eagle Creek	35.888319, -93.679017	War Eagle
108	Ogden Creek	35.887777, -93.679069	War Eagle
200	Ward Slough	35.997178, -94.173949	West Fork
201	Middle Fork of W.R. at Harris Rd	35.995825, -94.072894	Middle Fork
202	College Branch - U of A		West Fork
205	Hock Creek	36.022453, -93.859784	Richland Creek
206	Spout Spring Branch	36.055019, -94.161107	West Fork
210	Town Branch (White River Ball fields)	36.043179, -94.135852	West Fork
300	Brush Creek	36.131947, -93.947956	Beaver Reservoir
301	War Eagle Creek (Huntsville)	36.149997, -93.740137	War Eagle
302	Glade Creek	36.159851, -93.811690	War Eagle
303	Clear Creek	36.195153, -93.789276	War Eagle
304	Clifty Creek	36.239342, -93.907653	War Eagle
305	War Eagle (Mill)	36.267597, -93.943130	War Eagle
306	Prairie Creek	36.341208, -94.096513	Beaver Reservoir
307	Holman Creek Upstream of Huntsville	36.104418, -93.756750	War Eagle
308	Holman Creek Downstream of Huntsville	36.124453, -93.734211	War Eagle

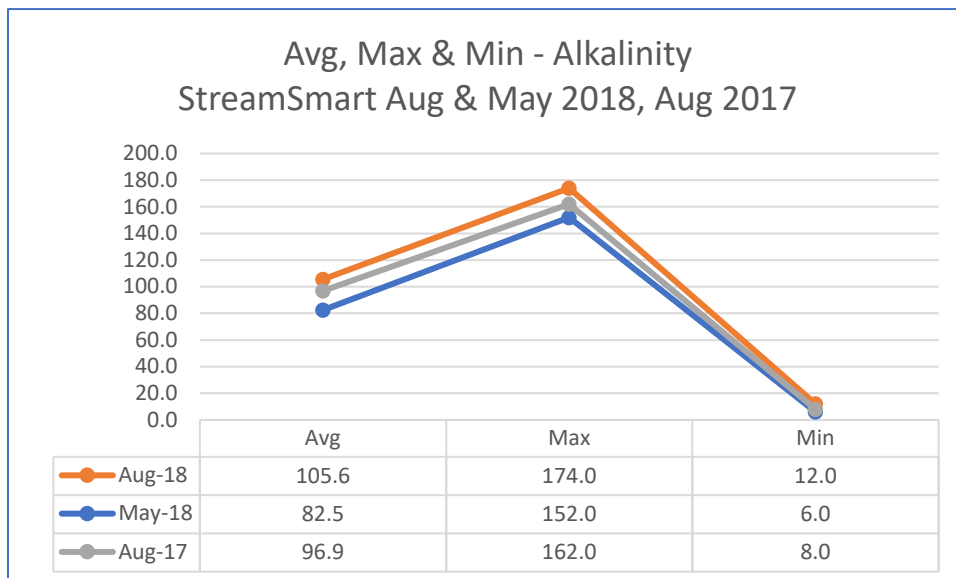
Alkalinity Data – August 2018 StreamSmart



Aug 2018 Data

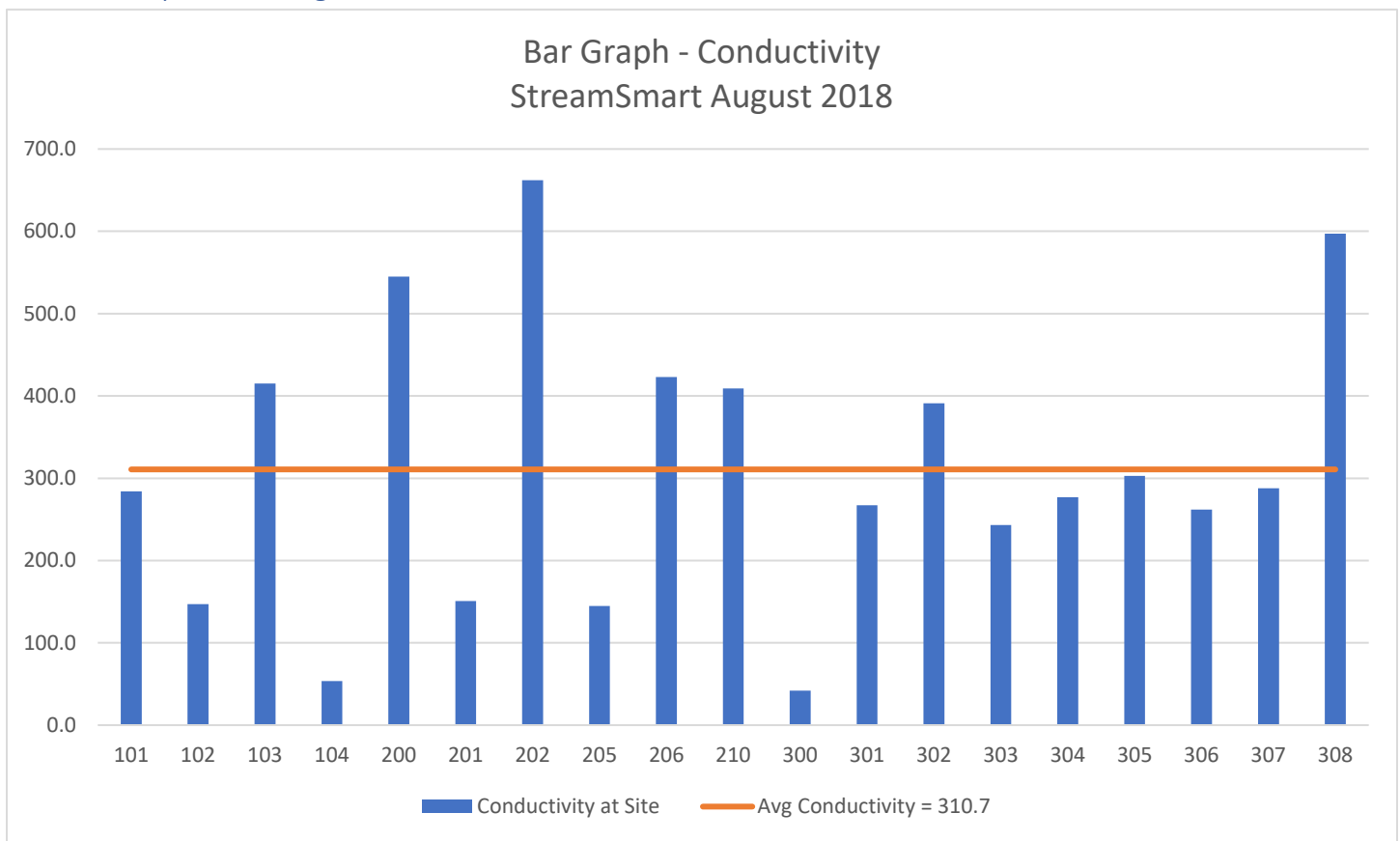
Site	Alkalinity
101	146.0
102	60.0
103	164.0
104	18.0
200	136.0
201	58.0
202	174.0
205	50.0
206	126.0
210	118.0
300	12.0
301	90.0
302	162.0
303	150.0
304	110.0
305	106.0
306	104.0
307	108.0
308	114.0

