

Yakima River RM150 Riparian Reforestation Riparian Planting Plan

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08/28/2023**

AGREEMENT / RECIPIENT INFORMATION	
Grant Number: WQC-2023-MCFEG-00116	Grant Recipient: Mid-Columbia Fisheries Enhancement Group
Project Manager / Contact: Katrina Strathmann, Mid-Columbia Fisheries Enhancement Group	
PROJECT INFORMATION	
Property / Site Name: Riparian Reforest Restoration at Yakima RM 150 (Aronica)	Implementation Target Fall 2023
Closest Water Body and Type: Yakima River side channel	

PROJECT LOCATION
<p>Location: Latitude: 46°56'32.73"N Longitude: 120°32'9.32"W Kittitas County Tax Parcel #: 518933, DD 46.942425°, -120.535922°</p> <p>The project location for RM150 can be accessed from the Acheson Ranch off 3308 Riverbottom Road in Ellensburg, WA. To access the project site, enter the private ranch, and follow farm roads through pasture to the site on the river side channel.</p>

PROJECT / SITE DESCRIPTION
<p>The project location for Yakima River at RM 150, located in the WRIA 39 (Upper Yakima Watershed), on the right (west) bank of a primary side channel of the river. The site has been used for cattle grazing for several decades. No infrastructure is present other than cattle exclusion fencing that borders the eastern side of the project along the side channel. Very little existing vegetation is present on the bank margin of the Yakima side channel, with the exception of reed canary grass (<i>Phalaris arundinaceae</i>) and perennial weed species such as Canada thistle (<i>Cirsium arvense</i>), absinthe wormwood (<i>Artemisia absinthium</i>) and teasel (<i>Dipsacus fullonum</i>). The bank is highly eroded with vertical cut slopes throughout. South of the project area, open grazed woodland is composed predominantly of widely spaced black cottonwood (<i>Populus balsamifera</i>) and Wood's rose (<i>Rosa woodsii</i>) understory.</p> <p>Soils in the project area Kayak-Weirman complex 0-2% slopes, Kayak gravelly ashy loam, 0 to 2% slopes, Nosal ashy silt loam, 0 to 2% slopes, Opnish ashy loam, 0 to 2% slopes, Mitta ashy silt loam, flooded, 0 to 2% slopes, and Zillah-Kayak complex, 0 to 2% slopes. Loam can be found on the surface whereas more gravelly soil types that allow for better draining can be found in the lower</p>

soil strata. Portions of the project site contain cobble inclusions visible at the surface indicating areas of well-drained soil. The riparian river bank is dominated by reed canary grass and noxious weeds are scattered throughout the site, with highest densities adjacent to the river.

The 2.64 acre project is funded by 3 grant sources (see Figure 2):

- DOE funds are being used to reforest a 2.44 acre area with a 100-200 ft wide buffer along 900 ft of the side channel. Washington Conservation Commission (WSCC) funds are supporting additional plants and installation that support reforestation activities of the 2.44 acre area, with high density plantings in the 30 ft zone closest to the side channel, and standard density plants in the 70-170 ft outer bank zone.
- USFWS Partners for Wildlife funds will reforest an 8800 sq. ft. area with a 30 ft wide riparian buffer. The landowner prefers to retain a narrower buffer zone along a 300-ft wide area of side channel. The USFWS is supporting most reforestation activities area, supplemented by Washington Conservation Commission funds.

RESTORATION GOALS

This project goals are to:

- reduce sediment delivery to the Yakima,
- slow water temperature warming, and
- improve fish and wildlife habitat.

These goals will be accomplished by increasing riparian shading, slowing bank erosion and increasing floodplain roughness along 1200 feet of a side channel of the Yakima River in the lower Kittitas valley, through riparian reforestation.

Reforestation will result in increased canopy cover, increased stem density, and a more robust aquatic food web. Creating more canopy cover will increase shading on the western aspect of the side channel, contributing to maintaining cooler water temperatures, which provides more habitable for conditions for salmonids. Increasing stem density will slow flood waters, maintain bank soils through rooting density, and increase sediment capture during surface flows to help reduce turbidity. Finally, increasing riparian forest provides habitat for native fish and wildlife that use stream and riverbanks; the value of these habitats to fish and wildlife will increase under climate change conditions, in particular as migration corridors within our arid ecoregion.

