



OREGON WATER RESOURCE DEPARTMENT WATER CONSERVATION, REUSE AND STORAGE FEASIBILITY STUDY GRANT PROGRAM

I. Grant Information

Study Name: **Farm Irrigation Ponds Paired with West Fork Palmer Creek Watershed Mitigation**

Type of Feasibility Study: Water Conservation Reuse Above-Ground Storage
 Storage Other Than Above-Ground [Including Aquifer Storage and Recovery (ASR)]

Program Funding Dollars Requested: **\$64,170**
Note: Request may not exceed \$500,000

Total Cost of Feasibility Study: **\$128,340**

II. Applicant Information

Applicant Name: Timothy C. Kreder	Co-Applicant Name: Suzanne E. Kreder
Address: 11700 SE Amity-Dayton Hwy Dayton, OR 97114	Address: same
Phone: 503-559-8077	Phone: 503-550-7489
Fax:	Fax:
Email: timboysenblue@gmail.com	Email: bigal@onlinemac.com

Principle Contact: David Engle
Address: 11700 SE Amity-Dayton Hwy Dayton, OR 97114
Phone: 503-857-7085
Fax:
Email: davidengle.palmercreek fruit@gmail.com

Certification: I certify that this application is a true and accurate representation of the proposed work for a project feasibility study and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant certifies that they are aware of the requirements of an Oregon Water Resources Department grant, have read and agree to all conditions within the sample grant agreement and are prepared to conduct the feasibility study if awarded.

Applicant Signature: _____ January 27, 2016 title: owner
 Timothy C. Kreder

Co-applicant Signature: _____ January 27, 2016 title: owner
 Suzanne R. Kreder

III. Feasibility Study Summary

Please give a brief summary of the feasibility study using no more than 150 words.

This feasibility study is for the development of **farm pond/reservoirs for storage** of water available during the winter months to use for agricultural crop **irrigation** in the summer, and which are also designed to **mitigate agricultural pollution**. The feasibility study will analyze the costs and planning stages involved in building ponds, and then filling them with water. It will include walking through the sequence of steps necessary to meet the regulatory requirements for getting, storing and using water for irrigation. It will analyze the feasibility of alternative sources of water. The study will develop cost estimates for engineering, construction and suitable irrigation systems. This study will also identify ways that collaborative partnerships with watershed conservation agencies can be used as a resource in the design and implementation of irrigation ponds that will also improve water quality and eco-system health.

IV. Grant Specifics

Section A. Common Criteria

Instructions: Please answer all questions contained in this section. It is anticipated that completed applications will result in additional pages.

1. Describe your goal and how this study helps to achieve the goal.

The proposed project is to develop **farm pond/ reservoirs** with the primary goal of storing water available in the winter to use in the summer for **crop irrigation**. The secondary goal of the reservoirs is **water quality enhancement** by mitigating agricultural pollution. New irrigation water is becoming increasingly hard to get. Without it, the farm economy is limited to a narrower range of crop options, but with irrigation, farmers can produce higher crop yields or higher value crops. The Palmer Creek watershed has been shown to have elevated levels of non-point source pollution linked to farm operations in the surrounding area. This study will determine the planning steps and development costs necessary to build ponds for irrigation, and identify what local conservation agency partnerships and resources are available to design the ponds that improve the quality of water draining in the watershed.

I. The goal of this study is to determine whether it is feasible for farmers to **increase the acreage of their irrigated crop land by using water stored in above-ground reservoirs**. The test case for this feasibility study is Tim and Susie Kreder Farms in rural Dayton of Yamhill County. The Kreders are members of the Palmer Creek Water District (PCWD) and use water delivered by PCWD to irrigate 55 acres of blueberries. Kreders have primary surface water rights with supplemental ground water for irrigating 125 acres. This water is supplied by an unnamed tributary (the “creek”) of the West Fork Palmer Creek which passes through the Kreders’ property and is stored in an in-channel reservoir on the Kreders’ property. This water drains from the fields of several neighboring farm and nursery operations.

The Kreders farm an additional 400+ acres which are not irrigated. In 2008 the Kreders applied to Oregon Water Resources Department (OWRD) for two groundwater permits in order to develop three irrigation wells. However, these applications remain unaccepted and have not been issued a permit because of the lack of summer groundwater availability to pump directly from the aquifer. In 2015, the Kreders were able to have 79 non-irrigated acres included into the PCWD with the hope that in the future, the PCWD will have enough water, and the capacity to deliver it during the irrigation season, for irrigation needs beyond the current use of its members.

The feasibility study will determine whether the capacity of the existing reservoir can be expanded and whether sites for three new off-channel reservoirs are geologically suitable. Then it will map out a course of action through the relevant regulatory requirements. For building and filling reservoirs, this would be local

county land-use approval, jurisdiction and wetlands determinations, delineations, and mitigation plans for the Department of State Lands/ US Army Corps of Engineers removal-fill permit, the Department of Environmental Quality (DEQ) and Oregon Department of Fish and Wildlife (ODFW) approval, OWRD reservoir water storage permits. Alternate sources of water will be evaluated based on availability, permit requirements, the costs to get the water on site. Options for evaluation include securing ground water and surface water rights, and sources of water that could be delivered by PCWD (federally-stored water, transfer of water rights from another district). The feasibility of connecting field drainage tiling to reservoirs to re-capture and re-use irrigation water tailings will be explored.

Then this study will determine the engineering and construction costs of building reservoirs, as well as options and costs for laying mainline pipes, power and pumps. This might include portable generators and pumps that can be moved as needs dictate. The energy efficiency and agility of systems will be given preference. It will develop options for irrigation systems suitable for higher-value farm crops and reduced water use.

II. A second goal of this study is to identify **how a pond developed primarily for irrigation purposes could also help improve water quality and aquatic eco-systems**. The water in the creek and in West Fork Palmer Creek has been recognized by the Oregon Department of Agriculture (ODA) and Department of Environmental Quality (DEQ) as being polluted by agricultural chemicals. This study will develop and evaluate design options for the proposed reservoirs so that they help to improve the quality of water that drains from the surrounding farmlands into West Fork Palmer Creek, the Yamhill and ultimately the Willamette. The reservoirs will be designed with sufficient storage capacity to allow for summer in-stream release to augment low water levels.

This study will look into forging collaborative partnerships with local conservation agencies able to provide expertise and/or resources for designing irrigation reservoirs with wetlands, riparian buffer zones and wildlife habitat. The Yamhill Soil and Water Conservation District (SWCD), USDA's Natural Resource Conservation Service (NRCS), and Greater Yamhill Watershed Council are likely local organizations for partnership in this project. The ODEQ and ODA's Agricultural Water Quality Program have expressed interest in involvement in this project for monitoring water quality data. Under the guidance of these partners, this study will put together a monitoring plan and begin water quality testing to establish baseline levels of pollutants. This study will also explore what grant funding opportunities are available for farmers to develop aquatic and riparian habitat as part of their irrigation storage ponds.

2. Describe the water supply need(s) that the proposed project addresses. Identify any critical local, regional, or statewide water supply needs that implementation of the project associated with the feasibility study will address. **Responses should rely upon solid water availability and needs data/analysis.** For examples of water supply needs see “Criteria and Evaluation Guidance Document.”

The water supply need is for agricultural crop irrigation. Increasing the number of acres that can be irrigated strengthens the rural farm-based economy. This study will identify feasible sources of water and cost-effective ways to deliver it to the fields where it is needed. Though average annual rainfall is typically more than 40 inches in the Willamette Valley, there is usually little or no rain in the summer growing season. For crops such as blueberries, this requires irrigating with up to 2.5 a/ft. Irrigation gives opportunities for higher-value crops and greater diversity, such as vegetables, or nursery stock. Even crops typically not irrigated, such as tall fescue and perennial rye grass seed, show yield increases of 19-24%, depending on variety, with the application of three to six inches of irrigation (Nicole Anderson, OSU Extension presentation, Chemeketa Community College, McMinnville, Nov. 3, 2015). Using irrigation to raise higher-value, or higher-yielding crops helps strengthen the farming economy and supports rural communities and businesses that depend on it.

There is water available for irrigation, but not in the summer. The Kreders’ 2008 groundwater applications Initial Reviews found that groundwater for agricultural irrigation was *not available in the summer* (Kerry Kavanagh, OWRD letter to Tim Kreder, Sept 18, 2008). However, OWRD water availability analysis data (WRIS website) **shows that surface water is available in the winter** from October to June. District 16 Watermaster Joel Plahn indicated that water from Palmer Creek and West Fork Palmer Creek could be stored for the months of November through February (Joel Plahn, OWRD, personal conversation Nov.17, 2015). The intermittent creek on the Kreders’ farm is a tributary to the West Fork Palmer Creek into Palmer Creek into the Yamhill River into the Willamette (watershed ID no. 30200801).

The US Army Corps of Engineers (USACE) operates the Willamette Basin Project, storing 1.6 million acre/feet in 13 reservoirs and the Bureau of Reclamation administers water contracts to make it **available** for agricultural irrigation (Bureau of Reclamation: Final Environmental Assessment: PCWDIC, April 2009). In addition, as of this writing, a water right for 4 cfs with a 1909 priority date is **available** (Doug Young, DOC New Construction Administrator, personal email, Nov 16, 2015) from a point of diversion in the Willamette.

Another water supply need is the improvement of water quality because of the impact of agriculture on surface water run-off. The ODA water quality testing of the creek running through Kreders’ farm in the spring of 2014 “indicated high levels” for parameters that indicate agricultural impacts to water quality including bacteria (E. coli), nitrate, phosphorus and total kjeldahl nitrogen and turbidity (Kevin Fenn, ODA letter to Tim Kreder, March 21, 2014). Pesticides are also in the water. “The West Fork of Palmer Creek has been identified

through the ODA/DEQ Pesticide Stewardship Partnership (PSP) as an area of concern for frequency and concentration of certain pesticides. Atrazine, Diuron, and Chlorpyrifos all exceeded benchmarks at least once in 2014 in the West Fork Palmer creek during the testing period. ODA, DEQ, the Greater Yamhill Basin Council and the Yamhill Soil and Water Conservation District have been partnering to try and reach out to landowners and operators in this area to share this pesticide testing information and implement best management practices to minimize pesticide impact on water quality in this watershed.” (Marie Vicksta, Yamhill SWCD , Nov 2015 OWEB grant application).

