North Fork Payette River Watershed
TMDL Implementation Plan

Compiled by the Idaho Department of Environmental Quality
In association with the North Fork Payette River Watershed Advisory Group, the Idaho Association of Soil Conservation Districts, Idaho Soil Conservation Commission, Valley Soil and Water Conservation District, USDA-Natural Resources Conservation Service, Idaho Department of Lands, United States Forest Service, and private timber interests.

June 12, 2007

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Preface

The North Fork Payette River Watershed TMDL Implementation Plan was drafted by land management agencies and private land owners that affect water quality in this area.

- The Idaho Association of Soil Conservation Districts (IASCD) represents private landowners and wrote the agricultural implementation plan.

- The Department of Lands (IDL) in coordination with the United States Forest Service, (USFS), Valley County, private timber interests and the Department of Environmental Quality (DEQ) wrote the forestry implementation plan.

- The Storm Water Runoff and Urban/Suburban Pollution Implementation Guide is provided as an overview of several measures that can be taken to prevent sediment from affecting the TMDL reaches in the North Fork Payette River Watershed.

Tracking and Accomplishments

The Department of Environmental Quality will regularly review accomplishments that stakeholders have had to achieve Water Quality Standards. DEQ, IASCD, USFS, IDL, Valley County and Western Pacific Timber agree to meet each year to assess projects and activities.

Agricultural TMDL Implementation Plan

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USDA-Natural Resources Conservation Service

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INTRODUCTION

Purpose

The purpose of this Total Maximum Daily Load (TMDL) Implementation Plan for Agriculture is to provide a prioritization strategy for implementing Best Management Practices (BMPs) conservation improvements on privately owned lands. The intent is to restore designated beneficial uses on the 303(d) listed streams within the North Fork Payette River (NFPR) Watershed by reducing pollutant contributions from privately owned parcels of agricultural land.

The North Fork Payette River Watershed Advisory Group (WAG), Idaho Department of Environmental Quality (IDEQ), Forest Service (USFS), Idaho Department of Lands (IDL), Idaho Soil Conservation Commission (ISCC), and Idaho Association of Soil Conservation Districts (IASCD), were involved in developing the allocation processes and their continued participation will be critical while implementing this TMDL Implementation Plan for Agriculture.

Goals and Objectives

The goal of this plan is to assist and/or compliment other watershed efforts to restore beneficial uses for the 303(d) listed stream segments within the North Fork Payette River Watershed. The agricultural component of the North Fork Payette River Watershed TMDL Implementation Plan includes an adaptive management approach for the implementation of Resource Management Systems (RMSs) and Best Management Practices (BMPs) to meet the requirements for the North Fork Payette River TMDL.

The primary objective of this plan is to reduce the amount of sediment entering the North Fork Payette River system. Agricultural RMSs and BMPs on privately owned land will be developed and implemented on a site-specific basis with individual agricultural operators as per the 2003 Idaho Agricultural Pollution Abatement Plan (APAP)(ISCC, 2003).

The State of Idaho has adopted a non-regulatory approach to control agricultural non-point sources. However, regulatory authority can be found in the Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02.350.01 through 58.01.02.350.03), which provides direction to the agricultural community and includes a list of approved BMPs. A portion of the APAP outlines responsible agencies or elected groups designated to address non-point source pollution problems.

Another objective of this plan is the implementation of a water quality outreach program that will encourage landowner participation in the application of water quality BMPs. Emphasis will also be placed on BMP effectiveness evaluation and monitoring in terms of pollutant reduction and impacts on designated beneficial uses of the listed stream segments.

For agricultural activities on private land, the Valley Soil & Water Conservation District (VSWCD) in cooperation with the Idaho Soil Conservation Commission (ISCC), the Idaho Association of Soil Conservation Districts (IASCD), and the Natural Resource Conservation Service (NRCS) can assist landowners in developing and implementing conservation plans that incorporate BMPs that will help meet TMDL allocation targets.

BACKGROUND

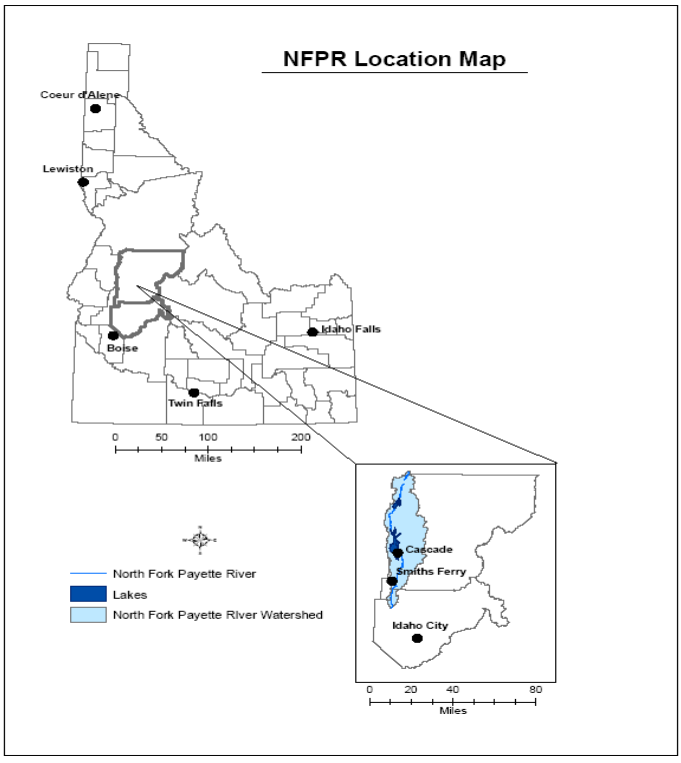
Project Setting

The North Fork Payette River watershed is surrounded by high elevation mountains to the north and bordered by low-lying, arid foothills to the south. The North Fork Payette River watershed is located in Valley, Gem and Boise counties. The North Fork TMDL originates at the spillway and dam located on Cascade Reservoir. Effectively, the TMDL boundary ends at the Black Canyon Reservoir Dam and encompasses the river system upstream of that point to Cascade Reservoir. The subwatersheds Big Creek, Clear Creek, Round Valley Creek, and NFPR from Clear Creek to Smith's Ferry, are 303(d) listed for sediment, and have TMDLs (Figure 3).

The North Fork Payette River Subbasin covers approximately 593,218 acres, and comprises approximately 222,907 acres of agricultural land (pasture, crop, range). Approximately 111,526 acres of the 222,907 acres comprise the North Fork Payette River TMDL. The remaining 111,381 acres are addressed in the Cascade Reservoir Phase I and II agricultural implementation plan or not considered agriculture.

The high elevation eastern and northern sections of the watershed are classified as part of the Northern Rockies ecoregion with geology and soil structures typical of the Northern Rocky Mountains. Crystalline igneous rocks of volcanic origin make up the coarse textured soils of the region. This region is part of the Idaho Batholith. Natural vegetation in the watershed includes spruce, fir and pine forests; mountain grass/forb meadows; and riparian and wetland complexes.

Figure 1. North Fork Payette River Watershed Location Map



Land Ownership

Land ownership is diverse, with private land comprising 56% and public lands (state&federal) comprising 44% (Figure 2). The watershed has no recognized tribal lands. Agricultural land use is diverse and includes irrigated cropland, irrigated pasture, forested areas, dry land agriculture, upland rangeland, and riparian pasture (figure 3). Within the southern portion of the watershed, the state owns considerable tracts of land. Most of the low-lying areas bordering the river from Gardena to Montour are privately held lands, as well as agricultural ground along the North Forth Payette River from Cascade to Cabarton Road and in Smiths Ferry.

Table 1. North Fork Payette River Land Ownership

Owner	Acres
B.L.M.	6,493
Open water	35,650
Private	329,495
State of Idaho	84,299
Forest Service	137,281
Total	**593,218**

Numbers generated from ArcGis 9.1 program layers

Figure 2. North Fork Payette Land percentages

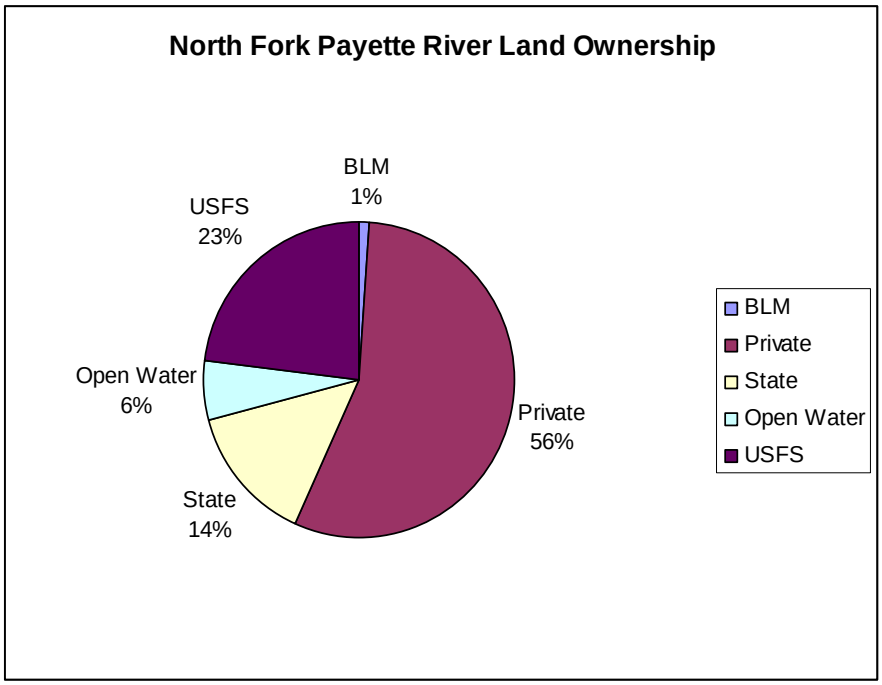
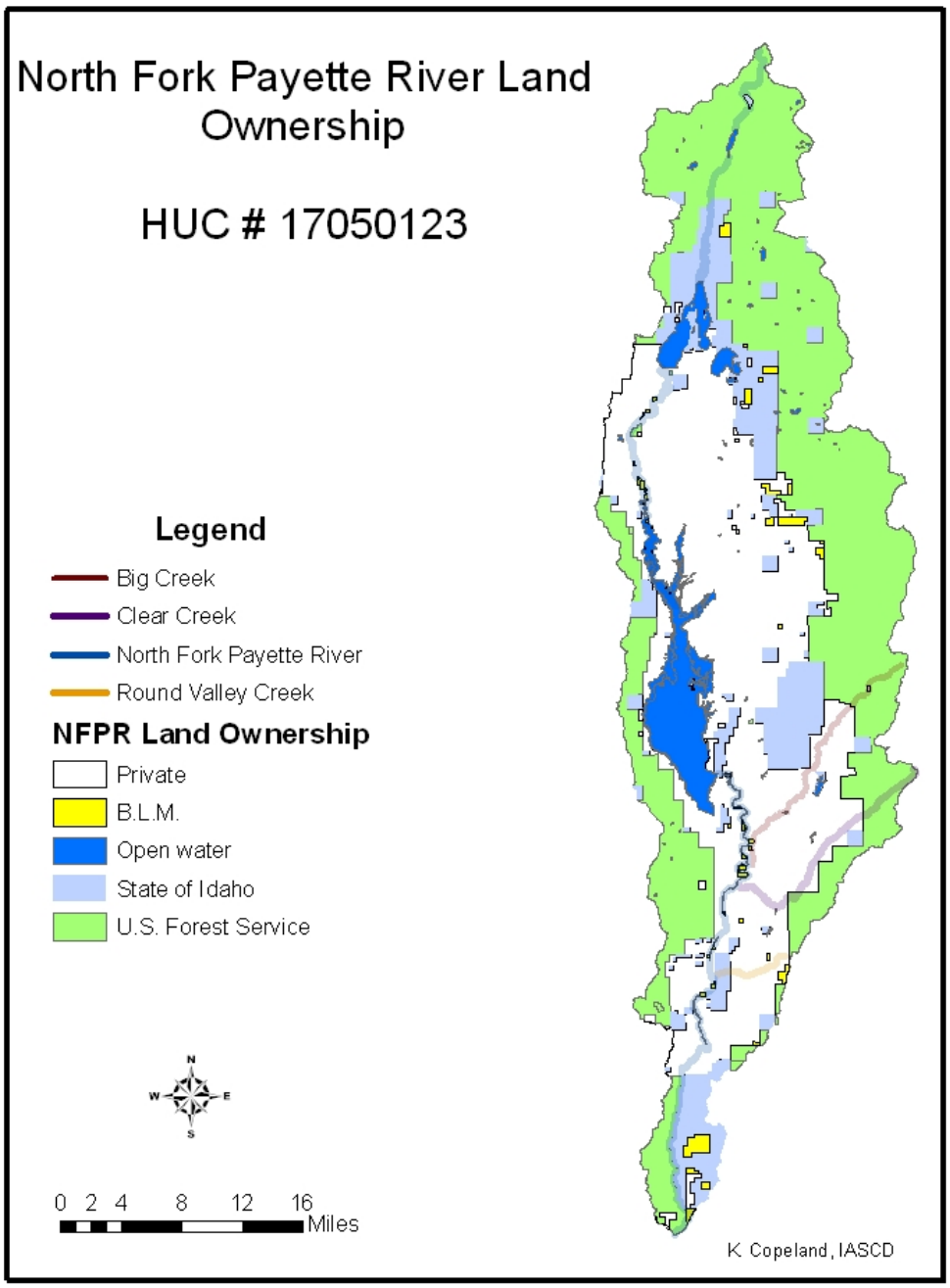


Figure 3. North Fork Payette River Land Ownership Map



Land Use

The North Fork Payette River Watershed consists of 593,218 acres. There are approximately 222,907 agricultural acres in the watershed consisting primarily of irrigated and dry land pastures and some hayland. Surface irrigation is used on approximately 70% of the acreage, while sprinkler irrigation accounts for about 20%, and dryland pasture and grazed forest account for 10%.

Agriculture land use in the watershed consists primarily of livestock (cattle) grazing and pasture/hayland farming. Table 2 illustrates the number of farms and crops in the NFPR watershed. The majority of livestock grazing occurs in the upland pasture areas of Round Valley between the headwaters and Cabarton Road. There are four active grazing allotments along the river riparian area comprised approximately 43,359 acres. Cattle graze on 559 acres in the Big Creek watershed, with 24,700 acres grazed by cattle and sheep in the Clear Creek watershed and Horsethief Reservoir area. In High Valley, cattle graze on 2400 acres, and in Smiths Ferry, 17,700 acres are grazed by sheep (Gurnsey, 2006).

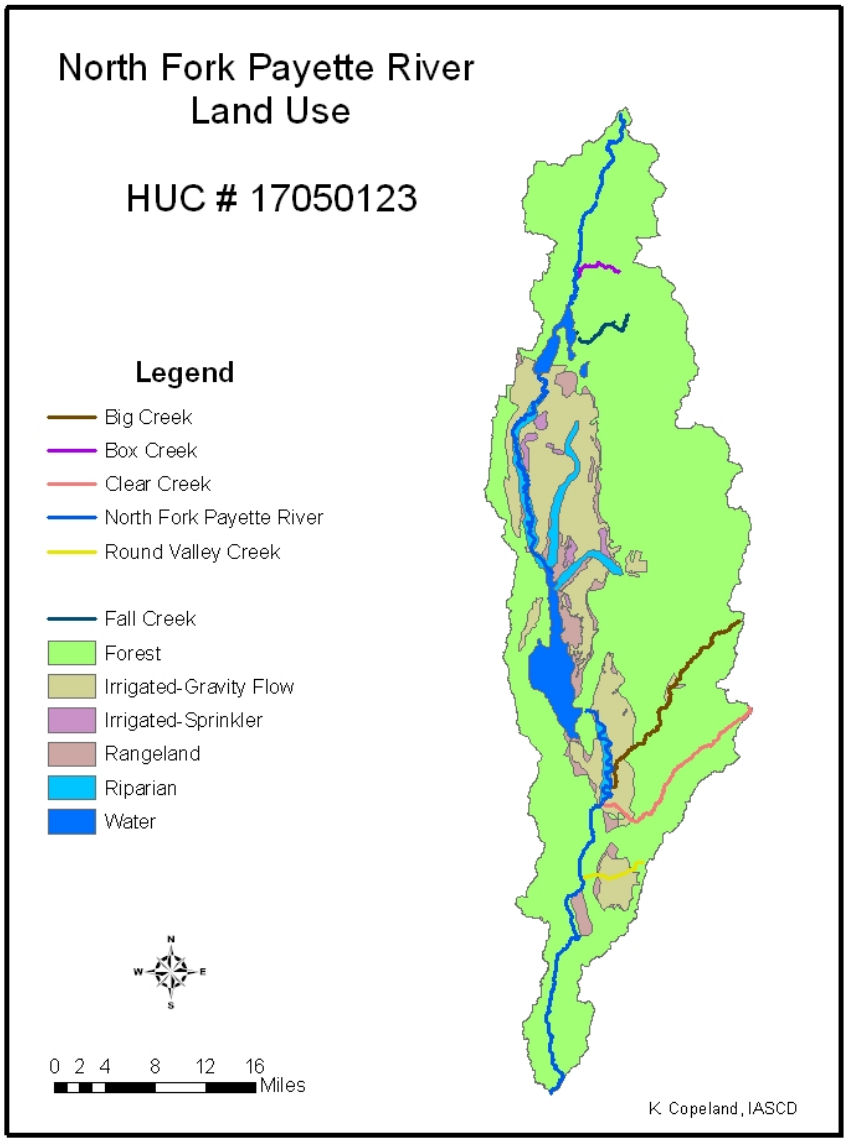
Population is difficult to determine because much of the population growth in the watershed lies in portions of Valley, Gem and Boise counties. The highest population in the watershed occurs in Horseshoe Bend and Cascade. Horseshoe Bend's population increased from 511 in 1970 to 819 in 2004, while Cascade's population increased from 833 in 1970 to 977 in 2004 (Idaho Commerce, 2006).

