

Columbia River Instream Atlas Project

Washington Department of Fish and Wildlife

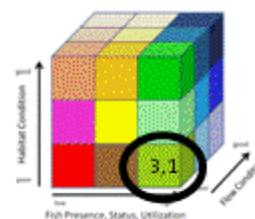
Final Report – APPENDIX B

WRIA 32 WALLA WALLA

3202 - Walla Walla River (Reach 2)

Fish	Habitat	Flow
3	1	3

Fish Status/Utilization and Habitat Condition scores use this color scheme:



Flow Condition score uses line thickness



Washington
Department of
FISH and
WILDLIFE

Walla Walla River (Reach 2)

Ecology Contract C1000090 - WDFW Contract 09-1471

Ecology Publication Number: 11-12-015

November 2011

Columbia River Instream Atlas Project - Final Report Appendix B –WRIA 32 Walla Walla

November 21, 2011

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Funding provided by Ecology Office of Columbia River as part of the 2011 Columbia Basin Long-term Water Supply and Demand Forecast

Ecology Contract C1000090

WDFW Contract 09-1471

Ecology Publication Number: 11-12-015

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Columbia River Instream Atlas Project

Final Report

Appendix B - WRIA 32 - Walla Walla

November 21, 2011

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1. Description

The Walla Walla Subbasin encompasses 1,758 square miles located in Walla Walla and Columbia Counties in southeast Washington State and Umatilla County in northeast Oregon State. “Walla Walla” means area of many springs, which is indicative of the history and the value of the springs in the valley. Only the streams reaches in Washington are considered here.

Primary waterbodies include the Walla Walla River and Touchet River, both of which originate in the Blue Mountains. The Touchet River and Mill Creek are major

tributaries to the Walla Walla, which is a direct tributary to the Columbia River. Melting snow from the Blue Mountains provides much of the annual runoff to the streams and rivers in the subbasin; the water level in many streams diminishes greatly during the summer months. Vegetation in the subbasin is characterized by grassland, shrub steppe, and agricultural lands at lower elevations and evergreen forests at higher elevations. Approximately 90 percent of the subbasin is privately owned, with 9 percent managed by federal/state agencies. The Confederated Tribes of the Umatilla Indian Reservation also owns approximately 8,700 acres within the subbasin¹.

2. Reach Definitions

Boundary delineation for individual reaches in the larger WRIA 32 streams occurs at major tributary confluences and dams. Surface flows and instream habitat often change significantly below these boundaries and in some cases are the points that mark the fork for a specific fish stock. Some reaches terminate at the Oregon border but in many of the small streams the riparian conditions, floodplain functions, fish passage problems, and adjacent land uses change very little until another fork or a tributary flows into it. On these respective small streams reach boundaries are established to reflect the change in flow, and instream and streamside habitat. Headwaters are not often delineated because there are no water rights that provide Ecology opportunities for water acquisition. The urban streams are either distributaries of Mill Creek or the Walla Walla River or flow from springs within the urban environment. Some of the urban streams adjoin underground stormwater systems and the respective boundaries terminate where the stream goes subsurface.

Table B-1 Reach Definitions

Stream Name	Code	Stream Reach Description
Walla Walla River (Reach 1)	3201	Mouth to Touchet River
Walla Walla River (Reach 2)	3202	Touchet River to Mill Creek
Walla Walla River (Reach 3)	3203	Mill Creek to Oregon border
Touchet River (Reach 1)	3205	Mouth to Hofer Dam
Touchet River (Reach 2)	3206	Hofer Dam to Coppei Creek
Touchet River (Reach 3)	3207	Coppei Creek to Touchet River forks
Coppei Creek	3208	Mouth to Coppei Creek forks
North Fork Coppei Creek	3209	Confluence to falls above Coppei Springs
South Fork Touchet River	3210	Mouth to Griffen Fork
North Fork Touchet River (Reach 1)	3211	Mouth to Wolf Fork
North Fork Touchet River (Reach 2)	3212	Wolf Fork to Forest Service boundary
Pine Creek	3213	Mouth to Oregon border
Mud Creek	3214	Mouth (lower) to Locher Rd
Dry Creek	3215	Mouth to North Fork Dry Creek
North Fork Dry Creek	3216	Mouth to tributary at GIS RM 3.0

1 Adapted from Northwest Power and Conservation Council 2005f.

Stream Name	Code	Stream Reach Description
West Little Walla Walla River	3217	Mouth to Oregon border
Mill Creek (Reach 1)	3218	Mouth to Bennington Dam
Mill Creek (Reach 2)	3219	Bennington Dam to Blue Creek
Mill Creek (Reach 3)	3220	Blue Creek to Oregon border
Doan Creek	3222	Mouth to Last Chance Rd at long. 118°24' 17.3" W
Cold Creek	3223	To upper extent of frog ponds E of McKinney Rd
Blue Creek	3224	Mouth to Laird Creek
East Little Walla Walla River	3225	Mouth to Oregon border
Patit Creek	3226	Mouth to confluence of North and West Patit Creeks
West Patit Creek	3227	Mouth to Forest Service boundary
Yellowhawk Creek	3228	Mouth to Mill Creek
Cottonwood Creek	3229	Mouth to North Fork Cottonwood Creek
Whisky Creek	3230	Mouth to tributary at GIS RM 6.0
Titus Creek (Reach 1)	3231	Mouth to Five Mile Bridge
Titus Creek (Reach 2)	3232	Five Mile Bridge to Mill Creek
Walsh Creek	3233	Mouth to pond on farm bordering Oregon
Caldwell Creek	3234	Mouth to Shelton Rd (whole stream)
Wolf Fork	3235	Mouth to USFS boundary

3. WRIA Results

Fish Status and Utilization

Components of the fish utilization score and ranking are SaSI status, ESA status, fish diversity and time spent in the reach for spawning/incubation, rearing/smolt migration and adult migration. TRT designation was not considered in this rating but is available on the spreadsheets for inclusion in future evaluations.

Four salmonid stocks are scored for the Walla Walla River Basin. Those stocks are Walla Walla Summer Steelhead, Touchet Summer Steelhead, bull trout, and Walla Walla Spring Chinook. Though fall Chinook and coho are also present in the Walla Walla, we did not include them in scoring for this basin.

Spring Chinook were effectively extirpated from the Walla Walla River Basin in the late 1950's. The extirpation was ascribed to dewatering of the mainstem Walla Walla River below Ninemile Dam and irrigation withdrawals throughout the basin during the important months of adult migration. Efforts by the CTUIR to reintroduce spring Chinook to the Walla Walla River Basin using adult out-planting, have met with some success, so the reintroduced stock is included in CRIA. An "unknown" status is assigned to spring Chinook here, and the known distribution of reintroduced fish is represented in the CRIA fish tables.

SaSI status for Walla Walla Summer Steelhead, Touchet Summer Steelhead, and bull trout are unknown, depressed, and depressed respectively. In addition, bull trout and the two summer steelhead stocks are classified by ESA as threatened (Table B-2). Fish status/utilization periodicity is depicted on Table B-3.

The weighting factor (ESA and SaSI) for the each stock remains the same within the basin whereas the life cycle stages and duration will change depending on the stream reach. SaSi status, and ESA listing will not be repeated for each stream reach.

Table B-2 SaSI Stock Name, Status, ESA Listing Unit, & Listing Status

SaSI Stock name	SaSI Status	ESA Unit Name	ESA Listing Status
Walla Walla Spring Chinook	n/a	n/a	n/a
Walla Walla Summer Steelhead	Unknown	Middle Columbia Steelhead	Threatened
Touchet Summer Steelhead	Depressed	Middle Columbia Steelhead	Threatened
Touchet Bull Trout	Unknown	Touchet/Walla Walla Bull Trout (Oregon Recovery Unit)	Threatened
Mill Creek Bull Trout	Healthy	Touchet/Walla Walla Bull Trout (Oregon Recovery Unit)	Threatened

Table B-3 Fish status & utilization periodicity for five life stages.

Fish Species - SaSI Stock (SaSI)	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Walla Walla Summer Steelhead (ESA Threatened; 2 Depressed SaSI Stocks)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock (SaSI)	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Walla Walla Spring Chinook (No ESA stock; No SaSI Stock)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock (SaSI)	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Walla Walla Bull Trout (ESA Threatened; 2 Unknown SaSI Stocks)	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												

Note: Stock presence varies by stream reach

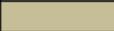
	= No Use
	= Some activity or use occurring
	= Peak activity

Table B-4 Fish status/utilization score & bin by stream reach

Reach Code	Reach Name	Prioritization Score	Normalized Score	Bin	Bin Equivalent
3201	Walla Walla River (Reach 1)	224	0.94	3	High
3202	Walla Walla River (Reach 2)	224	0.94	3	High
3203	Walla Walla River (Reach 3)	204	0.85	3	High
3205	Touchet River (Reach 1)	224	0.94	3	High
3206	Touchet River (Reach 2)	188	0.78	3	High
3207	Touchet River (Reach 3)	204	0.85	3	High
3208	Coppei Creek	114	0.50	2	Medium
3209	North Fork Coppei Creek	90	0.40	2	Medium
3210	South Fork Touchet River	195	0.86	3	High
3211	North Fork Touchet River (Reach 1)	198	0.88	3	High
3212	North Fork Touchet River (Reach 2)	225	1.00	3	High
3213	Pine Creek	114	0.50	2	Medium
3214	Mud Creek	60	0.27	1	Low
3215	Dry Creek	114	0.50	2	Medium
3216	North Fork Dry Creek	90	0.40	2	Medium
3217	West Little Walla Walla River	114	0.50	2	Medium
3218	Mill Creek (Reach 1)	198	1.00	3	High
3219	Mill Creek (Reach 2)	225	0.88	3	High
3220	Mill Creek (Reach 3)	225	1.00	3	High
3222	Doan Creek	114	0.50	2	Medium
3223	Cold Creek	114	0.50	2	Medium
3224	Blue Creek	150	0.66	2	Medium
3225	East Little Walla Walla River	114	0.50	2	Medium
3226	Patit Creek	114	0.50	2	Medium
3227	West Patit Creek	114	0.50	2	Medium
3228	Yellowhawk Creek	138	0.61	2	Medium
3229	Cottonwood Creek	90	0.40	2	Medium
3230	Whisky Creek	114	0.47	2	Medium
3231	Titus Creek (Reach 1)	90	0.40	2	Medium
3232	Titus Creek (Reach 2)	90	0.40	2	Medium
3233	Walsh Creek	90	0.40	2	Medium
3234	Caldwell Creek	90	0.40	2	Medium
3235	Wolf Fork	225	1.00	3	High

Habitat Condition

Water Resource Inventory Area (WRIA) 32 represents about 73 percent of the entire Walla Walla watershed; the remainder is in Oregon. Instream habitat and riparian conditions tend to reflect the local land use practices. The upper watershed tributaries, such as the upper North Fork Touchet River, Wolf Fork, and upper Mill Creek flow through managed US Forest Service lands that retain the natural functions and values of an aquatic environment to a much greater extent than the middle or lower reaches of the major tributaries and rivers within the Walla Walla Basin. High water temperatures and summer low flows create lower quality habitat conditions in the mainstem river below College Place on the Walla Walla River and downstream of Dayton on the Touchet River.

The Spring Branch system, known as the East and West Little Walla Walla Rivers is very dependent on alluvial groundwater levels that are heavily influenced from river flows as they leave the rocky mountain terrain and enter the large Walla Walla Basin alluvial fan. Most of the small streams in the valley originate from one of the many groundwater springs. Walla Walla means area of many springs, which is indicative of the history and the value of the springs in the valley. Flow and riparian restoration on the small tributaries coupled with the increasing numbers of steelhead spawning and rearing demonstrates the value of the cool groundwater influence within the smaller systems, plus the influence on temperature in the Walla Walla River.

Large scale agriculture practices dominate the landscape outside of the US Forest Service lands. Dry land and irrigated wheat are primary crops. There are numerous high water duty crops such as alfalfa, alfalfa seed, corn, onions, and apples, in addition to grapes, pasture, and rangeland. The high irrigation demand during the summer often puts surface flows at risk in the lower reaches resulting in a dry stream bed in the lower Touchet and Walla Walla Rivers. The erosion levels into the river from the deep soils are excessive and contribute to the loss of spawning gravels, poor water quality, and degraded food supply for rearing juvenile salmonids. Municipalities, small farms, levees, and other development also contribute to the loss of instream flow and habitat in the middle to lower reaches throughout WRIA 32.

The stream flow is dependent on snow pack in the Blue Mountains. A majority of salmonids spawn in higher elevation reaches because of fewer limiting factors; juvenile survival is higher because of better cover, considerable woody debris, cold clean water, and less competition from warm water fishes; and fluvial migration is not hindered due to low flows. Spring droughts affect the adult migration success of two key basin stocks: steelhead and spring Chinook. Mature bull trout often incur fluvial migrations only, which limits their migration to the upper reaches and makes them less vulnerable to low flow conditions due to drought in the middle to lower reaches.

