Palouse River Addendum Implementation Plan for Agriculture (17060108)

Photo taken from Palouse River Subbasin TMDL Five-Year Reveiw (IDEQ, 2015a)

Prepared by the Idaho Soil and Water Conservation Commission
In cooperation with the Latah Soil and Water Conservation District

July 2016

Original Plans:

Cow Creek WAG (Cow Creek Watershed Advisory Group). 2008. *Cow Creek Watershed Total Maximum Daily Load Implementation Plan for Agriculture.* Genesee, ID: Idaho Soil and Water Conservation Commission.

Palouse River Tributaries WAG (Palouse River Tributaries Watershed Advisory Group). 2009. *Palouse River Tributaries Total Maximum Daily Load Implementation Plan for Agriculture.* Potlatch, ID: Idaho Soil and Water Conservation Commission.

Paradise Creek WAG (Paradise Creek Watershed Advisory Group). 1999. *Paradise Creek Total Maximum Daily Load Implementation Plan.* Moscow, ID: Latah Soil and Water Conservation District.

South Fork Palouse River WAG (South Fork Palouse River Watershed Advisory Group). 2009. *South Fork of the Palouse River Total Maximum Daily Load Implementation Plan for Agriculture.* Moscow, ID: Idaho Soil and Water Conservation Commission.

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List of Tables and Figures:

Introduction

The purpose of this plan is to address the TMDL addendums and the 5-Year Review for the Palouse River Subbasin with the goal to help restore designated beneficial uses. Only the Idaho portion of the Palouse Subbasin is addressed in this implementation plan.

"Pursuant to section 39-3601 et seq., Idaho Code, and IDAPA 58.01.02, Water Quality Standards, the Idaho Soil & Water Conservation Commission (SWCC) is the designated agency for management of nonpoint source pollution on grazing and agricultural land in Idaho and is therefore responsible to lead TMDL implementation activities on grazing and agricultural land in the State."

The objective of the plan is to outline a process of potential site-specific agricultural best management practices (BMP's) that can be used to help restore the designated beneficial uses by reducing pollutant loads in the Palouse River subbasin.

Project Setting

The Palouse River subbasin (HUC 17060108) is located in northern Idaho near the City of Moscow covering 260,641 acres (407 square miles). The headwaters of the Palouse River originate in the Hoodoo Mountains of the St. Joe National Forest. The Palouse River (Figure 1) and most of its tributaries originate in forested mountain terrain and flow to the lower gradient rolling hills of the Palouse, which is dominated by agriculture. The Idaho portion of the Palouse River Subbasin is approximately 232,500 acres, located primarily in Latah County. (IDEQ, 2005a). The Palouse River subbasin is a sparsely populated area with one major town, Moscow, and several other small towns and communities, including Potlatch, Princeton, and Harvard (IDEQ, 2015a)

The economy of the Palouse is dominated by agriculture and two universities: the University of Idaho and Washington State University. Forestry, livestock, grazing, construction, and recreation are other economic factors. All of these affect water quality to some degree. The Palouse prairie is one of the most productive agricultural areas in the world and agriculture is and will continue to be the dominant economic driving force in the subbasin (IDEQ, 2015a). The Palouse River Subbasin TMDL 5-Year Review (IDEQ, 2015a) summarizes the project setting in more detail.

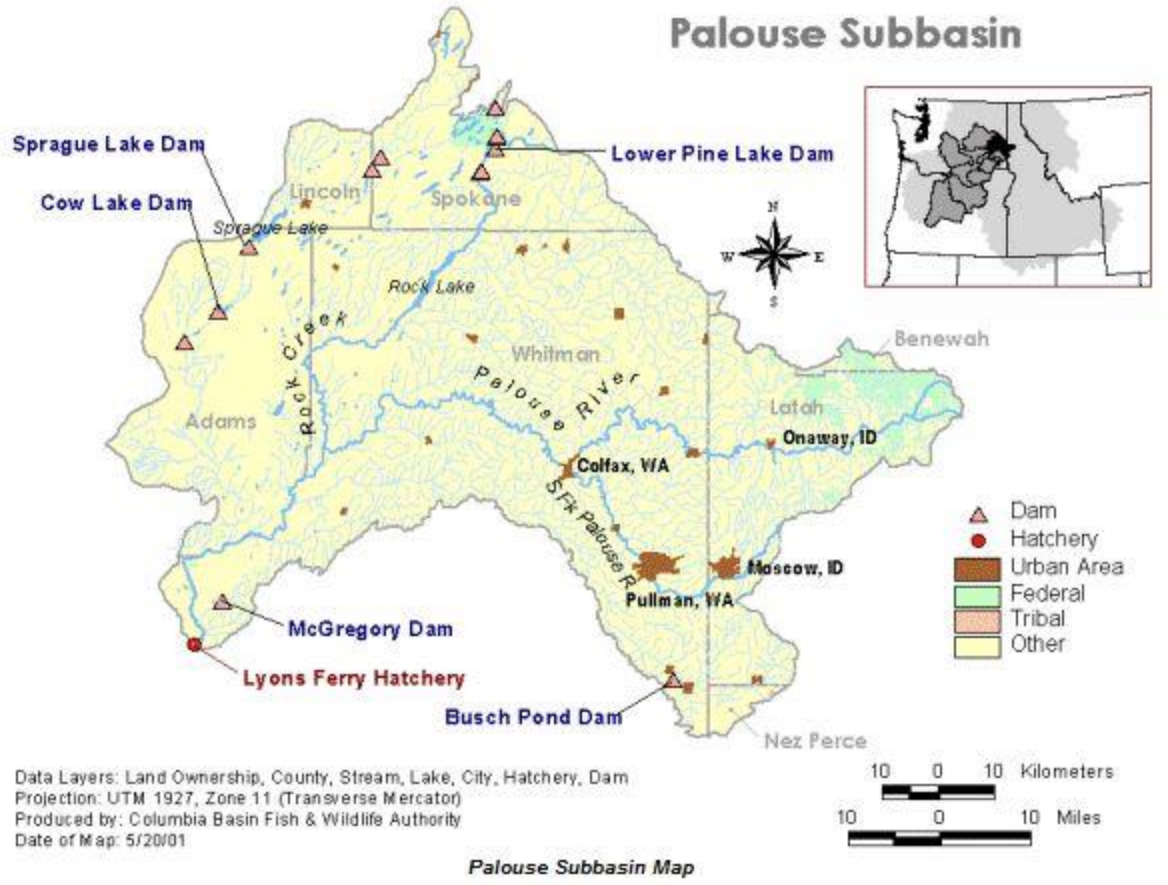

Figure 1. Palouse River Subbasin and Location (Latah Soil and Water Conservation District).

Land Use and Land Ownership

Land use in the Palouse River watershed is primarily dryland agriculture, followed closely be forestry. The majority of the watershed is privately owned (89%). Nearly all (94%) of the subbasin is located in Latah County. For a detailed description of land use, please refer to the original TMDL Implementation Plans (as reference on the front page).

Accomplishments

The "Palouse River Subbasin 5-Year Review" summarizes the implementation work that was done in the Palouse River Subbasin between 1998 and 2014. Table 1, 2, 3, and 4 summarize the practices installed using NRCS federal funds in the sub-watersheds. Table 5 highlights all the accomplishments.

Table 1. BMP Practices installed with NRCS funds FY 2003 thru FY 2015 in the Palouse River Tributaries.

