

Little Walla Walla River Assessment and Initial Action Plan (2010)

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I would like to acknowledge the thorough research and mapping work completed by Colin Shepley, a Whitman intern who assisted the Walla Walla Basin Watershed Council in completing this Assessment. Also, the WWBWC staff in general assisted with providing important details, graphs, and input. Interviews with agency staff and members of the community were also helpful.

INTRODUCTION

The Little Walla Walla River and Spring Branch system is an anomaly when compared to most river systems. This non-linear combination of distributaries and an alluvial fan of spring fed creeks is treated by various state agencies and the local community as either a water conveyance network or natural stream, depending on the location being considered, or the time of year. This conundrum needs to be described and evaluated so that a coordinated approach can be developed and implemented to improve these unusual streams and the farms, fish, and wildlife that depend on them.

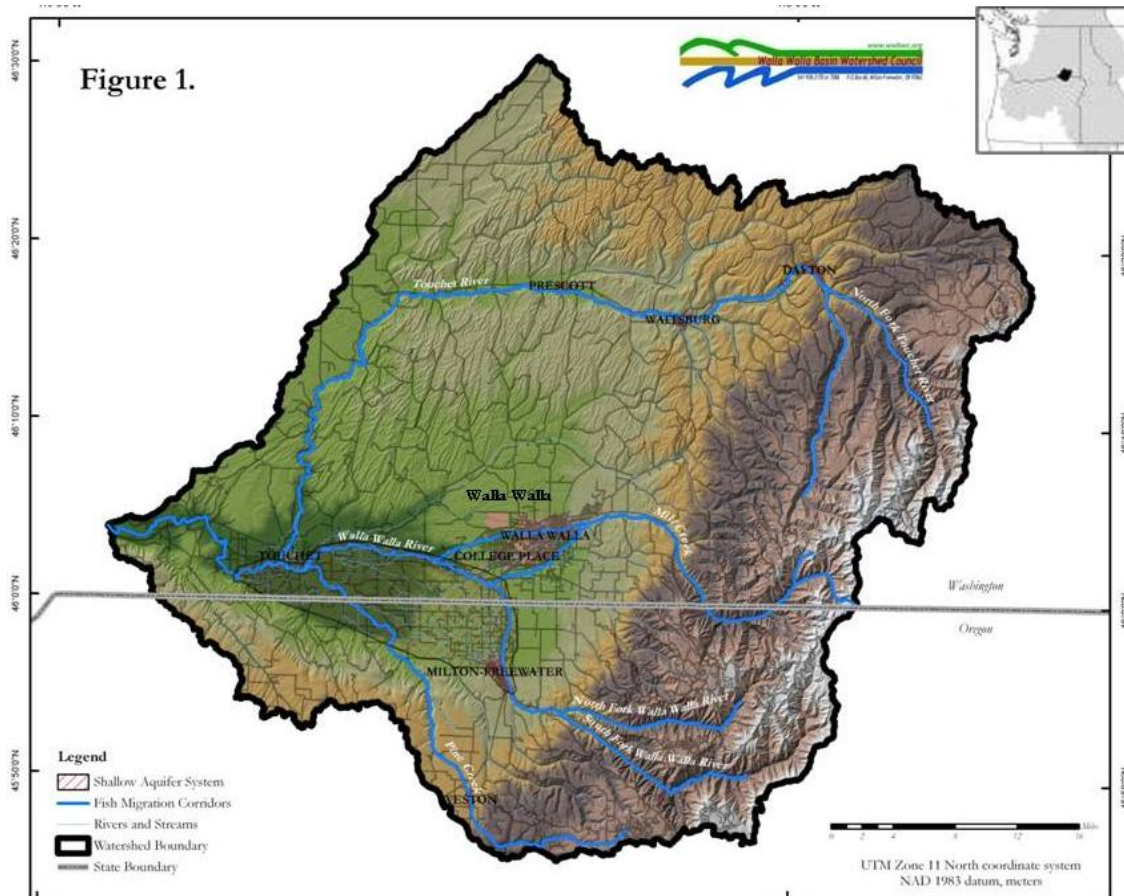
Purpose

This assessment consolidates information on the Little Walla Walla River and springs area with regards to historic and current flows, water use, land use, fish presence, habitat conditions, fish passage barriers, and water quality. This can then be utilized in developing a plan that aim to improve and preserve the environmental and economic health of this stream network, and to better define management and enhancement options. An Initial Action Plan of Goals and Actions is put forward as a discussion framework. Some of these actions are just conceptual, others are ongoing, but can be expanded to a greater scale.

Geographic context and Discussion:

The Little Walla Walla River branches are distributaries of the Walla Walla River. The Walla Walla River originates in the Blue Mountains and flows through the middle Walla Walla Valley, and down through Washington to the Columbia River near Wallula Gap. Hydrologic conditions change significantly once waters enter the middle valley; which is dominated by a broad alluvial fan and floodplain with a corresponding shallow alluvial aquifer. The river historically divided into multiple braids but is now limited to the mainstem Walla Walla River (historically known as the Tumulum) and the East and West Little Walla Walla Rivers. The Tumulum branch now carries most of the river's volume and for approximately the last fifty years, has been the primary passage route for migratory salmon, steelhead, and trout bound for spawning beds further upstream. The Little Walla Walla River divides from the mainstem at the 9th Avenue bridge (also known as Cemetery Bridge) in the town of Milton-Freewater. The Little Walla Walla River and neighboring spring source creeks that emerge on the valley floor and enter the Walla Walla River north of the Oregon/Washington stateline are the focus in this assessment (with an emphasis on the Little Walla Walla). These streams include: East Little Walla Walla system; West Little Walla Walla system; Spring Branch; Mud Creek; Dugger Creek; Lewis-Walsh Creek; Big Spring, and other area natural springs. It should be noted that a number of interstate stream reaches that this assessment covers are recognized by different names in Oregon and Washington. When this is the case both names will be noted. This assessment focuses primarily on the Oregon portion of the Little Walla Walla River and associated and proximal spring branches. Numerous spring fed streams such as Big Spring and Grandview Creek act as tributaries to branches of the Little Walla Walla River or Walla Walla River as it continues South and West. Other spring Creeks such as Swartz Creek, Dugger Creek, and Johnson Creek form from springs on the valley floor then flow into Pine Creek a larger mountain based tributary of

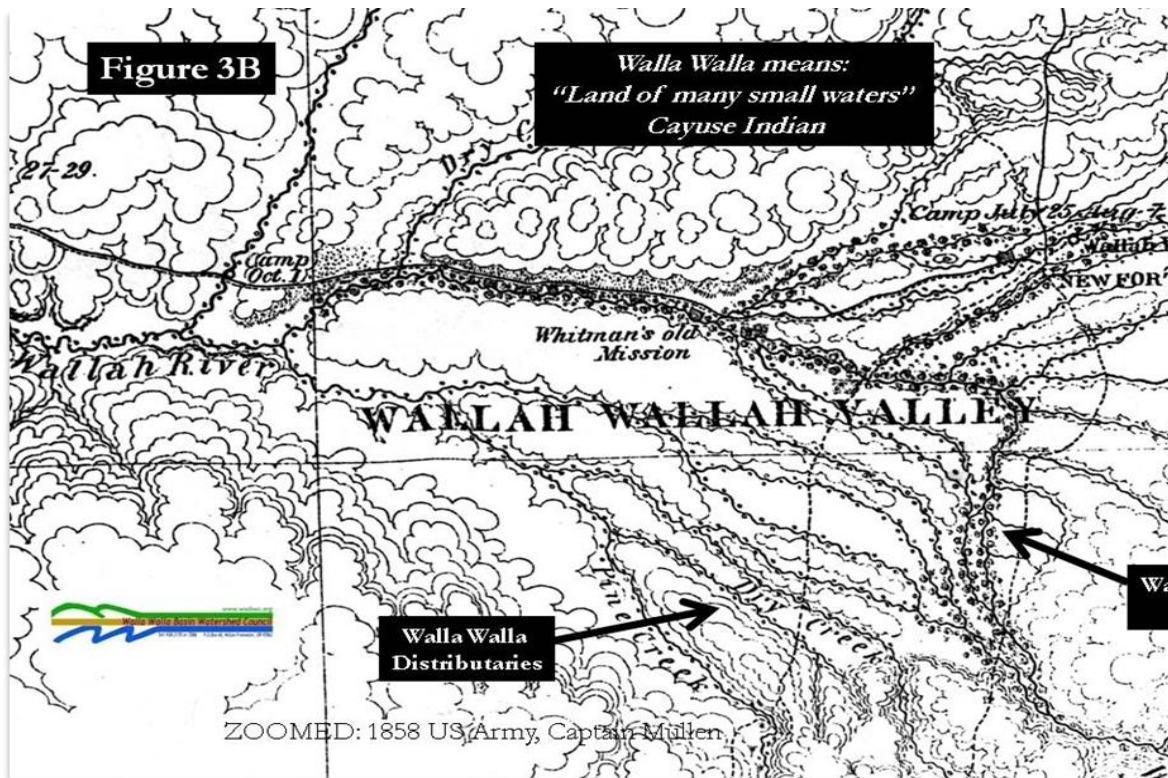
the Walla Walla River, or flow directly into the Walla Walla River.



The Walla Walla Subbasin, tributary to the Columbia River

The area this assessment focuses on is the Walla Walla River Valley subbasin where the mainstem flows out into this bi-state valley and historically became a distributary river system of mainstem branches, groundwater fed spring-creeks and, in the last century, further distributed out through an extensive system of lateral ditches.

Early maps of the valley showed that this distributary and spring system formed over the top of an unconfined alluvial aquifer system. This aquifer supplies the baseflow for more than 50 valley spring-creeks in Oregon and Washington that historically provided year-round baseflow in the form of cool groundwater and provided off-channel habitat to the mainstem Walla Walla River. With its historically braided and meandering river channels combined with over fifty spring fed creeks, the area was referred to by the Native American Tribes in the area as the *Walla Walla* or “*land of many small waters*” which historically supported a thriving salmon, steelhead, and trout fisheries and miles of distributary habitat.



1858 Mullen Map of Distributary Walla Walla and Little Walla Walla River System (Mullen, 1863)

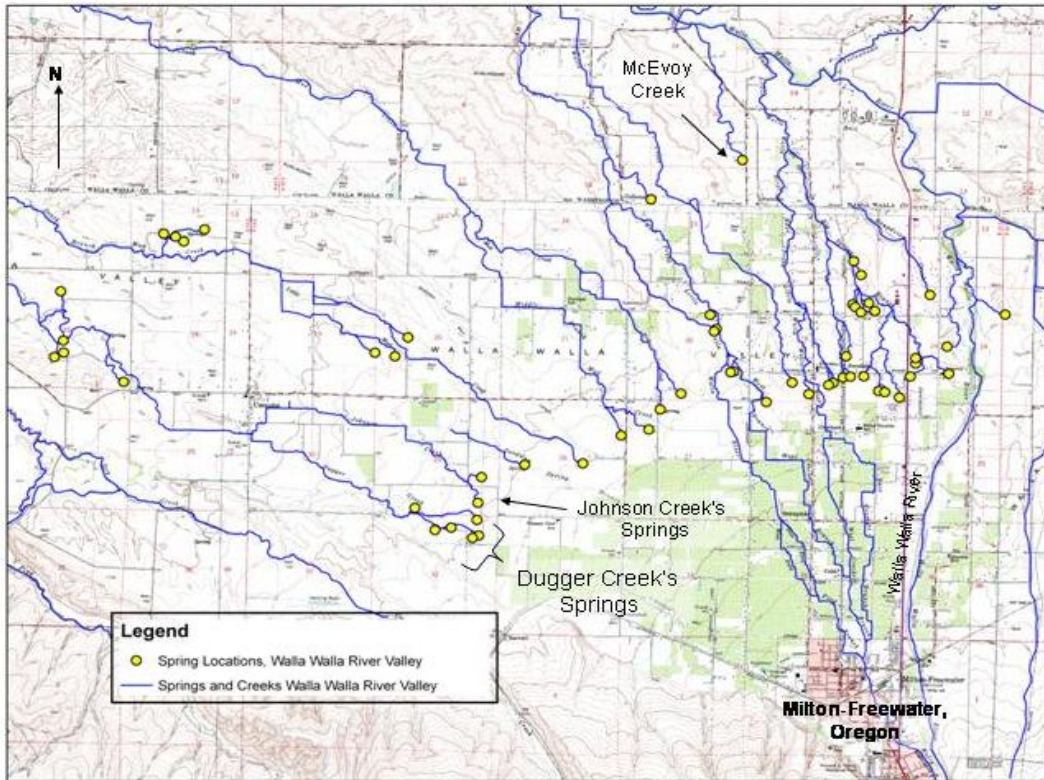
With the arrival of settlers the way in which water was redistributed and used began to change as did the hydrologic balance of the system. Naturally meandering rivers and creeks were straightened for flood control and agriculture, acting indirectly to speed up the flow of water through the system. This was offset to a degree by the valley's early flood and rill irrigation practices and the development of the lateral ditch system that acted to effectively 'slow' surface run-off. By redirecting surface waters away from the primary natural flow corridors, this helped to recharge the underlying shallow aquifer system, mimicking natural floodplain function.