Current, Previous Quarter, and 1 year ago - average, max, and min



	Max	Min
Aug-18	202 - Ward Slough	300 - Brush Creek
May-18	202 - Mullins Branch	103 - Baldwin Creek
Aug-17	300 - Brush Creek	103 - Baldwin Creek

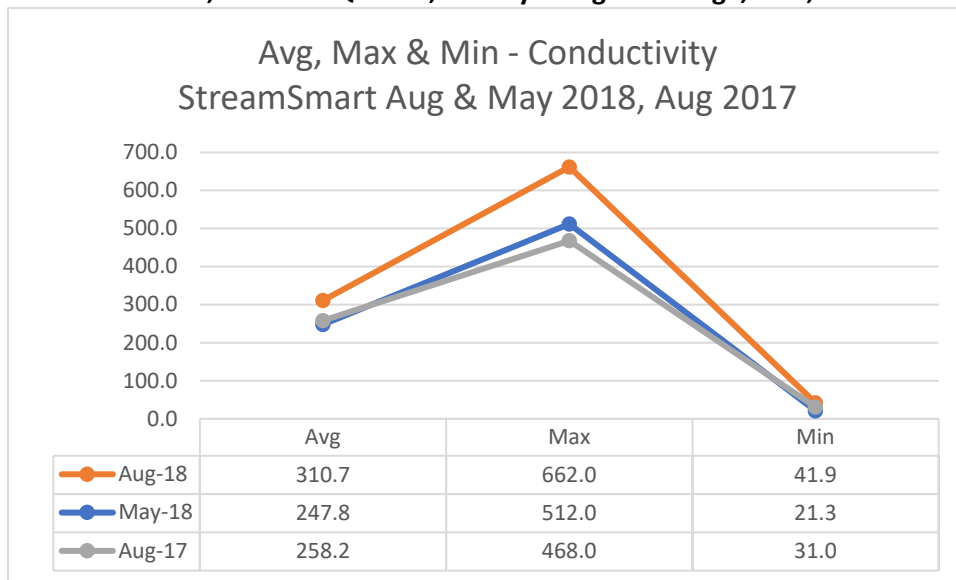
Conductivity Data – August 2018 StreamSmart