Practice Name	Amount Installed	Units
Access Control	6,922.90	acres
Access Road	123.00	feet
Conservation Cover	12,043.80	acres
Conservation Crop Rotation	10,466.50	acres
Contour Farming	7,105.50	acres
Cover Crop	52.70	acres
Critical Area Planting	3.10	acres
Enhancement - Energy Management	1,051.20	acres
Enhancement - Grazing Management	190.40	acres
Enhancement - Habitat Management	400.00	acres
Enhancement - Nutrient Management	531.20	acres
Enhancement - Pest Management	1,576.80	acres
Enhancement - Soil Management	525.60	acres
Fence	16,087.00	feet
Field Border	6,123.00	acres
Filter Strip	54.30	acres
Firebreak	242,994.10	feet
Forage and Biomass Planting	12.00	acres
Forage Harvest Management	142.50	acres
Forest Stand Improvement	3.50	acres
Grade Stabilization Structure	5.00	structures
Heavy Use Area Protection	2.30	square feet
Integrated Pest Management (IPM)	20,890.30	acres
Livestock Pipeline	3,810.00	feet
Nutrient Management	15,833.20	acres
Prescribed Grazing	501.20	acres
Range Planting	43.50	acres
Residue and Tillage Management, No-Till	6,857.70	acres
Residue and Tillage Management, Reduced Till	11,371.20	acres
Residue Management -Direct Seed	37,634.60	acres
Residue Management, Mulch Till	2,042.20	acres
Residue Management, No-Till/Strip Till	3,145.80	acres
Restoration and Management of Rare and Declining Habitats	24.60	acres
Riparian Forest Buffer	2.50	acres
Riparian Herbaceous Cover	37.10	acres
Spring Development	1.00	spring
Stream Crossing	2.00	crossings
Streambank and Shoreline Protection	13,142.00	feet
Structure for Water Control	1.00	structure
Tree/Shrub Establishment	88.60	acres

Underground Outlet	1,024.00	feet
Upland Wildlife Habitat Management	9,587.30	acres
Watering Facility	8.00	troughs
Wetland Enhancement	11.70	acres
Wetland Restoration	29.40	acres
Wetland Wildlife Habitat Management	603.50	acres
Wildlife Watering Facility	3.00	troughs

Table 2. BMP Practices installed with NRCS funds FY 2004 thru FY 2015 in the South Fork of the Palouse River.

Practice Name	Amount Installed	Units
Access Control	1,667.60	acres
Agricultural Secondary Containment Facility	1.00	facility
Brush Management	13.70	acres
Conservation Cover	4,502.70	acres
Conservation Crop Rotation	349.80	acres
Contour Farming	106.70	acres
Filter Strip	3.90	acres
Firebreak	69,132.00	feet
Forage Harvest Management	26.20	acres
Forest Stand Improvement	7.20	acres
Grade Stabilization Structure	1.00	basin
Herbaceous Weed Control	13.70	acres
Integrated Pest Management (IPM)	2,426.80	acres
Nutrient Management	2,245.50	acres
Prescribed Grazing	62.50	acres
Range Planting	1.00	acres
Residue and Tillage Management, Reduced Till	1,959.20	acres
Restoration and Management of Rare and Declining Habitats	18.10	acres
Tree/Shrub Establishment	88.30	acres
Tree/Shrub Pruning	8.50	acres
Underground Outlet	1,404.00	feet
Upland Wildlife Habitat Management	3,116.40	acres
Water and Sediment Control Basin	2.00	basins
Wildlife Watering Facility	1.00	trough
Woody Residue Treatment	11.50	acres

Table 3. BMP Practices installed with NRCS funds FY 2004 thru FY 2015 in Paradise Creek.

Practice Name	Amount Installed	Units
Access Control	787.90	acres
Comprehensive Nutrient Management Plan	1.00	plan
Conservation Cover	2529.40	acres
Conservation Crop Rotation	3812.90	acres
Contour Farming	3177.40	acres
Cover Crop	2.00	acres
Filter Strip	15.90	acres
Firebreak	22500.00	feet
Forage and Biomass Planting	89.50	acres
Forest Stand Improvement	4.00	acres
Grassed Waterway	14.00	acres
Integrated Pest Management (IPM)	749.20	acres
Irrigation Reservoir	1.00	acre-foot
Nutrient Management	650.10	acres
Prescribed Burning	3.20	acres
Residue Management, No-Till/Direct Seed	1148.60	acres
Restoration and Management of Rare and Declining Habitats	4.00	acres
Seasonal High Tunnel System for Crops	1536.00	square feet
Stream Crossing	1.00	crossing
Stripcropping, Field	746.00	acres
Tree/Shrub Establishment	139.30	acres
Upland Wildlife Habitat Management	2608.00	acres
Water and Sediment Control Basin	1.00	basin
Wetland Wildlife Habitat Management	15.00	acres
Wildlife Watering Facility	5	troughs
Woody Residue Treatment	4	acres

Table 4. BMP Practices installed with NRCS funds FY 2008 thru FY 2013 in Cow Creek.

Practice	Amount Applied	Unit
Access Control	5,521.2	acres
Access Road	123.0	feet
Comprehensive Nutrient Management Plan	1.0	each
Conservation Cover	8,812.0	acres
Conservation Crop Rotation	7,131.9	acres
Contour Farming	5,287.2	acres
Critical Area Planting	3.0	acres
Fence	23,995.0	feet
Field Border	6,123.0	feet
Filter Strip	42.6	acres
Firebreak	318,356.0	feet

Practice	Amount Applied	Unit
Forage and Biomass Planting	12.0	acres
Forage Harvest Management	168.7	acres
Forest Stand Improvement	8.2	acres
Grade Stabilization Structure	2.0	each
Heavy Use Area Protection	2.2	acres
Integrated Pest Management	11,377.5	acres
Nutrient Management	6,624.8	acres
Pipeline	4,336.0	feet
Prescribed Burning	52.4	acres
Prescribed Grazing	295.5	acres
Range Planting	22.5	acres
Residue/Tillage Mgt - Mulch Till	5,718.0	acres
Residue/Tillage Mgt - No Till, Strip Till, Direct Seed	5,205.4	acres
Restoration of Rare/Declining Habitats	25.6	acres
Riparian Forest Buffer	2.5	acres
Riparian Herbaceous Cover	37.1	acres
Stream Crossing	1.0	each
Stream Habitat Improvement and Mgt	148.2	acres
Streambank and Shoreline Protection	11,800.0	feet
Structure for Water Control	1.0	each
Tree/Shrub Establishment	90.7	acres
Tree/Shrub Site Preparation	51.2	acres
Upland Wildlife Habitat Mgt	8,907.6	acres
Water and Sediment Control Basin	1.0	each
Watering Facility	9.0	each
Wetland Enhancement	11.7	acres
Wetland Restoration	29.4	acres
Wetland Wildlife Habitat Mgt	169.1	acres
Wildlife Watering Facility	3.0	each
Woody Residue Treatment	2.5	acres