Coupled with these changes to the aquifer's ability to be replenished (recharged) were subsequent dramatic increases in groundwater use. The dramatic increase in the number of wells for primary and supplemental irrigation rights acted to increase the amount of water coming out of groundwater storage. The net hydrologic impact of these changes was a shallow aquifer showing declining water levels and reduced flows from the spring branch network.

While this surface to groundwater connection was first outlined by the USGS in 1933 (Piper, 1933) and again in 1965 (Newcomb, 1965) it was not until it was revisited in the

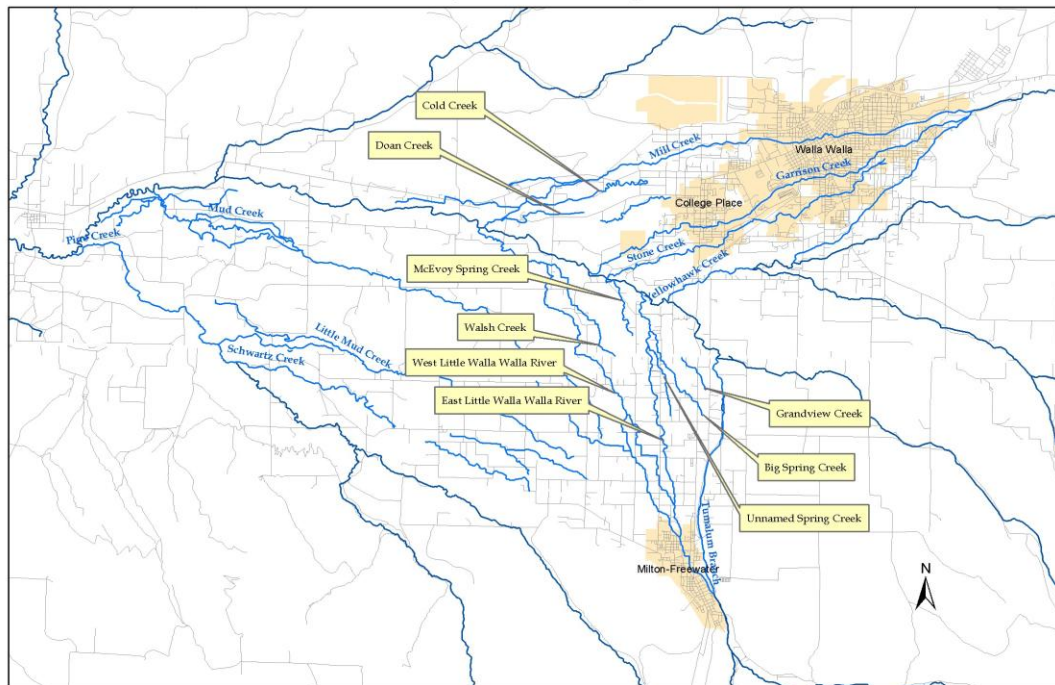
summer of 2000 that the community was forced to reexamine the situation. Starting with the ESA listing of bull trout across the Pacific Northwest in 1998 and the seasonal stranding of bull trout that coincided with heavy irrigation withdrawals from the Walla Walla River, federal fish agencies worked out an agreement with the three larger irrigation districts to divert less water to these distributary branches and ditches and leave more in the 'mainstem' Walla Walla River. This agreement, initiated in the summer of 2000, re-watered an Oregon section of the river with 1/4 of summer-time base flows for the first time in 100 years and was heralded nationally as a model of cooperation. However these dramatic changes in water management in the Little Walla Walla River system along with the piping of leaky ditches to stretch less water further had both immediate and longer term consequences. The springs that had been providing some baseflow (although not at historical potential) back to the Walla Walla River dramatically declined to the point that currently many of these spring creeks are nearly dry year round.

Through a series of public and WWBWC meetings, the WWBWC and its partners began to examine both the historic conditions of these streams and their connection to the underlying alluvial aquifer, upon which they depend for their flow. Starting in 2001, the WWBWC and partners started to develop a monitoring network and a series of on-the-ground aquifer recharge projects designed to address these water management challenges; how to slow water down, recharging the shallow alluvial aquifer and potentially increasing the groundwater flow back to the river during low flow months to sustain spring flows and baseflows for the mainstem Walla Walla River.

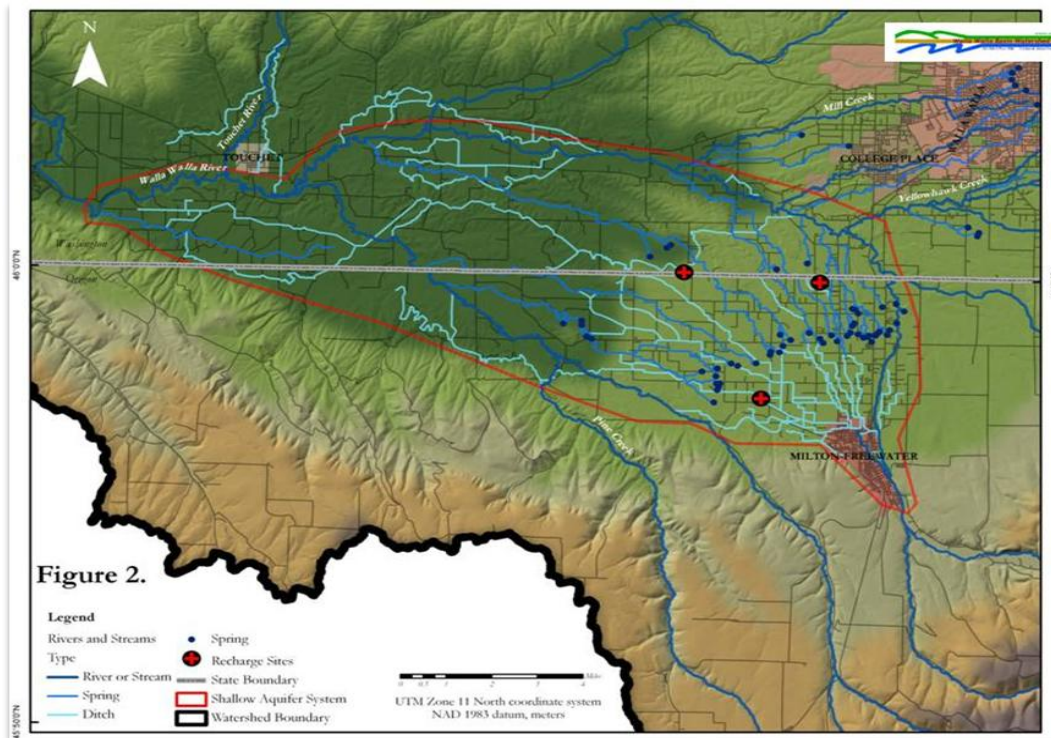


Little Walla Walla River "braids" and Spring Branch network, (springs located)

Walla Walla River and Mill Creek "Distributary" and Spring-fed Streams



Walla Walla River Distributaries identified



Map depicting managed ditches and natural streams (the upper Little Walla Walla River is shown here in pale blue as part of the ditch network)

HABITAT AND WILDLIFE CONDITIONS

Gauging the ecological value of the Little Walla Walla and Spring Branches has become a greater priority of a number of interested agencies. Preliminary research in establishing the potential for future species re-introduction and the means to improving existing fish and wildlife habitat has been performed. Information about these areas of focus continues to be refined and expounded.

The importance of continued investigation and consideration of conclusions is most relevant to the critical question: *What roles will the Little Walla Walla and Spring Branches play in larger efforts to enhance the natural ecological health and beauty of the greater Walla Walla watershed?*

Studies have suggested that maximizing the health of basin-wide ecology requires the involvement of the Little Walla Walla and Spring Branch system because of the critical functions performed within these off-channel habitats. In addition to some sections of the Little Walla Walla and Spring Branch system being relatively healthy fisheries in their own right, the Little Walla Walla and Spring Branch system offers the opportunity to increase flows and lower water temperatures as these smaller creeks enter the mainstem Walla Walla River. Additionally, these smaller creeks provide rearing grounds, holding areas during freshet events, and a cool water refuge for fish when summer temperatures heat up the mainstem Walla Walla River.

According to a detailed study of habitat and fisheries within the Little Walla Walla system in 2004, stretches of the Little Walla Walla itself could offer favorable conditions for salmonid rearing and spawning (Hoverson, 2004 “Habitat and Fisheries Assessment of the Mainstem, East and West Fork Little Walla Walla River Systems.”). Other studies have concluded that the alluvial fan structure of the Little Walla Walla and Spring Branches system provide unique benefits to aquatic species and likely were historically important to the production of salmon, steelhead, redband trout, lamprey, and freshwater mussels.

Fish surveys, where available, have confirmed the presence, albeit limited, of salmonids within the LWW and Spring Branches. Non-salmonid species are also found within the system, and in some cases in relative abundance. Both historic accounts of fishing within the area and salvage operations performed before the installation of new fish screens in 2000 at the LWW Diversion Facility, suggest historically abundant fish populations.

The LWW and Spring Branches system is also home to a wide variety of other aquatic and riparian species. These include valued species such as beaver, as well as ecologically and traditionally important freshwater muscels. The presence of invasive species has also been noted. Reed canary grass for example interferes with irrigation diversion activities and promotes mosquito infestations.

Temperature and Flow

Recent assessment of salmon recovery efforts in the Walla Walla Basin has identified widespread flow and high temperature problems as limiting factors in salmon production. (WWBWC “WW Watershed Assessment”, Army Corps of Engineers Flow Enhancement Feasibility Study, and others)

The LWW and Spring Branches System (LWW/SBS) has the potential to provide cool water to mitigate high temperatures while bolstering flows. Spring emergence , groundwater baseflow input, and hyporheic interaction within the LWW/SBS system enables and augments water temperature moderation. For example, in 2002 temperatures in E. Little Walla Walla reached only 70 degrees F; temperatures on the mainstem Walla Walla at Mojonner Rd (less than 1 mile downstream) exceeded 75 degrees F (Mendel et al. 2003).

Salmon Habitat

The task of investigating the status of habitat in the LWW and Spring Branches has highlighted a unique blend of characteristics of impressive potential. Accordingly, special methods have been utilized to provide an accurate measure of ecological potential.

Because most of these streams receive much of their flow from groundwater seeps and springs, it has been noted that Ecosystem Diagnosis and Treatment tool (EDT) analysis, a commonly accepted form of habitat assessment, likely falls short in recognizing key strengths offered by the LWW and SB system. (WWBWC 2002) The Walla Walla Subbasin plan states:

“The Spring Branch system in the Walla Walla Subbasin probably is – and most definitely was – very important to the production of salmon and steelhead. Low gradient, structurally complex side channels, distributaries and spring brooks provide excellent nursery areas for fry and parr of most salmonid species and, to a lesser degree, protected spawning areas for salmon as well. These kinds of habitat have a large terrestrial influence, and receive both woody debris to add complexity to the physical habitat, insects and other invertebrates that juvenile fish can eat directly, and leaves and other types of vegetation that feed the aquatic insects that are the primary prey base for salmonids. They are largely protected from the more destructive impacts of floods and, because they are directly connected to the hyporheic system (the shallow aquifer beneath and beside alluvial rivers), they were also buffered from the worst effects of drought. Spring brooks, and to a lesser degree distributaries and side channels, are also often infused with cool, nutrient-rich groundwater, which provides an indispensable thermal refuge in the summertime and further increases primary production and food availability. As a consequence, side channels, spring brooks and distributaries have become recognized as critical habitat elements by many biologists working in the hotter subbasins east of the Cascade Mountains. In the Yakima Subbasin, for instance, local biologists have found that juvenile spring chinook and rainbow/steelhead densities are on average three times as great in side channels as mainstem reaches. What is unclear is the degree to which the impact of these habitat elements has been accurately captured by the EDT analysis of the Walla Walla Subbasin. The main reason for uncertainty is that this kind of habitat has a way of disappearing as a subbasin is developed: they occur in rich, flat bottomland areas, and interfere with roads, houses and, especially, agriculture. Once again using the Yakima Subbasin as an example, there were historically seven wide, unconfined portions of the Yakima River that contained scores, and in some cases hundreds, of small side channels, spring brooks and sloughs. Old maps prepared by the Bureau of Reclamation document their existence beyond doubt. Today, however, most of these areas have been filled and levelled and given over wholly to hop fields, alfalfa fields and orchards. To the untrained eye, the river system in these areas today gives absolutely no clue of the kind of fluvial structures that once were present. Indeed, many local biologists believe it is precisely the loss of these complex, unconfined areas that is the major factor limiting production of salmon and steelhead in the Yakima Subbasin today. The Yakima, however, at least had the old maps, as well as the advice and analysis of a number of excellent fluvial geomorphologists and geographers. Therefore, in the Yakima EDT analysis, the historical description of these areas included many side channels, elevated food indices, thermally moderating impacts of groundwater upwelling, and so on. It may be that the documentation of

the historical structure of the Walla Walla Subbasin is missing critical pieces of information regarding this type of habitat. If this is in fact the case, then the restoration potential ascribed to the Spring Branch system of the Walla Walla Subbasin has been underestimated.”

