



WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y

Application for a 2015-2017 Floodplains by Design Project Grant

Submitted applications will be rated to create a ranked list in support of Ecology's FY 2015-2017 Floodplains by Design budget request.

Applications must be submitted electronically via email to Ecology by 5:00 pm, **September 8, 2014**. Send applications to:

Adam Sant at Adam.Sant@ecy.wa.gov

With the Subject line: 2015-2017 Floodplains by Design Project Grant Application

You will receive confirmation that your application has been received by close of business on September 15.

Applicants must use this form as provided. No alterations will be accepted.

Project Title **Trout Meadows/McCormick Levee Phase II**

Organization/Jurisdiction Name **Yakima County Public Services**

Contact Name **Terry Keenhan**

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Fourth Floor Courthouse

City, State, Zip Code **Yakima WA 98901**

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Legislative District(s) **14th District**

County **Yakima**

WRIA(s) **38**

Congressional District(s) **4th**

Specific Project Location

Section 6 Township 13 Range 18

River Mile **6.0**

Latitude 46.651023 Longitude -120.621975

GPS coordinates, if available

Major Watershed Project is in **Naches River**

***Full project (or phase proposed herein) should be completed in 3-4 years.
Project Narrative and Budget are limited to 20 pages.***

Scope of Work, Schedule, Maps and Photos can be in addition to those 20 pages.

- 1. Short Description of Project (500 words or less)** This project is the second and final phase of the Trout Meadows floodplain restoration, located on the Lower Naches River across from the County owned McCormick Levee (N-2) on the opposing bank, which has been repeatedly flanked at lower return period flood flows producing widespread flood damages. This second phase will open up river access on the right bank of the Naches River at the northern end of the acquired property through 500 feet of groin removal and levee setback and excavation, reconstruction of former floodplain channels using pilot channels and demolition of a barn structure (see Figure 2). On the opposing left bank the project will remove 600 feet of the lower end of McCormick Levee. By reacquiring the right bank old river channels and floodplain and removing and reducing the current restrictions on both banks the project will reduce flood heights and velocities at the McCormick Levee, and reduce flood heights upstream in the sediment depositional zone responsible for large destructive overland flood flows. This phased project will open up approximately 60 and 25 acres on left and right banks respectively, of quality floodplain that had been previously converted from river channels to agricultural fields and reduce velocities and increase left bank channel and floodplain access.

The expenditures under the Phase 1 grant were used for acquisition of two parcels in the Naches River Floodplain which formerly contained spring fed side channels, modification of existing flood protection works to allow more frequent flooding of the purchased parcels, re-contouring of purchased parcels to mimic historic channel conditions, reconnection of a spring to the newly graded channels, and re-vegetation. These parcels included the majority of the Ibrahim parcel – 18130612403, excluding the area of the developed RV park and residence (7.5 acres of the 54.3 acre parcel); and the Yolo Parcel – 18130614003, approximately 16.25 acres in size. The Project Budget for Phase 1 was funded under a Grant from the Department of Ecology, Office of the Columbia River, and other funding sources matched by the Yakima County Flood Control Zone.

The objectives of the County FCZD in this reach are to reduce backwater and improve sediment transport to either stop or reverse the channel aggradation in the McCormick-Trout Meadows area – efforts that will reduce flood risk to all parties and improve habitat. Flanking flow from this levee travel 3 miles over infrastructure and residences downstream and also flank the downstream N-1 levee overland (see Figure 1a). The project is part of the reestablishment of normal river processes along the twelve mile Lower Naches River reach at four County levees (Town of Naches, McCormick, Eschbach and Rambler's Park Levees) that were identified as priorities within the 2006 Lower Naches Comprehensive Flood Hazard Plan.

The County is setting back its USCOE PI84-99 levees between the Town of Naches and Rambler's Park to open up habitat and side channels, increase flood conveyance, reduce flood risk, mobilize levee-induced sediment deposits located upstream of the levees, and reestablish more natural sediment processes for movement of the released and normal sediment loads. These activities reduce flood risk, reactivate degraded habitat functions and reactivate lost habitat. The County is setting back its levees between the Town of Naches and Ramblers Park to open up habitat and side channels, increase flood conveyance, reduce flood risk, mobilize levee-induced sediment deposits upstream of the levees, and reestablish more natural sediment processes for movement of the released and normal sediment loads that also increase hyporeic flows.

