Application Name: Middle Fly Restoration Project

By: Grande Ronde Model WS Foundation

Offering Type: Upper Grande Ronde Initiative

Application Type: Restoration

OWEB Region: Eastern Oregon
County: Union
Coordinates: 45.156488,-118.429685

Applicant:
Jesse Steele
1114 J Avenue
La Grande OR 97850-2073
(541) 663-0570
jesse@grmw.org

Payee:
Mary Estes
1114 J Avenue
La Grande OR 97850
(541) 663-0570
mary@grmw.org

Project Manager:
Joe Platz
3502 HWY 30
LaGrande OR 97850
(541) 962-8571
jplatz@fs.fed.us

Budget Summary:
OWEB Amount Requested: $0
Total Project Amount: $0

Administrative Information

Abstract

Provide an abstract statement for the project. Include the following information: 1) Identify the project location; 2) Briefly state the project need; 3) Describe the proposed work; 4) Identify project partners.

This project involves implementing restoration in Middle Fly Creek to improve habitat for listed spring/summer chinook and summer steelhead. The project is located in the Lower Fly Creek Subwatershed (170601040108(T 5S, R 35.5E, S 3, 4, 8, 9)). Currently, the stream channel is simplified with low levels of large wood, course substrate, and lack of quality pool habitat. Floodplain inundation and function is limited. The project would construct debris jams and habitat structures at 56 sites within the middle 3.0 miles of Fly Creek (RM 4.0 – RM 7.0). Approximately, 2400 trees and tops will be flown in and placed by helicopter. There will be 100 trees directionally felled by hand and 85% of the racking material will be incorporated into the structure and stream through hand placement. Project partners are United States Forest Service, Grande Ronde Model Watershed and Bonneville Power Administration.

Location Information

What is the ownership of the project site(s)?

✓ *Public land (any lands owned by the Federal government, the State of Oregon, a city, county, district or municipal or public corporation in Oregon)*

What agency(ies) are involved?

US Forest Service.

❑ *Private (land owned by non-governmental entities)*

❑ *Not applicable to this project*

❑ *This grant will take place in more than one county.*

Permits

Other than the land-use form, do you need a permit, license or other regulatory approval of any of the proposed project activities?

● Yes
❍ No

For Details Go to Permit Page

I acknowledge that I am responsible for verifying applicable permits, licenses, and General Authorizations required for the project, and can update information at grant agreement execution.

✓*Yes*

Racial and Ethnic Impact Statement

Racial and Ethnic Impact Statement

❍ The proposed grant project policies or programs could have a disproportionate or unique POSITIVE impact on the following minority persons. (indicate all that apply)

❍ The proposed grant project policies or programs could have a disproportionate or unique NEGATIVE impact on the following minority persons. (indicate all that apply)

● The proposed grant project policies or programs WILL HAVE NO disproportionate or unique impact on minority persons.

Insurance Information

If applicable, select all the activities that are part of your project - These require a risk assessment tool unless otherwise noted (check all that apply).

❑*Working with hazardous materials (not including materials used in the normal operation of equipment such as hydraulic fluid)*

❑*Earth moving work around the footprint of a drinking water well*

❑*Removal or alteration of structures that hold back water on land or instream including dams, levees, dikes, tidegates and other water control devices (this does not include temporary diversion dams used solely to divert water for irrigation)*

❑*Applicant's staff or volunteers are working with kids related to this project (DAS Risk assessment tool not required, additional insurance is required)*

❑*Applicant's staff are applying herbicides or pesticides (DAS Risk assessment tool not required, additional insurance is required)*

✓*Insurance not applicable to this project*

Additional Information

❑ *This project affects Sage-Grouse.*

Problem Statement

Describe the watershed problem(s) that this restoration project seeks to address.

Overall problem: The Fly Creek reach is not in proper functioning ecological condition (hydrologic and geomorphic), due to historic management that included beaver trapping, roading, timber harvest (including splash dams), and livestock grazing.

Sub-problem 1 - Floodplain form and function: The Middle Fly Creek reach has limited water capture and retention capacities due to past anthropogenic influences.

These deficiencies have lowered groundwater tables. This has resulted in a decreased ability to store water and buffer water temperature, less connection to the floodplain to moderate in-channel velocity, and lower quality fish habitat. Lack of floodplain form and function has resulted in:

* Potential increase of in-stream water temperatures from decrease in groundwater recharge, which can be problematic for salmonids.
* Increase of in-channel velocity where the channel has downcut, and doesn't spread water out onto the floodplain during high flows. The process of downcutting causes vertical erosion, which increases fine sediment levels and decreases habitat complexity.
* Decrease in the amount of zero velocity habitat, which provide juvenile salmonids protection, temperature buffering, food sources and feeding areas, and resting areas.

Sub-problem 2 - Side channel habitat and activation: There are old channel scrolls within the floodplain that are rarely activated, due to many of the issues identified in Sub-problem 1.

* Channel incision and lack of woody debris have isolated side channel scrolls from the existing channel. These channels only flow during high flow events.

Sub-problem 3 - Fish habitat complexity: The Middle Fly Creek fish habitat complexity (cover, pool quality/quantity, and zero velocity habitat) is limited.

* Channel incision and lack of instream woody material has affected the quantity and quality of spawning, rearing, and overwintering habitat in the Middle Fly Creek Reach.

How have past or current land management practices contributed to the problem?

Historic management that included beaver trapping, roading, timber harvest (including splash dams), livestock grazing and an altered fire regime have degraded the Middle Fly Creek watershed's ecological form and function.

The loss of functional stream habitat adversely effects the survival and rearing of native salmonids, other fish, and wildlife species. Beaver trapping pressure in the 19th Century almost caused extirpation of this species in the western United States. The decrease in beaver populations on Fly Creek has contributed to channel incision, decreased habitat complexity, altered vegetative communities, and an altered flow/temperature regime. Beavers serve as ecological engineers by building dams that decrease the velocity of peak flows and spread flows out over longer periods of time. This increase of water retention time decreases erosive forces that cause stream incision. Higher levels of surface and subsurface water retention expands riparian and wetland habitat along the stream. As beavers move in and out of systems, side channels often form, and more woody vegetation ends up in the stream. This leads to increased habitat complexity for fish and wildlife.

High densities of roads near the Middle Fly Reach have likely caused a variety of compounding problems. Impermeable road surfaces increase the rate of overland flow. This affects the timing and volume of flow in downstream areas of the watershed. Roads that are built on the sides of stream systems (which is the case on sections of Fly Creek) often result in long-term soil compaction. The soil compaction can lead to a reduction in water holding capacity and infiltration into nearby meadow systems.

Historic overgrazing of sheep and cattle caused bank erosion, channel over widening, and soil compaction. This has caused vertical erosion and channel incision. Channel incision has altered the Fly Creek system by lowering streambeds and groundwater tables. Currently, the stream is only grazed by sheep with limited access to Fly Creek.

Historic logging practices caused a variety of problems in Fly Creek. Splash dams and the removal of wood from the system resulted in a confined channel, limited spawning gravels, low pool quality and quantity and less instream large woody debris (LWD).

Altered natural and human ignited fire (Native American and sheep herders) regimes due to 20th century fire suppression have likely affected the vegetative, hydrologic, and geomorphic processes of Fly Creek. Less frequent intense wildfires are more likely to have negative effects on the erosion of uplands than more frequent low-intensity fires. Historically, naturally caused and human ignited low intensity fires were likely more common. Conifer encroachment due to lack of regular fire intervals has caused dense under and mid-story fir/pine species on the edges of headwater meadows. This early stage forest ecosystem dynamic increases competition for large tree regeneration, and contributes to water loss through evapotranspiration.

The restoration of the Middle Fly Reach's form and function will address a combination of these interrelated problems through a physical approach to stream and floodplain restoration.

Project History

Continuation - Are you requesting funds to continue work on a project previously funded by OWEB where that work did not result in a completed project?

❍ Yes
● No

Resubmit - Have you submitted, but were not awarded an OWEB application for this project before?

❍ Yes
● No

Phased - Is proposed work in this application a phase of a comprehensive watershed restoration plan or project?

❍ Yes
● No

Plans and Salmon

Is the proposed restoration activity(ies) identified in a local assessment or other plan?

● Yes
❍ No

Provide name of local plan, Watershed assessment or other locally relevant document.

The project is located in the Upper Grande Ronde Restoration Atlas. The Upper Grande Ronde Atlas is a geo-spatial restoration prioritization plan developed in coordination with BPA by local fish biologists, researchers, engineers, hydrologists, practitioners, and stakeholders. The plan divides the subbasin into biologically significant reaches (BSR) and prioritizes those reaches for restoration based on fish species present, fish use, fish life stages, limiting factors, and floodplain availability. Restoration actions were identified during the planning process to address limiting factors for each BSR. Each reach is assigned a Tier with Tier 1 being the highest priority and Tier 3 being the lowest priority. The Middle Fly Creek Project is within a Tier 1 (Node) BSR.

Will this project benefit salmon or steelhead?

● Yes
❍ No

✓Snake River Basin - Steelhead
✓Snake River Spring/Summer-run - Chinook Salmon

How will the resulting restoration project benefit salmon or steelhead or their habitat?

* Side channels will be activated through constructing woody debris jams in strategic locations to raise water levels that would engage existing side channel scrolls.
* Floodplain engagement will increase through constructing woody debris jams in strategic locations to raise water levels.
* Habitat complexity and pool quality will improve through woody debris jam construction.

Does the project address a restoration action identified in a regional assessment or recovery plan?

❍ Yes
● No

Does this project address one or both of the following:

✓*Habitat needs for one or more Endangered Species Act-listed species and/or species of concern*
❑*Concerns identified on 303(d) listed streams*
❑*No*

Proposed Solution

Goal, Objectives, and Activities

State your project goal. A goal statement should articulate desired outcomes (the vision for desired future conditions) and the watershed benefit.

Overall Goal: To achieve proper ecological form and function of Middle Fly Creek and thereby restore habitat for the imperiled Snake River Basin Spring/Summer Chinook and Snake River Basin Steelhead.

Subgoal 1: Physical - Restore Hydrologic Function
Increase hydration of a laterally confined channel to improve groundwater retention through channel spanning log jam construction.

Subgoal 2: Physical - Activate Side Channel Scrolls
Encourage and create perennial side channels through channel spanning log jam construction.

Subgoal 3: Biological - Improve Fish Habitat
Restore habitat complexity. Existing LWD structures will be modified and additional whole trees will be placed. These structures will encourage scour pool habitat, and fish cover.

List specific and measurable objectives. Objectives support and refine the goal by breaking it down into steps for achieving the goal. (NOTE: If you quantify your objectives, ensure all numbers match the metrics listed in your selected habitat types.) Provide up to 7 objectives.