The influence that these streams can have on the steelhead and Chinook salmon populations is largely unknown. The assumption for this assessment is that the cool water input to the mainstem and opportunity for refuge should not be ignored. All of the streams, with the exception of West Little Walla Walla, flow into geographic areas that are priority for restoration and protection and that have flow and temperature as limiting factors. The West Little Walla Walla flows into the Walla Walla just downstream of the priority geographic areas.

Given the complicated nature of this area and lack of detailed understanding of fish usage, hydrology and limiting habitat conditions, the Planning team has recommended this area be identified as a special management focus area. A long-term management objective has been identified, along with specific activities to achieve the management objectives.

Objective: Enhance flow and improve habitat conditions in the Walla Walla spring creeks and distributaries to benefit aquatic and terrestrial species, and to enhance Walla Walla mainstem flow and temperature conditions.

Approach

- *Conduct studies to better understand surface/ground water interaction and hydrology, temperature conditions, fish usage for different lifestyles, limiting habitat conditions, and system fish production capability as part of the larger Walla Walla system*
- *Develop summer and winter flow enhancement targets (preliminary target suggested by citizen as base flow of 4 cfs), and identify and evaluate potential flow enhancement strategies, such as shallow aquifer recharge, irrigation efficiency, ditch management, and other applicable measures.*
- *Pursue projects that measurably enhance flow to the Little Walla Walla system and Walla Walla River mainstem.*
- *Identify and implement ways to manage impacts of residential development (e.g. exempt wells and riparian management) through CAO, zoning, conservation measures, etc.*
- *Identify habitat restoration projects for the lower reaches below springs (i.e. below Ferndale Rd.).*
- *Identify and evaluate diversion screening options for the system.*
- *Implement channel and habitat restoration projects to meet long-term objective.*

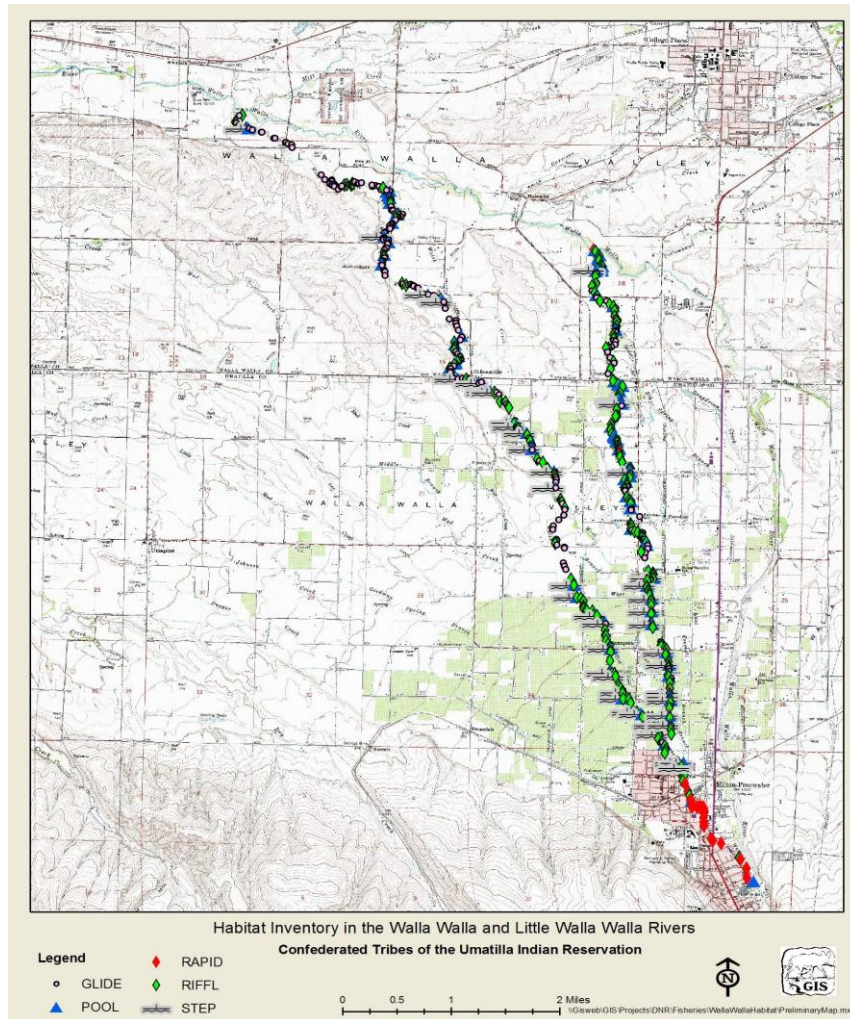
Information collected through these efforts will be evaluated over time, and management objectives and strategies will be updated as system understanding improves.

(*Mobrand Biometrics* in “Walla Walla Subbasin Plan, 2004”)

A 2004 study of salmon and bull trout habitat conditions in the Little Walla Walla, the West Little Walla Walla, the East Little Walla Walla, and Big Spring Branch performed by CTUIR fish biologists integrated ODFW standards of visual habitat assessment in improving the ability of EDT analysis ratings to assess the Little Walla Walla and Spring Branch system. This stream survey provides a detailed overview of habitat conditions which supports and expands upon the conclusions of the Walla Walla Subbasin Plan (Hoverson, 2004). Regarding the Little Walla Walla and Spring Branch system, the “Habitat and Fisheries Assessment of the Mainstem, East and West Fork Little Walla Walla River Systems” states:

“The system contains some high quality salmonid spawning and rearing areas and Big Springs Creek provides cool water and stable flows. Low flows, high stream temperatures and lack of habitat complexity are some of the factors limiting salmonid production in the mainstem WWR downstream from the LWW intake at river mile (RM) 47 as well as the LWW system. Therefore, incorporating a well balanced flow management and habitat enhancement strategy could be beneficial for improving salmonid conditions simultaneously in both the WWR and LWW.”
(Hoverson, 2004: pg 5)

This 2004 assessment interpolated results of current and historic fish surveys, electro-fishing studies, and a modified version of Oregon Department of Fish and Wildlife’s methods of aquatic and riparian habitat inventory. The results are summarized in the graphic below:



West Little Walla Walla River Habitat:

Of the 15.5 km of West Little Walla surveyed, 98% was classified as single channel, and only 6% as off-channel habitat. Based on historic maps and visual inspection it was apparent that significant straightening and channelization had occurred over the years.

At the time of the survey, habitat in the West Little Walla Walla is composed of 63.4% glide, 28.1% riffle and 5.8% sub-unit pools, 2.5% pool, and 0.2% steps. A total of 19 fish passage barriers were observed.

Analysis revealed substrate composition of 49% sand, 26% silt, 22% gravel, 2% cobble, 1% bedrock. The high levels of fine sediments present a limiting factor as they deprive eggs in potential spawning gravel of oxygen. These sediment levels were likely the result of concentrated cattle traffic, overgrazing, plowing too near the streambed, and adjacent dirt roads. (Hoverson, 2004) The lack of higher flows to flush out sediment should also be considered.

East Little Walla Walla Habitat:

Of the 9,464 m of East Little Walla Walla habitat surveyed nearly all was classified as single channel. A diverse assortment of land practices along this reach made abrupt variations in riparian conditions common.

Adult trout, minnows, freshwater mussels and brook lamprey were visually observed over the course of the survey. The assessment states:

“Conditions at the time of survey were such that adult salmon could safely inhabit the lower EF from the mouth to the confluence and including Spring Creek. The section of river upstream from Meadow Lane should be considered a migratory corridor for adults to reach optimal habitat in the LWW River if passage issues are addressed.” (Hoverson, 2004: pg 22)

Mr.Hoverson has stated in subsequent communication that these conditions are likely different in light of changes in flow patterns over the past few years since his assessment was completed. It should be noted however that because of spring tributaries, favorable hyporheic interaction, and stream characteristics the East Little Walla Walla experiences the kind of relatively stable flows important for salmonid production.

The survey concluded that the East Little Walla Walla is composed of 10% pool, 34% glide, and 56% riffle habitat. Substrate analysis showed 13% silt, 39% sand, 44% gravel, and 4% cobble.

Little Walla Walla Habitat (From Cemetery Bridge to the Frog):

This short stretch of river was characterized by predominance of rapid and ripple habitat, presumably resulting from areas where concrete structured narrow width to increase velocity while reducing flood risk. Relatively high concentrations of deciduous growth on the banks provide a significant amount of shade to potential habitat.

Habitat in the Little Walla Walla is composed of 75% rapid, 23% ripple, and 2% pool. Much of the surrounding land is zoned residential (40%). At places, large amounts of rubbish were observed in the stream or on banks.

Substrate analysis shows low levels of sand and silt. Gravel composed 62%, and cobble 26% of substrate.

Summary Tables:

Habitat Benchmark Rankings for the LWW, EF and WF WWR

HABITAT METRIC	POOR	FAIR	GOOD
Pool Area (%)	LWW(2), WF(3)	EF(10)	
Gravel (%)		WF(22)	EF(44), LW(62)

Fines (silt/sand %)	EF(52), WF(75)		LW(9)
Channel Shade (%)	EF(24), WF(26), LW(42)		
Riparian Canopy (%)	EF(15), WF(19)		LW(38)
Woody Debris (#/100m)	EF(1), WF(2), LW(2)		
TOTAL	12	2	4

Aquatic Habitat Inventory Metrics for the EF, WF, LWW Rivers

METRIC	LWW	EF	WF
Miles	1	5	7
Length (m)	2,330	9,464	15,521
Area (m ²)	10,272	20,817	28,936
Single Channel (%)	80	95	98
Quads	47	338	422
Ave Quad Length (m)	50	28	37
Ave Wetted Width (m)	4.4	2.2	1.9
Ave Bankful Width (m)	5.5	3.6	3.3
Ave Depth (m)	0.38	0.26	0.25
Pool (%)	2	10	3
Glide (%)	0	34	63
Riffle (%)	23	56	28
Rapid (%)	75	0	0
Subunit (%)	0	0	6
Bedscour	1.0	1.3	1.1
Spawning Fines	1.0	3.1	4.0
Embeddness	1.5	2.8	3.8
Silt (%)	1	13	26
Sand (%)	8	39	49
Gravel (%)	62	44	22
Cobble (%)	26	4	2
Boulder (%)	2	0	0
Bedrock (%)	1	0	1
Undercut (%)	51	54	53
Wood Pieces (#)	47	86	246
Wood Rating	1.4	1.1	1.2
Channel Shading (%)	42	24	26
Vegetative Stable (%)	40	78	77
Boulder Cobble (%)	46	7	7
Non Erodable (%)	12	7	5
Actively Eroding (%)	2	10	11
Deciduous (%)	73	28	36
Shrubs (%)	3	21	21
Grass (%)	9	50	35
Conifer (%)	5	1	1
None (%)	10	2	8

Canopy Closure (%)	37	15	19
Agriculture (%)	0	25	18
Grazing (%)	3	22	20
Commercial (%)	11	1	1
Residential (%)	40	7	9
Timber (%)	30	8	10
Grassland (%)	2	20	35
Paved (%)	11	7	4
Cleared (%)	3	10	3

This report notes a few important concerns regarding questions about the feasibility of managing the Little Walla Walla and Spring Branch system as a fishery.

The presence of passage barriers inhibits the movement of migratory species throughout the reaches of the Little Walla Walla. Clogged or otherwise inadequate culverts, irrigation structures, debris all act to isolate much of the “excellent” observed habitat.

These barriers also serve an important purpose in keeping fish from entering dangerously shallow waters and areas with erratic flows in the upper Little Walla Walla system, including irrigation ditches. Additionally, they currently serve in isolating an invasive population of brook trout, whose introduction into the mainstem would impact ESA listed bull trout populations. (Brook trout are known to hybridize with bull trout creating a sterile offspring.)

Despite these issues to salmonid re-population, this report concluded that habitat improvement could potentially increase fish populations by a factor of 7. Furthermore: “...incorporating a well balanced flow management and habitat enhancement strategy could be beneficial for improving salmonid conditions simultaneously in both the Walla Walla River and Little Walla Walla.” (Hoverson 2004, pg. 5) Fish presence data is shown below.