Table 5: BMP Accomplishments 1995-2016

Watershed	Description of Work	Project Lead	Years Completed
Paradise Creek	Flood plain work, floodwater detention capacity increased	University of Idaho	1999-2000
Paradise Creek	reconstructed channel (2,100 ft.), riparian vegetation planted	University of Idaho	2010
Paradise Creek	WWTP upgrades	City Moscow WWTP	1996-2010
Paradise Creek	Moscow WWT (130,680 sqft wetland, 1,300 feet streambank restoration)	LSWCD/Moscow WWTP	1996-2003
Paradise Creek	42,691 linear feet streambank restoration (includes 2,455,737 sq. ft. floodplain, 2,666,983 sq. ft. vegetated buffer)	PCEI	2000-2004
Paradise Creek	54,211 herbaceous and woody plants planted	PCEI	2000-2004
Paradise Creek	139,702 sq. ft. wetlands created	PCEI	2000-2004
Paradise Creek	2,541 ft. fence	PCEI	2000-2004
Paradise Creek	Carol Ryrie Brink Nature Park (5-ac floodplain, 1,200 ft. stream channel remeandered, 3 - 175 ft. revetments for stabilization, 3,000 ft. streambank seeded, 6,000' geotextile, 750 native plants planted)	LSWCD/PCEI	1995-1996
Paradise Creek	Sweet Avenue Project (11,553 sqft bank restoration along 1,750' of creek)	LSWCD/PCEI	1998
Paradise Creek	Chipman Trail (2,000 native trees and shrubs planted, 2,100 feet of stream bank restoration)	LSWCD/PCEI	1999-2000
Paradise Creek	East Mountain View (1,720' streambank restoration, 2 wetlands)	LSWCD/PCEI	2002-2003
Paradise Creek	Mountain View Park (1,100 tree and shrub plantings, 2,140' streambank restoration)	LSWCD/PCEI	1999-2000
Paradise Creek	Fire Station Streambank (190') Stabilization and Riparian planitngs	LSWCD/PCEI	2002
Paradise Creek	Fosberg Riparian Planting Project (1,370' bank restoration, 1,370' exclusionary fencing)	LSWCD/PCEI	2000
Paradise Creek	Good Samaritian Village Riparian Planting (171' bank stabilization)	LSWCD/PCEI	2002
Paradise Creek	Guy Wicks Field (1,136' strean bank restoration)	LSWCD/PCEI	2002
Paradise Creek	Leffingwell-Reid Wetland Constuction (650' bank restoration, 8,420 sqft of wetlands in three areas)	LSWCD/PCEI	2003
Paradise Creek	Lefors Wetland (972' streambank restoration, 486' fence, 6,211 sq ft of wetlands in two areas)	LSWCD/PCEI	2002
Paradise Creek	Lightfield Streambank Stabiilization (200') and Riparian Planting	LSWCD/PCEI	2003
Paradise Creek	Meadow Street Project (365 ft. streambank stabilized)	LSWCD/PCEI	2000

Paradise Creek	Nichols Project (60 ft. streambank stabilization)	LSWCD/PCEI	2000
Paradise Creek	Orchard Wetland (14,019 sqft wetland, 146' of streambank plantings)	LSWCD	2001-2002
Paradise Creek	Renaissance Charter School (379' streambank restoration)	LSWCD/PCEI	2002
Paradise Creek	Berman Creekside Park (150 ft. streambank stabilization with 413 tree revetments and plantings)	LSWCD/PCEI	2001-2002
Paradise Creek	State Line Project (1,020 ft. stream stabilized and planted)	LSWCD/PCEI	2001
Paradise Creek	Bridge Street Park and West Bridge Street Bank Stabilization (450 ft. stream reconfigured, 100 ft. stream stabilization)	LSWCD/PCEI	2001-2002
Paradise Creek	Bennett Creek (remove debris, reslope bank, 1200 native plantings)	LSWCD/PCEI	2008-2010
Paradise Creek	Streets Project (2 wetlands, 732' streambank restoration)	LSWCD	2002-2003
Paradise Creek	Styner Riparian Project (448' streambank restoration)	LSWCD/PCEI	2002
Paradise Creek	White Avenue (358' streambank restoration)	LSWCD/PCEI	2002-2003
Paradise Creek	Paradise Creek Rural Riparian Restoration (2,500' ripparian plantings, 6 wetlands, 2 animal crossings, 740' gully restoration, 14,938' streambank restoration)	LSWCD/PCEI	2002-2003
Paradise Creek	Private Landowner BMP installations (see Table 3 in Palouse Imp Plan)	NRCS	2004-2015
Crane Creek	Road rocking (8610 feet), Hydroseeding (521,000 sqft)	LSWCD	2008-2011
Deep Creek	Deep Creek Stabilization (2,782 linear ft. streambank stabilized)	PCEI/LSWCD	2009-2011
Deep Creek	Deep Creek Restoration (22,500 sq. ft. variable riparian buffer, 1070 ft stabilization and plantings, 2 wetlands created)	PCEI	2006-2009
Deep Creek	Cattle exclusion, offsite water facility, feed bunks	LSWCD	2009-2011
East Fork Deep Creek	Hydroseeding (11,250 sqft) along roadbank	LSWCD	2008-2010
Flannigan Creek	Flannigan Creek Restoration (1,336 ft. stabilization, 330,280 sq. ft. variable riparian buffer)	PCEI	2007-2010
Long Creek	1200' of road rocking	LSWCD	2009-2011
Missouri Flat Creek	Hydroseeding (160,875 sqft) along roadcut	LSWCD	2009-2011
West Fork Rock Creek	5900' of road rocking	LSWCD	2009-2011
Palouse River Tribs	Private Landowner BMP installations (see Table 1 in Palouse Imp. Plan)	NRCS	2003-2015

Palouse River Tribs	Direct seed (318.2 acres), Erosion Control structures (3)	LSWCD	2009-2011
South Fork Palouse	Fountain Project (1,670 ft. stabilization, 68,572 sq. ft. variable riparian buffer)	PCEI	2009-2013
South Fork Palouse	Palouse River Drive (floodplain developed, stabilization, 5 riparian wetlands, plantings for riparian forest buffer)	PCEI	2000-2004
South Fork Palouse	Robinson Park (517,957 sq ft streambank restored, 9 wetlands created, fencing, hardented crossing)	PCEI	2000-2004
South Fork Palouse	Private Landowner BMP installations (see Table 2 in Palouse Imp. Plan)	NRCS	2004-2015
Cow Creek	Cow Creek Water quality Improvement (erosion & sediment reduction structures (4),Conservation tillage (3,750 acres), riparian plantings)	LSWCD / NPSWCD	2004-2007
Cow Creek	Hwy 95 improvement (10 ac floodplain wetlands created)	ITD	2007
Cow Creek	Private Landowner BMP installations (see Table 4 in Palouse Imp. Plan)	NRCS	2008-2013

Resource Concerns

According to the 5-year review the Palouse River subbasin existing pollutant loads are in general improving. Table 6 summarizes the changes recommended for the assessment units (AU's) based on the 5-year review and the addendums TMDL plans from 2015. There are not any significant water quality improvements, with beneficial uses not being supported (Table 24 in the 5-year review has detailed data on the beneficial use assessments).

Table 6. Summary of recommended changes for AUs based on 5-year review and addendums (IDEQ, 2015a, c)

Assessment Unit Name	Assessment Unit Number	Pollutant	Recommended Changes to Next Integrated Report	Justification
South Fork Palouse River—Gnat Creek to Idaho/Washington border	ID17060108CL002_03	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation use	Data show 126 cfu/100 mL geometric mean criteria is being met.
South Fork Palouse River—source to Gnat Creek; tributaries	ID17060108CL003_02	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation use	Data show 126 cfu/100 mL geometric mean criteria is being met.
South Fork Palouse River—source to Gnat Creek	ID17060108CL003_03	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation use	Data show 126 cfu/100 mL geometric mean criteria is being met.