August 2018 Data

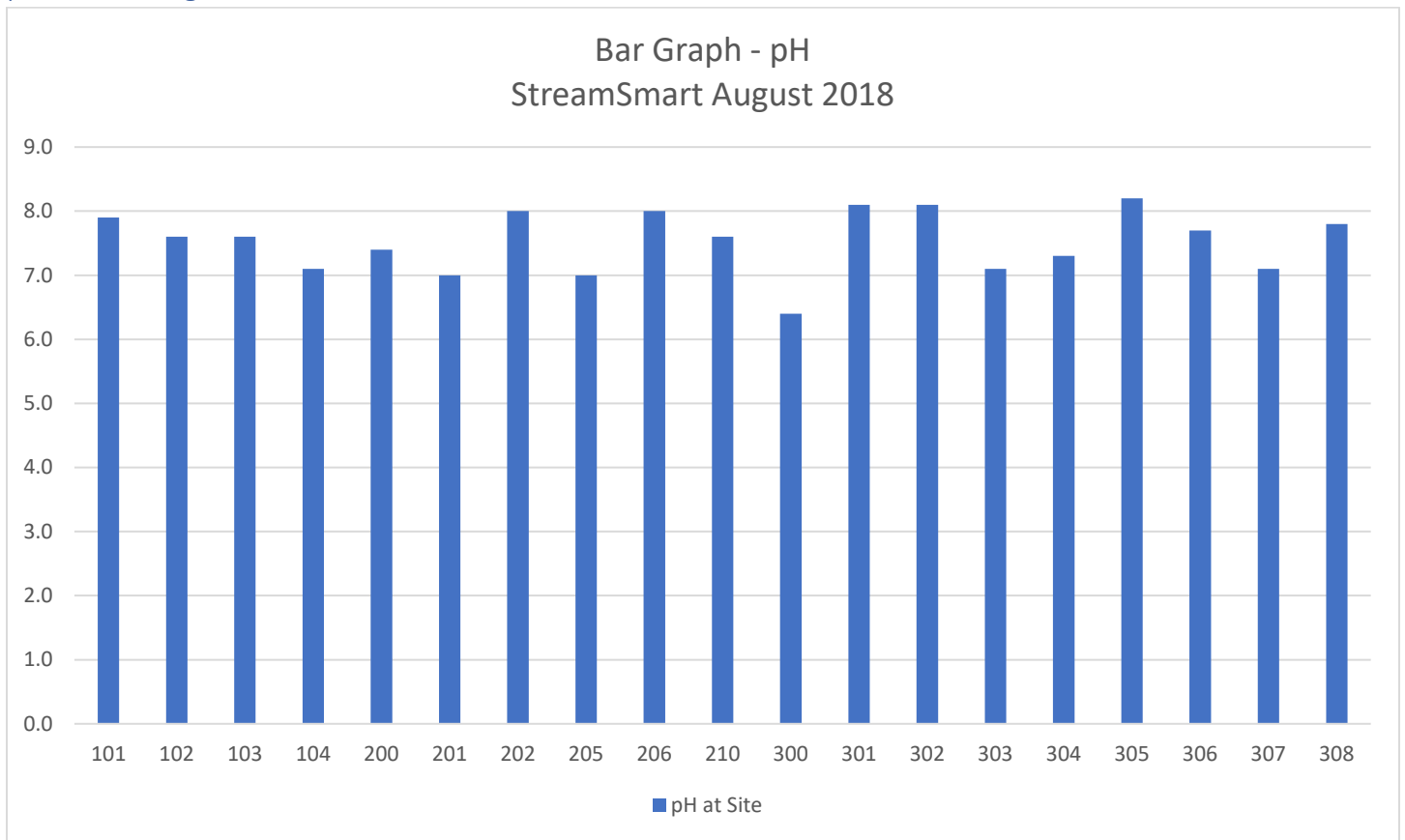
Site	Conductivity
101	284.0
102	146.9
103	415.0
104	53.4
200	545.0
201	150.8
202	662.0
205	144.7
206	423.0
210	409.0
300	41.9
301	267.0
302	391.0
303	243.0
304	277.0
305	303.0
306	262.0
307	288.0
308	597.0

Current, Previous Quarter, and 1 year ago - average, max, and min



	Max	Min
Aug-18	202 - Mullins Creek	300 - Brush Creek
May-18	202 - Mullins Creek	103 - Baldwin Creek
Aug-17	206 - Spout Spring Branch	103 - Baldwin Creek