There are several towns and small communities located within the NFPR TMDL region. Most of them are located along the State Highway 55 corridor, which parallels the North Fork of the Payette River from Horseshoe Bend to Cascade. These communities include Cascade, Smiths Ferry, Banks, Gardena and Horseshoe Bend. The Payette River turns westward along State Highway 52. The Squaw Creek drainage includes the communities of Montour, Sweet, and Ola. The northern portion of the NFPR offers tourist and recreational opportunities. In addition to agriculture, other land use activities in the watershed include whitewater rafting, camping, off road vehicles, fishing, boating, hunting, skiing and snowboarding, and snowmobiling.

Farms	156
Land in farms (acres)	65,501
Irrigated Land (farms)	19,856
Crops harvested (Forage)-land used for all hay and all haylage, grass silage, and green chop (acres)	3,647
crops harvested-oats for grain (farms)	985
Total Irrigated Past	2,662
Total dryland past/grazed forest	45,645

Table 2. Number of Farms and Crops in Valley County (USDA, 2002)

Figure 4. Distribution of the land use in the North Fork Payette River Watershed.



Accomplishments

Over the years since the early 1990s, many landowners and operators in the North Fork Payette River Watershed have voluntarily installed BMPs on their own and in cooperation with the VSWCD, IDEQ and NRCS. Based on field observations by ISCC and IASCD staff, the BMPs that have already been installed have greatly improved water quality within the watershed. See Appendix E for BMP examples.

The following table summarizes accomplishments on agricultural lands within the NFPR watershed to date by subwatershed to date. BMPs summarized in these tables were installed based on NRCS standards and specifications. Practice codes were obtained from the NRCS EFOTG database and used as a reference to applied practices.

Table 3. North Fork Payette River Subwatershed Accomplishments

Subwatershed	Program	Practice	Total Units
Big Creek	EQIP(NRCS)	Practice Code: 666 Forest Stand Improvement	159 acres
Clear Creek	EQIP(NRCS)	Practice Code: 382 Fencing	5430 Feet
	EQIP(NRCS)	Practice Code: 472 Use Exclusion	3 acres
North Fork Payette River	EQIP(NRCS)	Practice Code: 512 Pasture Planting with No-Till Drill	52 acres
	EQIP(NRCS)	Practice Code: 442 Irrigation System, Sprinkler	220 acres
	EQIP(NRCS)	Practice Code: 587 Structures for Water Control	4 each
	EQIP(NRCS)	Practice Code: 430 DD IWC Pipeline	4460 Feet
Round Valley Creek	EQIP(NRCS)	Practice Code: 512 Pasture Planting	53 acres
	EQIP(NRCS)	Practice Code: 561 Heavy Use Protection Area	1 each

IDENTIFICATION OF PROBLEMS

The North Fork Payette River TMDL was approved by EPA August 17, 2005. In many cases, pre-existing ephemeral and intermittent channels have been modified for irrigation water delivery or return flow for croplands and pastures. These drainages have been straightened and deepened in large stretches so that they now resemble canals or ditches rather than natural creeks or streams. In many cases, the excess irrigation water is delivered via surface drainage systems back to the North Fork Payette River, Cascade and/or Black Canyon Reservoirs.

Beneficial Use Status

Big Creek, Clear Creek, Round Valley Creek, and the North Fork Payette River (Clear Creek to Smith's Ferry) are listed on the state of Idaho's 303(d) list of water quality impaired water bodies (IDEQ, 2005). Designated uses for the North Fork Payette River are cold water aquatic life, salmonid spawning, primary contact recreation, domestic water supply, and special resource water. Descriptions of beneficial uses are defined by IDEQ in the NFPR TMDL (IDEQ, 2005). Big Creek, Clear Creek, and Round Valley Creek are undesignated. Table 4 below is a summary of specific 303(d) listed stream segments for which load allocations have been established.

Table 4. Streams and pollutants for which TMDLs were developed by Idaho Department of Environmental Quality, 2005.

Stream	Pollutants
Big Creek (Horsethief Creek to North Fork Payette River)	Sediment
Clear Creek (Headwaters to North Fork Payette River)	Sediment
North Fork Payette River (Clear Creek to Smith's Ferry)	Sediment
Round Valley Creek (Headwaters to North Fork Payette River)	Sediment

Pollutants: Load Allocations and Reductions

This section describes the sediment load allocations for the North Fork Payette River watershed. The North Fork Payette River, Big Creek, Lower Clear Creek and Round Valley Creek are receiving sediment allocations due to excess streambank erosion. Two different types of load allocations are given for the middle and upper reaches of Clear Creek based on sediment source (instream erosion and road sediment delivery).

The primary nutrient impairing beneficial uses is sediment. A target of 25 mg/l seasonal average for suspended sediment has been set in the North Fork Payette River TMDL. The critical period for target application is March-September in lower elevations, and June-September in higher elevations.

Streambank channel erosion is the primary source of sediment loading in Big Creek, Round Valley Creek, Lower Clear Creek, and North Fork Payette River (Cascade Dam to Cabarton Bridge). Land management practices may contribute to unstable banks and this resultant instability leads to sediment delivery to the stream channel. The surrogate target of 80% bank stability was selected for maintaining less than 30% depth fines for the specific Rosgen type stream. To determine the amount of instream erosion present IDEQ used the bank geometry of each measured reach and the lateral recession rate to come up with a reference reach.

IDEQ based the reference reach on the hydrogeologic conditions for each stream that would result in greater than 80% bank stability. These are the overall decreases necessary in the stream but can only reasonably apply to areas where banks are less than 80% stable (IDEQ, 2005).

Table 5. TMDL Water Quality Targets developed by Idaho Department of Environmental Quality, 2005.

Pollutant	Target	Application
Sediment	80% Bank Stability (surrogate for sediment)	Big Creek, Round Valley Creek, Lower Clear Creek
Sediment	12% above Natural Background sediment delivery conditions as determined by BOISED modeling	Upper and middle Clear Creek
Sediment	25 mg/l seasonal average suspended sediment 80% bank stability	North Fork Payette River (Clear Creek to Smith's Ferry)

The targets were designed by IDEQ to reflect the critical period as the time of runoff until the end of the irrigation season (June to September). Target design was based on runoff and low flow periods during summer months when these water bodies are believed to be the most vulnerable to impairment.

Table 6. Stream bank erosion load allocations for Big Creek, NFPR, Lower and Middle Clear Creek and Round Valley Creek.

Water Body	Current Erosion Rate (tons/mile /year)	Target Erosion Rate (tons/mile / year)	Current Total Erosion (tons/year)	Load Allocation & Load Capacity (tons/year)	% Decrease
Big Creek	62.56	48.61	528	410	22
Lower Clear Creek	86	45	349	182	48
Round Valley Creek	33	26.67	131	107	18
NFPR (Cascade Dam to Clear Creek)	72	45	864	547	36
Middle Clear Creek	1157	957	1081	124	38

Water Quality Monitoring Data (Results)

The North Fork Payette River has several historic and current USGS gauge sites, along with nutrient and sediment information collected by BOR and IDEQ. The IDEQ uses the Beneficial Use Reconnaissance Program (BURP) to collect and measure key water quality variables and aid in determining the beneficial use support status of Idaho's water bodies. There was limited data collected for tributary streams and limited summer season monitoring was done by IDEQ at the time of the development of the TMDL. In addition, the US Bureau of Reclamation, US Forest Service, and USGS assessed the North Fork Payette River and Black Canyon Reservoir over various years (IDEQ, 2005).

From 2002 to 2004, IDEQ conducted BURP assessments on the TMDL reach of the North Fork Payette River and its tributaries. The data collected on the listed subwatersheds can be found in Appendices A-D. From 1989 to 2003, upstream water quality (Cascade Reservoir Dam) was assessed. In 1999, water quality was assessed below Black Canyon Reservoir (IDEQ, 2005).

Riparian Inventory and Evaluation

During the 2004 field season, from June to August, the Valley SWCD, ISCC and IASCD staff assessed two reaches on 18 miles of Big Creek. An additional two reaches were also assessed, but due to missing data they are not stated in this report. The North Fork Payette River WAG requested that the reaches will be re-assessed in the summer of 2007. Eight reaches on 15.8 miles of Clear

Creek was assessed and eight reaches on 4.3 miles of Round Valley Creek. In 2006, IASCD staff assessed three reaches on 9.8 miles of the North Fork Payette River from below Cascade Dam to Cabarton Bridge (Clear Creek).

A target was set by IDEQ of 80% bank stability for the listed reaches Big Creek, Clear Creek, Round Valley, and North Fork Payette River (Clear Creek to Smith's Ferry). These reaches were assessed using the proper functioning condition protocol, focusing on streambank stability, and streambank erosion control.

Proper Functioning Condition

Proper Functioning Condition (PFC), developed in February 1988, was the method used by ISCC and IASCD staff in 2004 to assess perennial tributaries to the North Fork Payette River that flow through private agricultural land. The PFC method for assessing riparian-wetland areas was developed by an interdisciplinary team of specialists from the BLM, NRCS, and FWS (Prichard, 1998).

Riparian areas are placed into one of these three other categories:

- Proper Functioning Condition: A stream functioning at optimal condition.
- Functional-At Risk: Riparian wetland areas that are in functional condition, but an existing soil, water or vegetation attribute makes them susceptible to degradation.
- Non-Functional: Riparian-wetland areas that are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and are not reducing erosion, or improving water quality.
- Unknown: Riparian-wetland areas that manages a of lack sufficient information to make a determination (Prichard, 1998).

PFC field sheets used during the 2004 stream reaches assessments are on file at the VSWCD. The results from the 2004 PFC assessments are shown in Table 7 below.

Table 7. Riparian Assessment Results on Big, Clear, and Round Valley Creeks

Proper Functioning Condition	→ 0.5 miles were in Proper Functioning Condition → 8.0 miles were Functioning at Risk → 0.7 miles were Non-Functional
Streambank Stability	→ 5.5 miles with streambank stability >80% TMDL target → 3.7 miles with streambank stability <80% TMDL target
Streambank Erosion Control	→ 3.6 miles had erosion → 5.6 miles had no or slight erosion

Streambank Stability-NFPR

The North Fork Payette River (below Cascade Dam to Clear Creek) was visually assessed to determine bank stability by floating the reach. IDEQ used aerial photography to determine that banks were less than 80% stable. Three reaches were assessed in July 2006 by IASCD staff, and the North Fork Payette River appeared to have slight bank erosion. A total of 565 feet was found to be unstable in a 51,837 ft. reach. The assessment found 0.5% unstable streambanks with an overall bank stability of 99.5% for this reach. See Appendix F for a summary of riparian recommended tasks.

Irrigated Pasture Inventory and Evaluation

Irrigated pasture and dryland pasture/grazed forest were inventoried by direct on site field evaluation and the use of satellite and aerial photography. See table 8 for the North Fork Payette River watershed critical acres.

IMPLEMENTATION PRIORITY

Critical Areas

Critical areas are areas with the most significant impact on water quality. Critical areas include pollutant source and transport areas that have severe stream bank erosion and instability and large sediment loading. The NFPR watershed consists of approximately 222,907 acres of agricultural land (pasture, crop and range) and approximately 111,526 TMDL critical acres. Private agriculture in critical areas accounts for 22,532 acres. Table 8 below shows the breakdown of the critical areas within the NFPR watershed. This information was collected and interpreted from the ArcGIS program, field and land use inventories.

Private landowners own approximately 3,333 riparian acres and 5,819 acres of surface irrigated pasture. Private timber and privately owned dryland pasture accounts for 6,613 acres. The remaining 99,094 acres of surface irrigated pasture, dryland pasture, and grazed timber are not considered critical acreage, or 303(d) listed subwatersheds in the TMDL.

Table 8. Critical Acres in the North Fork Payette River Watershed

Subwatershed	Riparian Total Acres	Surface Irrigated Pasture/Hayland Total Acres	Dryland Pasture/Grazed Timber Total Acres
Big Creek	2,103	2,462	3,567
Clear Creek	700	338	370
Round Valley	30	2,919	1,676
NFPR (CC to SF)	500	100	1,000
Total TMDL acreage	3,333	5,819	6,613

TREATMENTS

Treatment Units

The watershed is divided into three critical area treatment units (TU) with similar land uses, soils, productivity, resource concerns and treatment needs. Each subwatershed is outlined with a description of the treatment unit on Table 9. These four subwatersheds will be targeted to receive project funds as they can be secured. Priority levels were based upon results that were interpreted from the 2004 Proper Functioning Condition Assessment preformed by IASCD and ISCC staff on Big Creek, Clear Creek, and Round Valley Creek.

High priority is given to reaches found in Round Valley, with Clear Creek being of moderate priority, Big Creek, moderate to low priority, and North Fork Payette River from Clear Creek to Smith's Ferry, low priority for treatments.

Conservation plans will be developed by the ISCC and IASCD in conjunction with NRCS and VSWCD. BMPs will be implemented in the watershed on a site specific basis based upon individual conservation plans.

Table 9. North Fork Payette River Treatment Unit Acres

	TU 1	**TU 2**	**TU 3**
Watershed	Riparian Acres Wetland/Pasture	Surface Irrigated Pasture/Hayland	Dryland Pasture/ Grazed Forest
Big Creek	2,103	8,208	35,665
Clear Creek	700	1,694	24,700
Round Valley	30	7,297	8,384
North Fork Payette (Clear Creek to Smith's Ferry)	500	2,000	20,100
Total	3,333	19,199	88,849

For BMPs and the cost list see Table 11.

See Appendix F for riparian recommendations.

Table 10. Treatment Units: Acreage Summary and Resource Concerns

Treatment Unit #1 Riparian Wetland/Pasture 0-2% Slopes

Total Acres	Soils	Resource Problems
3,333	Fine-Sandy Loam *Archabal; Gestrin Series	Plant Productivity
		Streambank degradation
		Surface water quality (suspended sediment)

Treatment Unit #2 Surface Irrigated Pasture/Hayland 0-2% slopes

Total Acres	Soils	Resource Problems
19,199	Fine-Sandy Loam *Melton; Roseberry Series	Soil Condition (compaction)
		Streambank erosion from irrigation return
		Irrigation management

Treatment Unit #3 Dryland Pasture/Grazed Forest 0-3% slopes

Total Acres	Soils	Resource Problems
88,849	Sand-Loam *Jugson Series	Plant productivity-health, vigor
		Loss of riparian vegetation

*As described or fully defined in the Valley County Soils Survey located in the VSWCD office or USDA NRCS web soil survey site http://soils.usda.gov/survey.

Planning Considerations and Alternatives

Implementation alternatives range from no action, to implementation of all practices identified for the delineated treatment units. Over the past five years, the Valley Soil and Water Conservation District has taken an active role in promoting conservation efforts through programs such as EQIP (NRCS), EPA 319, and recently the Water Quality Program for Agriculture (WQPA) administered by the ISCC. With willing landowners and operators who voluntarily participate in these programs, both structural and management practices can be implemented on range ground, as well as dry cropland, irrigated cropland, and pasture. An emphasis will be placed on riparian and stream channel restoration and bank stability.

Alternatives range from no action to implementation of all practices identified for the delineated treatment units. Three alternatives have been outlined in this implementation plan for application on private land. The goals of these alternatives are to address agricultural nonpoint source pollution control on critical acres. The following were used for consideration:

1. Alternative 1- No Action
2. Alternative 2 – Treatment of riparian areas only
3. Alternative 3 – Treatment all resource concerns

Alternative Selection

The VSWCD selected Alternative 3 for this watershed. This alternative meets the objectives set forth in the VSWCD five-year plan by improving water quality in the North Fork Payette River Watershed (VSWCD, 2007).

BMP Implementation Alternatives and Costs

The costs to install BMPs on private agricultural lands are estimated in this plan to provide the local community, government agencies, and watershed stakeholders some perspective on the economic demands of meeting specific TMDL goals. Availability of cost-share funds to agricultural producers within the North Fork Payette River Watershed will likely be necessary to meet the TMDL requirements within each stream segment that received a load reduction target.

The cost list to install BMPs on private agricultural land is available from the VSWCD in Cascade. These costs have been developed through actual tracking of average BMP installation costs and are used county-wide to determine allowed contracted costs through the EQIP. Since actual costs to install a BMP may not be known until during or after installation, a more accurate watershed-wide budget will be developed during the on-site planning and implementation process. Table 11 on the following page provides the typical costs for many of the applicable BMP components for southern Idaho.

The costs below were derived from the NRCS-2007 EQIP Idaho State Cost List. Costs may increase with greater travel distances and accessibility. Costs are estimated and reflect the critical area treatment units and acreages mentioned earlier. These are estimates of BMP treatments at a 100% fix and for both sides of the stream.

Table 11. Average Costs of Component Practices Applicable to Valley County

Treatment Unit	BMP	Unit Type	Unit Cost	Unit Amount	Total Funds
TU 1 Riparian Wetland/Pasture (3,333 Acres)	Stream Crossing	No.	$3,500.00	50	$175,000.00
	Critical Area Planting	acre	$250.00	2000	$500,000.00
	Fence	Ft	$2.00	44,200	88,400.00
	Pipeline	Ft	$2.59	20,000	$51,800.00
	Watering Facility	No	$1,500.00	40	$60,000.00
	Spring Development	No	$2,350.00	40	$94,000.00
	Use Exclusion	acre	$35.00	700	$24,500.00
	Tree/Shrub Establishment	Ft	$610.00	18,892	$11,524,120.00
	Prescribed Grazing	acre	$5.00	2000	$10,000.00
	Wetland Enhancement	acre	$2,000.00	100	$200,000.00
		Riparian Wetland/Pasture Subtotal			$12,727,820.00
TU 2 Surface Irrigated Pasture/Hay land (5,819 Acres)	Fence	ft.	$2.00	41,353	$82,706.00
	Prescribed Grazing	acre	$5.00	5,000	$25,000.00
	Watering Facility	No	$1,500.00	40	$60,000.00
	Pipeline	Ft	$2.59	10,000	$25,900.00
	Spring Development	No.	$2,350.00	20	$47,000.00
	Irrigation System, Sprinkler	acre	$1,300.00	2,500	$3,250,000.00
	Irrigation Water Management	acre	$10.00	2,500	$25,000.00
	Pasture and Hayland Planting	acre	$100.00	1000	$100,000.00
		Surface Irrigated Pasture/Hayland Subtotal			$3,615,606.00
TU 3 Dryland Pasture/Grazed Forest (6,613 Acres)	Critical Area Plantings	acre	$250.00	1,500	$375,000.00
	Fence	ft	$2.00	12,000	$24,000.00
	Watering Facility	No	$1,500.00	20	$30,000.00
	Pipeline	ft	$2.59	15,000	$38,850.00
	Stream Crossing	No.	$3,500.00	15	$52,500.00
	Use Exclusion	acre	$35.00	2,996	$104,860.00
	Spring Development	No	$2,350.00	20	$47,000.00
		Grazed Forest/Range Subtotal			$672,210.00
				Total	$17,015,636.00

FUNDING

Landowners can enter into voluntary water quality contracts with the VSWCD to reduce out of pocket expenses to implement BMPs. The USDA Natural Resources Conservation Service (NRCS), Idaho Soil Conservation Commission (ISCC), and Idaho Association of Soil Conservation Districts (IASCD) are technical agencies that can assist landowners in conservation plan development, BMP design, and identification of funding sources. Each landowner participating in an SCD sponsored program is responsible for installing the BMPs scheduled within their water quality contract (plan of operations). Each participant is also required to make their own arrangements for financing their share of installation costs.