Oregon Department of Agriculture’s test of the water in the unnamed creek leads to the conclusion that the Kreders’ farmland management was “unlikely to be a source of problems.” E. coli sources were from off site, attributed to neighboring farm operations. Water samples showed that nitrate and phosphorus levels actually decreased as the water passed through the Kreders’ property. High total kjeldahl nitrogen (TKN) numbers were linked to a “wildlife source” rather than fertilizer running off the Kreders’ fields (Kevin Fenn, ODA, letter April 18, 2014).

The proposed project **will meet the need for improving water quality** by including features in new reservoirs to reduce turbidity and non-point source pollutants in the water from the surrounding areas before they move further, into the eco-systems and communities that are downstream. It would also include riparian wildlife habitat and buffer zones. The planned project storage capacity would allow for the possibility of the in-stream release of 25% of its stored water.

3. Explain how the proposed project will meet the water supply need(s), and indicate what percentage of that need will be met. (For example: If your water supply need is 20,000 acre-feet of additional water and the project will supply 10,000 additional acre-feet, 50 percent of your need will be met).

One hundred per cent of the irrigation need would be met by building storage reservoirs. The proposed project is to build three new reservoirs and expand the capacity of an existing fourth reservoir. The water would be collected in the reservoirs during the winter months. The proposed project is for a total reservoir capacity of approximately 250 acre/ft. This would provide enough water to apply more than one acre/ft of irrigation water to a third of 400+ acres of crops (approx 180 acre/ft) in an irrigated/non-irrigated crop rotation. In addition, this would also allow for the release of 25% instream (approx 63 acre/ft) to augment stream flow.

With an increase in available capital, higher value permanent crops could be developed. Different water needs would lead to the necessity of balancing water availability, supplemental water rights, and greater water

conservation efficiency in irrigation methods. This study will develop options of crop mixes and irrigation types (ex. drip, sprinkler, big gun) which would be appropriate to the amount of water available, so that this storage project would provide 100% of the water needed for increasing crop yields or growing higher value crops. This study will also identify what grant opportunity partnerships are available to assist farmers in adding water conservation design features to irrigation projects.

The proposed project will provide significant data for quantifying water quality improvement methods. The project is a test case for learning to what degree irrigation ponds using wetlands and riparian filtration will successfully improve water quality and measurably reduce pollutants. Water sampling data will be used to establish baseline levels prior to implementation and then further monitoring will provide opportunities for comparison. Soil sampling data will be used to determine pre-existing levels of phosphorus that have already settled in the existing pond. Also, releasing water collected during the winter for summer instream augmentation would improve water quality by diluting summer run-off pollution and lowering temperatures during low flow times.

4. Describe the technical aspects of the feasibility study and why your approach is appropriate for accomplishing the specific study goals and objectives.

An engineering geologist will determine the suitability of the silt and clay layers of the proposed sites for excavation and for water storage and whether a liner will be necessary.

Insurmountable or prohibitively onerous regulatory requirements will be considered fatal flaws for the feasibility of this project. Internal staff will identify the various governmental regulatory requirements for above-ground storage reservoir construction and determine the most appropriate sequence of steps for meeting them. Some agency's reviews and approvals can be pursued concurrently, but some aspects will need to be done consecutively to avoid wasting time/effort because of something that needed to be done first but couldn't.

Any compensatory wetlands mitigation planning for the sake of the removal-fill permits will serve a dual purpose by becoming part of the overall planning for improving water quality and aquatic ecosystems. A wetlands scientist will help develop mitigation plans adequate to meeting the regulatory requirements. Then EnviroLogic staff and local conservation agencies will be additional sources for expert advice in further designing aquatic and riparian eco-system features.

Long-term lease agreements between the Kreders and the landowners will be developed internally so that development investment costs can be recouped.

In conjunction with Certified Water Rights Examiner Tom Calabrese, internal staff will conduct research into multiple possible water sources for irrigation. Staff will prepare applications for surface water rights, and reservoir permits. Internal staff will initiate inquiries into the availability of federally-stored Bureau of Reclamation water, and follow up on the opportunity to acquire existing water rights from upstream in the Willamette River, and any other opportunities that might present themselves, to get water deliverable through the Palmer Creek Water District point of diversion at the Willamette River. A re-review of the 2008 groundwater applications will be initiated to determine if ground water is available in the winter, and if it can be taken from an existing well.

The feasibility of re-using the tailings of irrigation by collected them through field drainage tiling will be studied. A tiling company will be consulted for costs to connect existing tiling to the proposed reservoirs. Research will be done to learn what amount and quality of water can be re-captured from irrigation.

Local conservation agencies will provide technical assistance to develop a water quality monitoring plan for pre- and post-project assessment of pesticides and other water quality parameters (E. coli, TKN, Nitrate and phosphorus).

Westech Engineering will determine designs options and cost estimates for reservoir size and capacity, and reservoir designs that function both for agricultural irrigation and meeting eco-system and fish/wildlife needs. Excavation contractors will be asked for construction bids.

Irrigation system designers of Ernst Irrigation will prepare cost and design options for crop-specific irrigation systems, energy efficient Variable Frequency Drive pumps, and telemetry for regulating and monitoring water usage.

This study will consult with the local utility company regarding costs and permits to install electricity to the pump sites. Options and cost estimates for portable generators and pumps will be identified.

Grant funding available to farmers for water and energy conservation and for developing water quality improvements related to the creation of irrigation water storage will be identified.

5. Describe how the feasibility study will be performed. Include:
 - a. General summary statement that describes the study progression.
 - b. When the feasibility study will begin.
 - c. Listing of key tasks to be accomplished with each task having:
 - i. Title
 - ii. Timeline for completion
 - iii. Description of the activities to be performed in this key task
 - iv. Description of the resources necessary for accomplishing the key task

Example:

- (i) Streamflow measurement;
- (ii) September-April;
- (iii) Weekly streamflow measurements will be performed to gather hydrographic data for the hydrologic analysis to take place in May;
- (iv) A technician will be hired to perform the streamflow measurements.

(Key tasks listed here are to be placed in Section VI. Project Feasibility Study Schedule for a quick reference “graphical” representation of the schedule.)

a) FEASIBILITY STUDY PROGRESSION

The first part of this feasibility study will be making sure there are no fatal flaws or deal-breakers right from the get-go (e.g. geologically inappropriate dam sites, no water, no permit) before proceeding to developing design options and costs analyses. This means that the feasibility study will have a sort of "shotgun" start, beginning many tasks right away and then walking them through either to completion or a dead end. This means identification of removal-fill permitting steps and evaluation of ecosystem enhancement designs, evaluation of water availability and identification of water rights permitting pathway.

If the first part of the study doesn't identify any deal-breakers, then the study will proceed to gather design options and construction cost estimates for a cost to benefit analysis.

b) The feasibility study could begin immediately. Administrative staff and a project manager are in place and ready to "pull the trigger". Preliminary conversations about aspects of this study have already taken place with the DSL staff, District 16 Watermaster at OWRD, the director of the Yamhill County Planning and Development Department, Yamhill SWCD and NRCS staff, the director of the Great Yamhill Watershed Council, ODA and ODEQ staff, the staff at EnviroLogic Resources and Westech Engineering, representatives of a water right administered by Santiam Water Control Board, and with Palmer Creek Water District Improvement Company Board members.

c) **THE TIMELINE SEQUENCE OF THE KEY TASKS**

Property Characterization—

April- Oct 2016

Existing data and documentation will be collected, reviewed and assimilated by project staff.

Local land use approval will be completed by project staff.

The reservoir sites will be evaluated for site soil suitability by an engineer and for ecological flows by a wetlands scientist.

Wetlands evaluations and compensatory mitigation plans will be developed by staff and wetlands scientists.

Baseline water quality data will be established for spring and fall by staff, using water quality testing packages.

Permit Feasibility—

April 2016-Jan 2017

Regulatory requirements for a DSL/USACE Removal-Fill permit application will be completed, including approval from DEQ and ODFW by project staff.

Applications for reservoir water storage permits (alt and standard) and surface water irrigation use permits will be submitted to OWRD by staff. Project staff will lead a re-review of existing ground water permit application.

Landowner Lease Arrangements—

April 2016;

Long-term lease arrangements will be negotiated between Kreder Farms and the landowners;

This will be done by Tim and Susie Kreder.

Water Supply Options Evaluation—

Sept-Oct 2016;

Project staff will identify and screen water supply technologies—reservoir design options, crop mix alternatives, irrigation systems.

Staff will conduct a detailed analysis of water supply alternatives and establish a preferred alternative based on reservoir engineering/construction cost development, irrigation system engineering/construction cost development, and electrical service design/construction cost development by subcontractors.

Grant Funding Options--

April –December 2016

Staff will investigate grant funding opportunities for habitat establishment, water conservation designs, water quality improvement, and implementation.

Prepare Water Supply Feasibility Report--

Nov 2016-Jan 2017;

Staff will draft a feasibility study report for client review, and complete the final report.

Project Management--

April 2016- January 2017

Ongoing project coordination and collaboration with partners, and schedule/budget tracking by staff and contractual partners.

6. Please provide the following data and information for the proposed project and the project's sources of water supply:

- a. The location of the proposed project. Include the basin, county, township, range and section. Attach a **map** that identifies the project's implementation area to this application.

The proposed reservoirs would be built on-site on land farmed by Tim and Susie Kreder Farms in rural Dayton. They are located in Yamhill County in the Willamette Basin, Yamhill Subbasin, T4S R3W sections 30 and 31. Map attached.

- b. The name(s) and river mile(s) of the source water and what they are tributary to, if applicable.

Determining the most feasible source of water is one of the tasks of this study.

Multiple sources of water are potentially available. One possible source is **West Fork Palmer Creek** from November through February. Another possible source is **Palmer Creek**. West Fork Palmer Creek is a tributary to Palmer Creek, which is a tributary to the Yamhill River, which is a tributary of the Willamette River.

Another source is winter surface **run-off from the fields and the unnamed tributary** of West Fork. One possible supplemental source might be groundwater available during the winter, with a point of diversion from a new or existing well.

