Stormwater Tip:

Effects of Higher Temperatures on PA Streams
Rising water temperatures in Pennsylvania streams are a growing concern due to climate change, urbanization, and human activities. Streams historically moderated temperature changes through shade from riparian vegetation, slow groundwater flow, and larger day–night temperature swings, but these buffers are weakening.

Key impacts of higher temperatures:

Biological stress: Many aquatic species have narrow thermal tolerances. Warmwater species (e.g., largemouth bass, carp) can tolerate 70°F+, while coldwater species (e.g., trout, salmon) require 70°F or below watersheded.dcnr.pa.gov. Prolonged above-normal temperatures can reduce survival, growth, and reproduction, especially for sensitive coldwater species.

Dissolved oxygen decline: Warmer water holds less dissolved oxygen, increasing stress from pollutants, parasites, and disease.

Altered species composition: Higher temperatures favor warmwater species over coldwater species, reducing biodiversity and ecosystem function.

Nutrient cycling and chemistry: Temperature changes affect rates of nutrient cycling, contaminant transformation, and pH buffering.

Vegetation and habitat loss: Aquatic plants and macroinvertebrates that rely on cooler conditions may decline, further degrading habitat.

Human impacts: Warmer streams can reduce water quality for recreation and impairments in fisheries and drinking water sources