Financial and technical assistance for installation of BMPs is needed to ensure success of this implementation plan. There are many potential sources for funding that will be actively pursued by the Valley SWCD to implement water quality improvements on private agricultural and grazing lands. These sources include (but are not limited to):

319 Grant Program**:** These are EPA funds, which are allocated to the State of Idaho DEQ to be distributed on a competitive basis. These funds are used to treat non-point sources identified in the TMDL implementation plan.
http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management

§104(b)(3)...Tribal and State Wetland Protection Grant, EPA
http://yosemite.epa.gov/R10/HOMEPAGE.NSF/webpage/Grants
This program provides financial assistance to state, tribal, and local government agencies to develop new wetland protection programs or refine and improve existing programs. All projects must clearly demonstrate a direct link to improving an applicant's ability to protect, restore or manage its wetland resources.

Challenge Cost-share Program, BLM
http://www.dfw.state.or.us/ODFWhtml/VolunteerProg/STEP.html
This program provides 50% cost-share monies on fish, wildlife, and riparian enhancement projects to non-federal entities.

Conservation Operations Program (CO-01), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
The CO-01 program provides technical assistance to individuals and groups of landowners for the purpose of establishing a link between water quality and the implementation of conservation practices. The NRCS technical assistance provides farmers and ranchers with information and detailed plans necessary to conserve their natural resources and improve water quality.

Conservation Improvement Grants, ISCC http://www.scc.state.id.us/programs.htm
The Conservation Research and Education program was created through the 1996 Farm Bill and is administered by the National Natural Resources Conservation Foundation. The purpose of the program is to fund research and educational activities related to conservation on private lands through public-private partnerships.

Conservation Reserve Program (CRP), FSA http://www.id.nrcs.usda.gov/programs/financial.html
The CRP program provides a financial incentive to landowners for the protection of highly erodible and environmentally sensitive lands with grass, trees, and other long-term cover. This program is designed to remove those lands from agricultural tillage and return them to a more stable cover. This program holds promise for nonpoint source control since its aim is highly erodible lands.

Conservation Technical Assistance (CTA), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
Technical assistance for the application of BMPs is provided to cooperators of soil conservation districts by the NRCS. Preparation and application of conservation plans is the main form of technical assistance. Assistance can include the interpretation of soil, plant, water, and other physical conditions needed to determine the proper BMPs. The CTA program also provides financial assistance in implementing BMPs described in the conservation plan.

Environmental Quality Incentives Program (EQIP), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
EQIP is a program based on the 1996 Farm Bill legislation. EQIP offers technical assistance, and cost share monies to landowners for the establishment of a two to ten year conservation agreement activities such as manure management, pest management, and erosion control. This program gives special consideration to contracts in those areas where agricultural improvements will help meet water quality objectives.

Farm Services Agency Direct Loan Program, FSA http://www.fsa.usda.gov/pas/default.asp
This program provides loans to farmers and ranchers who are unable to obtain financing from commercial credit sources. Loans from this program can be used to purchase or improve pollution abatement structures.

Grassland Reserve Program (GRP), NRCS http://www.nrcs.usda.gov/programs/GRP/.htm
A voluntary program offering landowners the opportunity to protect, restore, and enhance grasslands on their property.

Idaho Water Resources Board Financial Programs, IDWR
http://www.idwr.state.id.us/waterboard/financial.htm
The Idaho Water Resources Board Financial Program assists local governments, water and homeowner associations, non-profit water companies, and canal and irrigation companies with funding for water system infrastructure projects. The various types of projects that can be funded include: public drinking water systems, irrigation systems, drainage or flood control, ground water recharge, and water project engineering, planning and design. Funds are made available through loans, grants, bonds, and a revolving development account.

Range Improvement Fund - 8100, BLM http://www.id.blm.gov
This program focuses on improving rangeland management conditions, including the implementation of best management practices. A portion of the money to operate the program comes from the grazing fees paid by permittees.

Small Watersheds (PL-566), *NRCS* http://www.id.nrcs.usda.gov/programs/financial.html
The Small Watersheds program authorizes the NRCS to cooperate in planning and implementing efforts to improve soil and water conservation. The program provides for technical and financial assistance for water quality improvement projects, upstream flood control projects, and water conservation projects.

Resource Conservation and Development (RC&D), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
Through locally sponsored areas, the RC&D program assists communities with economic opportunities through the wise use and development of natural resources by providing technical and financial assistance. Program assistance is available to address problems including water management for conservation, utilization and quality, and water quality through the control of nonpoint source pollution.

Resource Conservation and Rangeland Development Program (RCRDP), SCC
http://www.scc.state.id.us/loans.htm
The RCRDP program provides grants for the improvement of rangeland and riparian areas, and loans for the development and implementation of conservation improvements.

State Revolving Fund (SRF), IDEQ http://www.deq.state.id.us/water/water1.htm#funding
The IDEQ Grant and Loan Program administers the State Revolving Fund. http://www.deq.state.id.us/water/water1.htm. The purpose of the program is to provide a perpetually revolving source of low interest loans to municipalities for design and construction of sewage collection and treatment facilities to correct public health hazards or abate pollution. State Revolving Loan funds are also used to support the Source Water Assessment Program and Nonpoint Sources…. The Grant and Loan Program uses a priority rating form to rank all projects primarily on the basis of public health, compliance, and affordability. Additional points are awarded to projects that have completed a source water assessment and are maintaining a protection area around their source.

Water Quality Program for Agriculture (WQPA), ISCC
http://www.scc.state.id.us/docs/wqpafs.doc
Provides financial incentives to owners and operators of agricultural lands to apply conservation practices to protect and enhance water quality and fish and wildlife habitat.

Wetlands Reserve Program (WRP), NRCS http://www.id.nrcs.usda.gov/programs/financial.html
WRP was established to help landowners work toward the goal of "no net loss" of wetlands. This program provides landowners the opportunity to establish 30-year or permanent conservation easements, and cost-share agreements for landowners willing to provide wetlands restoration.

Wildlife Habitat Incentive Program (WHIP), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
WHIP was established to help landowners improve habitat on private lands by providing cost-share monies for upland wildlife, wetland wildlife, endangered species, fisheries, and other wildlife. Additionally, cost share agreements developed under WHIP require a minimum 5-year contract.

Many of these programs could be used in combination with each other to implement BMPs.

OUTREACH

An intensive outreach program will be conducted through the VSWCD and its partners, IASCD, ISCC, and NRCS. The purpose of these outreach programs is to inform agricultural landowners and operators how water quality BMPs can benefit their farm or ranch.

District newsletters, direct mailings, project tours, demonstration projects, landowner meetings, and personal contacts will be conducted as part of this outreach effort. Other outreach objectives include:

- Provision of information about the TMDL process
- Increased landowner support for water-quality BMPs
- Distribution of TMDL implementation progress reports
- Greater awareness of agriculture's involvement in the protection and enhancement of natural resources
- Increased public awareness of agriculture's commitment to meeting the TMDL challenge
- Distribution of Proper Functioning Condition reports to private landowners involved

MONITORING AND EVALUATION

Field Level

Component practice BMP evaluation is done in conjunction with conservation plan and contract implementation. The objective of an individual conservation plan evaluation is to verify that BMPs are properly installed, maintained, and working as designed. An October 2003 publication by ISCC and IDEQ entitled *Idaho Agricultural Best Management Practices: "A Field Guide for Evaluating BMP Effectiveness"* provides the specifications and protocol for BMP evaluation to be used by field staff. Monitoring for pollutant reductions from individual projects consists of spot checks, annual reviews, and evaluation of advancement toward reduction goals. The results of these evaluations are used to recommend any necessary adjustments to continue meeting resource objectives. Annual status reviews are typically done within program contracts to ensure compliance with contract rules. Where conservation plans are developed in cooperation with the VSWCD, progress is tracked during the life of a program contract. Local tracking is assisted by NRCS and ISCC agency program specialists, where cost-share programs/projects are active. Where cost-share programs are not used, tracking will be conducted, as resources are available by the VSWCD or NRCS field offices.

Watershed Level

At the watershed to subbasin level, there are many government and private groups involved with water quality monitoring. The Idaho Department of Environmental Quality uses BURP to collect and measure key water quality variables that aid in determining the beneficial use support status of Idaho's water bodies. Project and program specific reviews will be conducted to ensure that projects are on schedule and on target. DEQ will conduct a 5-year status review of the North Fork Payette River Watershed and TMDL. Monitoring will be the key to successful application of the adaptive watershed planning and implementation process.

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APPENDIX A

BIG CREEK SUBWATERSHED

Big Creek Subwatershed

The Big Creek Subwatershed encompasses 45,976 acres within the North Fork Payette River Watershed (figure 5). Big Creek is a third order stream with a dendritic pattern that originates at 6,577 feet near Big Creek summit off of the Warm Lake Highway near Cascade in Valley County. It flows in a northern direction before it enters the North Fork Payette River below Cascade Dam at 4,723 feet.

The Horsethief Reservoir, fed by Horsethief Creek, is in the Big Creek subwatershed. It is a place for recreationists and avid fishermen. Idaho Fish and Game owns and operates the 275-acre reservoir and maintains it as a fishery for high angler use (IDWR 1999).

Big Creek stream channels are slightly entrenched. In the 1950's, the lower portion of Big Creek was dredged for radioactive phosphate (monazite). After a few years, 7,085 short tons were removed leaving tailing piles behind that are still present. This activity has influenced the morphology of the lowermost reaches near the mouth of Big Creek and could have possibly led to entrenchment (IDEQ, 2005).

Land Ownership and Land Use

The Big Creek subwatershed land uses include timber harvest and pasture. Watershed acres that are currently used for forestry practices are 17,442 acres. The area of canopy removed through timber harvest and road construction is estimated to be 1,511 acres (IDL, 2002).

The majority of the watershed is public land managed by USFS with about 20% private landholdings in the middle and lower portions. Big Creek land uses include dryland pasture, surface irrigated pasture, grazed forest, and rural residential. In the last few years, subdivisions have become prevalent, and plans are in place for many more. Approximately 10,381 acres are considered farmable acres. Table 12 below shows the total acreage of each land use.

Table 12. Land Use – Big Creek Subwatershed

Type of Irrigation	Total Acres
Dryland/non-irrigated pasture	4,665
Surface Irrigated pasture	1,125
Grazed forest	3,819
Rural residential	773

The land uses in this agricultural segment are being addressed for sediment. A bank stability target has been set at 80% of the overall reach for a landowner's property.

Figure 5. Big Creek Land Ownership

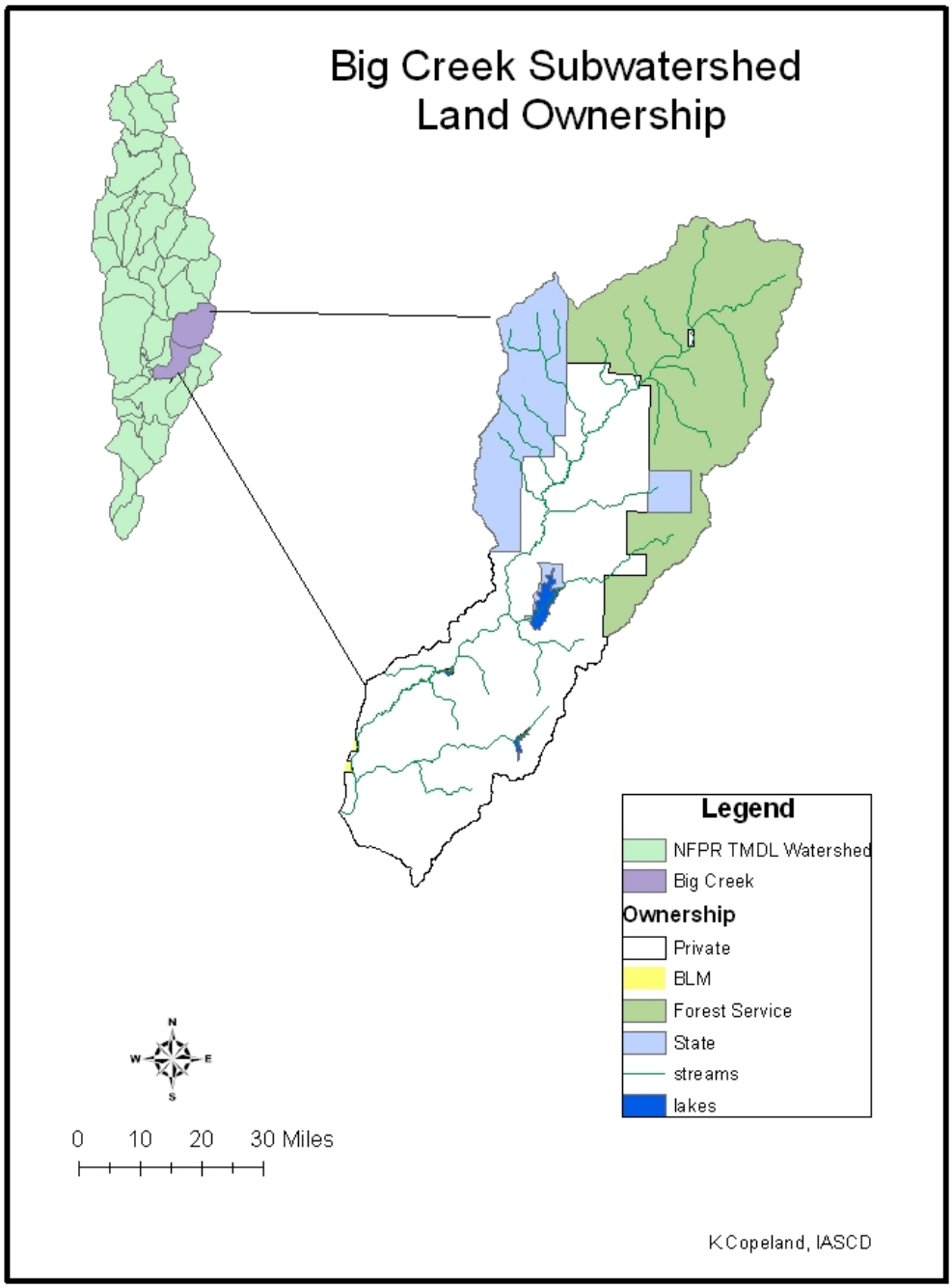
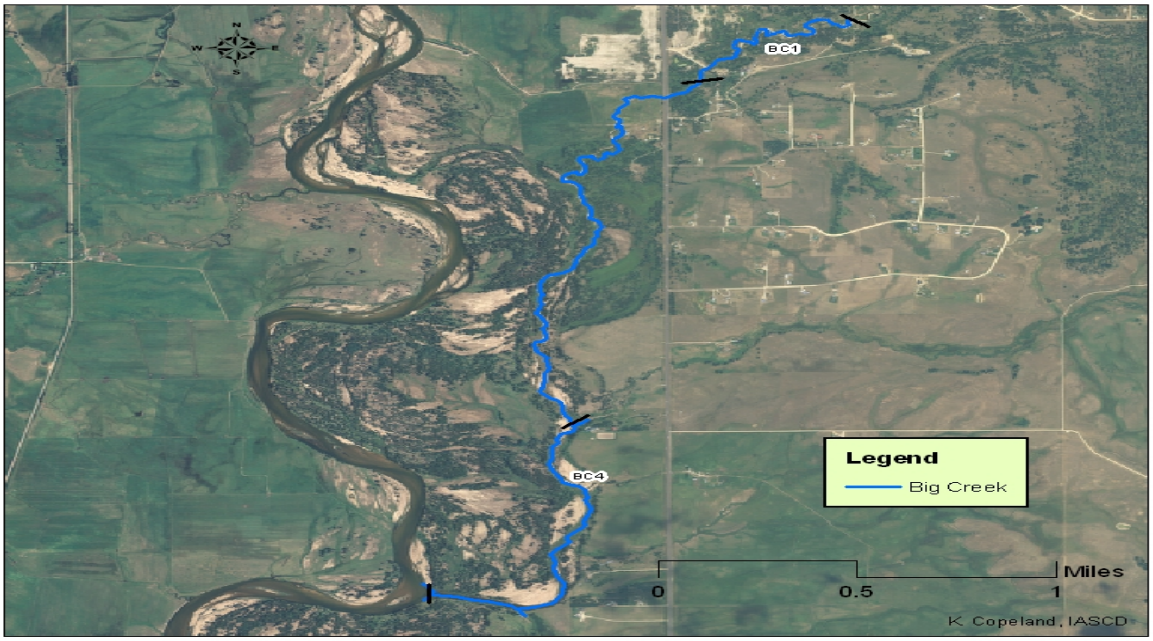


Table 13. PFC Riparian Attributes assessed on Big Creek reaches

Table 13. Various Riparian Attributes						
Stream Reach	Vegetation withstanding high stream flow events?	Species present for soil moisture maintenance?	Excessive Bank Erosion	Excessive Deposition?	System Vertically Stable?	Floodplain adequate to dissipate energy?
BC1	Y	Y	N	N	Y	N
BC4	Y	NA	N	N	Y	N

Figure 6. PFC Big Creek reaches assessed 2004



Two reaches were also assessed, but due to missing data they are not stated in this report. The North Fork Payette River WAG requested that the reaches will be re-assessed in the summer of 2007. More detailed descriptions of riparian attributes can be obtained from field sheets located at the VSWCD.