It should be noted that inadequate diversion screening was not evaluated for this project, though it is identified as a serious source of immediate fish mortality in basin-specific planning documents.

Table B-5 Habitat condition score & bin by stream reach

Reach Code	Reach Name	Prioritization Score	Bin	Bin Equivalent
3201	Walla Walla River (Reach 1)	9	1	Poor
3202	Walla Walla River (Reach 2)	10	1	Poor
3203	Walla Walla River (Reach 3)	11	2	Fair
3205	Touchet River (Reach 1)	8	1	Poor
3206	Touchet River (Reach 2)	11	2	Fair
3207	Touchet River (Reach 3)	14	2	Fair
3208	Coppei Creek	11	2	Fair
3209	North Fork Coppei Creek	16	3	Good
3210	South Fork Touchet River	15	3	Good
3211	North Fork Touchet River (Reach 1)	13	2	Fair
3212	North Fork Touchet River (Reach 2)	16	3	Good
3213	Pine Creek	6	1	Poor
3214	Mud Creek	6	1	Poor
3215	Dry Creek	10	1	Poor
3216	North Fork Dry Creek	16	3	Good
3217	West Little Walla Walla River	10	1	Poor
3218	Mill Creek (Reach 1)	8	1	Poor
3219	Mill Creek (Reach 2)	16	3	Good
3220	Mill Creek (Reach 3)	16	3	Good
3222	Doan Creek	12	2	Fair
3223	Cold Creek	12	2	Fair
3224	Blue Creek	15	3	Good
3225	East Little Walla Walla River	15	3	Good
3226	Patit Creek	8	1	Poor
3227	West Patit Creek	15	3	Good
3228	Yellowhawk Creek	10	1	Poor
3229	Cottonwood Creek	10	1	Poor
3230	Whisky Creek	11	2	Fair
3231	Titus Creek (Reach 1)	8	1	Poor
3232	Titus Creek (Reach 2)	15	3	Good
3233	Walsh Creek	13	2	Fair
3234	Caldwell Creek	11	2	Fair
3235	Wolf Fork	17	3	Good

Flow Condition

Water supply in the Walla Walla basin originates in the Blue Mountains of Southeast Washington/Northeast Oregon. A major deep aquifer comprised of basalt layers hundreds of feet in thickness underlies the entire watershed, and contains a substantial amount of ground water flowing slowly through fractures in the rock. A shallower gravel aquifer about 120,000 acres in size overlies the basalt aquifer from Milton-Freewater downstream to the town of Touchet, and has substantial hydraulic continuity with the Walla Walla River. A number of tributaries in this basin are spring-fed, and many creeks run dry naturally in late summer months. Sections of the lower Touchet River, lower Mill Creek, and the Walla Walla River between the city of Milton-Freewater and the Oregon-Washington border can become completely dewatered in summer and early fall. Recent efforts at flow restoration in the lower basin have resulted in significant flow improvements in these reaches.^{2 3}

It is important to distinguish between naturally-low-flow creeks and reaches in which low flows are caused by water diversions from the stream. Although that distinction has not been directly identified in CRIA flow scoring, reaches with low “flow” scores all have some component of water diversion.

Fourteen of the thirty-three reaches in WRIA 32 have no flow gauge and a couple of those have only intermittent gauge data. For reaches without gauges, flow scores were derived based on estimated flow levels and the status of diversions for each reach. Only a couple of reaches have no (recorded) diversions. In some cases the gauge data were so sparse that we decided not to use them for scoring; those cases are noted in the workbook tabs. Likewise, some of the NDH+ estimated Mean Annual Flows were incongruous with the little gauge data available, or with the habitat narrative, and were manually deleted from the analysis. These cases are noted on the “Reaches” tab of the Flow workbook. Removing these data points from the analysis has the effect of binning the reach “poor” for flow condition, which was consistent with scores for the other scoring elements.

Flow patterns across months are normative for most reaches (with gauges), though most curves are truncated as irrigation comes online. Several reaches (Cottonwood Creek, East Little Walla Walla River, Blue Creek, Mill Creek (Reach 2), Dry Creek, and Coppei Creek) have summer-fall flows below 2cfs; Mill Creek Reach 1 has July flow (4.9 cfs) that is 2% of the peak spring flow on average, and South Fork Touchet River has August/September flow (3.2 cfs) that is about 3% of the peak spring flow.

² Adapted from SALMONID HABITAT LIMITING FACTORS WATER RESOURCE INVENTORY AREA 32 WALLA WALLA WATERSHED FINAL REPORT 4/1/2001 Mike Kuttel, Jr. Washington State Conservation Commission; and

³ *Walla Walla Subbasin Plan* Prepared for Northwest Power and Conservation Council Submitted by Walla Walla County (on behalf of the Walla Walla Watershed Planning Unit) And the Walla Walla Basin Watershed Council, May 28, 2004.

Walla Walla Reach 2, Touchet Reach 2, North Fork Touchet Reach 1, and Mill Creek Reach 3 each have instream flow levels set in WAC (Table B-6)⁴. On average, WAC instream flows are not met in July through November (June through November in Mill Creek Reach 3). Monthly minimum flows (minimum flow for each month within a period of record) are lower than WAC instream flows 9, 8, 11, and 12 months out of the year (respectively) in these four reaches.

Table B-6 Minimum Instream Flows set in Chapter 173-532 WAC

Time Period	Reach 3202 Walla Walla River Reach 2 at East Detour Road ECY Gage 32A100	Reach 3206 Touchet River Reach 2 at Bolles Road ECY Gage 32B100	Reach 3211 N.F. Touchet River Reach 1 above Dayton ECY Gage 32E050	Reach 3220 Mill Creek Reach 3 near Walla Walla. USGS Gage 14013000
Jan	250	150	95	110
Feb	250	150	95	125
Mar	350	200	125	150
Apr	350	200	125	150
May	250	200	125	125
Jun	Closure	125	95	100
Jul	Closure	74	65	53
Aug	Closure	48	53	41
Sep	Closure	56	51	41
Oct	Closure	82	63	48
Nov	Closure	150	95	100
Dec	250	150	95	110

⁴ WAC instream flow rules are set by approximately weekly periods. Because CRIA scoring was evaluated at a monthly time scale, we choose the highest WAC value for each month to compare with Mean Monthly Flow. In closed periods, we used the most recent (earlier) WAC value.

3 = High/Good
2 = Average / Fair
1 = Low / Poor

Table B-7 Flow condition score & bin by stream reach

Reach Code	Reach Name	Prioritization Score (High = Poor)	Bin (High = Good)
3201	Walla Walla River (Reach 1)	7	3
3202	Walla Walla River (Reach 2)	9	3
3203	Walla Walla River (Reach 3)	7	3
3205	Touchet River (Reach 1)	6	3
3206	Touchet River (Reach 2)	11	3
3207	Touchet River (Reach 3)	8	3
3208	Coppei Creek	24	1
3209	North Fork Coppei Creek	24	1
3210	South Fork Touchet River	21	2
3211	North Fork Touchet River (Reach 1)	8	3
3212	North Fork Touchet River (Reach 2)	12	3
3213	Pine Creek	24	1
3214	Mud Creek	32	1
3215	Dry Creek	24	1
3216	North Fork Dry Creek	18	2
3217	West Little Walla Walla River	7	3
3218	Mill Creek (Reach 1)	18	2
3219	Mill Creek (Reach 2)	10	3
3220	Mill Creek (Reach 3)	18	2
3222	Doan Creek	24	1
3223	Cold Creek	36	1
3224	Blue Creek	15	2
3225	East Little Walla Walla River	20	2
3226	Patit Creek	24	1
3227	West Patit Creek	18	2
3228	Yellowhawk Creek	40	1
3229	Cottonwood Creek	36	1
3230	Whisky Creek	24	1
3231	Titus Creek (Reach 1)	36	1
3232	Titus Creek (Reach 2)	36	1
3233	Walsh Creek	32	1
3234	Caldwell Creek	24	1
3235	Wolf Fork	15	2

4. Reach Results

3201 - Walla Walla River (Reach 1)

Fish	Habitat	Flow
3	1	3

Fish Status/Utilization

All four stocks are present in Walla Walla River (Reach 1), which contributes to the high Fish Status/Utilization rating. Walla Walla and Touchet Summer Steelhead utilize this reach for adult migration and juvenile rearing. Most steelhead spawn higher in the system or in the headwaters of this basin beyond the borders of Washington. Walla Walla Spring Chinook and bull trout also rear and migrate in Walla Walla River (Reach 1) but spawn elsewhere.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The lowest reach on the Walla Walla River is a low gradient meandering stream channel that is surrounded by farms and grazing lands from the mouth to the Touchet River confluence. There are no tributaries, very few side channels, and floodplain connectivity is limited. Instream habitat is limited to slow moving water, pools, and long series of runs. Warm water temperatures during the summer limit juvenile rearing values to the late fall, winter, and spring months. Riparian zones are degraded, streambank erosion is high, and the river channel is incised.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 21 cfs in August and the peak is 1,292 cfs in February. Minimum flow is 4 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Contrary to the overall score of "good," this reach can be severely flow and temperature impaired in summer months. The average of June through October flows is 5 times less than the average for other months. With a minimum Mean Monthly Flow of 21 cfs (August) and a peak of 1,292 cfs (February), the usefulness of average monthly flow as a scoring basis can be questioned. Diversions evaluated for this project represent 27 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. While this reach demonstrates classic flow impairment, the overall flow volume bins this reach as "good" in comparison to the many very-low-flow reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3202 - Walla Walla River (Reach 2)

Fish	Habitat	Flow
3	1	3

Fish Status/Utilization

Walla Walla River (Reach 2) also rates high for Fish Status/Utilization. Walla Walla Summer Steelhead stock expresses spawning, rearing and migration life cycle behaviors in this reach. The other three stocks limit behavior to rearing and adult migration life cycle stages.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The middle reach (2) flows between the confluences of Mill Creek and the Touchet River. A large unconfined gravel aquifer that underlies the area roughly from Milton-Freewater downstream to the town of Touchet is highly connected to the river through hydraulic continuity and is the source of gaining flows in this reach. Numerous agricultural points of diversions (POD) often reduce flow during the spring, summer, or early fall to less than 10 cfs. This creates a physical and thermal passage barrier at critical riffle zones.

Several tributaries flow into the Walla Walla River Reach 2 that offer cool water refuge for juveniles at the confluence. There is very little public land that borders the river, except at McDonald Road. The riparian zones are narrow and limited in plant diversity because of farming. There are several levees that affect floodplain connectivity. There is limited side channel habitat and a few riverine wetlands in the lower gradient zones. Biologists observed steelhead spawning in the upper part of Reach 2 in 2010 near the mouth of Mill Creek. Rearing habitat values increase in the upper portions, as cool water complements greater mesohabitat complexity, and better cover.

Habitat scoring detail is available on Table B-9.

Flow

'Gauge:Yes Rule:Yes Comments: The minimum of monthly mean flows in this reach is 40 cfs in August and the peak is 635 cfs in May. Minimum flow is 14 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 57 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. The instream flow rule is higher than Mean Annual Flow in 5 months of the year, on average. Reaches with flow rules greater than Mean Annual Flow for between 6 and 9 months of the year are considered to be in 'fair' condition. Again, this reach demonstrates classic flow impairment; however the overall flow volume bins this reach as "good" in comparison to the many very-low-flow reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3203 - Walla Walla River (Reach 3)

Fish	Habitat	Flow
3	2	3

Fish Status/Utilization

The Fish Status/Utilization rating for Walla Walla River (Reach 3) is high. Even though only three stocks are present, Walla Walla Spring Chinook start to spawn within this reach. Walla Walla Summer Steelhead stock continues to utilize the river for spawning, rearing and adult migration whereas Touchet Steelhead is no longer present. Bull trout maintain rearing and adult migration in Walla Walla River (Reach 3).

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The Walla Walla River Reach 3 flows between the Mill Creek confluence and the Oregon state line. Its primary value lies in rearing habitat and access to the upper watershed in Oregon. There are several major irrigation PODs that historically dried up most of the river bed in this reach up to the mouth of Yellowhawk Creek. The lack of surface flow was a primary cause of poor fish production, especially bull trout, in this reach and upstream. Starting in 2000, bypass flows up to 25 cfs restored surface flows throughout the irrigation season. These flows resulted from an agreement between Washington/Oregon irrigators and federal agencies in response to ESA concerns.

