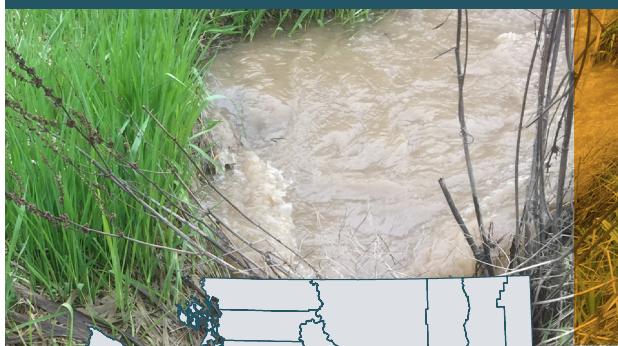


# Brender Creek

APRIL 2021

## Summary of 2019 Surface Water Monitoring Program Results



**DDT was widely used in orchard production until it was banned in the U.S. in 1972. It is still detected in the Brender Creek watershed due to the pesticide's strong soil binding abilities, combined with soil erosion into the adjacent stream.**

### Results:

- There were 325 detections in Brender Creek.
  - Of these, 78 were above WSDA assessment criteria. Roughly 80% (64 detections) of exceeding detections were from DDT and its degradates.
- When multiple pesticides are detected simultaneously, the environmental effects can combine; multiple pesticides were detected every week Brender Creek was tested. Between seven to 19 pesticides were detected at each sampling visit.
- WSDA identifies some pesticides as Pesticides of Concern (POC) when they have been detected above WSDA's assessment criteria and above certain detection frequencies.

### Watershed-specific POCs detected in Brender Creek:

#### ICONS FOR ENVIRONMENTAL HAZARDS LISTED ON PESTICIDE LABELS



#### Chlorpyrifos

- Common trade names:** Lorsban, Pilot, Vesper
- Example uses within watershed:** orchard
- A streamside no-spray buffer zone is required in Washington for chlorpyrifos to protect threatened and endangered Pacific salmon and steelhead.
- Detected at 10 sites in 2019. A watershed POC at six of them.

#### Imidacloprid

- Common trade names:** Admire Pro, Gaucho, Merit
- Example uses within watershed:** orchards, outside buildings, residential
- Detected at 11 sites in 2019. A watershed POC at nine of them.

#### Malathion

- Common trade names:** Malathion, Fyfanon
- Example uses within watershed:** orchard, pasture
- Malaoxon, a malathion breakdown product, is more toxic to organisms than its parent compound. Malaoxon was detected almost every time malathion was detected at this site.
- A streamside no-spray buffer zone is required in Washington for malathion to protect threatened and endangered Pacific salmon and steelhead.
- Detected at 10 sites in 2019. A watershed POC at seven of them.

#### Pyridaben

- Common trade names:** Nexter, GWN-1715, Sanmite
- Example uses within watershed:** orchard
- Detected at seven sites in 2019. A watershed POC at two of them.

### Watershed and site information:

In 2019, Washington State Department of Agriculture (WSDA) monitored 16 sites in Washington. Brender was one of three monitoring sites located in Chelan County.

**Years sampled:** 2007 – present

**Fish habitat:** Spring Chinook salmon and summer steelhead (SalmonScape: [apps.wdfw.wa.gov/salmonscape](https://apps.wdfw.wa.gov/salmonscape))

### Sampling dates:

23 weeks, April 2 – September 3

### Water testing:

- Samples were analyzed at the Manchester Environmental Lab, Port Orchard, Wash.
- 159 current and legacy chemicals (56 insecticides, 58 herbicides, 21 fungicides, 19 pesticide degradates, 2 synergists, 1 antimicrobial, 1 insect repellent, and 1 wood preservative)
- WSDA compares detected pesticide concentrations to WSDA assessment criteria, which are half of state and federal water quality criteria. Each pesticide has its own assessment criteria, based on its toxicity to aquatic animals, insects, and plants.



NATURAL RESOURCES ASSESSMENT SECTION

Products listed are for descriptive purposes only and do not imply endorsement by the author or the Department of Agriculture.

The calendar at right shows the concentration in µg/L and date sampled of each watershed POC. This calendar does not include all the pesticides WSDA found during the growing season. Detected concentrations that exceed WSDA's assessment criteria have a higher potential to cause harm to aquatic ecosystems.

[ I: Insecticide ]

exceeds assessment criteria

below assessment criteria

The graph at right shows the total number of detections per sampling visit in each pesticide category. The category 'other' includes degradates and additional pesticide-related chemicals. Note that the number of detections between categories cannot be directly compared due to the different number of chemicals in each category and variability in analysis methods used.



### Recommendations:

#### Make use of natural protections

- Use buffers, filter strips, sediment basins, ground cover, and setbacks.
- Maintain vegetation along creeks and take care during spring time applications before vegetation along streams leaves out.

#### Be informed

- Read and follow pesticide label directions.
- Check the weather forecast to reduce the chances of drift or runoff.
- Review WSDA's Pesticides of Concern and choose less-toxic pesticides when possible.