APPENDIX B

CLEAR CREEK SUBWATERSHED

Clear Creek Subwatershed

Clear Creek is a 15.8 mile stream that drains 31,523 acres of the NFPR watershed (Figure 7). The elevation change in the watershed is 2,705 feet from 7,425 feet at the headwaters to 4,720 feet at the mouth. At the mouth Clear Creek drains into the North Fork Payette River just below Cascade Dam.

Clear Creek originates in moderately to steeply timbered mountainous slopes with episodic flows generated from rainfall or snowmelt (Ferguson, 2004). Peak flows usually occur in May or June. In the early summer until late fall, the lower reach of Clear Creek is de-watered by an irrigation diversion on private land (USFS, 1999).

Land Ownership and Land Use

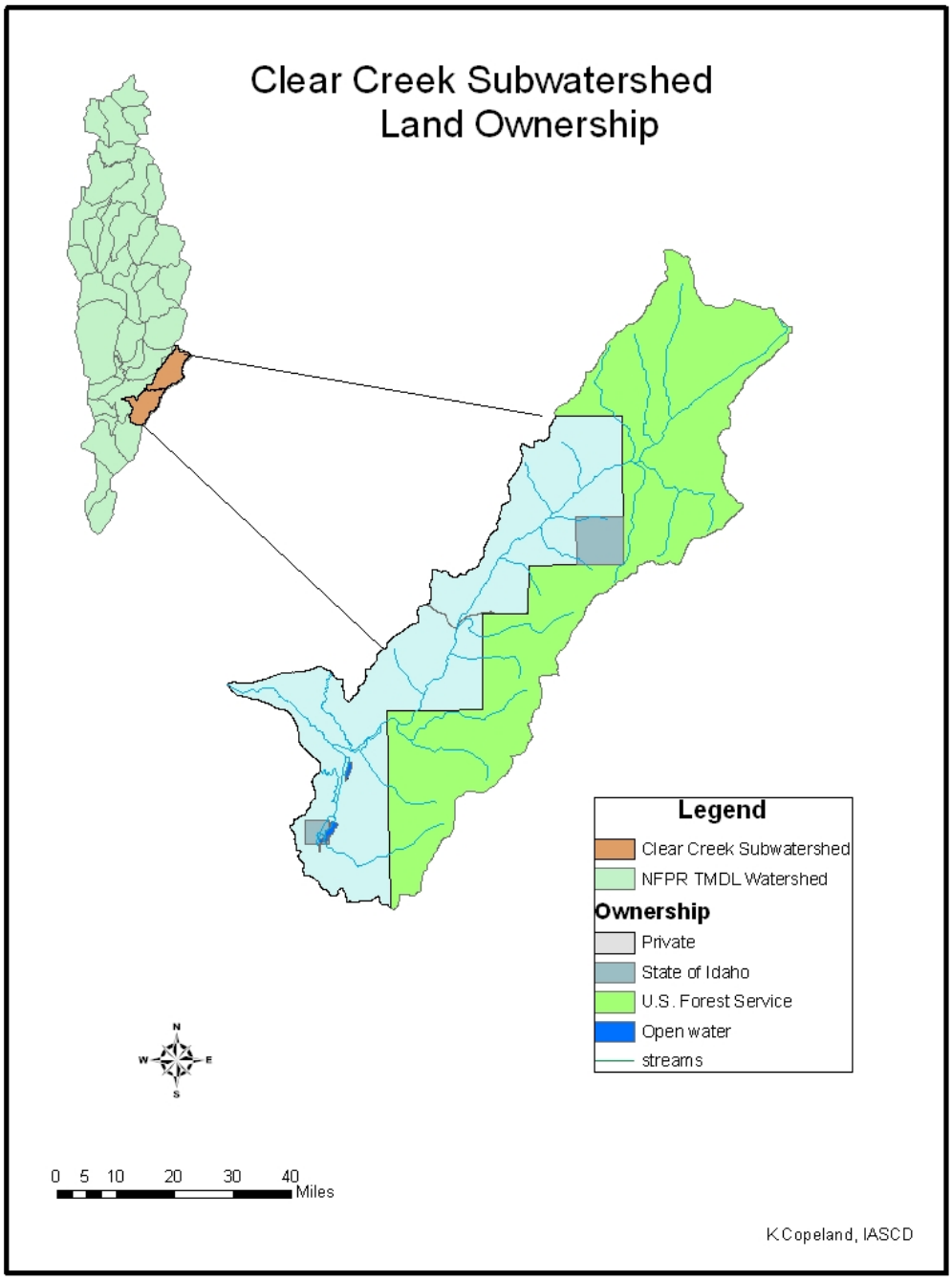
The primary land use within the watershed is forestland. The lower and middle reaches of Clear Creek are primarily on private land. Within the privately held portion, land uses are primarily, grazed forest and rangeland and surface irrigated pasture. Agricultural related activities such as ranching and grazing are practiced. There are also residential subdivisions in the lower portion of the watershed. Approximately 2,444 acres are deemed farmable acreage.

Vegetation varies throughout the Clear Creek Subwatershed. Vegetation transitions from conifer cedar land/forests in the upper reach such as, Douglas fir, Grand fir, Western Larch, and Lodge pole pine to sedge/grass to willow dominated stream channels in the lower section of the watershed. Agricultural reaches are being addressed for sediment. A bank stability target has been set at 80% for the overall reach.

Table 14. Land Use-Clear Creek

Type of Irrigation	Total Acres
Dryland/non-irrigated pasture	1,884
Surface Irrigated pasture	2,382
Grazed forest	62
Rural residential	700

Figure 7. Clear Creek Landownership Map



Water Quality Issue

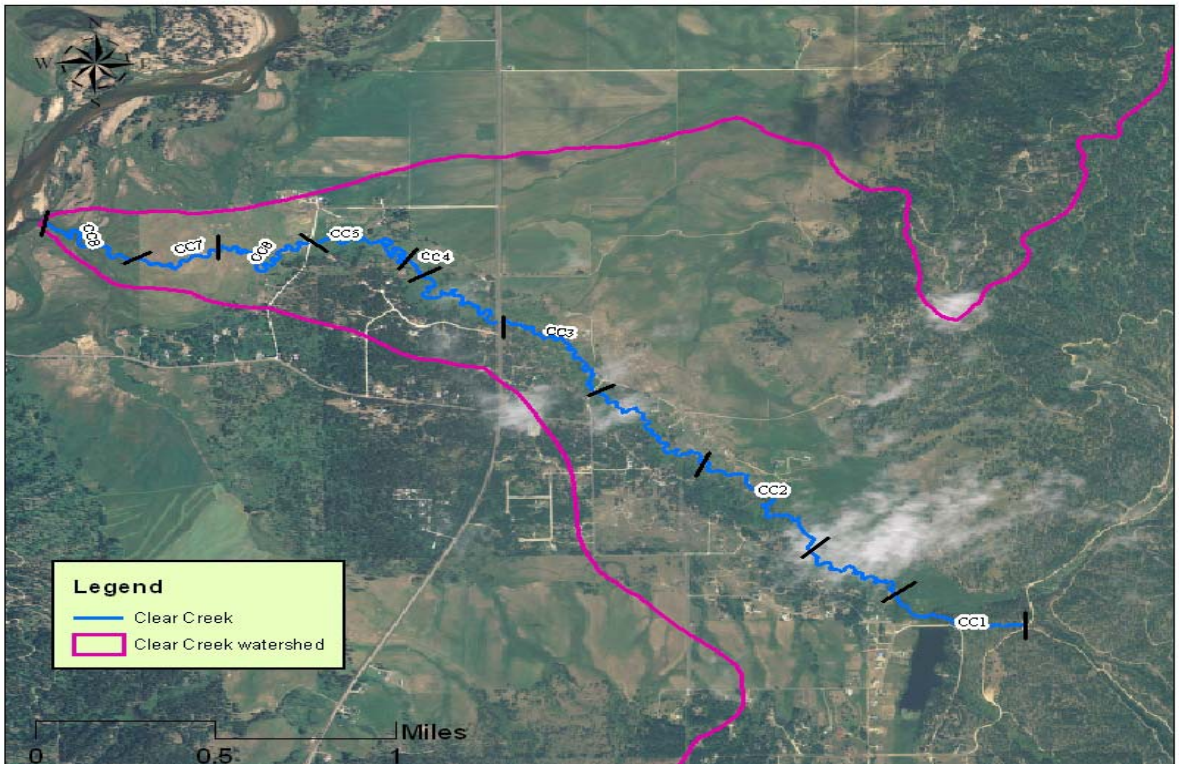
The water quality issue that will be addressed in the segment of Clear Creek is sediment. This segment of stream in the lower reach is primarily privately owned agricultural lands. There are two primary sources that are responsible for the sediment problem in Clear Creek. The first is in-stream

Table 15. Various Riparian Attributes						
Stream Reach	Vegetation withstanding high stream flow events?	Species present for soil moisture maintenance?	Excessive Bank Erosion	Excessive Deposition?	System Vertically Stable?	Floodplain adequate to dissipate energy?
CC1	Y	Y	N	N	Y	Y
CC2	Y	Y	Y	Y	Y	Y
CC3	Y	Y	Y	Y	Y	N
CC4	Y	Y	Y	Y	Y	N
CC5	Y	Y	Y	Y	Y	N
CC6	Y	Y	Y	Y	Y	N
CC7	Y	Y	Y	Y	Y	N
CC8	Y	Y	N	N	Y	N

channel/bank soil erosion from land bordering the stream and the second is sediment being transported to the creek by agricultural drains and tributaries (IDEQ, 2005).

Table 15 describes the attributes found in the 2004 PFC assessment of Clear Creek. Because the targets are 80% bank stability and the TMDL is for sediment, a few attributes were emphasized here.

Figure 8. PFC Clear Creek reaches assessed 2004



APPENDIX C

ROUND VALLEY CREEK SUBWATERSHED

Round Valley Creek Subwatershed

Round Valley is a stream that flows six miles through primarily pastureland in the Highway 55 Canyon. The headwaters of Round Valley Creek originate at 5,200 feet, and it enters into the North Fork Payette River above the Rainbow Bridge. Chipps Creek and Bacon Creek are two small tributaries to Round Valley Creek.

There is little flow information for Round Valley Creek. It has been redirected and channelized in sections, which affects flow characteristics. Channelized sections experience higher flows. Because of the low elevation of Round Valley Creek, it tends to have an earlier peak flow than other creeks in the watershed. A sustainable late/summer or fall flow is typically less than one cubic ft/sec (cfs) (IDEQ, 2005).

Land Ownership and Land Use

The Round Valley Creek Sub-watershed consists of a total of 15,711 acres. There are approximately 7,327 farmable acres. The primary land use within the Round Valley Creek watershed is surface irrigated pasture. Most of the land in Round Valley is primarily used for agriculture, although much of the land use is changing to residential development.

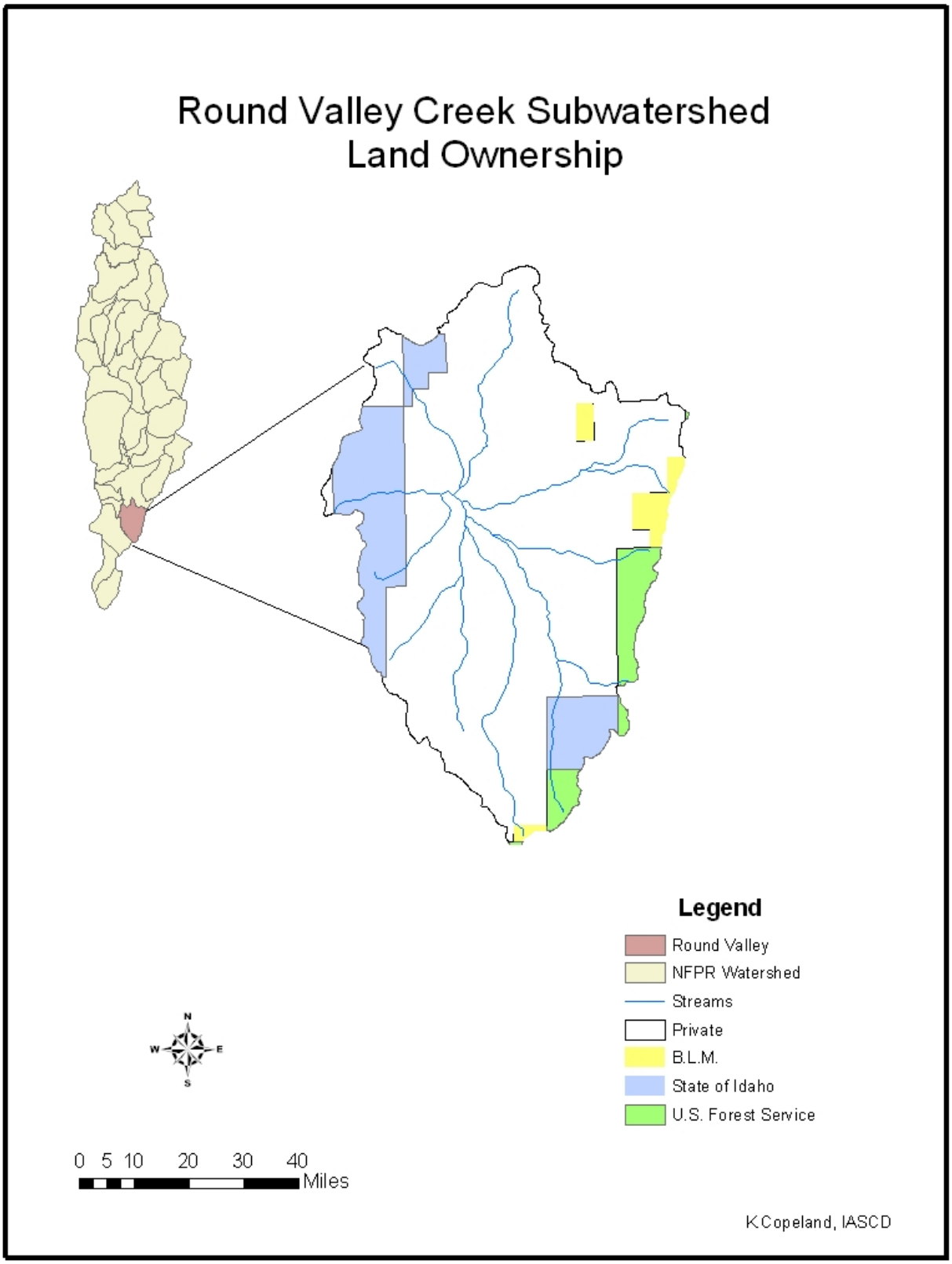
Within the privately held portion of Round Valley Creek, the land uses are primarily agricultural with surface irrigated pasture, dryland pasture, and grazed forest. Agricultural related activities such as livestock grazing are practiced in the subwatershed. A small portion of timber land has grazing allotments for sheep, but this has been discontinued in the past year.

Figure 9 shows the land ownership within Round Valley Creek watershed. Table 16 summarizes the land ownership in the Round Valley Creek subwatershed. There are approximately 5.7 total stream miles. An analysis by land area shows that 65% is comprised of private land. Based on the 2003 PFC assessment, Round Valley Creek subwatershed was found to have active riparian livestock grazing. Private lands are often used as holding areas before and after public land grazing periods. These areas consist of wider valleys with lower stream gradients. Public land management agencies manage their lands for multiple resources and purposes.

Table 16. Round Valley Creek Land Use

Land Use Type	Total Acres
Dryland/non-irrigated pasture	6,070
Surface Irrigated pasture	52
Grazed forest	1128
Rural residential	77

Figure 9. Round Valley Land Ownership Map



Various Riparian Attributes

Table 17 below shows attributes provided in the PFC protocol that were used to evaluate reaches.

Table 17. Summary of PFC attributes for Round Valley Creek Assessment

Table 17. Various Attributes						
Stream Name	Vegetation withstanding high stream flow events?	Species present for soil moisture maintenance?	Excessive Bank Erosion	Excessive Deposition?	System Vertically Stable?	Floodplain adequate to dissipate energy?
RV1	Y	Y	Y	Y	Y	N
RV2	Y	Y	Y	Y	N	N
RV3	Y	Y	Y	Y	N	N
RV4	Y	Y	Y	Y	Y	N
RV5	Y	Y	Y	Y	Y	N
RV6	Y	Y	Y	Y	Y	N
RV7	Y	Y	Y	Y	Y	N
RV8	Y	Y	Y	Y	N	N

Figure 10. Round Valley Creek PFC Reaches Assessed

APPENDIX D

NORTH FORK PAYETTE RIVER

North Fork Payette River (Clear Creek to Smith's Ferry) Subwatershed

North Fork Payette River (NFPR) (Clear Creek to Smith's Ferry) is a perennial stream that drains approximately 35,448 acres of primarily forest and rangeland. NFPR flows through a winding basalt canyon in places and then opens into a wider low gradient valley. In the canyon areas, the channel shape is trapezoid, and flat, broad and shallow in the pasture areas located in Smith's Ferry (IDEQ, 2005).

Riparian Assessment

A stretch of the North Fork Payette River was visually assessed for stream bank stability in June 2006 by IASCD staff, to collect data to ground truth the aerial photography assessed by IDEQ. The reach was approximately 9.8 miles long continually to Cabarton Bridge where Clear Creek enters the North Fork Payette River. The bridge is located on Clear Creek Rd, about 14 miles south of Cascade. Three reaches, a total of 565 feet, were found to be lacking in riparian vegetation, possibly in a downward vegetative trend, but bank stability does not seem to be such a problem because of the reservoir. A possible ramping effect involved with the operation of Cascade Reservoir Dam could affect flow levels and impact river banks.

The goals of the assessment were to determine if bedload sediment is affecting the North Fork Payette River and its beneficial uses (salmonid spawning; cold water biota) and to check for overall bank stability.

The North Fork Payette River Subbasin Assessment states that overall average bank stability was 70% from Cascade Dam to Smiths Ferry. Interpretation by aerial photo analysis showed that NFPR was below the 80% banks stability target. The conclusion was drawn that the excess sediment is being delivered to the river from bank erosion (IDEQ, July 2005).