The Walla Walla River channel is incised and bordered by levees at various locations. Reach 3, which is a losing reach for instream flow, is the primary source of groundwater water for the Spring Branch distributary system of the Little Walla Walla River. Riparian zones are fragmented because of agriculture and residential developments. Instream habitat complexity improves enough (compared to downstream reaches) to support higher levels of juvenile rearing and staging for migration.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 27 cfs in July and the peak is 429 cfs in May. Minimum flow is 13 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 75 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. Total flow volume combined with improved flows in recent years boost this reach's score to "good" in comparison with other reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3205 - Touchet River (Reach 1)

Fish	Habitat	Flow
3	1	3

Fish Status/Utilization

The Fish Status/Utilization rating is still high for Touchet River (Reach 1). Within this reach designation Touchet Summer Steelhead spawn, rear and migrate whereas Walla Walla Summer Steelhead behavior is limited to juvenile rearing. Walla Walla Spring Chinook and bull trout express the rearing and adult migration life cycle stages, although few spring Chinook exist in the Touchet basin.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The Touchet River Reach 1 is short in river miles, all below Hofer Dam at river mile (RM) 4.1. Historically and near Hofer Dam, this reach usually went dry during the irrigation season. Since 2006, local farmers installed irrigation efficiencies that improve summer and fall surface flows from historic conditions. Fish passage is functional at the dam, and flow improvements (as much as 23 cfs in early November) below the dam improved passage over previous critical riffles.

Warm water temperatures, lack of instream refuge and habitat complexity, such as large woody debris (LWD), boulders, or deep pools, limit the Touchet River Reach 1 to adult and juvenile migration life history phases. Some winter juvenile staging probably occurs in this reach.

The river channel is incised, lacks wide meanders, and is surrounded by active irrigation farming activities. The river substrate is highly embedded. The riparian zones are narrow and consist of linear communities of brushy willows, very few tall canopy trees, and reed canary grass. There are no perennial tributaries, and very few side channels.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 10 cfs in August and the peak is 474 cfs in March. Minimum flow is 5 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 10 percent of the Mean Annual Flow; reaches with diversions between 5% and 15% of Mean Annual Flow scored 'fair' for this scoring component. Total flow volume combined with improved flows in recent years boost this reach's score to "good" in comparison with other reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3206 - Touchet River (Reach 2)

Fish	Habitat	Flow
3	2	3

Fish Status/Utilization

Fish Status/Utilization for Touchet River (Reach 2) is also high. This point in the river is beyond the range for Walla Walla Summer Steelhead but Touchet Summer Steelhead expresses all three life cycle stages. Bull trout and Walla Walla Spring Chinook continue to rear and migrate in this reach.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Touchet River Reach 2 flows entirely through dry land and irrigated wheat farms and terminates at Coppei Creek. The riparian zones lack tall canopy trees and thus contribute very little structural woody debris. In the open farmlands, the reduced natural riparian buffers lead to high soil erosion levels, embedded substrate, and lack of instream complexity such as cover. The upper portion of Reach 2 flows through the city of Waitsburg and has levees that disconnect the river from the floodplain.

There are a number of ephemeral drainages that contribute flow during the wet seasons, but they do not support anadromous fish life. There are side channels that offer some refuge for juveniles during high flows. The lack of large woody debris limits the stream bed scour that creates pool habitat. Pools are used by adults and juveniles for instream refuge habitat. Warm summer waters and poor water quality also limit juvenile production in this reach, and probably limits the use by bull trout subadults and adults to winter and high spring flow conditions.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:Yes Comments: The minimum of monthly mean flows in this reach is 41 cfs in September and the peak is 693 cfs in March. Minimum flow is 15 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 52 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. The instream flow rule is higher than Mean Annual Flow in 5 months of the year, on average. Reaches with flow rules greater than Mean Annual Flow for between 6 and 9 months of the year are considered to be in 'fair' condition. Higher flow volume alone boosts this reach's score to "good" in comparison with other reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3207 - Touchet River (Reach 3)

Fish	Habitat	Flow
3	2	3

Fish Status/Utilization

Touchet River (Reach 3) also rates high for fish utilization. Wlla Walla Summer Steelhead are no longer present in the river. In contrast Walla Walla Spring Chinook and Touchet Summer Steelhead express all three life cycle stages. Bull trout is limited to rearing and adult migration.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The Touchet River Reach 3 is the transition zone between the lower elevation farm and shrub steppe lands and the forest zone. Flood control projects in and around populated areas have disconnected the Touchet River from over 50% of the historic 100-year floodplain. The land use transitions from farms in the lower portion of Reach 3, to the city of Dayton, to the series of small land parcels with residential development that are bordered by pine forests. Agricultural activities including dikes, filling of wetlands, conversion of riparian forest to cropland, and channelization eliminated nearly all the off-channel habitat along this reach.

Woody debris recruitment along with pool habitat and cover is moderate. Stream bed substrate supports minimal steelhead spawning. Bull trout use the upper portions of this reach for winter refuge habitat. Flow can become a limiting factor during late summer for passage and fish production, especially during drought years. Water quality is fair, with warm water temperature limiting the presence of salmonids. A couple of small tributaries drain into Reach 3 that provide off channel rearing opportunities near the confluence.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 37 cfs in August and the peak is 392 cfs in April . Minimum flow is 19 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 83 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. Higher flow volume alone boosts this reach's score to "good" in comparison with other reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3208 - Coppei Creek

Fish	Habitat	Flow
2	2	1

Fish Status/Utilization

Coppei Creek, a tributary to the Touchet River, Fish Status/Utilization is medium. Bull trout and Walla Walla Summer Steelhead are not present in this creek. Touchet Summer Steelhead spawn, rear and migrate here whereas Walla Walla Spring Chinook utilize the creek for rearing.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Coppei Creek enters the Touchet River within the city of Waitsburg. Riparian condition ranges from highly degraded on the lower mainstem of Coppei Creek near Waitsburg to a mix of mature deciduous and coniferous trees in the headwaters. The riparian zone from McCowan Road downstream to Waitsburg is a very narrow buffer of immature trees, often growing in the stream channel. Residential developments continue along the stream edge and much of the remaining area is farmed to the stream edge. Many areas of the Coppei Creek system are still open to cattle grazing.

Extensive areas of riprap and armored dikes are found from RM 8.0 downstream. Many gravel dikes have been built here as well. Channel modifications including straightening, removal of gravel from the streambed, and construction of gravel dikes have caused reduced sinuosity (stream meander) and channel incision.

About 90% of the 37 square mile Coppei Creek Watershed is highly erodible dry cropland. Fine sediment inputs have caused severely embedded gravel in many areas from RM 8.0 downstream. Large woody debris is rare from RM 8.0 downstream. A significant amount of channel straightening and downcutting have occurred on this portion of stream. Most off-channel habitat is eliminated. Fish passage is probably impaired during the summer months from warm water temperatures.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is less than 1 cfs in August and the peak is 44 cfs in March. Minimum flow is 3 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. This reach is ultra-impaired, as noted in the habitat comments. Gauge data suggest that surface flows cease for this reach in July-September. Diversions evaluated for this project represent 32 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component.

Flow scoring detail is available on Table B-10.

3209 - North Fork Coppei Creek

Fish	Habitat	Flow
2	3	1

Fish Status/Utilization

Fish Status/Utilization rating for North Fork Coppei Creek is medium. The only stock present in the reach is Touchet Summer Steelhead which expresses all three life cycle stages.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Many of the same conditions noted in the Coppei Creek Reach apply to the North Fork Coppei Creek reach. Stream temperatures are cooler than the lower reaches. Riparian buffer zones include taller canopy trees such as pine trees because of the proximity to forest lands. Stream substrate and water quality is healthy enough to sustain a steelhead spawning and rearing population. There is less encroachment on the stream channel from residential development, but agricultural and forest practices still impact instream habitat complexity.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 8 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 22 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component.

Flow scoring detail is available on Table B-10.

3210 - South Fork Touchet River

Fish	Habitat	Flow
3	3	2

Fish Status/Utilization

South Fork Touchet River maintains the high Fish Status/Utilization rating also seen in Touchet River (Reach 3). Walla Walla Summer Steelhead is not present but Touchet Summer Steelhead is present and expresses spawning, rearing and adult migration. Bull trout also express all three life cycle behaviors. In contrast Walla Walla Spring Chinook utilize the River for juvenile rearing.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The South Fork (SF) Touchet River lacks LWD and shade and it is a highly unstable channel. Grazing impacts affect the mid and lower portions. The SF Touchet riparian zones are narrow buffers with minimal mature trees providing some shade.

Approximately 2.0 miles of valley bottom road between the Griffin Fork and the Dry Touchet disrupt floodplain function and disturb the streambed. Dikes, levees, and roads disconnect the floodplain in places. There is a loss of LWD recruitment due to riparian timber harvest, land clearing for agriculture and homes, and removal of wood from the channel.

Off-channel habitat is nearly nonexistent and roads, dikes, and shifting channels limit formation and or maintenance of off-channel areas. Dewatering occurs on the lower mile of the SF Touchet during the summer months. This dewatering does not occur during juvenile or adult salmonid migration to and from the ocean respectively, but it impairs movement of juveniles rearing in the system. No artificial obstructions to fish passage are known to occur in this reach.

Confederated Tribes of the Umatilla Indian Reservation has made improvements to the road and road crossings, and riparian timber harvest has been curtailed on CTUIR property, so conditions here will continue to improve over the years.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 3 cfs in August and the peak is 100 cfs in April. Minimum flow is 7 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 13 percent of the Mean Annual Flow; reaches with diversions between 5% and 15% of Mean Annual Flow scored 'fair' for this scoring component.

Flow scoring detail is available on Table B-10.

3211 - North Fork Touchet River (Reach 1)

Fish	Habitat	Flow
3	2	3

Fish Status/Utilization

The Fish Status/Utilization is high for North Fork Touchet River (Reach 1). Three stocks are present in this reach of the river. Touchet Summer Steelhead and Walla Walla Spring Chinook spawn, rear and migrate in the river whereas bull trout is limited to rearing and adult migration.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The riparian zone has some mature trees present, but often in a narrow buffer. In many areas this buffer is disconnected from the river by dikes or fragmented by agricultural land conversion practices. In the lower portion of the North Fork Touchet River Reach 1, some channelization, straightening, and dikes occur, which were attempts to control flood waters.

A significant amount of spawning habitat is available on this reach. However, in some areas the stream has downcut close to bedrock. Wood is often removed from the channel during flood control work and LWD recruitment is limited by dikes that separate riparian vegetation from the river.

Pools are generally lacking on this reach; pools comprise 2.79% of total water surface on this reach. Many of the pools present on this reach are caused by the stream contacting the base of bedrock hillsides. Off-channel habitat is lacking along this reach. Agricultural land conversion, draining of wetlands, and dike construction destroyed or disconnected off-channel areas from the main river channel. Several small tributaries, including intermittent streams are a significant source of fine sediment laden runoff.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:Yes Comments: The minimum of monthly mean flows in this reach is 39 cfs in September and the peak is 255 cfs in April. Minimum flow is 32 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 14 percent of the Mean Annual Flow; reaches with diversions between 5% and 15% of Mean Annual Flow scored 'fair' for this scoring component. The instream flow rule is higher than Mean Annual Flow in 5 months of the year, on average. Reaches with flow rules greater than Mean Annual Flow for between 6 and 9 months of the year are considered to be in 'fair' condition.

Flow scoring detail is available on Table B-10.

3212 - North Fork Touchet River (Reach 2)

Fish	Habitat	Flow
3	3	3

Fish Status/Utilization

North Fork Touchet River (Reach 2) maintains the high Fish Status/Utilization rating. The three stocks present express all three life cycle behaviors. Walla Walla Summer Steelhead is not present.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Habitat conditions in the Upper Touchet, though not pristine, are more favorable to salmonids than those found in the Lower Touchet. No artificial obstructions have been identified on the North Fork Touchet River. A large portion of the reach is located on U.S. Forest Service (USFS) lands. Cattle ranching, recreational cabins, and small acreage home sites are also present. In general, riparian vegetation is composed of a diverse mixture of native trees and shrubs, providing adequate shade and LWD recruitment on USFS lands in the upper portion of Reach 1. Large woody debris is deficient in the reach between Lewis Creek and Wolf Fork. Very little livestock is present in the riparian zone on private lands.

The floodplain gets inundated on USFS lands during flood flows. Pools are lacking in quality and quantity. The lack of pools is caused by channel disturbances including removal of LWD and instream work performed following flood events as well as channel constrictions that minimize sinuosity. Off-channel habitat would not typically be found in abundance in a reach of this nature (2-4% gradient), but some is present. Water temperatures in this reach are the best found within the Touchet River Basin. Dewatering does not occur on this reach.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 20 cfs in September and the peak is 88 cfs in May. Minimum flow is 45 percent of the average; reaches with August flows between 33% and 66% of average scored 'fair' for this component of the flow element score. Diversions evaluated for this project represent a little under 5 percent of the Mean Annual Flow; reaches with diversions under 5% of Mean Annual Flow scored 'good' for this scoring component.

