KING COUNTY AGRICULTURE COMMISSION

MEETING NOTICE

THURSDAY, JANUARY 10, 2019
4:00-7:00 P.M.
ISSAQUAH CITY HALL'S EAGLE ROOM
130 E. SUNSET WAY, ISSAQUAH 98027

PROPOSED MEETING AGENDA *(AGENDA ITEM TIMES ARE TENTATIVE)*

4:00	**Call to Order** • Welcome and Introductions • Approval of Agenda • Approval of Minutes (November 2018)	Meredith Molli, Chair
4:15	**Public Comment** related to a specific agenda item *3 minutes/person; limit 3 people same side of any issue*	Meredith Molli
4:20	**Old Business - Updates** (approx. 2 min each) • Commission Details – welcome new commissioners • KC Ag Program ○ Policy/Economic Development • Pearson Eddy • Local Food Initiative • Land Conservation Initiative • King Conservation District • Farm Bureau • Farm, Fish Flood	 • Patrice Barrentine • Richard Martin • Patrice Barrentine • Richard Martin • Mike Lufkin • Leann Krainick • Josh Monaghan • Bruce Elliott, Rosella Mosby • Meredith Molli, Richard Martin
4:30	**Winery Ordinance and Amendment**	Karen Wolf, Sr. Policy Analyst, King County Office of Performance, Strategy, and Budget
5:00	**Agriculture Drainage Assistance Program** • Overview • Data from 2018 • Outlook for 2019	Lou Beck, KC Storm Water Engineer and ADAP
5:30	**Break**	
5:45	**Farm, Fish, Flood Buffer White Papers** • Best Available Science • Agriculture **Actions:** Review, Discussion, Recommendations, Create FFF Committee for further review	Beth Ledoux, Buffer Task Force Coord., Melissa Borsting, Ag Program
6:50	**General Public Comment** *3 minutes/person; limit 3 people same side of any issue*	Meredith Molli
6:55	**Concerns of Commissioners**	Meredith Molli
7:00	**Adjourn**	Meredith Molli

Next Meeting : February 14, 3-6pm, Preston Community Center

King County
Water and Land Resources Division
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Suite 600
Seattle, WA 98104-3855
206-477-4800 Fax 206-296-0192
TTY Relay: 711

King County Agriculture Commission
DRAFT Meeting Minutes
Thursday, November 8th, 2018
Pike Place Market Commons, Seattle

Commissioners	P	A	Commissioners	P	A	Ex Officio	P	A
Leann Krainick, Chair Pro-Tem	X		Lora Liegel	X		Fereshteh Dehkordi, DPER		X
Amy Holmes, Vice Chair Pro-Tem	X		Darron Marzolf	X		Becky Elias, SKCPH		X
Roger Calhoon	X		Meredith Molli	X		Josh Monaghan, KCD		X
Sarah Collier	X		Rosella Mosby		X	John Taylor, DNRP		X
Bruce Elliott		X	Leigh Newman-Bell	X		Kevin Wright, WSU	X	
Year Eng	X		Paul Pink		X			
Nayab Khan	X							

P=Present; A=Absent

County Staff/Representatives Present		
Patrice Barrentine, DNRP	Richard Martin, DNRP	Megan Moore, DNRP
Melissa Borsting, DNRP	Ivan Miller, PSB Office	

Guests Present		
Jeanne Currie, Pike Place Market	Sidra Schkerke, PPM	
Megumi Ryan, student	John Turnbull, PPM	

Meeting Action Summary

- **Approval of October 11th, 2018 Meeting Minutes**
- **Commission, County, and Organizational Updates**
- **Review/Update on King County Programs: 4:1 Program, Shoreline Master Program**
- **Pike Place Market Farm Program Annual Report**
- **Officer Nominations and Elections for 2019**
- **Commission Topics Brainstorming for 2019**

Meeting called to order at 4:03 pm

Approval of Meeting Agenda

Leann Krainick suggested adding a "New Business" item after the Winery Code Amendments item for an update on King County's Shoreline Master Program. Patrice Barrentine noted she had not had time to work on the Commission Policies and Procedures document, so it was suggested to replace that agenda item with a "brainstorming" session for Commission topics to address in 2019. Meredith Molli motioned to accept the agenda with these amendments. Darron Marzolf seconded; the motion carried unanimously.

Approval of Prior Meeting Minutes (October 11th, 2018)

Darron Marzolf motioned to accept the minutes as written. Amy Holmes seconded; the motion carried unanimously.

Public Comment (Related to a Specific Agenda Item)

There was no public comment during this period.

Old Business – Updates

- **Commission Details (Patrice Barrentine):**

- Ms. Barrentine thanked Leigh Newman-Bell for helping arrange the meeting in tonight's venue.
- Nominations for new and renewing Commissioners were transmitted to the County Executive and King County Council (KCC). Four have been acted on by KCC. All should be in place for the start of new terms in February 2019. Lora Liegel and Sarah Collier are renewing; the new Commissioners are Kevin Scott-Vanderberge and Lily Gottlieb-McHale. Ms. Gottlieb-McHale's nomination is still being finalized by KCC.
- King County agriculture staff are working on several items raised at last month's meeting, including a Land Committee update by Ted Sullivan in January, and a Policies and Procedures update.

- **King County Agriculture Program (Richard Martin, Patrice Barrentine):**
  - Farmland Preservation Program (FPP): Mr. Martin said there is a need to relaunch the Commission's Land Committee, and get it on a regular schedule. This is due to about 18 potential FPP properties for 2019 which need input from the Commission. An email on this from Ms. Barrentine or Ted Sullivan should be coming in the next few weeks. Conference calls are an option, depending on everyone's schedules. He further explained there needs to be agreement on what the committee's primary role is. The County's Land Conservation Initiative (LCI) launch has at least doubled the expected workload of FPP going forward, to nearly 475 acres yearly.
  - Bee Cha is working on a detailed assessment of immigrant farmer communities in King County, expected by the end of December.
  - A contractor has been hired to conduct a short-term assessment of water rights currently owned by King County, with a report expected in January. Mr. Martin said a lack of attention to these water rights has resulted in many County losses that could have benefited farmers.
  - Working Farmland Partnership (WFP): The program is moving forward at full speed; Mr. Martin said all questions on the program should be directed to Melissa Borsting.
  - Farm Fish Flood (FFF):
    - Mr. Martin said yesterday's Implementation Oversight Committee (IOC) meeting was successful in defining solid measures of success in implementing recommendations/action items. Caucus groups are now refining these, with results expected in the next month or two.
    - Buffers Task Force: Drafts of two documents are expected next month – a "Best Available Science" paper, and an assessment of riparian buffer impacts on agriculture. These are expected in mid-December, with a final draft in January. Ms. Barrentine will email these to the Commission for review before the January Commission meeting. Mr. Martin advised questions should be directed to Ms. Borsting, the County's point person on this task force.
    - Regulatory Task Force: Eric Beach, task force coordinator, is expected to deliver an update to the Commission in January.
    - Agriculture Strategic Plan Task Force: Ms. Barrentine requested Commission input as soon as possible on a draft job description for a new staff position to support the Snoqualmie Valley agriculture strategic plan. It is hoped this plan will be key in helping develop similar plans for other APDs. The first meeting of this task force is in January; Ms. Barrentine solicited input on possible recruitment for the task force.
  - Policy and Economic Development: Ms. Barrentine reported on last Monday's quarterly meeting of farmers' market managers in King County. The meetings offer productive discussion and are well-attended, by about 30 out of 38 markets. She said now is an exciting time to be involved in this, as there is a lot of staff transition occurring at some of the larger markets.
  - Focus on Farming Conference: Ms. Barrentine praised today's conference, including Leann Krainick's panel on her dairy farm and use of food waste as feed. Ms. Barrentine also discussed a meeting with Burlington butcher Travis Stockstill, who has worked nationwide to increase efficiency in the slaughter process.
- **Pearson Eddy (Richard Martin):**
  - The Snoqualmie Valley WID has sent a formal letter to NRCS, with many strong recommendations. A copy of the letter is available for review by contacting Cynthia Krass at the WID. DNRP is reviewing these recommendations to determine how best to support them. A final decision from NRCS on two proposed alternatives is still awaited before the County delivers its formal response. In the meantime, the County wants to support the WID's position going forward.
- **Land Conservation Initiative (Leann Krainick)**
  - A public meeting to launch Phase 3 of the LCI is scheduled for November 14th from 5 to 7 pm at King Street Center in Seattle. Ms. Krainick encouraged all interested parties to attend.