This study will also explore the feasibility of acquiring **federally stored water**, or water transferred from another water right. This source would be conveyed by Palmer Creek Water District Improvement Company from their point of diversion on the Willamette River at river mile 73.5.

- c. Whether the project will be off-channel or on-channel (for above-ground storage only).

This project proposes three off-channel reservoirs and one that is in-channel for an intermittent/seasonal stream.

- d. Water availability to meet project storage. For above-ground storage the Department typically evaluates availability using a 50 percent exceedance water availability analysis.

According to the OWRD water availability analysis data (Nov 9, 2015), surface water in the Yamhill Subbasin is available from October to June. According to Watermaster 16 Joel Plahn water is available in Palmer Creek and West Fork Palmer Creek from November through February. The Bureau of

Reclamation offers water contracts that are deliverable to a Willamette River point of diversion. As of this writing, a water right for 4 cfs from the Santian River with a 1909 priority date is available. Determining the availability and cost of other sources is a key component of this feasibility study.

- e. Proposed purposes and/or uses of conserved or stored water.

75% of stored water to be used for agricultural crop irrigation, and 25% is available for in-stream release to augment flow

- f. Environmental flow needs and water quality requirements of supply source water bodies.

It is not known whether seasonally varying flows have been determined for West Fork Palmer Creek. The study will check with ODFW to determine how much information already exists about the ecological flow functions of the possible stream sources. It is unclear how much data is needed to determine flow needs. If Seasonally Varying Flows have not been established, it is unclear how to what extent this would delay the development of the proposed water storage project.

Palmer Creek and West Fork Palmer Creek have been identified as an area of concern for water quality because of pesticides. The unnamed tributary (creek) is an intermittent seasonal stream and has been tested to show high levels of E.coli, nitrogen, phosphorus and turbidity. One of the goals of the proposed project is to develop sites that contribute to the mitigation of these water quality problems.

7. What local, state or federal project permitting requirements/issues/approvals do you anticipate in order for the feasibility study to be conducted? If approvals are required, indicate whether you have obtained them. If you have not obtained the necessary permits/governmental approval, describe the steps you have taken to obtain them. If no permits are needed, please provide explanation.

There are **no permit requirements** for conducting this study itself. The feasibility study will be conducted on **private property** with the cooperation of the landowners.

8. Describe the level of involvement, interest and/or commitment of local entities associated with the feasibility study. Describe how the feasibility study and/or proposed project will benefit/impact these entities. Attach letters of support if available.

This project has the support of the landowners, a regional food industry corporation, the local irrigation district, and state and local watershed conservation agencies because this project would be good for the rural farm economy and related industries, and it would be good for the environment.

The representatives of the **landowners** (MBS Properties LLC and Goodrich Trusts) have signed letters of support for this proposed project (attached) and have given authorization to build reservoirs and acquire water rights. They are long-time neighbors of the Kreders and live on their respective properties, adjacent to the Kreders' property. The working relationship between them and the Kreders is decades-long. The development of reservoirs and habitat would take acres of crop land out of production, but the landowners are supportive of the plan because irrigation would lead to increased land values and rent-generated income from irrigated crops.

This project has received a letter of support (attached) from George Smith, the president/CEO of **NORPAC Foods, Inc**, a regional food industry that processes local crops. Expanding irrigation and developing greater crop diversity will help develop a stronger agricultural economy.

Palmer Creek Water District Improvement Company Board has written a letter of support (attached) for this project. The feasibility study addresses a critical need for the continued health and growth of agriculture in Oregon.

Yamhill SWCD executive director Larry Ojua has written a letter of support (attached). The proposal and study could bring greater awareness about water quality issues to the agricultural community and open the door for collaboration between landowners, state and federal governments and the local conservation community. The Yamhill SWCD and the NRCS work closely on local water conservation projects and will offer technical assistance in the development of the watershed enhancement features of the project. **Greater Yamhill Watershed Council** executive director Luke Westphal has written a letter of support (attached).

ODA Agricultural Water Quality Program has written a letter of support (attached) and is willing to provide technical assistance, project review, and help with monitoring plans. Members of the DEQ's Yamhill Pesticide Stewardship Partnership (PSP) have offered to provide valuable in-kind technical assistance (Marie Vicksta, Yamhill SWCD/ PSP, email, Jan. 13, 2016).

Other local stakeholders, the Confederated Tribes of Grand Ronde, through their Director of Natural Resources and their Fish and Wildlife Program Manager, were invited to respond to the proposed project with comments or concerns (David Engle, email, Nov 30, Dec 16, Dec 28, 2015.)

9. Identify when matching funds will be secured, from whom, and the dates of matching funds availability.

In-kind matching funding of internal staff wages/benefits, materials and supplies, travel and equipment from Tim and Susie Kreder Farms has been secured and is available for the duration of this study. Unquantified in-kind support and expertise has been offered by various local conservation agencies.

10. Provide a description of the relevant professional qualifications and/or experience of the person(s) that will play key roles in performing the feasibility study. If the personnel have not been decided upon, include a description of the professional qualifications and/or experience of the person(s) you anticipate will play key roles in performing the feasibility study.

Tom Calabrese of EnviroLogic Resources, Inc, Portland, is a hydrogeologist and CWRE with 25 years of experience. He is the technical advisor and coordinator for completing the feasibility study. Nancy East-Smith is a senior geologist and CWRE with 20 years of experience. Additional expert staff will be contracted upon their recommendations.

Westech Engineering of Salem will aid in reservoir design and engineering cost estimates.

Ernst Irrigation of St. Paul will assist with the planning and cost analysis for the irrigation systems.

Yamhill SWCD and NRCS staff will provide expertise and support for habitat design guidance. ODA Agricultural Water Quality Program will provide technical assistance, project review and help with monitoring plans.

Project advisors/consultants are Tim and Susie Kreder. Tim is a third-generation farmer with 40 years of local farming experience and has been active in local agricultural issues. He has served on the Wilco Board, the Oregon Raspberry-Blackberry Commission, and the Palmer Creek Water Improvement District Board. He served on the OWRD Ground Water Advisory committee. Susie Kreder has a BS from OSU in agriculture. She has worked as a program assistant for USDA's Farm Service Agency when it was known as Polk County Agricultural Stabilization and Conservation Service. The Kreders were the recipients of Yamhill Soil and Water Conservation District's Conservation Landowner award in 2014.

A contributing consultant is Margaret Kreder, who is completing a BS in Wildlife Ecology at WSU.

Additional project staff support will be provided by Augustus Kreder, the Chief Operating Officer of Tim and Susie Kreder Farms. He has a BS in Agricultural Systems Management from University of Idaho.

Administrative staff work and research/draft writing will be provided by David Engle, the project manager for Palmer Creek Fruit Company LLC and Tim/Susie Kreder Farms. He had a 20+ year career as a high school teacher. His educational background is in the humanities and he has a master's degree.

11. If the project concept is ultimately deemed feasible, describe how the project will be implemented. Response should include a tentative funding plan for project implementation (e.g. other state or federally sponsored grant or loan programs) and the project proponent's track record in implementing similar projects.

If this project is feasible, the next step would be making the transition from the dream to the reality.

Kreders will engage an engineering firm to do the "real" design work necessary for the reservoir dams. They will also complete any regulatory permits that are pending and secure water rights. They would begin the bidding process for actual reservoir construction costs. They would begin installing mainline pipe and pumping infrastructure.

If the project is feasible, it will be submitted to OWRD for funding from a water supply development grant or loan because of the merits of its public benefits. This project is good for the rural farm economy and it is good for the environment and has multiple social benefits.

The feasibility study includes determining the opportunities for collaborative partnerships and cost-share grants for the development of habitat zones, as well as grant opportunities for energy efficient and water saving irrigation systems. If the project is implemented, the partnership and grant opportunities that are found to be available would be pursued.

Tim and Susie Kreder have experience in implementing water-related projects and projects that involve cooperating with outside agencies and following through with requirements and documentation.

They have more than two decades of experience with OWRD certification to use ground water, surface water and irrigation reservoirs. They have developed irrigation sites and installed and serviced irrigation systems for many years. They have worked with the NRCS and their EQIP program in 2006 to install drip irrigation, monitoring and filtration for 100 acres of berries. In 2010 they worked with Energy Trust to install a variable frequency drive pump for that system. They have worked with the NRCS since 2005 in drainage tile installation and the development and continual implementation of a conservation plan on Tier III level of the USDA's Conservation Security Program for IPM, pasture and nutrient management plan and water monitoring. In 2011 the Kreders achieved certification for their farm from Good Agricultural Practices and in 2014-15 from Global Good Agricultural Practices. In December 2015 Kreders were approved for an OWEB small grant administered through Yamhill SWCD to plant an upland hedgerow as a conservation buffer zone for drift and erosion.

Section B. Unique Criteria

Instructions: Address the set of items below that applies to the type of feasibility study that this grant will fund.

Water Conservation or **Reuse**

1. Water Conservation or Reuse projects that are identified by the Department in a statewide water assessment and inventory receive a preference in the scoring process. Contact the Department's Grant Specialist to include your project on the inventory.
2. Explain how the associated project will either: (a) mitigate the need to develop new water supplies and/or (b) use water more efficiently. Reference documentation and/or examples of the success of similar or comparable water conservation/reuse projects that would be available upon request.
3. Provide a description of: (a) Local, state and/or federal permitting requirements and issues posed by the **implementation** of the project associated with the feasibility study and (b) property ownership status within the project implementation area. If permitting or other approvals are not needed please indicate and provide an explanation.

Above-Ground Storage

Please answer the following three questions **BEFORE** proceeding:

Will the project divert more than 500 acre-feet of surface water annually? Yes No

Will the project impound surface water on a perennial stream? Yes No

Will the project divert water from a stream that supports sensitive, threatened or endangered species? Yes No

If you answered "Yes" to any of these questions, by signature on this application, you are committing to include the following required elements in your feasibility study.

Describe how you intend to address the required elements in your feasibility study:

- a) Analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows.

This study will gather available raw data and analyse seasonally varying flows of the affected stream. If there is insufficient historical flow data for West Fork Palmer Creek or Palmer Creek, it is unclear how many years of historical flow data are needed in order for a water development project to move forward in a timely manner. The feasibility study will evaluate how the storage of water from these sources will impact their flows.

