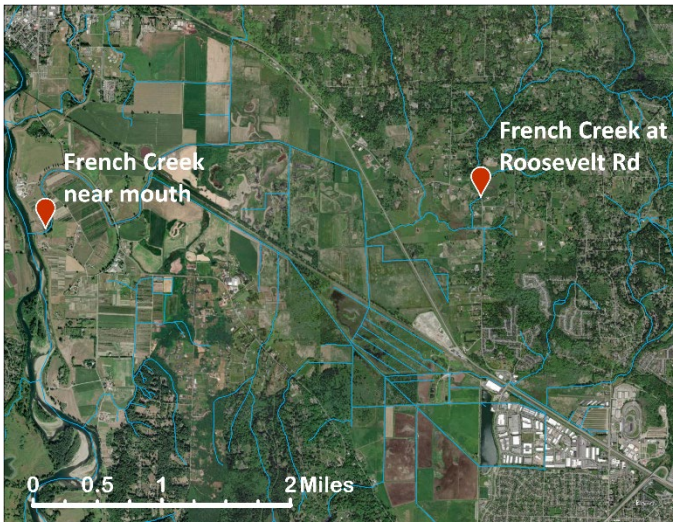
Focus On: French Creek Orange Water Study

Figure 1. Orange water at French Creek confluence, 2021. Photo by Nora Haider.

Background

French Creek is a tributary to the Snohomish River in southern Snohomish County, Washington. The French Slough Flood Control District (FSFCD) and other parties have observed an orange-brown color at the lower sections of French Creek. The discolored water has been occurring each year. The color indicates a presence of substances in the water that could be harmful to people and animals. Lower French Creek is channelized as a result of agricultural practices in the area. To protect the surrounding agricultural land, the FSFCD operates a floodgate and pump station to control the flow where the creek meets the Snohomish River.

To understand water quality conditions when the orange-brown water occurs, the Department of Ecology collected data at French Creek in the summer and fall of 2022. We compared two sites – one upstream and one downstream (see map on right). The downstream site is at Lower French Creek's floodgate and pump station. The surrounding land is mostly agricultural and has minimal shade. The upstream site is 5.4 river miles upstream of the pump station and has a narrower, more shaded channel. Land use in this area is a mix of rural residential and small farms. Ecology first observed the discolored water at the downstream site in the summer of 2022. During that same time, the upstream site, off Roosevelt Road, was comparatively clear with no color.



Study Results

Ecology took samples from French Creek to identify possible causes of the discolored water. These samples included nutrients, total suspended solids, iron, and tannins. Indicators of algae such as biomass, chlorophyll-a, and other pigments were also sampled. Staff identified algal species present during sampling.

Our results suggest that the discoloration during summer is probably linked to an orange pigment. This pigment is produced by blue-green algae, which were abundant at the downstream sampling site. Samples at the downstream site also indicate moderate to high nutrient levels. These nutrient levels encourage algal blooms. Property owners can reduce nutrient levels by developing and improving nutrient

management plans and by implementing best management practices.[1]

The most common species in the downstream algal bloom was a blue-green algae called Cuspidothrix. While we did not sample for toxins produced by algae, Cuspidothrix has been directly linked with neurotoxins that can be dangerous to humans and animals.[2]

In addition to algal blooms, the water's color may also be influenced by the total amount of suspended organic solids and iron-rich organic matter, particularly in autumn. However, Ecology cannot determine what role these may play without further sampling.

Ecology Recommendations

We recommend the following actions to reduce the risk of algal blooms:

• Establish and maintain fencing to prevent livestock access to the creek.

• Plant vegetation in creek buffers to filter pollutants to keep them out of the creek.

• Plant native trees for shade along the creek to reduce direct sunlight to discourage algal growth.

• Work with the local conservation district to develop a farm plan for nutrient management.

More Information and Resources

Reducing algal blooms on your property

Snohomish Conservation District is a non-regulatory agency offering free visits from certified farm planners through their Farm Planning Program[3]. Farm planners can evaluate your property and offer suggestions to reduce the risk of algal blooms. In some cases, the Conservation District can cover the cost of improvements to your farm. Interested property owners can sign up for a visit through the website, or call 425-335-5634.

Dairy nutrient management planning

Dairy farmers can visit the Washington Nutrient Management Planning[4] website developed by conservation districts to assist property owners and producers with nutrient management planning. Interested property owners can also call 360-526-2381 ext. 105.

Reporting and testing algal blooms

For concerns about the effects of blue-green algae on livestock and human health, visit the Washington State Department of Health's Blue-Green Algae[5] webpage. You can also call the Snohomish County Water Quality Hotline at 425-388-6481 to learn more about reporting and testing an algal bloom.

Related Information

- Changing weather, changing water – it's time to look out for harmful algal blooms[6]
- Voluntary Clean Water Guidance for Agriculture[7]
- Freshwater Algae Control Program[8]

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ADA accessibility

To request an ADA accommodation, contact Ecology by phone at 360 407 6381 or email at ecyadacoordinator@ecy.wa.gov, or visit https://ecology.wa.gov/accessibility. For Relay Service or TTY call 711 or 877 833 634

[1] https://ecology.wa.gov/About-us/Accountability-transparency/Partnerships-committees/Voluntary-Clean-Water-Guidance-for-Agriculture-Adv
[2] https://www.epa.gov/habs/what-are-effects-habs
[3] https://snohomishcd.org/sound-farms
[4] https://sites.google.com/site/wadairyplan/home
[5] https://doh.wa.gov/community-and-environment/contaminants/blue-green-algae
[6] https://ecology.wa.gov/blog/may-2024/changing-weather-changing-water-its-time-to-look-out-for-harmful-algal-blooms
[7] https://ecology.wa.gov/About-us/Accountability-transparency/Partnerships-committees/Voluntary-Clean-Water-Guidance-for-Agriculture-Adv
[8] https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Freshwater-algae-control