Objective #1

Objective
Objective #1

Hypothesis 1: If channel spanning wood structures using trees and racking material are constructed in strategic locations then: 2 years post implementation: (1) 10% more of the floodplain will be inundated in the summer season (June-July). (2) 50 new backwater pools will develop. Water storage will be quantified in terms of floodplain acres using drone technology.

Strategy and Objectives 1: Mimic beaver dam function at pool tails and where accessible side channel habitats exist by constructing channel spanning wood structures to:
- Deflect water into the floodplain for groundwater storage.
- Activate side channel scrolls.
- Promote gravel deposition & spawning gravel recruitment.
- Recruit deciduous vegetation.
- Improve habitat for future use by beaver populations.
- Create backwater pools.

Hypothesis 2: If large wood and racking material is placed to promote scour and longitudinal pools then residual pool depth will increase by 10% and instream wood will increase by 2500 pieces.
- Pool depth and wood will be measured by USFS Level II habitat surveys.

Strategy and Objectives 2: Place logs, rootwads, racking material and whole trees to encourage: pool scour, fish cover and habitat complexity.

Describe the project activities. Activities explain how the objective will be implemented.

The project would construct debris jams and habitat structures at 56 sites within the middle 3.0 miles of Fly Creek (RM 4.0 – RM 7.0). This would include approximately 1613 pieces of large wood (1613 trees). An additional 387 whole trees, 100 felled trees and 400 tops would be placed within the stream for habitat complexity. Approximately, 2400 trees and tops will be flown in and placed by helicopter. There will be 100 trees directionally felled by hand and 85% of the racking material will be incorporated into the structure and stream through hand placement.

• There will be 38 small debris jams that will involve 25 pieces of large wood, which includes 5 large trees with rootwads (> 20" dbh) & 50' long), 8 medium trees with rootwads (14" – 20" dbh & 50' long), 8 small trees/logs (10" – 14" dbh & 30' – 50' long), and 4 whole trees. These structures are designed for floodplain inundation, side channel activation and habitat complexity.

• There will be 12 large debris jams that will involve 50 pieces of large wood, which includes 10 large trees with rootwads (> 20" dbh & 50' long), 16 medium trees with rootwads (14" – 20" dbh & 50' long), 16 small trees/logs (10" – 14" dbh & 30' – 50' long), and 8 whole trees. These structures are designed for floodplain inundation, channel activation and habitat complexity.

• There will be 6 whole tree structures, involving 63 whole trees. These structures are intended to provide habitat complexity and fish cover.

• There will be 387 additional whole trees and 400 tops placed upstream and downstream of the debris jams to promote habitat complexity and fish cover.

• There will be 100 trees directionally felled into the stream to promote habitat complexity and fish cover.

• A total of 2500 large wood pieces will be placed into the Middle Fly Restoration Project in 2021.

There are a total of 2100 large trees needed for the project. Of these, 310 trees will be between 21" and 29" dbh, and 1790 trees between 10" and 20" dbh. All of the medium and large sized trees will be a minimum of 50' long (whole trees could be longer). The small sized trees are a minimum of 30' long. These trees will be obtained from within 20' of the road prisms of the 5115, 5115205, 300, 169, 180, 460 & 450 roads. The trees would be staged on these road prisms for helicopter transport and placement into Fly Creek.

There will be 100 trees directionally felled into Middle Fly Creek from the riparian area adjacent to the stream. In addition, racking material (small trees and limbs) will be thinned in the riparian area and incorporated into the structures and stream by hand placement. All of the disturbed areas will be seeded.

The project will occur from September 1, 2021 – November 30 of 2022. All of the helicopter instream wood placement will occur in October 2021. The directionally felled trees and hand placement of racking material will occur from October 2021 – November 30, 2022. Tree removal and haul from roads will occur in September of 2021. Rehabilitation and seeding will occur from September 1, 2021 – November 30, 2021.

List the major project activities and time schedule for each, including post project implementation.

Element	Description	Start Date	End Date
Tree Removal and haul	2400 trees and tops removed, hauled and staged for helicopter placement	9/2021	10/2021
Helicopter placement	Helicopter placement of trees and logs into Middle Fly Creek.	10/2021	11/2021
Rehabilitation and seeding	Rehabilitation and seeding of disturbed areas during the tree removal, haul and stage.	9/2021	11/2021
Hand placement	Hand placement of racking material	10/2021	11/2022

Element	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022
Tree Removal and haul						
Helicopter placement						
Rehabilitation and seeding						
Hand placement						

Habitat Types

In which habitat type(s) are you proposing to work?

✓*Instream Habitat: below the ordinary high water mark (includes in-channel habitat restoration, bank stabilization, flow, fish screening, and fish passage) -- Details will follow.*

✓*Riparian Habitat: above the ordinary high-water mark of the stream and within the stream's floodplain. -- Details will follow.*

❑*Upland Habitat: above the floodplain and improves native habitat and watershed function.*

❑*Wetland Habitat: land or areas covered, often intermittently, with shallow water or have soil saturated with moisture.*

❑*Estuarine Habitat: tidally influenced areas.*

Instream Habitat

Select all applicable Instream categories.

❑**Bank stabilization**

❑**Fish passage improvement**

❑**Fish screening project**

❑**Instream Flow**

✓**Instream habitat restoration**

Select all the actions you propose to implement to address the problem.

✓*Placement of materials in channel*

Does the proposed project follow:

✓*ODFW Guidelines*

✓*NOAA Guidelines*

❑*Other*

What types of instream habitat materials are you proposing to install? (select all that apply)

✓*Large wood*

Number of structures.

56

Average number of logs per structure.

29

Average length of logs per structure (feet)

50

Average diameter of logs per structure (feet)

1.3

❑*Boulders*

❑*Combination log/boulder*

❑*Other materials: Materials that stabilize the streambed*

❑*Channel reconfiguration and connectivity, including alcoves and side channel reconnection*

❑*Spawning gravel placement*

❑*Beaver reintroduction*

❑*Non-native plant control*

❑*Nutrient enrichment*

❑*Animal species removal*

Is the primary purpose of the instream habitat restoration treatment(s) to address water quality limiting factors?

● Yes

❍ No

✓High Temperature

Total miles of stream to be treated with all instream habitat restoration treatments

3.0

❑**Stockpiling logs**

Riparian Habitat

Select all applicable Riparian categories.

❑**Riparian road activities**

❑**Fencing and other materials for habitat protection**

❑**Vegetation establishment or management**
❑**Livestock management**
❑**Debris and Structure Removal**

Is an objective of the riparian treatment(s) to address water quality limiting factors?
❍ Yes
● No

Total linear stream miles to be treated.
0.0

Total riparian acres to be treated.
0.0

Left streambank miles to be treated.
0.0

Right streambank miles to be treated.
0.0

Wrap-Up

Watershed Benefit

Describe the watershed or ecosystem function(s) that the project will address through the proposed restoration actions and the resulting benefits to water quality, native fish and wildlife habitat, and/or watershed health. Explain why the project is a priority for investment at this time.

This project will increase floodplain inundation, habitat complexity, pool quantity/quality and side channel activation. The spring/summer chinook and summer steelhead need these habitat components and water quality improvements to improve spawning, rearing and migratory habitat. This project is a priority, due to the emphasis on Tier 1 projects within the Upper Grande Ronde River Watershed.

Public Awareness

Does this proposed project include public awareness activities?

❍ Yes
● No

Design

Were design alternatives considered?

● Yes
❍ No

Describe the design alternatives that were considered and why the preferred alternative was selected.

Ground-based machinery for structure construction was considered. However, there are large sections of the streambottom road that have been recontoured, which makes this alternative not feasible.

Select the appropriate level of design for your project.

❍ No design is required.
❍ 10-30%: Conceptual design (evaluation of alternatives, concept-level plans, design criteria for project elements, rough cost estimates).
● 30-85%: Preliminary design (selection of the preferred alternative, draft plans, draft design report, preliminary cost estimates).
❍ 85-100%: Final design (final design report, plans, and specifications, contracting and bidding documents, monitoring plan, final cost estimate).

If work remains on the project's design, describe the work that remains to be done and when you expect to have it completed. If no design is required put "N/A"

The design is at 85% and only needs GRMW Technical team review. The design was completed by CTUIR and USFS personnel.

Describe the steps you will take to minimize adverse impacts to the site and adjacent lands during and after project implementation.

The project is using helicopter placement to minimize adverse impacts.

Project Management

List the key individuals, their roles, and qualifications relevant to project and post project implementation. At a minimum include the following: project management, project design, project implementation, and project inspection.

Role	Name	Affiliation	Qualifications	Email	Phone
Project design, implementation and inspection	Joe Platz	USFS	Joe Platz is a biological technician for the US Forest Service. Joe Platz has a Bachelor of Science degree from OSU in Fisheries Science. He has been involved in designing and implementing restoration projects since 1989.	joe.platz@usda.gov	(541) 962-8571
Design	Allen Chjlds	Grande Ronde Fish Habitat Program Leader	Allen has a wealth of habitat restoration experience going back at least 25 years. He has implemented many successful projects on USFS and private lands and has worked with a multiple of agencies when doing so.	allenchilds@ctuir.org	(541) 429-7940

Optional Monitoring

OPTIONAL: Restoration Project Monitoring

❑*Salmonid Monitoring*
❑*Non-salmonid biological monitoring*
❑*Water (quantity) flow monitoring*
❑*Water quality monitoring*
❑*Rangeland monitoring*
✓*Onsite*
❑*Downstream*
❑*Upstream*
❑*Upslope*

Will effectiveness monitoring be conducted for this project?

● Yes
❍ No

Please describe the monitoring activities and any additional sources of funding (amount and source) to support this effort.

(1) Drone: Drone imaging will be collected, yearly, for five years by GRMW.
(2) Stream Survey: Region 6 Level II Stream Habitat Inventory would be conducted prior to (completed) and @ year 1 and year 5 after completion. This monitoring will be completed by the USFS.
(3) Structure construction: Monitoring of structures would involve photo points of before and after operations occur. Follow up photo points would occur at year 1 - 3 after project completion. This monitoring will be completed by the USFS.

Budget

Item	Unit Type	Unit Number	Unit Cost	OWEB Funds	External Cash	External In-Kind	Total Costs
Salaries, Wages and Benefits							
			$0	$0	$0	$0	$0
Category Sub-total				$0	$0	$0	$0
Contracted Services							
			$0	$0	$0	$0	$0
Category Sub-total				$0	$0	$0	$0
Travel and Training							
			$0	$0	$0	$0	$0
Category Sub-total				$0	$0	$0	$0
Materials and Supplies							
			$0	$0	$0	$0	$0
Category Sub-total				$0	$0	$0	$0
Equipment							
			$0	$0	$0	$0	$0
Category Sub-total				$0	$0	$0	$0
Other							
			$0	$0	$0	$0	$0
Category Sub-total				$0	$0	$0	$0
Modified Total Direct Cost Amounts				$0	$0	$0	$0
Indirect Costs							
	0%			$0	$0		$0
Total				$0	$0	$0	$0

* = OWEB funds excluded from indirect.