Fish Surveys:

LWW West Fish Surveys 2002				Salmonids		Estimated non-salmonids			
Date	Location	Site Length	Temp	Chinook	Steelhead	Dace	Shiners	Sculpin	Suckers
1/17/02	Mouth	150 m	4.8 C	1	4	2	2		2
1/10/02	Public Access (RM 1)	100 m	6.1 C		1	3			
1/17/02	Sunquist and Trolley	100 m	7.8 C			200		40	
1/10/02	Yancy Reser’s Land	100 m	6.4 C		2	7	5		1
1/23/02	Sinden Property	100 m	6.0 C		7	5	25	10	18
1/23/02	RM 0.8	100 m	6.4 C		4	20	100	100	25

From: "Electro-fishing Summary for WLWWR"

	Present #	Potential #	Increase
LWW	400	5,958	14.9
EF	509	2,914	5.7
WF	370	2,859	7.7
SPR	680	2,009	3.0
TOTAL	1,959	13,740	7.0

The wildlife species of primary concern for this portion of the watershed are aquatic species. The LWW and Spring Branches system have a limited amount of redband trout, and a few Steelhead have been documented in the lower East Little Walla Walla River. Historic accounts of steelhead and Salmon migrating up the Little Walla Walla to the upper Walla Walla River have been heard on occasion. Most fish presence consists of dace and shiners. Brook lamprey and freshwater mussels are present in a few locales. Freshwater mussels are a key indicator species. Their abundance is dependent upon high quality water of the appropriate temperature. Historically these species were prevalent in the Little Walla Walla River and Spring Branches. Their current presence has been recorded within the East Little Walla Walla, West Little Walla Walla, and possibly Big Spring reaches. (Hoverson 2004) Brook Trout, a non-native fish species has been observed in an upstream fork of the East Little Walla Walla and in the headwaters of big spring. These species threaten to out-compete native fish species if they are allowed to expand their reach. (Hoverson 2004) Also, if the brook trout are able to make it out to the main river, there is the potential for them hybridizing with bull trout which results in sterile offspring.

The historic presence of beaver throughout much of the Walla Walla Subbasin is well documented. In construction of dams, beavers indirectly encourage stream sinuosity. This helps create a healthy meandering characteristic, improving overall habitat for countless other species. This also maximizes streambed area and floodplain storage, thus markedly increasing total hyporheic interaction (in stream passive recharge). In a 2004 study by CTUIR, it was recommended that beaver be encouraged to return to the LWW and Spring Branches system in order to improve habitat for salmon. Water users have in recent years reported beavers in the LWW and Spring Branches system. ("Bi-State Water Diversion HCP Exhibit L", Hoverson 2004, others) Mink and muskrat are both present in limited numbers. Heron, kingfisher, and can be seen fishing the Little Walla Walla. Osprey are more infrequently spotted.

Native Cottonwood, Alder, willows, and non-native locusts dominate the over-story where one is present. Many reaches, as can be seen from the Hoverson surveys are only bordered by reed canary grass, blackberries, or other non-native grasses.

It has been noted that longstanding deciduous hardwoods have been imperiled by lower flow trends in the past few years, specifically on the banks of the West Little Walla Walla River. (Hoverson 2004)

Invasive Species include reed canary grass. It has been noted by landowners that lower flows have precipitated explosive growth of reed canary grass. If left unchecked, this species will grow to densities that alter river flow, disrupt diversions, can limit fish passage, and out-compete native vegetation. Slow flows resulting from increased densities of invasive weeds have reportedly created conditions for increased -mosquito breeding.

FLOWS

Study of the flows of the Little Walla Walla and Spring Branches system is limited by less than ten years of data, coupled with some flow measurement completed in the 1930s for a Supreme Court deliberation over Washington irrigators claiming Oregon irrigators were taking their water rights. Also, flow measurement has been complicated by variations in management practices over time. A number of conclusions can reasonably be drawn from an analysis of what information does exist.

The Hydrogeologic structure and resulting hydrological behavior of water is characterized by a high degree of ground permeability. , As a result of this permeability, frequent contact between groundwater and surface water is accentuated. The surrounding fertile landscape is shaped by the many natural springs, a clear manifestation of this “permeable alluvium”. For many centuries native peoples utilized the bounty provided by the fish and wildlife enabled by access to cool, clean spring water. The characteristic permeability has also been observed, studied, utilized, and relied upon since western settlement in the 1850’s by administrators, geologists, and irrigators.

Secondly, anthropogenic streambed modification, channelization, and water diversion has altered, eliminated, and in some cases augmented surface flows in the Little Walla Walla and Spring Branches system.

Though pre-irrigation flow data is unavailable, numerous historic documents concerned with relative water rights in the Walla Walla district do exist, and when viewed comparatively, to a certain degree, illuminate changes in flow level over the last century (Washington v. Achermann, Washington v. Oregon). These documents testify that consumptive use has, since the first few decades of the 20th century, consistently limited flows in the West LWW to less than 0.5 cubic feet per second during the months of July and August.

The tasks of piecing together historic flow data and developing new monitoring sites has been part of ongoing efforts of the WWBWC. Preliminary analysis has shown a correlation between early season diversion and sustainable summer flows in the LWW and Spring Branches system

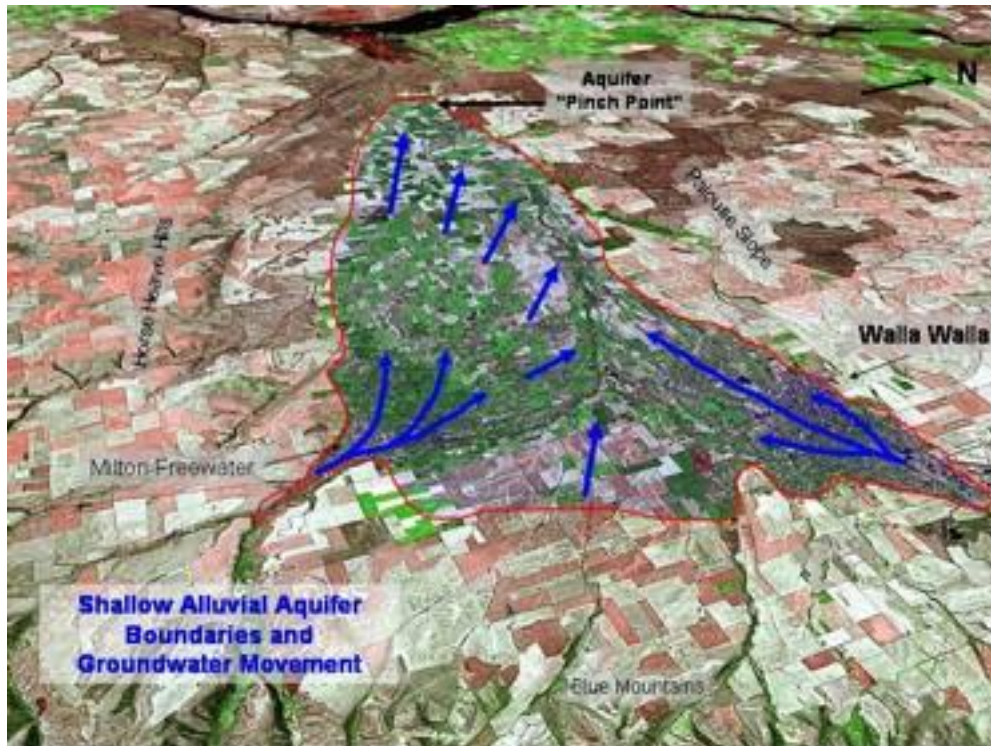
(Bower, 2010)

Hydrogeology

The Little Walla Walla and Spring Branches system are historical distributaries of the mainstem Walla Walla River. Though the East and West Little Walla Walla now initially receive their flow from a diversion of the mainstem, numerous natural springs about 2-3 miles down the valley from the diversion significantly augment flows throughout their respective courses through the Milton-Freewater alluvial fan.

The source for these natural springs, in turn, is known to be the shallow gravel aquifer that runs under the extent of the system (also known as permeable alluvium). (Piper 1933 and Others)

“Thus, the springs of the inner zone seem to be comparable to the spillway of a reservoir, for they are supplied by overflow from the groundwater reservoir in the permeable alluvium, which is constantly replenished from above. They are the agencies which establish and maintain equilibrium between inflow and outflow of groundwater across the barrier of less permeable terrace deposits at the outer margin of the fan.” (Piper 92, emphasis added)



The LWW and Spring Branches surface system function as points of interaction between the discharge of the main stem Walla Walla and the shallow gravel aquifer. These streams and springs absorb and later release peak flows, storing excess water in the shallow gravel aquifer.

(Bower 2007) This dynamic surface / groundwater system naturally utilizes the aquifer to store peak winter and spring flows for release in periods of mid-summer low flow.

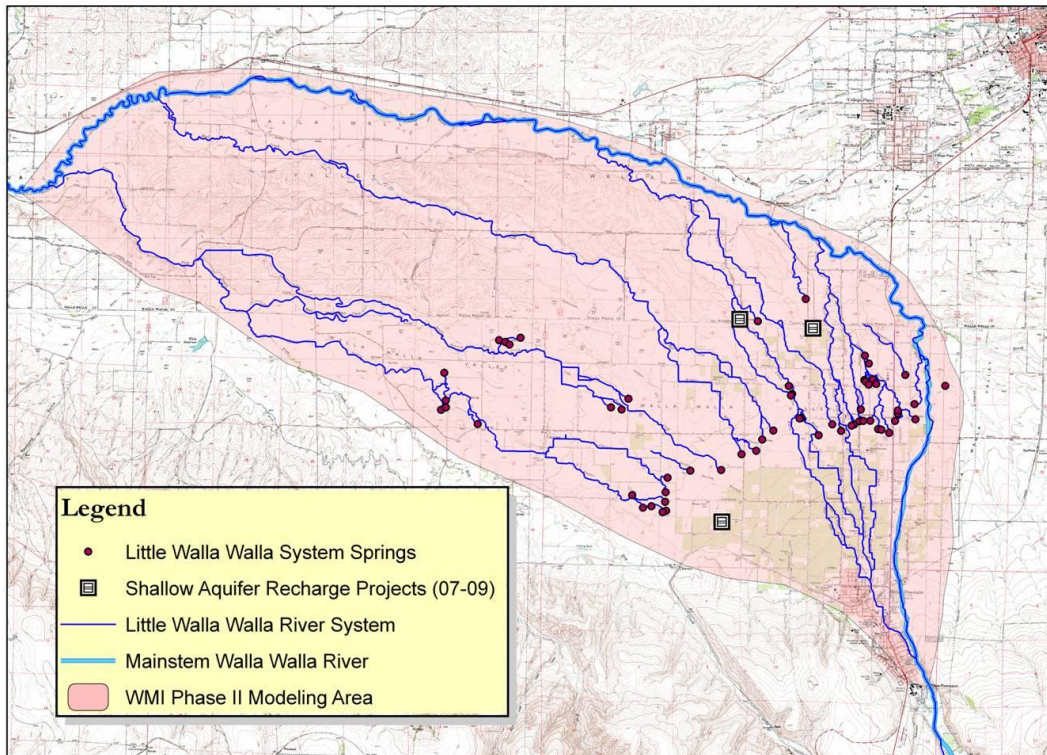
Irrigation practices have long since been adapted to these consistent seasonal trends, and have historically relied on the natural storage of peak flows in the aquifer.

“It has been the practice of the community for many years, due largely perhaps to the character of the streams’ run-off, to irrigate heavily during the early portion of the season... water applied during the winter, spring and early summer, finds its way through the soil and reappears in the form of springs or seepage in the lower channels, this increasing the supply of water available for diversion to lower lands... The practice and custom of heavy irrigation during the flood period of streams has continued for many years and has resulted in bringing under irrigation a considerably larger area than would be possible from the low water flow of the streams unaffected by this irrigation.” (In the Superior Court of the State of Washington in and for the County of Walla Walla; Washington vs Achermann)

This customary practice of the Walla Walla farming community shows a conscious adaptation of methods to the “character of the streams’ run-off.” Though modern scientific knowledge and recent digitized modeling clearly and accurately depict this “passive recharge”, the process has been acknowledged, if not completely understood, for nearly a century.

