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

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

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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
1. Hire a part-time \textit{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 \textit{loads}, and farm types.

3. Develop a \textit{watershed-level farm characterization} including farm numbers and types, and underutilized nutrient resources and associated bacteria loads on ag lands.
Team building and Approach Quiz

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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<th>Watershed</th>
<th>Date</th>
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<tr>
<th>Parcel #</th>
<th>Acreage</th>
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<tr>
<th>Address</th>
<th>Mailing Address</th>
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<tr>
<th>Owner</th>
<th>Operator</th>
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**Farm Size** – Commercial  Private  Personal

**Farm Type** – Pasture  Hay  Woodland  Cropland  Wetland  Prairie Habitat

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<tr>
<th>Livestock Type</th>
<th>Estimated Head Count</th>
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**Crop Type** – Row Crop  Grains  Timber  Orchard  Berries  Hay

**Bare Crop Land?** – Yes  No

**Noxious/Invasive Weeds** – Knotweed  Scotch Broom  Blackberry  Reed Canary Grass  Other: _______

**Pasture Condition** – Excellent  Good  Fair  Poor

**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