Figure 11. NFPR watershed reach assessed

Figure 12. North Fork Payette River Downstream

Figure 13. North Fork Payette River Downstream near Cabarton Bridge

APPENDIX E

WATERSHED ACCOMPLISHMENTS

Beaver Creek, Clear Creek, and Round Valley were assessed by ISCC and IASCD in 2004. Other accomplishments include a field observation assessment of the listed subwatershed reaches conducted by IASCD staff in June 2006. Digital photos were taken in 2006 to see the changes in vegetation since the 2004 assessment. Below are some examples of before and after pictures that were taken. Fencing in the Clear Creek Area showed signs of improvement by 2006. The digital photos are shown below for each creek.

Figure 14. 2004 Beaver Creek Visual Assessment Upstream

Figure 15. 2006 Beaver Creek Visual Assessment Upstream

Figure 16. 2004 Clear Creek Fencing Project

Figure 17. 2006 Clear Creek Fencing Project

Figure 18. 2004 Round Valley Creek Upstream

Figure 19. 2006 Round Valley Creek Upstream

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APPENDIX F

RIPARIAN RECOMMENDATIONS

Recommendations

Eroding sections of the tributaries within the NFPR watershed are considered a high priority to reestablish 80% bank stability and improve in-stream channel erosion. This target prioritizes the four listed streams. Round Valley is a high priority to stabilize head cuts and bank stability. Clear Creek is a moderate priority for grazing management and fencing. Big Creek is a moderate-low priority for grazing management issues, and the NFPR a low priority for grazing management and fencing. The following tables outline the impaired reaches, recommended actions to improve them, recommended best management practices for implementation and projected water quality benefits.

These tasks were interpreted and analyzed from 2004 Proper Functioning Condition Assessment summary reports by David Ferguson, ISCC, on Big Creek, Clear Creek, and Round Valley Creek.

Table 18. Big Creek Riparian Recommended Task Summary

BC=Big Creek

Reach/Length	Recommended Tasks	Possible BMPs	Water Quality Benefits
BC1, BC4 10,303 ft.	PFC Rating: Functioning at Risk; Vegetation in an upward trend		
	More rush and sedge planted	Practice Code: 612 Tree & Shrub Establishment	Greater impact on streambank stabilization efforts.
	Regeneration of riparian species(shrubs) is needed	Practice Code: 612 Tree & Shrub Establishment	Allow woody shrubs to regenerate to deal with excess sediment
	Switch to shortened grazing period and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase riparian vegetation productivity
	Temporary exclusion from riparian zone	Practice Code 472: Use Exclusion	Regeneration of vegetation and reestablish rushes and sedges
	Grazing management systems	Practice Code: 574 Spring Development	Offsite water developments to reduce stream impacts
	Creating riparian pastures	Practice Code: 382 Fence	Improve native plant populations
	Hardened stream/rock crossings	Practice Code: 578 Stream Crossings	Reduce bank damage and encourage livestock to cross and use water at a particular point
	Decrease Lodgepole Pine percentage and introduce greater numbers of Ponderosa Pine, Firs, Spruce	Practice Code: 612 Tree & Shrub Establishment	Provide greater diversification and long-term stream health conditions due to rapid decomposition of Lodgepole.
BC2, BC3, 11,654 ft.	Not rated due to missing data		

Table 19. Clear Creek Riparian Recommended Task Summary

CC=Clear Creek

Reach/Length	Recommended Tasks	Possible BMPs	Water Quality Benefits
CC1 2,505 ft.	PFC Rating: Proper Functioning Condition		
	Continue Current Management; Maintain current condition	Current conditions support water quality goals	
CC2 3,504 ft.	PFC Rating: Functioning at Risk; Vegetation in an upward trend		
	Maintain current condition; Continue Current Management, there is little grazing impact	Current conditions support water quality goals	
CC4, CC5 3,521 ft.	PFC Rating: Functioning At Risk; over- widened channel with excessive sand in channel		
	Reduce grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
CC6 3,058 ft. ft.	PFC Rating: Functioning at Risk; over-widened channel, excessive deposition and stream bank sloughing; conservation plan is in place		
	Reduce grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Hardened Stream Crossings	Practice Code: 578 Stream Crossings	Hardened crossings to minimize instability
	Grazing Management systems	Practice Code: 574 Spring Development	Offsite water developments to reduce in stream impacts
CC7 517 ft.	PFC Rating: Non-functional; regeneration of riparian species limited		
	Reduce grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Riparian Pasture development	Practice Code: 382 Fence	Improve plant populations
	Address Large head cutting	Practice Code: 410 Grade Stabilization Structure	Stabilize head cut, reduce in stream erosion
	Streambank and Shoreline Protection and Establish plant communities for stabilized stream area	Practice Code: 612 Tree & Shrub Establishment	Reduce Sediment
CC8 659 ft.	PFC Rating: Functional At Risk; vegetative in an upward trend; damage from moderate to light flood events		
	Reduce Grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Add fencing with watering facilities to assist; fence needs repaired between land owners	Practice Code: 382 Fence	Improve pasture efficiencies; increase bank stability

Table 20. Round Valley Creek Riparian Recommended Task Summary

RV=Round Valley Creek

Reach/Length	Recommended Tasks	Possible BMPs	Water Quality Benefits
RV1 1,241 ft.	PFC Rating: Functioning at Risk; damaged from moderate to light flood events		
	Reduce Grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Limit access to channels in some locations for regeneration of shrubs	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity; increase bank stability
	Fence needs repaired between landowners	Practice Code: 382 Fence	Increase bank stability
RV2 3,584 ft.	PFC Rating: Functioning At Risk; damaged from moderate to light flood events		
	Grazing Plan; Reduce Grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Address Large head cutting	Practice Code: 410 Grade Stabilization Structure	Stabilize head cut, reduce in stream erosion
RV3 3,072 ft	Non-functional; reach created in 1990's (ditch)		
.	Address Large head cutting	Practice Code: 410 Grade Stabilization Structure	Stabilize head cut, reduce in stream erosion
RV4 1,681 ft.	Functioning At Risk; ditch was directed to increase irrigation supply		
	Reduce Grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Regeneration of riparian species(shrubs)	Practice Code: 612 Tree & Shrub Establishment	Allow woody shrubs to regenerate to deal with excess sediment
RV5 4,504 ft.	Functioning at Risk; vegetation in an upward trend; reach not actively used by agriculture; no recommendations made		
RV6, RV7 3,294 ft.	Functioning at Risk; vegetation in downward trend		
	Regeneration of riparian species(shrubs)	Practice Code: 612 Tree & Shrub Establishment	Allow woody shrubs to regenerate to deal with excess sediment
	Reduce Grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase vegetative productivity
	Grazing Management systems	Practice Code: 574 Spring Development	Offsite water developments to reduce in stream impacts
RV8 2,751 ft.	Functioning at Risk; vegetation in downward trend		
	Riparian Pasture Development	Practice Code: 382 Fence	Improve native plant populations
	Reduce Grazing duration and adjust grazing schedules	Practice Code: 528 Prescribed Grazing	Improve plant vigor, increase plant productivity

Forestry Implementation Plan

Western Pacific Timber

I. Purpose, Goals, and Objectives

The purpose of this document is to identify Best Management Practices (BMPs) that are needed to reduce surface water pollutant loads and help restore the chemical, physical and biological functions of the NFPR watershed. The goal of this plan is to assist and/or complement other watershed efforts to restore beneficial uses for the 303(d) listed assessment units within the North Fork Payette River Watershed. The objective is to provide specific management options to reduce sediment loading and heat inputs to the specified 303(d) streams in the North Fork Payette River watershed and prevent any further degradation. Temperature TMDLs were developed for the Fall and Box Creek watersheds while sediment TMDLs were developed for Clear Creek. For Clear Creek the implementation goal is to reduce sediment delivery from roads.

II. North Fork Payette Subwatershed TMDL Summary

The North Fork Payette River Watershed (Figure 1) lies entirely in southwestern Idaho. Its headwaters originate near Secesh Summit in Valley County. The drainage flows in a southwesterly direction before it joins with the South Fork Payette River to form the Main Payette River. Cascade Reservoir lies in the North Fork Payette River watershed.

The Payette River watershed extends from the Main Payette River to the confluence with the Snake River. No TMDLs for that watershed are addressed in this plan.

Land use includes irrigated cropland, irrigated pasture, forested areas, dry land agriculture, upland rangeland, municipalities and flood prone river bottom riparian areas as seen in Figure 1. More detailed information on the watershed can be found in the North Fork Payette River TMDL (DEQ 2005).
http://www.deq.idaho.gov/water/data_reports/surface_water/tmdls/payette_river_nf/payette_river_nf.cfm

The assessment units addressed in this implementation plan all lie within Hydrologic Unit Code (HUC) 17050123 and actually encompass several distinct subwatersheds. This plan addresses those 2002 303(d) listed assessment units that had TMDLs developed for them in the North Fork Payette River Subbasin Assessment and TMDL.

Table 1. Summary of Assessment Outcomes

Water Body Segment (assessment unit)	Pollutant	TMDL(s) Completed	Recommended Changes to §303(d) List
Big Creek (SW012-02)	Sediment	Sediment	None
Box Creek (SW018-02)	Temperature	Temperature: Salmonid Spawning	None
Clear Creek (SW03-02)	Sediment	Sediment	None
Fall Creek (SW017-03)	Temperature	Temperature: Salmonid Spawning	None
Round Valley Creek (SW002-03)	Sediment	Sediment	None

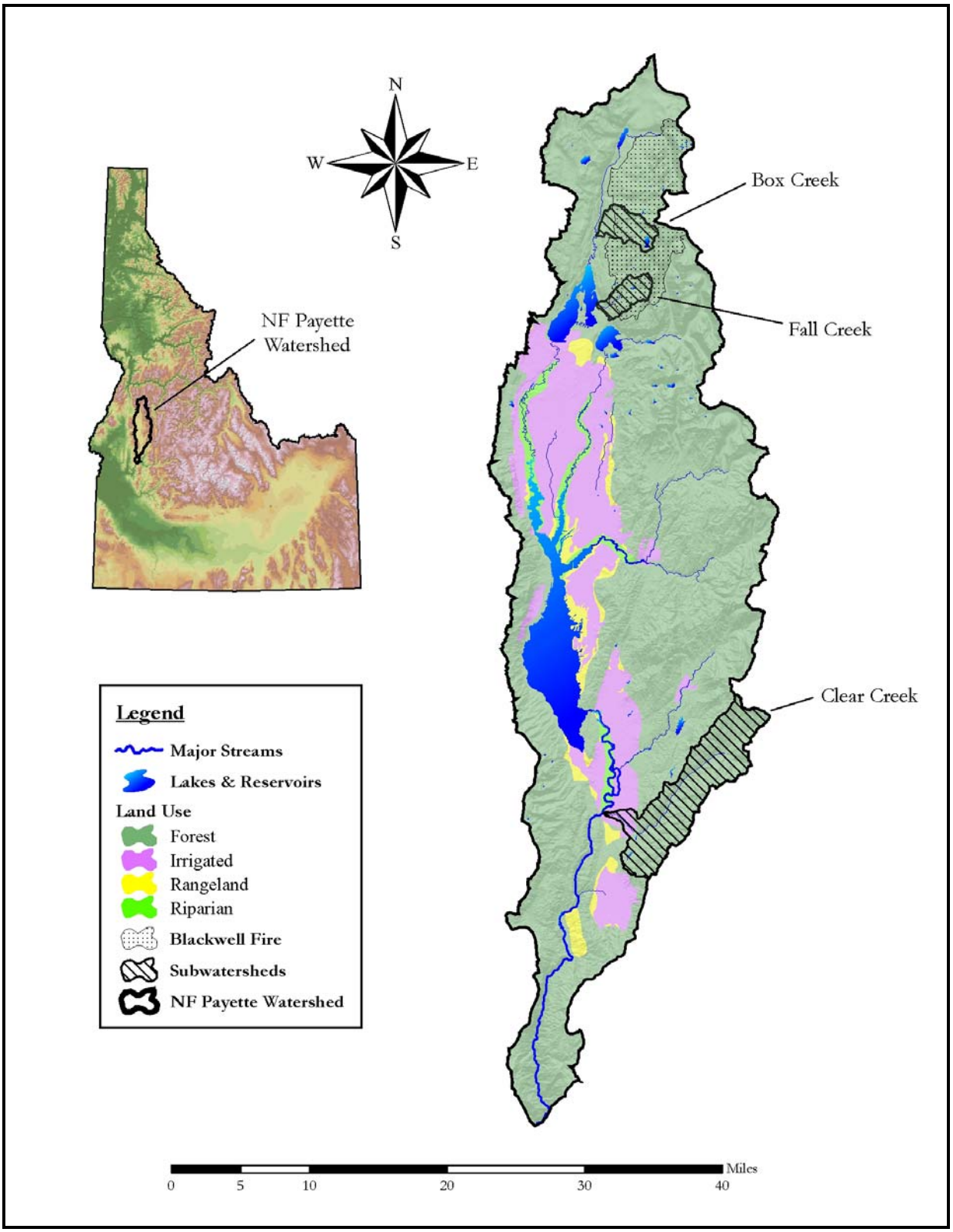

Figure 1. North Fork Payette River Watershed

III. Implementation Plans

The most effective means for controlling the generation of nonpoint source pollution is by applying preventative and restorative watershed management practices. Nonpoint source pollution control is accomplished through the voluntary application of technology based BMPs. Using a feedback loop style of management, forestry stakeholders will apply a BMP, monitor, evaluate, adapt and determine if the practices are effectively reducing sediment delivery or increasing shading to streams.

Designated Agencies

The Idaho Water Quality Standards and Wastewater Treatment Requirements list designated agencies responsible for reviewing and revising nonpoint source BMPs based on water quality monitoring data that is generated through the state's water quality monitoring program.

Designated state agencies are:

- Department of Lands for timber harvest activities, oil and gas exploration and development, and mining activities;
- Soil Conservation Commission for grazing and agricultural activities;
- Department of Transportation for public road construction;
- Department of Agriculture for aquaculture; and the
- Department of Environmental Quality for all other activities.

As designated land management agencies, both the United States Department of Agriculture (USDA) United States Forest Service and the United States Department of the Interior, Bureau of Land Management (BLM) entered into a Memorandum of Understanding between the US-Environmental Protection Agency (EPA) and various State of Idaho agency departments. Within the Forestry Practices Appendix to this MOU, the federal agencies agreed to comply with the water quality protection provisions of the Idaho Forest Practices Act Rules and Regulations

Idaho Department of Lands (IDL)

In accordance with Idaho's Nonpoint Source Management Plan, the Department of Lands is the designated lead agency for Forest Practices activities on all forest lands in the state of Idaho, including federal lands. As the lead agency, the Department of Lands is responsible for soliciting input from affected landowners and technical specialists to help develop practices that will fully restore the beneficial uses of impaired surface water.

IDL is responsible for managing endowment trust lands for numerous Idaho institutions as well as public trust lands; administering forestry and mining best management practices on private and state lands; consulting and cooperating with federal land managers; and oversees timber harvest activities, oil and gas exploration and development, and mining activities in Idaho.

Under Idaho's Antidegradation Policy, IDL is designated as the lead agency for surface mining, dredge and placer mining, and forest practices on all lands within the state. IDL works closely with DEQ to conduct Forest Practices Act audits, which form the basis for achieving State/Federal consistency for nonpoint source activities on forestlands.

They also work extensively with DEQ, BLM and USFS on the use of the Forest Practices Cumulative Watershed Effect Process (CWE) for watershed evaluation input to the TMDL process. The Forest Practices CWE Process provides a direct linkage for developing TMDLs and implementation plans for the forested portions of watersheds on the State §303(d) list.

Forestry Pollution Control Strategies

The Forest Practices Act (FPA) is designed to assure the continuous growing and harvesting of forest tree species and to protect and maintain the forest soil, air, water resources, wildlife, and aquatic habitat. FPA rules address timber harvesting practices, forest road construction and maintenance, forest tree residual stocking and reforestation, use of chemicals/management and prescribed fire. The Idaho Water Quality Standards and Wastewater Treatment Requirements, Title 39, Chapter 1, Idaho Code references the FPA rules as the approved BMPs for silvicultural, harvesting and forestry road activities. As mentioned above, IDL is the designated state agency responsible for administering and enforcing the FPA on all forestlands in Idaho.

The FPA requires forest practices rules for state and private lands to protect, maintain, and enhance our natural resources. Federal land practices must meet or exceed the Water Quality requirements of the state rules.

When an operation is found in violation of the rules and corrective measures are not taken in a reasonable time, the Idaho Department of Lands will take enforcement action against the responsible operator. Forest Practice Advisors, located statewide, also provide technical assistance to forest owners and operators who wish to learn about proper forest practices.

The Forest Practices Act as implemented has resulted in the reduction of off-site impacts due to timber management. However, recreational activities within the watershed, which may utilize the same roads network, are unregulated. In a number of instances, the treatment of sediment for roads on county, state, and/or federal lands may alleviate much of the sediment derived from recreational uses within the watershed. As such, the following types of management activities may need to occur as they relate to recreational activities and include:

- reconstruction of existing roads to meet current standards;
- improvement of drainage structures, water bars, grass seeding;
- relocation of roads;
- resurfacing of roads;
- temporary and permanent closure of high risk road segments.

State Endowment Trust Forestlands

As most harvest activities have been refined by BMPs contained in the Forest Practices Act, little sediment is produced by the actual harvest and processing of trees into logs.

IV. Forestry Implementation for Specific Assessment Units

CLEAR CREEK

Clear Creek has a sediment TMDL for the forested portion of the watershed based on reducing sediment delivery from roads. The total road density in the watershed is 4.39 miles per square mile with the highest densities in the lower portion of the watershed. Over half of the roads in the analysis area are on private lands. Approximately 44 miles of road in the Analysis Area are located within riparian conservation areas (RCAs), and the average RCA road density is approximately 5.70 mi/mi^2.

More detailed information on Clear Creek is found in the North Fork Payette River TMDL (DEQ 2005).