- b) Comparative analyses of alternative means of supplying water, including but not limited to the costs and benefits of water conservation and efficiency alternatives and the extent to which long-term water supply needs may be met using those alternatives.

This study will analyze alternative water supplies and economic benefits comparisons. The no-action alternative is to continue dry-land farming. The feasibility study arises from the specific need for more water for crop irrigation. The goal of this project is to increase the number of acres that can be irrigated for increased agricultural crop production. The irrigation design phase will consider different irrigation technology alternatives, with the intention of using the most efficient means possible to irrigate specific crops appropriately. Conservation technologies, however, won't make more water available on non-irrigated fields.

The feasibility study will explore the availability and costs of surface water that is available and/or deliverable through PCWDIC's point of diversion on the Willamette. This could alleviate the need for storage if it is available during irrigation season and is economically feasible. The extent to which this would be a long-term water supply solution would depend on the terms of the contracts and priority dates.

c) Analyses of environmental harm or impacts from the proposed storage project.

The positive and the negative impacts of this project will be analyzed to ensure that the final outcome of the project is more positive than negative for the environment.

At the very least, the feasibility study will evaluate the potential for environmental harm by means of the regulatory permitting and review process. If the proposed project cannot meet the environmental impact standards of the regulatory agencies (viz. the DSL and USACE removal-fill permit's compensatory wetlands mitigation plan reviewers, approval by ODFW and DEQ et al., etc., in the completion the regulatory requirements for this project), it would not be a feasible project.

Some of the sites being considered for reservoir/ponds are likely to temporarily incur negative environmental impacts. But one of the goals of this project is to design farm irrigation ponds that ultimately improve water quality and ecosystem health. To that end, the feasibility study will identify and evaluate pond designs and opportunities to collaborate with local conservation agencies and their affiliated assets to develop a project that goes beyond the minimum expectations of the regulatory agencies.

d) Evaluation of the need for and feasibility of using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values.

The feasibility study includes evaluating plans to develop enough storage capacity that 25% of stored water could be released from storage to augment instream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values. Reservoir designs with features to comply with this would be developed and evaluated.

Is the proposed storage project for municipal use?

Yes No

If "Yes," then please describe how you intend to address the following required element in your feasibility study:

- e) For a proposed storage project that is for municipal use, analysis of local and regional water demand and the proposed storage project's relationship to existing and planned water supply projects.

Proceed in addressing the following items:

1. Describe to what extent the project associated with the feasibility study includes provisions for using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life or other ecological values. Projects that include the above provisions receive preference in the scoring process.

The feasibility study will plan reservoir capacities of sufficient size above projected irrigation needs that it would give the option of augmenting instream flows with 25% of the stored water to conserve, maintain and enhance the aquatic ecosystem.

2. Provide a review of: (a) Local, state and/or federal permitting requirements and issues posed by the **implementation** of the project associated with the feasibility study and (b) property ownership status within the project implementation area.

a) A significant portion of the feasibility study is researching, sequencing, and preparing to meet the regulatory requirements of project implementation. The study will use the likelihood of a successful completion of regulatory requirements as an indicator as to whether the project is feasible.

- local land use approval
- jurisdiction and wetlands determinations
- DSL/US Army Corps of Engineers joint permit application for removal-fill permit
- wetlands delineations, permittee-responsible compensatory wetlands mitigation plan
- DEQ, ODFW approval
- OWRD application for permit to store water in a reservoir
- primary and supplemental water rights

(b) Landownership Status-- The site of the existing reservoir is owned by the Kreders. The other proposed project sites are owned by MBS Properties LLC (Yamhill County tax lot 4.3.30 0700 and 0800 and 4.3.31 01700) and Goodrich Trusts (Yamhill County tax lot 4.3.30 0500) and farmed by the Kreders. The representatives of the landowners MBS Properties LLC and Goodrich Trusts are long-time neighbors who live on their respective properties adjacent to the Kreders. The property owners and the Kreders have a working relationship that is decades-long. By the conclusion of the feasibility study, the Kreders and the landowners will have established a long-term lease agreement. They are supportive of the proposed project and have submitted letters of support.

Storage Other Than Above-Ground [Including Aquifer Storage and Recovery (ASR)]

Please answer the following three questions **BEFORE** proceeding:

Will the project divert more than 500 acre-feet of surface water annually? Yes No

Will the project impound surface water on a perennial stream? Yes No

Will the project divert water from a stream that supports sensitive, threatened or endangered species? Yes No

If you answered "Yes" to any of these questions, by signature on this application, you are committing to include the following required elements in your feasibility study.

Describe how you intend to address the required elements in your feasibility study:

- a) Analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows.
- b) Comparative analyses of alternative means of supplying water, including but not limited to the costs and benefits of water conservation and efficiency alternatives and the extent to which long-term water supply needs may be met using those alternatives.
- c) Analyses of environmental harm or impacts from the proposed storage project.
- d) Evaluation of the need for and feasibility of using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values.

Is the proposed storage project for municipal use?

Yes No

If "Yes," then please describe how you intend to address the following required element in your feasibility study:

- e) For a proposed storage project that is for municipal use, analysis of local and regional water demand and the proposed storage project's relationship to existing and planned water supply projects.

Proceed in addressing the following items:

1. Underground storage projects that are identified by the Department in a statewide water assessment and inventory receive a preference in the scoring process. Contact the Department's Grant Specialist to include your project on the inventory.
2. Provide a review of: (a) Local, state and/or federal permitting requirements and issues posed by the **implementation** of the project associated with the feasibility study and (b) property ownership status within the project implementation area.

V. Match Funding Information

Applicants must demonstrate a minimum dollar-for-dollar match based on the total funding request. The match may include a) secured funding commitment from other sources, b) pending funding commitment from other sources, and/or c) the value of in-kind labor, equipment rental, and materials essential to the feasibility study. For secured funding, you must attach a letter of support from the match funding source that specifically mentions the dollar amount shown in the “Amount/Dollar Value” column. For pending resources, documentation showing a request for the matching funds must accompany the application.

In the “type” column below matching funds may include:	In the “status” column below matching funds may have the following status:
<ul style="list-style-type: none"> • Cash - Cash is direct expenditures made in support of the feasibility study by the applicant or partner*. 	<ul style="list-style-type: none"> • Secured - Secured funding commitments from other sources.
<ul style="list-style-type: none"> • In-Kind - The value of in-kind labor, equipment rental and materials essential to the feasibility study provided by the applicant or partner. 	<ul style="list-style-type: none"> • Pending - Pending commitments of funding from other sources. In such instances, Department funding will not be released prior to securing a commitment of the funds from other sources. Pending commitments of the funding must be secured within 12 months from the date of the award.

*”Partner” means a non-governmental or governmental person or entity that has committed funding, expertise, materials, labor, or other assistance to a proposed project planning study. OAR 690-600-0010.

Match Funding Source (if in-kind, briefly describe the nature of the contribution)	Type (✓ One)	Status (✓ One)	Amount/ Dollar Value	Date Match Funds Available (Month/Year)
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
Tim and Susie Kreder Farms-- salary/benefits for staff, materials and supplies, travel, equipment	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in-kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	\$64,170	April 2016
Yamhill SWCD Pesticide Stewardship Partnership-technical assistance and expertise	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in-kind	<input type="checkbox"/> secured <input checked="" type="checkbox"/> pending	unquantified	April 2016
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		

VI. Feasibility Study Schedule

Estimated Study Duration: April 1, 2016 to January 31, 2017

Place an “X” in the appropriate column to indicate when each Key Task of the project will take place.

Feasibility Study Key Tasks	2016			2017				2018 & Beyond
	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	
Property Characterization	X	X	X					
Information Collection/Review	X							
Reservoir Siting Evaluation	X	X						
Local Land Use Approval	X							
Wetlands Evaluations	X	X						
Baseline Water Quality Evaluation	X		X					
Permit Feasibility	X	X	X	X				
Removal-Fill Permitting	X	X						
OWRD Permitting	X	X	X	X				
Long-term Landowner Lease Arrangements Feasibility	X							
Water Supply Options Evaluation	X	X	X					
Identify/Screen Water Supply Technologies		X	X					
Detailed Analysis of Water Supply Alternatives			X					
Grant Funding Options	X	X	X					
Prepare Water Supply Feasibility Study Report				X				
Project Management	X	X	X	X				

- **Please Note:** Successful grantees must include all invoices and identify which key tasks are associated with each invoice when requesting financial reimbursement.

VII. Feasibility Study Budget

Section A

Please provide an estimated line item budget for the proposed feasibility study. Examples would include: labor, materials, equipment, contractual services and administrative costs.

Line Items	Number of Units* <i>(e.g. # of Hours)</i>	Unit Cost <i>(e.g. hourly rate)</i>	In-Kind Match	Cash Match Funds	OWRD Grant Funds	Total Cost
Staff Salary/Benefits	334 hours 56 hours 928 hours 120 hours	\$75/hr \$50/hr \$35/hr \$25/hr	\$25,050 \$2,800 \$32,480 \$3,000			\$63,330
Contractual/Consulting	109 hours 88 hours 26 hours 4 hours	\$160/hr \$125/hr \$105/hr \$85/hr			\$17,440 \$11,000 \$2,730 \$340	\$61,510
Wetlands subcontractor	19.5 days	\$1000/day			\$19,500	
Engineering subcontractors	7.5 days	\$1000/day			\$7,500	
Water Quality Lab	2 day	\$1500/day			\$3,000	
Equipment (must be approved)						
Supplies						
Other: mileage (100)	18	\$60.00	\$840		\$240	\$1080
Water quality testing packages					\$2,420	\$2,420
Administrative Costs**						
Total for Section A			\$64,170		\$64,170	\$128,340
Percentage for Section A			50%		50%	100%

* Note: The "Unit" should be per "hour" or "day" – not per "project" or "contract." $Units \times Unit\ Costs = Total\ Cost$

** Administrative Costs may not exceed 10 percent of the total funding requested from the Department

A detailed cost estimate of in-kind match and contracted work is attached. Contractor's fee schedule is attached.

APPLICATION CHECKLIST

Instructions: Use this checklist to ensure that your application is complete. An incomplete application will jeopardize your application's review. **This form does not need to be included in your application packet.**

General

If submitting electronically, the preferred format is either a Microsoft word or Adobe pdf

- Only one application is included with the packet (other applications must be sent separately).

