Division of Surface Water
October 2023

Water Quality in Leslie Run and Sulphur Run

All data gathered indicates stream water quality is close to pre-derailment conditions

Water Quality Surveys

Ohio EPA evaluates water quality, sediment quality, bacteria, stream habitat, and biology (fish and bugs). Ohio EPA has been using biology to help evaluate streams since the 1970s and leads the nation in this work.

Little Beaver Creek was surveyed in:

- 1985
- 1999
- 2022

Historic Water Quality

In 1985, Leslie Run and Sulphur were severely impacted by land uses and discharges from several sources, including the Village wastewater treatment plant (WWTP).

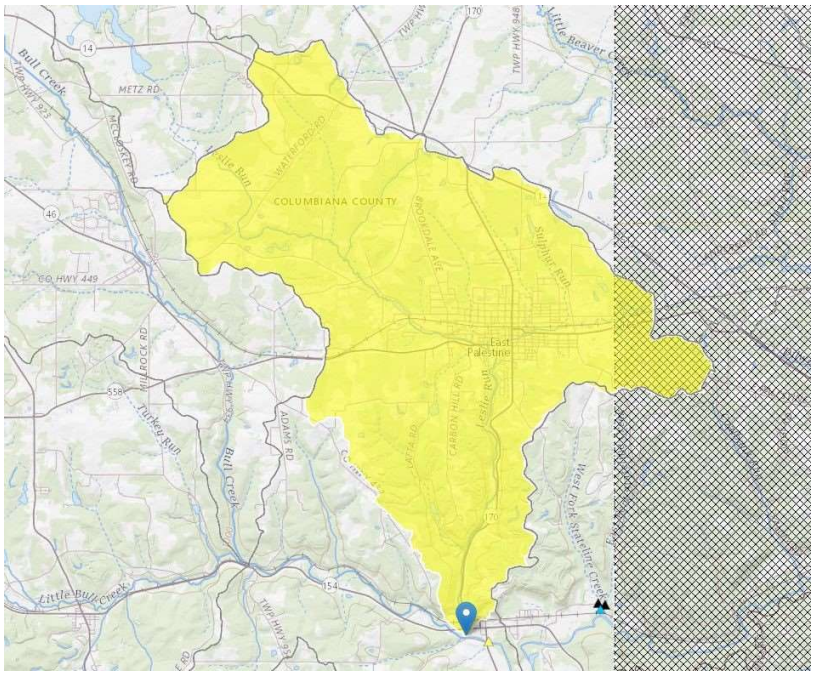

Figure 1 - Leslie Run watershed map (from USGS StreamStats). Note, hashed area is in Pennsylvania.

Study Findings

Biology (Fish & Bugs)

Ohio EPA generates scores for streams based on biological data. For the fish community, highest score is 60.

Leslie Run Negley Site:

- 1985 results indicating poor water quality, score was 33
- 1999 showing improvements score was 47
- 2022 improving even more, score is 54

Leslie Run Park Road Site:

- 1985 indicating very poor water quality, score was 16
- 1999 showing improvements, score was 29
- 2022 improving even more, score 44

Post Derailment Water Quality

A fish kill in Sulfur and Leslie Run occurred immediately after the train derailment. Recent fish sampling indicates the fish community has returned to pre-spill conditions. Water sampling has shown a decrease in levels of chemicals released by the train derailment.

EnviroScience collected and evaluated stream biology in summer of 2023. The bug samples are currently being evaluated and will be available later this year. Full data is anticipated early 2024.

- 2023 Leslie Run Negley Site received a score of 57
- Leslie Run Park Road Site will be sampled in 2024

Water Quality in Leslie Run and Sulphur Run

Stream ecology is dynamic; fish can move in response to factors like stream flow and temperature. Both the 2022 and 2023 scores represent exceptional fish communities. Organisms living in streams respond to several factors, including both physical habitat, stream flow, water, and sediment quality.

Poor water chemistry often results in impaired biology. Chemical impairments of sediment and water may occur and not result in impaired biology, especially at levels not harmful to stream life. Biological and water quality standards are separate for those reasons.

Sediment Investigation

Initial, limited sediment evaluation was performed following the derailment. There were detections of Polycyclic Aromatic Hydrocarbons (PAHs). PAHs are chemicals that are present in oils and fuels, occur naturally in coal and crude oil, and are commonly found in sediment throughout Ohio. PAHs were found in 2022 in sediment samples collected by Ohio EPA. Additional sediment investigation and testing will continue. This is expected to provide a much more complete picture of the full extent of chemical contaminants in the streams and may identify the need for additional remediation.

Sheen Investigation

The initial release from the derailment resulted in a very heavy sheen in Sulphur and Leslie Runs. While spontaneous sheening has diminished, it can still be observed , especially after stirring or disturbing the stream bottom. Limited testing indicates that the sheen is composed of various organic chemicals, including PAHs. Like sediments, sheen contamination is still an active area of investigation and no final conclusions have been reached. Additional investigation and testing will continue, and again, this may identify the need for additional remediation.

Additional Information

Additional information related to sample results:

- Ohio EPA – ***epa.ohio.gov/east-palestine***
- U.S. EPA – ***epa.gov/east-palestine-oh-train-derailment***