Assessment Unit Name	Assessment Unit Number	Pollutant	Recommended Changes to Next Integrated Report	Justification
Paradise Creek—urban boundary to Idaho/Washington border	ID17060108CL005_02	Ammonia	Keep in Category 4a; remove ammonia as an impairment	City of Moscow WWTP is meeting their permit effluent limits for ammonia.
Paradise Creek—forest habitat boundary to urban boundary	ID17060108CL005_02a	Ammonia	Keep in Category 4a; remove ammonia as an impairment	Listed in error
Paradise Creek—urban boundary to Idaho/Washington border	ID17060108CL005_02	Bacteria *(E. coli)*	No changes, currently in Category 4a	Update from fecal coliform to *E. coli* standard
Paradise Creek—forest habitat boundary to urban boundary	ID17060108CL005_02a	Bacteria *(E. coli)*	No changes, currently in Category 4a	Update from fecal coliform to *E. coli* standard
Idlers Rest Creek—source to forest habitat boundary	ID17060108CL005_02b	Ammonia	Keep in Category 4a; remove ammonia as an impairment	Listed in error
Gold Creek—source to T42N, R04W, Sec. 28	ID17060108CL030_02	Sediment (TSS)	Keep in Category 4a, remove sediment as an impairment	BURP data score of 3, indicating aquatic life beneficial uses are fully supporting; sediment data show no exceedance of the sediment surrogate.
Deep Creek—source to T42, R05, Sec. 02	ID17060108CL032a_02	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation use	Data show 126 cfu/100 mL geometric mean criteria is being met.
Deep Creek—source to T42, R05, Sec. 02	ID17060108CL032a_03	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation uses	Data show 126 cfu/100 mL geometric mean criteria is being met.
Deep Creek—T42, R05, Sec. 02 to mouth	ID17060108CL032b_02	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation use	Data show 126 cfu/100 L geometric mean criteria is being met.
Deep Creek—T42, R05, Sec. 02 to mouth	ID17060108CL032b_03	Bacteria (*E. coli*)	Move from Category 4a to 2 for contact recreation use	Data show 126 cfu/100 mL geometric mean criteria is being met.

Sediment

Table 7 details the assessment units (AU's) with sediment TMDL's. There is not a numeric criterion in the Idaho water quality standards (IDAPA 58.01.02.200.08) for sediment. For each AU with sediment concerns a numeric target using total suspended solids (TSS) was set by the original WAG. These numeric targets are displayed in Table 7.

Table 7. Assessment units with sediment TMDL's (IDEQ, 2015a).

Assessment Unit Name	Assessment Unit Number	TSS Numeric Target	Critical Period
South Fork Palouse River—Gnat Creek to Idaho/Washington border[a]	ID17060108CL002_03	50 mg/L/30 day avg; no greater than 80 mg/L daily	February–April
South Fork Palouse River—source to Gnat Creek; tributaries[a]	ID17060108CL003_02	25 mg/L/30 day avg; no greater than 50 mg/L daily	February–April
South Fork Palouse River—source to Gnat Creek[a]	ID17060108CL003_03	25 mg/L/30 day avg; no greater than 50 mg/L daily	February–April
Paradise Creek—urban boundary to Idaho/Washington border[b]	ID17060108CL005_02	100 mg/L instantaneous; 50 mg/L for 10 consecutive days	Year-round
Paradise Creek—forest habitat boundary to urban boundary[b]	ID17060108CL005_02a	100 mg/L instantaneous; 50 mg/L for 10 consecutive days	Year-round
Idlers Rest Creek—source to forest habitat boundary[b]	ID17060108CL005_02b	100 mg/L instantaneous; 50 mg/L for 10 consecutive days	Year-round
Flannigan Creek—source to T41N, R05W, Sec. 23[c]	ID17060108CL011a_02	25.91 mg/L for 10 consecutive days	January–May
Flannigan Creek—source to T41N, R05W, Sec. 23[c]	ID17060108CL011a_03	25.91 mg/L for 10 consecutive days	January–May
Flannigan Creek—T41N, R05W, Sec. 23 to mouth[c]	ID17060108CL011b_02	25.91 mg/L for 10 consecutive days	January–May
Flannigan Creek—T41N, R05W, Sec. 23 to mouth[c]	ID17060108CL011b_03	25.91 mg/L for 10 consecutive days	January–May
Rock Creek—confluence of WF and EF Rock Creek to mouth[c]	ID17060108CL012_03	9.36 mg/L for 10 consecutive days	January–May
West Fork Rock Creek—source to T41N, R04W, Sec. 30[c]	ID17060108CL013a_02	9.36 mg/L for 10 consecutive days	January–May
West Fork Rock Creek—T41N, R04W, Sec. 30 to mouth[c]	ID17060108CL013b_03	9.36 mg/L for 10 consecutive days	January–May
East Fork Rock Creek—source to T41N, R04W, Sec. 29[c]	ID17060108CL014a_02	9.36 mg/L for 10 consecutive days	January–May
East Fork Rock Creek—T41N, R04W, Sec. 29 to mouth[c]	ID17060108CL014b_02	9.36 mg/L for 10 consecutive days	January–May
Hatter Creek—source to T40N, R04W, Sec. 3[c]	ID17060108CL015a_02	25.81 mg/L for 10 consecutive days	January–May
Hatter Creek—T40N, R04W, Sec. 3 to mouth[c]	ID17060108CL015b_02	25.81 mg/L for 10 consecutive days	January–May
Hatter Creek—T40N, R04W, Sec. 3 to mouth[c]	ID17060108CL015b_03	25.81 mg/L for 10 consecutive days	January–May
Gold Creek—T42N, R04W, Sec. 28 to mouth[c]	ID17060108CL029_02	23.36 mg/L for 10 consecutive days	January–May
Gold Creek—T42N, R04W, Sec. 28 to mouth[c]	ID17060108CL029_03	23.36 mg/L for 10 consecutive days	January–May
Gold Creek—source to T42N, R04W, Sec. 28[c]	ID17060108CL030_02	23.36 mg/L for 10 consecutive days	January–May
Crane Creek—source to T42N, R04W, Sec. 28[c]	ID17060108CL031a_02	23.36 mg/L for 10 consecutive days	January–May

Assessment Unit Name	Assessment Unit Number	TSS Numeric Target	Critical Period
Crane Creek—T42N, R04W, Sec. 28 to mouth[c]	ID17060108CL031b_02	23.36 mg/L for 10 consecutive days	January–May
Deep Creek—source to T42, R05, Sec. 02[c]	ID17060108CL032a_02	23.36 mg/L for 10 consecutive days	January–May
Deep Creek—source to T42, R05, Sec. 02[c]	ID17060108CL032a_03	23.36 mg/L for 10 consecutive days	January–May
Deep Creek—T42, R05, Sec. 02 to mouth	ID17060108CL032b_02	23.36 mg/L for 10 consecutive days	January–May
Deep Creek—T42, R05, Sec. 02 to mouth[c]	ID17060108CL032b_03	23.36 mg/L for 10 consecutive days	January–May

[a] *South Fork Palouse River Watershed Assessment and TMDLs* (DEQ 2007)
[b] *Paradise Creek TMDL: Water Body Assessment and Total Maximum Daily Load* (DEQ 1997)
[c] *Palouse River Tributaries Subbasin Assessment and TMDL* (DEQ 2005a)
Note: milligrams per liter (mg/L)

The Palouse River Subbasin 5-Year Review has a list of seven tables that detail the TSS concentrations at each monitoring site established in the Palouse River subbasin TMDLs. Table 8-12 show the load reduction needs found during the 5-year review process (IDEQ, 2015a). Monitoring points without load reduction needs can be found in the Palouse River Subbasin 5-year Review.

Table 8. Daily TSS load for Lower Gold Creek (ID17060108CL029_03) (monitoring point PR9) (IDEQ, 2015a).