Paper submissions only

- The application and attachments are on 8 ½" x 11" paper.
- The application and attachments are single-sided.
- The application and attachments are not stapled or bound.

Section I – Grant Information

- All questions in this section have been answered.
- The Grant Dollars Requested and the Total Project Cost mirror the totals shown in Section VII.

Section II – Applicant Information

- All contact information for the applicant(s) and fiscal officer is complete and current.
- The certification is signed by an authorized signer.

Section III – Feasibility Study Summary

- A brief summary, of no more than 150 words, is complete.

Section IV – Grant Specifics

- All questions in Section A have been answered.
- If the type of feasibility study is water conservation, reuse or storage other than above-ground, you have contacted the Department and requested project be added to the Oregon Water Resources Department's statewide water assessment and inventory.
- All applicable questions for the type of grant requested have been answered.

Section V – Match Funding Information

- Applicant has identified that at least 50 percent match has been sought, secured or expended.
- Letters of support are included for "secured" match funding sources.
- Documentation is included for "expended" match funds.
- Documentation is included for "pending" match funds.

Section VI – Feasibility Study Schedule

- Estimated project duration dates have been supplied.
- All Key Tasks of the project are listed.

Section VII – Feasibility Study Budget

- Section A is complete.
- Administration costs do not exceed 10 percent of the requested OWRD Grant Funds.
- If grant amount requested is \$50,000 or greater, Section B has been completed.

All Key Tasks listed in Section B mirror the Key Tasks listed in Section VI.

FEE SCHEDULE

The following are the hourly rates for professional services, which may be revised from time to time. Each professional staff category includes scientists and engineers:

STAFF CATEGORY	HOURLY RATE
Clerical/Word Processor	\$65
Technician	70
Drafter/GIS Tech	85
Associate Project Staff	85
Project Staff	105
Senior Project Staff	125
Principal	160

INVOICING & PAYMENT: Invoices for services provided by *EnviroLogic Resources* consist of: 1) professional services fees; 2) reimbursable materials, equipment, communication, and travel expenses; 3) subcontractor costs; and 4) sales or gross receipt taxes, as applicable. Progress invoices will be issued monthly and payment is due upon receipt. Invoices for subcontractor charges are payable upon presentation. A finance charge of 1.5% per month will be assessed on past-due account balances.

REIMBURSABLE PROJECT MATERIALS, EQUIPMENT, COMMUNICATION, AND TRAVEL EXPENSES: All outsourced project-related expenses, materials, field supplies, and equipment charges; long-distance telephone, facsimile, photocopying, blueprints, express and regular shipping, and postage; rental vehicles, meals, travel, and lodging; premiums for insurance and bonds required by the client in addition to normal coverage; project-required permits and licenses; and similar reimbursable expenses will be invoiced at cost plus 15%. Personal vehicles will be charged at government reimbursement rates plus 15%.

SUBCONTRACTS: Subcontractor (drillers, analytical laboratories, surveyors, etc.) charges will be invoiced at cost plus 15%.

LEGAL PROCEEDINGS: A surcharge of 50% will be added to the professional services hourly rates for actual sequestered preparation time and for actual time spent in depositions, public testimony, court, and/or hearings.

COMPANY-OWNED EQUIPMENT AND MATERIALS: *EnviroLogic Resources*-owned equipment, vehicles, and materials will be invoiced at fixed unit rates. Black/white copies will be charged at \$0.10 each and color copies/prints at \$0.25 each. A summary of these rates will be provided upon request.

Detailed Cost Estimate
Farm Irrigation Pond/Watershed Mitigation
Tim and Susie Kreder Farms, Dayton, Oregon

ID		Task Name	Work	Cost	Duration	Start	Finish
1		KREDER - FARM IRRIGATION PONDS/WATERSHED MITIGATION	1,438 hrs	\$64,170	225 days	4/1/16	2/20/17
2		Authorization to Proceed	0 hrs	\$0	1 day	4/1/16	4/1/16
3		PROPERTY CHARACTERIZATION	294 hrs	\$11,490	146 days	4/4/16	10/27/16
4		Information Collection/Review	66 hrs	\$2,710	20 days	4/4/16	4/29/16
5		Existing Data/Document Collection	28 hrs	\$980	10 days	4/4/16	4/15/16
		<i>Kreder - Dave Engle</i>	28 hrs	\$980		4/4/16	4/15/16
6		Data/Information Review and Assimilation	38 hrs	\$1,730	10 days	4/18/16	4/29/16
		<i>Kreder - Tim Kreder</i>	10 hrs	\$750		4/18/16	4/29/16
		<i>Kreder - Dave Engle</i>	28 hrs	\$980		4/18/16	4/29/16
7		Reservoir Siting Evaluation	48 hrs	\$1,520	106 days	4/4/16	8/31/16
8		Site Soil Suitability	16 hrs	\$560	20 days	4/4/16	4/29/16
		<i>Kreder - Dave Engle</i>	16 hrs	\$560		4/4/16	4/29/16
9		Ecological Flows Evaluation	32 hrs	\$960	43 days	7/1/16	8/31/16
		<i>Kreder - Dave Engle</i>	16 hrs	\$560		7/1/16	8/31/16
		<i>Kreder - Margaret</i>	16 hrs	\$400		7/1/16	8/31/16
10		Local Land Use Approvals	24 hrs	\$840	20 days	4/4/16	4/29/16
		<i>Kreder - Dave Engle</i>	24 hrs	\$840		4/4/16	4/29/16
11		Wetlands Evaluations	140 hrs	\$5,860	106 days	4/4/16	8/31/16
12		Jurisdiction and Wetlands Determination	36 hrs	\$1,900	20 days	4/4/16	4/29/16
		<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		4/4/16	4/29/16
		<i>Kreder - Dave Engle</i>	20 hrs	\$700		4/4/16	4/29/16
13		Wetland Delineation	52 hrs	\$1,980	63 days	4/4/16	6/30/16
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	6/30/16
		<i>Kreder - Dave Engle</i>	28 hrs	\$980		4/4/16	6/30/16
		<i>Kreder - Margaret</i>	16 hrs	\$400		4/4/16	6/30/16
14		Compensatory Wetlands Mitigation Plan	52 hrs	\$1,980	43 days	7/1/16	8/31/16
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		7/1/16	8/31/16
		<i>Kreder - Dave Engle</i>	28 hrs	\$980		7/1/16	8/31/16
		<i>Kreder - Margaret</i>	16 hrs	\$400		7/1/16	8/31/16
15		Baseline Water Quality Evaluation	16 hrs	\$560	146 days	4/4/16	10/27/16
16		Spring 2016 Monitoring Event	8 hrs	\$280	20 days	4/4/16	4/29/16
		<i>Kreder - Dave Engle</i>	8 hrs	\$280		4/4/16	4/29/16
17		Fall 2016 Monitoring Event	8 hrs	\$280	19 days	10/3/16	10/27/16
		<i>Kreder - Dave Engle</i>	8 hrs	\$280		10/3/16	10/27/16
18		PERMIT FEASIBILITY	238 hrs	\$11,130	189 days	4/4/16	12/30/16
19		Removal-Fill Permitting	96 hrs	\$4,720	106 days	4/4/16	8/31/16
20		ODFW and DEQ Approval	24 hrs	\$1,560	106 days	4/4/16	8/31/16
		<i>Kreder - Dave Engle</i>	24 hrs	\$840		4/4/16	8/31/16
		Mileage (100)	12	\$720		4/4/16	8/31/16
21		DSL/USACE Removal-Fill Permit Application	72 hrs	\$3,160	106 days	4/4/16	8/31/16
		<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		4/4/16	8/31/16
		<i>Kreder - Dave Engle</i>	56 hrs	\$1,960		4/4/16	8/31/16
22		Oregon WRD Permitting	142 hrs	\$6,410	189 days	4/4/16	12/30/16
23		Reservoir Storage Applications (Alt and Standard)	62 hrs	\$2,810	127 days	4/4/16	9/30/16

Detailed Cost Estimate
Farm Irrigation Pond/Watershed Mitigation
Tim and Susie Kreder Farms, Dayton, Oregon

