



February 2, 2012

**Lampson Levee Setback and Habitat Restoration
OWEB Grant # 211-6050**

Project Location

Walla Walla River, River mile 48, Map Coordinates: T5N, R36E, Sections 18 and 19

Summary

A private levee constructed years ago along the Walla Walla River on the Lampson property is one of many that constrict the river's ability to meander and provide fish habitat complexity. This project helped to fund the construction of a levee setback, secondary channel creation, and revegetation of the riparian area and floodplain along a half mile river reach. Thirty six acres of conservation and flowage easements exist where this project expanded the Walla Walla River floodplain. This area is at the upper end of several miles of levee that continue below this reach. Half a mile of riparian habitat has been planted along this known (ESA listed) steelhead and spring chinook spawning habitat and bull trout rearing habitat. The river bank where the levee was removed has been designed and improved for stability and fish habitat, utilizing features such as J-hooks, root wads, and a roughened channel.

The problem

The private levee constructed several decades ago is one of many that constrict the river's ability to meander and provide fish habitat complexity such as pools, spawning gravels, and large woody debris. This highly channelized reach of the river creates greater flood velocities, imperiling downstream properties and limiting backwater or other low velocity refugia for fish during high flow events. The current channelization also offers very little habitat opportunities for salmonids such as pools, large woody debris recruitment, spawning gravels, overhanging banks, etc.

This type of project, de-channelizing the river and creating habitat complexity is listed as a priority need for the Walla Walla River in multiple plans:

"The Walla Walla Basin Subbasin Plan" (BPA) 2004.

"The Draft Mid Columbia Steelhead Recovery Plan" (NMFS/ODFW) 2009.

"Walla Walla Watershed Strategic Action Plan" (WWBWC) 2003, "Draft Bull Trout Recovery Plan " (USFWS) 2003, "Walla Walla River Floodplain Restoration Report" (USACE) 2000.

This project also implements riparian shading and floodplain reconnection actions recommended in the Walla Walla River Temperature TMDL (ODEQ).

The solution

The project implemented a design of levee removal and levee setback to allow reconnection of the river with its floodplain, including re-establishment of meanders. The former leveed river bank has been reconstructed to create habitat complexity while still providing stability needed to protect adjacent and downstream properties. This location is part of a thirteen mile reach of the river that has been greatly impacted by privately constructed levees, channel straightening and deepening, and "sugar-diking". It is hoped by the project partners and the involved landowners that this project can serve as a demonstration project for others that may be considering removing levees along their river frontage. OWEB funds from a previous project, OWEB project# 208-5031 provided \$18,210, and matched with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Fish Habitat Program's BPA funds, \$91,794, paid for the assessment and design work. OWEB project #211-6050 funds of \$97,985 were matched with CTUIR BPA \$950,000 and the ODEQ/EPA 319 program's \$155,000 funds to complete construction. CTUIR staff led the permitting process. OWEB funds were used for purchasing a portion of the rock and for the vegetation supplies (rooted trees, tree cuttings, grass seed) tree planting, and hydroseeding the grass mix.

Partners

The Landowners, Clark and Lyla Lampson, donated the use of their property for fish and wildlife habitat restoration, and also provided input on design and assisted with construction oversight. Jim Webster, fluvial geomorphologist, and Jed Volkman, fish biologist, both on staff at the CTUIR Fish Habitat Program have been actively working alongside WWBWC staff to complete this levee setback project. We also received input from Tim Bailey and Bill Duke, the former and current district fish biologists for Oregon Department of Fish and Wildlife. Brian Wolcott, Director of the WWBWC, co-coordinated the project with Jed Volkman, manager of the CTUIR Walla Walla Fish Habitat program. Mike Homza, Jeff Fealko, and Jason Scott, all with GeoEngineers, Inc. provided the assessment, design, and construction oversight. Partney Construction, Inc. completed to the construction and Botanical Developments, Inc completed the vegetation work.