- **King Conservation District (Leann Krainick):**
  - Ms. Krainick relayed a request on behalf of KCD staffer Mary Embleton. Ms. Embleton requested that any interested or affected parties take part in the King County Farm Direct Marketing Survey. Its goal is to better understand opportunities and current practices related to direct marketing, such as food access and institutional sales. Ms. Barrentine will email a link to the survey.
- **Farm Bureau (Leann Krainick):**
  - There were no updates, due to the absences of Bruce Elliott and Rosella Mosby.
- **Winery Code Amendments (Patrice Barrentine, Roger Calhoon):**
  - Ms. Barrentine reported that the County Executive has transmitted the amendments to the King County Council (KCC). KCC is currently talking to constituents and revising the amendments. Two pieces were not adopted by the Executive, regarding arterial road access, and a minimum for on-site production, mainly because it is not believed the wineries would accept the latter. Mr. Calhoon voiced some frustration at this, but added there is a group meeting at the Sammamish Grange Hall comprised mostly of people who've been engaged on the winery issue for two decades. Ms. Barrentine said this group's next meeting is November 13th at 7:00 pm at the Grange, and they are looking to form a response to the winery study and these legislative pieces. Councilmember Kathy Lambert's office is also working with constituents to form a response, but this is not yet available for review.

New Business: King County Shoreline Master Program Update – Leann Krainick, Amy Holmes

DPER sent a notice this past weekend announcing the 2019 periodic review of the King County Shoreline Master Program. A public meeting, also available to attend online, is scheduled for November 17th from 10:00 am to noon at the Vashon high school.

Ms. Holmes noted that, in addition to coastal shoreline, shoreline of fish-bearing creeks and streams impacts farmland as well. Public comment on this review is due by November 30th. Ms. Holmes encouraged any interested parties to attend the Vashon meeting or relay their questions to her, as she plans to attend. More information is available online at http://www.kingcounty.gov/shorelines/.

Ivan Miller of the Executive's Performance, Strategy, and Budget (PSB) office further explained the nature of the review. It consists of 19 narrow technical amendments to bring the County's shoreline regulations and definitions into compliance with state law and make permanent the state's ban on net pens. The bulk of the update will be part of the 2020 King County Comprehensive Plan update.

King County 4:1 Program Review – Ivan Miller, PSB Office

Mr. Miller reviewed King County's 4:1 land program and upcoming revisions to it that may have a small impact on agriculture and forestry. The 4:1 is a program that, for 20+ acre lands bordering the county's Urban Growth Boundary (UGB), preserves open space while allowing expansion of the Urban Growth Area (UGA) by moving the UGB.

In 1985, the County established its first UGA/UGB. In the 1994 KC Comprehensive Plan ("Comp Plan") this became part of the Growth Management Act (GMA), resulting in a large shrinkage of the UGA and many formerly transitional areas being zoned as rural. Over the years, some of these landowners told the County they want urban development on their lands. The 4:1 program was the result.

For lands in the program, one (1) acre of urban development is allowed per four (4) acres of permanently preserved County-owned open space. Any development must be residential, and a minimum density of four dwelling units per acre – largely consistent with surrounding urban space. Some of the urban space adjacent to the UGA is to serve as a "green wall": to buffer these urban areas from surrounding rural areas and connected open space. The new open space is primarily zoned as rural, and can be used for agriculture or forestry, but that has not yet occurred.

The program is voluntary, with specific criteria set by the County, and applies to mostly rural-zoned lands. It excludes lands zoned as agricultural; however, farmland zoned as rural could still be eligible. Mr. Miller noted there are conflicts to fix between the Comp Plan and the Countywide Planning Policy (CPP), the latter of which governs the County's work with cities. One example is that the CPP prohibits any natural resource land from being added to an urban area, while the County's program does allow some, such as forests.

The program remains small, with nine transactions since implementation. These have resulted in an increase of about 359 acres to the UGA, and over 1,300 acres of largely passive-use open space, largely connected to other open spaces. He also noted additions – 1,000 acres of urban land and 2,500 of open space – through three large "joint planning agreements" (JPA) between the County and various cities, which are not strictly 4:1 but use some of those principles. He said it is expected the County will end JPAs, as the current Executive does not favor them.

He reviewed some proposed changes to the 4:1 program:

- The adjoining city must agree to annex the new urban land, and urban development will occur under city standards, and the city collects the fees. Cities often have higher urban development standards than the County.
- Urban land remains residential; this and other conditions of concern of the County will be bound to the property title during the annexation agreement.
- Fix inconsistencies between CPP and Comp Plan; policy will be strengthened to say open space should be largely on-site and fully buffer new urban land.

Mr, Miller continued that he expects participation in this program to remain low. There are about 200 parcels in the County eligible in terms of size, but many of these are environmentally constrained from participating. He said it is being proposed to keep the program permanent, however, as it has been a useful conservation tool.

There are proposed changes to open space criteria as well. These include evaluating the quality of the open space so that only the highest-quality proposals are approved, lands with the most environmental benefits: fish and wildlife, wetlands, historical, archaeological, among others. Adding criteria will also benefit some areas in terms of public access, the ability for the County to manage the open space efficiently, and mitigating impacts to nearby resource lands. Other proposals would allow some open space to be designated as agricultural or forest.

Mr. Miller said open space would remain in full County fee-simple ownership. In cases such as parcels the County might want as agricultural land, the land might be leased or sold to a farmer. Amy Holmes asked if there is a model to decide who in the County gets control over the new open space from this program. Mr. Miller replied it is generally managed by DNRP, and is determined case-by-case if it will fall under WLRD, Parks, or others. Meredith Molli asked if there was a written policy to determine this. Mr. Miller said he is working with DNRP to determine if more guidance would be useful. Patrice Barrentine noted all 4:1 proposals close to agricultural land come to the Commission as part of the Comp Plan, and she was not aware of any "infighting" at DNRP over pieces of land.

Another proposed change to the program is to have 4:1 transactions initiated just by the property owner through the County's docket process, where residents can say they want to change the Comp Plan. It is also being proposed to put 4:1s on a four-year Comp Plan cycle, instead of annually. He reiterated a need for consistency about which lands are allowed in the 4:1; one proposal involves exempting all natural resource lands, not just agricultural, from the program. Roger Calhoon asked how long the full 4:1 process takes for a property; Mr. Miller said usually around two years total.

Some concern was expressed about the 40% of farmland in the County that occurs on rural-zoned land, outside the agricultural zone of an APD, being susceptible to urban development. Mr. Miller replied that most rural-zoned farmland in King County is not at risk of being developed in a 4:1, as it does not touch a UGA.

More details on this will be available in a draft report that is due the first quarter of 2019. Mr. Miller also touched on the upcoming Comp Plan update. KCC adopted the 2018 Plan last week. This moved major Plan updates from a four-year cycle to an eight-year cycle, with a midpoint update for narrow specific issues at the four-year mark. The next of these midpoints will be in 2020. KCC is looking at the Shoreline Master Program, sea level rise, and fossil fuel infrastructure, among other issues, which will be compiled for a scope of work. A public review draft of this will be available by July 2019, with transmission to KCC in September, and the final version due in 2020. He said he would relay the information to Richard Martin and Ms. Barrentine for distribution. He noted this Comp Plan update is limited, with many issues being delayed until the larger 2023 update.

Welcome from Pike Place Market Preservation & Development Authority – John Turnbull, PPM

Mr. Turnbull welcomed the Commission to the Market, and provided a brief review of its history. He said a great effort is being made to keep agriculture "up front and real." Farmers markets in the area are growing, and there is a strong demand for locally-grown products. He thanked the County for its stewardship being key in keeping this work going. Patrice Barrentine took a moment to praise Mr. Turnbull for his extensive knowledge of many facets of the Market.