ID	Task Name	Work	Cost	Duration	Start	Finish
	<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		4/4/16	9/30/16
	<i>Kreder - Dave Engle</i>	46 hrs	\$1,610		4/4/16	9/30/16
24	Surface Water Permit Application	44 hrs	\$1,860	127 days	4/4/16	9/30/16
	<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	9/30/16
	<i>Kreder - Dave Engle</i>	36 hrs	\$1,260		4/4/16	9/30/16
25	Re-Review of Existing Groundwater Permit Applicati	36 hrs	\$1,740	83 days	9/1/16	12/30/16
	<i>Kreder - Tim Kreder</i>	12 hrs	\$900		9/1/16	12/30/16
	<i>Kreder - Dave Engle</i>	24 hrs	\$840		9/1/16	12/30/16
26	LONG-TERM LANDOWNER LEASE ARRANGEMENTS FEAS	32 hrs	\$1,560	20 days	4/4/16	4/29/16
	<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	4/29/16
	<i>Kreder - Susie Kreder</i>	8 hrs	\$400		4/4/16	4/29/16
	<i>Kreder - Dave Engle</i>	16 hrs	\$560		4/4/16	4/29/16
27	WATER SUPPLY OPTIONS EVALUATION	424 hrs	\$18,640	175 days	4/4/16	12/9/16
28	Establish Water Supply Objectives	40 hrs	\$2,040	20 days	4/4/16	4/29/16
	<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		4/4/16	4/29/16
	<i>Kreder - Dave Engle</i>	24 hrs	\$840		4/4/16	4/29/16
29	Identify/Screen Water Supply Technologies	152 hrs	\$6,600	30 days	9/1/16	10/13/16
30	Reservoir Design Options	32 hrs	\$1,440	30 days	9/1/16	10/13/16
	<i>Kreder - Tim Kreder</i>	8 hrs	\$600		9/1/16	10/13/16
	<i>Kreder - Dave Engle</i>	24 hrs	\$840		9/1/16	10/13/16
31	Crop Mix Alternatives	80 hrs	\$3,520	30 days	9/1/16	10/13/16
	<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		9/1/16	10/13/16
	<i>Kreder - Susie Kreder</i>	16 hrs	\$800		9/1/16	10/13/16
	<i>Kreder - Dave Engle</i>	32 hrs	\$1,120		9/1/16	10/13/16
	<i>Kreder - Augustus</i>	16 hrs	\$400		9/1/16	10/13/16
32	Irrigation System Alternatives	40 hrs	\$1,640	30 days	9/1/16	10/13/16
	<i>Kreder - Tim Kreder</i>	8 hrs	\$600		9/1/16	10/13/16
	<i>Kreder - Dave Engle</i>	24 hrs	\$840		9/1/16	10/13/16
	<i>Kreder - Augustus</i>	8 hrs	\$200		9/1/16	10/13/16
33	Assemble Water Supply Alternatives	16 hrs	\$880	5 days	10/14/16	10/20/16
	<i>Kreder - Tim Kreder</i>	8 hrs	\$600		10/14/16	10/20/16
	<i>Kreder - Dave Engle</i>	8 hrs	\$280		10/14/16	10/20/16
34	Detailed Analysis of Water Supply Alternatives	168 hrs	\$7,160	34 days	10/21/16	12/9/16
35	Reservoir Engineering/Construction Costs Developpr	40 hrs	\$1,720	34 days	10/21/16	12/9/16
	<i>Kreder - Tim Kreder</i>	8 hrs	\$600		10/21/16	12/9/16
	<i>Kreder - Dave Engle</i>	32 hrs	\$1,120		10/21/16	12/9/16
36	Irrigation System Engineering/Construction Costs De	80 hrs	\$3,120	34 days	10/21/16	12/9/16
	<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		10/21/16	12/9/16
	<i>Kreder - Dave Engle</i>	32 hrs	\$1,120		10/21/16	12/9/16
	<i>Kreder - Augustus</i>	32 hrs	\$800		10/21/16	12/9/16
37	Electrical Service Design/Construction Costs Develo	48 hrs	\$2,320	34 days	10/21/16	12/9/16
	<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		10/21/16	12/9/16
	<i>Kreder - Dave Engle</i>	32 hrs	\$1,120		10/21/16	12/9/16
38	Establish Preferred Alternative	48 hrs	\$1,960	24 days	11/4/16	12/9/16

Detailed Cost Estimate
Farm Irrigation Pond/Watershed Mitigation
Tim and Susie Kreder Farms, Dayton, Oregon

ID		Task Name	Work	Cost	Duration	Start	Finish
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		11/4/16	12/9/16
		<i>Kreder - Susie Kreder</i>	8 hrs	\$400		11/4/16	12/9/16
		<i>Kreder - Dave Engle</i>	16 hrs	\$560		11/4/16	12/9/16
		<i>Kreder - Augustus</i>	16 hrs	\$400		11/4/16	12/9/16
39		GRANT FUNDING OPTIONS	136 hrs	\$6,480	197 days	4/4/16	1/12/17
40		Grant Funding Investigation for Habitat Establishment	24 hrs	\$1,280	189 days	4/4/16	12/30/16
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	12/30/16
		<i>Kreder - Dave Engle</i>	16 hrs	\$560		4/4/16	12/30/16
		Mileage (100)	2	\$120		4/4/16	12/30/16
41		Grant Funding Investigation for Water Conservation Desi	24 hrs	\$1,160	189 days	4/4/16	12/30/16
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	12/30/16
		<i>Kreder - Dave Engle</i>	16 hrs	\$560		4/4/16	12/30/16
42		Grant Funding Investigation for Water Quality Improvem	24 hrs	\$1,160	189 days	4/4/16	12/30/16
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	12/30/16
		<i>Kreder - Dave Engle</i>	16 hrs	\$560		4/4/16	12/30/16
43		Implementation Grant Funding Opportunities	64 hrs	\$2,880	22 days	12/12/16	1/12/17
		<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		12/12/16	1/12/17
		<i>Kreder - Dave Engle</i>	48 hrs	\$1,680		12/12/16	1/12/17
44		PREPARE WATER SUPPLY FEASIBILITY STUDY REPORT	176 hrs	\$8,160	73 days	11/4/16	2/20/17
45		Draft WSFS Report	104 hrs	\$4,600	40 days	11/4/16	1/4/17
		<i>Kreder - Tim Kreder</i>	24 hrs	\$1,800		11/4/16	1/4/17
		<i>Kreder - Dave Engle</i>	80 hrs	\$2,800		11/4/16	1/4/17
46		Client Review	56 hrs	\$2,840	5 days	1/5/17	1/11/17
		<i>Kreder - Tim Kreder</i>	16 hrs	\$1,200		1/5/17	1/9/17
		<i>Kreder - Susie Kreder</i>	16 hrs	\$800		1/5/17	1/9/17
		<i>Kreder - Dave Engle</i>	24 hrs	\$840		1/5/17	1/11/17
47		Final WSFS Report	16 hrs	\$720	28 days	1/12/17	2/20/17
		<i>Kreder - Tim Kreder</i>	4 hrs	\$300		1/12/17	1/12/17
		<i>Kreder - Dave Engle</i>	12 hrs	\$420		1/12/17	1/13/17
48		PROJECT MANAGEMENT	138 hrs	\$6,710	209 days	4/4/16	1/30/17
49		Partner Collaboration Communications	32 hrs	\$1,440	209 days	4/4/16	1/30/17
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	1/30/17
		<i>Kreder - Dave Engle</i>	24 hrs	\$840		4/4/16	1/30/17
50		Meetings/Conference Calls	24 hrs	\$1,280	209 days	4/4/16	1/30/17
		<i>Kreder - Tim Kreder</i>	8 hrs	\$600		4/4/16	1/30/17
		<i>Kreder - Susie Kreder</i>	8 hrs	\$400		4/4/16	1/30/17
		<i>Kreder - Dave Engle</i>	8 hrs	\$280		4/4/16	1/30/17
51		Project Coordination	42 hrs	\$2,190	209 days	4/4/16	1/30/17
		<i>Kreder - Tim Kreder</i>	18 hrs	\$1,350		4/4/16	1/30/17
		<i>Kreder - Dave Engle</i>	24 hrs	\$840		4/4/16	1/30/17
52		Schedule/Budget Tracking	40 hrs	\$1,800	209 days	4/4/16	1/30/17
		<i>Kreder - Tim Kreder</i>	10 hrs	\$750		4/4/16	1/30/17
		<i>Kreder - Dave Engle</i>	30 hrs	\$1,050		4/4/16	1/30/17

Detailed Cost Estimate
Farm Irrigation Pond/Watershed Mitigation
Tim and Susie Kreder Farms, Dayton, Oregon

ID		Task Name	Work	Cost	Duration	Start	Finish
1		KREDER - FARM IRRIGATION PONDS/WATERSHED MITIGATION	445 hrs	\$64,170	225 days	4/1/16	2/20/17
2		Authorization to Proceed	0 hrs	\$0	1 day	4/1/16	4/1/16
3		PROPERTY CHARACTERIZATION	227 hrs	\$33,820	146 days	4/4/16	10/27/16
4		Information Collection/Review	48 hrs	\$6,100	20 days	4/4/16	4/29/16
5		Existing Data/Document Collection	20 hrs	\$2,480	10 days	4/4/16	4/15/16
		Principal1201	4 hrs	\$640		4/4/16	4/15/16
		Senior Project Staff1201	8 hrs	\$1,000		4/4/16	4/15/16
		Project Staff1201	8 hrs	\$840		4/4/16	4/15/16
6		Data/Information Review and Assimilation	28 hrs	\$3,620	10 days	4/18/16	4/29/16
		Principal1201	8 hrs	\$1,280		4/18/16	4/29/16
		Senior Project Staff1201	12 hrs	\$1,500		4/18/16	4/29/16
		Project Staff1201	8 hrs	\$840		4/18/16	4/29/16
7		Reservoir Siting Evaluation	35 hrs	\$4,480	106 days	4/4/16	8/31/16
8		Site Soil Suitability	18 hrs	\$2,320	20 days	4/4/16	4/29/16
		Principal1201	2 hrs	\$320		4/4/16	4/29/16
		Senior Project Staff1201	8 hrs	\$1,000		4/4/16	4/29/16
		Engineering Sub	8 hrs	\$1,000		4/4/16	4/29/16
9		Ecological Flows Evaluation	17 hrs	\$2,160	43 days	7/1/16	8/31/16
		Principal1201	1 hr	\$160		7/1/16	8/31/16
		Wetlands Sub	16 hrs	\$2,000		7/1/16	8/31/16
10		Local Land Use Approvals	0 hrs	\$0	20 days	4/4/16	4/29/16
11		Wetlands Evaluations	142 hrs	\$17,820	106 days	4/4/16	8/31/16
12		Jurisdiction and Wetlands Determination	0 hrs	\$0	20 days	4/4/16	4/29/16
13		Wetland Delineation	80 hrs	\$10,000	63 days	4/4/16	6/30/16
		Wetlands Sub	80 hrs	\$10,000		4/4/16	6/30/16
14		Compensatory Wetlands Mitigation Plan	62 hrs	\$7,820	43 days	7/1/16	8/31/16
		Principal1201	2 hrs	\$320		7/1/16	8/31/16
		Wetlands Sub	60 hrs	\$7,500		7/1/16	8/31/16
15		Baseline Water Quality Evaluation	2 hrs	\$5,420	146 days	4/4/16	10/27/16
16		Spring 2016 Monitoring Event	1 hr	\$2,710	20 days	4/4/16	4/29/16
		WQM Labor	1 hr	\$1,500		4/4/16	4/29/16
		Basic Pesticides Package	1	\$1,050		4/4/16	4/29/16
		Audubon Package	1	\$160		4/4/16	4/29/16
17		Fall 2016 Monitoring Event	1 hr	\$2,710	19 days	10/3/16	10/27/16
		WQM Labor	1 hr	\$1,500		10/3/16	10/27/16
		Basic Pesticides Package	1	\$1,050		10/3/16	10/27/16
		Audubon Package	1	\$160		10/3/16	10/27/16
18		PERMIT FEASIBILITY	46 hrs	\$6,380	189 days	4/4/16	12/30/16
19		Removal-Fill Permitting	26 hrs	\$3,460	106 days	4/4/16	8/31/16
20		ODFW and DEQ Approval	2 hrs	\$320	106 days	4/4/16	8/31/16
		Principal1201	2 hrs	\$320		4/4/16	8/31/16
21		DSL/USACE Removal-Fill Permit Application	24 hrs	\$3,140	106 days	4/4/16	8/31/16
		Principal1201	4 hrs	\$640		4/4/16	8/31/16
		Senior Project Staff1201	20 hrs	\$2,500		4/4/16	8/31/16