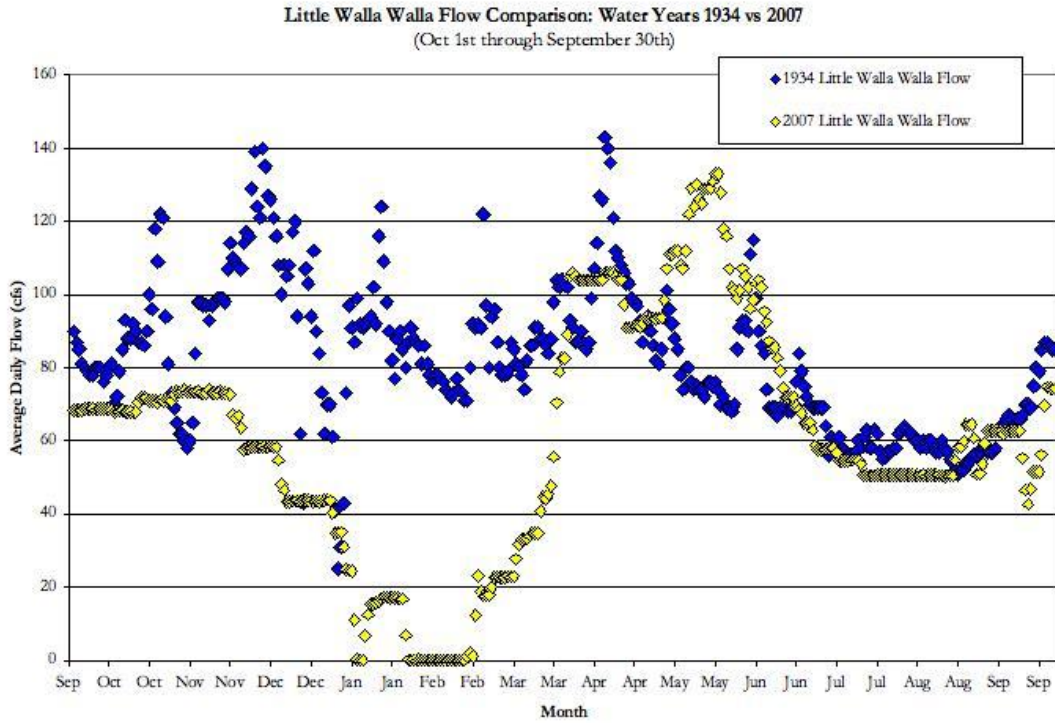
Comprehensive study of this surface / groundwater interaction has been led by the WWBWC hydrology team in partnership with Oregon State University, Oregon Water Resources Department, and Washington Department of Ecology. Data collected has established a strong direct correlation of diversion flows in the Little Walla Walla system and area groundwater levels.

Figure 2. IWFM Modeling Area: Little Walla Walla and Mainstem Walla Walla River System

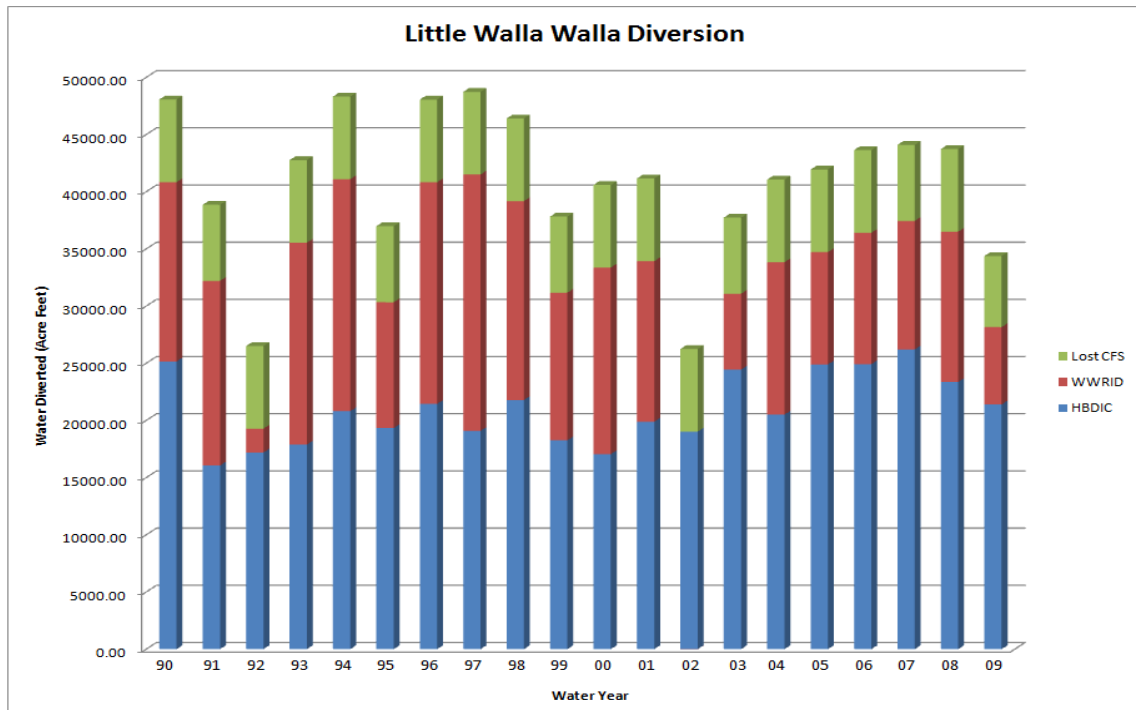


IWFM = Integrated Surface Water/ Groundwater Flow Model

Changes in management practices, motivated over the last decade by desires for irrigation efficiency to allow a portion of water rights to remain instream for federally protected bull trout and steelhead, have significantly reduced the total amount of water stored in the shallow gravel aquifer. Comparisons of historic and modern diversion rates correspond to a declining water table.



Note the reduced flows for the Fall, Winter, and Early spring of 2007 as compared to 1934



This graph shows 10 years before the fish flow agreement and ten years of the agreement

implementation

The maintenance of groundwater levels is essential for the preservation of natural springs and shallow well rights. Anecdotal reports have been heard of 40-50 shallow aquifer wells going dry since the 1980s. The dropping groundwater levels increased dramatically with the the last ten years of the fish flow agreement with USFWS. This was anticipated by the Irrigation Districts, but it was seen as a lesser evil than the potential monetary fines and potential jail time for the alleged takings of ESA protected Bull Trout. In January through February of 2008, several domestic and irrigation wells went dry across a square mile area in the vicinity of Ferndale. There were also visible declines in spring fed ponds in that area. The groundwater levels in this area have recovered somewhat since that event.

In an out of court settlement agreement between the three largest irrigation districts in the valley and the US Fish and Wildlife Service in 2000, a minimum of 13 cfs has been maintained in the main stem Walla Walla. This minimum has since been increased to 25 cfs. This effort has been taken in hopes of elimination of seasonal stranding of ESA protected bull trout and steelhead in what had been the annually dewatered Milton-Freewater stretch. This venture has been successful in restoring main stem Walla Walla River flows and enabling fish passage and year round habitat. Additional flow improvement work and fish passage continue to improve habitat quality and numbers of steelhead and trout show increasing population trends. A secondary benefit has been the restored flows, combined with multiple fish passage projects have made it possible to begin restoring the extirpated population of Spring Chinook salmon back to the Walla Walla River.

This re-appropriation of water to the main stem has had a significant negative impact on flows in the Little Walla Walla and Spring Branch System, especially during the summer. Several historic farms in both Oregon and Washington with pre-1900 water rights have no water at their points of diversion all summer and into the early fall. Fish and wildlife have been lost along several miles of the West Prong Creek system, especially after it crosses over into Washington, but also in Oregon near the stateline.

Winter flows in the Little Walla Walla changed dramatically since the new fish screens were installed at the Little Walla Walla River headgates in 1998. Also flows are carefully controlled in the winter and spring by the irrigation districts, with the concern of stranding bull trout or steelhead that could potentially enter the ends of their service canals, upgradient of spring influences. However, this is unlikely with the multiple barriers documented by the CTUIR 2004 assessment.

LAND USE

The Little Walla Walla and Spring Branch system supports significant economic activity. Over 11,000 acres of water rights are served Walla Walla River water rights conveyed via the Little

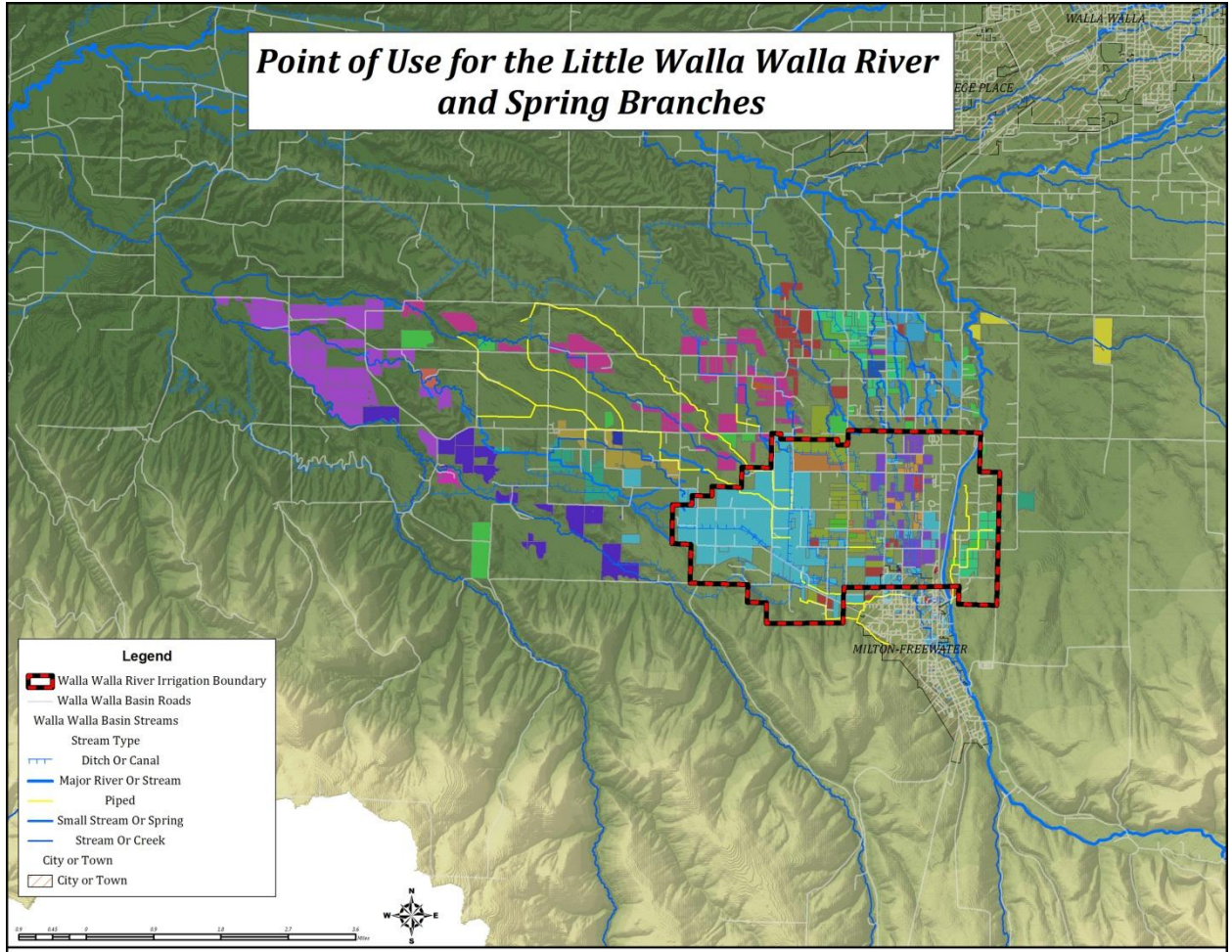
Walla Walla River. Approximately 6500 individual farm acres are irrigated from the Little Walla Walla river and Spring Branches System. This number represents the sum of estimates made at the time of application for a water right. Given that the precision of these numbers is unknown and may not reflect actual irrigated area as it varies from year to year, this acreage total should be understood to reflect maximum allowable usage.

Many small farms, orchards, and vineyards are irrigated with water from the Little Walla Walla and Spring Branches System. Approximately 6500 acres of irrigated lands are served by independent water diversions from these streams, another 19,000 +/- acres have their water delivered by one of three irrigation districts (Walla Walla River Irrigation District (WWRID) 3212 acres/up to 120 cfs water rights , Hudson Bay District Improvement Company (HBDIC) up to 130 cfs, and Gardena Farms District #13 (GFID) up to). WWRID and HBDIC water is conveyed down the Little Walla Walla River to their ditches and farms. GFID, canal crosses over the lower reaches of the East and West Little Walla Walla River in Washington. Also the Fruitvale Water Users Association serves Walla Walla River water rights to their 1400 acres of individual farms via the West Little Walla Walla River to the Fruitvale Ditch that delivers their water to Headwater spring ponds of Middle Mud Creek. A common practice for many of the farms on the valley floor is their irrigation from surface diversion is often supplemented by shallow gravel aquifer “supplemental” wells.