Goal

The goal of the project is improving fish habitat diversity, restoring floodplain function, and improving riparian and upland habitat. The primary benefits are constructing a secondary river channel for fish habitat diversity and floodplain reconnection. The project is based on the completed design that meets the objectives of the landowners, the downstream neighbors, WWBWC, and project partners.

The levee setback allows reconnection of the river with its floodplain along 2297 feet of river, opening up 36 acres of floodplain to a currently constricted river.

The landowners at the project site, Clark and Lyla Lampson are committed to restoring the floodplain benefits of their property. They have put 36 acres of their land into a 15 year conservation easement with the Confederated Tribes of the Umatilla Indian Reservation. The Tribal fish habitat program has been restoring the former orchard lands to a mix of cottonwood and other native trees and grasses. The Lampsons are considering a permanent conservation easement on this 36 acre floodplain portion of their property with Blue Mountain Land Trust.

Methods

Designs were based on river channel surveys combined with extensive terrestrial and river survey work completed by the US Army Corps of Engineers in 1999-2000. A planning meeting occurred with the landowners and technical partners. An RFP for designs was submitted and following a selection process, an engineering firm was hired to develop the designs. Preliminary Designs were completed in the Spring of 2009. Technical and landowner review occurred, including selecting a preferred design out of three options. Permitting and funding proposals based on designs and costing were initiated in January of 2010. Funding, then permits, were secured. A competitive bid process occurred and a qualified contractor was selected and construction occurred in the Summer and Fall of 2011, with tree planting and grass seeding occurring in the fall of 2011.

How it worked

CTUIR Fisheries program were enthusiastic about this project and provided more funding than the initial match of \$6,600 that was stated in the original OWEB design. Instead the CTUIR Fish Habitat program is matched the OWEB design funds with \$91,794. The CTUIR funds have been used to help collect additional survey data, provide a hydraulics and hydrology assessment, pay for the non-OWEB portion of the designs and set up piezometers prior to construction to track water table changes, provide reporting and project management. An RFP was developed and sent out to solicit proposals from engineering firms. Interested firms toured the site. Proposals from several companies were received and reviewed by the project partners for thoroughness, as well as verifying the qualifications and experience of the Engineering firms. GeoEngineers was selected and worked with project partners to complete assessments and develop design options from which a final concept was designed.

Pre-existing topographical survey data and pebble count data was provided along with hydrograph data. The engineers evaluated the site and presented three design options. The project team, including the Lampsons, picked an option that was completed to a final design stage. Option 2 was picked to be completed with final design, materials and construction costing and an implementation plan. CTUIR staff completed the NEPA consultations and permitting. The CTUIR Fish Habitat Program used BPA and EPA

funds to cover much of the cost for materials and construction. The WWBWC OWEB Restoration funds matched the CTUIR funds. The OWEB funds paid for \$56,000 in contracted services for purchase, delivery, and installation of rock, and \$28,715 towards the purchase and planting of vegetation. The balance of the OWEB funds, \$13,270, went to cover project management, administration, and reporting.

Results

A half mile of private levee was removed, and thirty six acres of floodplain has been reconnected with the river. In addition a secondary channel designed to take 10 % of the river flow was created. Over 100 pieces of large woody debris were installed along the river's edge to provide stability and fish habitat complexity. A spring creek is being daylighted from a pipe and will meander across a portion of the property.

Lessons learned

The permitting took much longer than expected, resulting in a one year delay in project completion. The main issues were details on minimizing impacts of the instream work and how to isolate water, and fish, away from the work zones, and reducing the likelihood of fish stranding associated with the side channel creation.

As spring runoff receded just prior to instream construction it became apparent that channel downcutting of over two feet had occurred at the upstream and downstream portions of the project. New channel surveys and a modification to designs were completed to modify designs at these two locations. It was decided to not try to reestablish the original river elevation, and instead just reestablish half of the grade. This meant lowering the side channel and adjacent floodplain more than what the design had called for. Also to reduce the chance of further downcutting of the river bed, a roughened channel was designed and constructed at the lower limit of the project. The design adjustments to this new elevation and re-completing the cut and fill surveys caused time delays and cost increases.