Detailed Cost Estimate
Farm Irrigation Pond/Watershed Mitigation
Tim and Susie Kreder Farms, Dayton, Oregon

ID	Task Name	Work	Cost	Duration	Start	Finish
22	Oregon WRD Permitting	20 hrs	\$2,920	189 days	4/4/16	12/30/16
23	Reservoir Storage Applications (Alt and Standard)	0 hrs	\$0	127 days	4/4/16	9/30/16
24	Surface Water Permit Application	0 hrs	\$0	127 days	4/4/16	9/30/16
25	Re-Review of Existing Groundwater Permit Application	20 hrs	\$2,920	83 days	9/1/16	12/30/16
	Principal1201	12 hrs	\$1,920		9/1/16	12/30/16
	Senior Project Staff1201	8 hrs	\$1,000		9/1/16	12/30/16
26	LONG-TERM LANDOWNER LEASE ARRANGEMENTS FEASIBILITY STUDY	0 hrs	\$0	20 days	4/4/16	4/29/16
27	WATER SUPPLY OPTIONS EVALUATION	92 hrs	\$12,070	175 days	4/4/16	12/9/16
28	Establish Water Supply Objectives	8 hrs	\$1,060	20 days	4/4/16	4/29/16
	Principal1201	4 hrs	\$640		4/4/16	4/29/16
	Project Staff1201	4 hrs	\$420		4/4/16	4/29/16
29	Identify/Screen Water Supply Technologies	36 hrs	\$4,640	30 days	9/1/16	10/13/16
30	Reservoir Design Options	34 hrs	\$4,320	30 days	9/1/16	10/13/16
	Principal1201	2 hrs	\$320		9/1/16	10/13/16
	Engineering Sub	32 hrs	\$4,000		9/1/16	10/13/16
31	Crop Mix Alternatives	1 hr	\$160	30 days	9/1/16	10/13/16
	Principal1201	1 hr	\$160		9/1/16	10/13/16
32	Irrigation System Alternatives	1 hr	\$160	30 days	9/1/16	10/13/16
	Principal1201	1 hr	\$160		9/1/16	10/13/16
33	Assemble Water Supply Alternatives	10 hrs	\$1,270	5 days	10/14/16	10/20/16
	Principal1201	4 hrs	\$640		10/14/16	10/20/16
	Project Staff1201	6 hrs	\$630		10/14/16	10/20/16
34	Detailed Analysis of Water Supply Alternatives	26 hrs	\$3,460	34 days	10/21/16	12/9/16
35	Reservoir Engineering/Construction Costs Development	24 hrs	\$3,140	34 days	10/21/16	12/9/16
	Principal1201	4 hrs	\$640		10/21/16	12/9/16
	Engineering Sub	20 hrs	\$2,500		10/21/16	12/9/16
36	Irrigation System Engineering/Construction Costs Development	1 hr	\$160	34 days	10/21/16	12/9/16
	Principal1201	1 hr	\$160		10/21/16	12/9/16
37	Electrical Service Design/Construction Costs Development	1 hr	\$160	34 days	10/21/16	12/9/16
	Principal1201	1 hr	\$160		10/21/16	12/9/16
38	Establish Preferred Alternative	12 hrs	\$1,640	24 days	11/4/16	12/9/16
	Principal1201	4 hrs	\$640		11/4/16	12/9/16
	Senior Project Staff1201	8 hrs	\$1,000		11/4/16	12/9/16
39	GRANT FUNDING OPTIONS	0 hrs	\$0	197 days	4/4/16	1/12/17
40	Grant Funding Investigation for Habitat Establishment	0 hrs	\$0	189 days	4/4/16	12/30/16
41	Grant Funding Investigation for Water Conservation Design	0 hrs	\$0	189 days	4/4/16	12/30/16
42	Grant Funding Investigation for Water Quality Improvement	0 hrs	\$0	189 days	4/4/16	12/30/16
43	Implementation Grant Funding Opportunities	0 hrs	\$0	22 days	12/12/16	1/12/17
44	PREPARE WATER SUPPLY FEASIBILITY STUDY REPORT	44 hrs	\$5,900	73 days	11/4/16	2/20/17
45	Draft WSFS Report	28 hrs	\$3,920	40 days	11/4/16	1/4/17
	Principal1201	12 hrs	\$1,920		11/4/16	1/4/17
	Senior Project Staff1201	16 hrs	\$2,000		11/4/16	1/4/17
46	Client Review	0 hrs	\$0	5 days	1/5/17	1/11/17
47	Final WSFS Report	16 hrs	\$1,980	28 days	1/12/17	2/20/17

Detailed Cost Estimate
 Farm Irrigation Pond/Watershed Mitigation
 Tim and Susie Kreder Farms, Dayton, Oregon

ID		Task Name	Work	Cost	Duration	Start	Finish
		<i>Principal1201</i>	<i>4 hrs</i>	<i>\$640</i>		<i>1/12/17</i>	<i>2/20/17</i>
		<i>Senior Project Staff1201</i>	<i>8 hrs</i>	<i>\$1,000</i>		<i>1/12/17</i>	<i>2/20/17</i>
		<i>Drafter1201</i>	<i>4 hrs</i>	<i>\$340</i>		<i>1/12/17</i>	<i>1/31/17</i>
48		PROJECT MANAGEMENT	36 hrs	\$6,000	209 days	4/4/16	1/30/17
49		Partner Collaboration Communications	2 hrs	\$320	209 days	4/4/16	1/30/17
		<i>Principal1201</i>	<i>2 hrs</i>	<i>\$320</i>		<i>4/4/16</i>	<i>1/30/17</i>
50		Meetings/Conference Calls	8 hrs	\$1,520	209 days	4/4/16	1/30/17
		<i>Principal1201</i>	<i>8 hrs</i>	<i>\$1,280</i>		<i>4/4/16</i>	<i>1/30/17</i>
		<i>Mileage (100)</i>	<i>4</i>	<i>\$240</i>		<i>4/4/16</i>	<i>1/30/17</i>
51		Project Coordination	16 hrs	\$2,560	209 days	4/4/16	1/30/17
		<i>Principal1201</i>	<i>16 hrs</i>	<i>\$2,560</i>		<i>4/4/16</i>	<i>1/30/17</i>
52		Schedule/Budget Tracking	10 hrs	\$1,600	209 days	4/4/16	1/30/17
		<i>Principal1201</i>	<i>10 hrs</i>	<i>\$1,600</i>		<i>4/4/16</i>	<i>1/30/17</i>

T4S R4W Section 36
T4S R3W Section 30, 31



NOT TO SCALE

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SE Lafayette Hwy

S 4th W

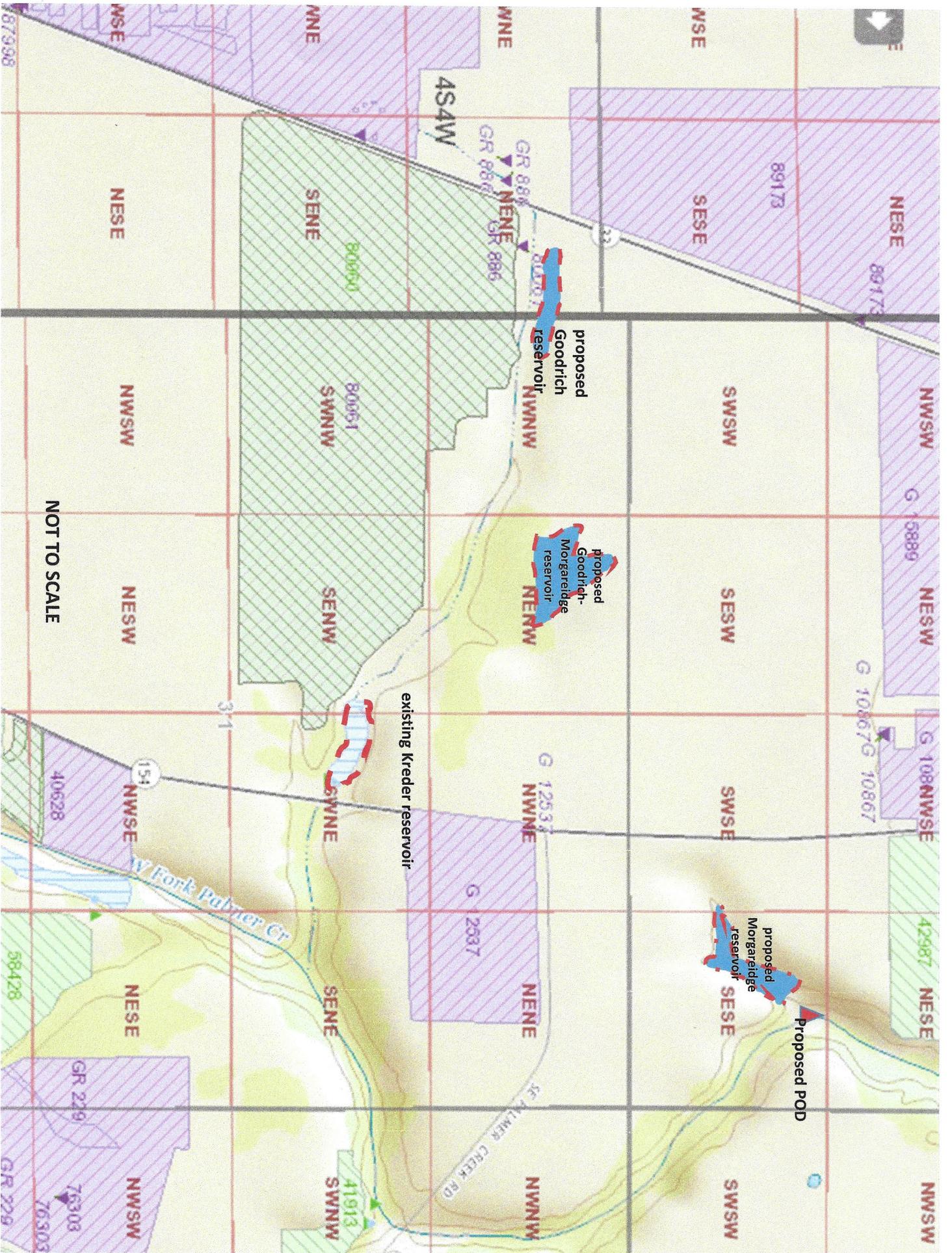
Proposed Goodrich reservoir

Proposed Goodrich Morgantedge reservoir

Existing Kreder Pond

Proposed Morgantedge reservoir

West Fork Palmer Creek



NOT TO SCALE

proposed Goodrich reservoir

proposed Goodrich-Morgareidge reservoir

existing Kreder reservoir

Proposed POD

Y Fork Palmer Cr

SE PALMER CREEK RD

454W

154

371

87398



January 18, 2016

MBS Properties LLC
Mary A. Albright, manager
11100 SE Lafayette Hwy
Dayton, OR 97114

To the Oregon Water Resources Department grant committee,

This is a letter expressing support of the feasibility study that Tim and Susie Kreder are proposing to conduct into the construction of farm irrigation ponds for storing winter water to use for the irrigation of crops on land owned by MBS Properties LLC.