BREAK

Pike Place Market Farm Program Report – Leigh Newman-Bell, Sidra Schkerke, Jeanne Currie

Ms. Newman-Bell, with fellow PPM Farm Program staff Ms. Schkerke and Ms. Currie, updated the Commission on the progress of the different aspects of the Farm Program over the past year:

- **Community-Supported Agriculture (CSA):** This program is slowly being rebuilt, with about 187 current members. All produce in the boxes delivered to members is sourced from PPM farmers and eastern Washington farmers. The produce selection is seasonal and varies week to week. This year a sliding-scale pricing option was offered, with many boxes subsidized up to 50%. Many participants are believed to be local

residents, with boxes also delivered to PPM on-site housing and school, several King County worksites, and Seattle public preschools. The CSA has also partnered with Fresh Bucks to Go, funded partly through the Seattle sweetened drink tax. This allows for more produce bought from farmers, and more delivered to Seattle preschools, where 150 boxes are delivered weekly to local families. About 15-20 farmers at any given time participate in the program. A goal for the program is to one day be completely self-supporting. It was noted that over 40% of the produce in the CSA boxes is sourced from King County farmers.

- **Food Access:** This program includes the Farmers Markets, highstalls in PPM, and the new PPM Market Commons. The markets saw about $16,000 in revenue via Fresh Bucks and $6,000 via WIC/senior services funds matching, with about 4,000 pounds in produce gleaned. Match funds with PPM currency are offered up to $16 per person. Highstalls saw about $29,000 through its bonus card program, which has about 250 participants. The Market Commons opened last year, and is still in the process of tying initiatives together. So far they have hosted cooking classes, Fresh Bucks transactions, bonus card signups, summer distribution of farmer Pike bucks, and winter distribution of highstall Pike bucks. The new market front pavilion hosts weekly Pike Box Pickups, with 12 participating farms. These pickups include a weekly "meet the producer," CSA customer appreciation, Food Bank outreach, and produce sampling. It was noted that surveys are done throughout the year to see what customers like in terms of produce selection, and while selection is sometimes limited, unique and culturally relevant selections are offered when possible.
- **Satellite Markets:** Four satellite farmers' markets are offered from May to October in the Seattle area, to give farmers an opportunity to sell their produce in more of a local neighborhood setting. The markets saw a combined total of $900,000 in sales last year, with 68% of the earnings going to the 41 participating farmers and artisans. The average daily sale to each farmer is about $700. Patrice Barrentine noted that once these markets hit their stride, they may be better able to support meat sales as well.
- **Farm Development Program:** This program secured $58,000 in grant funding for local farmers this year. The program also offers technical assistance; individual farmer development (funded by KCD) which includes business classes and a $5,000 startup stipend; farm visits; and "safety net" requests. The individual development program (IDA) is currently targeted at PPM farmers, but may expand to include business incubators for other market vendors.

Ms. Barrentine added that she had received and would distribute 2017 metrics from the Washington State Farmers' Market Association. King County has 22% of the state's farmers' markets, with about $27 million in sales last year. She also said that at a recent meeting of farmers' market managers, the managers asked to present to the Commission, but this could be discussed at a later time.

Officer Nominations and Elections for 2019 – Leann Krainick, Patrice Barrentine

Ms. Barrentine announced that one nomination for Commission Chair for 2019 had been received, for Meredith Molli, while Rosella Mosby and Leigh Newman-Bell were nominated for Commission Vice Chair for 2019. Roger Calhoon had also been nominated for vice chair, but declined the nomination. Ms. Barrentine explained the term limits were for one year, January 1 through December 30.

Ms. Molli accepted her nomination for Chair. Mr. Calhoon made a motion to elect Ms. Molli as Chair. Lora Liegel seconded the motion, and the motion passed unanimously.

Ms. Newman-Bell accepted her nomination for Vice Chair, adding that Ms. Mosby was equally qualified to serve in that position. Darron Marzolf motioned to elect Ms. Newman-Bell as Vice Chair. Sarah Collier seconded the motion, and the motion passed unanimously.

Ms. Barrentine praised and thanked Leann Krainick and Amy Holmes for their service as Chair and Vice Chair.

Brainstorming for 2019 Topics – Commissioners

Amy Holmes suggested an update on the status of the 2020 Comprehensive Plan update, sometime in the fall.

Leann Krainick asked for input on the meeting schedule: how many meetings should be held, and what months should be taken off. Meredith Molli said it seemed public attendance had dropped since the location of the meetings started rotating. Ms. Holmes said one meeting per year should be held on Vashon, as there are lots of issues for farmers there. Roger Calhoon said he believed that public attendance is issue-driven, and preferred to rotate the meeting locations to make it easier for farmers from different areas to attend. Ms. Molli suggested holding half of the meetings in a fixed location, and rotating the rest. Ms. Barrentine agreed this would make things easy.

It was generally agreed among Commissioners that a nine-meeting schedule would be enough meetings for the year, though Ms. Barrentine noted that eight was the number preferred by Commissioners in her poll. Different variations

were suggested: July and December and another to-be-determined month off, or two months of meetings followed by a break in the third month. Ms. Krainick suggested keeping September as a "pending" meeting should urgent issues arise. Ms. Barrentine agreed to put together some schedule options for the Commission to vote on in January.

Ms. Barrentine reported there would be a joint orientation for this Commission and the Rural Forest Commission in January at King Street Center, the day before this Commission's January meeting. Additional topics will include a presentation on yearly metrics for ADAP, the FFF buffer task force papers, and FPP. Ms. Holmes also suggested a Land Conservation Initiative update early in the year. Ms. Krainick asked about the possibility of a KCC farm tour in north King County. She didn't think an update to KCC was needed this year, but that the Commission could decide on that. Ms. Barrentine agreed a shorter farm tour may be possible, and there was plenty of time to work on details.

Public Comment (General)

There was no public comment during this period.

Concerns of Commissioners

- **Roger Calhoon** said he received an email about the cannabis real estate industry, stating that a lot of money is looking to invest in farmland. He advised the Commission should not lose track of this issue.
- **Meredith Molli** asked about a possible Snoqualmie Valley-specific focus to some aspects of the 2020 comp plan update. Patrice Barrentine agreed to follow up.

Meeting Adjourned at 7:04 pm

Next Meeting

January 10th, 2019, 5:00 – 7:00 pm, King Street Center (Seattle)

King County Board or Commission Member
CODE OF CONDUCT

King County strives to ensure that individuals appointed to serve on a King County board or commission will treat all persons and decisions in an equitable manner; and will conduct business in a way that exemplifies transparency and open communications. To that end, King County board members are required to read the King County Code of Conduct below and commit to abide by the following:

- Board members will make decisions based on the best interest of the board's mission; and will avoid the appearance of a conflict of interest.

- Board members shall not use their appointed position to influence board or commission decisions in which they have a financial interest or where they have an organizational responsibility or a personal relationship that would present a conflict of interest. If there is a conflict of interest regarding a particular agenda item, the board member will refrain from participating in that discussion or decision.

- Board members will become familiar with enabling legislation and governing documents that pertain to their board or commission, and will commit to taking any trainings required by state law or King County, including but not limited to:
  - Washington State Open Public Meetings Act training (RCW.42.30)
  - Washington State Public Records Act training (RCW 42.56)
  - King County Code – Maintenance of Permanent Records training (King County Code 2.12)
  - File an annual King County Ethics Program Financial Disclosure Form with the Board of Ethics (quasi-judicial boards and "independent" boards are exempt from this annual requirement)
  - King County Equity & Social Justice Training

- Board members shall not accept or seek for others any gifts or things of value offered in connection with their appointment that would violate the King County Ethics Code, Section, King County Code 3.04.030(B)(3)&(4).

- Board members will respect fellow board or commission members, staff and the public by treating all with patience, courtesy, and civility at all times.

- Board members shall not speak or act on behalf of their board except when formally given such authority to do so for a specific purpose. When speaking to the public or to the press, board members shall explicitly state that they are not representing their board or commission or King County but are simply presenting their personal opinions or positions as a private citizen.

- Board members will oppose discrimination and resist stereotyping in all of its forms, as indicated in King County Code 12.18 (Fair Employment Practices), and King County policies (PER 22-3-3 (AEP)) on non-discrimination and anti-harassment. King County has a zero tolerance approach to discrimination, harassment, and retaliation. Any board member who engages in conduct that is discriminatory, harassing, or retaliatory towards fellow board members, King County staff, or the public will not be tolerated and the board member is subject to removal from the board. Complaints alleging misconduct on the part of board member will be investigated promptly. No one should ever be harassed or humiliated, afraid, or discriminated against because of their gender, race, sexual orientation, or any other factor.