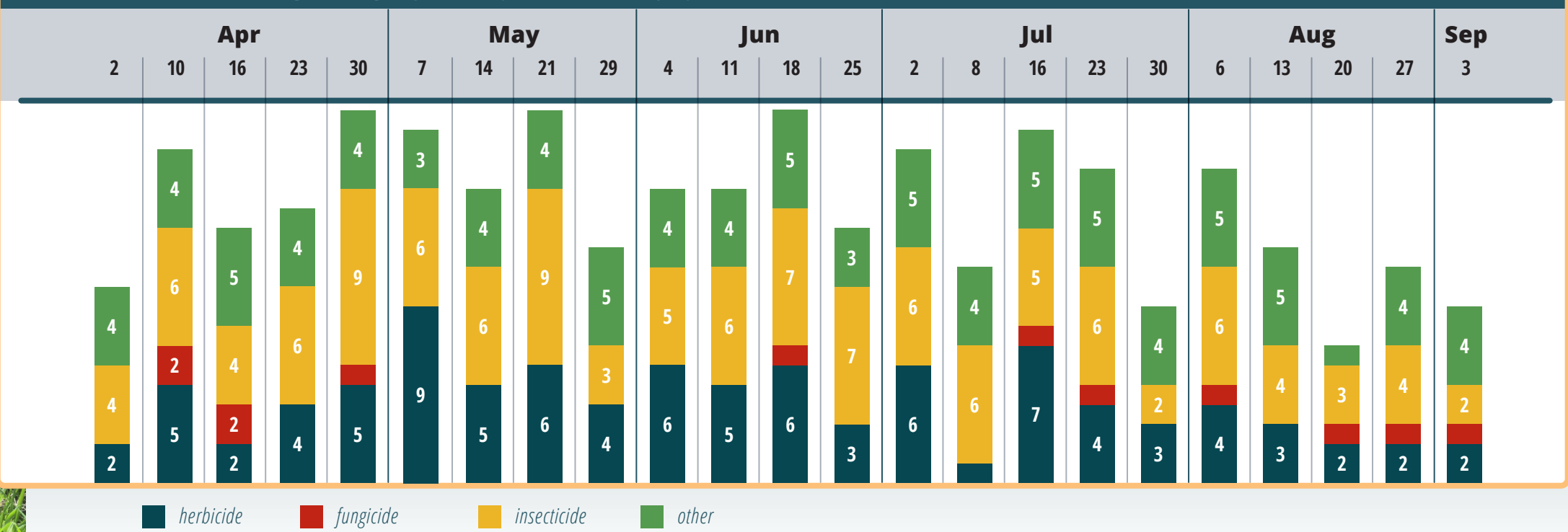
#### Care for your equipment and products

- Calibrate, maintain, and inspect application equipment.
- Properly dispose of all unneeded pesticides. Visit [agr.wa.gov/wastepesticide](http://agr.wa.gov/wastepesticide) to learn about waste pesticide collection events.