GENERAL DESCRIPTION OF PLANTING

The DOE-funded portion of the project will protect 2.44 riparian acres from cattle grazing, complete site preparation weed control, install plantings within the protected area, and maintain all DOE and WSCC funded plants and cattle fencing until successfully established.

All plants will be mechanically deep-planted, placing root masses into moist soil, which provides riparian phreatophytes with a constant source of water during the high evapotranspiration season. Planting density is high to rapidly provide for slowed bank erosion along the side channel length.

PLANTING SPECIES AND TYPE

Native species for replanting include wetland obligate and facultative species, all woody riparian trees and shrubs. Plant species and number (funded by DOE) are:

Species	Common Name	Container Size	Height	1300 DOE Buffer No.
<i>Alnus incana</i>	Mountain alder	treepot	>5 ft	350
<i>Cornus sericea</i>	Dogwood	treepot	>5 ft	150
<i>Populus balsamifera ssp. trichocarpa</i>	Black cottonwood	treepot	>5 ft	150
<i>Populus tremuloides</i>	Aspen	treepot	>5 ft	50
<i>Salix amygdaloides</i>	Peachleaf willow	treepot	>5 ft	100
<i>Salix exigua</i>	Coyote willow	treepot	>5 ft	400
<i>Salix prolixa</i>	Mackinzie willow	treepot	>5 ft	100
TOTAL				1300

An additional 1450 plants will be installed using Washington Conservation Commission funds, to complete reforestation of the entire 2.44 acre project area.

Species: *Alnus incana* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 350

Species: *Cornus sericea* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 150

Species: *Populus balsamifera ssp. trichocarpa* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 150

Species: *Populus tremuloides* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 50

Species: *Salix amygdaloides* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 100

Species: *Salix exigua* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 400

Species: *Salix Prolixa* Cuttings Bare root Pots Pot Size: 10 and 40 cu in Amount: 100

NOXIOUS WEED MANAGEMENT

Dominant weed species in the project area are:

- Reed canarygrass (*Phalaris arundinaceae*)
- Canada Thistle (*Cirsium arvense*)
- Crack willow (*Salix fragilis*)
- Diffuse knapweed (*Centaurea diffusa*)
- Teasel (*Dipsacus fullonum*)
- Wormwood (*Artemisia absinthium*)

Site preparation: Reed canarygrass is dominant on the riverbank terrace and lower inset benches closer to water surface elevation. These will be brushcut or mowed as close as possible and treated with herbicides to suppress the large-stature reed canarygrass during establishment. Where pasture grass is present, only broadleaf weed treatments will be performed, so that the pasture grass is retained to serve as a “sod mat” around deep-plantings and reduce weed invasion and weed management needs following installation. Wood chip mulch will be applied at 20 gal/plant after plantings are complete to help minimize weed competition with plantings.

Maintenance: Spot-spraying herbicide to control weed populations in the project site will occur during the growing season, along with manually removing grasses/weeds around plantings. Mowing and brushcutting will be used where required and feasible to reduce competition for light with the new plantings. Planting effectiveness will be increased, and maintenance costs will be reduced with the use of a mulch application.

PLANTING SITE PREPARATION

Two types of site preparation will be completed: 1) weed management; and 2) cattle and elk exclusion fence.

Reed canary grass is the dominant vegetative species in the planting area, which will create above-ground competition with the plantings for light. The plants installed will be mechanically deep-planted at 4 ft depth, which will reduce overall root competition with the reed canary grass. Mulch will be applied around each plant to help suppress weed growth around plants, letting plants to receive light and limit stress.

The project will utilize mowing, brushcutting, and herbicide applications to suppress reed canarygrass during plant establishment. These methods will also be used to reduce weeds in planting areas in the growing season prior to plant installation.