Although the number of trees planted and location of planting has been satisfactory, the size (height and diameter) of the rooted tree and shrub stock was smaller than anticipated. So far the planted trees and shrubs have seemed to endure the winter and the constant presence of deer throughout the project area. Several species of resident weeds are emerging and are competing with grass establishment. Portions of the grass seeding did not start to grow as a result of late planting and topographical shade from the adjacent cliff. I would have been better to seed that area sooner and apply irrigation water to get the grass growing. Trees were planted deep enough right along the waterline and they have withstood the moderately higher flows that have washed away finer soils around their bases.

Well coordinated surveys captured just prior to construction documented the extent of river downcutting and a re-survey of the project area corrected the cut and fill elevations to adjust the project based on that river downcutting. The lesson learned is that a river

channel can change dramatically between the time of the original survey and design and the actual year of construction.

Permitting delays can be extremely frustrating, delaying the project and driving up the cost of the project, and the river reach can change by the time all the funding and permits are in hand.

The contractor was well organized in managing multiple staff and pieces of equipment working on various locations of the project in an orchestrated manner that increased efficiency, while maintaining the safety of the work crew, and minimizing disturbance to fish. There was a plume of sedimentation that eluded containment during part of the construction period by traveling subsurface through the gravels and entering the river, however the plume was diluted out downstream of the project area. Additional pumping of water at and immediately below the project area could have reduced the sedimentation of the river, but if done adequately, would have impacted stream flow. An isolated settling basin may have helped.

There has been a lot of curiosity about this project, especially the levee setback component and the new secondary channel component. We have already toured local citizens, agency staff, and watershed restoration organization staff from around the area. Despite community outreach to the city and the Levee management district and the Corps, there was still anxiety that logs placed in the project area could get swept downstream and cause flooding problems for the downstream community. Plan on more community education meetings and more site visits prior to/ and during construction.

Next Steps

Additional tree planting and willow whip planting during late winter and early spring.

Continue site tours and initiate two similar projects at two other locations along the Walla Walla River. This project has been described at several Watershed Council Meetings, during Watershed restoration presentations, and during tours with restoration partners.

Continue to monitor flows in the secondary channel, look for fish and wildlife utilization of habitat, and monitor vegetation recovery.

Project proposed site condition plan and implementation photos are attached



Prior to construction, landowner Clark Lampson stands on edge of eroding riverbank where damaged levee will be removed as part of project, about a 10' drop to water



Levee in mid section of project prior to removal



Levee prior to removal



Same location, levee gone and side channel being installed



Levee removed and rootwads installed



Roughened channel installed at downstream end of project to maintain grade



Side channel area is being excavated. Existing vegetation was planted in late 1990s



Side channel activated with river flows, note hydroseed, planted trees, and habitat logs



Entrance to side channel, WWBWC staff taking flow measurement for engineers



Side Channel receiving higher winter flows in February 2012



Side Channel returning to mainstem Walla Walla River



Upper end of project showing logs installed and habitat rocks

Reference: Aerial obtained from MAP 77262005

Revision No./Date:	Description:	Index:	Designed: JUF
1 09/01/11	Channel channel re-design	JUF	Drawn: MGF Checked: MGH Date: 08/27/11

APPROVED FOR CONSTRUCTION

Project No. 2698-02-02

Walla Walla River
 Umatilla County, Oregon
 Confederated Tribes of the
 Umatilla Indian Reservation