- Board members shall use public resources (e.g., staff time, equipment, supplies, email accounts, or facilities) appropriately ~ in a way that does not support personal purposes or private gain.

- Board or commission members are expected to attend their regularly scheduled meetings. King County board or commission members must commit to attend no less than seventy-five percent (75%) of all regularly scheduled meetings, subcommittee meetings or any special meetings during the year (*unless stated differently in the board's bylaws or enabling legislation*).

I have read and understand the King County Boards and Commissions Code of Conduct and agree to abide by and uphold this Code of Conduct to the best of my ability at all times while serving as a member of a King County board or commission. I further understand that failure to comply with any part of this Code of Conduct can result in being relieved of my duties as a King County board or commission member.

Signature: _____

Print Name: _____

I am a Board Member on the: _____

Date: _____

Please return your completed Code of Conduct form via U.S. Post Office or via email to (*We will accept a scanned copy of your completed form sent via email)*:

Rick Ybarra
Liaison for Boards & Commissions
King County Executive Office
401 Fifth Ave, Suite 0800
Seattle, WA 98104
Rick.Ybarra@kingcounty.gov

King County Agriculture Commission

2019 Meeting Schedule

Date	Time	Area	Location
January 10	4-7pm	Issaquah	Issaquah City Hall
February 14	3-6pm	Preston	Preston Community Center
March 8	9:30-4 new commissioner orientation	Seattle	King Street Center
March 14	3-6pm	TBD	
April 11	3-6pm	Preston	Preston Community Center
May 9	3-6pm	Preston	Preston Community Center
June	off		
July 11	3-6pm	Preston	Preston Community Center
August	off		
September 12	3-6pm	Preston	Preston Community Center
October 10	3-6pm	Preston	Preston Community Center
November 14	3-6pm	Seattle	Pike Place Market Commons
December	off		

King County Ethics Program
Office of Risk Management Services
500 4th Avenue, Room 320
Seattle, WA 98104
206.263.7821 TTY Relay 711
Program.ethics@kingcounty.gov

Statement of Financial and Other Interests

King County Board, Commission, Committees, and Other Multimember Bodies

Filing Year 2019

Read all instructions carefully then fully complete each section.
Incomplete forms cannot be filed

Name:

Board or Commissions:

☐ I am filing within two weeks of initial nomination or appointment, reporting on the preceding 12 calendar months.

Nomination or appointment date:

☐ I am filing an annual statement, reporting on calendar year 2018 (See Item No. 3, "Period of Reporting" in Filing Instructions.)

Financial and Other Interests to Report

Note: Underlined terms are defined in the Filing Instructions and in the Code of Ethics

A. Compensation, Gifts and Things of Value

During the reporting period, did you, or a member of your immediate family receive compensation, gifts, or things of value from any person engaged in any transaction with King County in which you participated or for which you had responsibility?

☐ No ☐ Yes **If yes**, please answer the following additional questions:

1) Name of each person engaged in any transaction with King County from whom the compensation, gift, or thing of value was received.

2) Name of individual who received the compensation, gift, or thing of value and their relationship to you.

Describe the situation and provide any additional information regarding the compensation, gift or thing of value for the Ethics Program's consideration below.

B. Financial Interests

During the reporting period, did you, or a member of your immediate family possess a financial interest in any person engaged in any transaction with King County in which you participated or for which you had responsibility?

☐ No ☐ Yes **If yes**, please answer the following additional questions:

1) Name of each person engaged in any transaction with King County in whom a financial interest was possessed.

2) Name of individual who possessed the financial interest and their relationship to you.

Describe the situation and provide any additional information regarding this financial interest for the Ethics Program's consideration below.

C. Positions

During the reporting period, did you, or a member of your immediate family hold a position in any person* engaged in any transaction with King County in which you participated or for which you had responsibility?

** "Person" means any individual, partnership, association, corporation, firm, institution, or other entity, whether or not operated for profit. The term does not include governmental units within the United States unless so specified.*

☐ No ☐ Yes **If yes**, please answer the following additional questions:

1) Name of each person engaged in any transaction with King County with whom the position was held.

2) Name of individual who held the position and their relationship to you.

3) Title of the position held.

Describe the situation and provide any additional information regarding the position(s) for the Ethics Program's consideration below.

D. Real Property

During the reporting period, did you, or a member of your immediate family possess a financial interest in any real property that was either involved in or the subject of a King County action? Property for which the only King county action was valuation or revaluation for tax purposes does not have to be reported, **except that employees of the Department of Assessments and Board of Appeals who are required to file this statement shall report property for which valuation or revaluation actions were taken by King County during the reporting period.**

☐ No ☐ Yes **If yes**, please answer the following additional questions:

1) Street address, parcel number, or legal description of real property involved in or subject of a King County action.

2) Name of individual who possessed the financial interest and their relationship to you.

3) Name of the King County department involved in the King County action.

E. Declaration

By filling out the information below, I affirm that I, _____, am signing this form and declaring under penalty of perjury under the laws of the State of Washington that the foregoing is true, complete, and correct as of the date submitted.

Signature: S/ _____

at _____ _____ _____

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Riparian Buffers in an Agricultural Setting

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November 2018

King County

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Water and Land Resources Division
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Riparian Buffers in an Agricultural Setting

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King County

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Funded in part by:

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PC-01J22301 through the Washington Department of Fish and Wildlife. The contents of this website and the documents herein do not necessarily reflect the views and policies of the Environmental Protection Agency or the Washington Department of Fish and Wildlife, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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1.0 INTRODUCTION

1.1 Problem Statement

King County, like other local jurisdictions in the Puget Sound Region, has overlapping and sometimes conflicting mandates to support the recovery of Endangered Species Act listed salmon and a healthy, viable agriculture sector. A rapidly growing regional population coupled with a burgeoning interest in local food and food security have amplified the need to resolve longstanding conflicts. The conflicts are particularly acute in floodplains that are critical for salmon habitat restoration and also feature some of the best agricultural soils in western Washington. In the last several years, intensive efforts have been initiated to integrate these mandates in ways that result in net gains for both salmon recovery and farm viability.

In King County's Snoqualmie Fish, Farm, Flood initiative, participants have struggled with the potential of riparian restoration actions to displace several thousands of acres of agricultural lands. This conversation has raised questions about a one-size-fits-all riparian buffer width for all waterways. There is a desire to improve the ability to implement riparian buffer restoration in a way that prioritizes riparian functions on different types of waterways for salmon recovery, while also reducing potential adverse impacts to agricultural activities and the amount of acres for growing food. Moreover, the direct loss of farmable acres is not the only way that riparian restoration can affect agriculture. Riparian buffers can also complicate field drainage maintenance, harbor wildlife that may damage crops, create obstructions to flood flows, and shade crops. Riparian buffers may also provide benefits to agriculture, including shade for livestock, controlling bank erosion, and creating habitat for pollinators.

In 1985, the King County Comprehensive Plan update designated five Agricultural Production Districts (APDs) across the county. These districts were established to maintain contiguous farming communities, acknowledging that the most profitable farms are usually found in blocks with other farms and support services, and few non-agricultural uses (King County, 1985). The 41,100 acres designated as APDs represent some of the best soil and growing conditions in the county and contain most of the county's commercial agriculture (King County, 2009). The Snoqualmie APD is the second-largest in the county (over 14,500 acres) and straddles the Snoqualmie River from Fall City north to the County line.

The Snohomish Basin Salmon Conservation Plan (hereafter referred to as the Salmon Plan) recommends a buffer width of 150 feet along all fish bearing water courses to restore riparian functions and improve degraded water quality. That recommendation was based on previous review of the best available science. The Salmon Plan prioritizes buffer implementation (plantings) that will ultimately achieve intact conditions (i.e., 150-ft buffers) along 65-85% of total stream length based on fish use. For example, the plan recommends that at least 85% of the mainstem Snoqualmie River should have an intact riparian buffer, while only 65% is the target for smaller waterways in the basin. The

percent targets highlight that plantings are critical to the survival of salmon but also do not aim for 100% planting of the length of the waterways in the Snoqualmie Valley.