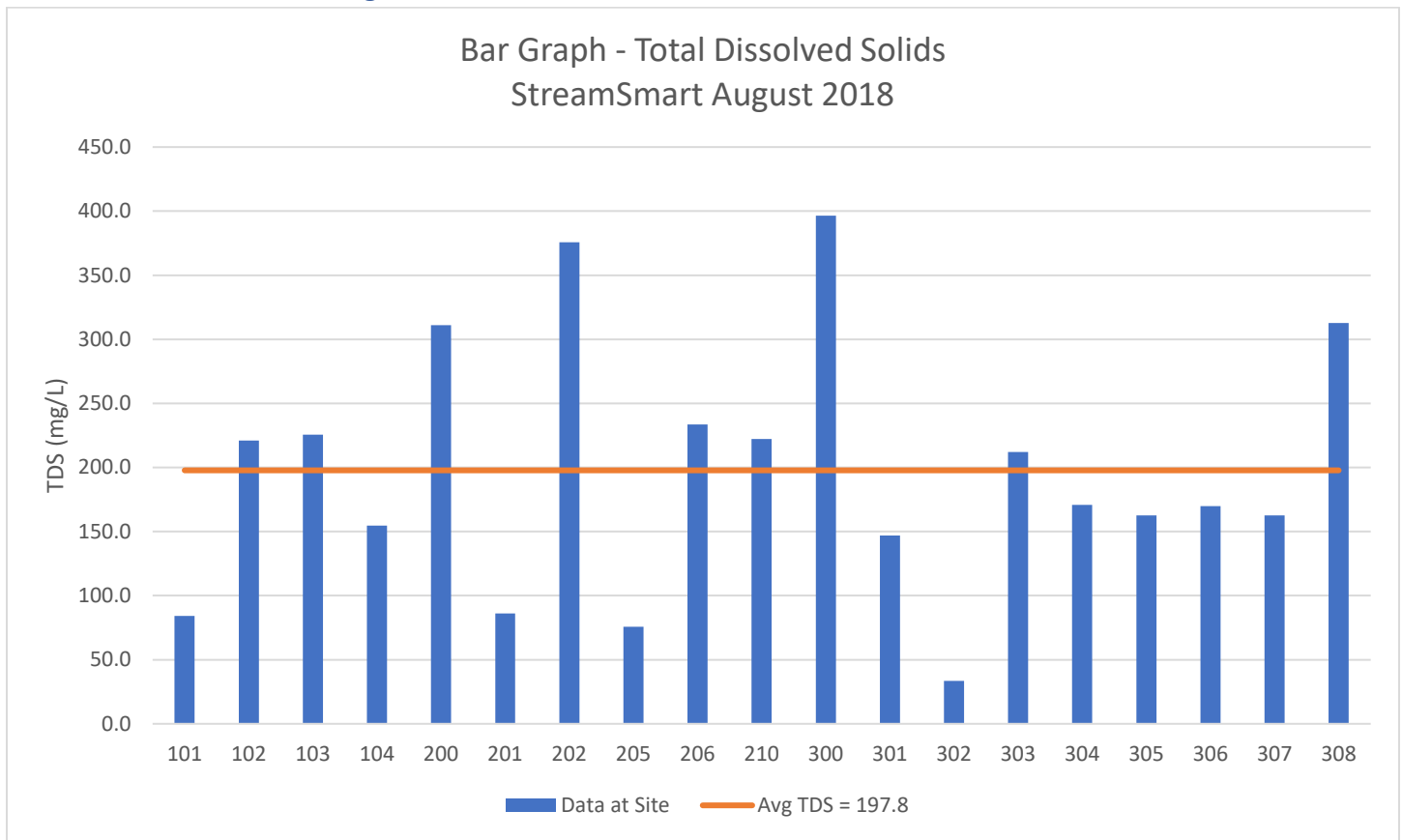
pH Data – August 2018 StreamSmart



August 2018 Data

Site	pH
101	7.9
102	7.6
103	7.6
104	7.1
200	7.4
201	7.0
202	8.0
205	7.0
206	8.0
210	7.6
300	6.4
301	8.1
302	8.1
303	7.1
304	7.3
305	8.2
306	7.7
307	7.1
308	7.8

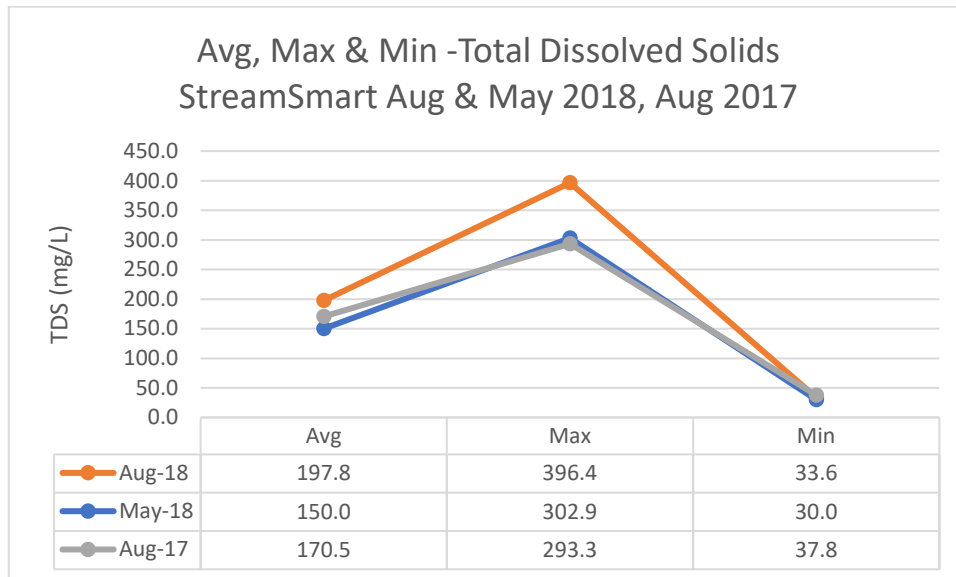
Total Dissolved Solids – August 2018 StreamSmart



August 2018 Data

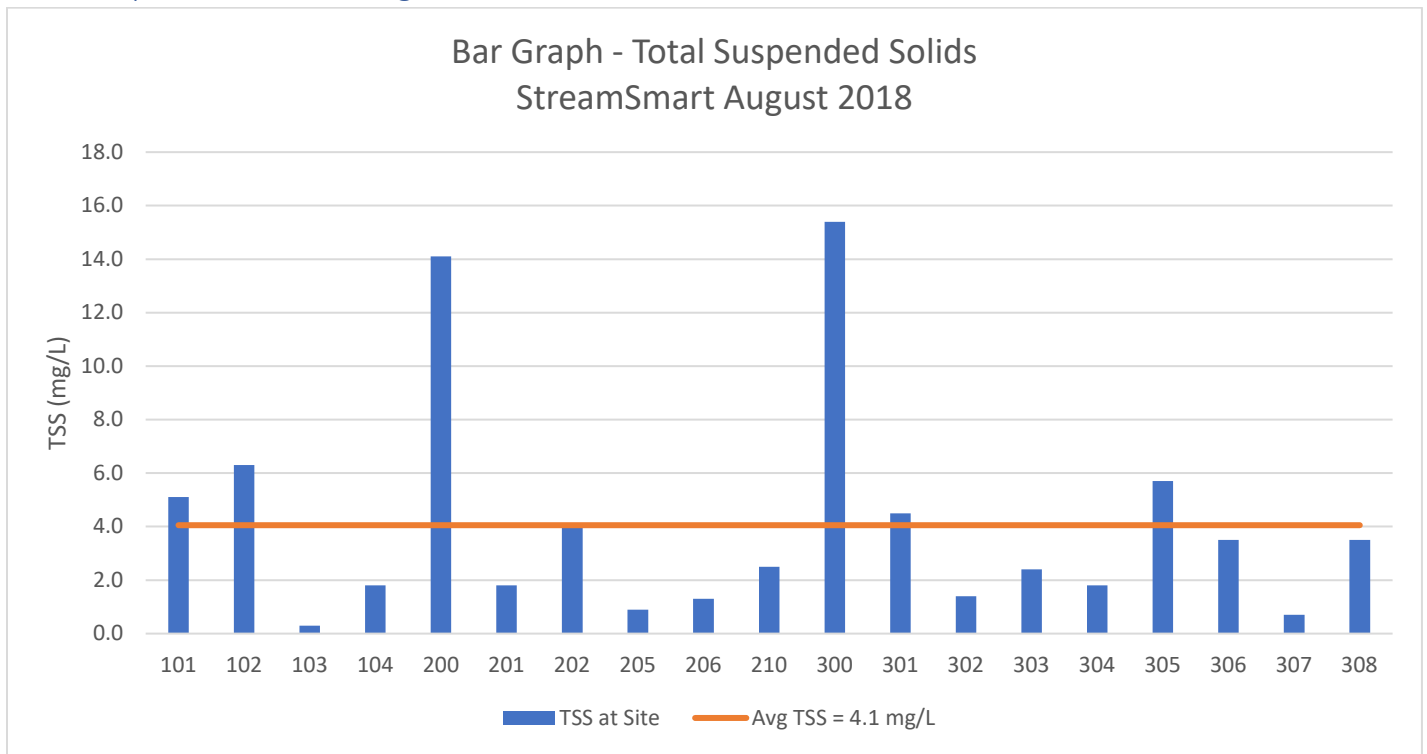
Current, Previous Quarter, and 1 year ago - average, max, and min