TMDL Objectives

A sediment TMDL for the middle and upper Clear Creek reaches was developed using BOISED results, from a sediment prediction model, for the East Fork Clear Creek as reference conditions for the rest of the watershed. The tributaries to the East Fork and the lower East Fork Clear Creek reach had low percent fines and roads are within close proximity in these areas. A 38% percent overall reduction in sediment delivered from roads (kg/total sediment) is needed to achieve the reduction goals of this TMDL. This is an average for the watershed. The actual percentage will vary from location to location depending upon several factors including road condition, slope toward creek and proximity to creek.

Table 2. Middle and Upper Clear Creek Load Allocation.

Water Body	Current Sediment Yield (tons/year)	Natural Background (tons/year)	Load Capacity (tons/year)	Load Allocation (tons/year)	% Decrease
Upper and Middle Clear Creek Drainages	1157	957	1081	124	38

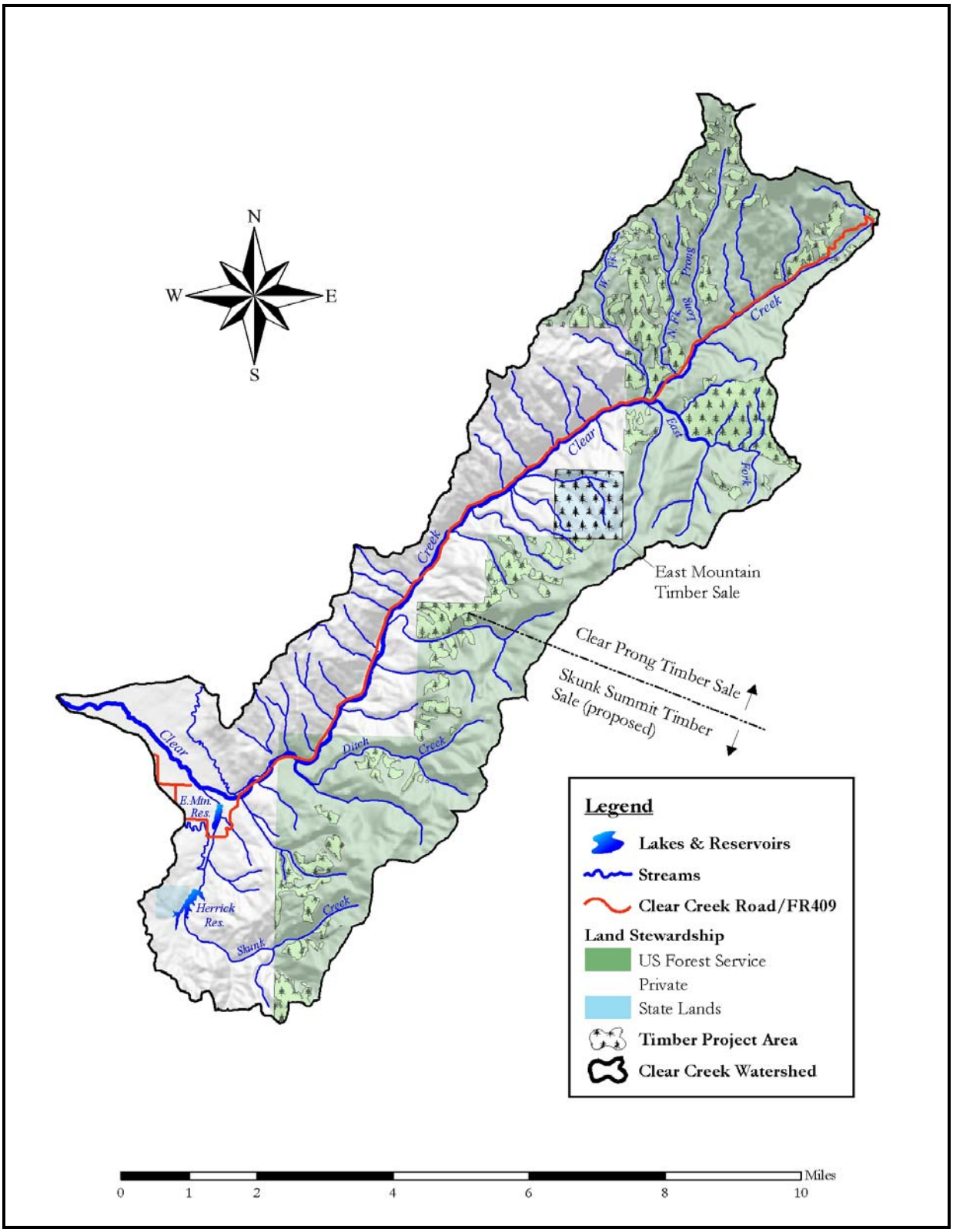

Figure 2. Clear Creek Watershed.

Sediment Delivery from Roads

Although all roads are potential sediment sources, those directly adjacent to streams are of the greatest concern. Roads that are located near meandering low gradient channels often disconnect the channel from its adjacent floodplain and result in bank cutting during higher flows. Roads in the Clear Creek watershed are close to the stream channel in several places and there are at least 30 road crossings in the watershed. Due to the proximity of roads to the stream channel, Clear Creek is vulnerable to excess sedimentation.

Table 3 shows estimates of the annual sediment contribution attributable to roads

Table 3. Clear Creek Sediment Yield (USFS 1999).

Stream Reach	Watershed Size	Percent over Natural Sediment Yield	Road Related Sediment (tons/year)
West Fork	1327	35	32.4
North Fork	923	27	12.6
Long Prong	1346	10	13
Upper Clear	2811	14	29.1
Upper Main Forest Service	689	11	6.3
East Fork	3170	12	16.8
Upper Main Boise Cascade	5276	33	76.1
Upper East Mountain	571	12	2.7
East Mountain	581	45	11.9
6th field watershed			
Upper Clear Creek	16693	21	200.9

Current/Projected Road Management Activities

Both the Idaho Department of Lands and the USFS have proposed timber sales in this drainage.

Idaho Department of Lands

The IDL East Mountain Timber Sale in section 16 T 13N, R5E (see Figure 2) was sold August 22, 2005 and work began in summer 2006. Approximately 2.3 million board feet over 640 acres is scheduled to be harvested by skyline and tractor/jammer. About 10.45 miles of secondary road will be opened, 6.73 miles of spur road will be reconstructed and 0.08 mile of new spur road will be constructed.

The Clear Creek road and road 417H will be used to access the sale area.

Actions to Achieve Objectives During and After Timber Harvest in Clear Creek by IDL

- A total of $1.34/mbf will be collected for deferred road maintenance.
- Skid trails will be water-barred and landing areas drained as needed.

- Landings and skid trails designated by the forester-in-charge will be seeded to grass after logging.
- New roads will be seeded; culvert installations will be seeded and mulched.
- Slash filter windrows will also be built at new culvert installations.

Timeline

IDL: 2006- Timber harvest and associated road activities commence
2007 Road maintenance activities continue

Boise National Forest Activities

The USFS will continue to follow the Boise National Forest Plan to implement activities. These activities include timber harvest, road management, grazing, prescribed fire, watershed improvements, and fish habitat improvements. The identification of sources of sediment, treatments and implementation of treatment will occur concurrently with activities as they are scheduled. Road segments will be prioritized for targeting. Road improvements on USFS lands can be accomplished in three ways: associated with timber harvest, general road maintenance or with outside funding such as a 319 Grant.

Activity plans are finalized and implemented as funds become available. Required National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) analyses will occur before implementation is possible. Scheduling of project implementation is determined by funding and priority on each forest. Partnership and cooperative efforts will be developed on a project by project basis.

The USFS has two proposed timber sales in the area (see Figure 2). Information was available for the Clear Prong Sale but not for the Skunk Summit sale at the time of this writing. When these sales are finalized an addendum to this Implementation Plan will be added outlining the timeline and treatment measures being used.

The Clear Prong sale would result in thinning of sub-merchantable trees and prescribed fire, on 2,875 acres. An estimated 9.0 million board feet would be removed using tractor, off-road jammer, skyline, and helicopter yarding systems. A variety of silvicultural prescriptions would be employed including commercial thin, commercial thin with prescribed fire, sanitation/improvement, sanitation/improvement with prescribed fire, seed cut shelterwood, clearcut with reserve trees, thinning of sub-merchantable trees, thinning of sub-merchantable trees with prescribed fire, and prescribed fire. The BOISED modeling for the sale shows that both of the two different alternatives for harvest result in a slight long term decrease of road sediment delivery over what is currently occurring.

Actions to Achieve Objectives During and After Timber Harvest in Clear Creek

- Gravelling of surface roads
- Re-grading of roads after harvest
- Culvert replacements including installation of relief culverts
- Adherence to Forest Practices Act

- Road obliteration/decommissioning
- Use of sedimats at stream crossings
- Placement of erosion barriers
- Minimization of stream crossings during project
- Filter Windrows
- Reseeding/mulching of disturbed areas
- Placement of slash on decommissioned roads after road prism is ripped
- No logging in landslide prone areas
- Overall decrease in road density as compared to pre-harvest road density

Previously Addressed Road Issues

Many of the road-related sediment sources on Forest Service administered lands within the analysis area were addressed in 2002. The objective of these road restoration activities was to reduce sediment contributions from, and long term maintenance needs of, identified road segments. Specifically these activities included:

- replacement of a damaged relief culvert and graveling roughly 0.1 mile of the #407X road
- rounding the cut slope, installation of drivable dips, extending existing culverts, armoring the ditch line, and graveling the surface of 0.8 miles of the #406 road;
- installation of an additional relief culvert on the #405B road;
- graveling the surface of roughly 0.1 mile of the #405 road, and;
- installation of six additional relief culverts and spot graveling 1.2 miles of the #405C road.

Timeline

The commencement of USFS measures is contingent upon start of the timber harvest projects. Other road improvement projects that are ancillary to these projects are contingent upon funding. No estimated timeline can be given at this time.

Valley County Road Department

Valley County has maintenance authority over the entire Clear Creek Road including Forest Road 409. The section of the #409 road below the Forest boundary is a native surface road that is very close to Clear Creek in numerous places. This section of road is a high priority for implementation.

Actions to Achieve Objectives in Clear Creek

- Fill slope removal and stabilization
    - Different grading techniques in areas close to road
    - Installation of asphalt lead ups to bridges and on bridges
- Road surfacing in spots
- Installation/improvement of road drainage
- Revegetation of exposed soils

- Culvert removal or replacement and culvert maintenance
- Installation of stormwater BMPs during road projects
- Realignment of road where the creek is encroaching on it
- Install rock barbs in creek to deflect flow away from road

Timeline

Implementation is contingent upon funding. The following is a tentative timeline:
2007 - Pursue 319 grant funding for road improvements
2008 - Place Clear Creek on maintenance schedule
2009 - Start road improvement projects
2010 - Complete road improvement projects
2011 - Maintain as necessary

Western Pacific Timber

Western Pacific Timber has timber harvest activity, grazing and recreation occurring on their lands. The Forest Practices Act is followed to ensure that sediment delivery is minimized to creeks in harvest areas. In addition, Western Pacific Timber is dealing with impacts to their land from recreation by seasonal vehicle access restrictions, limiting ATVs to existing roads and gating of the roads they control through the Access Yes program in cooperation with the Idaho Department of Fish and Game (IDFG).

Actions to Achieve Objectives in Clear Creek

• Road closure
• Gate installation through Access Yes program in partnership with IDFG
• Installation/improvement of road drainage
• Revegetation of exposed soils
• Culvert removal or replacement
• Manage grazing to reduce impacts to the riparian areas

Timeline

The timeline for these measures is dependent upon the current activity going on in the watershed. The Access Yes program is being initiated this year.

FALL CREEK

Originating at 7,809 feet, Fall Creek is in a 4,210 acre forested watershed in central Idaho managed for timber production (Figure 3). From its headwaters, Fall Creek flows 4.8 miles before entering Payette Lake at 4,990 feet approximately 3.5 miles outside of McCall, Idaho. A portion of Fall Creek originates as spillover from Blackwell Lake, a small regulated glacial lake located in the upper third of the watershed. Land ownership is public and is primarily managed by the USFS (Payette National Forest) and to a lesser extent by the Idaho Department of Lands.

Fires occurred in 1994 in the headwaters of Fall Creek. The fire caused extensive tree mortality and burned most of the ground cover

TMDL Objectives

Recovery has occurred in this watershed and beneficial uses are not impaired with the exception of cold water aquatic life uses during salmonid spawning season. Instream temperatures during the salmonid spawning season do not meet the temperature criterion. Stream protection protocols are in place and the exceedences of the salmonid spawning criteria appear largely attributable to the results of the Blackwell Fire. Recovery continues to occur and should continue to contribute to lower temperatures. Using aerial photos, pre and post burn vegetative cover were compared. A shading target of 85% was developed using shade curves for similar Douglas Fir-Grand Fir vegetative community types. A TMDL was determined for Fall Creek for salmonid spawning temperatures.

Table 4. Fall Creek Load Allocation.

Water Body	Existing Shade	Load Capacity (potential shade)	Load Allocation (% shade increase needed)
Fall Creek	**50% (3.3 kWh/m^2/day)**	**85% (0.957 kWh/m^2/day)**	**35%**

Current and Proposed Management Activities

USFS

The USFS will continue to follow the Payette National Forest Plan to implement best management activities. These activities include timber harvest, road management, grazing, prescribed fire, watershed improvements, and fish habitat improvements. Activity plans are finalized and implemented as funds become available. Required NEPA and ESA analyses will occur before implementation is possible. No projects are currently planned.

Idaho Department of Lands

The Eastside Payette Timber Sale (Figure 3) was sold on 10/18/04 by the Idaho Department of Lands. Work is projected to start in the summer of 2006. A harvest of 2.205 million board feet of saw timber will occur with the use of tractor/jammer and helicopter.

Actions to Achieve Objectives in Fall Creek

- Forest Practices Act Adherence
    - 100 foot stream protection zone

- 25 foot no harvest zone around Fall Creek

- Minimization of vehicle access during harvest
- Cutting prescription is by individual tree
- Approximately 2.64 miles of secondary roads and 2.34 miles of spur roads will be reconstructed or improved.
- Surfacing of roads to minimize sediment delivery (0.38 miles surfaced with basalt)
- Roads will be closed again after harvest

Timeline

Riparian improvements are expected to occur naturally since the riparian area is being left alone. Thus, improvement in instream temperature will rely on vegetation naturally reestablishing itself. Riparian monitoring of canopy cover will occur at least every five years to track changes. If agency monitoring shows a decrease in shading, an investigation of causal factors will be made and corrective action taken.

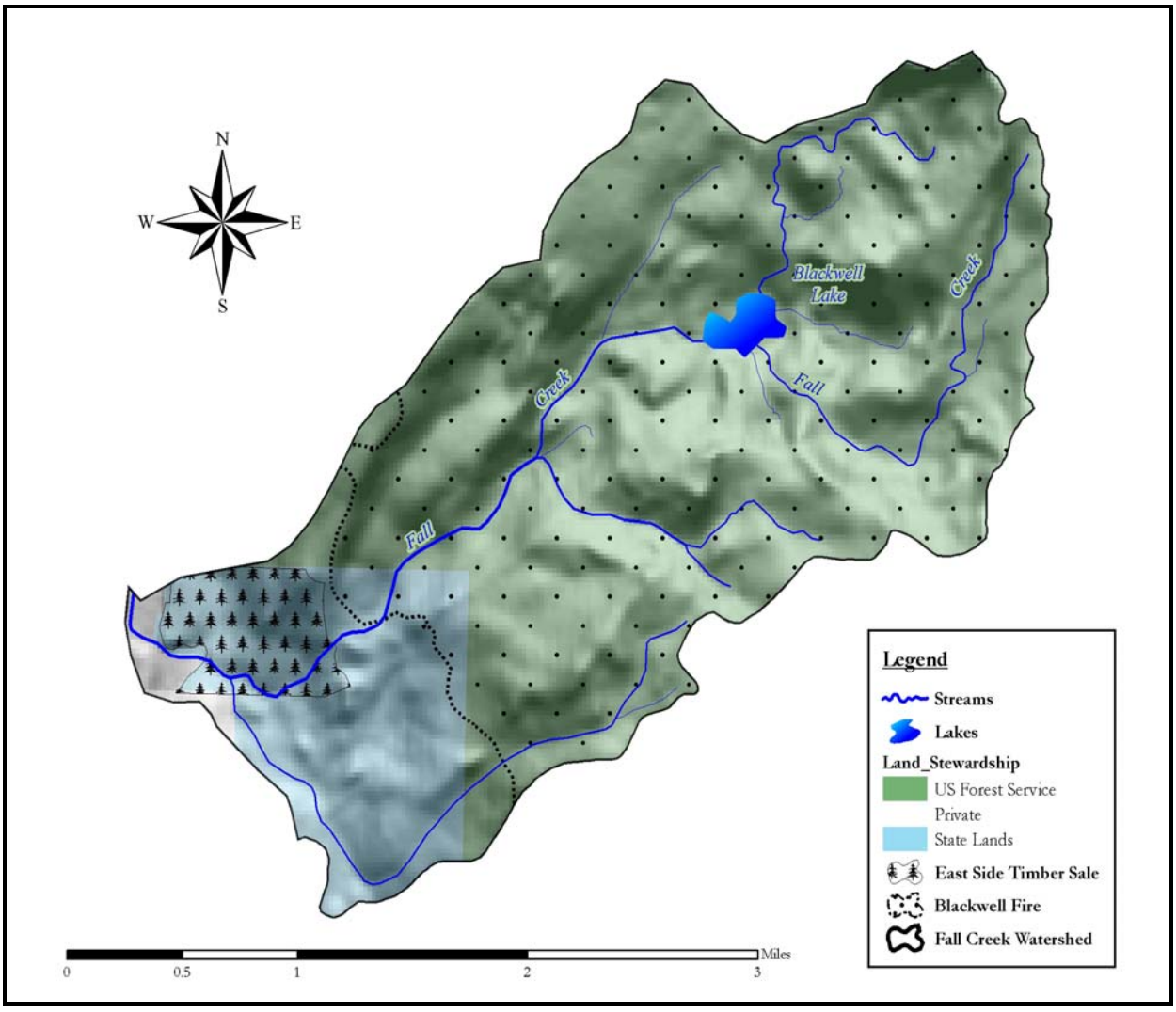

Figure 3. Fall Creek Watershed.