Weed management

- Brushcut reed canarygrass throughout the project area.
- Apply herbicide to planting areas to suppress noxious weeds.
- Retain pasture grasses where present and treat with broadleaf/dicot-specific herbicide, so that they serve as a weed-suppression sod mat during planting. Pasture grasses will be mowed prior to installation.
- After planting, apply wood chip mulch to reduce weed competition at 20 gals/plant in rings that are 6” thick and 2 ft diameter around plantings.

Herbivory control

To reduce mortality and increase growth, the plantings will be fenced to prevent ungulate and livestock grazing. 1960 ft of fence will be installed prior to planting, and gates will allow access for planting, weeding, and other maintenance activities. Fence will be 6-strand smooth-wire built with H-braces and t-posts that form the perimeter of the planting area. The fence will not be placed in the lower bench planting areas, but only on the elevated terraces, to avoid damage during ordinary high flows.

PLANTING SITE MAINTENANCE

Describe how you will maintain plants during the life of the agreement. Discuss browse protection, mortality replacement, or any other methods you will use to increase survival. Also, will plants need / receive maintenance after the project period? Why or why not? How long?

Maintenance in the years immediately following planting is critical to establishment and increased survival of transplants.

Weed management

All transplants will be hand-weeded during the first two years following planting to reduce competition from weed species for light, water and nutrients. In addition, mowing will be conducted around and within planting areas to reduce seed set and growth in the planting areas. Noxious weeds will be treated with spot-spray herbicide application if necessary.

Herbivory control

Cattle and elk enclosure fencing will be monitored for damage and maintained as necessary.

IRRIGATION

Will your plantings be given supplemental irrigation? Yes X No

If not, why not? Plants will be mechanically deep-planted to depths reaching groundwater, approximately 4 ft.

<i>If yes, please answer the remaining questions¹.</i>
<i>How long do you intend to irrigate the plants (months per year and number of years)?</i>
<i>How will you irrigate the plantings?</i> <input type="checkbox"/> With On Site Ground Water <input type="checkbox"/> With On Site Surface Water <input type="checkbox"/> Transporting It In From Another Location. <i>From where?</i> <input type="checkbox"/> Other (please describe):
<i>Will you be irrigating a total of ½ acre or less?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No, more than ½ acre <input type="checkbox"/> Not Sure
<i>Is the project within the 'place of use' of a water right?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<i>Do you need a temporary water right permit⁴?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<i>If yes, have you already obtained one?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No, but have applied <input type="checkbox"/> No, and I haven't yet applied

PLANTING SITE MONITORING²
<i>What is your planting goal at the end of the project period?</i>
70% survival 50% canopy (right/west bank)
<i>How was your plant goal determined? Please describe.</i>
The planting survival goal was determined by evaluating typical tree and shrub survival in similar project areas and using similar techniques. The canopy cover goal was selected based on canopy development in similar projects over a 5-10 year period. Initial canopy cover is 0 on this west bank..
<i>How will you measure this goal? Please describe. Make sure the monitoring method is suitable to determine whether you achieved your planting goal.</i>

¹ If you cannot answer one or more of these questions, or think you may need a temporary water right for irrigation, please contact the Project Manager or Water Resources Customer Service Line (Ecology, CRO) at 509-575-2597.

² NRCS paper on creating planting goals and monitoring the results:
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044175.pdf

MCF will monitor a subset of the plantings for survival, establishing the monitoring immediately after planting and revisiting the site after the first season of growth, and periodically until the end of the project period.

What is your timeline for monitoring or project tracking? How frequently will you visit and for how long?

Monitoring is accomplished at these intervals:

- Prior to installation, pre-monitoring (year 0)
- The summer season following installation, typically 8 months following (year 1)
- Summer season (years 2, 3)
- Summer season (years 5, 10)

What other monitoring, short and long term, will you do to determine whether you have achieved your planting goals? Please describe.

Photomonitoring points are established prior to project site preparation, and repeat photos are taken on an annual or periodic basis for the duration of the project.

ENVIRONMENTAL MONITORING

Are you doing any water quality (ground or surface) or other environmental data collection?