Site	TDS (mg/L)
101	104.2
102	56.7
103	30.0
104	36.9
200	298.4
201	65.6
202	302.9
205	62.2
206	245.6
210	285.8
300	191.8
301	93.8
302	176.7
303	127.1
304	175.8
305	112.4
306	169.1
307	109.8
308	204.4



	Max	Min
Aug-18	300 - Brush Creek	302 - Mullins Creek
May-18	202 - Mullins Branch	103 - Baldwin Creek
Aug-17	206 - Spout Spring Branch	103 - Baldwin Creek

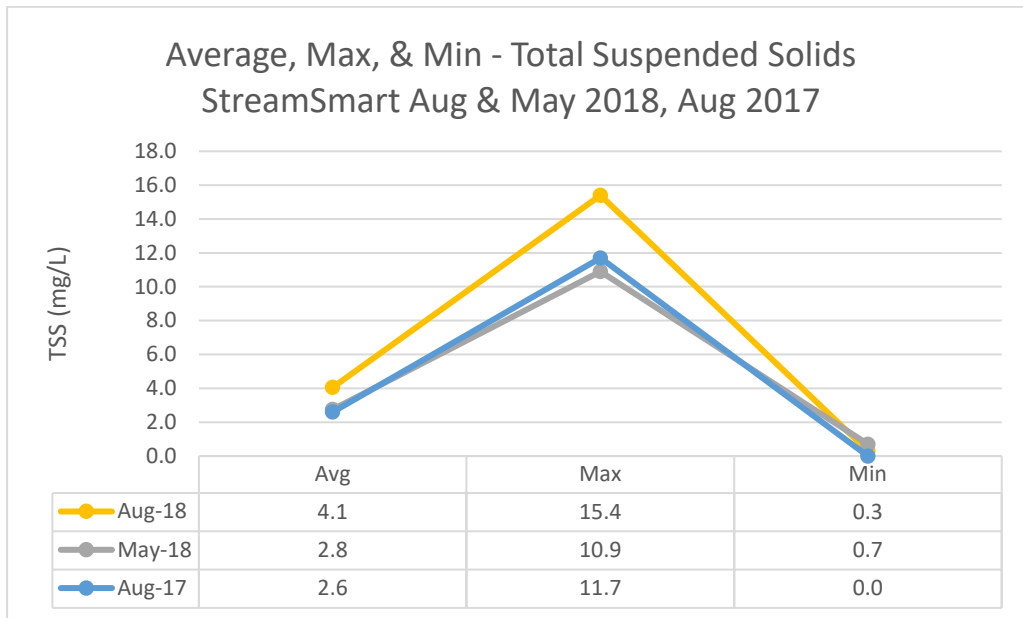
Total Suspended Solids – August 2018 StreamSmart