GEOENGINEERS
 523 East Second Avenue
 Spokane, Washington 99202

Proposed Conditions
 Lampson Construction Drawings

Sheet
S-5.1



Partney Lampson Contract

Item #	Item Description	Units	Unit Cost (\$)	No. of Units	Cost (\$)	2011		2012		
						BPA	OWEB	DEC 319	BPA	OWEB
Division 1	General Requirements	Lump Sum	\$8,900.00	1	\$8,900	\$8,900				
2100	Environmental Controls	Lump Sum	\$18,000.00	1	\$18,000	\$18,000				
2110	Cultural Resources	Lump Sum	\$3,000.00	1	\$3,000	\$3,000				
2200	Protection of Existing Installations	Lump Sum	\$3,000.00	1	\$3,000	\$3,000				
2300	Cleaning	Lump Sum	\$2,500.00	1	\$2,500	\$2,500				
3110	Mobilization and Demobilization	Lump Sum	\$25,000.00	1	\$25,000		\$25,000			
3120	Construction Staking	Day	\$1,400.00	10	\$14,000	\$14,000				
3130	Traffic Control and Management	Lump Sum	\$3,500.00	1.00	\$3,500	\$3,500				
3210	Clearing, Grubbing, Stockpiling and Disposal	Acre	\$3,500.00	4	\$14,000	\$14,000				
3220	Topsoil Stripping, Stockpiling and Reuse	Acre	\$12,000.00	4	\$48,000	\$48,000				
3230	Tree and Plant Protection and Salvage	Lump Sum	\$12,000.00	1	\$12,000	\$12,000				
3240	Dewatering	Lump Sum	\$20,000.00	1	\$20,000	\$20,000				
3310	Levee Excavation	CY	\$7.00	11,300	\$79,100			\$79,100		
3320	Floodplain, Side Channel and Spring Channel Excavation and Grading	CY	\$8.00	9,700	\$77,600	\$1,700		\$75,900		
3300	Fill and Grading (Spoils Area A)	CY	\$5.00	400	\$2,000	\$2,000				
3300	Fill and Grading (Spoils Area B)	CY		17,100	\$0					
3300	Fill and Grading (Spoils Area C)	CY	\$6.50	3,000	\$19,500	\$19,500				
3340	Haul to Spoils Location C	CY		3,000	\$0					
3410	Cofferdams	LF	\$18.00	2,100	\$37,800	\$32,300	\$5,500			
3520	Woody Habitat Structures & Anchors	Lump Sum	\$190,000.00	1	\$190,000	\$190,000				
3530	Rock Structures (Imported Boulders)	Each	\$120.00	50	\$6,000	\$6,000				
3530	Rock Structures (Salvaged Riprap)	Each	\$20.00	600	\$12,000	\$12,000				
3530	Rock Structures (Cobbles from other Excavation)	CY	\$15.00	500	\$7,500	\$7,500				
3610	Seeding and Planting	Lump Sum	\$78,000.00	1	\$78,000	\$14,745	\$28,715		\$34,540	
3630	Transplanting Trees and Shrubs	Lump Sum	\$20,000.00	1	\$20,000	\$20,000				
3700	Haul and Disposal of Excavated Material	CY	\$3.00	17,100	\$51,300	\$51,300				
3800	Site Cleanup and Repair	Lump Sum	\$2,000.00	1	\$2,000	\$2,000				
Total Construction Cost per Grant						\$480,445	\$84,715	\$155,000	\$34,540	\$0
Grant subtotal						\$754,700				
Total Construction Cost 2011						\$720,160				
Total Construction Cost 2012						\$34,540				
Total Construction Cost						\$754,700				

PARTNEY CONSTRUCTION, INC.

63024 Monroe Lane
LaGrande, Oregon 97850
USA

Phone 1.541.962.1064
Fax 1.541.962.7644

CTUIR - DNR Fisheries Program
ATTN: Julie A. Burke
46411 Timine Way
Pendleton, OR 97801