Management of the sediments accumulated in the reach will take cooperation across partners to meet the multiple objectives of return to natural river processes, reduced flood risk, improved riverine and floodplain habitats over a three mile reach of the mainstem river. We believe that these objectives are common to all of the interested/responsible parties (both habitat and irrigation supply) in this reach.

2. Flood hazard / risk reduction (60 points)

Describe your project and how it will reduce the magnitude or frequency of flood damages to people, structures or infrastructure. Projects will be evaluated on the significance of the flood hazard and the ability of the solution to address the hazard. Evidence of flood hazard reduction can be demonstrated via flood storage added (acre-feet), flood stage reduction [reduced BFE (base flood elevation)], conveyance increased (cubic ft/sec), sediment storage added or inputs reduced, number or value of structures and/or development rights removed from hazard area (# or area extent), critical facilities removed from high hazard area, transportation and infrastructure facilities removed from high hazard areas, and other project-specific goals. Describe both upstream and downstream effects of your project.

Answer question 2 here: The McCormick Levee is a County-owned levee, enrolled in the USCOE's P84-99 program that protects an irrigation diversion, SR12, Long Lane, McCormick Road, several businesses and residences. The Levee has experienced repeated failures during floods (1996, 2006, 2011) and now provides limited protection at higher flows due to channel aggradation caused by, and immediately upstream of, the McCormick Levee. This ongoing aggradation is reflected in our 2009 hydraulic model which shows the river can "flank" the McCormick Levee at its' upper end, and significant expansion of the area of floodway. The channel aggradation upstream of the levee is the result of backwater from the right bank levee alignment and the pre 1970s removal of left bank old river channels and floodplain by landowner occupation of Trout Meadows through bank armoring, channel infilling and floodplain re-grading. The infrastructure configuration creates significant constrictions, noted in the FEMA hydraulic model and has, and continues to produce river bed aggradation upstream for several miles and sediment starvation immediately downstream with unstable reaches at high flow. These ongoing conditions have led to ever-increasing flood water surface elevation increases of about 3 feet during the 100-year flood, causing the flood flows during the 15 year and higher return period floods to flank McCormick Levee towards the residences and inundate SR12. The constriction has expanded the regulatory floodplain and floodways over a very large area and provided increased flood hazard (see figure 1b), that is worsening by further sediment deposition.

The diversion at the upstream end of McCormick Levee experienced significant damage in 1996 and is now more vulnerable due to increased sediment accumulation. Improvements have been washed away, and this project attempts to reverse the grade changes at the structure.

3. Floodplain ecosystem protection or restoration element (60 points)

Describe the ecological benefit of the project, its significance, and the ability of the solution to address the overall need in the project area or watershed. Examples include, but are not limited to, reconnecting floodplains, salmon recovery actions, habitat restoration, Channel Migration Zone protections, etc. Evidence of ecosystem benefits include floodplain (including estuary) habitat type (e.g., wetland, side channel, forest) and area restored (# acres), floodplain area protected from bank armoring (# of acres), floodplain area protected from development or other land use change (# acres), hardened bank removal or levee/riprap removal (linear feet), levee setbacks constructed (linear feet, # acres), new side channels or reconnection of old side channels (linear feet or storage volume), salmon species benefitted (# of listed, non-listed species). Secondary evidence includes culvert replaced to restore fish passage or increase conveyance, logjam and or wood structures installed, riparian area planted, and other project-specific goals.

Answer question 3 here: The Naches is one of two mainstem tributaries of the Yakima River, a basin with recovering and increasing returns of Salmon and ESA species. Flows are least regulated on the Naches and this mainstem reach is prone to channel movement that increases habitat potential and improves fish habitat. Almost a third of the total basin endangered and other aquatic, species travel through this reach. The potential for channel movement and migration has led to competing levees and bank protection in this reach that have laterally constrained the river and produced excessive sediment deposition upstream and degradation downstream. Please see figure 3, Trout Meadows Floodplain Restoration.