Aug 2018 Data

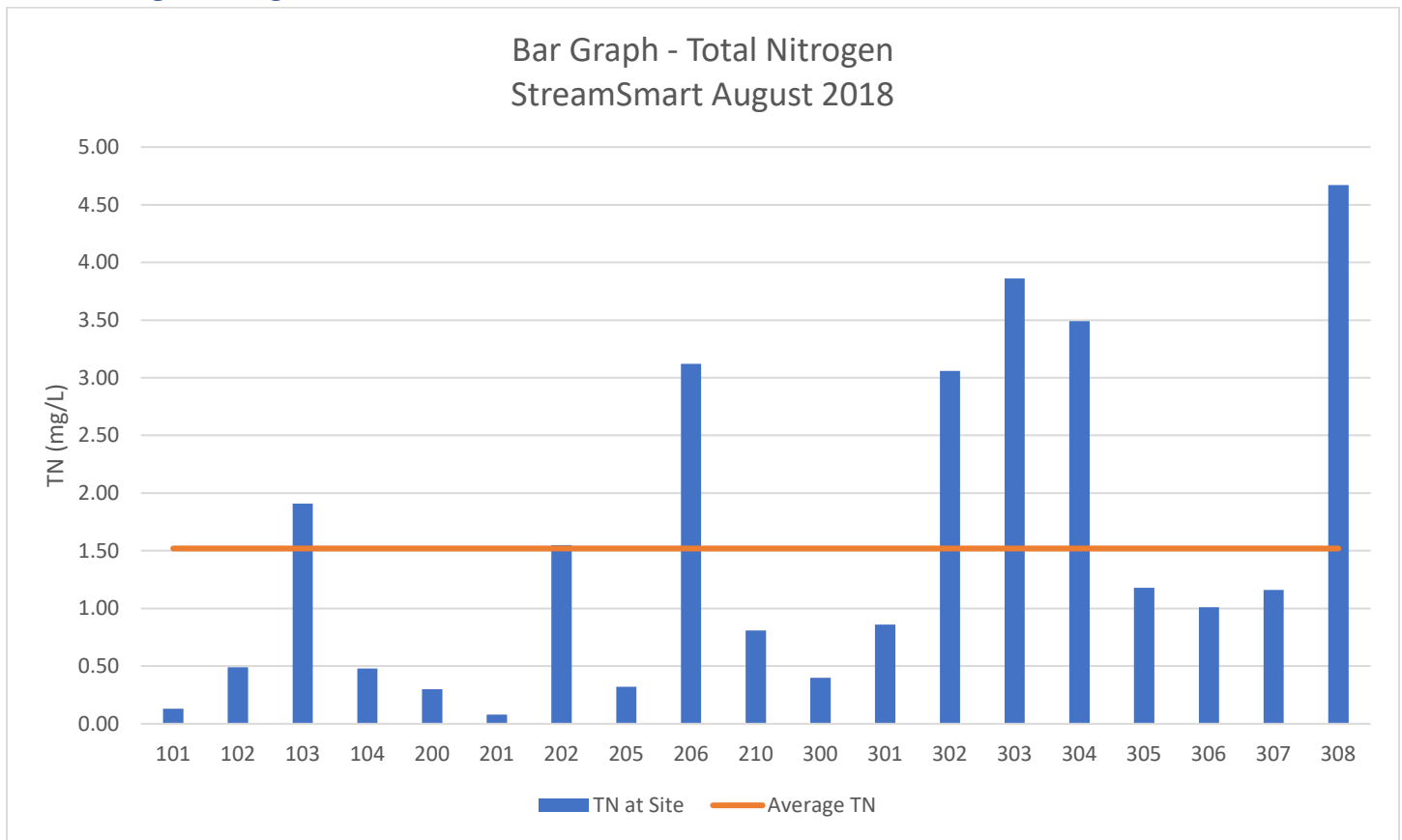
Site	TSS (mg/L)
101	5.1
102	6.3
103	0.3
104	1.8
200	14.1
201	1.8
202	4.0
205	0.9
206	1.3
210	2.5
300	15.4
301	4.5
302	1.4
303	2.4
304	1.8
305	5.7
306	3.5
307	0.7
308	3.5

Current, Previous Quarter, and 1 year ago - average, max, and min



	Max	Min
Aug-18	300 - Brush Creek	103 - Baldwin Creek
May-18	305 - War Eagle Mill	206 - Spout Spring Branch
Aug-17	304 - Clifty Creek	300 - Brush Creek

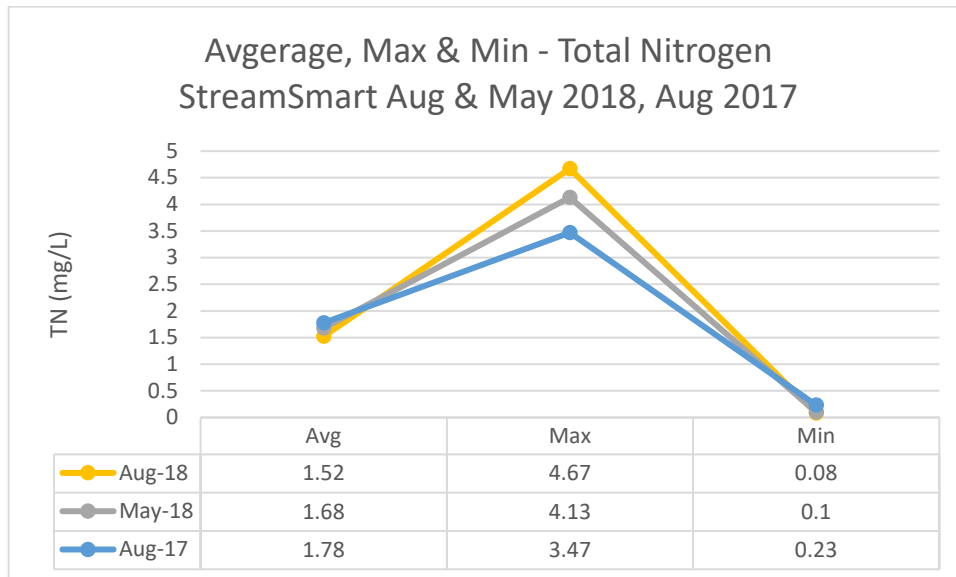
Total Nitrogen – August 2018 StreamSmart