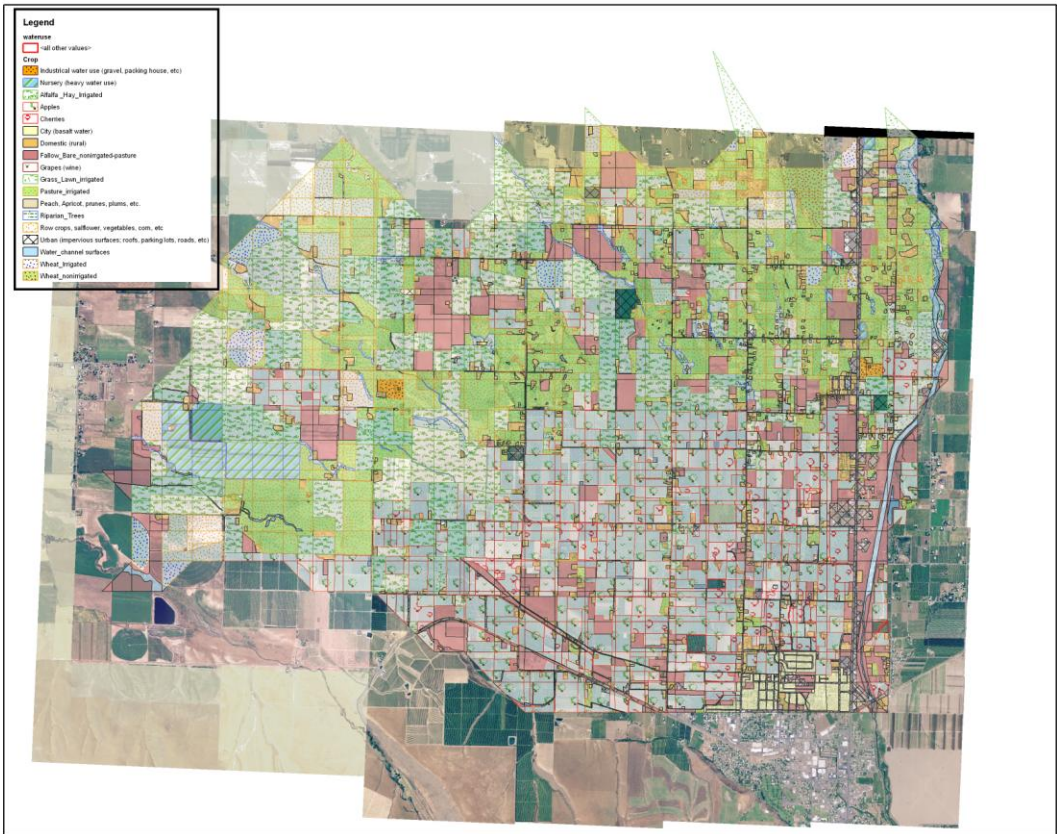
The Little Walla Walla and spring source creeks receive varying degrees of influence on streamflow by water diversion activities in Oregon. The East and West Little Walla Walla Rivers now receive their water via the mechanically controlled Little Walla Walla River diversion off the mainstem Walla Walla River, and numerous natural springs, and spring fed tributaries. Depending on the time of year, 5 to 130 cubic feet per second (cfs) of water is diverted into the Little Walla Walla River. One cfs of that is diverted at the Stillman ditch, with the remainder flowing another half mile through Milton-Freewater and dividing at a diversion structure known as the Frog into the East and West Little Walla Walla Rivers and the HBDIC White Ditch. Much, and sometimes all of the stream flows of the West and East Little Walla Walla Rivers are depleted by the end of the Walla Walla River Irrigation District service area. Just downstream of the WWRID boundary, several springs emerge across the valley floor rejuvenating stream flow in the branches of the East and West Little Walla Rivers. In recent years less water has been diverted down the Little Walla Walla in the summer to satisfy a minimum instream flow requirement on the mainstem Walla Walla River. Because less water has been diverted at the Little Walla Walla River diversion, less water has been available for the West and East Little Walla Walla Rivers as well. While East Little Walla Walla can maintain flow due to groundwater influence, the West Little Walla in parts of Oregon and Washington has gone dry the past ten summers, impacting fish, wildlife, and senior water rights which had never had their points of diversion go dry.

A 2007 report utilized aerial photographs and land owner surveys to determine land use in the OSU-WWBWC IFWM model area. This area includes the Oregon extent of the Little Walla Walla River and Spring Branches system. This data was used in the estimation of water use values within the model calculations. The resulting maps aptly display the wealth of agricultural production afforded by the Little Walla Walla River and Spring Branches System.

Point of Use for the Little Walla Walla River and Spring Branches




- Point of Use Source**
- UNNAMED SPRING
 - BALLOU SPRING BR.
 - BEAWE SPRING
 - BIG SPRING BR.
 - BIRCH CREEK
 - CRYSTAL SPRING
 - DRY CREEK
 - DUGGER CREEK; DUGGER CREEK
 - EAST BRANCH FD BRANCH L WW RIV; EAST BRANCH FORD BR
 - EAST BRANCH W BRANCH CROCKETT; EAST BRANCH W CR BRANCH LT WW; EAST BRANCH W CROCKETT BR; EAST FORK CR BRANCH L WW RIVER; EAST FORK CROCKETT BR; EAST FORK CROCKETT BRANCH L W; EAST FORK CROCKETT BRANCH WW
 - EAST LIT WALLA WALLA RIVER
 - EASTBR/FD BRANCH LT WW RIVER
 - EASTCR BRANCH L WW RIVER; CROCKETT BRANCH L WW RIVER; CROCKETT BRANCH LT WW RIVER; EAST BRANCH CR BRANCH L WW RIV; EAST BRANCH CREEK BRANCH L WW; EAST BRANCH CROCKETT BR; EAST BRANCH CROCKETT BRANCH LW; EAST BRANCH CROCKETT C LWWR; EAST BRANCH CROCKETT CREEK
 - EASTED BRANCH LT WW RIVER
 - EASTLIT WALLA WALLA RIVER; EASTLITTLE WALLA WALLA; EASTPR L WALLA WALLA; EASTPR L WALLA WALLA RIVER; EASTPR L WW R SP BRANCH; EASTPR L WW R SPRING BR
 - FERNDALE SPRING BR
 - FORD BRANCH L W W RIVER; FORD BRANCH L WW RIVER; FORD BRANCH LITTLE WALLA WALLA; FORD BRANCH LT WW RIVER
 - GENTRY SPRING
 - GOODMAN SPRING BRANCH
 - HALUNS SPRING BROOK
 - HEAD SPRING
 - JOHNSON CREEK
 - WEST BRANCH FORD BRANCH L WW; WEST BRANCH FORD BRANCH L WW R; WEST FORD BRANCH L WW RIVER
 - LEWIS SPRING BRANCH
 - LOWER HUDSON BAY D
 - LYDELL BRANCH FORD BRANCH
 - LITTLE MUD CREEK; M BRANCH MUD CREEK; MIDDLE BRANCH MUD CREEK; MUD CREEK; WEST BRANCH MUD CREEK; EAST BRANCH MUD CREEK
 - SALINDERS SPRING BRANCH
 - STEVENS_HALUN CREEK
 - SWARTZ SPRING CREEK
 - LITTLE WALLA WALLA RIVER
 - WEST BRANCH LT W W RIVER; WEST LIT WALLA WALLA RIVER; WEST LITTLE WALLA WALLA; WEST LITTLE WALLA WALLA RIVER; WEST PR L WALLA WALLA RIVER; WEST PR L WW RIVER; WEST PR L WALLA WALLA RIVER; WEST PRONG L WW RIVER; WEST PRONG LITTLE WALLA WALLA; WEST PRONG LWWR





Legend


wateruse

 <all other values>

Crop


 Industrial water use (gravel, packing house, etc)

 Nursery (heavy water use)


 Alfalfa_Hay_Irrigated

 Apples


 Cherries

 City (basalt water)


 Domestic (rural)


 Fallow_Bare_nonirrigated-pasture


 Grapes (wine)


 Grass_Lawn_irrigated


 Pasture_irrigated

 Peach, Apricot, prunes, plums, etc.


 Riparian_Trees

 Row crops, salflower, vegetables, corn, etc

 Urban (impervious surfaces; roofs, parking lots, roads, etc)

 Water_channel surfaces

 Wheat_Irrigated

 Wheat_nonirrigated

LITTLE WALLA WALLA RIVER/SPRING BRANCH MANAGEMENT

As an economically essential and environmentally rich natural resource, the Little Walla Walla River and Spring Branches System are within the jurisdiction of numerous regional, state, and federal agencies. As a bi-state water system, it is under the management of both Oregon and Washington agencies as these streams flow within each state. In addition to governmental bodies, many other groups exist that are invested in the protection and enrichment of water in the area. Managing water resources here has evolved over the years within the context of dialogue and negotiation between and within these organizations, with the overarching guidance being the Walla Walla Decree, the Federal Supreme Court decision of 1933 that attempted to resolve water disputes between competing water interests of the time (Oregon irrigators and Washington irrigators all with Walla Walla River water rights with two separate prior appropriation lists.

The actual mechanisms responsible for supervising the beneficial procurement of water operates within a system designed to maximize diversion under water right decrees and in accordance to the principle of prior appropriation. Though elegant in theoretical simplicity, the implementation of these strategies is inevitably complicated by differences in practice, perspective, and interpretation. In most cases legal precedent exists to frame any debate and help resolve ambiguity. The little Walla Walla River system treated as a distributary system rather than the braided channels of a river that cross a stateline have limited legal precedent to draw upon. One outlier in the valley being a Mud Creek water right in Washington that can make a call on the Walla Walla River and Oregon is obligated to send that water to their farm via the Little Walla Walla River and Mud Creek.

Important to any questions of system management, is the process of classification. Official classification of the Little Walla Walla and Spring Branches impacts most notably the role of agencies interested in Wildlife protection and management, and subsequently, the role of the Little Walla Walla and Spring Branches system in fish production is defined.

There are a number of legal issues relevant to the Little Walla Walla and Spring Branches system. Because the Little Walla Walla and Spring Branches system runs through both Oregon and Washington, interstate legal incongruence is of major concern in issues of water right administration and implementation of flow improvement and fisheries management strategies.

The 1933 Supreme Court case ruling on a petition of Washington water users seeking to enjoin Oregon diversion provides an early example of interstate disagreements. This case provides precedence in interstate water law within the Little Walla Walla and Spring Branches system which reaffirms the principles of beneficial use and prior appropriation.

Additionally, the language of “water law” has been the focus of some discussion with regards to the legality of water rights for projects aimed at aquifer renewal and flow improvement. This has been most pronounced in the efforts to secure permanent rights for the Hudson Bay District Improvement Company’s Aquifer Recharge and Spring Recovery Projects.

An out of court settlement agreement was initiated in the Summer of 2000 between Walla Walla basin irrigation districts, and the US Fish and Wildlife Service. This required approximately 25% of prior appropriated irrigation-season water rights to be left instream for ESA protected bull trout and steelhead passage and habitat efforts. An unintended effect of this agreement (although concerns were raised during negotiations) is that the agreement severely impacted the Little Walla Walla and Spring Branches system. Under this agreement, water has been re-appropriated to the mainstem Walla Walla River from the Little Walla Walla River System and Mud Creek system.

An understanding of the complex systems responsible for managing these waters is necessary for any successful attempt at watershed improvement. Current programs operate both within this established system and upon it in efforts to enhance the health and productivity of the Little Walla Walla and Spring Branches System. What follows is an overview of issues central to management and improvement of water in the area.

Water Management Facilities

The Little Walla Walla River begins at the Cemetery Bridge diversion within the city of Milton-Freewater, Oregon (figure M1). This diversion was constructed as the euro American settlement of Milton was established in the mid to late 1800s as a way to control irrigation water, water to operate water-powered mills, and to limit flooding of the community. The Diversion was upgraded in 1998 with \$2 million from BPA. This funded the construction of an inflatable diversion dam and concrete fishway and automated fish screens and headgates.

Yearly maintenance performed on the Little Walla Walla Diversion facility currently stops flows

for approximately four weeks during the month of February and sometimes into March. Maintenance activities include the clearing of sediments deposited in the forebay and the inspection of the screen gaskets and seals and replacement of those parts if necessary. This schedule began with a shutdown to construct the new fish screens in 1998.