Provide context and justification for how your budget was developed. Explain how project costs and/or rates were determined.

The budget was formulated using 11 years of past contracts that involved similar work. Columbia helicopters was contacted for a rough estimate for the helicopter placement.

Does the budget identify a contingency amount for specific line item(s) within the Contracted Services and/or Material and Supplies budget category?

❍Yes
●No

Funding and Match

Fund Sources and Amounts

Organization Type	Name	Source Note	Contribution Type	Amount	Description	Status
Tribe	Confederated Tribes Umatilla Indian Reservation	Design	Cash	$8,080	Design	Secured
Federal	Bonneville Power Administration	Project Implementation	Cash	$48,312	NEPA, Design, Implementation	Secured
Federal	Bonneville Power Administration	Project Implementation	Cash	$1,051,000	Project Implementation	Pending
Federal	US Forest Service	NEPA, design, implementation	In-Kind - Materials	$317,500	Trees and seed	Pending
Federal	US Forest Service	NEPA, design, implementation	Cash	$1	NEPA, design, implementation	Secured
Fund Source Cash Total		**$1,107,393**	**Fund Source In-Kind Total**		**$317,500**	

Match

Contribution Source-Type: Description	Amount
Confederated Tribes Umatilla Indian Reservation-Cash: Design	$0
Bonneville Power Administration-Cash: NEPA, Design, Implementation	$0
Bonneville Power Administration-Cash: Project Implementation	$0
US Forest Service-In-Kind - Materials: Trees and seed	$0
US Forest Service-Cash: NEPA, design, implementation	$0
Match Total	**$0**

Do match funding sources have any restrictions on how funds are used, timelines or other limitations that would impact the portion of the project proposed for OWEB funding?

❍ Yes
● No

Do you need state OWEB dollars (not Federal) to match the requirements of any other federal funding you will be using to complete this project?

❍ Yes
● No

Does the non-OWEB cash funding include Pacific Coast Salmon Recovery Funds?

❍ Yes
● No

Uploads

Map: MiddleFlyRestoration_Project.pdf -

Project Design: Middle Fly Construction Drawings Final 09092020.pdf -

Figures and Tables: Headwaters UGR Partnership - Middle Fly Creek Application Budget Template.pdf - **Budget**

Permit Page

Project Activity Requiring a Permit or License	Name of Permit or License	Entity Issuing Permit or License	Status
Entire Project	NEPA	USFS	
All Activities	ARBOII - ESA consultation	NOAA and USFWS	
Instream work	General Programmatic Permit	Army Corps and DSL	

MIDDLE FLY CREEK RESTORATION 2021

Date: 12/3/2019

1:15,840

Miles

0 0.25 0.5 0.75 1

Contour Interval 40 FT

Restoration Project Type

- Small Spanning Structure
- Large Spanning Structure
- Whole Tree Placement
- Tree Locations

- Open Roads
- Closed Roads
- Non FS Roads
- Decomm Roads
- Streams
- La Grande Ranger District

T 4 S
R 35 E

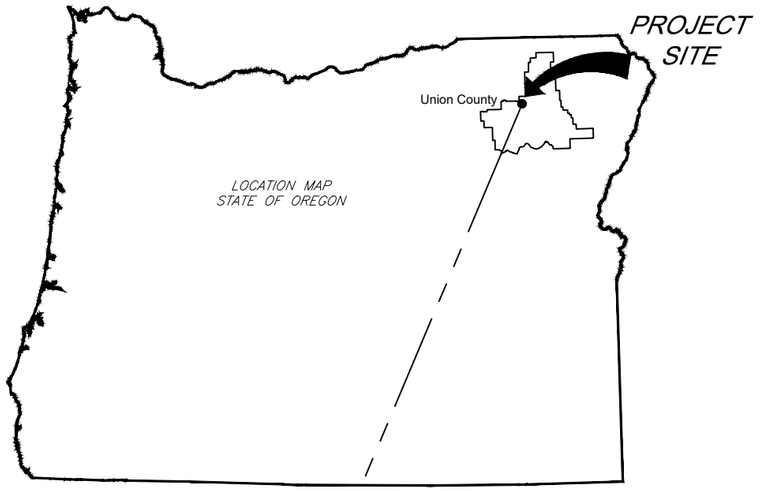
T 5 S
R 35 E

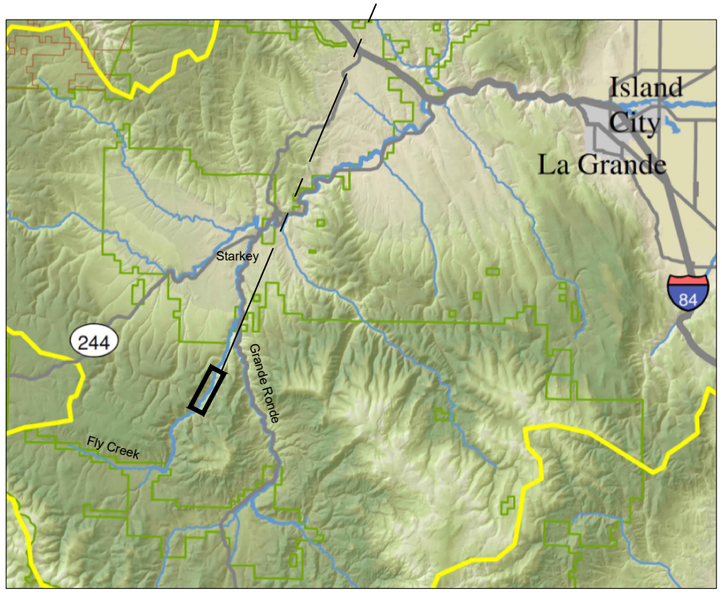
Marley Creek
Swan Creek
Pickle Creek
Fly Creek
Grande Ronde River

MIDDLE FLY CREEK RESTORATION
FISH HABITAT PROJECT

Upper Grande Ronde River Basin

Construction Drawings





PROJECT LOCATION MAP

Township 5 South, Range 35 $\frac{1}{2}$ East
SECTIONS: 3, 4, 8, & 9
450928 N, 1182545 W
UNION COUNTY, OREGON

USGS Quadrangle: Marley Creek, Oregon
45118-B4-TF-024

Project Elevation - 4,000 Feet Above Mean Sea Level

Lower Fly Creek Subwatershed 170601040108
6th Field HUC, Upper Grande Ronde River #17060104

PROJECT DESCRIPTION

The US Forest Service, Wallowa-Whitman National Forest, LaGrande Ranger District, seek to enhance and restore fish habitat and floodplain process and function to benefit fishery resources along an 5 mile reach along Fly Creek in the Upper Grande Ronde River Basin. The project is scheduled for construction during summer 2021. Targeted fish populations include ESA listed Snake River spring-summer Chinook salmon and summer steelhead. Additional species of interest include bull trout, Pacific lamprey, freshwater mussels, and resident native fish. The project area provides critical spawning and rearing habitat for targeted fish populations. Planned habitat enhancement includes installation of large wood material to increase habitat complexity, promote pool development, and activate floodplain and side channel habitats.

Goal/Objectives

1: Activate Side Channel Scrolls

Encourage and create perennial side channels through channel spanning log jam construction.

2: Restore Hydrologic Function

Increase hydration of a laterally confined channel to improve groundwater retention through channel spanning log jam construction.

3: Improve Fish Habitat

Restore habitat complexity. Existing LWD structures will be modified and additional whole trees will be placed. These structures will encourage scour pool habitat, and fish cover.

Large wood structures will be constructed using ground based equipment. Project wood material will be staged by helicopter an placed by track-mounted excavator. Additional wood material will be felled locally and placed instream for cover and complexity. Targeted life history requisites for adult spawning and juvenile summer and winter rearing include: habitat complexity and diversity, large pools, decreased channel width:depth ratio, sediment sorting, routing, storage and decreased streambed embeddedment and sub-pavement, increased cold water refuge and hyporheic exchange. The Project was designed in accordance with ARBO II, Aquatic Restoration Activities Biological Opinion conservation measures and project design criteria.

INDEX OF DRAWING SHEETS

Date July 2020
Designed J. Platz
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