Flow scoring detail is available on Table B-10.

3213 - Pine Creek

Fish	Habitat	Flow
2	1	1

Fish Status/Utilization

Pine Creek is a primary tributary to the mainstem Walla Walla River. The Fish Status/Utilization score for this creek is "average." Two stocks are presumed to be present in Pine Creek, Walla Walla Summer Steelhead and Walla Walla Spring Chinook. Walla Walla Spring Chinook shows rearing behavior whereas Walla Walla Summer Steelhead expresses all three life cycle stages.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Little or no riparian vegetation is present along much of Pine Creek as a result of farming to the edge of the streambank. Pine Creek is deeply incised to RM 7.0 (Oregon). This incision is the result of unstable banks caused by conversion of native riparian buffers to crop land. Stream banks frequently cave in forming temporary silt dams. Channel incision limits floodplain connectivity. Highly unstable streambanks caused by removal of riparian vegetation and channel incision contribute to a large fine sediment load.

Several large steep passage barriers exist on Pine Creek in Oregon and Washington, and one is a concrete slide that extends over 20 feet.

Substrate embeddedness is a problem. No data on off-channel habitat is available, but channel incision and conversion of floodplains to cropland suggest that off-channel habitat would be rare. Maximum water temperatures on Pine routinely exceeded 80°F (26.7°C) during July and August. Average temperatures commonly exceeded 70°F from late July through late August. Irrigation withdrawals in October and November periodically dewater Pine Creek. Flows are highly dependent upon irrigation activities upstream in Oregon.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 41 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 60 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component.

Flow scoring detail is available on Table B-10.

3214 - Mud Creek

Fish	Habitat	Flow
1	1	1

Fish Status/Utilization

Mud Creek is also a primary tributary to the mainstem Walla Walla River but Fish Status/Utilization is low. Two stocks are present. These are Walla Walla Summer Steelhead and Walla Walla Spring Chinook. Both stocks behavior is limited to rearing in Mud Creek.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

There is very little woody vegetation, and almost completely void of tall canopy trees in the riparian zones of Mud Creek. There is no LWD or medium woody debris (MWD). The stream gradient is low and meanders almost entirely through farms and crop fields.

Bank erosion, which is high due to grazing activity and crop production, contributes large quantities of fine soils to the streambed. There is very little spawning size gravel for steelhead.

Various reaches of Mud Creek are intermittent, probably due to direct irrigation diversions and conjunctive wells. The lack of flow during the irrigation season creates a fish passage barrier for adults and juveniles. Several culverts also present obstructions to fish passage. There is perennial flow and more temperate water temperatures near the confluence with the Walla Walla River. The lower reach provides juvenile refuge and rearing habitat year round; cooler in the summer and warmer in the winter.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 2 cfs Mean Annual Flow was used to score this reach. Diversion data used for this evaluation are many times higher than the Mean Annual Flow.

Flow scoring detail is available on Table B-10.

3215 - Dry Creek

Fish	Habitat	Flow
2	1	1

Fish Status/Utilization

Fish Status/Utilization in Dry Creek, a primary tributary to the mainstem Walla Walla, is rated as medium. Walla Walla Summer Steelhead and Walla Walla Spring Chinook are present and express all three behaviors and juvenile rearing respectively.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The riparian zone a few miles above the town of Dixie is characterized by a relatively dense forest. From Dixie downstream the buffer becomes a thin strip often only one tree in width and often of non-native black locust trees. A severe passage barrier is present on Mud Creek (right bank tributary at RM 28.8, east of the town of Dixie) at a failed culvert under an abandoned rail line. A wide riparian buffer is present above the barrier on Mud Creek. About two miles of potential summer steelhead spawning and rearing habitat are upstream of this blockage. At least two concrete grade control structures just downstream of the Highway 12 Bridge are potential barriers.

Deep channel incision eliminated large woody debris recruitment from the buffer along the majority of the lower reaches. Some areas are downcut 40 to 50 feet below the old floodplain in response to channel straightening and removal of riparian vegetation. Substrate conditions are extremely poor. A lack of riparian vegetation along stream banks, and severe downcutting of the channel eliminated access to much of the

floodplain, thereby limiting LWD recruitment. Off-channel habitat is nearly nonexistent in the lowest reaches of Dry Creek. Dry Creek carries a huge fine sediment load eroded from dryland agricultural fields throughout the drainage.

Dry Creek has very low summer flows, causing mostly standing and/or stagnant water. The channel has been straightened downstream of Dixie. The upper portion of Dry Creek is a narrow canyon with a narrow floodplain. This area is rapidly being converted to home sites. Floodplain connectivity is good at this time. Biologists report 9.9 pieces of large woody debris (LWD) per mile, which is extremely low. Pools generally range from 1 to 1.5' deep. Although LWD is lacking, some undercut banks provide pools with cover. No information on off-channel habitat is available and very substrate data exists. Temperatures on the Dry Creek mainstem are not as favorable as in the North Fork Dry Creek. Previous studies show maximum temperatures frequently exceed 70° F and averaged $\geq 65^{\circ}\text{F}$ from mid July through mid August.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is around 1 cfs in August and the peak is 44 cfs in April. Minimum flow is 5 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversion data used for this evaluation exceed the Mean Annual Flow.

Flow scoring detail is available on Table B-10.

3216 - North Fork Dry Creek

Fish	Habitat	Flow
2	3	2

Fish Status/Utilization

North Fork Dry Creek is a tributary to Dry Creek and also maintains a medium Fish Status/Utilization rating. The only stock present is Walla Wall Summer Steelhead which utilizes the creek for all three life cycle behaviors.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The county road along the North Fork of Dry Creek has seven fords across the stream, disturbing spawning and rearing functions and water quality values. The North Fork of Dry Creek has relatively cool summer water temperatures, and flows through forest lands. The riparian conditions vary, but have tall canopy trees and some shoreline native vegetation shrubs. Substrate consists of small to large cobble with medium amount of embeddness.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 9 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 1 percent of the Mean Annual Flow; reaches with diversions less than 5% of Mean Annual Flow scored 'good' for this scoring component.

Flow scoring detail is available on Table B-10.

3217 - West Little Walla Walla River

Fish	Habitat	Flow
2	1	3

Fish Status/Utilization

Two stocks are present in the West Little Walla Walla River, a tributary of the mainstem Walla Walla River. Walla Walla Spring Chinook utilize the River for juvenile rearing whereas Walla Walla Summer Steelhead uses the river for all three life cycle stages. Stock presence, life cycle stages and duration within the stream attribute to the medium Fish Status/Utilization rating.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The stream channel meanders through farms, pasture, and crop fields before draining into the Walla Walla River downstream of the Mill Creek confluence. Woody shrubs are intermittently spread along the riparian zones. Flow is the extreme limiting factor because of the numerous irrigation withdrawals and a loss of groundwater connectivity to its source water, the mainstem Walla Walla River. The groundwater influence provides cooler water during the summer, but the reduced groundwater influence means water temperatures exceed salmonid limits in most reaches of the stream. Year round juveniles rearing values persist in the lowest reaches, with added benefit during the winter months further upstream. Fish passage is limited in the middle to upper reach by flow and by a number of small culverts.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 161 cfs Mean Annual Flow was used to score this reach⁵. Diversions evaluated for this project represent 9 percent of the Mean Annual Flow; reaches with diversions between 5% and 15% of Mean Annual Flow scored 'fair' for this scoring component. The bin of "good" for this reach is highly influenced by the NHD+ estimated flow volume, which is high relative to other WRIA reaches.

⁵ A comment received in October 2011 indicates that the NHD-derived 161cfs is not a reasonable flow for the capacity of this stream, which is frequently dry between the state boundary and its mouth in summer months.

Flow scoring detail is available on Table B-10.

3218 - Mill Creek (Reach 1)

Fish	Habitat	Flow
3	1	2

Fish Status/Utilization

Mill Creek (reach 1) is another primary tributary of the mainstem Walla Walla River. Fish Status/Utilization for this creek is high. Three stocks present and the life cycles expressed help make the Fish Status/Utilization rating high. Touchet Summer Steelhead is the missing stock in this reach. Walla Walla Summer Steelhead and Walla Walla Spring Chinook show the full range of life cycle stages whereas bull trout is limited to juvenile rearing and adult migration.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Mill Creek was channelized in 1948 from Bennington Lake Diversion Dam downstream to Gose Road. The upper and lower portions of this wide channel are characterized by rip rapped banks and cross weirs spaced about every 100 feet. The middle portion of the channel (through the City of Walla Walla) is concrete lined with a low flow channel and baffles placed at regular intervals in an attempt to allow fish passage. Juvenile passage is still impeded through this reach during both low and high flow conditions. Remediation of fish passage problems is under study and planned throughout much of the lower portion of this reach. Summer low flows are most critical about a mile below Bennington Lake Diversion Dam just below the Yellowhawk/Garrison Creek division dam.

Riparian vegetation is sparse and disconnected from the stream by the Mill Creek flood control project downstream to Gose Road. Channelization and floodplain development eliminated natural floodplain processes. Substrate embeddedness in the channelized portion of Mill Creek is very poor because of the concrete lined channel. Large woody debris is nearly nonexistent on this reach. Channelization and floodplain development also eliminated off-channel habitat. Springs in the Walla Walla City limits and outflow from the City of Walla Walla sewage treatment plant prevent complete drying of the channel. High chlorine levels create suboptimal conditions for salmonids from Gose Road upstream to the City of Walla Walla sewage treatment plant.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 5 cfs in July and the peak is 239 cfs in January. Minimum flow is 5 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 94 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean

Annual Flow scored 'poor' for this scoring component. This reach is ultra-impaired, as noted in the habitat comments, but was saved from binning 'poor' because overall volume is high relative to other reaches in this WRIA.

Flow scoring detail is available on Table B-10.

3219 - Mill Creek (Reach 2)

Fish	Habitat	Flow
3	3	3

Fish Status/Utilization

Fish Status/Utilization in Mill Creek (Reach 2) is also rated high. Bull trout, Walla Walla Spring Chinook and Walla Walla Summer Steelhead stocks all spawn, rear and migrate in this reach.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The Mill Creek Reach 2 is characterized by high plateaus where dryland farming is the dominant land use. Riparian zones are a mixture of deciduous and coniferous trees with varying degrees of disturbance depending upon property ownership. Roads and dikes limit floodplain connectivity on private lands. Large woody debris is deficient throughout this reach. The forebay area of Bennington Lake Diversion Dam (upstream side) has created a large delta area with several meandering stream channels, contributing to high quality salmonid rearing habitat. However, a gravity diversion into Titus Creek (RM 14.3) does cause complete dewatering (in the vicinity of the diversion only) during the summer months.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 1 cfs in August and the peak is 179 cfs in March. Minimum flow is 1 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Gauge data suggest that surface flows cease for this reach in August-September. Diversions evaluated for this project represent 3 percent of the Mean Annual Flow; reaches with diversions less than 5% of Mean Annual Flow scored 'good' for this scoring component. In spite of the de-watering mentioned above and summer low flows, the overall flow volume score helps this reach bin in the upper one-third for this WRIA.

Flow scoring detail is available on Table B-10.

3220 - Mill Creek (Reach 3)

Fish	Habitat	Flow
3	3	2

Fish Status/Utilization

Fish Status/Utilization in Mill Creek (Reach 3) is the same as for Mill Creek (Reach 2). Both rate high for Fish Status/Utilization. In addition bull trout, Walla Walla Spring Chinook and Walla Walla Summer Steelhead utilize the designated reach for all three life cycle stages.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Mill Creek originates on U.S. Forest Service lands in Washington high in the West flanks of the Blue Mountains. The upper portion of this creek is protected by the Mill Creek Watershed, an area closed to public. Much of the upper portion of the subbasin is remote forest land. Riparian vegetation within “the watershed” is dominated by large Douglas fir, white fir, grand fir, and alder trees. The floodplain is fully connected. Side channels comprise 3.6% of stream surface area on USFS lands. Regardless, large woody debris remains deficient throughout the reach.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:Yes Comments: The minimum of monthly mean flows in this reach is 30 cfs in August and the peak is 169 cfs in March. Minimum flow is 31 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 68 percent of the Mean Annual Flow⁶; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. The instream flow rule is higher than Mean Annual Flow in 6 months of the year, on average. Reaches with flow rules greater than Mean Annual Flow for between 6 and 9 months of the year are considered to be in 'fair' condition.

Flow scoring detail is available on Table B-10.

⁶ A comment received in October 2011 indicated that 68% is too high and is probably attributable to an undeveloped municipal permit in this reach.