The Snoqualmie Valley Agricultural Production District (Snoqualmie APD) contains just over 150 miles of waterways. Almost all of which are used by anadromous fish to some degree, but roughly half of that length is provided by small tributaries, many of which are actively maintained for agricultural drainage. An analysis of GIS data during FFF phase 1 in 2014 showed that in the APD, 57% of the land that lies within 150 feet of waterways is in active agricultural use, the vast majority associated with very small tributaries rather than larger streams or rivers (King County unpublished data).

Riparian conditions in the Snoqualmie APD are heavily degraded. While the 150-foot recommendation was based on best available science as to what would benefit salmon, analyses were not undertaken during the Salmon Plan creation in the early 2000's that would provide context about how much land that recommendation might require restoring. Analyses of 2014 conditions, undertaken during Phase 1 of FFF, showed that implementing the policy of 150-foot buffers on all salmon bearing waterways in the Snoqualmie APD would affect roughly 4,800 acres of land, or roughly one third of the Snoqualmie APD. While only about 2,400 (50%) of the 4,800 acres was currently in agricultural production according to the analysis, that 2,400 acres represented about one fourth of all actively farmed land in the APD (about 9,400 acres). Removal of nearly a fourth of the farmed acreage within the Snoqualmie APD would likely have significant and long-lasting effects on the Valley's agricultural economy. It is also understood that to restore 4,800 acres of riparian buffer would cost $100 million, or more, and buffer restoration funding is limited.

It is known that riparian buffers improve water quality and salmon habitat, and it is also known that riparian buffers can complicate farming. It is recognized by both salmon recovery practitioners and local landowners that a one-size-fits-all buffer approach is not the most efficient or effective way to get buffers established. The ecological functions that are desired for salmon recovery from the mainstem Snoqualmie are not the same functions that are expected of a small, artificial channel specifically built for drainage. Of equal importance, relatively large buffers will not be supported by most landowners in the valley, so opportunities to achieve some ecological benefits are lost if there is no flexibility. To move forward and improve conditions for salmon, a more nuanced approach to buffers is needed.

1.2 Purpose and Goal

The purpose of this document is to summarize the effects of riparian buffers on agricultural land with a goal to make recommendations for variable-width voluntary buffer sizes in the Snoqualmie APD.

This document provides the perspective of current agricultural land managers. At the same time, it is intended to describe the impacts – positive and negative – of planting buffers

today on the future viability of farming in the Snoqualmie Valley. Much of the content of this document is driven by concerns expressed by the agricultural community throughout the first phase of the Fish, Farm, Flood process. It is important to be specific about the effects of riparian buffers on agricultural land and farm businesses, and the Buffer Task Force will work to balance ecological, societal, and economic values of floodplain riparian areas.

Initial input on the outline and content of this document was received from the Buffer Task Force, the King County Agriculture Commission, and staff at King County. The text is informed by a review of primary literature as well as interviews with 10 farmers and professionals serving the Snoqualmie Valley farming community. Individual farmers were not identified in the text, but those who were interviewed are listed in Section 5.0 (References).

2.0 SNOQUALMIE VALLEY BUFFER PLANTING BACKGROUND

2.1 Overview of Buffer Planting Programs

There are four ways that riparian buffers are established on agricultural land in the Snoqualmie Valley.

2.1.1 Voluntary Buffers

Landowners can voluntarily plant buffers to achieve desired management objectives. The objectives may include providing high quality riparian function and habitat, reducing erosion, creating a sound or sight barrier, or a combination of these objectives. The organizations and agencies who partner with landowners to provide expertise and funding for buffer plantings include the Snoqualmie Tribe, Stewardship Partners, Sound Salmon Solutions, and the King Conservation District. Two primary funding sources for these projects comes from King County Flood Control District by way of the Cooperative Watershed Management (CWM) grant fund for habitat restoration and the Department of Ecology.

2.1.2 Incentive Programs for Buffers

The Conservation Reserve Enhancement Program (CREP) is a joint federal and state funded program that pays farmers to remove environmentally sensitive land from production. CREP reimburses landowners for the cost of site preparation, and the purchase and planting of native trees and shrubs along salmon bearing streams. The program reimburses maintenance costs for up to five years after planting. Landowners are paid rent for a period of 10-15 years by enrolling their land in the program. Minimum buffer widths are 15' for hedgerows and 50' for riparian forest buffers. The maximum width is 180' for riparian forest buffers. CREP plantings are considered a farming practice, therefore when the lease period expires CREP allows landowners to cut the buffer area to generate revenue from timber sales or to restore the site back to active farming. However, local jurisdictions may have restrictions that limit buffer management at the end of the lease period. Landowners who intend to remove buffers after the lease period ends should understand the local land use code restrictions before entering into a CREP lease agreement.

The King Conservation District (KCD) has a cost-share program that covers 90% of the costs to plan, implement, and maintain buffer plantings. This program follows the same standards as CREP but is limited to plantings that cover 1 acre or less.

2.1.3 Mitigation

King County Code (KCC 21A.24) requires mitigation planting to compensate for impacts to a Critical Areas from activities requiring a clearing and grading permit, e.g., buildings, farm pads, dredging for drainage. Some landowners have expressed reluctance to do any voluntary planting to keep areas available for mitigation plantings in case they want to make farm business related improvements on their property in the future. One of the tasks of the FFF Regulatory Task Force is to explore the options and constraints on voluntary plantings as mitigation for future projects.

2.1.3.1 ADAP

Depending on waterway type, King County's Agricultural Drainage Assistance Program (ADAP) requires the planting of between 1 and 3 rows of trees and/or shrubs after drainage maintenance. King County and King Conservation District (KCD) pay for the plantings and the initial three years of maintenance. If future drainage maintenance requires removal of planted buffer, the buffer must be reestablished to the original ADAP specifications once maintenance activities are completed.

2.1.3.2 Regulatory

For Critical Area impacts not associated with ADAP, the mitigation planting will typically be riparian buffers on the parcel where the impact is occurring. Offsite mitigation can be also approved.

2.1.4 Passive

Trees and shrubs will establish through successional processes when land is left fallow for prolonged periods. Once trees reach 4" diameter at breast height (dbh) that is, the diameter at 4.5' above the ground, the conditions for tree removal are controlled by the Critical Areas Ordinance (KCC 21A.24) and cannot be removed without a permit. Landowners who do not want woody vegetation to become a permanent part of their farm must actively inhibit tree invasion on fallow lands to avoid future regulatory encumbrance.

2.2 Buffer Plantings to Date

Farmers and landowners have expressed a lot of concern about the scale of buffer plantings on Snoqualmie Valley farmland but there has not been a complete summary of the number of acres planted across the Snoqualmie APD. Since 2005 a minimum of 153 acres of voluntary plantings have been implemented in the Snoqualmie APD for salmon recovery. 90of those acres were on public land, 62acres were on private land. Data are not available to determine if all of these plantings have established successfully (P. Falcone, personal communication, November 2018). Many of the plantings on public lands were understory plantings in already established buffers (B. Ledoux, personal communication, November 2018). These totals do not include acres planted for mitigation or CREP.

King County staff have begun an effort for consolidated record keeping on planting projects funded by Cooperative Watershed Management (CWM) Grants and Department of Ecology funds awarded for salmon recovery planting projects. To effectively evaluate impact of buffer plantings, records should include planting dimensions (width, length), species composition, maintenance tracking, and land use immediately prior to planting.

3.0 EFFECTS OF BUFFERS ON AGRICULTURAL LAND

3.1 King Conservation District Survey

In fall of 2018, King Conservation District (KCD) sent a survey to all of their customers. Out of the 600 respondents so far, 239 had waterways with planted vegetation. 74 farmland owners provided thoughts regarding their perceived and realized benefits and concerns with buffers. Tables 1 and 2 summarize those responses.

