Snoqualmie Fish, Farm, Flood Advisory Committee

Issue Identification and Prioritization
February 12, 2014

"LIST A": List of identified issues that the Stakeholder Committee will prioritize to identify the most pertinent to work on over the next few months, as time allows. The committee will also develop issue briefs and potentially recommendations for those List A items that the committee is unable to consider in depth due to time constraints *(Note that at the end of each of the letter bullets there is a notation as to which "F" that issue primarily is falls under.)*

1. **Drainage**: drainage is imperative for keeping farm fields in production, but comes with challenges related to fish habitat and water quality impacts.

    a. Increasing upslope storm water runoff from development can increase drainage need and frequency of maintenance on a local scale *(Farm)*

    b. Lack of drainage maintenance reduces available agricultural acreage, especially in spring and late fall. *(Farm)*

    c. Drainage maintenance can be expensive given all the required Best Management Practices. *(Farm)*

    d. Mitigation plantings are not liked by many and can be costly to install and maintain. *(Farm)*

    e. Lack of drainage districts makes it harder for farmers to act as a group toward a common goal of improving drainage. *(Farm)*

    f. Revamped Agricultural Drainage Assistance Program (ADAP) program not well known, and probably could be further improved. *(Farm)*

    g. Drainage activities can cause direct mortality (e.g., dewatering of stream, de-fishing mortality) and indirect mortality to fish (e.g., increased avian predation) *(Fish)*

    h. Drainage activities degrade instream habitat for a period of time (reduced cover, increased temp, reduced livable area, increase velocity, increased turbidity, etc) *(Fish)*

    i. Channelized streams do not provide the quality (often without riparian cover, food, shelter and have higher temperatures) or quantity of habitat provided by streams that meander; *(Fish)*

    j. Drainage infrastructure's intent is to reduce shallow groundwater early in season, which also reduces summer low flow recharge potential and increases temperatures. *(Fish)*

    k. Waterways can be exposed to excess nutrients, sediments, or toxicants if agricultural best management practices are not followed and sometimes if they are. *(Fish)*

    l. Tile-based drainage increases nitrogen while reducing phosphorus into aquatic systems—open waterways the reverse. (*Excess nitrogen can cause overstimulation of*

growth of aquatic plants which leads to high decomposition and loss of dissolved oxygen, then fish kills) *(Fish)*

2. **Riparian Buffers:** riparian buffers serve a number of functions, most of which positively affect fish habitat and some that positively affect agriculture. There are also negative impacts to agriculture: land taken out of agricultural production, shading of crops, encroachment by wildlife and invasive plants, etc.

    a. Needed for fish and wildlife habitat functions: reduces temperature and predation, increases habitat complexity, provides cover, provides food, stabilize banks, reduces pollutants from getting to aquatic areas, reduces flood velocities, provide large wood recruitment in the long-term. *(Fish)*

    b. While many buffer plantings enhance the top of bank riparian functions, they do not necessarily address the needs for planting the banks of the river to enhance in-stream habitat in the river for fry. *(Fish)*

    c. Beneficial for some agricultural landowners: beneficial insects/birds, shade of livestock, some crops, and waterway (reduced drainage maintenance by shading reed canary grass), protect from flood debris, etc. *(Farm)*

    d. Can be deleterious to some agricultural owners: pests (e.g., beavers, elk), catch debris. *(Farm)*

    e. Directly reduces available agricultural acreage if not on marginal lands. *(Farm)*

    f. Can cause secondary effects—shade reducing productivity of land in ag production. *(Farm)*

    g. Willing landowners who plant buffers are not necessarily located where the highest habitat priorities exist. *(Farm and Fish)*

    h. Salmon Plan policies call for 150ft buffers on all salmon bearing streams, which would take a lot of ag land out of production, but the 50 year goal is less than 150ft buffer everywhere. Buffer goals focus on higher amounts of restoration on mainstem Snoqualmie and high coho use streams. *(Farm and Fish)*

    i. Ecology's Temperature TMDL also recommends 150ft buffers on mainstem. On tributaries buffers should be wide and tall enough to completely shade the channel, but larger buffers strongly preferred. [Note: Recent changes in guidance will in many cases raise the minimum width required when using Ecology grant funds]. *(Farm and Fish)*