Sample Date	Flow (cfs)	TSS (mg/L)	Existing Load (lb/day)	Load Capacity (lb/day)	Load Reduction (%)
5/8/2014	10.42	8.17	458.86	1,311.99	0
5/14/2014	6.172	5.95	197.94	777.12	0
5/20/2014	4.233	7.79	177.74	532.98	0
5/28/2014	2.874	4.97	76.99	361.87	0
6/4/2014	1.795	4.67	45.18	226.01	0
6/10/2014	0.847	4.57	20.86	106.65	0
2/19/2015	9.058	7.92	386.68	1,140.50	0
3/2/2015	7.29	12.9	506.88	917.89	0
3/16/2015	31.57	59.7	10,158.69	3,974.99	61

Notes: total suspended solids (TSS); cubic feet per second (cfs); milligrams per liter (mg/L); pounds per day (lb/day)

Table 9. Daily TSS load for Lower Hatter Creek (ID17060108CL015b_03) (monitoring point PR12) (IDEQ, 2015a).

Sample Date	Flow (cfs)	TSS (mg/L)	Existing Load (lb/day)	Load Capacity (lb/day)	Load Reduction (%)
5/8/2014	18.22	8.36	821.0	2,534.7	0
5/14/2014	10.61	8.57	490.1	1,476.0	0
5/20/2014	8.107	7.78	340.0	1,127.8	0

5/28/2014	5.541	4.06	121.3	770.8	0
6/4/2014	3.471	3.78	70.7	482.9	0
6/10/2014	2.036	2.28	25.0	283.2	0
2/19/2015	22.61	22.9	2,790.8	3,145.4	0
3/2/2015	17	14.8	1,356.1	2,365.0	0
3/16/2015	26.72	52.4	7,546.7	3,717.2	51

Notes: total suspended solids (TSS); cubic feet per second (cfs); milligrams per liter (mg/L); pounds per day (lb/day)

Table 10. Daily TSS load for Lower Rock Creek (ID17060108CL012_03) (monitoring point PR14) (IDEQ, 2015a).

Sample Date	Flow (cfs)	TSS (mg/L)	Existing Load (lb/day)	Load Capacity (lb/day)	Load Reduction (%)
5/8/2014	0.662	7.09	25.30	33.40	0
5/14/2014	0.391	5.09	10.73	19.73	0
5/20/2014	0.185	4.32	4.31	9.33	0
5/28/2014	0.105	4.27	2.42	5.30	0
6/4/2014	0.059	3.58	1.14	2.98	0
6/10/2014	0.033	11.1	1.97	1.66	16
2/19/2015	2.449	4.13	54.52	123.55	0
3/2/2015	1.15	6.29	38.99	58.02	0
3/16/2015	6.209	29	970.53	313.25	68

Notes: total suspended solids (TSS); cubic feet per second (cfs); milligrams per liter (mg/L); pounds per day (lb/day)

Table 11. Daily TSS load for Upper Rock Creek (ID17060108CL013a_02) (monitoring point PR15) (IDEQ, 2015a).

Sample Date	Flow (cfs)	TSS (mg/L)	Existing Load (lb/day)	Load Capacity (lb/day)	Load Reduction (%)
5/8/2014	0.154	3.91	3.25	7.77	0
5/14/2014	0.068	3.92	1.44	3.43	0
5/20/2014	0.043	2.31	0.54	2.17	0
5/28/2014	0.062	3.1	1.04	3.13	0
6/4/2014	0.032	3.14	0.54	1.61	0
6/10/2014	0.007	3.8	0.14	0.35	0
2/19/2015	0.627	17.6	59.48	31.63	47
3/2/2015	0.379	1.59	3.25	19.12	0
3/16/2015	1.054	11.4	64.76	53.17	18

Notes: total suspended solids (TSS); cubic feet per second (cfs); milligrams per liter (mg/L); pounds per day (lb/day)

Table 12. Daily TSS load for Lower Flannigan Creek (ID17060108CL011b_03) (monitoring point PR16) (IDEQ, 2015a).

Sample Date	Flow (cfs)	TSS (mg/L)	Existing Load (lb/day)	Load Capacity (lb/day)	Load Reduction (%)
5/8/2014	5.646	26.4	803.40	788.49	2
5/14/2014	3.836	25	516.90	535.72	0
5/20/2014	3.223	6.26	108.75	450.11	0
5/28/2014	2.669	20	287.72	372.74	0
6/4/2014	0.622	11.7	39.23	86.87	0
6/10/2014	1.023	19.3	106.42	142.87	0
2/19/2015	5.778	5.94	184.99	806.93	0
3/2/2015	4.452	6.3	151.18	621.74	0
3/16/2015	13.13	20.8	1,472.03	1,833.67	0

Notes: total suspended solids (TSS); cubic feet per second (cfs); milligrams per liter (mg/L); pounds per day (lb/day)

Bacteria

The Palouse River Subbasin TMDL's utilize *E.coli* bacteria as per the Idaho water quality standards (IDAPA 58.01.02.251.01.a). Table 13 shows the assessment units with *E. coli* bacteria TMDL. Table 14 shows the reductions that are needed to meet the water quality standards for the South Fork of the Palouse River and the Palouse River Tributaries. Table 15 shows the reduction needs in Paradise Creek.

Table 13. Assessment units with *E. coli* bacteria TMDL's (IDEQ, 2015a).

Assessment Unit Name	Assessment Unit Number	*E. coli* Bacteria Numeric Criteria (cfu/100 mL)	Critical Period
South Fork Palouse River—Gnat Creek to Idaho/Washington border[a]	ID17060108CL002_03	126	Year-round
South Fork Palouse River—source to Gnat Creek; tributaries[a]	ID17060108CL003_02	126	Year-round
South Fork Palouse River—source to Gnat Creek[a]	ID17060108CL003_03	126	Year-round
Flannigan Creek—source to T41N, R05W, Sec. 23[b]	ID17060108CL011a_02	126	Year-round
Flannigan Creek— source to T41N, R05W, Sec. 23[b]	ID17060108CL011a_03	126	Year-round
Flannigan Creek—T41N, R05W, Sec. 23 to mouth[b]	ID17060108CL011b_02	126	Year-round
Flannigan Creek—T41N, R05W, Sec. 23 to mouth[b]	ID17060108CL011b_03	126	Year-round
Rock Creek— confluence of WF and EF Rock Creek to mouth[b]	ID17060108CL012_03	126	Year-round
West Fork Rock Creek—source to T41N, R04W, Sec. 30[b]	ID17060108CL013a_02	126	Year-round
West Fork Rock Creek—T41N, R04W,	ID17060108CL013b_03	126	Year-round

Assessment Unit Name	Assessment Unit Number	*E. coli* Bacteria Numeric Criteria (cfu/100 mL)	Critical Period
Sec. 30 to mouth[b]			
East Fork Rock Creek—source to T41N, R04W, Sec. 29[b]	ID17060108CL014a_02	126	Year-round
East Fork Rock Creek—T41N, R04W, Sec. 29 to mouth[b]	ID17060108CL014b_02	126	Year-round
Hatter Creek— source to T40N, R04W, Sec. 3[b]	ID17060108CL015a_02	126	Year-round
Hatter Creek—T40N, R04W, Sec. 3 to mouth[b]	ID17060108CL015b_02	126	Year-round
Hatter Creek—T40N, R04W, Sec. 3 to mouth[b]	ID17060108CL015b_03	126	Year-round
Gold Creek—T42N, R04W, Sec. 28 to mouth[b]	ID17060108CL029_02	126	Year-round
Gold Creek—T42N, R04W, Sec. 28 to mouth[b]	ID17060108CL029_03	126	Year-round
Gold Creek—source to T42N, R04W, Sec. 28[b]	ID17060108CL030_02	126	Year-round
Crane Creek—source to T42N, R04W, Sec. 28[b]	ID17060108CL031a_02	126	Year-round
Crane Creek—T42N, R04W, Sec. 28 to mouth[b]	ID17060108CL031b_02	126	Year-round
Deep Creek—source to T42, R05, Sec. 02[b]	ID17060108CL032a_02	126	Year-round
Deep Creek—source to T42, R05, Sec. 02[b]	ID17060108CL032a_03	126	Year-round
Deep Creek—T42, R05, Sec. 02 to mouth[b]	ID17060108CL032b_02	126	Year-round
Deep Creek—T42, R05, Sec. 02 to mouth[b]	ID17060108CL032b_03	126	Year-round

[a] *South Fork Palouse River Watershed Assessment and TMDLs* (DEQ 2007)
[b] *Palouse River Tributaries Subbasin Assessment and TMDL* (DEQ 2005a)
Note: colony forming units/100 milligrams (cfu/100 mL)

Table 14. *E. coli* bacteria reductions needed for the South Fork of Palouse and Palouse Tributaries (IDEQ, 2015a).