The project will reclaim on the right bank 60 acres of channel migration zone and floodplain previously cut off by agricultural conversion to low quality agricultural lands through 500 feet of hardened bank removal. In addition on the left bank the McCormick Levee will be shortened by 600 feet of levee removal to reduce the channel simplicity created by the levee by opening a minimum of 25 acres of floodplain downstream for restoration through floodplain interconnectivity and additional side channels providing quality floodplain. The initial pilot channels on the right bank will be placed in former alignments as evidenced in historic air photos and LiDAR and are intended to jump start natural previously interrupted geomorphic processes, including sediment redistribution and channel formation processes.

By removing constraints to the floodplain the project is designed (see above) to increase the responsiveness and vibrance of the system to future changes as opposed to control response and fight change. Resistance (in the channel) is futile (and expensive). Based on a hydraulic modeling design that reduces lateral restrictions the project will mobilize long term stored sediment to return the system towards increases floodplain connectivity, increased sediment mobilization and more normal sheet deposits with reasonable turn over periods, all of which increase the cooling hyporeic flows and floodplain food web and vegetation towards balance with sediment loads. Reach long (13 miles) sediment models are currently under construction by the Corps

This project should return this reach of river to a more normative state of energy distribution and channel complexity, with increased channel complexity, floodplain interconnectivity and hyporeic flows to support a food web for aquatic species including benefits to ESA listed Mid- Columbia Steelhead and Bull Trout. Spring Chinook and Coho have responded very well to similar levee removal and floodplain restoration activities in this reach, and this reach should have been prime habitat for Summer Chinook, which are also being reintroduced (via a hatchery supplementation program) into the basin.

4. Is your project in a Puget Sound Partnership Priority Floodplain? (5 points)

(Deschutes, Dungeness, Duwamish/Green, Elwha, Hood Canal, Lake Washington, Lower Skagit, Nisqually, Nooksack, Puyallup, Sauk, Skokomish, Skykomish, Snohomish, Snoqualmie, Stillaguamish, Upper Skagit)

Answer question 4 here: Yes

No X

5. Other benefits (40 points)

Describe how your project maintains or improves agricultural viability, water quality, public open space/recreation access, economic development, or other important local benefits or values, and does not conflict with other objectives of this program. Projects receive points based on the importance of the result produced, the ability of the solution to address the overall stakeholder need and the long-term improvement.

- a. Agricultural viability (evidence of agricultural benefits include reductions in flooding (acres), protection from development (acres), improvement of drainage infrastructure (acres), or other capital or non-capital benefits to agricultural productivity).
- b. Water quality improvement [e.g., through stormwater infrastructure upgrades, treatment of a TMDL or 303(d) issue, reduction in sediment, restoration of wetlands or riparian areas, implementation of related best management practices, etc.].
- c. Public access and recreation (e.g., through land acquisition, the development of trails or other recreational infrastructure, etc.)
- d. Other floodplain values or services of local importance.

Answer question 5 here: In terms of dollars Yakima County is the number one County producer of agricultural products in Washington State and number two for processing of agricultural foods. Those products are primarily derived from diversion of Naches and Yakima Rivers' flows. McCormick Levee contains an irrigation diversion supplying approximately 200 acres and will have reduced risk of failure following the project. The Trout Meadows property had low agricultural productivity and had been fallow

for years.

Sediment imbalances and simplified river structure in this reach due to levees have led to reduced abilities of the river to absorb, assimilate and reduce pollutants within the floodplain, and reduced availability of side channels and normative hyporeic function that reduces river temperatures and promotes a food based web. The project will move this reach out of a simplified river structure and move to restore the above processes. The area has road access.

6. Cost-effectiveness (20 points)

- i. Project will be judged on whether the budget is appropriate to the project scope, and designed for project success.
- ii. Describe how the project will be continued or maintained after the grant has been completed.
- iii. If project cannot be fully funded, explain how the project could be scaled downward.

Answer question 6 here: The project is relatively simple, without capital construction and costs, only demolition and the goals are easy to attain by promoting natural river processes that will sustain themselves, once initiated. It also builds on the previous phase to deliver full benefits

7. Long-term cost avoidance: (30 points)

- a. Describe how your project minimizes or eliminates future costs for maintenance, operation, or emergency response. **(15 points)**

Answer 7.a. here: Reduces damages (\$600,000 over 15 years) and risk to McCormick levee and will reduce flanking of downstream Ramblers levees from overflow paths. Project will reduce closures of Long Lane, McCormick Road and SR24 for flood events exceeding the 10 year flood.

