A collaborative approach for evaluating agricultural contributions to nonpoint source pollution in the Deschutes watershed, south Puget Sound

Stephen Bramwell  
*Washington State Univ., United States, bramwell@wsu.edu*

Nicole Warren  
*Thurston Conservation District, United States, nwarren@thurstoncd.com*

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Building a Team and an Approach to Assess Potential Agricultural Non-Point Source Water Pollution

Stephen Bramwell, WSU Extension
Nicole Warren, Thurston Conservation District
Larry Schaffner, Thurston County Stormwater Utility
Project goals

1. find opportunities for improving water quality as impacted by farming,

2. develop a protocol to integrate natural resource and farm management data, and

3. craft this data collection in a manner that would later enable procurement of cost-share dollars in the form of grants for farmers, thereby incentivizing voluntary stewardship
The federal Clean Water Act (CWA) requires that a TMDL be developed for each of the water bodies on the 303(d) list of impaired waters.
Water Quality Thresholds and Measurements

Point source discharges

Non-point source discharges
Project Activities

1. Hire a part-time **rural-working lands conservation technician**

2. Utilize partner (TCD, State agencies, County, other) source material to aggregate existing watershed-level information concerning nutrient and bacteria **loads**, and farm types.

3. Develop a **watershed-level farm characterization** including farm numbers and types, and underutilized nutrient resources and associated bacteria loads on ag lands.
This project will quantify:
A. Ag non-point pollution
B. Underutilized farm resources

A project deliverable will be a:
A. Parcel-level database of farming activity
B. Basin-level level summaries of farming activity

Data will be stored at:
A. WSU Extension
B. Thurston Conservation District
C. Thurston County

A primary outcome of this project is to:
A. Help secure grants for voluntary cost-share programs
B. Develop a pollution identification and control program

Farmers need to be:
A. Regulated into submission
B. Paid for the ecosystem service work that society is asking of them
Activity 1: Hire a working lands conservation technician

1. protocol for data collection and storage
2. trust with farmers/landowners
3. protocol for farm evaluation work (pasture, nutrient assessment, windshield surveys)
4. span divide between farming and conservation
5. partner/lead for outreach and implementation
6. ...need to know farming
Activity 2. Aggregate existing watershed-level data

Department of Ecology:
- Deschutes Total Daily Maximum Load Report 2012
- Deschutes Water Quality Improvement and Implementation Plan 2015
- Puget Sound Characterization 2016

Thurston County:
- Deschutes Watershed Land Use Analysis: Current Conditions Report 2015
- Deschutes Watershed Characterization Study 2011

Department of Ecology and the Department of Health:
- Available Water Quality Data 2004 - 2017
  - Bacteria
  - Dissolved oxygen
  - Temperature
  - pH
  - Total Nitrogen
  - Total Phosphorous
Activity 3. Aggregate existing watershed-level data

1. Inventory existing farm plans at TCD
2. Review available GIS data
3. Collect windshield survey data

Aggregate parcel-to-parcel level agricultural activity

Develop basin-level agricultural activity summaries
FARM WINDSHIELD SURVEY FORM

**Farm Plan Candidate** – Yes  No  Existing Farm Plan: Year _____

**Priority** – High  Medium  Low

**Critical Areas Present** – Geological Hazardous Areas  Wetlands  Critical Fish and Wildlife Habitat

Critical Recharge Area  Frequently Flooded

**Slope** – Flat  Moderate  Steep

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<tr>
<th>Watershed</th>
<th>Date</th>
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<th>Parcel #</th>
<th>Acreage</th>
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<th>Mailing Address</th>
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<table>
<thead>
<tr>
<th>Owner</th>
<th>Operator</th>
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<table>
<thead>
<tr>
<th>Farm Size</th>
<th>Commercial  Private  Personal</th>
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<table>
<thead>
<tr>
<th>Farm Type</th>
<th>Pasture  Hay  Woodland  Cropland  Wetland  Prairie Habitat</th>
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<tr>
<th>Livestock Type</th>
<th>Estimated Head Count</th>
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<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Row Crop  Grains  Timber  Orchard  Berries  Hay</th>
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<th>Bare Crop Land?</th>
<th>Yes  No</th>
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<thead>
<tr>
<th>Noxious/Invasive Weeds</th>
<th>Knotweed  Scotch Broom  Blackberry  Reed Canary Grass</th>
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<td>Other:</td>
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<tr>
<th>Pasture Condition</th>
<th>Excellent  Good  Fair  Poor</th>
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**Additional Pasture Comments**
Reichel Sub-basin
Agricultural Activity

Total agricultural acreage: 563 acres (of 5,045)
Total in pasture or hay: 100%
Total with livestock: 37%
Total without livestock: 63%

Number of cattle: 135
Number of horses: 4
Number of goats: 6
Total A.U.s: 176

1. Land use
2. Ag activity
3. Animal density distribution
4. Livestock stream access
5. Known/unknown Ag characterization
Next steps

Use of the data, team and approach:

- Evaluate connection of ag activity & water quality data - geographic
- Identify risk categories
- Enable assessment of change over time
- Critical areas overlap
- Landowner outreach
- Cost-share $ (infrastructure, restoration, other)
- Expand analysis to whole watershed

Lessons learned:

- Outreach opportunity, not pollution quantification (or even unused resources quantification)
- Need GIS modeling to expand approach to whole watershed

Thank you