COVER

MIDDLE FLY CREEK RESTORATION 2021

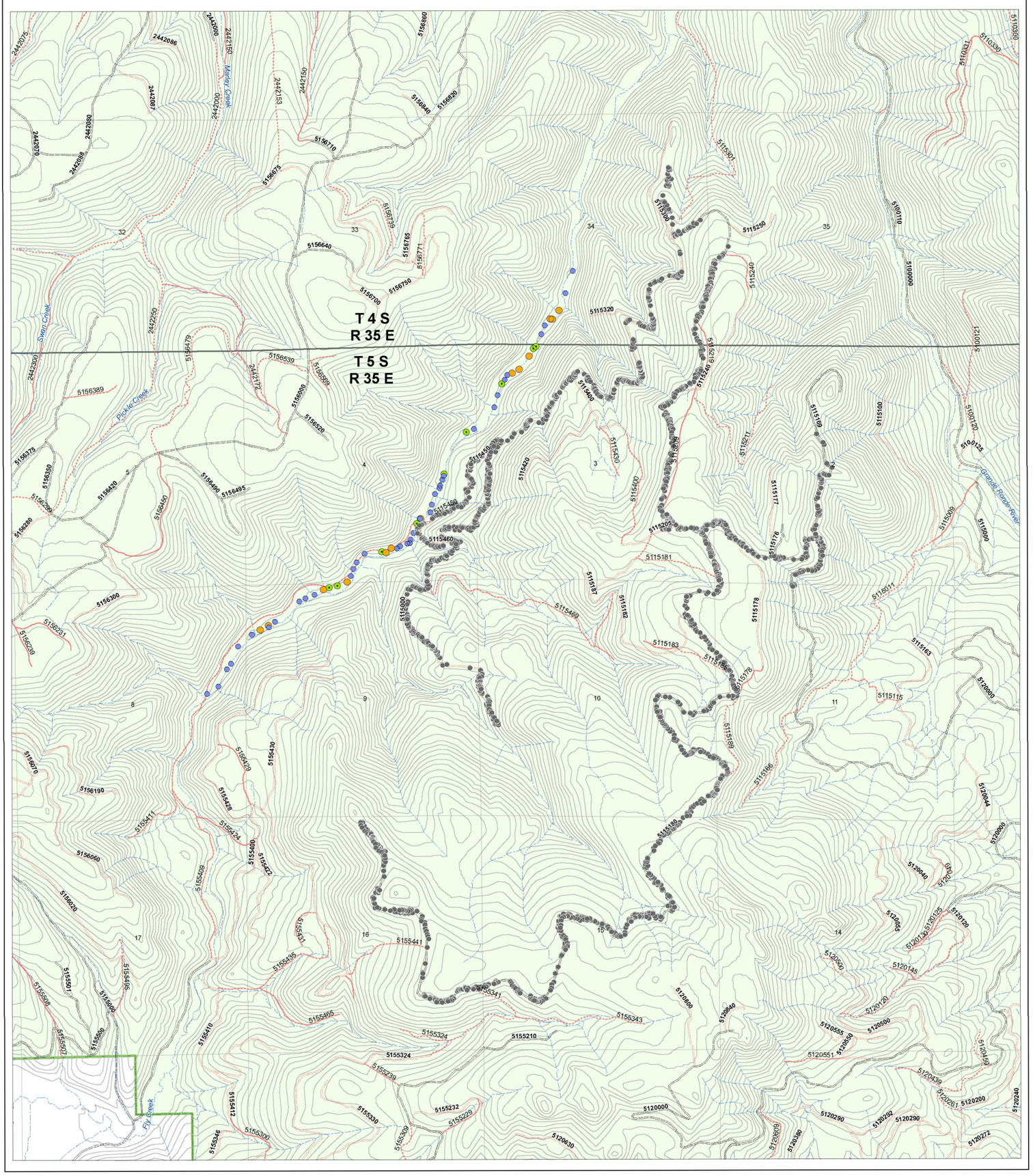
Date: 12/3/2019

Restoration Project Type

- Small Spanning Structure
- Large Spanning Structure
- Whole Tree Placement
- Tree Locations

- Open Roads
- Closed Roads
- Non FS Roads
- Decomm Roads
- Streams
- La Grande Ranger District

1:15,840
Miles
0 0.25 0.5 0.75 1
Contour Interval 40 FT

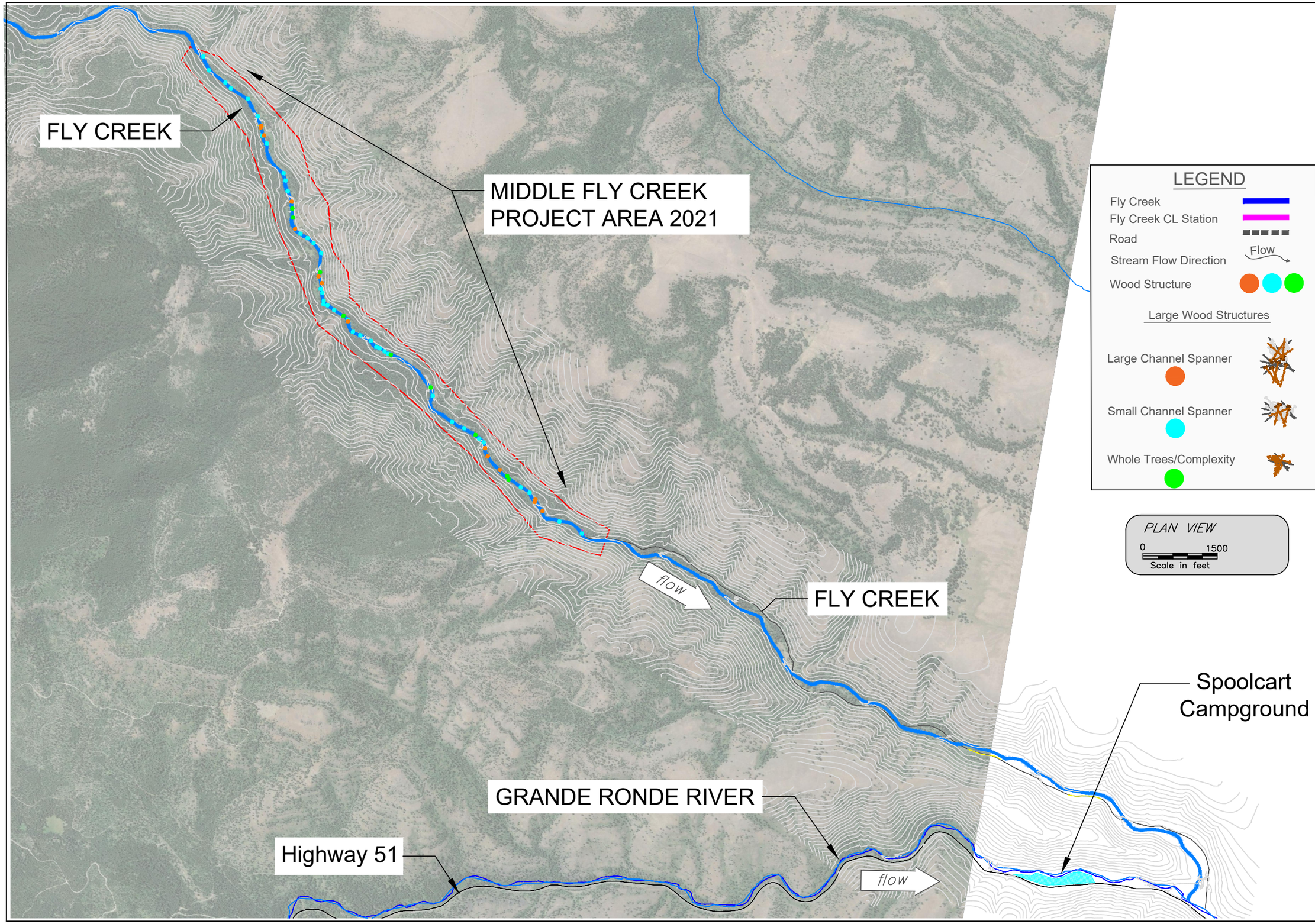


Sheet 2 of 12

PROJECT OVERVIEW

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

		Date
Designed	J. Platz	July 2020
Drawn	A. Childs	July 2020
Checked		
Approved		
Title		



LEGEND

- Fly Creek
- Fly Creek CL Station
- Road
- Stream Flow Direction (Flow)
- Wood Structure

Large Wood Structures

- Large Channel Spanner
- Small Channel Spanner
- Whole Trees/Complexity

PLAN VIEW

0 1500

Scale in feet

Date	
Designed J. Platz	July 2020
Drawn A. Childs	July 2020
Checked	
Approved	
Title	

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project

Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

PROJECT LOCATION

GENERAL CONTRACTOR REQUIREMENTS

Work shown on these plans will be performed for the United States Forest Service Wallowa-Whitman National Forset, LaGrande Ranger District (USFS WWNF) herein referred to as "Contracting Agency." Contact information for Contracting Agency's representative is included on these construction drawings. Contracting Agency's representative (or other persons assigned by Contracting Agency to act as Contracting Agency's representative) are herein referred to as the "Contracting Officer."

The Contractor shall conduct stream enhancement construction in accordance with the plans "Approved for Construction." These plans will be provided to the Contractor by the Contracting Agency prior to construction. Work shall not be done without the current set of approved construction plans.

The project designs depicted herein are approximate and are intended to express the overall design intent of the project. These designs may need to be adjusted in the field during construction in order to meet the specific site conditions and intended function. Adjustments are to be authorized by the Contracting Officer.

The Contractor shall pursue work in a continuous and diligent manner to ensure timely completion of the project per construction subcontract.

The Contractor shall be responsible for the general safety during construction, and all work shall conform to pertinent safety regulations and codes. The Contractor shall be solely and completely responsible for compliance with all applicable provisions of OSHA and OAR Chapter 437, in the construction practices for all employees directly engaged in the construction of this project.

All material and workmanship furnished on or for this project must meet the minimum requirements of project permits, approving agencies, specifications as set forth herein, or whichever is more restrictive.

Contractor shall be responsible for obtaining, at Contractor's expense, all construction permits as required by local, state and federal agencies. Contractor shall provide all material, labor, and equipment required to comply with all applicable permit conditions and requirements.

Prior to commencement of work, Contractor shall provide the Contracting Agency with a detailed construction schedule and work plan for approval. The Contractor shall not begin any construction work until the construction schedule and work plan is approved by the Contracting Officer.

Project design drawings and specifications represent the construction documents. Any deviations from these drawings and associated specifications without written approval from the Contracting Officer may result in this project not meeting specifications and may affect the terms and conditions of the construction contract.

All existing conditions are to be verified in the field prior to construction and any adjustments to the drawings shall be made as directed by the Contracting Officer.

Excavation, grading, and trenching shall be the responsibility of the contractor performing the work. The design drawings are not intended to provide means or methods of construction.

All excess materials and excavation to be placed at location identified by the Contracting Officer with coordination with the contractor.

Existing Data & Coordinate System

Elevations and distances shown are in feet and decimals.

Horizontal datum is US State Plane Coordinate System, Oregon North Zone, NAD 83, International Feet. The vertical datum is NAVD 88, feet.

Topographic mapping along the Grande Ronde River is based on LIDAR Survey Data. The geometry of the stream at the time of construction could be different than shown on these plans due to channel evolution.

Aquatic Restoration Activities Biological Opinion II in States of Oregon and Washington (ARBO II)

TERMS AND CONDITIONS AND BEST MANAGEMENT PRACTICES
The Contractor will comply with the General Aquatic Conservation Measures and Project Design Criteria in the NOAA Fisheries ARBO II that requires the utmost care is taken when construction activity is taking place in or near the waterway.

All work within the actively flowing Fly Creek channels shall occur only within designated in-water work window (July 1 – July 31)

Anytime work occurs within the actively flowing channel, the Contractor shall monitor in-stream turbidity once per hour at a location 100 feet downstream of the construction activity using turbidity monitoring equipment provided by the Contracting Officer.

In-stream turbidity shall be limited to levels listed in permits and specifications, and the Contractor shall modify work procedures if necessary comply with specifications. The Contracting Officer will assist the Contractor during initial measurements to ensure testing equipment is used correctly. The Contractor will be responsible for all measurements and maintain a log that documents date, time, and turbidity level of all measurements taken.

The Contractor shall install and maintain appropriate sediment control devices throughout the project site, including the construction staging area and stockpile area if there is potential for impacting waters of the State. Temporary construction and permanent erosion control measures shall be designed, constructed and maintained in accordance with all applicable local, state and federal regulations.

Discharges entering active streams on site shall satisfy all state and federal standards and project permit requirements for contaminants and turbidity.

Work Area Isolation, Fish Rescue and Avoidance

In-water work will be completed during in-water work window identified above.