Stream Name and Monitoring Point	Assessment Unit Number	Existing Load (cfu/100 mL)	Load Capacity (cfu/100 mL)	Load Allocation (cfu/100 mL)	Load Reduction (%)
South Fork Palouse River—SF4	ID17060108CL002_03	102	126	126	0
South Fork Palouse River—SF2	ID17060108CL003_03	72	126	126	0
Flannigan Creek—PR17	ID17060108CL011a_02	1,940	126	126	93.5
Flannigan Creek—PR16	ID17060108CL011b_03	2,239	126	126	94.4
Rock Creek—PR14	ID17060108CL012_03	239	126	126	47
Rock Creek—PR15	ID17060108CL013a_02	141	126	126	11
Hatter Creek—PR13	ID17060108CL015a_02	190	126	126	34
Hatter Creek—PR12	ID17060108CL015b_03	764	126	126	84
Gold Creek—PR9	ID17060108CL029_03	234	126	126	46
Gold Creek—PR8	ID17060108CL030_02	223	126	126	43
Deep Creek—PR6	ID17060108CL032a_02	31	126	126	0
Deep Creek	ID17060108CL032b_03	48	126	126	0

Note: colony forming units per 100 milliliters (cfu/100 mL)

Table 15. *E. coli* bacteria concentrations and necessary load reductions in Paradise Creek (IDEQ, 2015c).

Date	Existing Load[a] (cfu/100 mL)[b]	Daily Load Allocation[a] (cfu/100 mL)[b]	Load Reduction (cfu/100 mL)[b]	Necessary Load Reduction (%)
May 2013	688.1	126	562.1	82
June 2013	1192.0	126	1066.0	89
August/September 2013	485.7	126	359.7	74
October 2013	437.0	126	311.0	71
November 2013	209.3	126	83.3	40
December 2013	785.1	126	659.1	84
January 2014	200.2	126	74.2	37
February 2014	167.9	126	41.9	25
March 2014	149.6	126	23.6	16
April 2014	185.1	126	59.1	32

Nutrients

According to Idaho water quality standards (IDAPA 58.01.02.200.06), the nutrient standard is a narrative standard. Aquatic life beneficial uses can be impaired when excessive algae decompose, depleting dissolved oxygen in the water column. Monitoring data indicates that phosphorus is the limiting nutrient for aquatic plant growth in the subbasin. Therefore, phosphorus (TP) was used as a surrogate target for nutrients in the Palouse River subbasin (IDEQ, 2015a). Table 16 shows the assessment units with a nutrient TMDL. Average total phosphorus non-point source load allocations are shown in Table 17.

Table 16. Assessment units with nutrient TMDL's (IDEQ, 2015a).

Assessment Unit Name	Assessment Unit Number	Total Phosphorus Numeric Target (mg/L)	Critical Period
Cow Creek—source to Idaho/Washington border[a]	ID17060108CL001_02	0.1	June–September
Cow Creek—source to Idaho/Washington border[a]	ID17060108CL001_03	0.1	June–September
South Fork Palouse River—Gnat Creek to Idaho/Washington border[d]	ID17060108CL002_03	0.1	May–October
South Fork Palouse River—source to Gnat Creek; tributaries[d]	ID17060108CL003_02	0.1	May–October
South Fork Palouse River—source to Gnat Creek[d]	ID17060108CL003_03	0.1	May–October
Paradise Creek—urban boundary to Idaho/Washington border[b]	ID17060108CL005_02	0.136	May–October
Paradise Creek—forest habitat boundary to urban boundary[b]	ID17060108CL005_02a	0.136	May–October
Idlers Rest Creek—source to forest habitat boundary[b]	ID17060108CL005_02b	0.136	May–October
Flannigan Creek—source to T41N, R05W, Sec. 23[c]	ID17060108CL011a_02	0.1	May–October
Flannigan Creek—source to T41N, R05W, Sec. 23[c]	ID17060108CL011a_03	0.1	May–October
Flannigan Creek—T41N, R05W, Sec. 23 to mouth[c]	ID17060108CL011b_02	0.1	May–October
Flannigan Creek—T41N, R05W, Sec. 23 to mouth[c]	ID17060108CL011b_03	0.1	May–October
Hatter Creek—T40N, R04W, Sec. 3 to mouth[c]	ID17060108CL015b_02	0.1	May–October
Hatter Creek—T40N, R04W, Sec. 3 to mouth[c]	ID17060108CL015b_03	0.1	May–October

[a] *Cow Creek Subbasin Assessment and Nutrient Total Maximum Daily Load* (DEQ 2005b)
[b] *Paradise Creek TMDL Water Body Assessment and Total Maximum Daily Load* (DEQ 1997)
[c] *Palouse River Tributaries Subbasin Assessment and TMDL* (DEQ 2005a)
[d] *South Fork Palouse River Watershed Assessment and TMDLs* (DEQ 2007)
Note: milligrams per liter (mg/L)

Table 17. Average total phosphorus nonpoint source load allocations (IDEQ, 2015a).

Stream Name and Monitoring Point	Assessment Unit Number	Average Daily Flow	Total Load Capacity (kg/day)	10% Margin of Safety (kg/day)	Available Load Capacity (kg/day)	Existing Load (kg/day)	Load Reduction (%)
Cow Creek	ID17060108CL001_02	0.64	0.16	0.02	0.14	0.09	0
Cow Creek	ID17060108CL001_03	4.52	1.11	0.11	1	1.05	5
South Fork Palouse River—SF4	ID17060108CL002_03	3.34	0.82	0.08	0.74	0.87	15
South Fork Palouse River—SF1	ID17060108CL003_02	0.4	0.1	0.01	0.09	0.14	36
South Fork Palouse River—SF2	ID17060108CL003_03	2.1	0.51	0.05	0.46	0.48	4
Paradise Creek	ID17060108CL005_02	1.2	0.29	0.03	0.26	0.43	40
Flannigan Creek—PR17	ID17060108CL011a_02	3.72	0.91	0.09	0.82	0.76	0
Flannigan Creek—PR16	ID17060108CL011b_03	2.84	0.69	0.07	0.63	0.76	17
Hatter Creek—PR12	ID17060108CL015b_03	8	1.96	0.2	1.76	1.18	0

Notes: kilograms per day (kg/day)

Temperature

Temperature was not included in the original TMDL documents for the Palouse River subbasin. There have been addendum Temperature TMDL's written in 2015 for each of the subbasins within the Palouse River that had temperature listings using the Potential Natural Vegetation (PNV) protocol. The PNV protocol uses shade as a surrogate target for temperature. The Cow Creek Temperature Addendum Implementation Plan was developed July 2014 (ISWC, 2014) in response to the Cow Creek Temperature Total Maximum Daily Load Addendum (IDEQ, 2013). Table 18 summarizes the average lack of shade for the Lower Cow Creek AU.