Yes³ No *If yes, please describe:*

If yes, are you developing a QAPP for this data collection? Yes No N/A

If yes, what is the status? Approved by Ecology In development Not yet initiated

PROJECT SIZE

What is the size of the area to be planted, treated, enhanced, and/or protected? Please provide all of these metrics if you can: Acres: 2.44 Square Feet: Stream Feet:

1 or both sides of stream: One: Two: Other:

PLANTING SITE RIPARIAN BUFFER

³ May require the development of a QAPP. Discuss with Ecology Project Manager.

What will be the minimum width of the buffer?

35 ft. 50 ft. 75 ft. 100 ft. Other: 100 ft

How has the Ordinary High Water Mark (OHWM)⁴ been determined for this site?

The OHWM is observed from visual assessment as well as evaluation of a digital elevation model.

If any or all of the project site will not meet the minimum required buffer size⁵, please describe why:

A portion of the site, not funded by DOE and not described in this planting plan, is desired by the landowner to have a 30 ft buffer only. This portion of the site is funded and implemented under a USFWS Partners for Wildlife grant, with a small amount of supplemental funding from the WSCC. This smaller buffer area is not included in this Riparian Planting Plan, or in the DOE grant agreement WQC-2023-MCFEG-00116 but is noted here for clarity. Also for clarity, The DOE 319 grant funds the fence and all planting site prep for the DOE area, in addition to 1350 plants to be installed in the 30 ft buffer zone at high density. The WSCC funding supports provision and placement of an additional 1450 plants in the remaining 70-170 ft width of buffer outside the DOE 30 ft high-density planting.

LIVESTOCK

Are livestock present or near? Yes No *If yes, what type?* Cattle are present seasonally near the project site.

Will there be a livestock exclusion fence installed? Yes No

If yes, describe the fencing and who will install and maintain it:
The fence will be a 6-strand smooth wire cattle fence. MCF restoration crew members will construct the fence and perform seasonal maintenance during the agreement period. The landowner and ranching lessee will manage checking and repairing fence after the agreement period ends.

If no, why? Livestock cannot access plants Fence already in place

Other:

CULTURAL RESOURCES REVIEW

⁴ For information on determining OHWM, see: <https://fortress.wa.gov/ecy/publications/documents/0806001.pdf>.

⁵ Refer to the appropriate Funding Guidelines for buffer size requirements, ask Ecology Program Manager if unsure.

Have you initiated a 05-05 / 106 cultural resources review ⁶ ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no, please state when you expect it to be initiated</i>
<i>If yes, please describe where it is at in the process:</i> Cultural resources survey and report was completed by the USFWS archaeologist; consultation with DAHP and the tribes has been initiated by USFWS and they are in the 30-day waiting period.
Have you developed an Inadvertent Discovery Plan (IDP)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

CLIMATE CHANGE

The UW Climate Change Impact Group estimates that eastern Washington may experience decreases in snowpack, increases in precipitation as rain from fall through spring, and warmer year-round temperatures. Effects on vegetation are poorly understood; however, we hope to increase site resilience by planting a range of species that are adapted both to current climate conditions as well as potential future conditions of wetter winters and warmer summers. The plant species selected for the site have a broad ecological range, including elevations and precipitation zones lower and higher than that of the project area.

⁶ Go to: <http://www.ecy.wa.gov/programs/wq/funding/Res/EnvRev/EnvRevMain.html> for Ecology cultural resource documents.

Figure 1.