3. **Large restoration projects or flood reduction projects in the APD**: large projects have the potential to significantly improve fish and wildlife habitat and offer some benefits to farming (improved flood risk reduction), but may take considerable acreage out of agricultural production

    a. Assuming large restoration projects and flood risk reduction projects occur within the APD, especially in the 6 miles of mainstem downstream of both the Raging and Tolt Rivers, agricultural land will be converted to a non-agricultural use. *(Farm, Fish, and Flood)*

i. Acres needed for aquatic restoration projects reduces the agricultural acreage designated for long-term protection. *(Farm and Fish)*

ii. Early rearing habitat most needed is in areas of relatively higher elevation ag acreage while marginal ag lands are frequently in areas that do not match highest habitat needs. *(Farm and Fish)*

iii. River segments below confluence with Raging and Tolt Rivers are at higher risk for channel migration and erosive forces than other areas of APD, therefore higher risks to adjacent landowners. Levee setback projects can improve floodwater conveyance and increase sediment storage capacity; setback facilities are also built to current engineering standards so higher level of reliability. *(Farm and Flood)*

4. **Impacts of large floods**: large floods can erode soil, damage infrastructure, impact farm income, kill livestock and plants, etc.

    a. The process to repair bank and field erosion is not quick or timely. *(Farm)*

    b. Deposition of debris and garbage occurs on fields and there is limited access to affordable and appropriately timed disposal options. *(Farm)*

    c. Snohomish County's operation of tide gates and management of the height of dikes to limit small scale flooding of Snohomish County ag areas can exacerbate flood levels upstream in the Snoqualmie. *(Farm)*

    d. Height of dikes in Snohomish County. *(Farm)*

    e. Floodplain soils are saturated after a flood and lose their ability to absorb water like a sponge. *(Farm)*

5. **Floodplain regulations limit fill in floodplain**:

    a. Alternatives to fill can be expensive (to modify/expand infrastructure, including infrastructure for food safety practices). *(Farm and Flood)*

    b. Not every farm has a farm pad *(Farm and Flood)*

    c. Alternatives may be incompatible with farm operations. *(Farm and Flood)*

    d. In some areas of valley, limits of floodplain capacity are being reached (constrained reaches) which makes placing fill even more difficult. *(Farm and Flood)*

6. **Flood safety standards limit options for farm housing within the floodway**: State law prohibits new residences in the floodway, which encompasses a large portion of the Agricultural Production District.

    a. No new residences allowed in floodway, but many farm types (especially livestock) need farmers to live on or extremely close to farm. *(Farm and Flood)*

    b. Ability to create temporary farm worker housing on farms is severely limited. *(Farm and Flood)*

c. Not all farm houses or farm infrastructure are elevated out of floodway/floodplain. The county's current program for house elevations is limited by funding, and there is no specific outreach beyond word-of-mouth. (NOTE: The Lower Snoqualmie needs assessment will better inform total numbers of homes that need elevating and total budget required) *(Farm and Flood)*

d. High cost of adjacent land to floodplain limits options for potential housing. *(Farm and Flood)*

e. We don't have a good sense of how many homes need to be elevated (though Rivers' Lower Snoqualmie needs assessment will help by April). *(Farm and Flood)*

7. **Lack of flexibility in the National Flood Insurance Program's Community Rating System (CRS) rating system**? The CRS is an incentive program that allows a jurisdiction to lower its flood insurance rates by exceeding National Flood Insurance Program minimum requirements. King County has a high CRS rating and low insurance rates, but meeting CRS requirements may limit regulatory flexibility

    a. The County's CRS rating benefits all county residents who buy flood insurance, but it may reduce options for floodplain land uses. *(Farm and Flood)*

    b. CRS rating is based on many things (regulations, mapping, flood warning, outreach, etc.) Is there flexibility in the process to ease requirements on floodplain ag uses without harming broader CRS rating? *(Farm and Flood)*

8. **Farmland Preservation Program:** the Farmland Preservation Program continues to preserve soil for future generations, but the associated covenants restrict the ability to do larger riparian improvements and flood and fish projects.

    a. The farmland preservation program policies constrain the use of enrolled land for non ag open space preservation and restoration purposes (riparian restoration as well as large restoration projects). *(Farm, Flood and Fish)*

    b. FPP policies have been developed by King County that regard restoration and riparian plantings as actions that count against a farmer's 5% tillable surface allowance. This limits restoration potential on FPP lands. *(Farm, Fish).*

9. **Water Quality:** water quality standards can be difficult to meet and the Snoqualmie River does not meet state standards for summer temperature and other water quality parameters. Some impairments are directly associated with agricultural lands and practices, but not all.

    a. Total Maximum Daily Load (TMDL's) exist for Snoqualmie waterways in the Agricultural Production District for Temperature, Fecal Coliform Bacteria, Dissolved Oxygen, Ammonia-Nitrogen and PH. *(Farm and Fish)*

    b. Meeting water quality standards can be an issue for agriculture:

        - Turbidity standards are challenging to meet for agricultural activities which generally mix soil and water together. *(Farm)*

        - When the river overflows its banks, even good crop or manure management practices do not prevent sediment or nutrients getting into water; *(Farm)*

- The agronomic application of manure may overlap with large rain events, particularly in early spring and late fall. Like early flooding, this causes fecal bacteria and nutrients to get washed into aquatic habitats. *(Farm)*
- Unforeseen rain events can cause excess nutrients or sediment at certain times in the farming cycle. *(Farm)*

10. **Impacts from small frequent floods**:
    a. Get water off fields sooner so can get equipment out as early as possible and plant as early as possible ; *(Farm)*
    b. Spring floods associated with snow melt tend to be smaller, but the timing of them greatly impacts field accessibility and workability and can kill crops. *(Farm)*
    c. Will improved drainage practices provide better localized flood storage for these smaller flood events? *(Farm)*
    d. Lack of accessibility: roads and road maintenance *(Farm)*
11. **Lack of road maintenance/access in various weather conditions (flooding and snow**): roads critical for farm access and product delivery may not be repaired or maintained in a timely fashion. *(Farm)*
12. **Cross-floodplain structures, barriers**: Structures (roads, trails, etc.) and other features (such as forests or other mature vegetation) that extend across the floodplain can back up flood waters.
    a. Roads, levees, trails that are perpendicular to floodway can back up floodwaters on upstream landowners. *(Farm, Fish, and Flood)*
    b. Roads, levees, trails that are parallel to floodway can restrict flood storage behind structure. *(Farm, Fish, and Flood)*
    c. Removal of levees, roads, etc can create new impacts to downstream landowners. *(Farm, Fish, and Flood)*
    d. Road height increasing via repeated asphalt/chip seal overlays of road surface; *(Farm, Fish, and Flood)*
    e. Large floodplain forests/plantings perpendicular to floodway (e.g. project at county-line) *(Farm, Fish, and Flood)*
13. **Floodgates:** floodgates can keep water off farms during smaller flood events if operating properly, but they may impact fish negatively and may not function as intended.
    a. Floodgates block fish passage at time when juveniles need to get out of the mainstem to quieter backwater areas. *(Fish)*
    b. Pumps associated with floodgates generally cause injury or mortality to fish going through the pumps. *(Fish)*
    c. Floodgates may provide a margin of increased productivity for agriculture if they keep spring floods (low) off land; or enable pumping before or after a spring flood. *(Farm)*

d. Pumps may not be in place or functioning where they were originally installed. *(Farm)*

e. It is unclear how useful/effective they are at reducing small scale flooding *(Farm, and Flood)*

14. **Revetments and levees:** revetments and levees can reduce channel migration and bank erosion and some flood impacts, but are typically not good for fish habitat. Current priority framework for maintaining revetments does not value farmland, economics of agriculture, or food security;

    a. Levees/revetments are particularly concentrated in spawning reaches due to higher natural channel migration rates in those areas. Can cause scour of spawning habitats which leads to direct mortality of eggs in gravel. *(Fish)*

    b. Levees/revetments degrade fish habitat, especially shallow water edge and slow water habitats. *(Fish)*

    c. Levees/revetments may not be the panacea some think they are. They provide a false sense of security. *(Flood)*

    d. Unclear which levees/revetments the County will help maintain or repair and when that work will be done. *(Farm)*

    e. Levees/revetments can channel water towards downstream properties or cause significant deposition below them that increases rates of erosion of adjacent lands. *(Farm and Flood)*

15. **Lack of real time flood information**. Need to clarify what is needed beyond the gage data and flood statistics provided by the county's flood warning system. *(Flood and Farm)*

16. **Gravel dredging of mainstem Snoqualmie:** gravel management (removal) may reduce small scale flooding and bank erosion, but it is not a sustainable, long term flood management tool and has negative ecological consequences. *(Farm, Fish, and Flood)*

17. **Poor habitat quality in agricultural areas:** fish habitat is not optimal in agricultural areas due to factors such as straightened channels, lack of riparian cover and diminished water quality. *(Fish)*

18. **Competing needs for water:** water in the basin is typically in lowest supply (summer and fall) when it is most needed for many fish as well as farmers (irrigation and livestock water).