- b. Describe how your project accounts for expected future changes to hydrology, sediment regimes, or water supply resulting from other floodplain management efforts, land use changes, extreme weather events, or other causes. **(15 points)**

Answer 7.b. here: As noted in 2 and 3 above the project is designed to reverse ongoing degradation and increase the responsiveness and vibrance of the system and system sediment deposits to future changes as opposed to control response and fight change. A return to natural processes and natural responsiveness increases the robustness of the system to increase currently curtailed flood risk and habitat benefits (natural cooling and oxygen levels in deposits). Key to that is the return to normative sediment movement through the system. Reach long (13 miles) sediment models are currently under construction by the Corps.

The Yakima basin runoff is managed by five Bureau dams to prolong snowpack runoff, and has extensive flow rule management to allow maximization of benefits to both agricultural and habitat sectors. The combined storage volumes of the dams is only 30 percent of the average annual basin runoff, so that modifications of the snowpack have significant implications. Increased drought frequency has occurred since the 1970's and led to the recent efforts by basin and State interests to provide more storage within the basin. This snowpack change has been attributed by many to due to the climate warming trend impact on snowpacks, also seen in the recent disappearance/recession of the nearby North Cascade glaciers.

The Yakima Basin, being located on the lee of the Cascade range, is probably the basin within Washington State that it is most vulnerable to snow pack modification through climate change. Macro models have indicated probable temperature increase and minor increased precipitation in the basin due to climate change. The use of micro models will show however that the effect of increased temperature will cause much of the snow currently carried over the Cascade crest to not reach the Yakima basin at all due to the state change converting near flat snow trajectories

to near vertical rain trajectories. A huge volume of precipitation now reaching Yakima basin will not reach the basin due to a warming of only one degree. This phenomena was studied by BC Hydro and National Weather Service for the Bridge Basin in BC during the 1990's. Altered snow packs and glacier retreat will change available sediment loads and flood nature/ sediment transport. In summary climate change impacts probably will reduce Yakima basin runoff volumes and temperatures making hyporeic flows in floodplains, as proposed in this grant, more important for ESA and Salmonid species sustainability on the Columbia and in Eastern Washington.

We are interested in collaborating with NOAA, the UW Climate Impacts Group, and other partners to evaluate and quantify climate change impacts that could affect project design and implementation. We believe that designs should maximize the design elements/benefits noted above in this section that contribute to robustness in the face of change.

8. Demonstration of need and support (30 points)

- a. Describe how your project is consistent with the intent of existing floodplain management or habitat recovery plans or is specifically identified through existing plans or work programs. (Elements of the project may have been developed through more than one planning process. Please identify the planning process used for each major element if they are not from a common plan.) (15 points)

Answer question 8.a. here: Phase 1 of this project was supported by the habitat committee of the Yakima Basin Implementation Plan, as important to basin habitat recovery, and reviewed by the Technical Committee of the Recovery Board, which resulted in its financial support. Both Phases are in concert with the Lower Naches Comprehensive Flood Hazard Management Plan which identified remedial measures for the McCormick Levee reach. Of major issue is the impact of this levee on adjacent infrastructure.

- b. Describe which flood control authorities, Tribal Nations, local governments, lead entities, key stakeholders or decision-makers representing floodplain interests located within the river reach or affected by the project have provided letters of support explicitly endorsing the project and its outcomes for their interests. (15 points)

Answer question 8.b. here:

9. Readiness to proceed and complete the proposed phase of the project (25 points)

Describe how your project is ready to proceed with the scope of work, and your capacity to complete the project successfully and maintain it over time, including your project schedule and deliverables. Describe your experience with similar projects. If your project is acquisition only, describe how you will complete floodplain restoration subsequent to the acquisition.

Answer question 9 here: We would not start the capital portion of this project until 2017 after phase one.