Project Vicinity Map

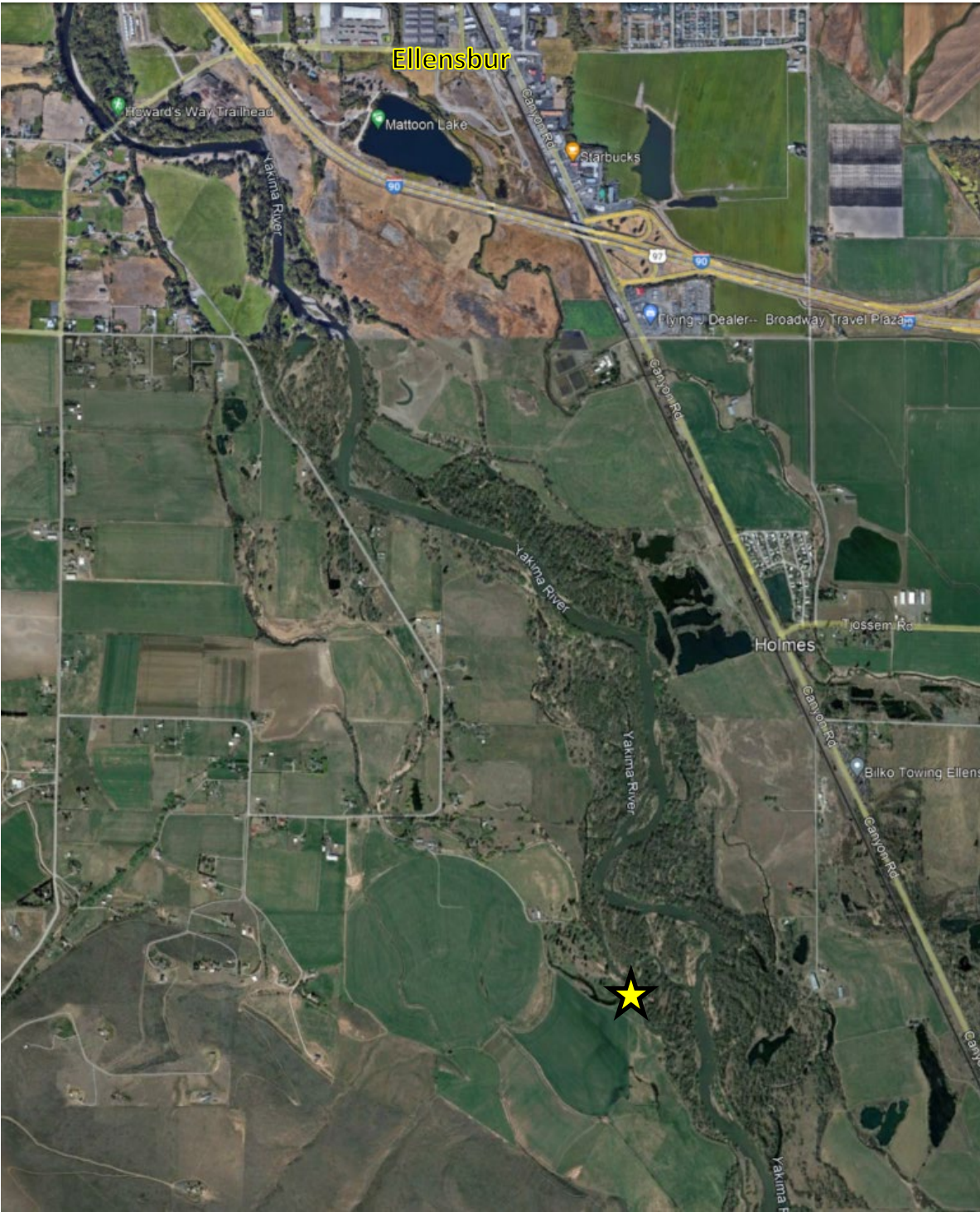


Figure 2.

