Balancing Agriculture & Watershed Planning

Whatcom County Agricultural & Watershed Planning – 2012 WA State Dept of Commerce Land Use Planning Grant
The Ag-Watershed Project aims to demonstrate how integrated mapping and scientific tools can be used to identify, plan for, and measure benefits of specific actions to enhance agriculture and watershed conditions in Whatcom County.
Project Focus Area

Lynden North WMU

Bertrand Creek Watershed

Fishtrap Creek Watershed

Kamm Creek Watershed
Ag-Watershed Pilot Project purpose

Examine how a marketplace approach can strengthen Ag while enhancing larger-scale watershed processes and functions.

1. Identify opportunities for landowners to provide benefits through voluntary actions.

2. Develop incentives and tools to assess and compensate actions that go above and beyond what is required.

3. Implement two demonstration pilot projects on Ag land in the project focus area (Lynden North watersheds).
Project partners and process

1. Project Partners
   - Whatcom County (Planning & Development Services, Public Works)
   - Whatcom Conservation District
   - Whatcom Farm Friends
   - local representative of WA Dept. of Fish & Wildlife
   - WA State Watershed Characterization Technical Assistance Team (WCTAT) with WA Dept of Ecology, Commerce & others

2. Project Review Committee

3. Project Team led by FHB Consulting (Heather MacKay)
Using marketplace tools and incentives to help achieve watershed & Ag priorities

**Phase 1**

- Priority agriculture services
- Priority watershed services

**Phase 2**

- Specific actions to achieve agriculture & watershed enhancement priorities
- Measurement tools to report & track benefits of specific actions: the accounting system

**Enhancement priorities** for agriculture, watersheds & opportunities for mutual gain

Transparent system that uses incentives and marketplace tools to encourage and reward specific actions that are above the minimum required by regulation: the crediting system

*This step is outside the project scope*
Purpose of the characterization

• **Where** on the landscape should management efforts be focused first
• **What** general types of activities and actions are most appropriate at that place
• **Why** are those places relatively more or less important than other places
Puget Sound Watershed Characterization Project
A multi-agency effort to provide land use planners with a watershed context for planning

see https://fortress.wa.gov/ecy/coastalatlas/wc/About.html
Sound Wide Results – Water Flow
Interpreting Assessment Results: WHERE

Step 1 – Using the importance scores, locate the most important places (i.e. assessment units) within a study area.
Interpreting Assessment Results: WHAT

Step 2 – Based on degradation scores, determine what general types of activities (protection and/or restoration) that should be emphasized in the most important places.
Step 3 – Construct tables that summarize results for the processes that comprise importance and degradation scores. Understanding why should lead to recommendations for more specific management actions.
Enhancement priorities

**Agriculture**

- Water quantity (out of stream)
  - Drainage of fields
  - Protection of fields from flooding
  - Agricultural land protection (from development pressure)
- Ag-residential buffer areas
- Revenue
- Pollination

**Watershed**

- Water quality: Nutrients (N, P), Sediment, Bacteria, Dissolved oxygen, Water temperature
- Water quantity: Instream flows, aquifer recharge, wetland storage
- Habitat: Chinook spawning/rearing, Other anadromous and ESA listed fish, Wildlife habitat
Ag characterization & mapping

SUMMARY OF AGRICULTURAL RESULTS

SUMMARY OF WATERSHED ASSESSMENT RESULTS

Ag-Watershed Project Phase 2 Partner Outreach – WCPDS
15 Jan, 2015
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## Actions & benefits proposed in pilots

### AGRICULTURE ENHANCEMENT

<table>
<thead>
<tr>
<th>Enhancement benefit</th>
<th>Specific action(s) proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage of agricultural (ag) fields</td>
<td>Maintain effectiveness of existing field drainage system: prevent sediment accumulation, remove reed canary grass and control re-growth in ditches</td>
</tr>
<tr>
<td>Flood protection for ag fields</td>
<td>Protect crops on ag land from flooding at critical times</td>
</tr>
<tr>
<td>Ag land protection</td>
<td>Transfer, extinguish or sell development rights through PDR program</td>
</tr>
<tr>
<td>Ag resilience &amp; diversity of revenue</td>
<td>Easements, CREP leases, payments from other incentive programs</td>
</tr>
</tbody>
</table>

### WATERSHED ENHANCEMENT

<table>
<thead>
<tr>
<th>Enhancement benefit</th>
<th>Specific action(s) proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water quality-temperature</td>
<td>Plant native vegetation on tributary streams</td>
</tr>
<tr>
<td>Habitat-Chinook</td>
<td>Plant native vegetation on tributary streams</td>
</tr>
<tr>
<td></td>
<td>Provide instream enhancements such as LWD, sinuosity, complexity, gravel</td>
</tr>
<tr>
<td>Habitat-other anadromous fish</td>
<td>Plant native vegetation on tributary streams</td>
</tr>
<tr>
<td></td>
<td>Provide stream channel &amp; fish habitat improvements</td>
</tr>
<tr>
<td>Habitat-wetlands</td>
<td>Protect, enhance or restore wetland habitat</td>
</tr>
<tr>
<td>Water quantity-wetland storage capacity</td>
<td>Protect, enhance or restore wetland hydrological functions for water storage</td>
</tr>
</tbody>
</table>
**Ag-Watershed Tracking & Accounting System:** working definitions*