Little Walla Walla River Diversion Dam and Headgates on Walla Walla River

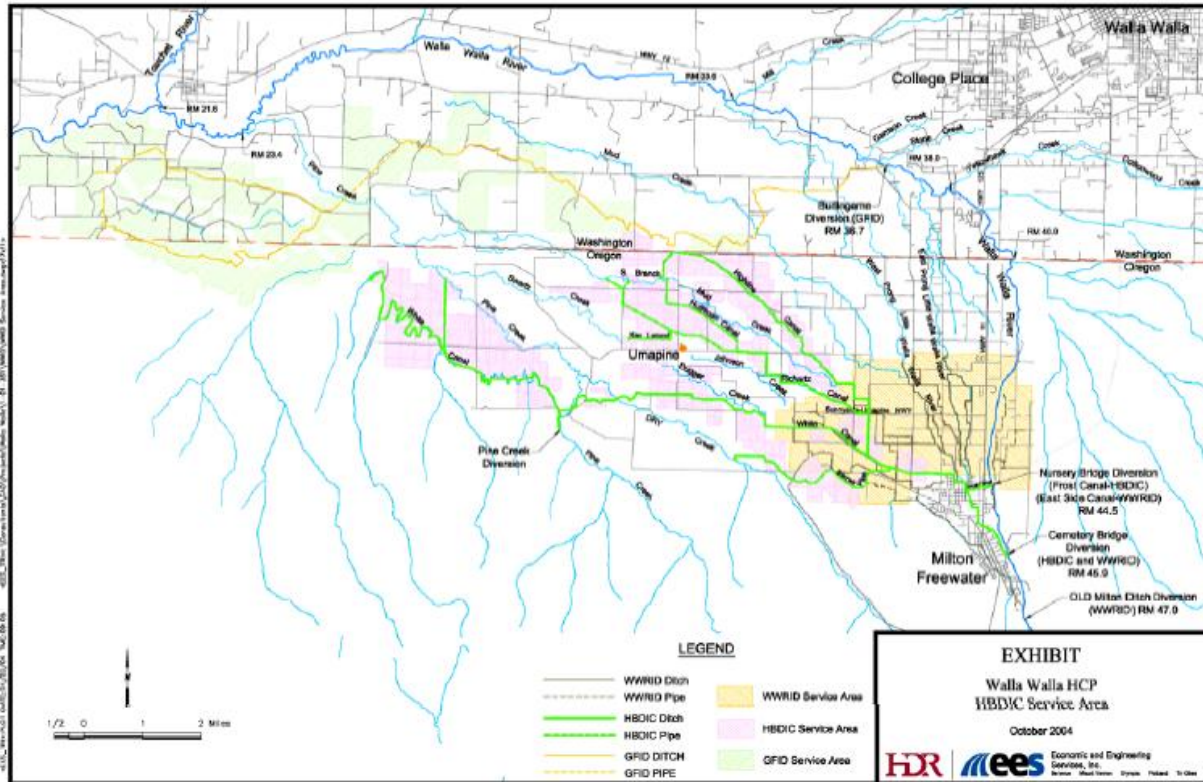


Little Walla Walla Fish screens shut down for winter maintenance

For approximately 1.5 miles the Little Walla Walla meanders through residential, commercial, and light industrial properties and a number of short culverts under roads and a piped section that illegally routed the River around a residential development constructed in the mid 1990s. At about RM 1.5 the LWW is divided into three prongs by a structure known as the “Frog”: The West Little Walla Walla (Ford Ditch); the East Little Walla Walla (Crockett Ditch); and the Hudson Bay District Improvement Company’s main delivery canal.



Hudson Bay Canal, West Little WW, and East Little WW Split L to R. at The “Frog”



Classification of the Little Walla Walla

Geologic and historic evidence strongly suggests that the Little Walla Walla was, before large scale human diversion, part of a natural alluvial fan structure of streams and springs. Over the last 150 years, anthropogenic channelization and streambed modification has consolidated and simplified this system. As a result, there is some disagreement as to whether the Little Walla Walla system should be considered a natural river channel that rejoins the larger river channel at the termination of a 9 mile long, 2 mile wide complex of alluvial deposited islands, or should the Little Walla Walla system be considered an irrigation water conveyance ditch, or otherwise artificial conveyance. This has led to a lack of agreement as to the classification of the Little Walla Walla system amongst managing agencies. The implications of referring to these waters as wholly a natural river or merely an irrigation ditch have also led to a compartmentalized classification of the system in some cases. Adding to the complexity, are the springs that emerge approximately 2.5 miles downgradient of the LWW diversion that provide water year round for much of the Lower Little Walla Walla River system.

The process of official classification results from an interagency dialogue. In Oregon the Department of State Lands (DSL) makes the official classification based on consultations from, among others, the Oregon Department of Fish and Wildlife (ODFW), and the Oregon Water Resources Department (OWRD). In the Little Walla Walla and Spring Branches area, the 1932 Walla Walla River Decree is also used as a guide for legal classification.

Oregon Water Resources Department, the agency responsible for managing water rights in the state of Oregon, asserts the following:

“The river divides here into numerous natural prongs or branches in the nature of sloughs which are **used and controlled as ditches**. Regarding appurtenancy the Decree states in part: "and the priorities of right herein confirmed confer no right to use of the waters of said river and its tributaries on any lands other than those specified tracts to which such rights are herein set forth as appurtenant, and each and every person shall be and is hereby prohibited, restrained and enjoined from **diverting and using water from said river on such other lands without lawful permit first obtained from the State Engineer.**" The State Engineer is the predecessor to what we now know as the OWRD. Regarding priorities the Decree states in part: "and those have prior rights are entitled to divert and use the waters of said river and its tributaries herein involved when necessary for beneficial use in connection with the irrigation of their respective lands or **other useful and beneficial purposes for which they are decreed the right of use**, at all times against those having subsequent rights without let or hindrance, and whenever the water is not required by the appropriator having a prior right to its use for the purpose for which said water was appropriated, he must permit it to flow down the natural channel of the stream as it was wont to flow in its natural course without hindrance or diversion thereof, and those having subsequent rights are entitled to the use of such water and to divert the same to the extent of their rights of appropriation according to the order of priority of their rights; and at all times the water shall be beneficially, economically and reasonably used without waste by those having **a right to the use of such water**, and no rights of appropriation are hereby confirmed to divert a greater quantity of water than such appropriator can beneficially use for the purpose to which the water is to be put." (Justus 4/28/08)

The Oregon decree effectively classifies the Little Walla Walla and Spring Branches as a system of ditches, subject to management in accordance of the policies of beneficial use and prior appropriation.

The classificatory status of a “ditch system”, for better or worse, excludes waters from enforcement of many environmental protections. The role of wildlife protection in these situations has accordingly been to limit the presence of fish within “ditches” and, when possible, salvage stranded ESA listed species in times of low flow for return to the mainstem Walla Walla River. Fish screens have, for the most part, limited the presence of ESA listed salmon and trout species in the Little Walla Walla and Spring Branches system since installation in the 1960s.

There are additional legal questions surrounding Wildlife protection agencies’ actively isolating an environment that fish would otherwise populate. In its defense, this policy protects migratory fish from the inhospitable conditions within and around the many

diversion structures on the Little Walla Walla River and Spring Branches.

In essence, any debate over whether the Little Walla Walla and Spring Branches should be managed as a fishery or merely an irrigation conveyance system is constrained by this ridged classificatory framework.

In the late 1990s, a developer of a subdivision within Milton-Freewater city limits piped a section of the West Little Walla Walla River around and under the home he constructed. DSL levied a monetary fine against the developer, treating the Little Walla Walla River as a natural stream. Another example occurred on one of the spring branches immediately downstream from where the springs emerge. A landowner wanted to pipe a section of the spring creek past his winter feedlot, but was told by DSL that the piping of the stream would not be permitted.

As part of the Walla Walla Bi-State Technical Work Group meetings at the onset of negotiations between the three irrigation districts and USFWS, there was a preliminary agreement made regarding Little Walla Walla River system management. A tour of the Little Walla Walla River System was led by OWRD staff, Washington Department of Ecology staff, and retired Judge Yancey Reser, a water right holder on the Lower West Little Walla Walla River and co-Founder of The Native Creek Society. At the meeting following the tour there was preliminary agreement among Oregon state, Washington state, tribal, USFWS, and NOAA fish biologists regarding managing the upper Little Walla Walla streams between the Little Walla Walla River diversion downstream to where the springs emerge as irrigation water conveyance channels. From the Springs downstream to confluences with the Walla Walla River will be treated as existing and potential fish habitat as flows are not artificially controlled, but instead rely on the output of various springs. There were also statements made that it should not be ruled out that future opportunities may exist for improving the Little Walla Walla River as a migratory route and as important fish habitat. The fact that a \$2 million dollar diversion and fish screen had been installed the previous year to prevent fish from getting into the Little Walla Walla from the upper end was a factor in the outcome of the discussion.

Interstate Waters:

Because the Little Walla Walla and many area Spring Branches run across the border of the state of Oregon into Washington, water rights associated with these waters are administered by separate agencies. Because water rights in the respective state have been adjudicated separately, there is, with a few exceptions, currently no procedure for granting senior water rights in Washington priority over junior rights in Oregon.

This administrative disjunction is of particular concern with regards to in-stream water rights. These flows are designated, as the name implies, to remain within the respective stream. The intent is to maintain suitable flows for fish populations. Many Oregon irrigators have expressed some resentment at re-appropriating water for fish by this method because there is no effective way of protecting these rights across state lines.

On a larger scale, the inability to manage the Little Walla Walla and Spring Branches consistently throughout their extent makes projects aimed at habitat restoration and flow improvement difficult to sustain. Additionally, the separate adjudication and enforcement of water rights in the different states creates strong feelings of inequity that lead to an oppositional orientation within the community of water users.

1936 State of Washington v. State of Oregon

In 1933 this issue was the focus of a complaint filed by the state of Washington against the state of Oregon in the US Supreme Court (*State of Washington v. State of Oregon*, 1936). In this case Washington asserted that Oregon users were utilizing a disproportionate amount of water, resulting in economic damage to Washington irrigators.

To make findings of fact, and to issue a non-binding recommendation, the US Supreme Court appointed a “Special Master”. At the time there was also a study performed by the US geological survey of the groundwater in the Walla Walla basin (Piper, 1933). The Special Master submitted an opinion to the court that the complaint be dismissed, on the basis of a finding that the state of Oregon had for a number of years consistently used approximately the same amount of water without eliciting a complaint from Washington.

It was during these proceedings that a stipulation was signed allowing for joint management of Mud Creek and its tributaries, and Pine Creek and its tributaries. This joint management disregards the State line in determining junior and senior water rights (Stipulation before the Supreme Court of the United States, Original No. 17, In Equity, signed October 21 1933).

As a whole however, *Washington v. Oregon* supports separate adjudication and management by the different states.

Water Rules

The term “water rules” is used to denote the existing guidelines for classification and implementation of water rights. These rules regulate the utilization of specific irrigation practices and the conditions under which a right may be served or a new right established.

These regulations stand to dictate the legality of flow improvement projects. This includes the implementation of instream rights, and any potential aquifer recharge projects.

The Hudson Bay aquifer recharge project managed in partnership with the Walla Walla Basin Watershed Council, is currently relying on a second round of a five year limited license for its water use, until a water right is obtained.

Endangered Species Act and 2000 Agreement

In 2000, the two Irrigation districts which use the Little Walla Walla as a delivery mechanism with rights in the Little Walla Walla and Spring Branches reached a landmark agreement with the US Fish and Wildlife Service, (numerous non-governmental environmental organizations informally agreed not to sue the irrigation districts and the Federal Services) to allow nearly 30% of water previously diverted down the Little Walla Walla for irrigation to remain in the mainstem

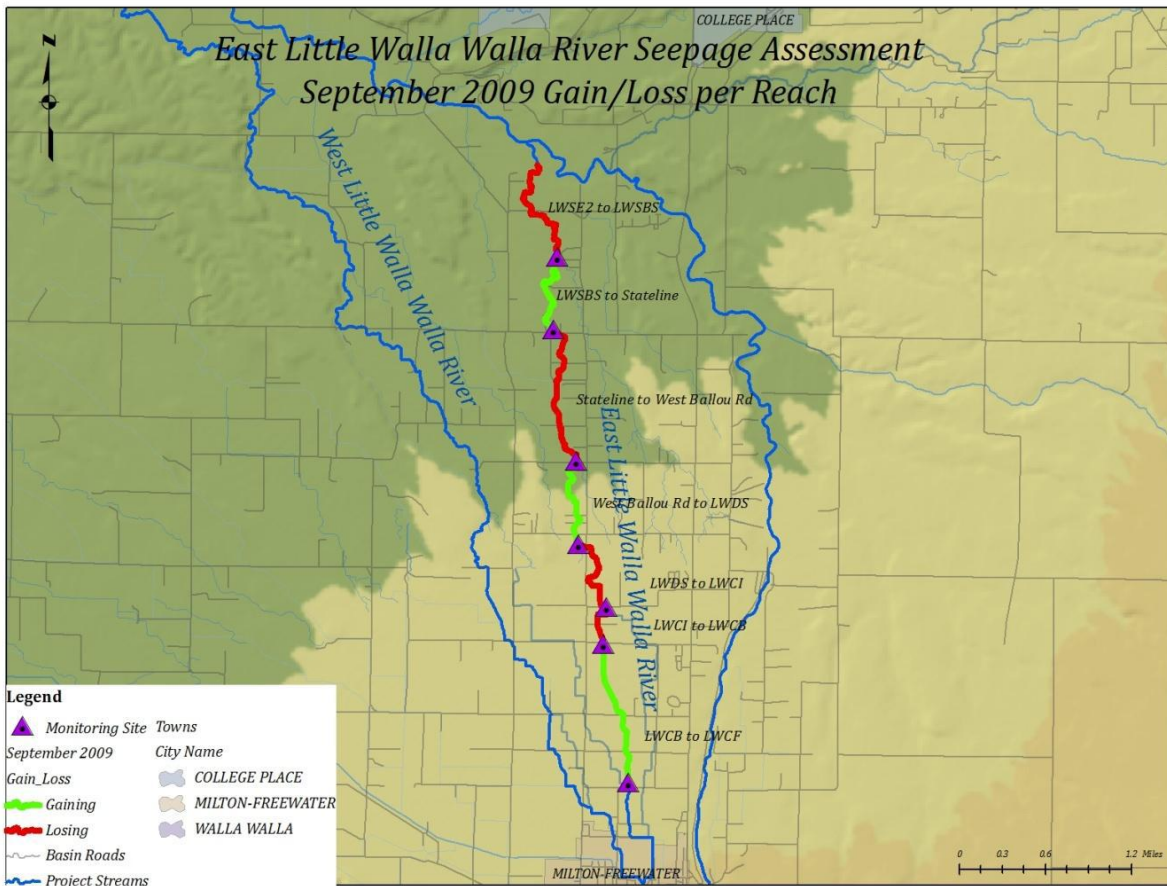
Walla Walla. This was intended to prevent the perennial dewatering of the Walla Walla River and protect ESA listed fish species.