Table 1. Response to KCD survey question "What do you believe are the benefits of a vegetation buffer (check all that apply)?" (King Conservation District, 2018). n=74

Answer Choices	Percent	Total
Attracts wildlife	83%	61
Stabilizes the shoreline bank	83%	61
Keeps the stream cool for fish	80%	59
Shades out invasive weeds	71%	52
Provides food for fish	66%	49
Creates habitat for bees	65%	48
Improves the visual quality of the property	51%	38
Increases property privacy	46%	34
Provides protection from the wind	37%	27
Creates noise shield	35%	26
Provides shade for livestock	26%	19
Increases crop production on the property	11%	8

Table 2. Response to KCD survey question "What do you believe are some concerns that you may have experienced or could experience with a buffer (check all that apply)?" (King Conservation District, 2018). n=74

Answer Choices	Percent	Total
Challenges with maintenance of the buffer	46%	34
Arrival of nuisance wildlife such as coyotes or deer	28%	20
New or increased presence of Beaver	19%	14
New or increased presence of Elk	15%	11
Reduction in crop production because of shading	12%	9
Decreased farm field drainage	8%	6
Increased flooding	6%	5

Answer Choices	Percent	Total
Increased crop pests	3%	2

3.2 Land

Buffer planting in the Snoqualmie Valley will take agricultural land out of production, but the magnitude of that change will not be known until there is a recommendation from the FFF Buffer Task Force (Snoqualmie Fish Farm Flood Advisory Committee Draft Final Report, February 2017). The scale of the change will also be influenced by the willingness of landowners to participate in establishing buffers. The loss of farmable land is the primary concern for most landowners when considering planting a buffer. With 57% of the land in the Snoqualmie APD within 150' of a waterway, buffers can take up a large amount of the tillable land on a single farm site. As a reference, a buffer planted 150 feet wide and 145 feet long along each side of a waterway would cover one acre of ground (Table 3). Beyond the initial planted area, buffers continue to grow out over time and can encroach on farmland beyond originally planted width. A landowner can legally maintain buffer edges, but farmers point out that this work requires time and money and takes away from other farming tasks. Farmers also consistently express frustration with the time and farm resources required for successful establishment of buffer plantings.

Table 3. Buffer length and width to equal 1 acre.

Buffer Width *(one side of waterway)*	**Length to equal 1 acre**
150'	290'
100'	435'
50'	871'
25'	1,742'

The value of tillable land varies widely depending on farm uses (Table 4). The gross numbers in Table 4 do not take into account farm inputs, equipment, infrastructure, labor, marketing, sales, or fields left fallow for crop rotation. Rather, the gross income provides a sense of the value of an acre of land to a farmer.

Table 4. Gross income per acre for agricultural land in the Snoqualmie Valley (interviews with farmers, Maynard and Hochmuth 1997, USDA 2017, Salatin 1996).

Crop	Gross income per acre
Silage corn	$1,500
Hay	$400-$1,500
Wholesale mixed vegetables	$8,000-$15,000
Retail mixed vegetables	$30,000

Crop	Gross income per acre
Beef cattle	$500-$3,500
Lamb	$1,000-$5,000
Meat chickens	$12,500
Eggs	$20,000-$40,000

Riparian buffer plantings can have operational and financial impacts greater than just the dollar value of the potential crop on a site. The area nearest the mainstem Snoqualmie River is often the highest elevation of the farm. These "natural levees" are ideal for early or late season crops (when other parts of the site may be flooded or too wet to farm). They are also often the best place to locate agricultural structures (lowest risk from flooding). As a result, loss of farmland from riparian buffer plantings on high ground can have an especially negative impact on a farm.

Under current King County code, voluntary buffer plantings in Critical Areas cannot be removed without a permit once trees reach 4" diameter at breast height (KCC 21A.24.054). This effectively renders that portion of land permanently unavailable for agricultural production. The immediate economic impact of removing an acre from production is quantifiable, but it is more difficult to quantify the long term effects of loss of rich, floodplain farmland in the Snoqualmie APD. Under predicted changes in climate patterns over the next 30-50 years, the Puget Sound region will remain a highly viable place for food production while climate shifts in other regions makes them much less suitable for agriculture than they are now (Climate Impacts Group, 2015). Farmland in the Snoqualmie Valley plays an important role in our region's local food system and will continue to do so well into the future (King County, 2015).

Incentive programs can help increase landowner participation. A review of buffer payment systems throughout Europe identified consistent elements that led to higher participation by farmers (Dworak et al., 2007). Successful program elements included rates high enough to compensate for lost production, clear guidelines with low administrative barriers, stable funding, and limited input by the farmer to successfully establish and maintain the buffer. The CREP program incentivizes buffer plantings by providing the landowner with an annual rental payment for 10-15 years. However, because of CREP's relatively large buffer requirements, few farmers find that these buffers fit well with long-term profitability of their farm. In many parts of the Snoqualmie Valley, 100ft. buffers would remove half or more of the farm parcel from agricultural production. Providing flexibility in compensation rules for land taken out of production may encourage more landowners to participate. The Spokane Conservation District implemented a pilot program in 2017 that paid farmers per acre based on USDA Risk Management Agency crop rotation values for adjacent crops – typically higher than the amount per acre paid by CREP (Spokane Conservation District Commodity Buffer Program; www.sccd.org/buffers).

Although farmers are typically committed to being good stewards of the land and other natural resources found on their farms, they want to know whether buffers are significantly benefiting salmon recovery. To paraphrase one local landowner, it is much

easier to give up farmland if you understand what is being gained in return. Effectiveness monitoring of projects will provide information about buffer widths and the level of various riparian functions they provide. The King Conservation District's Discovery Farms Project (Awole et al., 2018) lays the groundwork for this work in the Snoqualmie Valley. KCD is measuring water temperature in waterways along established buffers of different widths to understand the effect of buffers on stream temperatures. In a similar effort, Whatcom Conservation District partnered with other organizations to implement a Discovery Farms program in Whatcom County to validate various practices on dairy farms that are implemented to minimize nutrient inputs to adjacent waterways.

Members of the FFF Buffer Task Force recognize that not all waterways are required or able to provide the full suite of potential ecological benefits. The Buffer Task Force is charged with identifying the primary buffer functions thought necessary for water quality and salmon recovery. The riparian functions expected of the different waterways are likely to be different based on characteristics such as waterway size, solar aspect, and fish use. . It is necessary to acknowledge that salmon recovery is a landscape level effort, and it can be difficult to demonstrate some of these habitat improvements on an individual property. KCD's Discovery Farms work is intended to demonstrate directly to landowners and farmers how buffers are achieving habitat objectives while minimizing farming impacts.

3.3 Water and Flooding

Farming in the Snoqualmie Valley floodplain is often a balancing act between too much water in the winter and too little water in the summer. Any project that tips the water balance can add to an already challenging food production system. Debris from trees can clog waterways, which may reduce the effectiveness of those waterways to drainagricultural land (Dosskey et al, 2017). Farmers emphasize that buffers can make drain tiles hard to maintain, or ineffective. Roots from plantings can clog tiles, and buffers along the waterways into which tiles drain make it difficult to access waterways to clear mud and debris.

Vegetation plantings, in particular east west across the Snoqualmie Valley can create drainage issues by slowing water dissipation in a localized area during flood events (Moore, 2017). However, in minor to moderate flood events, some landowners have seen that buffers can help keep the stream in its banks.

Reed canary grass is an aggressive, invasive species that commonly establishes in wet farm fields and smaller waterways. Reed canary grass can impede drainage in waterways adjacent to farm fields, leading to fields that are too wet to farm. Reed canary grass transpires such large amounts of water that its removal can lead to an increase in instream flows (Schilling and Kiniry, 2007). Shade from trees and shrubs in planted buffers can prevent reed canary grass from establishing on a site (Kim et al., 2006; Miller et al., 2008). Proper site preparation is required if buffer plantings are to shade out reed canary grass (Miller et al., 2008; Hovick and Reinartz, 2007).

Riparian vegetation roots stabilize banks and reduce channel migration, which could otherwise lead to farmland loss due to erosion (Micheli et al., 2004; Thorne, 1990). Trees and shrubs are more effective than herbaceous vegetation at stabilizing banks along waterways with high flow rates (Simon and Collison, 2002; Zaimes et al., 2004). However smaller channels bordered by grass demonstrate less widening than those bordered by trees or shrubs (Lyons et al., 2000). This is attributed to several causes. Grass develop a tighter near-surface root mat that may be better than trees and shrubs at preventing erosion (Davies-Colley, 1997), large trees that fall in the stream cause significant soil disturbance and can focus stream flows into the bank (Trimble 1997, Montgomery 1997), and the voids left by root wads of fallen trees can cause turbulence and localized erosion (Thorne, 1990). A study in the Tolt River Watershed showed that channel widening only occurred at points where log-jams diverted flow into the bank (Montgomery et al., 1995).