Aug 2018 Data

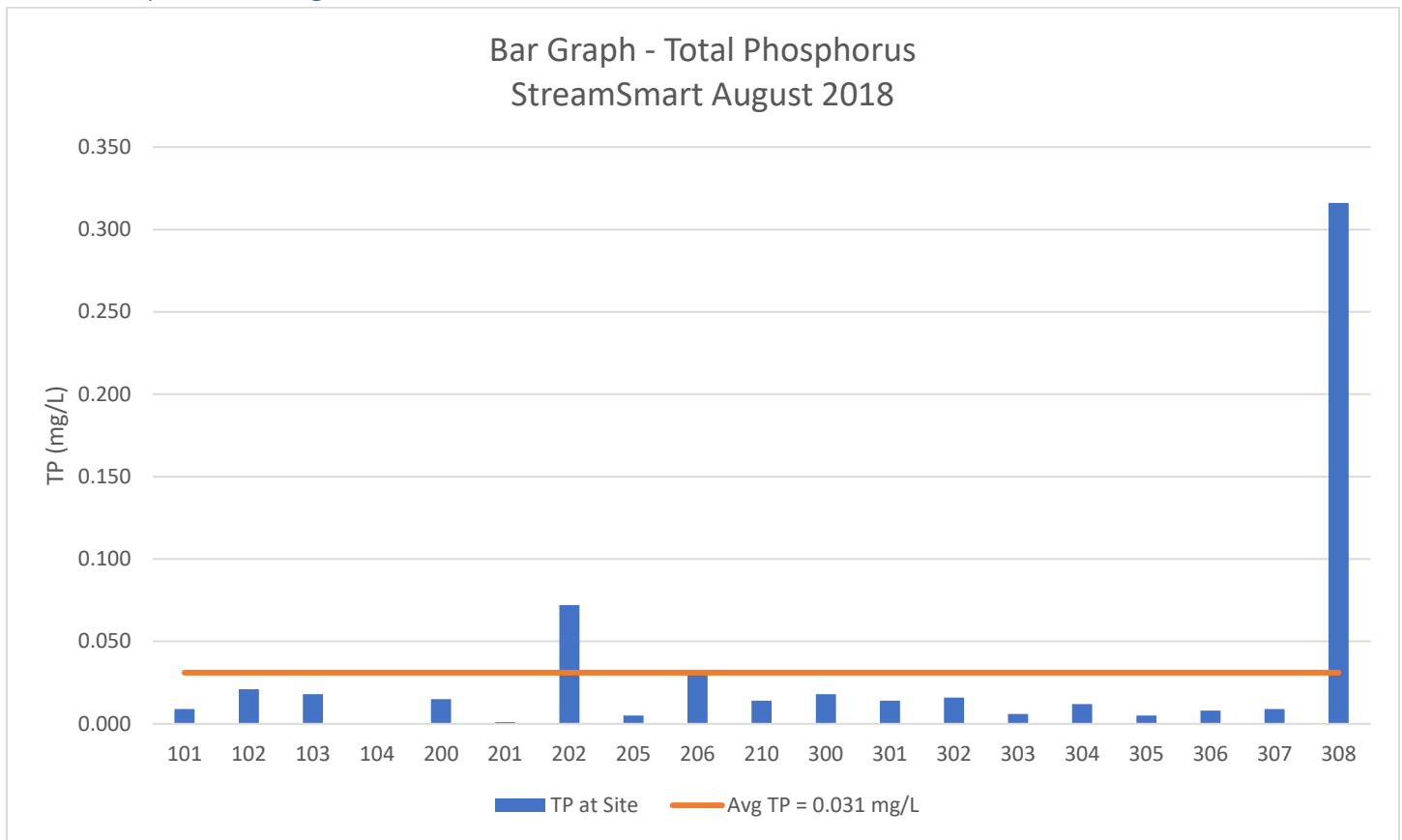
Current, Previous Quarter, and 1 year ago - average, max, and min

Site	TN (mg/L)
101	0.13
102	0.49
103	1.91
104	0.48
200	0.30
201	0.08
202	1.55
205	0.32
206	3.12
210	0.81
300	0.40
301	0.86
302	3.06
303	3.86
304	3.49
305	1.18
306	1.01
307	1.16
308	4.67



	Max	Min
Aug-18	308 - Holman Creek DS of Huntsville	201 - Middle Fork of White River at Harris Bridge Road
May-18	302 - Glade Creek	104 - White River near St. Paul
Aug-17	300 - Brush Creek	101 - West Fork Near Baptist Ford Bridge

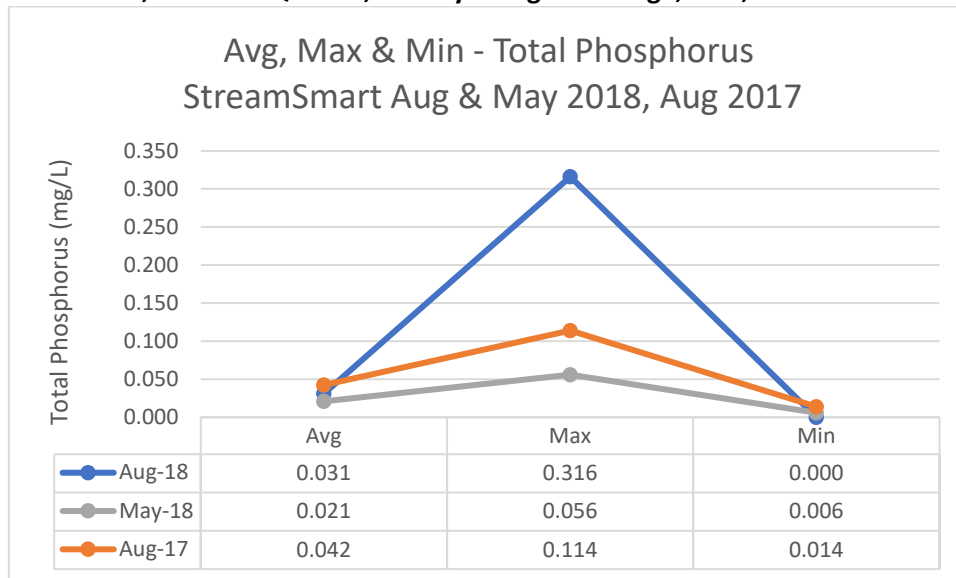
Total Phosphorus – August 2018 StreamSmart



Aug 2018 Data

Site	TP (mg/L)
101	0.009
102	0.021
103	0.018
104	0.000
200	0.015
201	0.001
202	0.072
205	0.005
206	0.031
210	0.014
300	0.018
301	0.014
302	0.016
303	0.006
304	0.012
305	0.005
306	0.008
307	0.009
308	0.316

Current, Previous Quarter, and 1 year ago - average, max, and min



	Max Site Number - Location	Min Site Number - Location
Aug-18	308 - Holman Creek DS of Huntsville	104 - White River Near St. Paul
May-18	308 - Holman Creek DS of Huntsville	201 - MF of WR at Harris Rd.
Aug-17	304 - Clifty Creek	104 - White River Near St. Paul

What is Alkalinity?