**Metrics:** The methods, equations, rules, and tools that translate indicators of ag or watershed health measured at a site and/or landscape scale into “benefits” or “debits”.
- *Scientific / technical tools*

**Protocol:** a set of rules that defines the generic process through which benefits of specific actions are quantified, assessed and tracked within the ag-watershed benefit tracking and accounting system.
- *Administrative & oversight tools*
Metrics allow us to connect measurable outcomes to specific beneficial actions

1. Shade calculator to quantify thermal load blocked by riparian shade (kCal/ft)

2. SFAM Stream function assessment methodology integrates measurements of stream functions and values: (points)
   - Hydrologic
   - Geomorphic
   - Biological
   - Water quality

3. Wetland function assesses changes in wetland function (acre-points):
   - Water quality improvement
   - Flood storage & flood flow reductions
   - Habitat for plants and animals
     (Dept of Ecology’s Wetland Credit/Debit method)

4. Ag metric integrates simple measurements of ag functions & values (acre-benefit points):
   - Flood protection
   - Drainage
   - Ag land protection
   - Site assessment
   - Land evaluation
Shade Calculator quantifies the solar energy that reaches the stream

Based on:

- Site location (latitude & longitude)
- Day of the year
- Elevation
- Stream wetted width
- Aspect
- Topography
- Vegetation characteristics (type, height, density, overhang)

Image from Willamette Partnership
Agricultural Metric

Simple measurement tool that calculates the benefits of actions taken on a single farm or on a group of farms to enhance priority ag services.

<table>
<thead>
<tr>
<th>Category</th>
<th>How is the ag benefit score calculated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site information</td>
<td>How big is the site? How much is farmable?</td>
</tr>
<tr>
<td>1. Land evaluation</td>
<td>Soil-based quality and capability.</td>
</tr>
<tr>
<td>2. Site evaluation</td>
<td>Current farming activity, ag neighborhood, access to water, fragmentation of the site.</td>
</tr>
<tr>
<td>3. Ag land base protection</td>
<td>Potential density, level of protection.</td>
</tr>
<tr>
<td>4. Maintenance of ag drainage</td>
<td>Active maintenance of existing drainage.</td>
</tr>
<tr>
<td>5. Flood protection for ag fields</td>
<td>Active maintenance of flood protection works. Seasonal, year-round or no protection.</td>
</tr>
</tbody>
</table>

**Overall site score**

Ag benefit points / Acre-points
Protocols: to account for, track & monitor specific actions and outcomes

1. Validation checklist
   - Site information
   - Site history
   - Proposed specific actions
   - Types of benefits/credits

2. Project design report & credit estimate
   - Detailed assessment of design vs baseline conditions
   - Estimated uplift/credit

3. Project stewardship & monitoring plan
   - Enhancement actions to be taken on site, timelines
   - Maintenance and management practices to be followed on site
   - Monitoring, reporting & verification responsibilities

4. Buyer-Seller transaction
   - Purchase and sale agreement
   - Easement if included
   - Closing

Exploration of credit potential by Project Developer/Seller

Stewardship commitments by Project Developer. Third-party responsibilities for monitoring and ongoing verification

Transaction between Buyer and Project Developer/Seller

Preliminary draft – based on WP GCPv2.0
• Questions & discussion on Measuring Tools?

• Implementation challenges we are learning about in field tests
Implementation strategy: challenges

Mapping & measurement
- Metrics to connect site- & farm-scale actions to outcomes in ag or watershed system
- Data & information to run metrics
- Extending the ag-watershed characterization & prioritization beyond the pilot area

Regulatory & policy
- Establishing additionality at a site
- Multiple overlapping agencies & signoff requirements
- Gaps in enabling regulations/policy

Financial/institutional
- Implementing organization(s) & long-term oversight
- Transaction costs & initial financing, financial sustainability
- Mobilizing demand (local, regional)
- Building capacity (landowners, support, technical, administrative)

Adaptive management
- Social, political, economic, environmental changes
- Improving tools through application & learning
• Questions & discussion

• Thank you!

For additional information, contact the project leads:

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Protocols allow us to account for, track and monitor specific actions and outcomes

Step 1: Collate project information, determine eligibility and additionality
Step 2: Measure project baseline
Step 3: Project design: quantify potential outcomes & benefits
Step 4: Project verification
Step 5: Project certification
Step 6: Credit registration and credit issuance
Step 7: Project monitoring - includes monitoring of the project to establish continued validity of credits, and monitoring of broader outcomes in terms of ag & watershed conditions