### Watershed Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations

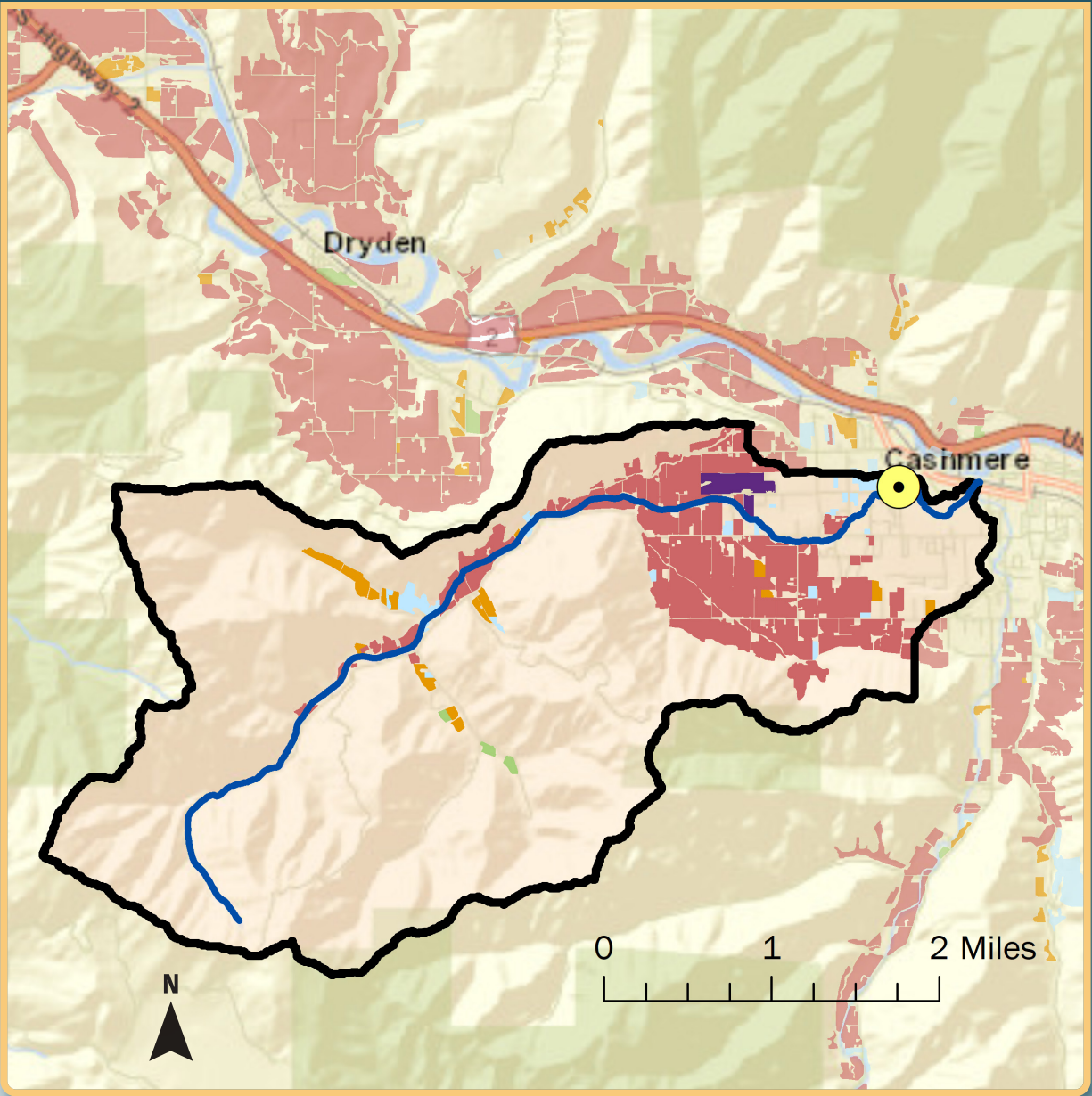
| Month                         | Day of the Month | Use* | Apr   |       |       |       |       | May   |       |       |      | Jun   |       |       |       | Jul   |       |       |       |       | Aug   |       |       |       | Sep |
|-------------------------------|------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
|                               |                  |      | 2     | 10    | 16    | 23    | 30    | 7     | 14    | 21    | 29   | 4     | 11    | 18    | 25    | 2     | 8     | 16    | 23    | 30    | 6     | 13    | 20    | 27    | 3   |
| Chlorpyrifos                  | I                |      | 0.004 | 0.203 | 0.060 | 0.079 | 0.111 | 0.048 | 0.032 | 0.019 |      | 0.011 | 0.009 | 0.010 | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 |       |       |       |     |
| Imidacloprid                  | I                |      |       |       |       |       | 0.004 |       |       |       |      |       |       |       |       | 0.002 |       |       |       |       | 0.015 | 0.009 | 0.003 | 0.003 |     |
| Malathion                     | I                |      | 0.038 | 0.874 | 0.014 | 0.011 | 0.028 | 0.009 | 0.009 | 0.004 |      |       |       |       | 0.005 |       |       |       |       |       |       |       |       |       |     |
| Pyridaben                     | I                |      |       |       |       |       |       |       |       | 0.004 |      |       |       |       |       |       |       |       |       |       |       |       |       |       |     |
| Total suspended solids (mg/L) |                  |      | 19    | 14    | 20    | 9     | 40    | 16    | 61    | 30    | 37   | 19    | 12    | 24    | 21    | 40    | 39    | 52    | 35    | 13    | 21    | 71    | 35    | 52    | 24  |
| Streamflow (cubic ft/sec)     |                  |      | 1.5   | 0.9   | 1.3   | 1.1   | 3.0   | 1.7   | 4.4   | 7.1   | 6.1  | 2.0   | 1.6   | 3.4   | 2.1   | 4.3   | 4.5   | 4.1   | 2.5   | 1.9   | 1.3   | 5.5   | 3.9   | 3.8   | 4.4 |
| Precipitation (total in/week) |                  |      | 0     | 0.48  | 0.10  | 0     | 0.01  | 0     | 0     | 0.47  | 0.54 | 0.01  | 0.06  | 0     | 0     | 0.46  | 0.04  | 0.07  | 0     | 0.15  | 0     | 0.50  | 0     | 0     | 0   |

### Total Number of Detections per Sampling Event by Pesticide Category



Please see [agr.wa.gov/AgScience](http://agr.wa.gov/AgScience) for more information.





| Brender Creek crop groupings |              | acres       |
|------------------------------|--------------|-------------|
| <div></div>                  | Other        | 38          |
| <div></div>                  | Hay / Silage | 9           |
| <div></div>                  | Orchard      | 774         |
| <div></div>                  | Pasture      | 64          |
| <div></div>                  | Turfgrass    | 35          |
| Total Agriculture            |              | 920 acres   |
| Watershed Total              |              | 6,864 acres |

Brender Creek

Brender Watershed

To view mapped crop groups at the field scale, download the WSDA Agricultural Land Use data or view the interactive web map here:  
<https://agr.wa.gov/departments/land-and-water/natural-resources/agricultural-land-use>