Yakima River at RM 150 -- Site Plan

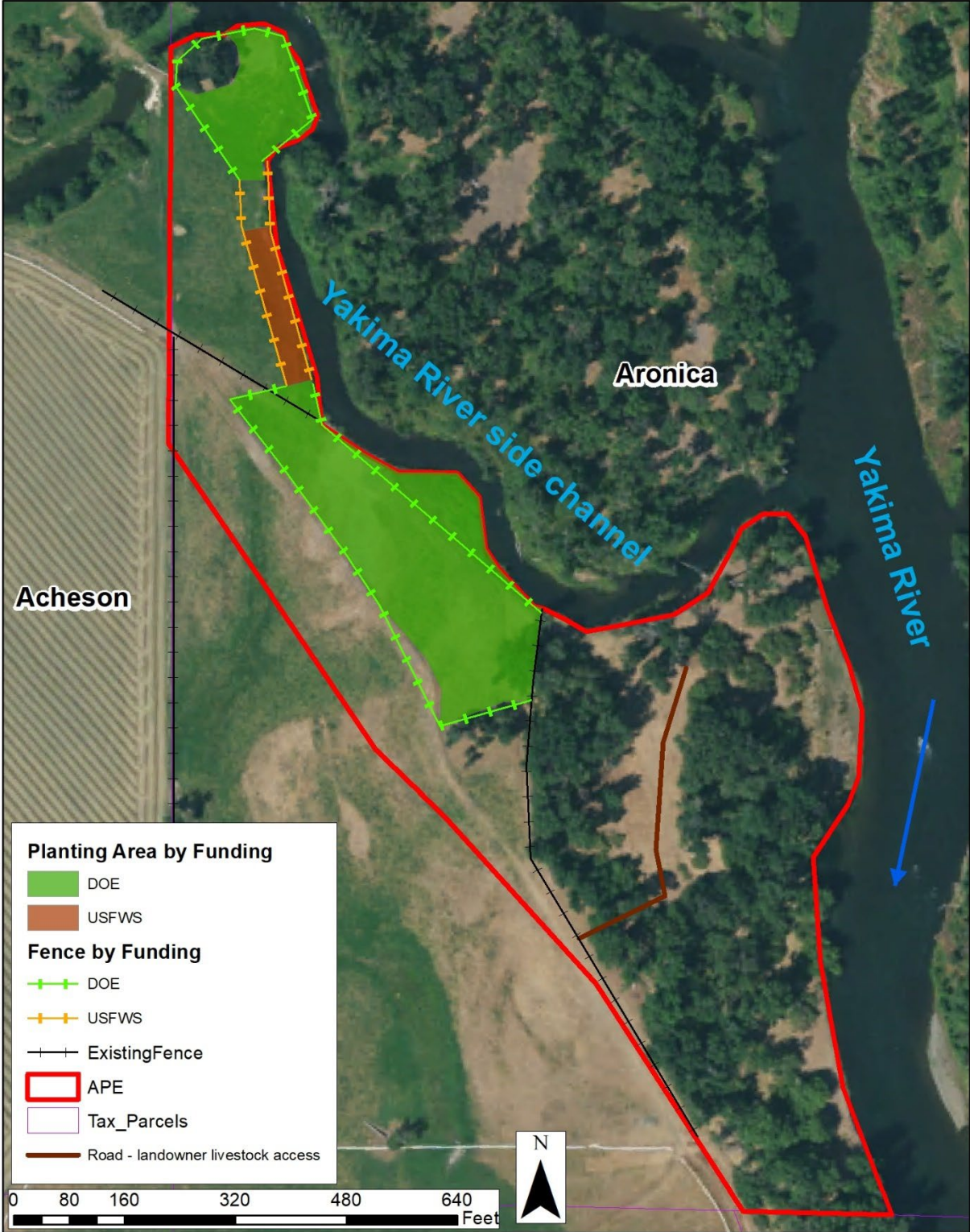


Figure 3.

Yakima River side channel, looking downstream. Project area is located on the bank on the right.



Figure 4.

The roadbed on the right side of the image is the location of the western fenceline of the project area..




RIPARIAN PLANTING PLAN APPROVAL PAGE	
GRANT NUMBER:	WQC-2023-MCFEG-00116
RECIPIENT NAME:	Mid-Columbia Fisheries Enhancement Group
PROJECT SITE NAME:	Aronica Yakima River RM 150
<p><i>Once approved by the recipient and the Ecology Project Manager, this document must be signed by both parties before any implementation can begin. Failure to do so could result in the rejection of any related reimbursement request.</i></p>	

Approval Signatures

Margaret Neuman 08/17/2023
 Margaret Neuman, Recipient Organization Manager Date

Katrina Strathmann 08/17/2023
 Katrina Strathmann, Recipient Project Manager Date

 8-15-23
 Ecology Project Manager Date

Signature Certificate



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Margaret Neuman

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