3222 - Doan Creek

Fish	Habitat	Flow
2	2	1

Fish Status/Utilization

Fish Status/Utilization for Doan Creek, a tributary to Mill Creek, is medium. Touchet Summer Steelhead and bull trout are not present in the reach. Walla Walla Spring Chinook utilizes the creek for juvenile rearing whereas Walla Walla Summer Steelhead uses Doan Creek for all three life cycle stages.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Local biologists continue to restore stream channel, riparian, floodplain, and fish passage functions in lower Doan Creek, especially the portion that flows through U. S. National Park lands. Middle reaches still flow underground through pipes that originate near the groundwater springs that are the source of flow for the stream.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 9 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 83 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component.

Flow scoring detail is available on Table B-10.

3223 - Cold Creek

Fish	Habitat	Flow
2	2	1

Fish Status/Utilization

Cold Creek, another tributary to Mill Creek, also has a medium Fish Status/Utilization rating. As with Doan Creek, Walla Walla Spring Chinook utilize the creek for juvenile rearing whereas Walla Walla Summer Steelhead use Cold Creek for all three life cycle stages. Touchet Summer Steelhead and bull trout are not present.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The source flow originates in groundwater springs that are located in an urban neighborhood. The stream flows through underground pipes, though is occasionally exposed in a residential backyard before disappearing back underground. The entire

surface water stream channel flows through small farms and rural residential zones. Riparian buffers are of minimal width and retain minimal large canopy trees. Many of the land owners farm to the stream edge. Fish passage conditions throughout the drainage are not well documented.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 4 cfs Mean Annual Flow was used to score this reach. Diversion data used for this evaluation exceed the Mean Annual Flow.

Flow scoring detail is available on Table B-10.

3224 - Blue Creek

Fish	Habitat	Flow
2	3	2

Fish Status/Utilization

Fish Status/Utilization for Blue Creek is rated at medium. This creek is a tributary to Mill Creek and is utilized by bull trout, Walla Walla Spring Chinook and Walla Walla Summer Steelhead. Bull trout and Walla Walla Spring Chinook express juvenile rearing life stage whereas Walla Walla Summer Steelhead express all three.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Blue Creek remains a relatively healthy stream system that continues to support steelhead life histories. Historic logging practices and fires continue to contribute excessive levels of fine sediment. The basin terrestrial habitat is a mix of forest lands, mixed deciduous trees, and grasslands. The Tribes of the Umatilla Indian Reservation (CTUIR) replanted and fenced riparian buffers along Blue Creek. The floodplain, substrate, side-channel, and instream habitat functions and values are not very well documented.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The dataset for this reach is very old: 1939-1971. Based on those data, the minimum of monthly mean flows in this reach is around 1 cfs in July and the peak is 34 cfs in March. Minimum flow is 5 percent of the average; reaches with August flows less than 33% of average scored 'poor' for this component of the flow element score. Diversions evaluated for this project represent 4 percent of the Mean Annual Flow; reaches with diversions less than 5% of Mean Annual Flow scored 'good' for this scoring component.

Flow scoring detail is available on Table B-10.

3225 - East Little Walla Walla River

Fish	Habitat	Flow
2	3	2

Fish Status/Utilization

East Little Walla Walla River is a primary tributary to the Walla Walla River mainstem and rates medium for Fish Status/Utilization. Walla Walla Summer Steelhead and Walla Walla Spring Chinook are present in this reach whereas Touchet Summer Steelhead and bull trout are not. Life cycle behavior expressed by Walla Walla Summer Steelhead and Walla Walla Spring Chinook are spawning, rearing, and migration, and juvenile rearing respectively.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Habitat is generally characterized by impaired riparian conditions and a relatively high amount of fine sediment in the substrate. The adjacent land is used for cattle grazing which impacts the habitat in and along the stream. Large woody species native to the area are largely absent in all except the lower portion of the system. There is very little instream structure. The summer low flows naturally limit recruitment from upstream habitat, plus LWD recruitment may be limited throughout the year because of small culverts upstream. Dense areas of reed canary grass are common habitat areas used for rearing juveniles. Many of the road culverts are functional at normal flows, but not during high flows. Woody debris blockage occurs at the culvert crossing regularly, resulting in the flooding of adjacent upstream property. There are numerous livestock crossings that create wide shallow reaches of stream where streambed and soil disturbances impact sediment loads during high water.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach hovers near 3 cfs in winter months and the peak Mean Annual Flow is 5 cfs in June. Minimum flow is 80 percent of the average; reaches with August flows greater than 66% of average scored 'good' for this component of the flow element score. This small stream has a relatively flat hydrograph with lower flows occurring in winter months. Diversions evaluated for this project represent 75 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component. Flow data from the stream gage in the East Little Walla Walla River shows a range of 3 to 16 cfs. During a survey in August 2005, it was visually estimated that stream flow was approximately 3 to 4 cfs. Channel capacity has been estimated to be between 16 and 20 cfs.

Flow scoring detail is available on Table B-10.

3226 - Patit Creek

Fish	Habitat	Flow
2	1	1

Fish Status/Utilization

Patit Creek is a tributary to the Touchet River. This creek has a medium Fish Status/Utilization rating. Touchet Summer Steelhead is present rather than Walla Walla Summer Steelhead. Walla Walla Spring Chinook is also present but Bull trout is not. Touchet Summer Steelhead utilizes the stream for all three life cycle stages whereas Walla Walla Spring Chinook only utilize Patit Creek for juvenile rearing.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Patit Creek flows through dryland, irrigated crop lands, pasture lands, and the city of Dayton. The confluence with the Touchet River is within the city of Dayton. The riparian zone is fragmented, depending on the adjacent land use. Some riparian replanting is ongoing in the farm zones; in the city, lawns often go to the stream edge. There are spawning gravels available, but embeddedness is high due to the erosion and fine sediments that come from agricultural activities. The stream is incised and bedrock is exposed in several areas of the stream. Patit Creek often dewateres from the forks downstream during the summer months.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 21 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 9 percent of the Mean Annual Flow; reaches with diversions between 5% and 15% of Mean Annual Flow scored 'fair' for this scoring component.

Flow scoring detail is available on Table B-10.

3227 - West Patit Creek

Fish	Habitat	Flow
2	3	2

Fish Status/Utilization

Walla Walla Spring Chinook and Touchet Summer Steelhead are present in West Patit Creek, a tributary to Touchet River. Walla Walla Spring Chinook utilize the creek for juvenile rearing. In contrast Touchet Summer Steelhead utilizes West Patit Creek for spawning, rearing and adult migration. The utilization by the two stocks leads to a medium Fish Status/Utilization rating.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

West Patit Creek has marginal steelhead habitat, with low to no flows in summer; there are some better flows upstream about 2 to 3 miles from the confluence. This is a short, somewhat steep drainage with farmlands on the top. The direct riparian area has some grasses and a mix of shrubs (hawthorne, etc.) and some trees (cottonwood and hardwoods with a few Ponderosa pines). The riparian area gets decent about 2 to 3 miles from the confluence and in the upper reaches riparian habitat is good. Overall, sedimentation is an issue, as is flow and temperature.

CTUIR staff did some habitat work several years ago in this stream, adding large woody debris etc. to add channel complexity. This is now the area in which the majority of Patit Steelhead spawn.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 10 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 1 percent of the Mean Annual Flow; reaches with diversions less than 5% of Mean Annual Flow scored 'good for this scoring component.

Flow scoring detail is available on Table B-10.

3228 - Yellowhawk Creek

Fish	Habitat	Flow
2	1	1

Fish Status/Utilization

Yellow Creek is a tributary to the mainstem Walla Walla River. As such Walla Walla Summer Steelhead is present rather than Touchet Summer Steelhead. Walla Walla Summer Steelhead utilizes the creek for all three life cycle stages. Bull trout and Walla Walla Spring Chinook are also present and utilize the stream for adult migration and juvenile rearing respectively. These stocks and activities lead to a medium Fish Status/Utilization rating.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Yellowhawk Creek is used as a bypass corridor for salmonids to get around the channelized portion of Mill Creek. Four channel spanning barriers have been identified on Yellowhawk Creek. Irrigation activity is high, with 34 pump and three gravity diversions on Yellowhawk Creek. Yellowhawk Creek flows through both highly urbanized areas and relatively natural riparian areas. Streambanks are very unstable;

43% of banks assessed were actively eroding. Unstable banks are attributed to urban development and increased flows from irrigation diversions out of Mill Creek.

Flows are controlled year-round, preventing “flushing flows” that would clean gravel and reduce embeddedness. Urban development and regulations of flows both severely limit floodplain connectivity. Gravels and cobbles are highly cemented by fine sediment. Yellowhawk Creek is deficient of LWD; only 12.6 pieces of LWD per mile. Off-channel habitat is very limited. Yellowhawk Creeks would go dry during the summer months without the additional water diverted from Mill Creek.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: There are very few data points with which to evaluate this reach; no gauge data are available from December through April. Neither gauge data nor the NHD+ estimate provided a reasonable basis for scoring, and were manually removed from the scoring matrix. Of the gauge data available, Mean Annual Flow is 46cfs, the minimum of monthly mean flows reported for this reach is 17 cfs in August-September and the peak is 153 cfs in May. Diversion data used for this evaluation exceed the gauged Mean Annual Flow⁷.

Flow scoring detail is available on Table B-10.

3229 - Cottonwood Creek

Fish	Habitat	Flow
2	1	1

Fish Status/Utilization

Fish Status/Utilization rating for Cottonwood Creek, a tributary to the mainstem Walla Walla River, is medium. The only stock present is Walla Walla Summer Steelhead, but the ESA rating, SaSI status and expression of all three life cycle stages in this creek leads to the medium rating.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Cottonwood Creek originates in wooded ravines in the Oregon portion of the Blue Mountains. The stream flows through vast areas of dryland agriculture. In many cases the land is farmed to the edge of the streambank, leaving no riparian buffer. Where woody vegetation is present it is usually found in a thin strip, often growing up out of an incised stream channel. Many reaches are deeply incised as a result of removal of riparian vegetation from the historic floodplain. The lower portion of Cottonwood Creek has dikes. No data exists on off-channel habitat. Portions of Cottonwood Creek from

⁷ An October 2011 review comment indicates that actual diversions are probably lower than those used for this analysis.

the mouth to the state line go dry during the summer. No man-made physical barriers are identified on Cottonwood Creek.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: There are too few gauge data points with which to evaluate this reach. NHD+ estimates are not reasonable in context with those few gauged points, and were also removed from the scoring matrix. Diversion data used for this evaluation exceed the Mean Annual Flow. Lacking flow data upon which to score, the reach bins as 'poor' condition.

Flow scoring detail is available on Table B-10.

3230 - Whisky Creek

Fish	Habitat	Flow
2	2	1

Fish Status/Utilization

Whisky Creek is a tributary to Touchet River. Two stocks are present in this creek, Touchet Summer Steelhead and Walla Walla Spring Chinook. Walla Walla Spring Chinook use Whisky Creek for juvenile rearing whereas Touchet Summer Steelhead utilize the stream for spawning, rearing and adult migration. The utilization of Whiskey Creek by these two stocks ascribes to a medium Fish Status/Utilization rating.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Whiskey Creek is one of the few perennial tributaries to the lower portion of the Touchet River Reach 2. Juvenile rearing values are good primarily due to cool summer temperatures; maximum temperatures never exceeded 65°F during the summer of 1999, and average temperatures were <58°F. Minimal instream and riparian habitat data is available for Whiskey Creek.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 18 cfs MAF was used to score this reach. Diversions evaluated for this project represent 9 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component.

Flow scoring detail is available on Table B-10.

3231 - Titus Creek (Reach 1)

Fish	Habitat	Flow
2	1	1

Fish Status/Utilization

Titus Creek (Reach 1) is a tributary to Mill Creek. The only stock present is Walla Walla Summer Steelhead, but the ESA rating, SaSI status and expression of all three life cycle stages in this creek leads to the medium rating.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The lower reach of Titus Creek (Reach 1) is approximately two miles in length and flows through irrigated crop land and the local community college campus. The community college and local officials are restoring passage, riparian, and instream habitat structure in the lower reaches of Titus Creek. The farm areas still have diversion weirs and livestock access that cause juvenile passage barriers. Records show at least 13 pump and two gravity diversions in Reach 1. Groundwater influences the water temperatures, keeping it cool in the summer and warmer in the winter. This temperature cycle provides juvenile rearing and refuge habitat year round. The riparian zone is almost void of tall canopy trees, except in the upper portions. Future conditions are likely to improve with the increased community focus.

Habitat scoring detail is available on Table B-9.

Flow

Gauge? No Rule? No. Comments: There are few data available with which to score this reach. While Qi data were available, no NHD+ estimate of Mean Annual Flow was used.

Flow scoring detail is available on Table B-10.