    a. Water rights are established and managed under State law and are very complicated. *(Farm, and Fish)*

    b. Water for irrigation and stock watering can compete with needed in-stream flows for fish. *(Farm, and Fish)*

    c. Water withdrawals on small streams can cause conflicts in dry months (e.g., dewater stream, increase temperature). *(Farm, and Fish)*

    d. Pumps can cause fish mortality even when screened. Screen rules are hard to understand and fish-friendly pump systems are expensive. *(Farm, and Fish)*

    e. Illegal and unscreened diversions/irrigation operations have been occurring in drier summers. *(Farm, and Fish)*

f. There appear to be enough water rights "on paper" in the valley to meet the larger APD's irrigation need, but the rights are not necessarily in the hands of farmers that need them. *(Farm, and Fish)*

g. Riparian stock watering--controlled access points for livestock erode banks, increase sedimentation, and nutrients (livestock waste). *(Farm, and Fish)*

19. **Wetlands regulations:** ag wetland regulations at County, state and federal levels can reduce farmland through mitigation requirements.

    a. The County's wetland policies do not match state and federal wetland policies. Grazed wet meadow (Term used by King county to describe semi functioning wetlands being used by/for ag) are treated as true wetlands by Feds, thus larger mitigation ratios apply when development or redevelopment impacts occur that require State or Federal permits (i.e., most development in floodplains). *(Farm, and Fish)*

    b. Requirements for wetland mitigation can act as a deterrent to voluntary planting of streams where the riparian area is also a wetland because the voluntary planting may "use up" a site for future required mitigation. *(Farm, and Fish)*

20. **Beavers and other wildlife**. Both the reduced trapping/hunting and restoration/increase of riparian habitats have likely caused an increase in beaver numbers and conflicts with farms, primarily drainage issues and flooding of fields.

    a. Trapping/removing beavers is costly. *(Farm)*

    b. While allowances are there to allow for small and new beaver dams to be manipulated, it requires farmers to regularly walk/monitor waterways to check for damming activity. *(Farm)*

    c. Beaver ponds create excellent rearing habitat, especially for coho juveniles. *(Farm, and Fish)*

21. **Regulations governing agriculture** are unknown and/or unclear for some landowners.

    a. Current regulations are challenging to understand and seem to change all the time. *(Farm)*

    b. You get a different answer depending on who you talk to at King County Department of Permitting and Environmental Review. *(Farm)*

    c. There is no conventional way of notifying landowners when regulations or regulatory standards have changed and interpretation of code varies. *(Farm)*

LIST B: List of issues that the Committee can't readily address within its process or timeline. Still need committee to evaluate and make recommendations for priorities and/or next steps associated with these issues. NOTE: This does not mean that the issues are not important. It means that the committee's limited time is not well spent on the issue.

1. **Decentralized flood storage options.** This may be considered by the Rivers' Section Hydraulic and Hydrologic study that is being initiated during 2014. *(Farm, Fish and Flood)*
2. **Forestry practices and their impacts on valley flooding.** This may be considered by the Rivers' Section Hydraulic and Hydrologic study that is being initiated during 2014. *(Farm and Flood)*
3. **Stormwater management practices and their impacts on valley flooding.** This may be considered by the Rivers' Section Hydraulic and Hydrologic study that is being initiated during 2014. *(Farm and flood)*
4. **Can King County staff provide data showing where and what the relative risk of bank and field erosion in different parts of the valley**. *(Farm) This type of information is outside our ability to say without significant modeling, time and money.*
5. **Responding to the new food safety standards** may cause a decrease in wildlife habitat, riparian condition, and require more farm infrastructure that may not be allowed under current flood regulations. It is currently unknown exactly what and when will come down from FDA. *(Farm) Staff recommends that the committee suggest KC track over the next year.*
6. **The National Marine Fisheries Service's Biological Opinion (BIOP)** of the Federal Emergency Management Agency National Flood Insurance Program may have impacts on floodplain regulations that we haven't anticipated. *(Farm)*
7. **Climate change impacts on changing trends in flooding**.
    - Are seasonal flooding patterns changing—more spring flooding? *(Farm and Flood)*
    - Are "small" floods occurring more frequently than used *(Farm and Flood)*
    - Has the pattern of large floods changed over the last century. *(Farm and Flood)*
8. **Want an inventory and assessment of all vacant parcels** in the APD. What would it take to put a farm pad and house on each parcel. *(Farm and Flood)*
9. **Large flood control dam.** This strategy is not in the KC Flood Plan and is not currently under consideration. *(Farm)*

More information needed:

- How are silage bunkers treated by the County's fill regulations? This activity is temporary in nature, but gets replaced all the time. Do those count as fill?