10. Pilot project and leverage opportunities (25 points)

- a. If applicable, describe how your project could serve as a pilot effort or result in changes or results with broader impacts to the state. (10 points)

Answer question 10.a. here: We believe our approach of levee removal and setback with the use of pilot channel to strategically use the increased grade that was created over time (sediment deposition) by the to-be-removed structures is opposed to efforts by others in the State to increase grade by deflection structures (more constriction). The former returns the river back to its natural processes, while the other increases the imbalance, will worsen the situation (more problems) and therefore have short life spans. Also this approach moves to reestablish sediment balance through the removal of restrictions and the resulting sediment deposition zones that further imbalance.

- b. If applicable, describe how your project leverages existing investments, such as SRFB, FCZDs, Dike Districts, TMDLs, WWRP, ESRP, NEP, and other funding sources. Evidence of this will be based on the amount and diversity of the leveraged funding sources. **(10 points)**

Answer question 10.b. here: The Project Budget for Phase 1 was funded under a Grant from the Department of Ecology, Office of the Columbia River, and other funding sources matched by Yakima County Flood Control zone.

- c. If applicable, describe how your project addresses inequity or social justice issue by benefitting underserved communities. **(5 points)**

Answer question 10.c. here:

11. Budget (add more tasks as needed).

Task	Amount Requested from Ecology*	Other Funding for Project** (20% of Total Cost Minimum)	Total Cost
Task 1--Administration	17,600	4,400	22,000
Task 2-- Backwater and sediment transport modeling	32,000	8,000	40,000
Task 3 Complete detailed design (completed in Phase 1)	0	0	0
Task 4 –Obtain all necessary permits (SEPA)	16,000	4,000	20,000
Task 5-- Complete construction including removal of groins and set-back of existing levee and removal of 600 feet of McCormick levee.	282,400	70,600	353,000
Task 6 –Revegetation and completion of project	20,000	5,000	25,000
Total	368,000	92,000	460,000

*Amount requested from Ecology under this grant program

**Other sources of funding dedicated to this project. Insert narrative below that details what the source of funding is and whether or not it has been received or applied for but not yet received.

Match must be at least 20% of Total Project cost.

Narrative and/or Table of other funding sources for project, here: If it's not possible to fully fund this proposal, please describe a *phased* approach that would still significantly advance the effort: Phase 1 was funded under a Grant from the Department of Ecology, Office of the Columbia River, and other funding sources. The 20% match required for Phase 2 will come from Yakima Flood Control and partner funds, including in kind contributions such as land match.

12. SCOPE OF WORK: Please attach a Scope of Work and schedule. If your proposal is a phase

of a larger multi-year project, please place this proposal in the context of the overall project and provide preliminary cost projects to complete the project.

13. **Maps:** Please attach at least two (2) maps to your application. The first map should be a vicinity map and the second should be a map of your project.
14. **Planting Maintenance/Survival:** If your project includes plantings, please provide a description of how you will ensure plant survival and maintenance.
15. **Photos:** Photos are not required, but if you think they enhance our understanding of your application, please include them. We are particularly interested in "before" photos that can be matched with "after" photos.
16. **Executive order 05-05, Archaeological and Cultural Resources** (online at http://www.governor.wa.gov/office/execorders/eoarchive/eo_05-05.pdf) directs state agencies to review all capital construction projects for potential impacts to cultural resources to make sure that reasonable action is taken to avoid adverse impacts to these resources. If this grant program is funded by the 2015 Legislature, successful grant applicants will be required to submit additional information to Ecology to comply with this Executive Order.

Additional factors in ranking and award: This is a very new funding source. To ensure that projects meet the objectives of the program, these additional factors will be considered in creating the proposed funding list:

- **Balance of project types:** Balance funding ready-to-proceed construction projects with funding pre-construction activities. This balance in project types is vital to ensuring success over time.
- **Geography:** There is strong interest in ensuring that projects in all areas of the state receive funding.
- **Advancing multi-benefit floodplain management:** It is important that the project list advance the principles and practical application of multi-benefit floodplain management.

Certification

I certify to the best of my knowledge that the information provided above is true and correct and that I am legally authorized to sign and submit this information on behalf of the organization applying for this grant.

 

Signature Date

Terry Keenhan, Surface Water Division Manager

Printed name and Title

Yakima County Flood Control District

Name of Organization Applying for Grant