Work area isolation and fish rescue, if necessary, will include a combination of techniques based on individual treatment sites and presence of fish. Activities may include block netting, seining work areas to relocate fish from immediate work areas, and limited electrofishing.

Project site may include presence of freshwater mussels which will be surveyed prior to project construction. Documented mussel beds will be avoided where feasible and salvaged/transplanted as necessary to construct project.

Contractor and CO will coordinate during construction to schedule fish rescue and isolation of individual work sites.

Site and Resource Protection

Construction will be proceed with emphasis on minimizing damage to riparian and wetland vegetation. Contractor and CO will coordinate closely on equipment access and staging areas to minimize impacts on existing vegetation. Access, staging, and construction sites will be reviewed onsite by Contractor and CO to define access and flag vegetation that needs to be cleared .

Trees, shrubs and sod expected to be damaged by access and/or construction will be carefully cleared and stored for re-use/replanting.

Cultural Resources Inadvertent Discovery

If construction work comes into contact with any of the following cultural resources:
-Native American cultural artifacts (flakes, arrowheads,stone tools, bone tools, pottery, etc.)
-Historic era artifacts (building foundations, homesteads, mining camps, etc)
-Human skeletal remains and bone fragments:

Ground disturbing construction in the area must immediately discontinue. Do not touch or move the objects and maintain the confideniallity of the site. Follow procedures listed in the BPA Inadvertent Discovery Procedure and await further direction from BPA's Cultural Resource Staff.

Utilities

The USFS WWNF makes no representation as to the existence or non-existence of utilities. It is the responsibility of Contractor to comply with the provisions of ORS 757.541 to 757.571. Contractor will be liable for any damage resulting from disruption of service caused by construction activities. The telephone number for utility locates is 1-800-424-5555.

Project Material Notes and Specifications

Prior to commencement of work, Contractor shall provide the Contracting Agency with a detailed schedule and work plan for materials acquisition and delivery to designated material stockpile locations. Materials acquisition plan will be approved by Contracting Officer.

Contractor shall confirm the access point, route(s), and locations of temporary staging and storage areas with the Contracting Officer prior to transporting materials and equipment to the project site.

Project design drawings and specifications represent the construction documents. Any deviations from these drawings and associated specifications without written approval from the Contracting Officer may result in this project not meeting specifications and may affect the terms and conditions of the construction contract.

All existing conditions are to be verified in the field prior to construction and any adjustments to the drawings shall be made as directed by the Contracting Officer.

All excess materials and excavation to be placed at location identified by the Contracting Officer with coordination with the contractor.

Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

NOTES

EXISTING DATA AND COORDINATE SYSTEM

1. Elevations and distances shown are in feet and decimals.

2. Horizontal datum is US State Plane Coordinate System, Oregon North Zone, NAD 83, International Feet. The vertical datum is NAVD 88, feet.

3. Topographic mapping along Fly Creek is based on 2012 LIDAR data. The geometry of the stream at the time of construction could be different than shown on these plans due to channel evolution.

HELICOPTER FLIGHT SAFETY PLAN

1. Project staging, landing and servicing locations are located along the project reach on USFS WWNF lands. It is the responsibility of helicopter contractor to provide security at the helicopter land and staging area.

2. Communications between aircraft and ground crew will be via hand held FM radios provided by helicopter contractor.

3. Project aircraft shall monitor VHF-AM 122.9 throughout the project. This is a standard FAA aviation frequency used in general airspace for pilots to coordinate with one another. Helicopter technical contact will coordinate and communicate with Blue Mountain Interagency Dispatch Center (BMIDC) regarding daily routine (likely radio communications due to poor cellular phone operation) prior to flight operations.

4. Wallow-Whitman radio frequencies for the Emily and Tower radio tower repeaters are listed below:

Group 2: Wallowa-Whitman LaGrande/Whitman Repeaters:

Channel Name	Display	RX Freq	TX Freq	RX Tone	Tx Tone
1 WWF Emily	WWF EMLY	170.5250	164.8000	131.8	167.9
2 WWF Tower	WWF TOWR	170.5250	164.8000	131.8	103.5

5, U.S. Forest Service Coordination coordination contact are:

BMIDC Aircraft Desk
541-975-5401

Mike Hancock
Unit Aviation
U.S Forest Service Wallowa-Whitman & Umatilla National Forests

BMIDC Main Number
541-962-7171

Work: 541-974-5418
Mobile: 541-786-1357
Email: miles.hancock@usda.gov

6. Helicopter contractor will conduct a pre-operation and daily safety meeting with all personnel on the job. Hazards will be addressed and land and stream crews will be given written directions and maps of the project area. Ground crews will conduct their own hazard assessments as they proceed through the work areas. The air crew will be constantly surveying for hazardous conditions and will advise ground crew by radio. Aircraft support equipment includes a flyable Stokes Litter in case of personal injury for emergency. A formal evacuation and emergency safety plan will be prepared before work commences.

7. The pre-operations and daily safety meetings will also include USFS WWNF's project staff responsible for project construction oversight and administration. Safety discussions will include review of signage, placement of road guards and communications and necessary to ensure safe construction observations.

PROJECT DESCRIPTION & MATERIALS

Introduction

This project involves implementing restoration in Middle Fly Creek to improve habitat for listed spring/summer chinook and summer steelhead. The project is located in T 5S, R 35.5E, S 3, 4, 8, 9. It is located in the Lower Fly Creek Subwatershed (170601040108).

Existing Condition

Middle Fly Creek is currently apart of the McCarty Sheep Allotment. Fly Creek is only used for watering and not used for any significant grazing. In the late 1980s/early 1990s, sill logs were added into the stream at specific locations. In 2009, large wood was added to the stream to enhance pool development and was effective in many parts of the project area. However, the 2019 peak flow event reduced their effectiveness. A streambottom road was partially re-contoured and planted. Currently, the stream channel is simplified with low levels of large wood, course substrate, and lack of quality pool habitat. Floodplain inundation and function is limited.

Goal/Objectives

1: Activate Side Channel Scrolls

Encourage and create perennial side channels through channel spanning log jam construction.

2: Restore Hydrologic Function

Increase hydration of a laterally confined channel to improve groundwater retention through channel spanning log jam construction.

3: Improve Fish Habitat

Restore habitat complexity. Existing LWD structures will be modified and additional whole trees will be placed. These structures will encourage scour pool habitat, and fish cover.

Project Description

The project would construct debris jams and habitat structures at 56 sites within the middle 3.0 miles of Fly Creek (RM 4.0 - RM 7.0). This would include approximately 1613 pieces of large wood (1613 trees). An additional 387 whole trees, 100 felled trees and 400 tops would be placed within the stream for habitat complexity. Approximately, 2400 trees and tops will be flown in and placed by helicopter. There will be 100 trees directionally felled by hand and 85% of the racking material will be incorporated into the structure and stream through hand placement.

- There will be 38 small debris jams that will involve 25 pieces of large wood, which includes 5 large trees with rootwads (> 20" dbh) & 50' long), 8 medium trees with rootwads (14" - 20" dbh & 50' long), 8 small trees/logs (10" - 14" dbh & 30' - 50' long), and 4 whole trees. These structures are designed for floodplain inundation, side channel activation and habitat complexity.
- There will be 12 large debris jams that will involve 50 pieces of large wood, which includes 10 large trees with rootwads (> 20" dbh & 50' long), 16 medium trees with rootwads (14" - 20" dbh & 50' long), 16 small trees/logs (10" - 14" dbh & 30' - 50' long), and 8 whole trees. These structures are designed for floodplain inundation, channel activation and habitat complexity.
- There will be 6 whole tree structures, involving 63 whole trees. These structures are intended to provide habitat complexity and fish cover.
- There will be 387 additional whole trees and 400 tops placed upstream and downstream of the debris jams to promote habitat complexity and fish cover.
- There will be 100 trees directionally felled into the stream to promote habitat complexity and fish cover.
- A total of 2500 large wood pieces will be placed into the Middle Fly Restoration Project in 2021. An additional 400 whole trees and 600 logs will be flown into Lower Fly Creek to augment 2020 constructed structures.

There are a total of 2400 large trees needed for the project. Of these, 272 trees will be between 21" and 29" dbh, and 2128 trees between 10" and 20" dbh. All of the medium and large sized trees will be a minimum of 50' long (whole trees could be longer). The small sized trees are a minimum of 30' long. These trees will be obtained from within 20' of the road prisms of the 5115, 5115205, 300, 169, 180, 460 & 450 roads. The trees would be staged on these road prisms for helicopter transport and placement into Fly Creek.

There will be 100 trees directionally felled into Middle Fly Creek from the riparian area adjacent to the stream. In addition, racking material (small trees and limbs) will be thinned in the riparian area and incorporated into the structures and stream by hand placement.

All of the disturbed areas will be seeded.

The project will occur from May 15 - November 30 of 2021. All of the helicopter instream wood placement will occur in July. The directionally felled trees and hand placement of racking material will occur from July - November 30, 2021. Tree removal and haul from roads will occur from May 15 - June 30, 2021. Rehabilitation and seeding will occur from May 15 - November 30.

Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

NOTES, DESCRIPTION, MATERIALS

Date | July 2020 | July 2020

Designed J. Platz

Drawn A. Childs

Checked

Approved

Title

MIDDLE FLY CREEK RESTORATION

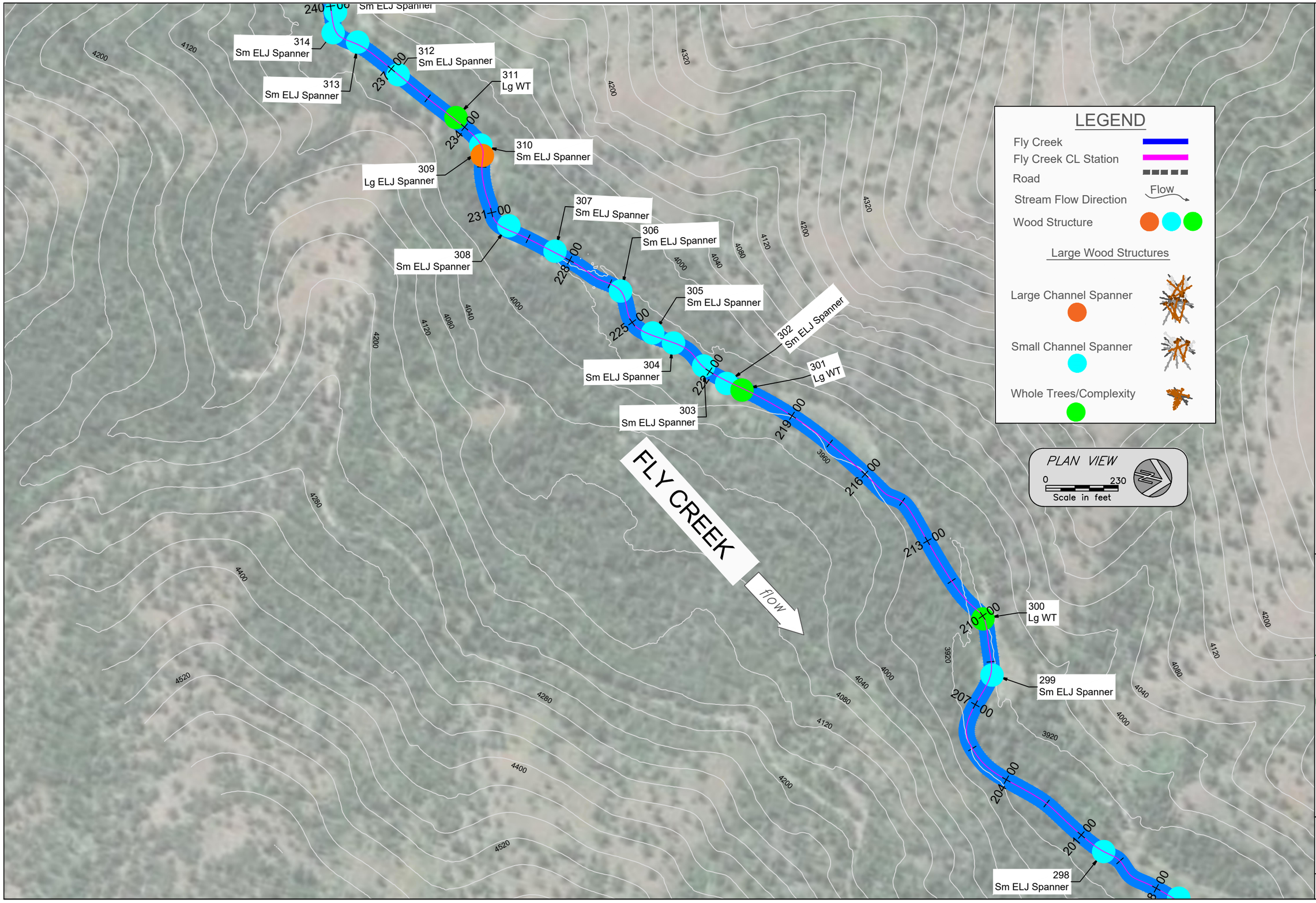
UPPER GRANDE RONDE BASIN

Fish Habitat Project

Wallowa Whitman National Forest LaGrande Ranger District

Union COUNTY, OREGON

PLANVIEW STATIONS 162+00 TO 200+00



LEGEND

- Fly Creek
- Fly Creek CL Station
- Road
- Stream Flow Direction — Flow
- Wood Structure

Large Wood Structures

- Large Channel Spanner
- Small Channel Spanner
- Whole Trees/Complexity

PLAN VIEW

0 230

Scale in feet

Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project

Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

PLANVIEW
STATIONS
200+00 TO
240+00

Sheet 7 of 12

Sm ELJ Spanner
330 Sm ELJ Spanner
267+00
329 Sm ELJ Spanner
264+00
328 Lg ELJ Spanner
327 Lg WT
261+00
326 Lg WT
258+00
325 Lg ELJ Spanner
324 Sm ELJ Spanner
255+00
323 Sm ELJ Spanner
252+00
322 Sm ELJ Spanner
FLY CREEK
flow
321 Sm ELJ Spanner
249+00
246+00
320 Lg WT
319 Lg ELJ Spanner
318 Lg ELJ Spanner
243+00
317 Sm ELJ Spanner
316 Sm ELJ Spanner
315 Sm ELJ Spanner
240+00
314 Sm ELJ Spanner
312

LEGEND

- Fly Creek
- Fly Creek CL Station
- Road
- Stream Flow Direction — Flow
- Wood Structure

Large Wood Structures

- Large Channel Spanner
- Small Channel Spanner
- Whole Trees/Complexity

PLAN VIEW
0 230
Scale in feet

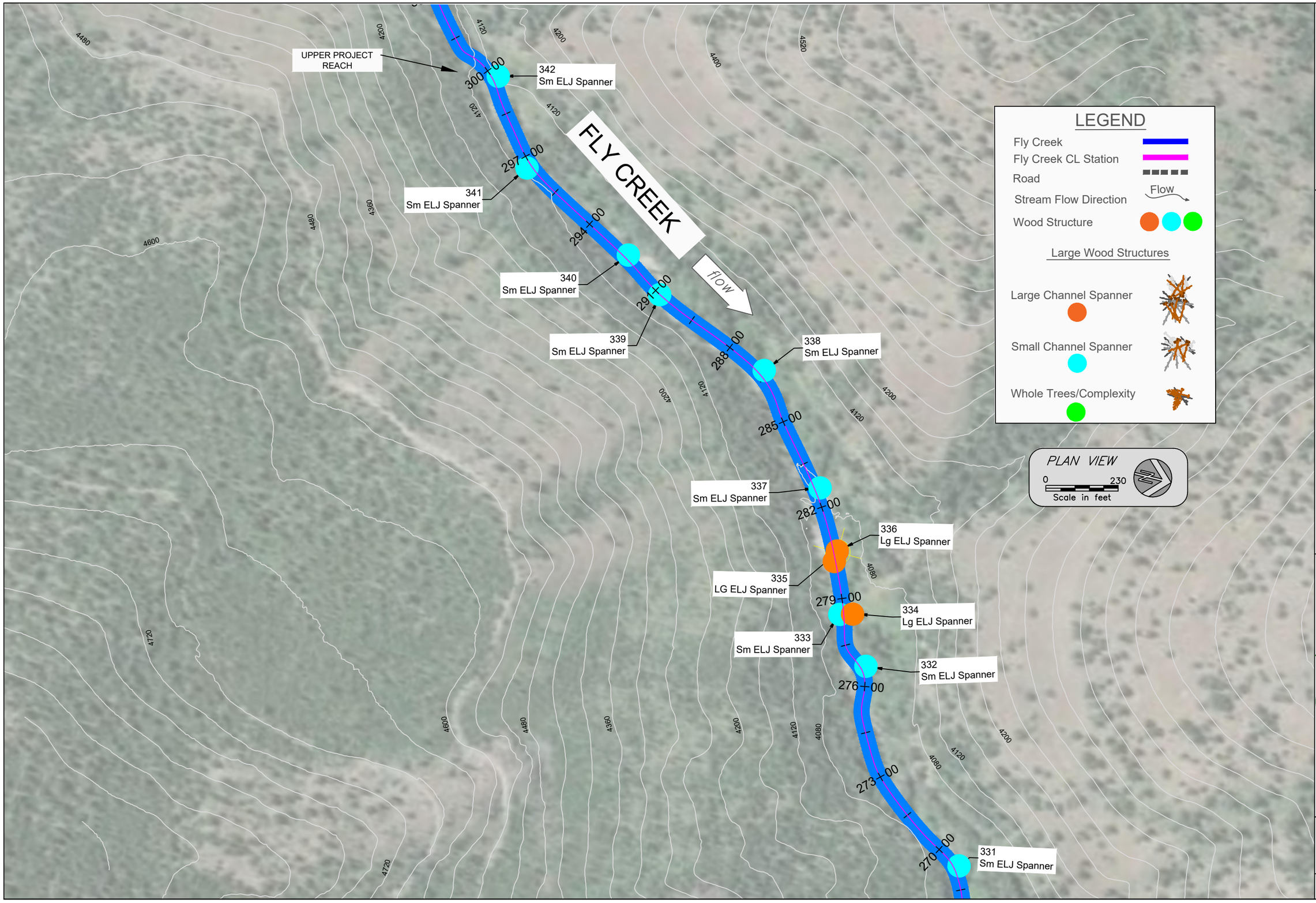
Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project

Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

PLANVIEW STATIONS 240+00 TO 270+00



Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

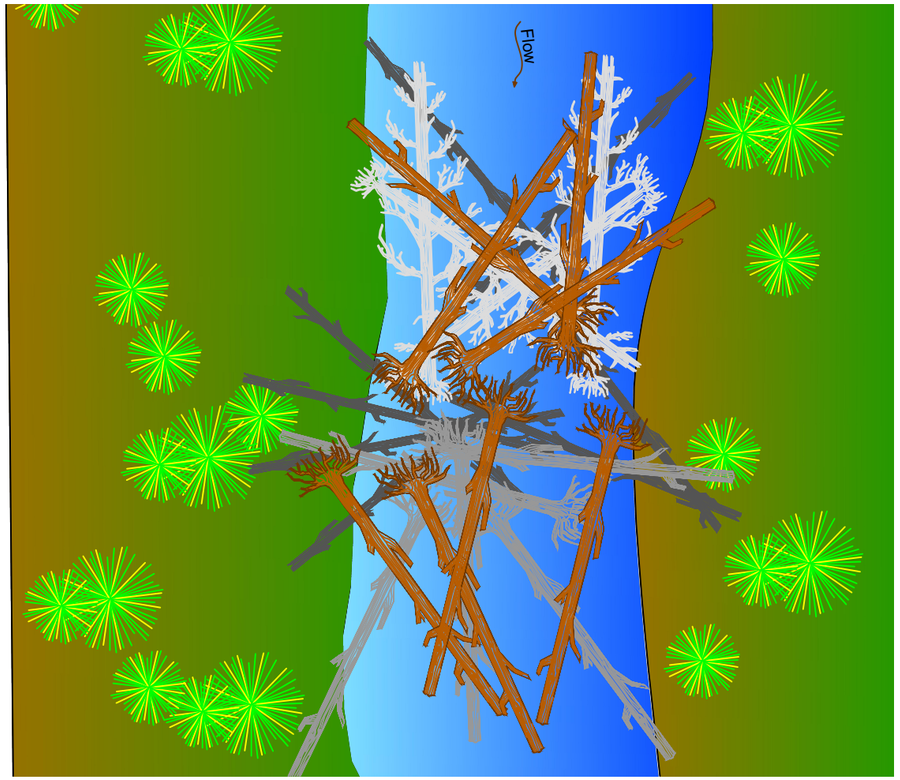
MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

PLANVIEW
STATIONS
270+00 TO
300+00

Sheet 9 of 12

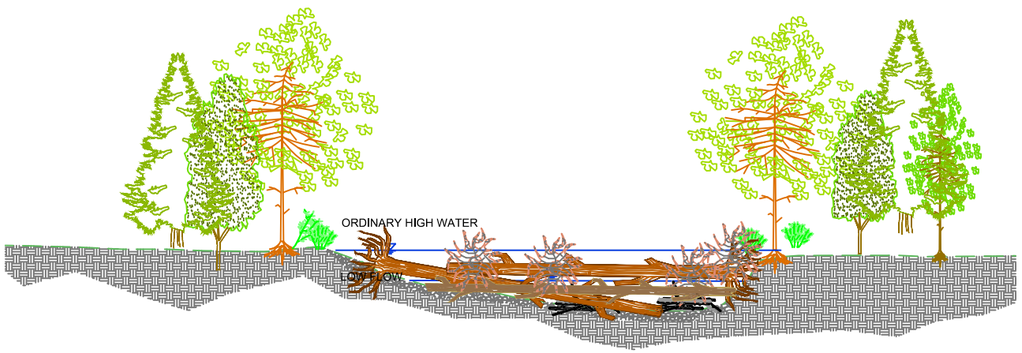
LARGE CHANNEL SPANNING LOG STRUCTURE
BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE A LARGE CHANNEL SPANNING LARGE WOOD STRUCTURE IS TO INCREASE WATER SURFACE ELEVATION AND DEPTH, DECREASE WATER VELOCITY, PROMOTE SEDIMENT DEPOSITION AND STORAGE, PROVIDE HABITAT COVER AND COMPLEXITY, AND PROMOTE FLOODPLAIN CONNECTIVITY AND INCREASED GROUNDWATER AND HYPORHEIC FUNCTIONS TO IMPROVE WATER TEMPERATURE DIVERSITY AND PROVIDE COLD WATER REFUGE.
- PROMOTES DEVELOPMENT AND MAINTENANCE OF LARGE POOL HABITAT, COMPLEXITY AND DIVERSITY, COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES.