3232 - Titus Creek (Reach 2)

Fish	Habitat	Flow
2	3	1

Fish Status/Utilization

Titus Creek (Reach 2) Fish Status/Utilization is rated as medium. Walla Walla Summer Steelhead is the only stock present in the reach, but shows all three life cycle stages.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The upper reach of Titus Creek represents close to 1.5 miles of distributary or side channel habitat to Mill Creek. Migration of the Mill Creek channel resulted in erosion of

the right bank, causing the majority of Mill Creek flow to be directed into Titus Creek. A push-up dam about 500 yards down Titus Creek directs about 10 cfs of flow back into Mill Creek below the critical flow reach of Mill Creek. Areas of Titus Creek are separated from Mill Creek by a levee. The levee reduces the floodplain functions and values. The stream flows through a tall cottonwood gallery in the upper portions of Reach 2. Residential and agricultural activities surround much of the lower portion of Reach 2. Groundwater cools the stream flow during the summer.

Habitat scoring detail is available on Table B-9.

Flow

Gauge? No Rule? No. Comments: There are no data available with which to score this reach; No NHD+ estimate was used.

Flow scoring detail is available on Table B-10.

3233 - Walsh Creek

Fish	Habitat	Flow
2	2	1

Fish Status/Utilization

Walsh Creek is a primary tributary to the Walla Walla mainstem. Again only one stock is present, Walla Walla Summer Steelhead. The medium Fish Status/Utilization rating is based on ESA and SaSI status and the the utilization of the Creek for spawning, rearing and adult migration.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Walsh Creek is spring fed and provides juvenile rearing habitat because of the cool summer water habitat. The groundwater relationship to surface flows may be a cause for the stream going dry during the summer. The stream flows through farm areas where there is grazing and access for stock watering. Stream substrate consists of fine sediments and a few gravel zones. The riparian zones are fragmented into thin strips of willows, rose bushes, a few deciduous tall canopy trees, and reed canary grass. The channel gradient is low resulting in slow flows. Fish passage is hindered by small road culverts that also prevent LWD from mobilizing downstream.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 1 cfs Mean Annual Flow was used to score this reach. Diversion data used for this evaluation exceed the Mean Annual Flow.

Flow scoring detail is available on Table B-10.

3234 - Caldwell Creek

Fish	Habitat	Flow
2	2	1

Fish Status/Utilization

Fish Status/Utilization in Caldwell Creek is similar to Walsh Creek. Caldwell Creek is a tributary to the mainstem Walla Walla River with only one stock present. Walla Walla Summer Steelhead utilize the creek for all three life cycle stages and the Fish Status/Utilization rating is medium.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

Caldwell Creek is a small left bank (LB) tributary of Yellowhawk Creek. Irrigation withdrawals consist of three pumps and one gravity diversion. The riparian zones are fragmented into narrow woody shrubs, a few tall canopy deciduous trees, reed canary grass, or bare shorelines. Springs feed the stream within the city of Walla Walla and thus offer some cool water habitat during the summer for juvenile salmonids. There is very little source of rocky substrate and the floodplain consists of small fields of annual crops and residential backyards. The stream flows through several undersized culverts.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:No Rule:No Comments: An NHD+ estimated 8 cfs Mean Annual Flow was used to score this reach. Diversions evaluated for this project represent 23 percent of the Mean Annual Flow; reaches with diversions more than 15% of Mean Annual Flow scored 'poor' for this scoring component.

Flow scoring detail is available on Table B-10.

3235 - Wolf Fork

Fish	Habitat	Flow
3	3	2

Fish Status/Utilization

The high Fish Status/Utilization rating for Wolf Fork is based on the presence and utilization of three stocks. Wolf Fork is a tributary to Touchet River. Touchet Summer Steelhead, Walla Walla Spring Chinook and bull trout utilize the reach for spawning, rearing and adult migration.

Fish Status/Utilization scoring detail is available on Table B-8.

Habitat

The riparian zones on the Wolf Fork are relatively intact and are dominated by immature coniferous trees, some alder, and willow. The riparian zone is nearly intact with the exception of a road that parallels the stream. Streambanks are very stable with the exception of road crossings. No manmade barriers are identified although several fords cross the channel, which is heavily used by spawning bull trout. There are no known diversions on this reach of the Wolf Fork. The road in the valley bottom receives little use or maintenance and rarely isolates the stream from its floodplain. Previous studies show that embeddedness is less than 30%, which is still elevated for a high mountain stream. Unfortunately, there are numerous intermittent and perennial streams that carry a significant amount of fine sediment laden runoff from clearcuts and logging roads in the uplands.

Upland timber harvest and channel cleanouts have resulted in a lack of LWD on the Wolf Fork. Officials report that less than 50% of the pools measured contained woody debris, while 33% and 17% of run and riffle habitat, respectively, contained LWD. The predominant instream cover type was woody debris in scour pools and turbulence in plunge pools. Off-channel habitat is rare. Wolf Fork is considered a cool water stream during the summer; in 1991, the maximum water temperature recorded in the Wolf Fork at Whitney Creek was 55°F on August 25. Dewatering does not occur.

Habitat scoring detail is available on Table B-9.

Flow

Gauge:Yes Rule:No Comments: The minimum of monthly mean flows in this reach is 23 cfs in September and the peak is 75 cfs in April. Minimum flow is 50 percent of the average; reaches with August flows more than 66% of average scored 'good' for this component of the flow element score. Diversions evaluated for this project represent 9 percent of the Mean Annual Flow; reaches with diversions between 5% and 15% of Mean Annual Flow scored 'fair' for this scoring component.

Flow scoring detail is available on Table B-10.

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5. Scoring Sheets

Table B-8 Fish Scoring Sheet

Color / Bin Score

3 = High/Good
2 = Average / Fair
1 = Low / Poor

Code	Reach Name	Reach Score & Bin	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3201	Walla Walla River (Reach 1)	224	20	20	20	22	22	16	13	13	19	19	20	20
3202	Walla Walla River (Reach 2)	224	17	20	20	22	22	19	16	16	19	19	17	17
3203	Walla Walla River (Reach 3)	204	0	19	19	19	19	16	13	15	18	18	16	16
3205	Touchet River (Reach 1)	224	17	20	20	22	22	19	16	16	19	19	17	17
3206	Touchet River (Reach 2)	188	14	17	17	19	19	16	13	13	16	16	14	14
3207	Touchet River (Reach 3)	204	16	19	19	19	19	16	13	15	18	18	16	16
3208	Coppei Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3209	North Fork Coppei Creek	90	6	9	9	9	9	6	6	6	9	9	6	6
3210	South Fork Touchet River	195	14	17	17	17	17	14	14	14	20	20	17	14
3211	North Fork Touchet River (Reach 1)	198	13	16	16	16	16	16	16	18	21	21	16	13
3212	North Fork Touchet River (Reach 2)	225	16	19	19	19	19	16	16	18	24	24	19	16
3213	Pine Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3214	Mud Creek	60	5	5	5	5	5	5	5	5	5	5	5	5
3215	Dry Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3216	North Fork Dry Creek	90	6	9	9	9	9	6	6	6	9	9	6	6
3217	West Little Walla Walla River	114	8	11	11	11	11	8	8	8	11	11	8	8
3218	Mill Creek (Reach 1)	198	16	19	19	19	19	16	16	18	24	24	19	16
3219	Mill Creek (Reach 2)	225	13	16	16	16	16	16	16	18	21	21	16	13
3220	Mill Creek (Reach 3)	225	16	19	19	19	19	16	16	18	24	24	19	16
3222	Doan Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3223	Cold Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3224	Blue Creek	150	11	14	14	14	14	11	11	11	14	14	11	11
3225	East Little Walla Walla River	114	8	11	11	11	11	8	8	8	11	11	8	8
3226	Patit Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3227	West Patit Creek	114	8	11	11	11	11	8	8	8	11	11	8	8

3228	Yellowhawk Creek	138	11	14	14	14	14	11	8	8	11	11	11	11
3229	Cottonwood Creek	90	6	9	9	9	9	6	6	6	9	9	6	6
3230	Whisky Creek	114	8	11	11	11	11	8	8	8	11	11	8	8
3231	Titus Creek (Reach 1)	90	6	9	9	9	9	6	6	6	9	9	6	6
3232	Titus Creek (Reach 2)	90	6	9	9	9	9	6	6	6	9	9	6	6
3233	Walsh Creek	90	6	9	9	9	9	6	6	6	9	9	6	6
3234	Caldwell Creek	90	6	9	9	9	9	6	6	6	9	9	6	6
3235	Wolf Fork	225	16	19	19	19	19	16	16	18	24	24	19	16
Month Scores			337	446	446	454	454	361	340	356	470	470	374	353

Note: Reach names link to workbook tabs.

SaSI Stocks in the Walla Walla Basin	SaSI Stock Rating	Weight Factor**
Walla Walla Summer Steelhead - 6854	Depressed	2
Touchet Summer Steelhead - 6861	Depressed	2
Touchet Bull Trout - 8396	Unknown	2
Mill Creek Bull Trout - 8408	Healthy	
Walla Walla Spring Chinook- SaSI stock not assigned	Unknown	2

** Weighting Factor Values by SaSI Stock Status:	Weight
Healthy	1
Depressed	2
Unknown	2
Critical	3

Weighting Factor for Federally Listed Species:	ESA Weight Factor
Assign additional weight to stocks that are listed as Threatened or Endangered under the ESA? (yes=1; no=0)	1
Assign additional weight to reaches within Interior Columbia TRT-designated spawning areas (MaSAs or MiSAs)? (yes=1; no=0)	0

Color / Bin Score

3 = High/Good

2 = Average / Fair

1 = Low / Poor

Table B-9 Habitat Scoring Sheet

Reach Code	Reach Name	Reach Score & Bin	Off Channel Habitat (OCHs)	Flood-plain Connectivity	Riparian Condition	Spawning Suitability	Rearing Suitability	Passage Condition
3201	Walla Walla River (Reach 1)	9	1	1	1	1	2	3
3202	Walla Walla River (Reach 2)	10	2	1	1	2	2	2
3203	Walla Walla River (Reach 3)	11	2	1	2	2	2	2
3205	Touchet River (Reach 1)	8	1	1	1	1	1	3
3206	Touchet River (Reach 2)	11	1	1	2	2	2	3
3207	Touchet River (Reach 3)	14	2	1	2	3	3	3
3208	Coppei Creek	11	1	1	2	2	2	3
3209	North Fork Coppei Creek	16	2	2	3	3	3	3
3210	South Fork Touchet River	15	2	2	2	3	3	3
3211	North Fork Touchet River (Reach 1)	13	1	1	2	3	3	3
3212	North Fork Touchet River (Reach 2)	16	2	2	3	3	3	3
3213	Pine Creek	6	1	1	1	1	1	1
3214	Mud Creek	6	1	1	1	1	1	1
3215	Dry Creek	10	1	1	2	2	2	2
3216	North Fork Dry Creek	16	2	2	3	3	3	3
3217	West Little Walla Walla River	10	2	2	2	1	2	1
3218	Mill Creek (Reach 1)	8	1	1	1	1	2	2
3219	Mill Creek (Reach 2)	16	2	2	3	3	3	3
3220	Mill Creek (Reach 3)	16	2	2	3	3	3	3
3222	Doan Creek	12	1	2	1	2	3	3
3223	Cold Creek	12	2	2	1	3	3	1
3224	Blue Creek	15	2	2	2	3	3	3
3225	East Little Walla Walla River	15	3	2	2	3	3	2
3226	Patit Creek	8	1	1	1	1	2	2
3227	West Patit Creek	15	2	2	2	3	3	3
3228	Yellowhawk Creek	10	1	1	2	2	2	2
3229	Cottonwood Creek	10	1	1	2	2	2	2
3230	Whisky Creek	11	2	1	1	2	2	3
3231	Titus Creek (Reach 1)	8	1	2	1	1	2	1
3232	Titus Creek (Reach 2)	15	2	3	3	2	3	2
3233	Walsh Creek	13	2	2	2	2	3	2
3234	Caldwell Creek	11	2	2	2	1	2	2
3235	Wolf Fork	17	3	2	3	3	3	3