We feel that this project would increase the value and productivity of the land and would be good for long-term economic strength of the rural farm economy. The Kreders have our permission to engage in this study, which will include pursuing the completion of the regulatory steps necessary to construct ponds, and securing water rights permits for the land owned by MBS Properties LLC.

Signature:

Mary A. Albright

Printed Name:

MARY A. Albright

Title:

Manager,

/de

January 18, 2016

Goodrich Trusts
Eunice Goodrich, TTEE
PO Box 466
Dayton, OR 97114

To the Oregon Water Resources Department grant committee,

This is a letter expressing support of the feasibility study that Tim and Susie Kreder are proposing to conduct into the construction of farm irrigation ponds for storing winter water to use for the irrigation of crops on land owned by Goodrich Trusts.

We feel that this project would increase the value and productivity of the land and would be good for long-term economic strength of the rural farm economy. The Kreders have our permission to engage in this study, which will include pursuing the completion of the regulatory steps necessary to construct ponds, and securing water rights permits for the land owned by Goodrich Trusts.

Signature: *Eunice M. Goodrich*
Printed Name: *Eunice M. Goodrich*
Title: *Trustee*

/de



NORPAC FOODS INC.

3225 25th St. SE
Salem, OR 97302-1133
PO Box 14444
Salem, OR 97309-5012
503-480-2100

December 15, 2015

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

To the Oregon Water Resources Department grant committee:

I am writing in support for the grant application of Tim and Susie Kreder Farms of Dayton, OR, to fund a feasibility study for the development of farm irrigation reservoirs.

This study is for a project that will be good for the rural farm economy and good for the environment. This is the kind of study that the State of Oregon envisioned when it established grant funding to support the development of our water resources. Irrigation water is becoming a precious commodity due to increasing demand and decreasing availability in the summer months. These ponds would be used to store water in the winter for crop irrigation use during the summer.

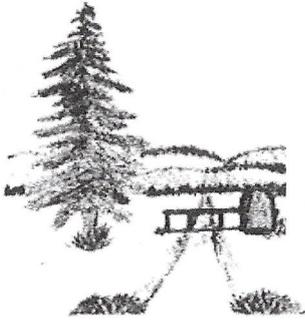
The project will also be designed to contribute to the mitigation of agricultural pollution running into the Palmer Creek watershed eco-system and demonstrate ways that farm water projects can be done in collaboration with local watershed conservation partners. It will determine and examine what resources are available when designing and implementing projects that address water quality problems locally—problems which ultimately have a broader impact in our state.

The feasibility study will help farmers improve or expand their ability to irrigate and develop greater crop diversity and help produce two important outcomes—a stronger agricultural economy and enhanced eco-system health.

I thank you in advance for your support of this grant application.

Sincerely,

George F. Smith
President and CEO



**Palmer Creek Water District
Improvement Company**

**14395 SE Wallace Rd.
Dayton, OR 97114**

To the Oregon Water Resources Department grant committee:

January 8, 2016

Please consider this as a letter of support for the grant application of Tim/Susie Kreder Farms of Dayton. As we understand the proposed grant, it would support a feasibility study for the development and management of farm irrigation reservoirs.

These ponds would be used to store surface water in the winter for use in crop irrigation in the summer. The ponds would also be designed to help mitigate agricultural pollution running into the Palmer Creek watershed eco-system. It is clear that additional water storage, both surface and ground water storage, is critical for the continued health and growth of our state and agriculture in particular. This is the kind of study that State of Oregon grant funding should support as part of our overall water strategy.

The feasibility study can help farmers improve or expand their ability to irrigate and develop greater crop diversity. The study would also demonstrate ways that farm water projects can be done in collaboration with local watershed conservation partners.

Thank you

The Board of Palmer Creek Water District.



Providing Natural Resource Leadership

January 13, 2016

Oregon Water Resources Department
Attention: Grant Review Committee Members
725 Summer Street, Suite A
Salem, OR 97301

Dear Review Committee Members,

The Yamhill Soil and Water Conservation District (district) offers its support for the feasibility grant application submitted by Tim and Suzie Kreder. The application requests support to fund a feasibility study relating to the development of farm irrigation reservoirs that store water during the winter, for crop irrigation use in the summer. The feasibility study also proposes to evaluate how reservoirs could be designed and managed to help mitigate agricultural or other non-point source pollution sources in the Palmer Creek watershed eco-system.

Landowners who seek to diversify their crop enterprises and produce irrigated crops could benefit from this study. The concept of increasing available summer-time flow in the stream system from storage reservoirs is of interest to the district. Increased flows could help support fish and wildlife resources, keep riparian areas healthy, and improve water quality. This concept could be a win-win for both the local agricultural industry, and for watershed health.

We believe the proposal and study could bring greater awareness about water quality issues to the agriculture community, and open the door for collaboration between landowners, state and federal governments, and the local conservation community.

The district encourages the Oregon Water Resources Department to provide full consideration of this proposal, as it supports rural economies, watershed health, and development of needed water resources in the state.

Sincerely,

Larry Ojua,
Executive Director
Yamhill Soil and Water Conservation District



Oregon

Kate Brown, Governor

Department of Agriculture
635 Capitol St NE
Salem, OR 97301-2532



December 22, 2015

Attn: John Unger: Grant Committee
Oregon Water Resources Department (OWRD)
725 Summer St NE #A
Salem, OR 97301-1290

Re: Kreder Water Storage Feasibility Study Proposal

Dear OWRD Grant Committee,

We are writing to express support for the proposal by David Engle on behalf of Kreder Farms and Palmer Creek Fruit Company for an OWRD grant to complete a feasibility study for irrigation storage reservoirs. This proposal seeks funding to complete a feasibility study that will analyze the costs and planning associated with: a) developing irrigation storage; b) identify ways to work in collaboration with local conservation partners to improve water quality; and c) to analyze how to develop irrigation storage while protecting or improving water quality.

In addition to supporting the project, the Oregon Department of Agriculture is willing to provide technical assistance, project review, and help with monitoring plans if the proposal is funded.

The approach of this proposal is important because it can provide information that will help agricultural producers assess ways to store water on the landscape when water is available for storage and then use the water for irrigation at a time surface water can not be diverted for irrigation. In addition, the Palmer Creek watershed would benefit from potential water quality improvements. The Palmer Creek watershed has an ongoing Pesticide Stewardship Partnership that works with agricultural operators in the watershed to educate them on concerns with pesticides in the surface water. In addition, Oregon Department of Agriculture's Water Quality Program has worked with many landowners in the Palmer Creek watershed to address water quality concerns.

Thank you for your consideration.

Sincerely,

Kevin Fenn
Compliance Lead;
Agricultural Water Quality Program
Oregon Department of Agriculture

Margaret Matter
Agricultural Water
Resource Specialist

Paul Measeles
Hydrologist





**GREATER
YAMHILL
WATERSHED
COUNCIL**

237 NE Ford Street, Suite 9
P.O. Box 1517
McMinnville, OR 97128
Phone: 503.474.1047

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Neyssa Hays
Chair, Watershed Resident

Corissa Holmes
Treasurer/Secretary,
City of McMinnville

Theresa Crain
Watershed Resident

James Riedman
Watershed Resident

Leonard A. Rydell
Yamhill Co. Small Woodlands Assoc.

Staff

Luke Westphal
Executive Director

Theresa Crain
Community Engagement

Neyssa Hays
Community Engagement

January 12, 2016

John Unger
Oregon Water Resources Dept.
725 Summer ST, STE A
Salem, OR 97301

Subject: OWRD Water Conservation, Reuse and Storage Grant Program proposal for Kreder family farm irrigation reservoirs

Dear Mr. Unger,

The Greater Yamhill Watershed Council (GYWC) would like to express our support for the Kreder family's irrigation reservoir feasibility study proposal through the Oregon Water Resources Department's (OWRD) Water Conservation, Reuse, & Storage grant program under SB 1069.

The proposal requests funding to conduct a feasibility analysis for the development of reservoirs for summertime crop irrigation within the West Fork Palmer Creek sub-basin. The proposal also seeks to determine the potential for improving agricultural water quality through the design and management of the reservoirs.

The proposed effort aligns strongly with the objectives of the Yamhill Pesticide Stewardship Partnership (PSP), a community-based program funded primarily through the Oregon Departments of Agriculture (ODA), and Environmental Quality (DEQ), to monitor agricultural pesticide water quality in the Palmer Creek watershed and to promote the voluntary adoption of land management practices that address identified pesticide pollution concerns. The GYWC is in full support of the Kreder's proposal and believe the project will serve as an effective demonstration for the development of needed water resources in the Willamette Valley, and the improvement of agricultural water quality in the PSP Palmer Creek watershed.

Thank you for your consideration, and please feel welcome to contact me regarding our hearty support of the Kreder's OWRD feasibility grant proposal.

Sincerely,

Luke Westphal

Greater Yamhill Watershed Council, Executive Director

luke@gywc.org

Mobile: 971-388-9200

Office: 503-474-1047