Planting on a single side of waterways has been proposed as a solution for farmers who need access to the waterway for recurrent dredging and beaver management; avoiding the costly step of removing shrubs and trees. DeWalle (2010) found that 70% of the total daily shade on an E-W oriented stream was provided by a buffer on the south side. The 30% provided by a buffer on the north side provided shade in the morning and late afternoon when solar intensity was reduced. Newton and Cole (2013) found that stream temperatures with one-sided buffers on forest land were comparable to pre-harvest temperatures. However, in portions of their study area, shrubs grew up on the "no buffer" side of the treatment, providing shade to the streams. It may be possible to design plantings so that there are access points along the waterway. If these access points are planted with adventitious sprouting species like willows, buffers may be mowed for periodic waterway maintenance and those species will typically regrow without additional buffer management. This mowing for access requires the farmer to invest time and money for equipment to do the mowing and any expense for slash disposal.

3.4 Animals

3.4.1 Insects

Many studies examined the value of buffers or hedgerows near agricultural lands as a source of pollinators. Klein et al. (2006) identified 16 studies that found that proximity to "near natural" habitats resulted in higher pollination rates as measured by fruit set, number of seeds, or directly counting pollinator species. Up to 25% higher pollinator visits have been observed on crops with flower strips within 20m than those without (Feltham et al. (2015). Bean yield has been found to be greater at the edges of large monocropped fields due to availability of pollinators at the edges of the field (Free and Williams 1976).

European honey bees (*Apis mellifera*) are relied on for most insect pollination in the US – their life history make them reliable and successful pollinators (Mader et al., 2010). Recent decreases in bee populations have been attributed to pesticides and parasites and there is increased incentive to provide habitat that provides multi-season benefits to honey bees.

European honey bees are but one of many native and non-native bees that can provide significant pollenization services and benefit from establishment of diverse riparian buffers. Flowering shrubs in a hedgerow or buffer can increase diversity and abundance of pollinating native bees (Vaughan and Black, 2006) and a high diversity of flowering buffer species with varied seasons of flowering provides ideal forage habitat for native bee pollinators (Vaughan and Black, 2006a). Buffer edges also provide valuable habitat for both wood nesting bees (Grundel et al., 2010) and ground nesting species which require undisturbed soil (Cane et al., 2007).

Riparian buffers are also known to host both beneficial and harmful insects. The abundance and diversity of predatory insects that prey on crop pests increases with landscape complexity, such as provided by buffer plantings (Chaplin-Kramer and Kremen, 2012; Shackleford et al. 2013). Wider buffers supported a greater diversity of these beneficial insects early in the growing season (Maria, 2013), when many crops are most susceptible to pest outbreak. Potentially problematic, buffers may also provide habitat for pest species (Heimpel et al., 2010).

3.4.2 Mammals and Birds

Many farmers in the Snoqualmie Valley have expressed concern that beavers will move in to newly planted buffer areas. Many farmers and landowners have seen how beaver dam construction can change how water flows across a farm and cause flooding in fields. Ponding associated with beaver dams raises groundwater levels in adjacent land in some cases making the land completely unusable within 165 feet of the beaver dam (Lowry, 1993).

Because beavers demonstrate preference for certain tree and shrub species, many farmers focus on species selection for buffer plantings to reduce the likelihood of attracting beavers. King County (2018) has compiled a summary of beaver forage preferences (Table 3).

Table 5. Beaver forage preference by plant species (King County, 2018).

High	Medium	Low	
Willow species (Sitka, Pacific, Hooker's, Scouler's)	Bigleaf maple	Sitka spruce	Twinberry
Black cottonwood	Western redcedar	Bitter cherry	Ninebark
Red alder	Douglas-fir	Red twig dogwood	Western crabapple
Vine maple		Oregon ash	Douglas hawthorn
		Cascara	Nootka rose
		Salmonberry	Spirea (Hardhack)

Beavers demonstrate preference for shrub and tree species as food sources, but are opportunistic and will use a wide variety of vegetation for forage and dam construction. Selecting planting stock based on preferential foraging habits of beavers may help buffer establishment, but may not necessarily prevent them from moving into a site with otherwise suitable habitat features (J. Vanderhoof, personal communication, October 2018). Educating landowners about the tools and legal options for beaver management will help reduce impacts to agricultural land when beavers move into new sites. A recently released technical paper summarizes beaver management options in King County (King County, 2018). Some practitioners have suggested incorporating plant species that beavers typically avoid and that could deter deer or elk movement such as rose, salmonberry, and Sitka spruce (King County 2018). On a case–by-case basis, it may be possible to determine where minor flooding due to beaver activity could be acceptable and focus buffer plantings in these areas.

Buffers can serve as habitat or movement corridors for deer and elk which can eat crops or trample on plants, often causing significant damage in a single visit. Washington Department of Fish and Wildlife has a program to compensate farmers for crop losses from deer and elk depredation. While the program has not been widely used in King County, they do have one recent claim of $7,722.72 for a crop of lettuce that elk ate just before harvest (R. Schreiner, personal communication, October 2018). The new Produce Safety Rule under the Food Safety Modernization Act will require certain farms to track wildlife and bird presence on the farm (Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption; 2015). Many farmers are reluctant to increase potential habitat for birds and wildlife until they better understand the implications of enforcement of this new rule.

3.5 Shade, wind, and visual barrier

Shade from buffers can reduce crop productivity adjacent to buffers (Reynolds et al. 2007). Shade rather than root competition with the plants in the buffer reduced corn yield by 30-70% reduction in the first 30 ft. from the buffer (Udawatta et al. 2016). Sugar beet yield was reduced by 60% in the first 16 ft., and some reduction in yield was seen as far as 65 ft. from the buffer (Borin et al., 2009).

Buffers offer wind protection. A literature review (Brandle et al. 2004) found crop yield improved 6%-44% with shelter from windbreaks. Yield responses varied with crop, windbreak design, moisture condition, and soil properties. The response of plant growth to shelter from wind depends on the relationship of temperature, moisture availability, and mitigating physical damage. In some cases, crop yields near buffers may be reduced due to allelopathy, nutrient competition, moisture competition, shade, or temperature (Kort, 1988).

For farmers raising animals, the shade from buffers can provide important benefits to animal health, milk production, and conception rates. Heat stress is responsible for production decreases in dairy cows, beef cows, sows, market hogs, broilers, layers, and

turkeys (St. Pierre et al., 2003). By modeling different livestock management scenarios across the United States, St. Pierre et al. (2003) determined that lack of some form of heat abatement resulted in $700 million in total losses across animal classes. Shade from buffers can be an important part of heat abatement. In a New Zealand study, milk yield was found to be at least 3% greater for cows with access to shade (Fisher et al., 2008). West (2003) summarized multiple studies and described a 4%-10% increase in milk production for cows with access to shade. These studies were from the southeastern US where higher temperatures and humidity currently have greater impact on milk production than in the Pacific Northwest. However, in the long term, shade provided by riparian buffers may help ameliorate the impacts of climate change as average temperatures rise (Dosskey et al., 2017). With respect to climate change impacts, Rowlinson (2008) emphasizes that in temperate ecosystems similar to the Snoqualmie Valley with future summer rainfall predicted to be lower than it is now, shade will provide value in both improving forage growing conditions and the health of animals themselves.

Wind protection in winter can also increase milk production and decrease stress on animals (Brandle et al., 2004). Windbreaks can be a component of odor management for livestock production (Dosskey et al, 2017).