1 PLAN VIEW

HORIZ 1" = 25'



2 SECTION VIEW

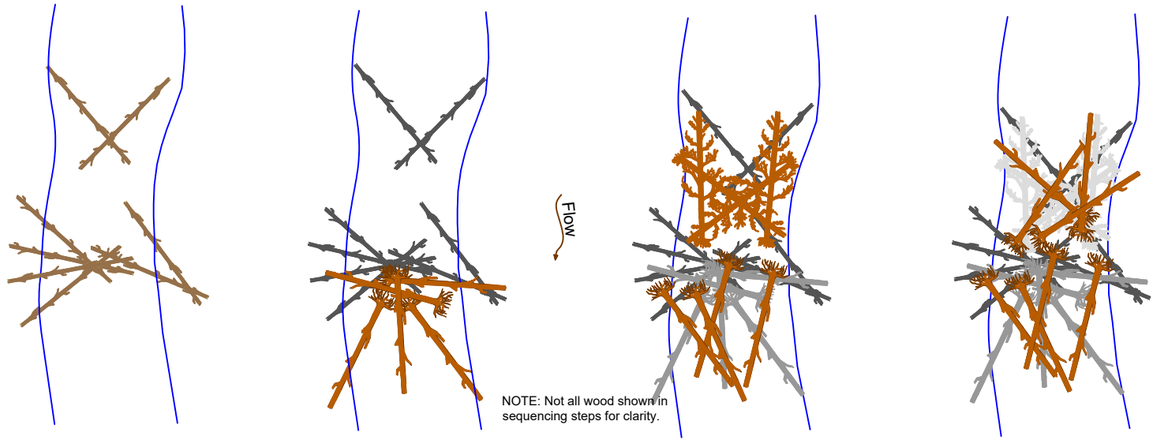
HORIZ 1" = 25'

STEP 1 - Install small logs/racking material on streambed as shown to form base of wood structure

STEP 2 - Place large logs on top of underlying racking material

STEP 3 - Place additional large logs on top of base structure materials for cover, structure, and mass of underlying wood structure members.

STEP 4 - Place top layer of large logs for ballast and cover over structure base.



NOTE: Not all wood shown in sequencing steps for clarity.

3 ASSEMBLY DETAIL & INSTALLATION SEQUENCE

HORIZ 1" = 50'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGEPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. WOOD STRUCTURE SHALL BE CONSTRUCTED WITH GROUND BASED EQUIPMENT.
4. STRUCTURE WILL BE CONSTRUCTED IN LAYERS FOLLOWING THE ASSEMBLY DETAIL ILLUSTRATED ABOVE.
5. CONSTRUCTION WILL BE INITIATED BY PLACING BASE WOOD MATERIAL, FOLLOWED BY LARGE KEY MEMBER LOGS AND INTERWOVEN WITH ADDITIONAL RACKING MEMBERS.
6. TOP KEY MEMBER LOGS WILL BE PLACED LAST, OVER-TOPPING BASE MEMBERS TO PROVIDE BALLAST AND ANCHORING OF UNDERLYING WOOD MATERIAL AS DIRECTED BY CO.

MATERIAL SCHEDULE

ITEM	QUANTITY	DBH (IN)	LENGTH (FT)	ROOTWAD (Y/N)
LARGE LOG W/RW	10	>20" +	50'	YES - 5' DIA. MIN.
MED TREES W/RW	4	14-20"	50'	YES - 5' DIA. MIN
SMALL TREES & LOGS	16	10-14"	50'	NO
WHOLE TREES W/RW	16	>14"	35'+	YES - 5' DIA. MIN

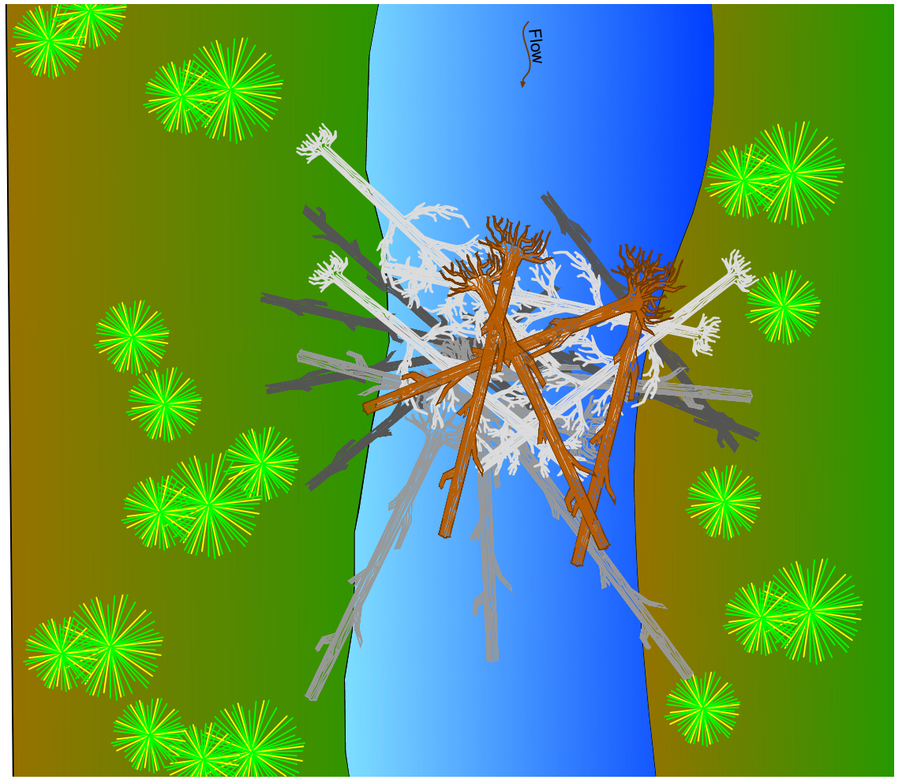
Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

LARGE CHANNEL SPANNING WOOD STRUCTURE

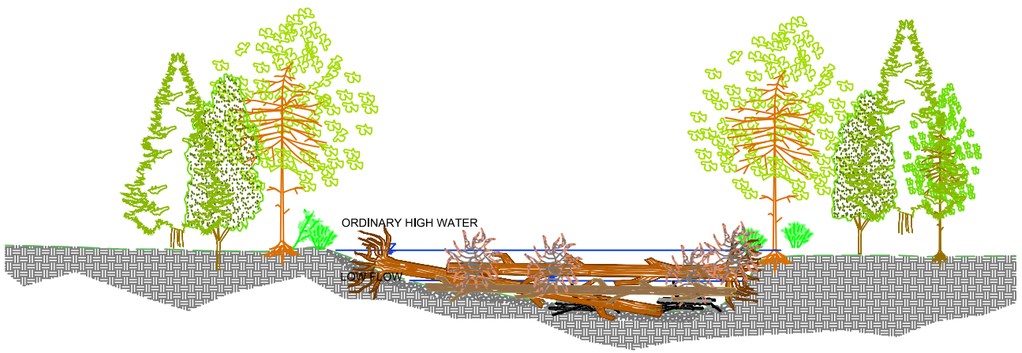
SMALL CHANNEL SPANNING LOG STRUCTURE
BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE A LARGE CHANNEL SPANNING LARGE WOOD STRUCTURE IS TO INCREASE WATER SURFACE ELEVATION AND DEPTH, DECREASE WATER VELOCITY, PROMOTE SEDIMENT DEPOSITION AND STORAGE, PROVIDE HABITAT COVER AND COMPLEXITY, AND PROMOTE FLOODPLAIN CONNECTIVITY AND INCREASED GROUNDWATER AND HYPORHEIC FUNCTIONS TO IMPROVE WATER TEMPERATURE DIVERSITY AND PROVIDE COLD WATER REFUGE.
- PROMOTES DEVELOPMENT AND MAINTENANCE OF LARGE POOL HABITAT, COMPLEXITY AND DIVERSITY, COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES.



1 PLAN VIEW

HORIZ 1" = 25'



2 SECTION VIEW

HORIZ 1" = 25'

STEP 1 - Install small logs/racking material on streambed as shown to form base of wood structure

STEP 2 - Place large logs on top of underlying racking material

STEP 3 - Place additional large logs on top of base structure materials for cover, structure, and mass of underlying wood structure members.

STEP 4 - Place top layer of large logs for ballast and cover over structure base.

NOTE: Not all wood shown in sequencing steps for clarity.

3 ASSEMBLY DETAIL & INSTALLATION SEQUENCE

HORIZ 1" = 50'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGEPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. WOOD STRUCTURE SHALL BE CONSTRUCTED BY GROUND BASED EQUIPMENT.
4. STRUCTURE WILL BE CONSTRUCTED IN LAYERS FOLLOWING THE ASSEMBLY DETAIL ILLUSTRATED ABOVE.
5. CONSTRUCTION WILL BE INITIATED BY PLACING BASE WOOD MATERIAL, FOLLOWED BY LARGE KEY MEMBER LOGS AND INTERWOVEN WITH ADDITIONAL RACKING MEMBERS.
6. TOP KEY MEMBER LOGS WILL BE PLACED LAST, OVER-TOPPING BASE MEMBERS TO PROVIDE BALLAST AND ANCHORING OF UNDERLYING WOOD MATERIAL AS DIRECTED BY CO.