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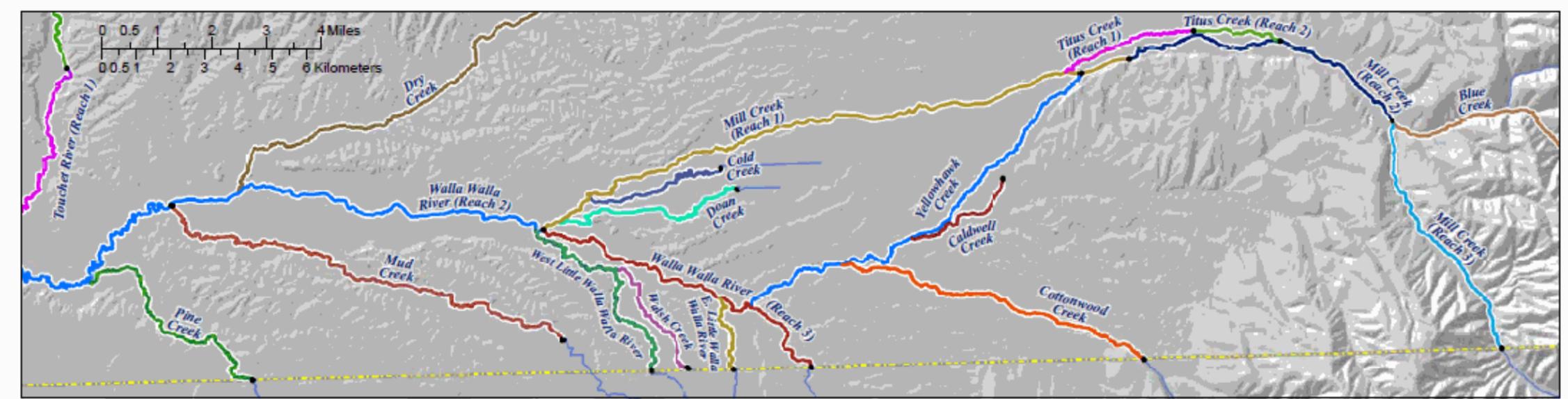
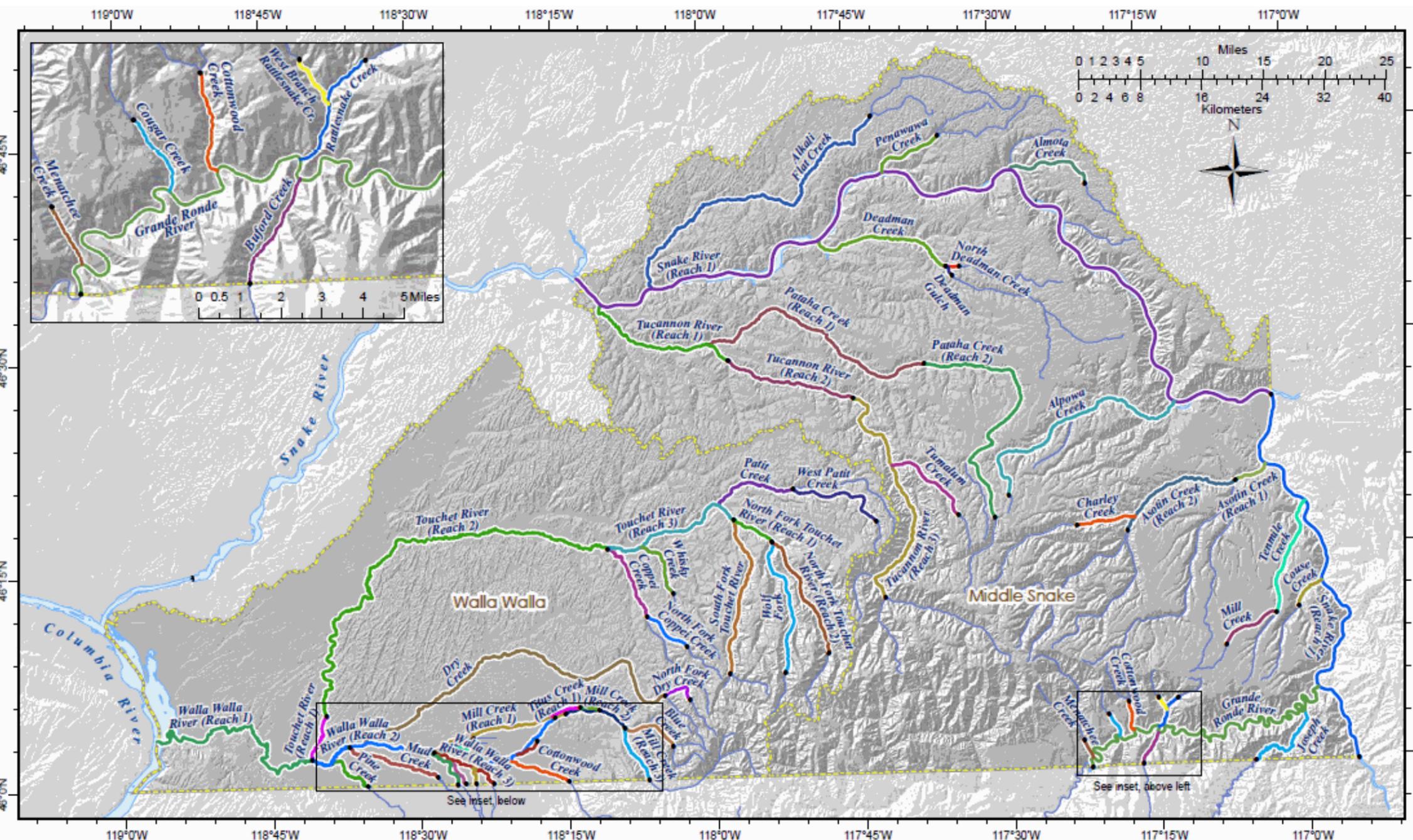


Figure B-1 Assessed Stream Reaches



Walla Walla and Middle Snake River Basins
WRIAs 32 and 35
Assessed Stream Reaches
colored for visual reference

- — Assessed Stream Reach upper extents
- Continuation of Assessed Streams to Headwaters

Location of all project WRIAs (blue), location of the area mapped (boxed), and featured WRIAs (green).



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WRIAs 32 and 35 - Walla Walla and Middle Snake River Basins - Priority Streams

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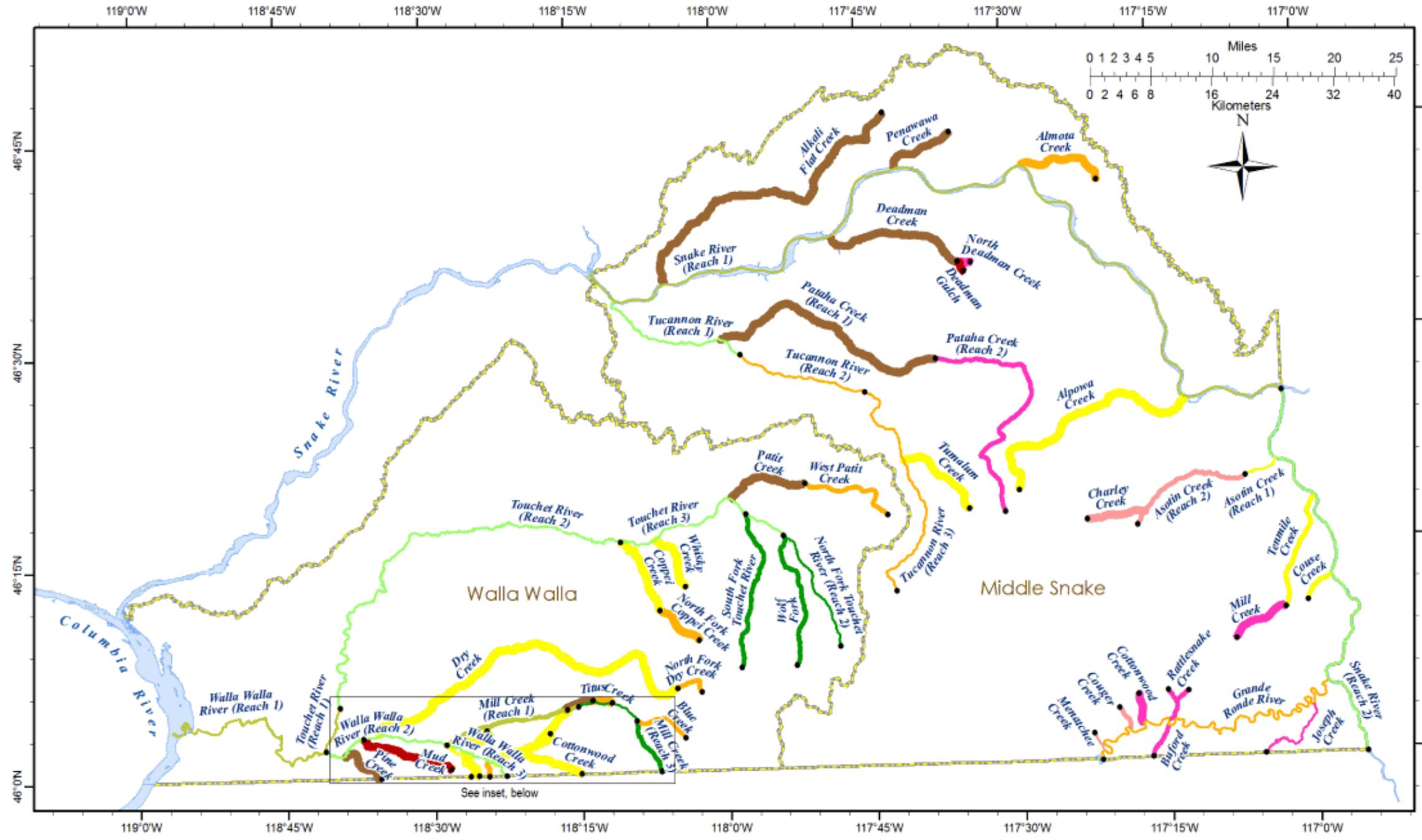


Figure B-2 Combined Prioritization Scores for Fish, Habitat, & Flow



**Walla Walla and Middle Snake River Basins
WRIAs 32 and 35
Combined Prioritization Scores
for Fish, Habitat, and Flow**

Fish Status/Utilization and Habitat Condition scores use this color scheme:

Fish Score			Habitat Score
Low	Avg	High	
Light Green	Yellow	Dark Green	Good
Light Blue	Light Green	Light Yellow	Fair
Light Red	Light Blue	Light Green	Poor

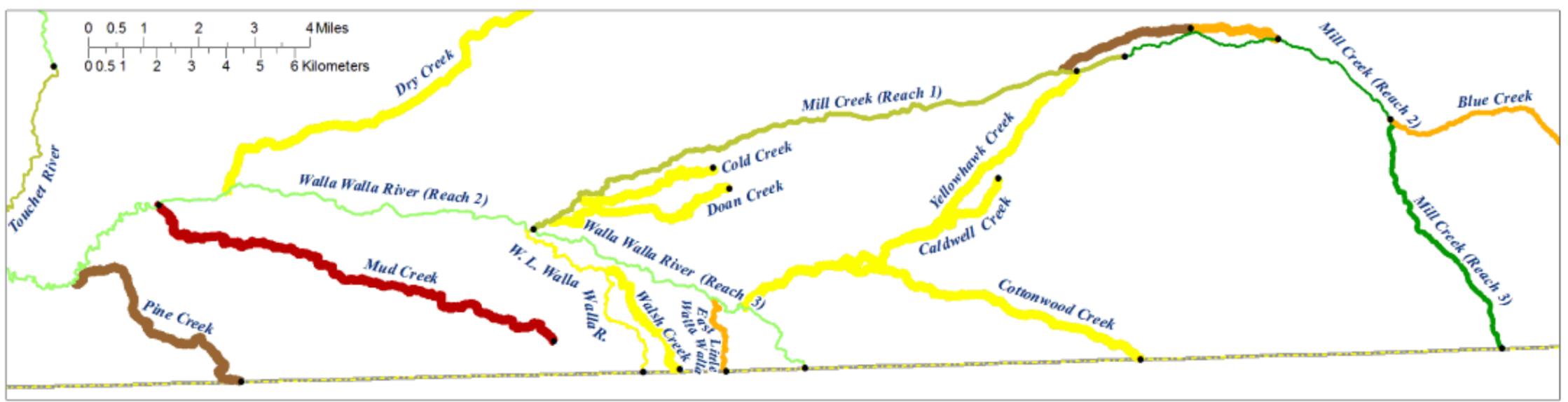
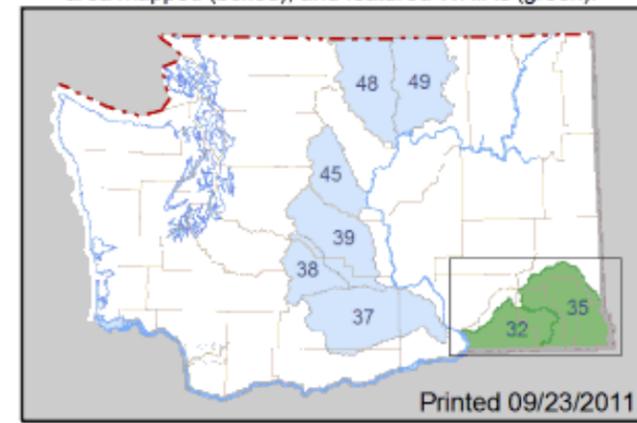
Flow Condition score uses line thickness

- Good
- Fair
- Poor

• — Assessed Stream Reach upper extents

WRIA Boundary

Location of all project WRIAs (blue), location of the area mapped (boxed), and featured WRIAs (green).