Project Name: Upper Walla Walla River Lampson Reach Enhancement Project

Cost Centers: #408-011, #429-008

INVOICE

BILLING DATE: 8/12/2011
ACCOUNT NO: 2011-CTUIRLAMP1
PREVIOUS BALANCE: \$0.00

ACCOUNT ACTIVITY

DATE	ITEM # / UNIT	QUANTITY	DESCRIPTION	% COMPLETE	UNIT PRICE	TOTAL
8/12/2011	DIV. 1 / LS	1	General Requirements	50%	\$8,000.00	\$4,000.00
	2100 / LS	1	Environmental Controls	50%	\$18,000.00	\$9,000.00
	3110 / LS	1	Mob / Demob	50%	\$25,000.00	\$12,500.00
	3120 / DAY	10	Construction Staking	50%	\$14,000.00	\$7,000.00
	3130 / LS	1	Traffic Control and Management	50%	\$3,500.00	\$1,750.00
	3210 / ACRE	4	Clearing, Grubbing, Stockpile & Disp.	100%	\$3,500.00	\$14,000.00
	3220 / ACRE	4	Topsoil, Stockpiling & Reuse	50%	\$12,000.00	\$24,000.00
	3230 / LS	1	Tree and Plant Protection and Salvage	70%	\$12,000.00	\$8,400.00
	3240 / LS	1	Dewatering	30%	\$20,000.00	\$6,000.00
	3310 / CY	11300	Levee Excavation	100%	\$7.00	\$79,100.00
	3320 / CY	9700	Floodplain, Side chan & Spring Chan Ex	60%	\$8.00	\$46,560.00
	3300 / CY	400	Spoils Area "A"	100%	\$5.00	\$2,000.00
	3300 / CY	3000	Spoils Area "C"	100%	\$6.50	\$19,500.00
	3410 / LF	2100	Cofferdams	30%	\$18.00	\$11,340.00
	3520 / LS	1	Woody Habitat Structures	50%	\$190,000.00	\$95,000.00
	3530 / EACH	600	Rock Structures (Salvaged Riprap)	50%	\$12,000.00	\$6,000.00

Please pay this amount: **\$346,150.00**

Terms: 30 days

When sending payment, include the account number on the check. Thank you.

PARTNEY CONSTRUCTION, INC.

63024 Monroe Lane
LaGrande, Oregon 97850
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CTUIR - DNR Fisheries Program
ATTN: Julie A. Burke
46411 Timine Way
Pendleton, OR 97801

Project Name: Upper Walla Walla River Lampson Reach Enhancement Project

Cost Centers: #408-011, #429-008

INVOICE

BILLING DATE: 9/23/2011

ACCOUNT NO: 2011-LAMPSON#2

PREVIOUS BALANCE: \$0.00

ACCOUNT ACTIVITY

DATE	ITEM # / UNIT	QUANTITY	DESCRIPTION	% COMPLETE	UNIT PRICE	TOTAL
9/23/2011	DIV. 1 / LS	1	General Requirements	55.00%	\$8,900.00	\$4,900.00
	2100 / LS	1	Environmental Controls	50.00%	\$18,000.00	\$9,000.00
	2110 / LS	1	Cultural Resources	100.00%	\$3,000.00	\$3,000.00
	2200 / LS	1	Protection of Existing Installations	100.00%	\$3,000.00	\$3,000.00
	2300 / LS	1	Cleaning	100.00%	\$2,500.00	\$2,500.00
	3110 / LS	1	Mob / Demob	50.00%	\$25,000.00	\$12,500.00
	3120 / DAY	10	Construction Staking	50.00%	\$14,000.00	\$7,000.00
	3130 / LS	1	Traffic Control and Management	50.00%	\$3,500.00	\$1,750.00
	3220 / ACRE	4	Topsoil, Stockpiling & Reuse	50.00%	\$12,000.00	\$24,000.00
	3230 / LS	1	Tree and Plant Protection and Salvage	30.00%	\$12,000.00	\$3,600.00
	3240 / LS	1	Dewatering	70.00%	\$20,000.00	\$14,000.00
	3320 / CY	9700	Floodplain, Side chan & Spring Chan Ex	40.00%	\$8.00	\$31,040.00
	3410 / LF	2100	Cofferdams	70.00%	\$18.00	\$26,460.00
	3520 / LS	1	Woody Habitat Structures	50.00%	\$190,000.00	\$95,000.00
	3530 / Each	50	Rock Structures (Imported Boulders)	100.00%	\$120.00	\$6,000.00
	3530 / Each	600	Rock Structures (Salvaged Riprap)	50.00%	\$20.00	\$6,000.00
	3530 / CY	500	Rock Structures (Cobble from other Ex)	100.00%	\$15.00	\$7,500.00
	3610 / LS	1	Seeding and Planting	100.00%	\$78,000.00	\$78,000.00
	3630 / LS	1	DELETED (transplant trees and shrubs)	0.00%	\$0.00	\$0.00
	3700 / CY	17100	Haul and Disposal of Excavated Mat.	100.00%	\$3.00	\$51,300.00
	3800 / LS	1	Site Cleanup and Repair	100.00%	\$2,000.00	\$2,000.00
Please pay this amount:						\$388,550.00

Terms: 30 days

When sending payment, include the account number on the check. Thank you.

