Appendix 4, South Fork Walla Walla Landowner Access Environmental Assessment

SFWW Water Quality Restoration Plan
for temperature impaired streams
Vale District
Bureau of Land Management
Baker Resource Area

Introduction

This water quality restoration plan (WQRP) has been prepared in partial fulfillment of the Bureau of Land Management's (BLM) commitment to work with the Oregon Department of Environmental Quality (ODEQ) to meet requirements of Section 303(d) of the 1972 Federal Clean Water Act (CWA), as amended. The BLM protocol for addressing 303(d) listed waters provides a framework for this WQRP (USFS/BLM, 1999).

This WQRP addresses lands administered by the BLM in the Walla Walla Subbasin and specifically references land along the South Fork Walla Walla River. In Oregon, the U. S. Environmental Protection Agency (EPA) has delegated authority for implementing the Clean Water Act to the ODEQ. ODEQ develops water quality standards to protect beneficial uses established for a particular waterbody. Waters that do not attain State standards are considered "water quality limited" and are included on Oregon's 303(d) List of Water Quality Limited Waterbodies (e.g., 303(d) list). The most current 303(d) list for Oregon was approved by EPA in 2002. The South Fork Walla Walla River is included on the 2002 list for temperature impairment.

The DEQ is responsible for developing Total Maximum Daily Loads (TMDLs) and Water Quality Management Plans (WQMP) for water quality impaired waters. ODEQ developed and EPA approved a temperature TMDL for the Oregon portion of the Walla Walla Subbasin in September 2005. The TMDL and WQMP recognize BLM as a designated management agency (DMA) for BLM administered lands upstream of Harris County Park adjacent to the South Fork Walla Walla River. ODEQ anticipates that the BLM will develop and implement a WQRP to ensure that this portion of the river does not exceed natural thermal potential (DEQ, 2005). The South Fork Walla Walla River WQRP will be provided to ODEQ as an amendment the Walla Walla Subbasin WQMP and TMDL.

Condition Assessment and Problem Description

A majority of BLM administered lands along the South Fork Walla Walla River (SFWW) is designated as an Area of Critical Environmental Concern (ACEC). The area was designated in 1992 to provide management direction to protect and enhance riparian ecosystem, fisheries habitat, and scenic values while providing some recreational use (BLM, 1992).

As mentioned in the South Fork Walla Walla Landowner Access Environmental Assessment (EA), since the SFWW was designated as an ACEC and bridges were removed along the main channel, there has been improvement to riparian vegetation and reduced impact on the riparian area from recreational use.

The TMDL indicates excess heating (implying thermal loading) where the SFWW flows through BLM administered lands (DEQ, 2005). The TMDL also mentions that "the assessment of channel width and vegetative structure is of relatively low resolution", and that "it is not clear whether heating is attributable to legacy forest practices, recreational usage or natural causes" (DEQ, 2005).

The Water Quality Standards: Beneficial Uses, Criteria, and Policies for Oregon (OAR, Chapter 340, Division 041) states that water quality in the Walla Walla Basin must be managed to protect the designated beneficial uses (Table 330A), including designated fish use (Figures 310A and 310B).

Table 330A illustrates the beneficial uses for the Walla Walla Basin and Figures 330A and 330B illustrates the designated fish uses, which in the SFWW are related to bull trout spawning and juvenile rearing. The maximum seven day average temperature to sustain these uses is 12^0C, or 53.6^0F. Table 330A and Figures 310A and 310B (OAR 340-041-0330) were reproduced from the ODEQ website for inclusion in this WQRP.

Table 330A (from DEQ website)

Designated Beneficial Uses Walla Walla Basin (340-41-0330)

Beneficial Uses	**Walla Walla River Main Stem from Confluence of North & South Forks to State Line**	**All Other Basin Streams**
Public Domestic Water Supply[1]	X	X
Private Domestic Water Supply[1]	X	X
Industrial Water Supply	X	
Irrigation	X	X
Livestock Watering	X	X
Fish & Aquatic Life[2]	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power		X
Commercial Navigation & Transportation		
[1] With adequate pretreatment (filtration & disinfection) and natural quality to meet drinking water standards.		
[2] See also Figures 310A and 310B for fish use designations for this basin.		