BOX CREEK

Originating at 8,653 feet off of Beaverdam Peak, Box Creek flows approximately 4.5 miles before entering the North Fork Payette River at 5,020 feet, approximately 8 miles north of McCall, Idaho (Figures 4). Much of the upper portion of the drainage was burned in the Blackwell fire in the summer of 1994. The 5,667-acre Box Creek watershed has several alpine lakes present in its headwater area with Box Lake being the largest in size. Land ownership is primarily public federal land with some small areas of BLM and IDL managed public land.

TMDL Objectives

Elevated temperatures in Box Creek may be affecting beneficial uses during spawning season. Stream inventories by DEQ have shown that beneficial uses are not impaired during the summer months. The riparian zone is continuing to improve following the Blackwell Fire of 1994. During salmonid spawning season, the temperature regime may be affected by the drawdown of Box Lake, but the extent of this influence cannot be ascertained without further study. Using aerial photos, pre and post burn vegetative cover were compared. Stream widths pre and post fire appeared to have stayed the same. A shading target of 82% was developed using shade curves for similar Douglas Fir-Grand Fir vegetative community types by averaging results for streams of a similar width and aspect from these TMDLs: the Walla Walla (ODEQ 2004b), Willamette (ODEQ 2004a), Mattole (CRWQCB 2002) and South Fork Clearwater (IDEQ 2002) TMDLs. Since the riparian canopy is not yet at the target cover amount, the following TMDL was established.

Table 5. Box Creek TMDL

Water Body	Existing Shade	Load Capacity (potential shade)	Load Allocation (% shade increase needed)
Box Creek	**62% (2.17 kWh/m^2/day)**	**82% (1.15 kWh/m^2/day)**	**20%**

The Box Creek watershed is managed for timber harvest. Most historic tree harvest activity used ground-based tractor skidding and some of this occurred in stream protection zones. Old skid trails that were in stream protection zones have substantial vegetative recovery and cannot be used in the future under current *Idaho Forest Practices Act* (FPA) rules. New skid trails are outside stream protection zones, resulting in very little delivery of sediment to stream channels. Salvage logging occurred in 1995-96 after the fire.
The Box Creek-Brush Creek Road is closed off permanently and graveled to minimize sediment delivery. Other watershed roads and skid trails were closed or obliterated.

Current and Projected Management Activities

No timber sales are planned in the Box Creek drainage for the next five years.

The USFS will continue to follow the Payette National Forest Plan to implement activities. These activities include timber harvest, road management, grazing, prescribed fire, watershed improvements, and fish habitat improvements. Activity plans are finalized and implemented as funds become available. Required NEPA and ESA analyses will occur before implementation is possible.

Actions to Achieve the Objectives in Box Creek

- Adherence to Forest Practices Act
- Road closures/obliteration
- Surfaced roads

Timeline

Monitoring will occur at least every five years to assess riparian canopy increases. Box Creek is expected to reach its potential natural vegetation without supplemental plantings. However, if agency monitoring shows a decrease in shading, an investigation of causal factors will be made and corrective action taken.

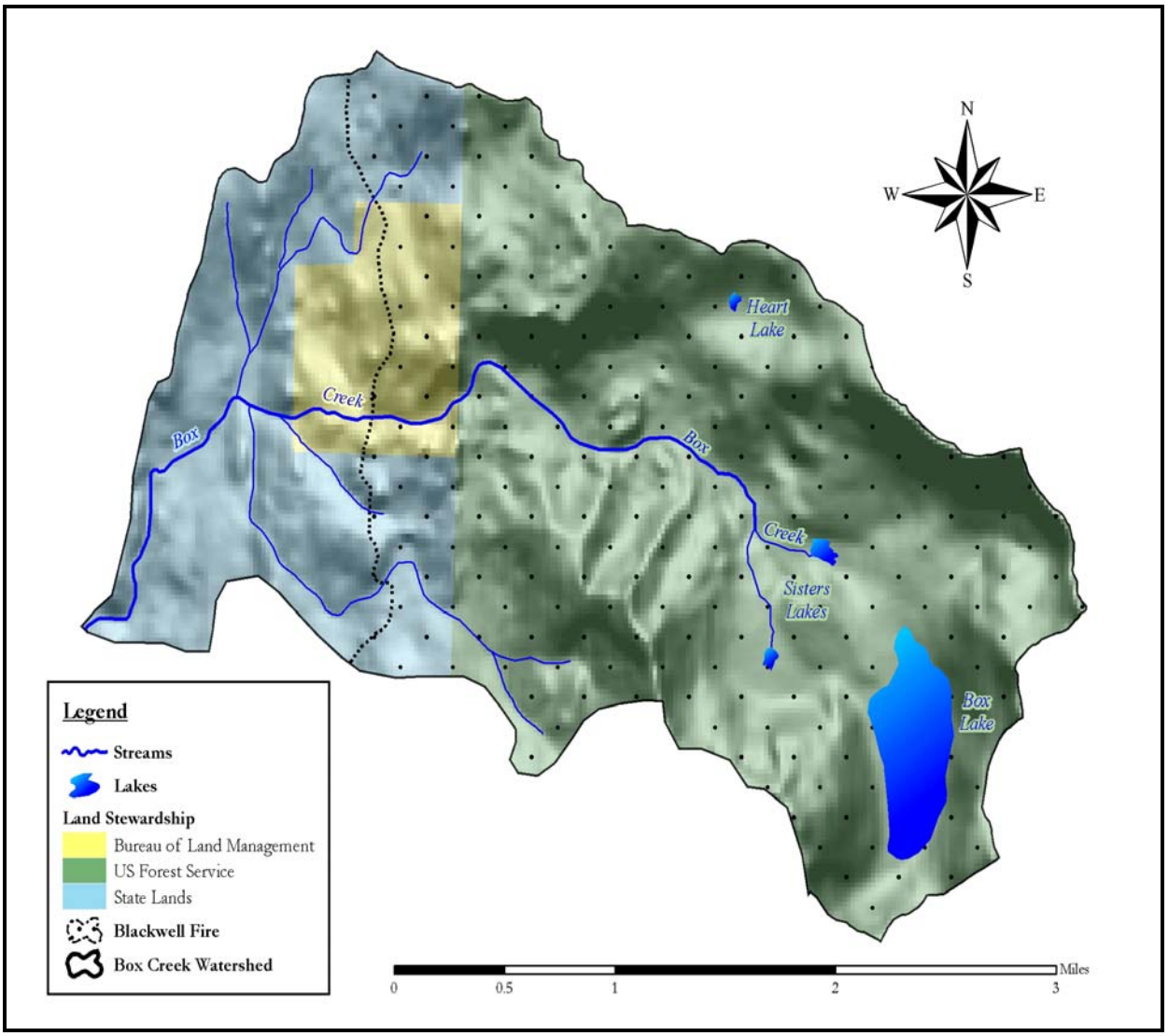

Figure 4. Box Creek Watershed.

VI. Monitoring Plan, Feedback Loop and Implementation Tracking

Two processes are currently in place to evaluate forestry BMP implementation and effectiveness. These are: 1. annual audits of the Forest Practices Act by IDL to determine if BMPs are being implemented on federal, state and private lands and 2. BMP effectiveness evaluations completed by DEQ every 5 years in association with the scheduled TMDL update.

Forest practices in the watershed may be inspected yearly for compliance with the FPA. If any unsatisfactory conditions are identified, they will be corrected using standard IDL enforcement procedures. The IDL district office in McCall will be the office of record for all FPA inspection reports in this drainage.

In addition to the regular FPA inspection program conducted by IDL, the Forest Practices Water Quality Management Plan calls for a statewide audit of the application and effectiveness of Idaho Forest Practices Rules. This interagency independent audit is conducted every four years. The 1996 Forest Practice audit found that FPA rules were implemented 97% of the time. The audit also determined that when the FPA rules were properly implemented and maintained, the rules were effective 99% of the time. The audit process is one key component of the feedback loop mechanism used by the Forest Practices Act Advisory Committee and the Idaho State Board of Land Commissioners to evaluate the effectiveness of Idaho forestry BMPs.

The USFS also has performed monitoring of timber sale activities including road construction. This includes project level monitoring for BMP implementation and effectiveness of the FPA. Monitoring has also been conducted on grazing allotments.

Forest landowners will also monitor implementation and effectiveness of activities conducted to reduce sediment/phosphorus loading. Potential indicators may be quantitative or qualitative depending upon the BMP implemented. 319 funded activities as well as many other grant programs require effectiveness monitoring

The Idaho Cumulative Watershed Effects process will be reinitiated in 2012 to help monitor progress in meeting beneficial use attainment goals.

Implementation Tracking

In 2004 the IDL created a geological information system-based (GIS) tracking system with associated database to track management problems identified in CWE reports on a statewide basis. This computer system resides on a server at the IDL private forestry bureau in Coeur d'Alene and is available for generating reports at any supervisory area office. Data collected includes the location and type of problem, digital image, date observed and repairs initiated. Local supervisory area personnel complete updates to this system. Information on this data base is not restricted to just endowment properties, although updates to non-state problems requires voluntary reporting and coordination through the local IDL forest practices act advisor.

Each IDL supervisory area also maintains a GIS-based road inventory layer with specific information on engineering standards, drainage structures and closures on those roads maintained by the IDL and/or cooperators. Voluntary Idaho Forest Practices terms adopted by the local IDL unit include completing a detailed inventory of drainage structures, stream crossing conditions and

management problems prior to fall of 2009. Large industrial private road cooperators plan to combine inventory information with IDL and produce one data set.

The vast majority of projects undertaken by large industrial landowners and the IDL are completed by independent contractors and sale purchasers. All parties routinely inspect operations for compliance with contract terms before accepting results for payment or releasing performance bonds. Internal audits verify compliance.

In addition, the Department of Environmental Quality will track annually the progress that Designated Management Agencies have made in improving water quality. The DEQ, USFS and IDL agree to meet each year to document what projects occurred over the previous field season. Private landowner participation will also be solicited. Projects will be compared with the Tasks and Milestones that are outlined in respective portions of the implementation plan.

VII. Forestry Implementation Plan Funding

Under the FPA, logging operators are responsible for meeting the rules. Therefore, the cost of complying with the FPA is born solely by the operator or forest landowner depending on any contractual agreements that may be in existence. At present, private forest landowners are assessed $.05 per acre for all forestlands and $.08 per thousand board feet harvested to help fund the IDL administration of the FPA. Since this funding is not totally adequate to support the FPA administrative program, funds for the initiation of additional protection measures beyond the requirements of the FPA are not available. IDL also has authority to expend funds out of the FPA rehabilitation account but is limited to only those costs associated with the repair of unsatisfactory practices identified in the Notice of Violation process. The Natural Resource Conservation Service's Environmental Quality Incentives Program (EQIP) and other grants are other possible sources of limited funding for additional volunteer site-specific forest BMPs.

IDL Funds for implementation come from revenue tied to the harvest of forest products.
Major improvements (i.e. bridges, graveling, surfacing etc.) are appraised directly against the value of the timber harvested

Maintenance projects are prioritized on an annual basis and accomplished as funds are available. Since the Department has maintenance responsibilities outside the North Fork Payette River watershed in any given year, all or none of the available funds may be exhausted elsewhere.

Additional Funding of Best Management Practices

Chapter Four of the Idaho Nonpoint Source Management Plan contains a fairly substantial listing of potentially available funding sources and cooperating agencies for use in the implementation of best management practices and includes several of the programs which could possibly be used as potential implementation funding sources
Appendix A contains a list of potential funding sources.

VIII. Reasonable Assurance of Implementation

The Clean Water Act provides for certain control through enforcement of point sources, but leaves non-point source control to states through largely incentive based mechanisms.

Idaho has an EPA approved Nonpoint Source Management Plan which includes certification by the attorney general that adequate authorities exist to implement the plan. Idaho's water quality rules (IDAPA 16.01.02.350) state that current best management practices will be evaluated and modified by the appropriate designated agencies if found to be inadequate to protect water quality. In addition, if necessary, injunctive or other judicial relief may be sought against the operator of a nonpoint source activity in accordance with the DEQ Director's authorities provided by Idaho Code 39-108.

The DEQ believes these provide all the assurance that is reasonable and necessary.
Through the development of this Plan, the DEQ and the other cooperating agencies believe that the Plan includes the necessary provisions to meet the reasonable assurance needs and provided that funding is available these actions can be implemented. In particular, the Plan has described:

- The actions that will be implemented to achieve the TMDL;
- The responsible party who must undertake the management measures or control actions;
- The variety of actions that may be taken to meet the load allocation;
- When those actions will be implemented;
- The schedule for completion of milestones;
- The monitoring necessary to ensure the goals and objectives of the Plan are met.

Appendix A: FUNDING OPPORTUNITIES

§104(b) (3)...Tribal and State Wetland Protection Grant, EPA
This program provides financial assistance to state, tribal, and local government agencies to develop new wetland protection programs or refine and improve existing programs. All projects must clearly demonstrate a direct link to improving an applicant's ability to protect, restore or manage its wetland resources.

§319 (h)...Nonpoint Source Grants, EPA/DEQ
This program provides financial assistance for the implementation of best management practices to abate nonpoint source pollution. The DEQ manages the NPS program. All projects must demonstrate the applicant's ability to abate NPS pollution through the implementation of BMPs.

Aquatic Ecosystem Restoration, CoE
Section 206 of the Water Resources Development Act of 1996, provides financial assistance for aquatic and associated riparian and wetland ecosystem restoration and protection projects that will improve the quality of the environment. There is no requirement for an aquatic ecosystem project to be linked to a Corp of Engineers project. The program does require that a non-federal interest provide 35% of construction costs, including all lands, easements, right-of-ways and necessary relocations. The program also requires that 100% of the operation, maintenance, replacement, and rehabilitation be borne by the non-federal interest. The program limits the amount of federal assistance to $5 million for any single project.

Conservation Operations Program (CO-01), NRCS
The CO-01 program provides technical assistance to individuals and groups of landowners for the purpose of establishing a link between water quality and the implementation of conservation practices. The NRCS technical assistance provides farmers and ranchers wit information and detailed plans necessary to conserve their natural resources and improve water quality.

Conservation Reserve Program (CRP), FSA
The CRP program provides a financial incentive to landowners for the protection of highly erodable and environmentally sensitive lands with grass, trees, and other long-term cover. This program is designed to remove those lands from agricultural tillage and return them to a more stable cover.

Conservation Technical Assistance (CTA), NRCS
Technical assistance for the application of BMPs is provided to cooperators of soil conservation districts by the NRCS. Preparation and application of conservation plans is the main form of technical assistance. Assistance can include the interpretation of soil, plant, water, and other physical conditions needed to determine the proper BMPs. The CTA program also provides financial assistance in implementing BMPs described in the conservation plan.

Environmental Quality Incentives Program (EQIP), NRCS
EQIP offers technical assistance, and cost share monies to landowners for the establishment of a five to ten year conservation agreement activities such as manure management, pest management, and erosion control. This program gives special consideration to contracts in those areas where agricultural improvements will help meet water quality objectives.

Farm Services Agency Direct Loan Program, FSA
This program provides loans to farmers and ranchers who are unable to obtain financing from commercial credit sources. Loans from this program can be used to purchase or improve pollution abatement structures.

Fish America Foundation (www.fishamerica.org)
The Fish America Foundation provides matching funds for restoration projects that involve the improvement of sport fisheries.

Hydrologic Unit Areas (HUAs), *NRCS*
The NRCS is responsible for the HUA water quality projects. The purpose of these projects is to accelerate technical and cost-share assistance to farmers and ranchers in addressing agricultural nonpoint source pollution.

Idaho Water Resources Board Financial Programs, IDWR
The Idaho Water Resources Board Financial Program assists local governments, water and homeowner associations, non-profit water companies, and canal and irrigation companies with funding for water system infrastructure projects. The various types of projects that can be funded include: public drinking water systems, irrigation systems, drainage or flood control, ground water recharge, and water project engineering, planning and design. Funds are made available through loans, grants, bonds, and a revolving development account.

National Conservation Buffer Initiative, NRCS
The National Conservation Buffer Initiative program provides cost-share funds in an effort to use grasses and trees as conservation buffers to protect and enhance riparian resources on farms.

Planning Assistance, CoE
Section 22 of the Water Resources Development Act of 1974 authorizes the Corp of Engineers to assist local governments and agencies, including Indian Tribes, in preparing comprehensive plans for the development, utilization and conservation of water and related resources. Total costs for projects cannot exceed $1 million in a single year and are cost shared at a 50% federal and 50% non-federal rate.

Small Watersheds (PL-566), *NRCS*
The Small Watersheds program authorizes the NRCS to cooperate in planning and implementing efforts to improve soil and water conservation. The program provides for technical and financial assistance for water quality improvement projects, upstream flood control projects, and water conservation projects.

Partners for Wildlife (Partners), USFWS
The Partners for Wildlife program is implemented by the U.S. Fish and Wildlife Service and designed to restore and enhance fish and wildlife habitat on private lands through public/private partnerships. Emphasis is on restoration of riparian areas, wetlands, and native plant communities.

Pheasants Forever
Pheasants Forever can provide up to 100 percent cost-share for pheasant and other upland game projects that establish, maintain, or enhance wildlife habitat.

Resource Conservation and Development (RC&D), NRCS
The RC&D program assists communities with economic opportunities through the wise use and development of natural resources by providing technical and financial assistance. Program assistance is available to address problems including water management for conservation, utilization and quality, and water quality through the control of nonpoint source pollution.

Resource Conservation and Rangeland Development Program (RCRDP), SCC
The RCRDP program provides grants for the improvement of rangeland and riparian areas, and loans for the development and implementation of conservation improvements.

Trout Unlimited, Embrace A Stream Program
Trout Unlimited provides funding to landowners for small scale stream restoration projects. These projects have significant TU volunteer involvement.

Wetlands Reserve Program (WRP), NRCS
WRP was established to help landowners work toward the goal of "no net loss" of wetlands. This program provides landowners the opportunity to establish 30-year or permanent conservation easements, and cost-share agreements for landowners willing to provide wetlands restoration.

Wildlife Habitat Incentive Program (WHIP), NRCS
WHIP was established to help landowners improve habitat on private lands by providing cost-share monies for upland wildlife, wetland wildlife, endangered species, fisheries, and other wildlife. Additionally, cost share agreements developed under WHIP require a minimum 5 year contract.