PARTNEY CONSTRUCTION, INC.

63024 Monroe Lane
LaGrande, Oregon 97850
USA

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CTUIR - DNR Fisheries Program

ATTN: Julie A. Burke

46411 Timine Way

PENDLETON, OR 97801

Project Name: Upper Walla Walla River Lampson Reach Enhancement Project

Cost Center: #408-011, #429-008

INVOICE

BILLING DATE:	10/6/2011
ACCOUNT NO:	Change Order #1
PREVIOUS BALANCE:	\$0.00

ACCOUNT ACTIVITY					
DATE	ITEM / UNIT	DESCRIPTION	UNIT PRICE	QUANTITY	TOTAL
8/12/2011	1 / Tons	Imported Rip Rap Rock	\$30.00	400	\$12,000.00
	2 / Hours	PC308 Excavator - Install and remove diversion structure, Install rip rap for roughened channel and grade control, Install rip rap for river right floodplain return to main channel, place additional floodplain wood, install wood in lower structure and place substrate material in roughened channel.	\$165.00	140	\$23,100.00
	3 / Hours	10-12 CY Dump Truck - Haul substrate rock to roughened channel, Haul in floodplain material to raise elevation.	\$100.00	25	\$2,500.00
	4 / Each	Ecology Blocks used as anchors	\$75.00	30	\$2,250.00
	5 / Each	4' X 1.5" Rebar Pins	\$15.00	145	\$2,175.00
	6 / LF	3/8" Grade 43 anchor chain	\$4.00	500	\$2,000.00
	7 / Hours	Labor	\$55.00	23	\$1,265.00
	3320 / CY	Floodplain, Side Channel and Spring Channel	\$8.00	13500	\$108,000.00
	3700 / CY	Haul and Disposal of Excavated Material	\$3.00	13500	\$40,500.00
	10 / Lump Sum	Additional Bonding @ 2% of total	\$3,875.80	1	\$3,875.80
		<u>Botanical Developements Change Orders:</u>			
	Change Order #1	Seed 3 acres with Native seed mix	\$1,200.00	1	\$1,200.00
	Change Order #2	Purchase and plant 1200 black cottonwood	\$9,360.00	1	\$9,360.00
	Change Order #3	Purchase and install 14 straw wattles	\$1,620.00	1	\$1,620.00
	Change Order #4	Apply Biotic Earth over 3 acres	\$3,208.00	1	\$3,208.00
	Change Order #5	92 Alder pole cuttings	\$938.00	1	\$938.00
	Change Order #6	Purchase and install quickgrow sterile seed	\$2,400.00	1	\$2,400.00
Please pay this amount:					\$216,391.80

Terms: 30 days

Lampson Project Planting palette

Tree & Shrub	size/unit	qty
pondo	2 gal	13
snow berry	1 gal	533
blue elderberry	1 gal	34
woods rose	1 gal	220
serviceberry	1 gal	64
choke cherry	1 gal	173
wax current	1 gal	32
golden current	1 gal	78
black cottonwood	10 ci plug	1600
black cottonwood	cutting	1602
thin leaf mountain alder	40 ci plugs	92
red dogwood	cutting	179

Seed

QuickGuard sterile triticale <i>Mix</i>	lbs	150
Mtn. Brome	lbs	25
Sandbergs bluegrass	lbs	30
Blue wildrye	lbs	25
Bluebunch wheatgrass	lbs	40
Idaho fescue	lbs	30

Botanical Developments**Notes:**

Broadcast/harrow
doubled application rate
hydroseeded
hydroseeded
hydroseeded
hydroseeded
hydroseeded