Table 18. Average lack of shade for Lower Cow Creek AU (ISWC, 2014).

Lower Cow Creek (ID1706108CL001_03)	Lack of Shade (%)
Above Genesee (along Genesee-Juliaetta Road)	11 to 31
Section in Genesee	9
Union flats to Genesee	0 to 15
Below Union Flats	2 to 22

The Palouse Subbasin TMDL Temperature details the tributaries with temperature listed as a pollutant. The PNV approach was utilized using shade as a surrogate target for temperature. Table 19 summarizes the solar loads and the average lack of shade for each tributary (IDEQ, 2015b).

Table 19. Total solar loads and average lack of shade for Paradise Creek, Palouse River Tributaries and South Fork Palouse River (IDEQ, 2016).

Water Body/ Assessment Unit	Total Existing Load	Total Target Load	Excess Load (Reduction)	Average Lack of Shade (%)
	(kWh/day)			
Paradise Creek ID17060108CL005_02a	85,000	41,000	43,000 (51%)	-25
Paradise Creek ID17060108CL005_02	120,000	98,000	21,000 (18%)	-14
Paradise Creek ID17060108CL005_02b	4,600	1,500	3,200 (70%)	-22
Palouse River Tributaries				
Deep Creek Tributaries ID17060108CL032a_02	190,000	100,000	92,000 (48%)	-29
Deep Creek ID17060108CL032b_03	380,000	300,000	83,000 (22%)	-16
Gold Creek ID17060108CL030_02	120,000	36,000	80,000 (67%)	-21
Deep Creek Tributaries ID17060108CL032b_02	68,000	13,000	56,000 (82%)	-61
Flannigan Creek ID17060108CL011a_02	61,000	15,000	49,000 (80%)	-23
Big Creek ID17060108CL027b_02	200,000	150,000	44,000 (22%)	-16
Hatter Creek ID17060108CL015b_02	83,000	40,000	43,000 (52%)	-22
Hatter Creek ID17060108CL015a_02	48,000	14,000	34,000 (71%)	-24
Flannigan Creek ID17060108CL011b_03	190,000	160,000	33,000 (17%)	-23
Flannigan Creek Tributaries ID17060108CL011b_02	33,000	4,100	32,000 (97%)	-69
Crane Creek ID17060108CL031b_02	91,000	62,000	29,000 (32%)	-28
Flannigan Creek ID17060108CL011a_03	71,000	46,000	25,000 (35%)	-22
Gold Creek ID17060108CL029_03	79,000	56,000	23,000 (29%)	-21
Crane Creek ID17060108CL031a_02	18,000	6,300	13,000 (72%)	-31
Deep Creek ID17060108CL032a_03	30,000	20,000	10,000 (33%)	-32
Big Creek ID17060108CL027a_02	14,000	7,000	6,700 (48%)	-15

Hatter Creek ID17060108CL015b_03	220,000	260,000	0 (0%)	-8
South Fork Palouse River ID17060108CL002_03	180,000	140,000	39,000 (22%)	-11
South Fork Palouse River ID17060108CL003_02	38,000	18,000	20,000 (53%)	-14
South Fork Palouse River ID17060108CL003_03	15,000	10,000	4,700 (31%)	-12

Note: Load data are rounded to two significant figures, which may present rounding errors.

Agricultural Inventory and Evaluation

As projects are implemented the existing shade levels should be documented before implementation of practices to verify the PNV aerial photo interpretation of the site. These before values should be compared to shade levels after implementation to determine actual shade increases of each project. This process will help evaluate the approach that was used in developing the temperature TMDL.

Treatment

Agricultural lands that contribute excessive pollutants to waterbodies were defined as critical areas for BMP implementation. Critical areas are prioritized based on proximity to the waterbody; potential for transport and delivery of pollutant to the waterbody; and water quality impact. Critical areas are those areas where treatment is considered necessary to address the resource concerns affecting water quality.

Table 20: Potential BMP Practices by watershed

South Fork Palouse Recommended BMP's

Practice	Amount	Units
Dry Land Crop	**12,900**	**ac**
Residue Management, No-Till (329)	3,250	ac
Nutrient Management (590)	3,250	ac
Water & Sediment Control Basins (638)	60	no
Filter Strips (393)	242	ac
Riparian Forest Buffer (391)	80	ac
Riparian Herbaceous Cover (390)	80	ac
Tree/Shrub Establishment (612)	80	ac
Grass/ Pasture/ CRP Lands	**3,900**	**ac**
Channel Bank Vegetation (322)	25	ac

Channel Stabilization (584)	5,400	ft
Diversion	1,200	ft
Fence	52,000	ft
Riparian Forest Buffer (391)	75	ac
Riparian Herbaceous Cover (390)	75	ac
Tree/Shrub Establsihment (612)	75	ac
Watering Facility (614)	8	no
Well (642)	4	no

Paradise Creek Recommended BMP's

Practice	**Amount**	**Units**
Agriculture (cropland/grazing)		
Nutrient Management (590)	500	ac
Filter Strips (393)	335	ac
Riparian Forest Buffer (391)	734	ac
Water & Sediment Control Basins (638)	52	no
Sediment Basins (350)	21	no
Field Borders		ft
Residue Management, No-Till (329)	500	ac
Channel Stabilization (322)		ft
Forest		
Road rocking		ft
Grass seeding		ac
Reforestation		ac
Urban-Riparian		
Streambank stabilization		ft
Rural - Riparian		
Riparian restoration		ac
Wetland restoration		ac

Cow Creek Recommended BMP's

Practice	**Amount**	**Units**
Riparian		
Grassed Filter Strips (412)	1240	ac
Woody Vegetation Buffer (391)	200	ac

Dry Land Crop		
Residue Management, No-Till (329)	15,000	ac
Nutrient Management (590)	30,000	ac
Water and Sediment Control Basins (638)	50	no
Grade Stabilization Structures (410)	10	no
Pasture		
Fence (382)	8,000	ft
Watering Facility (614)	3	no
Well (642)	1	no
Pumping Plant (riparian) (533)	1	no
Waste Storage Facility (winter feed) (313)	1	no

Big Creek Recommended BMP's

Practice	**Amount**	**Units**
Grass/ Pasture / Haylands	**13**	**ac**
Fence (382)	18,000	ft
Riparian Forest Buffer (391)	13	ac
Riparian Herbaceous Cover (390)	13	ac
Tree/Shrub Establishment (612)	13	ac
Use Exclusion (472)	13	ac

Rock Creek Recommended BMP's

Practice	**Amount**	**Units**
Dry Land Crop	**507**	**ac**
Residue Management, No-Till (329)	250	ac
Residue Management, Mulch Till (345)	250	ac
Nutrient Management (590)	500	ac
Water & Sediment Control Basins (638)	4	no
Filter Strips (393)	2	ac
Pasture / Haylands	**1,672**	**ac**
Channel Bank Vegetation (322)	4	ac
Channel Stabilization (584)	1,400	ft
Diversion (362)	1,350	ft
Fence (382)	14,000	ft
Riparian Herbaceous Cover (390)	11	ac

Watering Facility (614)	9	no
Well (642)	9	no

Hatter Creek Recommended BMP's

Practice	**Amount**	**Units**
Dry Land Crop	**355**	**ac**
Residue Management, No-Till (329)	175	ac
Residue Management, Mulch Till (345)	180	ac
Nutrient Management (590)	300	ac
Water & Sediment Control Basins (638)	3	no
Filter Strips (393)	1	ac
Riparian Forest Buffer (391)	2	ac
Riparian Herbaceous Cover (390)	2	ac
Tree/Shrub Establishment (612)	2	ac
Pasture/Haylands	**1,971**	**ac**
Channel Bank Vegetation (322)	12	ac
Channel Stabilization (584)	2,600	ft
Diversion	1,500	ft
Fence	50,000	ft
Riparian Forest Buffer (391)	25	ac
Riparian Herbaceous Cover (390)	38	ac
Tree/Shrub Establishment (612)	19	ac
Watering Facility (614)	20	no
Well (642)	10	no