Appendix B. IMPLEMENTATION PRACTICE EFFECTIVENESS

Implementation Practice	Practice listed in literature	% Sediment Reduction	Reference	Tons* Reduction
Culvert replacement				(tons* of fill)
Gate(s) installed		75 (x miles of road CCB)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Barriers installed		75 (x miles of road CCB)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Earthen berm		75 (x miles of road CCB)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Guard rail		75 (x miles of road CCB)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Jersey barrier		75 (x miles of road CCB)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Bridge installed				(tons* of fill)
LWD placement	LOD placement	87	Bilby (1981) in NCASI (2000)	(2 t/y/m)
Road surfaced (rocked)	Gravel road	80	Swift (1984a) Burroughs (1989) in Dube (2004)	(5.5 t/y/m)
Road surfaced (spot rocked) @ stream crossings	Gravel road	80	Swift (1984a) Burroughs (1989) in Dube (2004)	(5.5 t/y/m)
Rocked rolling dip		30	WEPP road	(1 t/y/m)
Road closure (temporary)	Reducing traffic from high to light	75 (x miles of road closed)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Road closure (permanent)	Reducing traffic from high to light	75 (x miles of road closed)	Reid (1984) in NCASI (2000)	(2 t/y/m)
Road abandoned		40	WEPP road	(7 t/y/m)
Road obliterated		100	WEPP road	(9 t/y/m)
Full bench end haul road		50	WEPP road	(7 t/y/m)
Riparian planting		50		(0.5 t/y/m)
Riparian fencing		90		(0.5 t/y/m)
Installation of road drainage	Rocked ditch	44	WEPP road	(1 t/y/m)
Culvert inlet	Rip-rap drainage	50	Grace (2002)	(0.5 t/y/m)

protection	structure at outfall		in Dube (2004)	
Seed and mulch stream crossing	Seed, mulch cut, fill slope & road surface	77	Burroughs (1989) Swift (1986) in NCASI (2000)	(0.5 t/y/m)
Fixed landslide				(tons* of landslide)
Fixed perched fill				(tons of fill)
Dust abatement		10	WEPP road	(0.5 t/y/m)
Erosion rocking (ballast rock)		20	WEPP road	(1 t/y/m)
Pond construction	Sediment retention pond (Ag)	85	Robbins (1975) in Gilmore (1995) sed bsn	(2 t/y/pond)
Fill slope removal & stabilization				(tons* of fill)
Fixed CWE culvert (fish passage)		Same as culvert replacement		(tons* of fill)
Filler windrow	Filler windrow	50	Burroughs (1955a) in NCASE (2000)	(2 t/y/m)

CBB = closed behind barrier
Tons* = Fill dimensions (L'x W'x H'/2)*(120pcf) / (2000 lbs/ton)

Storm Water Runoff and Urban/Suburban Pollution Implementation Guide

Introduction

Education, on the ground actions and preventative maintenance will all play a significant role in protecting and improving the North Fork Payette River watershed from pollution caused by urbanizing lands and the associated stormwater runoff accumulated by impervious surfaces.

Understanding that the primary pollutant of concern in the North Fork Payette River watershed is sediment, particular attention should be paid to development in the area. Development in the watershed is primarily residential, with limited commercial development around Cascade. Impacts from development that are of particular concern in the watershed are riparian zone and floodplain disturbances that can cause increased upland surface runoff and transport of contaminants, increased stream bank erosion, unstable stream channels, and impaired aquatic habitat and riparian vegetation. (Stream Corridor Restoration, 1998).

The following sections of this document provide an overview of several measures that can be taken in urban/suburban areas to prevent sediment from affecting the TMDL reaches of the North Fork Payette River, Clear Creek, Round Valley Creek, and Big Creek. Responsible parties include the city of Cascade, Valley County and private landowners in the watershed. These measures are largely prevention and improvement activities, and all actions are voluntary.

Since implementation is an ongoing process, rather than list all the potential projects that could be done in each watershed, DEQ will track actual projects that are currently being implemented on their website starting in April 2007 (www.deq.idaho.gov). Due to the fact that implementation is voluntary, it is likely that there will be more water quality improvement practices taking place than are accounted for on the website.

Urban/Suburban Area Determination

Urban/Suburban areas are acreages that are not assessed with an agricultural exemption by Valley County and are not considered under the Forestry Implementation Plan. At the time this plan was being developed, a specific search of acreages in each watershed that did not meet the agricultural exemption was not possible. However, those acres can be determined by examining the agricultural implementation plan and the forestry implementation plan together. Acreage not covered in either of those plans, should then fall under the urban/suburban plan. It is important to note, as lands in Valley County continue to develop, more acreage will likely fall into the Urban/suburban category.

I. Storm Water Runoff Characteristics

As lands are developed, impervious surfaces are created such as city streets, driveways, and parking lots. Stormwater runoff from these surfaces can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, or wetland. The pollutants collected are many and can include sediment, bacteria, and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus).

In addition to water quality impacts, land development impacts the hydrology and geomorphology of the receiving water, and affects aquatic and riparian habitats. Development results in impervious surfaces that eliminate the natural retention provided by vegetation and soil in an undeveloped area.

Increasing impervious surfaces increases the quantity of water delivered to the water body during storms. This results in increased runoff with more rapid peak discharges. Changes in the volume and timing of runoff can result in stream widening and erosion, decreased channel stability, embeddedness and decreased substrate quality.

Stormwater is unavoidable, but its effects can be reduced by keeping pollutants out of the runoff. The Lake a Syst program was developed for the Cascade Reservoir Area and is applicable to development along creeks and rivers as well as lake. This educational program provides information to homeowners in booklet form regarding appropriate construction, landscaping and household techniques for reducing stormwater runoff from their property. Materials are available from DEQ at the McCall Satellite Office or on the web at www.deq.idaho.gov. Various stormwater BMPs that can be applied in the watershed are summarized at: http://www.epa.gov/npdes/pubs/owm0307.pdf

II. Streambank, Riparian and In-stream Improvement Techniques

Since the TMDLs on Clear Creek, Round Valley Creek, Big Creek and the North Fork of the Payette River are all sediment TMDLs based on bank erosion, the following discussion focuses on improving eroding streambanks.

Nonliving improvement practices use rigid constructions, such as surface armoring, gravity retaining walls and rock buttresses. Care should be used in the selection of a treatment so that the treatment is suitable for the site. For example, woody vegetation may not solve a stability problem caused by geologic parameters. Nonliving, rigid construction applications should only be considered in situations where high soil loss potential exists, such as threats from highways or railroad embankments, homes, or buildings and where soil bioengineering techniques will not be effective.

Although nonliving, structural practices such as large rip-rap and reservoirs can certainly help reduce sediment yield from the treated location itself, they are not emphasized in this Watershed Plan as a streambank erosion treatment due to the potential disruption of the natural processes of the river. This plan emphasizes the use of soil bioengineering as a possible alternative to hard engineering in the treatment of excessive streambank erosion. The applicability of soil bioengineering should be evaluated on an individual basis. A brief description of soil bioengineering is included below.

Erosion Control with Soil Bioengineering/Geotechnical Construction Techniques

Soil bioengineering/geotechnical construction techniques combine mechanical, biological and ecological concepts and treatments to reduce slope failures and erosion (NRCS Engineering Field Handbook, Chapter 18). Two approaches to soil bioengineering are woody vegetative systems and woody vegetative systems combined with simple structures.

Soil bioengineering/geotechnical construction offers a promising alternative to traditional riparian engineering techniques. Most traditional engineering practices used to control erosion along streams require good access to the site, and a great deal of earth moving on site to install the practices. In contrast, soil bioengineering can often be done by hand, with minimal disturbance to the site. Some common soil bioengineering techniques are:

- **Fascines** bundles of small diameter live brush tied together,
- **Brush Mattresses** many long branches criss-crossed and fastened to the ground with dead stakes
- **Live Stakes** insertion of medium diameter live vegetative cuttings into the ground, and
- **Root Wads** part of the trunk and roots of dead, uprooted trees.

The watershed has many areas with poor road access. To reduce erosion damage in the riparian corridor and still maintain high aesthetic values, these labor intensive but simple bioengineering practices seem to offer the best solution.

Where possible soil bioengineering/geotechnical construction should be used to incorporate large woody debris, such as root wads and tree revetment, into streams. It is highly recommended that people with considerable experience in soil bioengineering techniques be consulted prior to planning these systems. Each site should be custom designed with someone knowledgeable in soil bioengineering/geotechnical construction techniques, and the evolution of stream systems.

River Stream Channel Assessment (Golder 2003) has led to the following recommendations:

(1) Phase woody species into the herbaceous cover where possible,;
(2) Use more advanced successional woody species due to their greater root strength;
(3) Perform soil stability equations along streambanks and the associated drainage area to define the "safe zone" (i.e. a 100 ft. wide strip adjacent to each streambank). Within this zone, all human activity that arrests or reverses the successional process should be discouraged. This includes logging and building construction unless these activities are consistent with forest management practices that promote advanced successional stands;
(4) Actively promote acceptable methods of forest management in critical erosion sites. Establish advanced successional woody vegetation including planting of seedlings, selective cutting; and
(5) Establish vegetation on construction sites at the earliest opportunity. Critical area planting could be used to stabilize some slopes and eroding areas. It is preferable to use native plant species since exotic species often compete with native species, leading to their decline.

III. Prevention of Excess Sediment Delivery to Streams

The following sections discuss basic approaches that can be implemented to prevent erosion including education, coordination, projects and practices.

Education: Riparian Zone Management

Financial incentives, educational opportunities, and technical assistance provided to landowners enable them to manage their riparian zones for stream ecosystem improvement. Landowner implementation of riparian zone recommendations is on a voluntary basis. Therefore, a coordinated effort to inform and assist them is needed to implement recommendations. Riparian zones in urban/suburban areas should be established or managed to have a buffer between cultivated fields, pastures, and street and lawn runoff. Working with private landowners to increase awareness of watershed issues, water quality, improvement opportunities and any related permit requirements would help prevent further degradation of habitat. Education on properly managing small acreages would also lead to decreases in surface runoff and streambank erosion. Assistance can be found at through the Idaho Department of Agriculture's Home A Syst Program which is intended to provide

general information and recommendations to rural residents regarding riparian management. http://homeasyst.idahoag.us/Water/quiz10/quiz10_information.pdf

Wetland Projects

Enhancing and creating wetlands can improve water quantity, water quality, and wildlife conditions within a watershed. Water quantity benefits include reduction of peak flows by virtue of the storage properties of the wetland and maintaining base flows by acting as groundwater recharge areas. Water quality benefits include sediment filtering and nutrient uptake by wetland plants. Wildlife benefits include providing habitat for diverse species and a food and water source for land animals. Wetlands can also benefit urban or residential areas. Incorporating wetlands in roadway designs can offset increased peaks associated with surface ditching and wetlands can maintain flows and sediment loadings at pre-development levels for residential or commercial areas.

The restoration of altered wetlands is more effective than the creation of wetlands because the hydrology, soils, and seed bank are usually still present on the site. In addition, restored wetlands have a higher functional value than created wetlands. Created wetlands do not support the diversity of plant and wildlife species that are found in natural or restored wetlands.
A voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property can be found through the Natural Resource Conservation Service http://www.nrcs.usda.gov/programs/wrp/

Roads

Roadside erosion contributes to sedimentation in the basin. Although much of the erosion in the watershed comes from streambanks, roadside erosion sites are also a sediment source.

Regular road maintenance would help to prevent sediment delivery due to roads. There are some privately maintained roads that service residences. Some of these receive very minimal maintenance. A road condition assessment throughout the watershed would help identify where roads are currently impacting the watershed. Corrective actions could then be identified. Vehicle crossings over stream channels on private land should be assessed and upgraded where appropriate, with the cooperation of private landowners. The Idaho Department of Water Resources (IDWR) and the COE should be consulted on new crossings and improvements.

Coordination between public road maintenance employees, landowners, and land management agencies regarding road construction and repair could help reduce effects such as increased peak flows, sediment delivery to streams, fish barriers, and channel alterations. Avoiding road construction near streams and in unstable areas would help reduce the fine sediment problem in the watershed.

Best Management Practices (BMPs): Construction Site Discharge Control

Construction site BMPs can be categorized as erosion control practices, which prevent or minimize erosion; sediment control practices, which attempt to capture soil released through erosion; and source controls.

Potential exists for local government to mitigate pollution. County and city governments have an opportunity to develop ordinances requiring more detailed construction standards for subdivisions, and to control stormwater runoff. Application processes already in place can be amended to require specific details of construction work before planning and zoning approval.

Federal storm water regulations require National Pollutant Discharge Elimination System (NPDES) Permits, issued by EPA, for construction sites greater than one acre. A Storm Water Pollution Prevention Plan must be prepared and implemented to control storm water discharges from the construction site. Further information on the permit requirements is available on the EPA website. http://cfpub.epa.gov/npdes/stormwater/cgp.cfm

Erosion control represents various practices designed to keep water from coming in contact with bare soil or controlling its velocity if it does. Preventive erosion controls include limiting disturbance to land and vegetation; scheduling; and phasing construction. Phasing construction is a practice in which clearing operations are performed in stages to take advantage of cover that exists on the site before construction. Erosion control practices also include drains for surface and subsurface water, dikes and swales placed across slopes to interrupt runoff, and roughness created on the surface to reduce velocity. Trapping sediments once they are released requires slowing the transport velocity sufficiently for soil particles to settle. The two basic types of sediment trapping techniques in use are sediment barriers and settling ponds. Sediment barriers include the commonly used filter fabric and straw bale fences as well as brush fences and barriers constructed of gravel. Both types trap sediments in the same way, by ponding water.

Temporary cover practices are used on portions of construction sites that remain unworked for months, during which time very large amounts of erosion can occur unless these areas are stabilized. Stabilization can be achieved with temporary seeding or various kinds of slope coverings, or both. Slope coverings include both mulches and commercial mats and blankets. Fugitive dust can be controlled through these practices or through the application of water or tackifiers.

Other stabilization practices include a stabilized construction entrance and permanent stabilization through vegetation establishment as soon as possible after all construction is completed in each segment of the site. The construction entrance at the most important access route is important to stabilize, since it is the last point at which tracking sediment off site can be stopped. If equipment travels extensively on unstabilized roads on the site, a tire and vehicle undercarriage wash near the entrance will be needed. Wash water will require treatment in a sediment pond or trap.

Structural and non-structural BMPs are effective for reducing sediment pollution to surface water Structural controls include infiltration devices, detention and retention basins, vegetated swales, water quality inlets, screens and filters, channel stabilization, riparian habitat enhancement efforts, and wetland restoration projects.

Non-structural controls include planning, procedures, and site-based local controls. Runoff problems can be addressed efficiently with sound planning procedures. Master plans, comprehensive plans, and zoning ordinances can promote improved water quality by guiding the growth of a community away from sensitive areas and by restricting certain types of growth to areas that can support it without compromising water quality. Site-based local controls can include buffer strip and riparian

zone preservation, minimization of disturbance and imperviousness, and maximization of open space.

Stormwater BMPs can be found in the Stormwater Catalog of BMPs for Cities and Counties on DEQ's website: http://www.deq.idaho.gov/water/data_reports/storm_water/catalog/index.cfm This manual is largely applicable to Valley County. For additional information on where there may need to be modifications to account for climate, soils, water table conditions that are unique to the Valley County area, please contact the Valley County Engineer at (208) 382-7100.

Resources

Managing Small Acreages: University of Idaho Cooperative Extension: http://www.ag.uidaho.edu/sustag/living_on_the_land.htm

Pasture and Riparian Management: http://homeasyst.idahoag.us/Water/quiz10/quiz10_information.pdf

Protecting the Watershed: Lake A Syst, Idaho Soil Conservation Commission and DEQ

Stormwater BMPs: Valley County Manual of Stormwater BMPs

Stormwater: Catalog of Stormwater BMPs for Idaho Cities and Counties (DEQ): http://www.deq.idaho.gov/water/data_reports/storm_water/catalog/index.cfm

Wetlands: http://www.nrcs.usda.gov/programs/wrp/

EPA Construction General Permit: http://cfpub.epa.gov/npdes/stormwater/cgp.cfm

Public Comments

The matrix below documents the comments received during the 30-day comment period for the North Fork Payette River Watershed Total Maximum Daily Load Implementation Plan. The comment period extended from July 10, 2007 through August 9, 2007. In some instances the comment is summarized. In others, the exact comment is given.

Comments From: Idaho Department of Environmental Quality	Response
Regarding the Agricultural portion of the implementation plan. P. 15. Streambank Stability Analysis. What method did you use to assess streambank stability? How long were each of the three reaches measured? Could data be included in an appendix as well as a reference for your stability analysis method?	The method used to assess stream bank stability throughout this reach was Stream Visual Assessment Protocol (SVAP). This protocol was developed by the Natural Resources Conservation Service (NRCS) Aquatic Assessment Workgroup. Excessive eroded banks, defined as "actively eroding" banks were measured using bankfull width. The length of the assessment reach is 12 times the bankfull channel width. Pictures of the reach and calculations are available at the Valley Soil and Water Conservation District.
Comments From: Mike Settell Idaho Resident	Response
1) Incorporation of "Fish Friendly culverts in all road projects and culverts. These should be a part of county ordinances 2) Inclusion of beaver re-introduction in cooperation with Idaho Fish and Game and County and State Road Agencies. Efforts should be made to protect beaver habitat. 3) Exclusion of any development within 200 feet of perennial, intermittent and dry stream channels for flood damage avoidance. 4) More stringent requirements on siting of all activities involving fuel and oil storage, including state and county shops. Separate oil and grease traps with provisions for mandatory inspections.	1) We will pass this suggestion along to Valley County. 2) The Boise National Forrest is currently evaluating opportunities for beaver re-introduction. 3) This issue can be addressed at the county level. We will pass this suggestion along to Valley County. 4) See WQS section 800 page 163 for Hazardous and Deleterious Material Storage. Provisions for oil and grease traps are required by MSS4 municipal stormwater permits in larger cities (>10,000). Smaller cities and counties must pass regulations or ordinances on their own. We will pass this suggestion along to Valley County.

August 2007 The Final North Fork Payette River Watershed Total Maximum Daily Load Implementation Plan was submitted to DEQ.