Alkalinity is the water's capacity to resist changes in pH that would make the water more acidic. Alkalinity refers to the capability of water to neutralize acid. The alkalinity of natural water is determined by the soil and bedrock through which it passes. The main sources for natural alkalinity are rocks which contain carbonate, bicarbonate, and hydroxide compounds. Limestone is rich in carbonates, so waters flowing through limestone regions or bedrock containing carbonates generally have high alkalinity - hence good buffering capacity. Conversely, areas rich in granites and some conglomerates and sandstones may have low alkalinity and, therefore, poor buffering capacity.

Alkalinity is important for fish and aquatic life because it protects or buffers against rapid pH changes. Living organisms, especially aquatic life, function best in a pH range of 6.0 to 9.0. Alkalinity is a measure of how much acid can be added to a liquid without causing a large change in pH. Higher alkalinity levels in surface waters will buffer acid rain and other acid wastes and prevent pH changes that are harmful to aquatic life.

<http://www.water-research.net/index.php/the-role-of-alkalinity-citizen-monitoring>

What is Conductivity:

Conductivity is a measurement of the ability of an aqueous solution to carry an electrical current. Typically, the units of measure are microhms/cm (uohms/cm) or microsiemens/cm (uS/cm). Conductivity or specific conductance is a measure of the ability of a fluid to carry a charge which is directly related to the concentration of dissolved substances. As the total dissolved substances in the water increases, the conductivity of the water also increases.

<http://www.water-research.net/index.php/drinking-water-testing-and-conductivity-of-water>

What is pH:

pH measurements run on a scale from 0 to 14, with 7.0 considered neutral. Solutions with a pH below 7.0 are considered acids. Solutions with a pH above 7.0, up to 14.0 are considered bases. Living organisms, especially aquatic life, function best in a pH range of 6.0 to 9.0.

The pH scale is logarithmic, so every one-unit change in pH represents a ten-fold change in acidity. In other words, pH 6.0 is ten times more acidic than pH 7.0; pH 5 is one hundred times more acidic than pH 7.0.

The pH of a body of water is affected by several factors including the bedrock and soil composition through which the water moves. Some rock types such as limestone can, to an extent, neutralize acid. Another factor which affects the pH is the amount of plant growth and organic material within a body of water. When this material decomposes carbon dioxide is released. The carbon dioxide combines with water to form carbonic acid. Although this is a weak acid, large amounts of it will lower the pH. A third factor which determines the pH of a body of water is the dumping of chemicals into the water by individuals, industries, and communities.

Changes in the pH value of water are important to many organisms. Most organisms have adapted to life in water of a specific pH and may die if it changes even slightly. This is especially true of aquatic macroinvertebrates and fish eggs and fry.

<http://www.water-research.net/index.php/ph-in-the-environment>

What is Total Dissolved Solids?

A water quality parameter defining the concentration of dissolved organic and inorganic chemicals in water. After suspended solids are filtered from water and water is evaporated, dissolved solids are the remaining residue. An elevated total dissolved solids concentration does not mean that the water is a health hazard, but it does mean the water may have aesthetic problems, such as taste and odor, or cause nuisance problems.

<http://www.water-research.net/index.php/water-treatment/tools/total-dissolved-solids>

What is Total Suspended Solids?

The suspended or colloidal particles, commonly referred to as total suspended solids (TSS), are all the extremely small suspended solids in water which will not settle out by gravity. TSS is measured on a sample of water (which has been settled) and are those particles which will not pass through a very fine filter.

TSS in streams in northwest Arkansas usually range from 0.1 to 20 mg/L but can get as high as 500 mg/L during storm flows because the faster water moves the more sediment it can carry and the more force it has to cause erosion of the stream banks and channel.

What is Total Phosphorus?

Phosphorus occurs naturally in rocks and other mineral deposits. During the natural process of weathering, the rocks gradually release the phosphorus as phosphate ions which are soluble in water and the mineralize phosphate compounds breakdown. Phosphorus is one of the key elements necessary for the growth of plants and animals and in lake ecosystems it tends to be the growth-limiting nutrient.

Total phosphorus is a measure of all the forms of phosphorus in the sample (orthophosphate, condensed phosphate, and organic phosphate). This is accomplished by first "digesting" (heating and acidifying) the sample to convert all the other forms to orthophosphate. Then the orthophosphate is measured by the ascorbic acid method. Because the sample is not filtered, the procedure measures both dissolved and suspended orthophosphate. Monitoring phosphorus is challenging because it involves measuring very low concentrations down to 0.01 milligram per liter (mg/L) or even lower. Even such very low concentrations of phosphorus can have a dramatic impact on streams.

What is Total Nitrogen?

There are three forms of nitrogen that are commonly measured in water bodies: ammonia, nitrates and nitrites. Total nitrogen is the sum of total kjeldahl nitrogen (ammonia, organic and reduced nitrogen) and nitrate-nitrite. It can be derived by monitoring for organic nitrogen compounds, free-ammonia, and nitrate-nitrite individually and adding the components together. An acceptable range of total nitrogen is 2 mg/L to 6 mg/L, though variations from this range can occur. We measure total Nitrogen as part of our on-going monitoring of nutrients concentrations in surface water.