Pesticide drift into surface water can be reduced by buffers, dependent on the timing in the growing season. Wenneker and Van de Zande (2008) observed an 80-90% drift reduction when leaves are full developed in deciduous buffers, as low as 35-50% when leaves are not fully developed. Buffers can also reduce non-point source pollution including nutrient and water runoff (Schultz et al., 2004; Merrington et al., 2004). 16 ft. grass filters and riparian vegetation both reduced sediment runoff by 60-90% (Daniels and Gilliam, 1996). Jia et al. (2006) found a 30-40% reduction in phosphorus and nitrogen transport from fertilizer applications with 26ft. grass buffers. They also noted that in their 3-year study, timing spray irrigated fertilizer applications to avoid high water tables and storm events had more impact on water quality than vegetated buffers.

The presence of a buffer obstructs views across a farm field. For livestock producers it is important to see animals to efficiently assess health, predation, or other stressors (R. Reinlasoder, personal communication, October 2018). Buffers break up field lines and can drop limbs and trees on fences and fields. And for many farmers maintaining the clean lines of their farm are simply an important element of running a business. In the King Conservation District 2018 survey seven respondents wrote in an answer about buffer concerns related to blocking views and one respondent expressed a reduced sense of security.

4.0 SUMMARY

King County has committed to supporting both salmon recovery (King County, 2016) and a thriving agricultural sector (King County, 2015) within their jurisdiction. As a part of balancing these complex objectives, the Buffer Task Force is working to provide recommendations for variable-width voluntary riparian buffers to achieve salmon recovery objectives and minimize adverse effects to agriculture. This work recognizes that farmland is a valuable and finite resource in the Snoqualmie Valley.

When researching and writing this document, it became clear that buffer impacts were very dependent on context. The way a buffer impacts farming operations depends on elements including the agricultural land use, where the waterway is on the landscape, and the type of waterway. A cattle ranch may welcome trees for shade and water quality protection while a vegetable farm may experience financial losses from reduced production near their buffer. On a larger waterway tree and shrub roots serve an important role to hold the streambank in place while smaller waterway banks may receive the same benefit through smaller shrubs and grasses. Willingness of landowners to participate in voluntary riparian buffer planting is similarly dependent on current and future plans for use of the property as well as individual values and concerns.

While farmers may conceptually support salmon recovery work as part of their larger commitment to environmental stewardship, they are often not willing to agree to the more extensive voluntary planting options that exist. Buffer planting and maintenance will take a farmer's time away from farming, remove some of their land from production, and have other potentially adverse impacts on their property and business. Varied buffer widths and program incentives will help encourage landowner participation in buffer planting projects. Other opportunities to engage landowners include technical assistance with planting plans, identifying sites where one-sided buffers are options and expanding financial incentive programs. Program-wide, there needs to be increased monitoring of buffer planting effectiveness monitoring and collection of more complete data on buffer planting projects.

Synthesis of Riparian Buffer Best Available Science: Informing Variable Width Buffers in the Lower Snoqualmie Valley

Optional picture here

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Synthesis of Riparian Buffer Best Available Science: Informing Variable Width Buffers in the Lower Snoqualmie Valley

Prepared for:

King County

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Funded in part by:

Washington State Department of Natural Resources and Washington State Department of Fish and Wildlife

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1.0 INTRODUCTION

1.1 Problem Statement

King County, like other local jurisdictions in the Puget Sound Region, has overlapping and sometimes conflicting mandates to support the recovery of Endangered Species Act listed salmon and healthy, viable agriculture. A rapidly growing regional population coupled with a burgeoning interest in local food and food security have amplified the need to resolve longstanding conflicts. The conflict is particularly acute in floodplains that are critical for salmon recovery and also feature some of the best agricultural areas in western Washington. In the last several years, intensive efforts have been initiated to integrate these mandates in ways that result in net gains for both salmon and farms.

In King County's ongoing Snoqualmie Fish, Farm, Flood initiative, the potential of riparian restoration actions to potentially displace hundreds or even several thousands of acres of agricultural lands has raised questions about a one size fits all riparian buffer width for all waterways. There is a desire to improve the ability to implement riparian buffer restoration in a way that prioritizes riparian functions on different types of waterways for salmon recovery, while also reducing potential adverse impacts to agricultural activities and the amount of acres for growing food. Moreover, the direct loss of farmable acres is not the only way that riparian restoration can affect agriculture. Riparian buffers can also: complicate field drainage maintenance; harbor wildlife that may damage crops; create obstructions to flood flows; shade crops, etc. In tandem, riparian buffers also provide benefits to agriculture, such as: shade for livestock; controlling bank erosion; and creating habitat for pollinators.

The Snohomish Basin Salmon Conservation Plan recommends a buffer width of 150 feet along all fish bearing water courses to restore riparian functions and improve degraded water quality. The plan prioritizes buffer implementation (plantings) along 65-85% of total stream length based on fish use. 85% of the mainstem Snoqualmie River is targeted to be planted according to the Salmon Conservation Plan, while only 65% is targeted for smaller waterways in the basin. The percent targets highlight that plantings are critical to the survival of salmon but also do not aim for 100% planting of the length of the waterways in the Snoqualmie Valley.

The Snoqualmie Valley Agricultural Production District (Snoqualmie APD) contains well over 100 miles of waterways, all of which are likely used by anadromous fish to some degree, but roughly half of that length is provided by small tributaries, many of which are actively maintained for agricultural drainage. In the APD, 57% of the land that lies within 150 feet of waterways is in active agricultural use, the vast majority associated with very small tributaries rather than larger streams or rivers.

Riparian conditions in the Snoqualmie APD are heavily degraded. While the 150 foot recommendation was based on best available science as to what would benefit salmon, analyses were not undertaken during the Salmon Plan creation in the early 2000's that

would provide context about how much land that recommendation might require restoring. Analyses of 2014 conditions, undertaken during Phase One of FFF showed that implementing the policy of 150 foot buffers on all salmon bearing waterways in the Snoqualmie APD would equate to planting roughly 4,800 acres of land, or roughly one third of the Snoqualmie APD. While only about 50% of the 4,800 acres is currently in agricultural production, this was a much larger number of acres than expected and would have serious impacts to agricultural production in the Snoqualmie Valley. It is also understood that to restore that large of an area by planting the 150 foot wide buffer along all the waterways would be extremely costly.

It is known that riparian buffers improve salmon habitat and it is also known that riparian buffers can complicate farming. Understanding all this, it is recognized by both salmon recovery practioners and local landowners that a one-size fits all buffer approach does not necessarily take into account differential priority of some waterways for salmon, nor does it account for differential value of some agricultural lands. It is understood that the ecological function that are desired for salmon recovery from the mainstem Snoqualmie are not the same functions that are expected of a small, artificial channel specifically built for drainage. In order to move forward and improve conditions for salmon, a more nuanced approach to buffers is needed.

1.2 Purpose and Goal

The purpose of this document is to summarize scientific literature that helps King County and those involved in the Fish, Farm, Flood effort in the lower Snoqualmie Valley with the goal to make recommendations for variable width buffer sizes in the Snoqualmie APD.

Many best available science reviews have been done for riparian buffer widths, the most recent one for our region was an extensive Best Available Science done by Washington State Department of Wildlife, Riparian Ecosystems, Volume 1: Science Syntheses and Management Implications. This document validated that the larger the riparian vegetation area the more protective of the aquatic systems it is. That document provided the foundation for the Buffer Task Force. This document describes how smaller, larger, and variable width riparian buffers differ in potential ecological functions pertaining to salmonid recovery. This required reviewing the literature and studies with the intent of trying to inform variable buffer widths based on a combination of ecological needs and practical land management issues.

This document is not intended to summarize riparian best available science. The intent is to analyze the details of the different functions, for example what are the key controlling factors that drive water temperature, and what factors might be applied to suggest smaller buffers. The use and understanding of the buffer science is important in this effort so that reliable information is produced to understand consequences of variable width buffers. Scientific literature that can help tease out, to the best of our ability, how well ecological functions (such as erosion control, water quality improvements or large wood recruitment)

perform at a given buffer width is critical to support making choices in recommending a set of variable buffer widths.

This document will inform the overarching goal of Buffer Task Force, which is to make recommendations of variable width buffers for the waterways in the SAVP. It is acknowledged that there are ecological tradeoffs and potential uncertainty in riparian function by reducing buffer widths from the larger riparian buffers recommended in the Salmon Recovery Plan and WDFW Best Available Science document. It is important to be clear that this process is to understand ecosystem expectation and benefit while being thoughtful and respectful of the need of landowners to continue to work the land.