WRIAs 32 and 35 - Walla Walla and Middle Snake River Basins - Fish, Habitat, and Flow

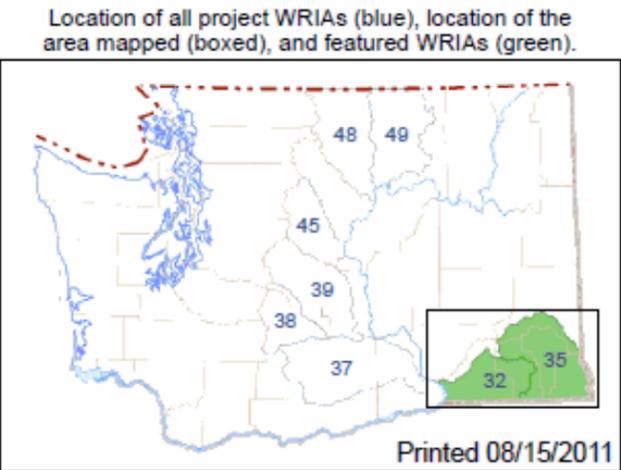
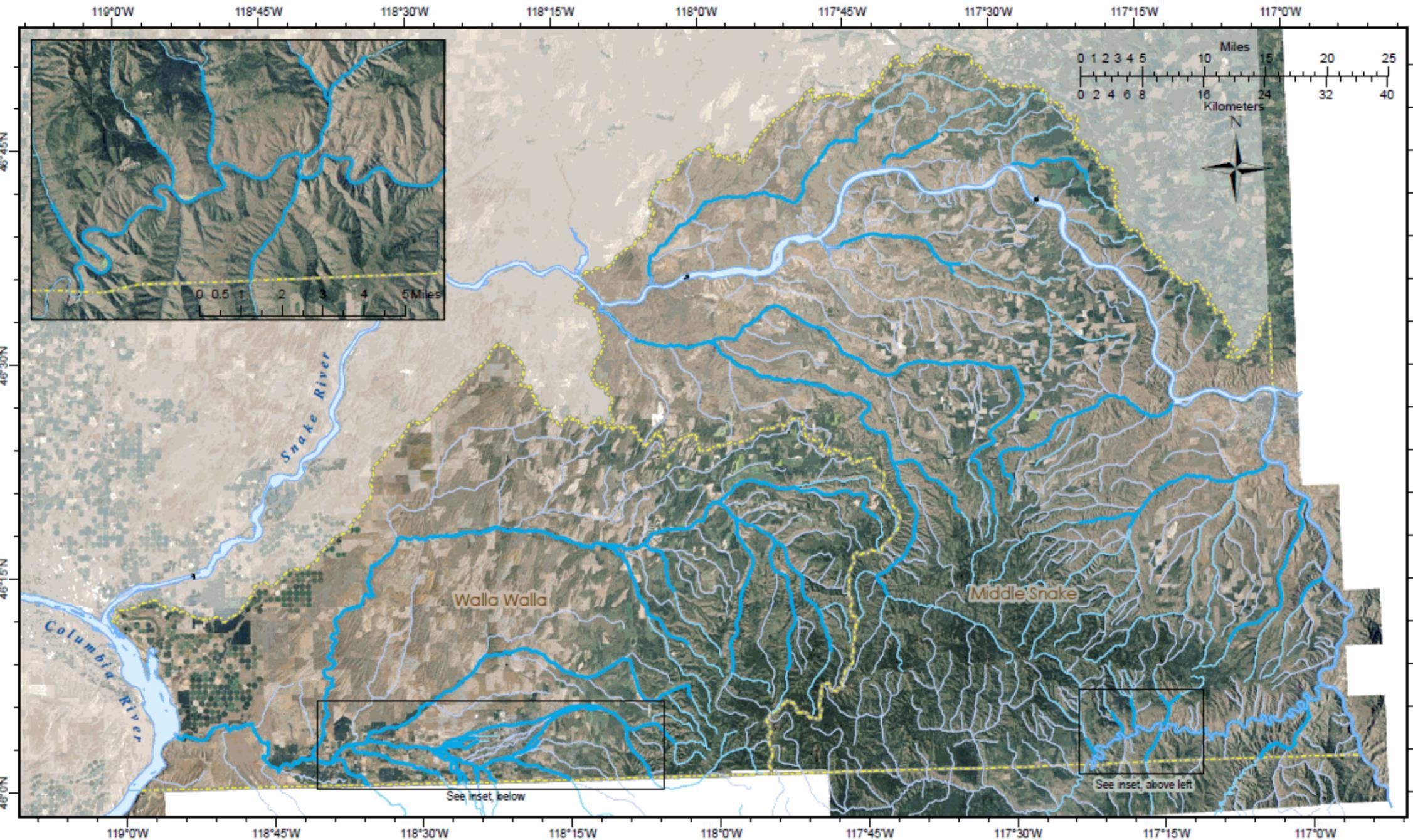
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Figure B-3 2001 Statewide 1m Orthophoto



Walla Walla and Middle Snake River Basins
WRIAs 32 and 35
2009 Statewide 1m Orthophoto

- Stream Distinctions
-  Assessed Reaches
 -  Headwaters of Assessed Reaches
 -  Other Named Streams
 -  WRIA Boundary



WRIAs 32 and 35 - Walla Walla and Middle Snake River Basins - Orthophoto

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Figure B-4 2001 National Land Cover Database

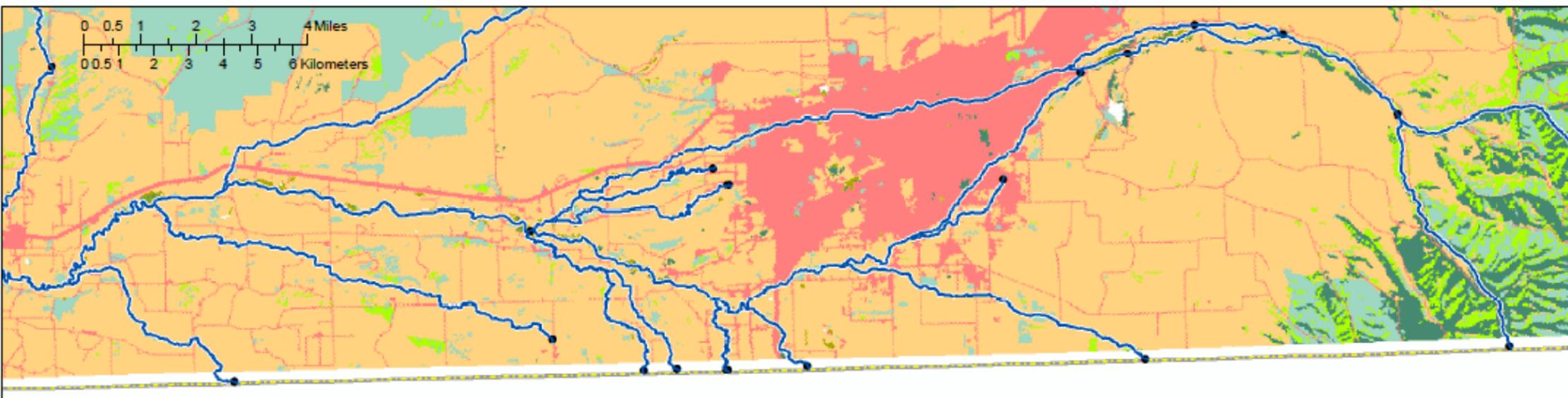
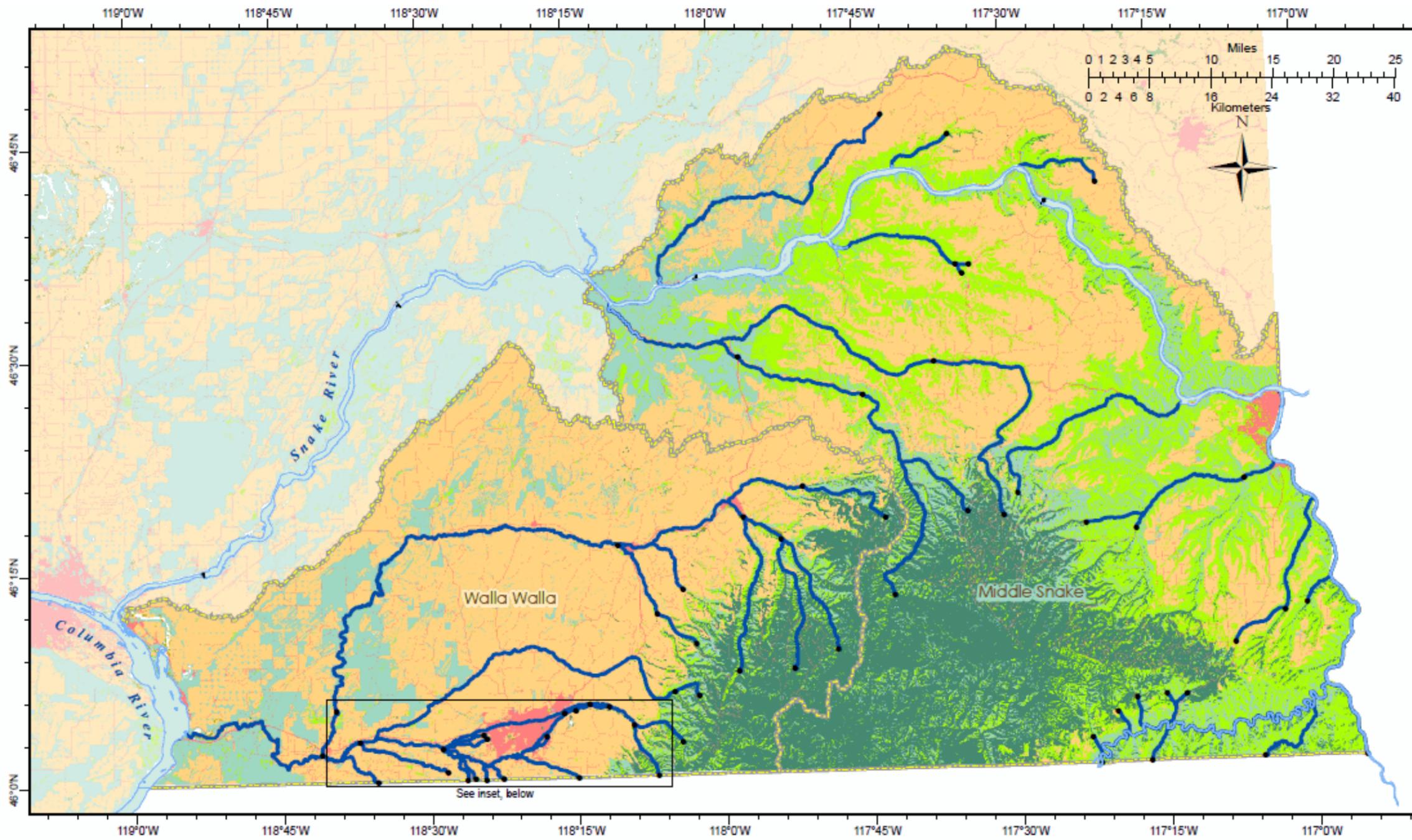


Walla Walla and Middle Snake River Basins
WRIs 32 and 35
2001 National Land Cover Database

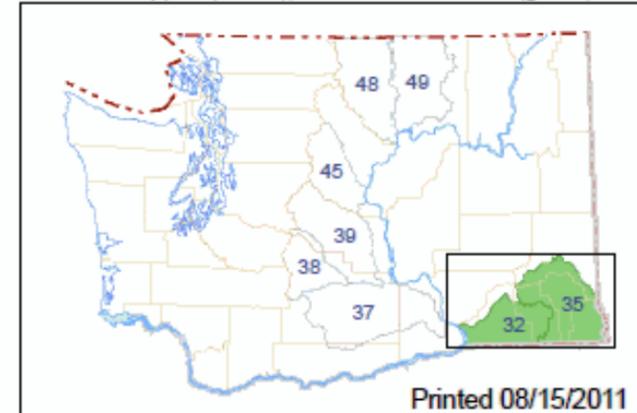
Land Cover and Use

- Snow and Ice
- Developed
- Barren
- Forest
- Scrub
- Grasslands
- Agriculture
- Riparian

Assessed Stream Reaches with upper extents marked



Location of all project WRIs (blue), location of the area mapped (boxed), and featured WRIs (green).



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WRIs 32 and 35 - Walla Walla and Middle Snake River Basins - NLCD

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