Table produced November, 20003

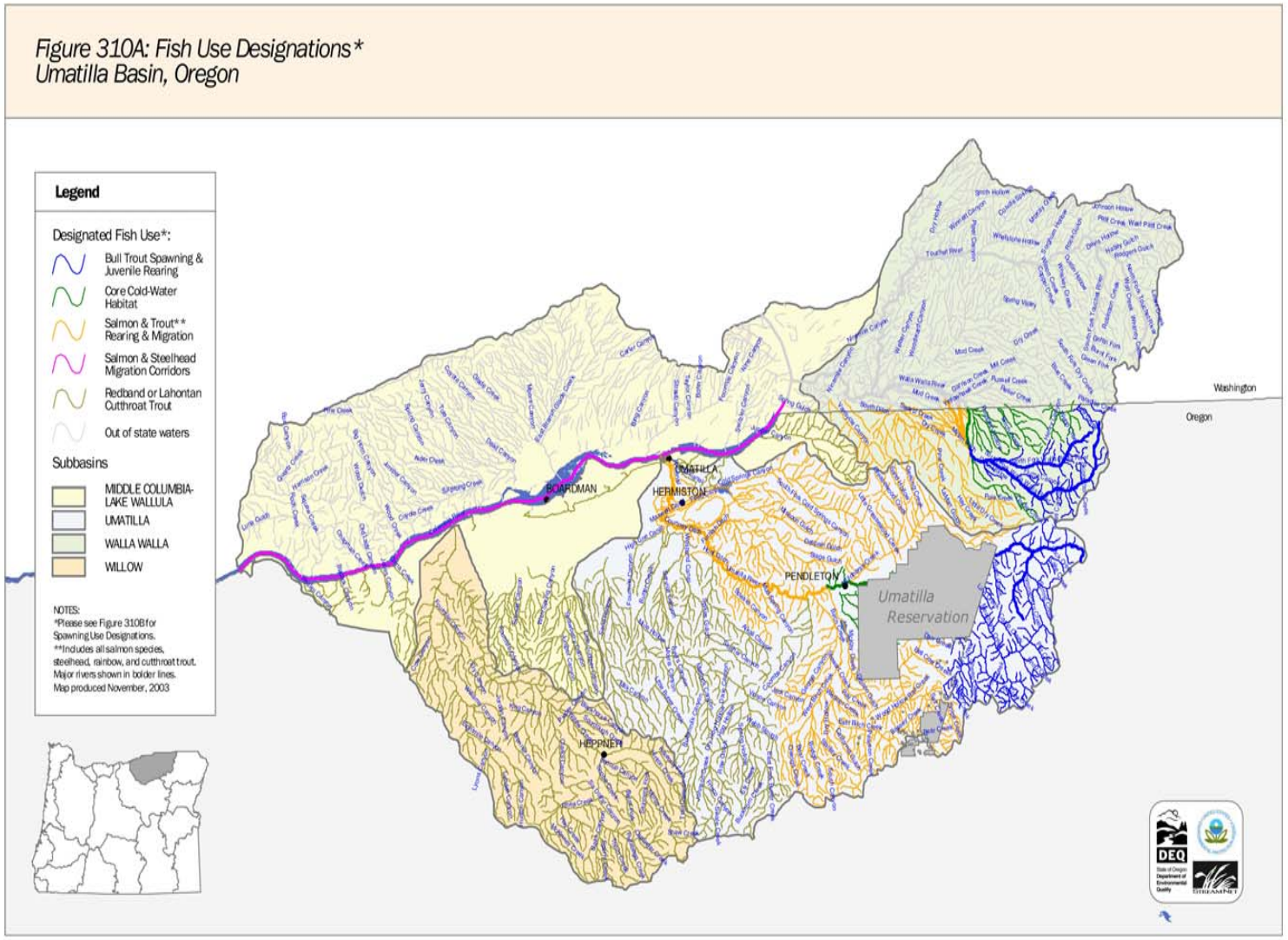
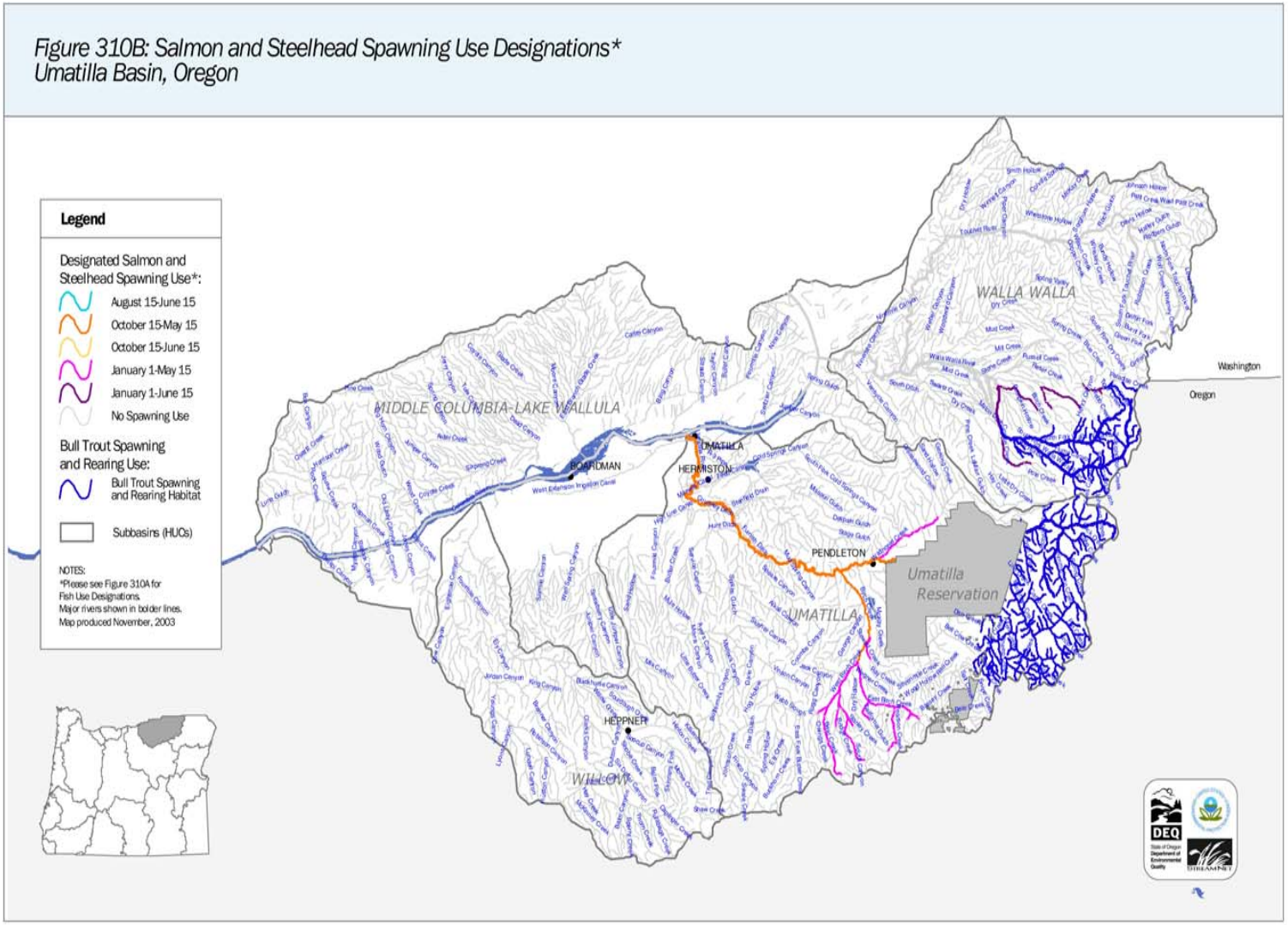