Flannigan Creek Recommended BMP's

Practice	**Amount**	**Units**
Dry Land Crop	**1,558**	**ac**
Residue Management, No-Till (329)	400	ac
Residue Management, Mulch Till (345)	400	ac
Nutrient Management (590)	800	ac
Water & Sediment Control Basins (638)	10	no
Filter Strips (393)	5	ac
Riparian Forest Buffer (391)	10	ac
Riparian Herbaceous Cover (390)	10	ac
Tree/Shrub Establishment (612)	10	ac
Pasture/Haylands	**834**	**ac**

Channel Bank Vegetation (322)	5	ac
Channel Stabilization (584)	1,800	ft
Diversion	900	ft
Fence	36,000	ft
Riparian Forest Buffer (391)	15	ac
Riparian Herbaceous Cover (390)	15	ac
Tree/Shrub Establishment (612)	15	ac
Watering Facility (614)	12	no
Well (642)	6	no

Deep Creek Recommended BMP's

Practice	**Amount**	**Units**
Dry Land Crop	**4,339**	**ac**
Residue Management, No-Till (329)	1,000	ac
Residue Management, Mulch Till (345)	1,000	ac
Nutrient Management (590)	2,000	ac
Water & Sediment Control Basins (638)	27	no
Filter Strips (393)	25	ac
Riparian Forest Buffer (391)	25	ac
Riparian Herbaceous Cover (390)	25	ac
Tree/Shrub Establishment (612)	25	ac
Grass/ Pasture/ Haylands	**6,633**	**ac**
Channel Bank Vegetation (322)	20	ac
Channel Stabilization (584)	4,000	ft
Diversion	4,800	ft
Fence	80,000	ft
Riparian Forest Buffer (391)	53	ac
Riparian Herbaceous Cover (390)	53	ac
Tree/Shrub Establishment (612)	53	ac
Watering Facility (614)	32	no
Well (642)	16	no

Gold Creek Recommended BMP's

Practice	**Amount**	**Units**
Dry Land Crop	**3,570**	**ac**
Residue Management, No-Till (329)	900	ac
Residue Management, Mulch Till (345)	900	ac
Nutrient Management (590)	1,800	ac

Water & Sediment Control Basins (638)	22	no
Filter Strips (393)	32	ac
Riparian Forest Buffer (391)	32	ac
Riparian Herbaceous Cover (390)	32	ac
Tree/Shrub Establishment (612)	32	ac
Grass/ Pasture/Haylands	**650**	**ac**
Channel Bank Vegetation (322)	1	ac
Channel Stabilization (584)	400	ft
Diversion	300	ft
Fence	1,000	ft
Riparian Forest Buffer (391)	7	ac
Riparian Herbaceous Cover (390)	7	ac
Tree/Shrub Establishment (612)	53	ac
Watering Facility (614)	2	no
Well (642)	2	no

Funding

Financial and technical assistance for installation of BMPs may be needed to ensure success of this implementation plan. The Latah Soil and Water Conservation District can assist interested landowners in actively pursuing potential funding sources to implement water quality improvements on private agricultural and grazing lands. The SWC and NRCS can provide technical assistance when needed. Many of these programs can be used in combination with each other to implement BMPs. These sources include (but are not limited to):

CWA 319 –These are Environmental Protection Agency funds allocated to Tribal entities and the State of Idaho. The Idaho Department of Environmental Quality (DEQ) administers the Clean Water Act §319 Non-point Source Management Program for areas outside the Tribal Reservations. Funds focus on projects to improve water quality and are usually related to the TMDL process.
http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management

Resource Conservation and Rangeland Development Program (RCRDP) –The RCRDP is a loan program administered by the ISWCC for implementation of agricultural and rangeland best management practices or loans to purchase equipment to increase conservation. http://www.scc.state.id.us/programs.htm

Environmental Quality Incentives Program (EQIP): EQIP provides financial and technical assistance to agricultural producers in order to address natural resource

concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat. http://www.nrcs.usda.gov/programs/eqip/

Regional Conservation Partnership Program (RCPP) - RCPP promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/farmbill/rcpp/

The Agricultural Conservation Easement Program (ACEP) – ACEP provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits.. Under the Agricultural Land Easements component, NRCS helps Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/easements/acep/

Conservation Technical Assistance (CTA) –The CTA provides free technical assistance to help farmers and ranchers identify and solve natural resource problems on their farms and ranches. This might come as advice and counsel, through the design and implementation of a practice or treatment, or as part of an active conservation plan.
http://www.nrcs.usda.gov/programs/cta/

National Grazing Lands Coalition (NatGLC) –The National Grazing Lands Coalition' promotes ecologically and economically sound management of grazing lands. Grants are available that facilitate the following: (1) demonstration of how improved soil health affects grazing lands sustainability (2) establishment of conservation partnerships, leadership and outreach, (3) education of grazing land managers, professionals, youth and the public (4) enhancement of technical capabilities, and (5) improvement in the understanding of the values and multiple services that grazing lands provide.
http://www.glci.org/

Conservation Reserve Program (CRP) –The CRP is a land retirement program for blocks of land or strips of land that protect the soil and water resources, such as buffers and grassed waterways http://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index

Conservation Innovation Grants (CIG) –CIG is a voluntary program to stimulate the development and adoption of innovative conservation approaches and technologies for agricultural production.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/

State Revolving Loan Funds (**SRF) –**These funds are administered through the IDEQ. https://www.deq.idaho.gov/water-quality/grants-loans/water-system-construction-loans.aspx

Conservation Security Program (**CSP) –**CSP is a voluntary program that rewards the Nation's premier farm and ranch land conservationists who meet the highest standards of conservation environmental management. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/alphabetical/csp/

HIP – This is an Idaho Department of Fish and Game program to provide technical and financial assistance to private landowners and public land managers who want to enhance upland game bird and waterfowl habitat. Funds are available for cost sharing on habitat projects in partnership with private landowners, non-profit organizations, and state and federal agencies. http://fishandgame.idaho.gov/cms/wildlife/hip/default.cfm

Partners for Fish and Wildlife Program in Idaho – This is a U.S. Fish and Wildlife program providing funds for the restoration of degraded riparian areas along streams, and shallow wetland restoration. http://www.fws.gov/partners/pdfs/ID-needs.pdf

Maintenance, Monitoring, Evaluation

DEQ will continue to monitor the watersheds as per Idaho Code 39-3611, at least on a 5-year interval using BURP protocol. Additional monitoring of BMP's and the maintenance of BMP's installed will be performed by the designated agency or the agency that funded the BMP installations. The Latah Soil and Water Conservation District follows the Natural Resource Conservation Service guidelines for BMP life expectancy and monitors BMP installations for the expected life of each practice to ensure proper maintenance of the practices. Typically, when a volunteer approaches the district for BMP assistance the district evaluates the current site-specific resource concerns. Individual conservation planning with willing landowners will determine the most appropriate BMPs to install on a case by case basis.

All BMP's will be maintained by the landowner for the life of the practice. BMP's will be monitored and evaluated upon completion of the project, during annual reviews, and throughout the life of the practice. Monitoring and evaluations will enable staff to ensure practices are maintained and to evaluate BMP effectiveness for future projects.

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