In addition to significantly altering the amount of water available for distribution to water right holders on the Little Walla Walla and Spring Branch system, the 2000 agreement represents a shift in managerial orientation to one recognizing legal protections of fish.

This agreement also offered provisions for “incidental take” as part of a continuing development of a Habitat Conservation Plan. “Incidental take” permits provide protection for actions that may injure or harm an ESA species or their habitat. This may include water users from individual legal action if ESA listed species are found trapped or dead within their diversion structures or related ditches. Mitigating this liability has been an important aspect of the agreement and continues to be a major concern of the irrigation districts.

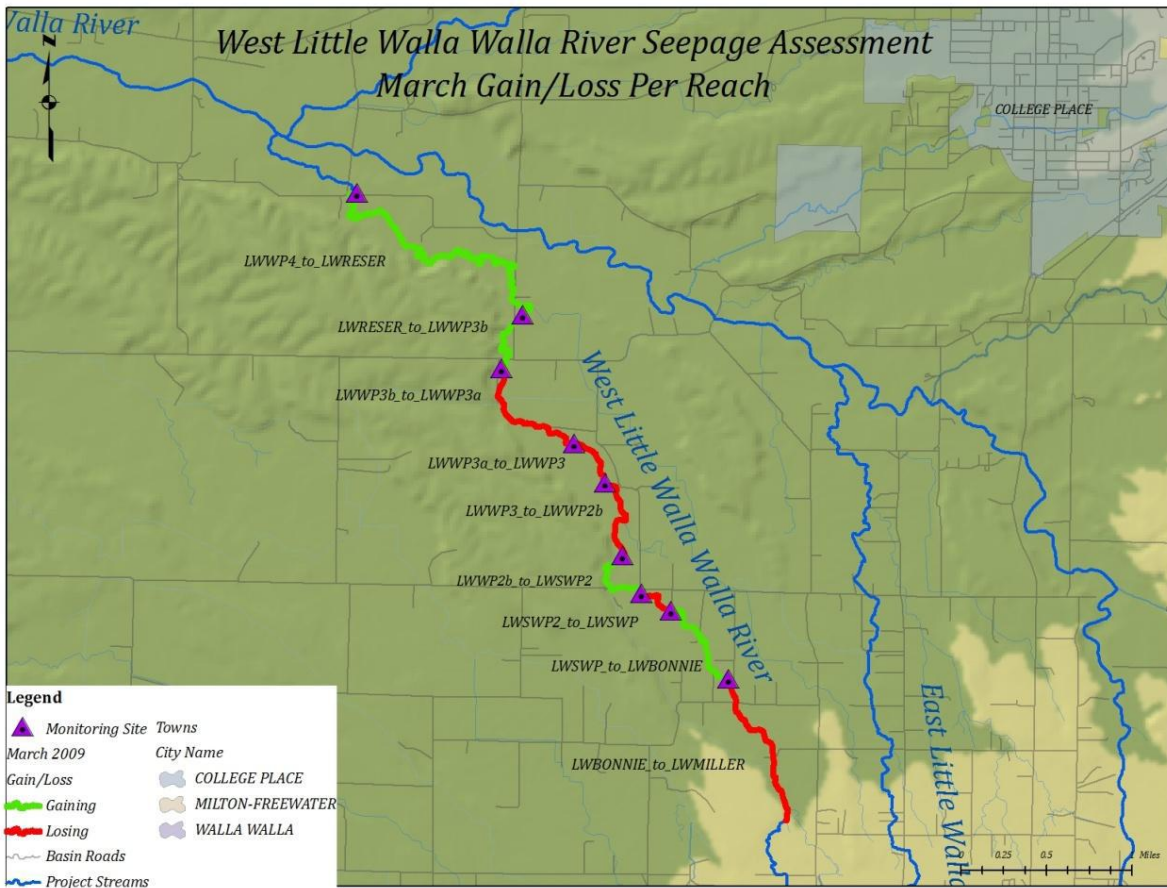
Three primary methods have been used by the irrigation districts to reduce their consumption of surface water rights yet keep the farms they serve viable. WWRID reduced the rate they deliver to their farms from 16.8 gpm to 11.2 gpm. Aggressive irrigation efficiency has been achieved with grant funding match assistance from OWEB, BPA, USFWS, and NRCS for piping over 13 miles of leaky delivery canals and installing more efficient sprinkler systems on over 80 farms. The third method was greater use of supplemental well water from both the shallow and deep aquifers. All three of these actions have contributed to less stream flow in the Little Walla River system and with groundwater level declines the spring branch network was also impacted. The valley community is starting to offset the groundwater impacts by implementing varying methods of aquifer recharge when higher winter and spring flows are available and can be artificially spread out to locations on the floodplain for leakage into the gravels and soils of the depleted aquifer.

Current management is difficult and confusing for the irrigation districts and the individual water right holders downstream that have suffered from inadequate water for their farms. Priority rights often come into question and the both state Watermasters have had to settle disputes or turn down or off irrigation diversions that are junior in water right date to others downstream. Conditions are also no doubt confusing for fish of various species trying to navigate up or down the Little Walla Walla River and Spring Branch streams at various times of year.



September 2009 East LWW Seepage Run: data available in:

http://wwbc.org/images/pdf/WMIfinalreports/4.2_Seepage%20Assessment%20Final%20Report.pdf



September 2009 West LWW Seepage Run: data available in:
http://wwbwc.org/images/pdf/WMIfinalreports/4.2_Seepage%20Assessment%20Final%20Report.pdf

Additional information regarding Walla Walla Basin stream flows and shallow aquifer water level data and trends is available and readily accessible at www.wwbwc.org

Additional relevant photos are attached for an improved understanding of this complicated network of streams.

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INITIAL ACTION PLAN

The following list of activities has been developed to illicit further discussion and planning among varied interests as to the best methods to employ regarding improved flows and conditions for fish and farms in the Little Walla Walla River and Spring Branches. Some of these actions are currently being implemented while others are possible actions to consider. Other suggestions will require policy or administrative changes at the state agency level. Some of these actions have not yet been implemented and further discussion may be required prior to implementation. Many of these topics are contentious and threatening and have led to tense discussions in both a small setting or in public meetings. Movement forward on several of these actions will depend on consensus among the interested parties involved.

Goal 1 Increase year round flows in the Little Walla Walla River

Improve water management to and between diversions with coordinated rotations to improve streamflows (This action is already being implemented by the WWRID for the upper Little Walla Walla area)

Improve water measurement at diversions to improve streamflows (This has been getting implemented on the irrigation districts and increasingly at the turnouts of individual farms off district, especially East Mud Creek utilizing an OWEB grant, and Middle Mud Creek as the Fruitvale Water Users Association implements a 1st and 2nd phase of an OWEB/BPA grant, the Lower West Prong LWW is now starting a diversion measurement project with BPA funds).

Improve irrigation efficiencies on farms to increase stream flows

Clear reed canary grass and iris and other non native wetland vegetation and sediments that are preventing adequate flows

Install fish passage barriers to prevent fish from getting into the Little Walla Reaches that are not sustain with spring creek water volume and flow intermittently at various times of the year. Currently there is concern of fish stranding at times of the year when fish species could migrate up into an inhospitable area

Reduce the Little Walla Walla River shutoff period changing how the fish screens are maintained each year. This could include inspecting the screens using an underwater camera, flushing annual sediment build up out instead of drying up the forebay, utilizing volunteers from the lower Little Walla Walla River to quickly and efficiently clear sediments, put a temporary screened pump in the river and pipe 5-10 cfs around the screens during the maintenance period

Goal 2 Improve Fish Passage in the Lower Little Walla Walla River and Spring branches

Conduct ramping down to gather any possibly stranded fish prior to screen maintenance, then conduct fish rescues if necessary. Occasionally with storm events or accidental power losses the Little Walla Walla River has been known to overtop the screens.

Modify diversion structures starting at the lower end of the East and West Little Walla Walla to increase fish utilization. Eventually work up to but not beyond the spring sources as flows are too intermittent and hot in the summer in the Orchard district area.

Install fish screens at irrigation diversions along the lower Little Walla Walla River

Goal 3 Improve fish and wildlife habitat

Plant trees along the streams

Flush out fine sediments to expose gravels

Improve livestock watering access points with riparian fencing and rock access points

Goal 4 Encourage coordinated management among agencies within Oregon and across the stateline

Consistent management of all reaches of the Little Walla Walla River and the Spring Branch creeks will ensure predictability for landowners and hasten flow and fish habitat improvements in those areas where it is most practical

Goal 5 Groundwater level and spring flow recovery

Implement passive groundwater recharge by maintaining winter flows in the Little Walla Walla River

Continue operating existing HBDIC recharge site to maintain and improve flows in Johnson Creek, Dugger Creek, and Little Mud Creek

Install additional shallow aquifer recharge sites in the vicinity of the Little Walla Walla River and Spring Branches

Goal 6 Improve water quality

Plant trees and shrubs to provide shade for maintaining cooler temperature for aquatic species

Continue Pesticide Stewardship Program, best management practices, and integrated pest management practices to reduce the possibility of pesticides getting into the streams

Install “no dumping – drains to stream” signs on streets around Milton-Freewater

Improve or propose alternate vehicle crossing sites

Clear debris and abandoned machinery from riparian areas

Goal 7 Improve communication and coordination

Support groups that are working on improvements such as the Native Creek Society, the West Prong Little Walla Walla water users, Fruitvale Water Users Association, and the Blue Mountain Horticultural Society

Assist OWRD as they work to improve water management, and measurement of streamflows and diversions

Assist ODFW and CTUIR as they work to improve flows, fish passage, and aquatic habitat

Assist DEQ with monitoring and improving water quality

Little Walla Walla River and Spring Branch Photos



Little Walla Walla River Dry in Feb 2010



Clearing sediment from headgate fish screens



Looking for fish in lower West Prong LWW



Typical Diversion in lower LWW



Before Clearing vegetation West Prong LWW



Same site after vegetation cleared

Little Walla Walla photos page 2



Fish screen forebay LWW headgate



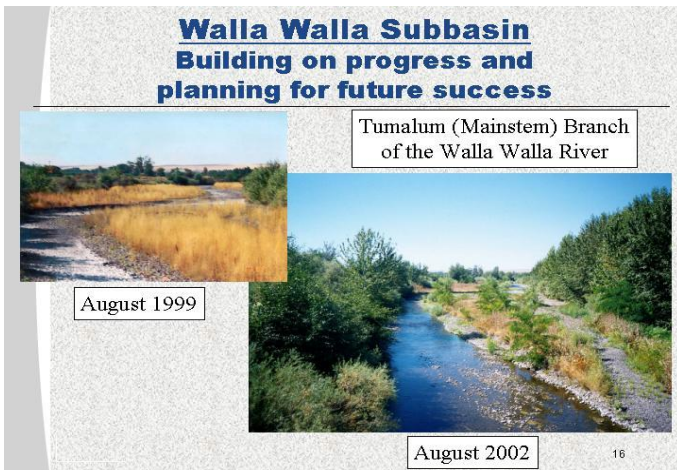
OWRD Gage House at LWW headgate



Clearing WW river gravel buildup at headgates



West Prong measuring device/gate



Flow agreement water in the Walla Walla River that impacted Little Walla Walla River flows