MATERIAL SCHEDULE

ITEM	QUANTITY	DBH (IN)	LENGTH (FT)	ROOTWAD (Y/N)
LARGE LOG W/RW	5	>20" +	50'	YES - 5' DIA. MIN.
MED TREES W/RW	8	14-20"	50'	YES - 5' DIA. MIN
SMALL TREES & LOGS	8	10-14"	50'	NO
WHOLE TREES W/RW	4	>14"	35'+	YES - 5' DIA. MIN

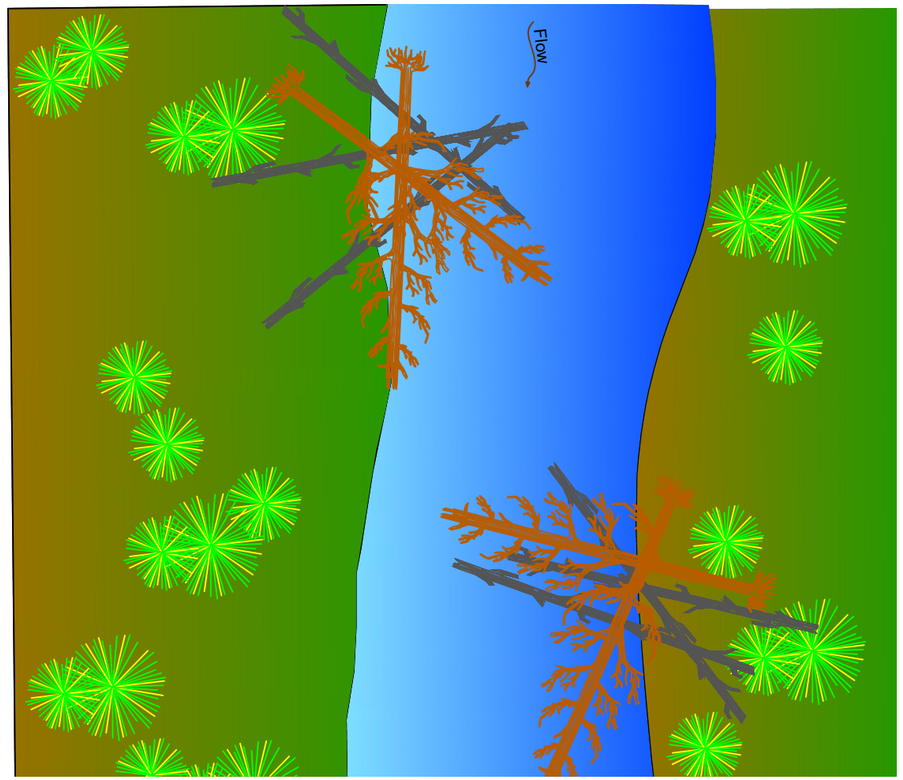
Designed J. Platz — Date July 2020
Drawn A. Childs — Date July 2020
Checked — Date
Approved — Date
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

SMALL CHANNEL SPANNING WOOD STRUCTURE

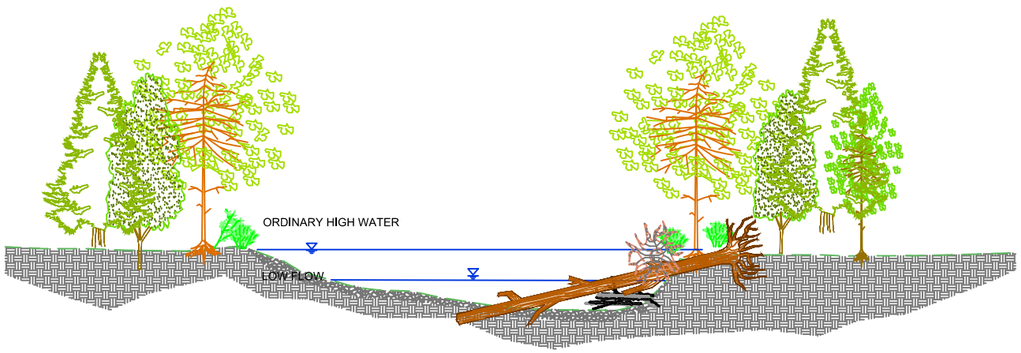
SMALL CHANNEL SPANNING LOG STRUCTURE
BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE A LARGE CHANNEL SPANNING LARGE WOOD STRUCTURE IS TO INCREASE WATER SURFACE ELEVATION AND DEPTH, DECREASE WATER VELOCITY, PROMOTE SEDIMENT DEPOSITION AND STORAGE, PROVIDE HABITAT COVER AND COMPLEXITY, AND PROMOTE FLOODPLAIN CONNECTIVITY AND INCREASED GROUNDWATER AND HYPORHEIC FUNCTIONS TO IMPROVE WATER TEMPERATURE DIVERSITY AND PROVIDE COLD WATER REFUGE.
- PROMOTES DEVELOPMENT AND MAINTENANCE OF LARGE POOL HABITAT, COMPLEXITY AND DIVERSITY, COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES.



1 PLAN VIEW

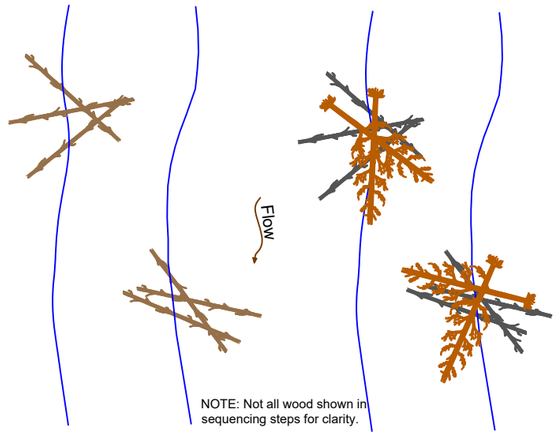
HORIZ 1" = 25'



2 SECTION VIEW

HORIZ 1" = 25'

Whole trees and cover wood will be installed by helicopter and/or felled into the stream from locally available wood material. Diagram illustrates a typical configuration of woo material. CO will have discretion on wood material arrangement and configurations to optimize overhead cover and habitat complexity.



NOTE: Not all wood shown in sequencing steps for clarity.

3 ASSEMBLY DETAIL & INSTALLATION SEQUENCE

HORIZ 1" = 50'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGEPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. WHOLE TREES AND COVER WOOD WILL PLACED BY GROUND BASED EQUIPMENT AND/OR FELLED FROM LOCALLY AVAILABLE MATERIAL.

MATERIAL SCHEDULE

ITEM	QUANTITY	DBH (IN)	LENGTH (FT)	ROOTWAD (Y/N)
LARGE LOG W/RW	2	>20" +	50'	YES - 5' DIA. MIN.
MED TREES/LOGS	2-4	10-14"	50'	NO

Date
Designed J. Platz July 2020
Drawn A. Childs July 2020
Checked
Approved
Title

MIDDLE FLY CREEK RESTORATION
UPPER GRANDE RONDE BASIN
Fish Habitat Project
Wallowa Whitman National Forest LaGrande Ranger District
Union COUNTY, OREGON

WHOLE TREES & COVER WOOD COMPLEXITY

BUDGET

MIDDLE FLY CREEK RESTORATION PROJECT

Totals automatically round to the nearest dollar

A	B	C	D	E	F	G	H
Itemize projected costs under each of the following categories:	**Unit Number**	**Unit Cost**	**Unit Type**	**BPA Funds**	**Cash Match**	**In-Kind Match**	**Total Costs**
	(e.g., # of days)	(e.g., daily rate)					(add columns D, E, F)
SALARIES, WAGES AND BENEFITS. List position titles, include only costs of employees charged to this grant.							
SUBTOTAL (1)			0	0	0	0	0
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by *non-staff* for project implementation.							
Tree removal and stage contract (2400 pieces)	1	$225,000	contract	215,000			215,000
Helicopter contract (2400 pieces)	1	$700,000	hr	700,000			700,000
Biological Technician (Joe Platz)	25	$360	8 hr day	9,000	27,000		36,000
Biological Technician	60	$250	8 hr day	15,000			15,000
Project Engineer (Allen Childs)	20	$404	8 hr day		8,080		8,080
NEPA/Support Staff	60	$334	8 hr day		20,040		20,040
Forest Service Indirect Cost Rate (12%)	1	$28,680	12% of $239,000	28,680			28,680
SUBTOTAL (2)			0	967,680	55,120	0	1,022,800
TRAVEL. Mileage, per diem, lodging, etc. Must use current State of Oregon rates.							
USFS vehicle	40	$4.30	day		172		172
Truck mileage	2000	$0.55	mile		1,100		1,100
SUBTOTAL (3)			0	0	1,272	0	1,272
MATERIALS/SUPPLIES. Refers to items that are "used up" in the course of the project. Costs to OWEB must be directly related to the implementation of this grant.							
Trees (FS$)	2100	$150	tree			315,000	315,000
Native Seed	250	$10	pound			2,500	2,500
SUBTOTAL (4)			0	0	0	317,500	317,500
EQUIPMENT/SOFTWARE. List portable equipment costing **$300** or more per unit.							
							0
							0
SUBTOTAL (5)			0	0	0	0	0

A	B	C	D	E	F	G	H
Itemize projected costs under each of the following categories:	**Unit Number**	**Unit Cost**	**Unit Type**	**BPA Funds**	**Cash Match**	**In-Kind Match**	**Total Costs**
	(e.g., # of days)	(e.g., daily rate)					(add columns D, E, F)
OTHER. Costs must be necessary and reasonable for successful completion of this grant.							
							0
							0
SUBTOTAL (6)			0	0	0	0	0
[Add subtotals above] MODIFIED TOTAL DIRECT COSTS (7)			0	967,680	56,392	317,500	1,341,572

GRANT ADMIN. Select one of the methods below. Fill in the requested rate. Compute by multiplying MTDC (7) line by this rate.							
Federally Negotiated Indirect Cost Rate	☐			0			0
Federally Accepted 10% *de minimis*	☐						0
OWEB Negotiated Indirect Cost Rate	☐						0
SUBTOTAL (8)			0	0	0	0	0
POST-GRANT. Pre-paid costs ($3,500 or less) that are associated with either post implementation status reporting or effectiveness monitoring or plant							
Post-Implementation Status Reporting ($3,500 or	/yr						0
Effectiveness Monitoring ($3,500 or less)	/yr						0
Plant Establishment ($3,500 or less)	/yr						0
SUBTOTAL (9)			0	0	0	0	0

GRANT BUDGET TOTAL ***Totals automatically round to the nearest dollar**

GRAND BUDGET TOTAL **[Add Totals (10), (11), and (12) as applicable]**	0	967,680	56,392	317,500	1,341,572