Figure 310A reproduced from DEQ website

Figure 310B reproduced from DEQ website



This WQRP focuses on improvements to BLM administered lands to benefit stream temperature.

Exceedance of daily maximums within the SFWW is consequent of non-point source pollution. Stream temperature is influenced by many variables including riparian vegetation, channel geometry, and/or flow. Thermal loading from solar and longwave radiation, evaporative and convective heat transfer, conduction, and advection also influence stream temperature. Of these, solar radiation has the greatest influence on daily stream temperature (Brown 1983). In fact, for a stream of given surface area and stream flow, an increase in the amount of heat entering the stream from solar radiation will produce a proportional increase in temperature. For purposes of this WQRP, riparian vegetation and channel morphology are considered the primary factors for influencing non-point source pollution.

In addition to the physical effect that removing riparian vegetation has on stream bank stability and channel integrity, removal of riparian vegetation can also lead to increased stream temperatures (Beschta, 1997; Brown, 1983; Gregory, et al, 1991; Howell, 2001). Loss of vegetation increases solar insolation, elevating water temperatures in summer or reducing the tempering affect of vegetation on water temperature during the winter. Loss or removal of riparian vegetation also can lead to increased width/depth ratios and elevated stream temperatures that rise as a function of channel widening.

Riparian vegetation contributes to stream bank stability, aids in infiltration of flood flows and groundwater recharge, and reduces direct solar input to streams, all which reduce thermal loading of streams. Channel bank stability reduces erosion and sedimentation resulting from overland flow/runoff.

Legacy issues including historic livestock grazing, timber harvest, road building, and recreation use coupled with drought, floods, wildland fire, and vegetative succession have and will continue to affect water quality in the SFWW.

The South Fork Walla Walla Landowner Access EA provides an overview of current management that could impact the SFWW. Since the ACEC was designated, vehicle access has been limited and riparian conditions have improved.

Lands upstream of the BLM administered portion of the SFWW are in private ownership or are administered by the U. S. Forest Service (USFS). The WQMP (DEQ, 2005) indicated that although the SFWW exceeds the stream temperature criteria, the river is considered to be at potential in terms of vegetation and channel condition on the USFS administered land.

The TMDL and WQMP (DEQ, 2005) questioned whether the stream channel was wider than “potential” in the BLM administered portion that excess thermal loading as a function of channel width could be occurring. The BLM believes that the lands managed by the Baker Resource Area in the SFWW area are at or near potential. Results of stream surveys (2006) including assessment of Proper Functioning Condition (PFC) (1999) are

presented below as a basis for evaluating ODEQs assumption and further developing restorative actions for the BLM administered portion of the SFWW.

The concept of PFC (1998) refers to a minimum threshold for managing water quality, fish and wildlife habitat, aesthetics and livestock forage. PFC is a qualitative assessment that considers hydrology, vegetation, and soil/landform attributes and rates riparian function as:

- Proper Functioning Condition: *Riparian-wetland areas are properly functioning when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality, filter sediment, capture bedload, and aid in floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity.*
- Functional - At Risk: *Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation*. Stream reaches determined to be Functional At Risk are further assessed for Trend – upward, downward, or not apparent.
- Non-Functioning: *Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc*.

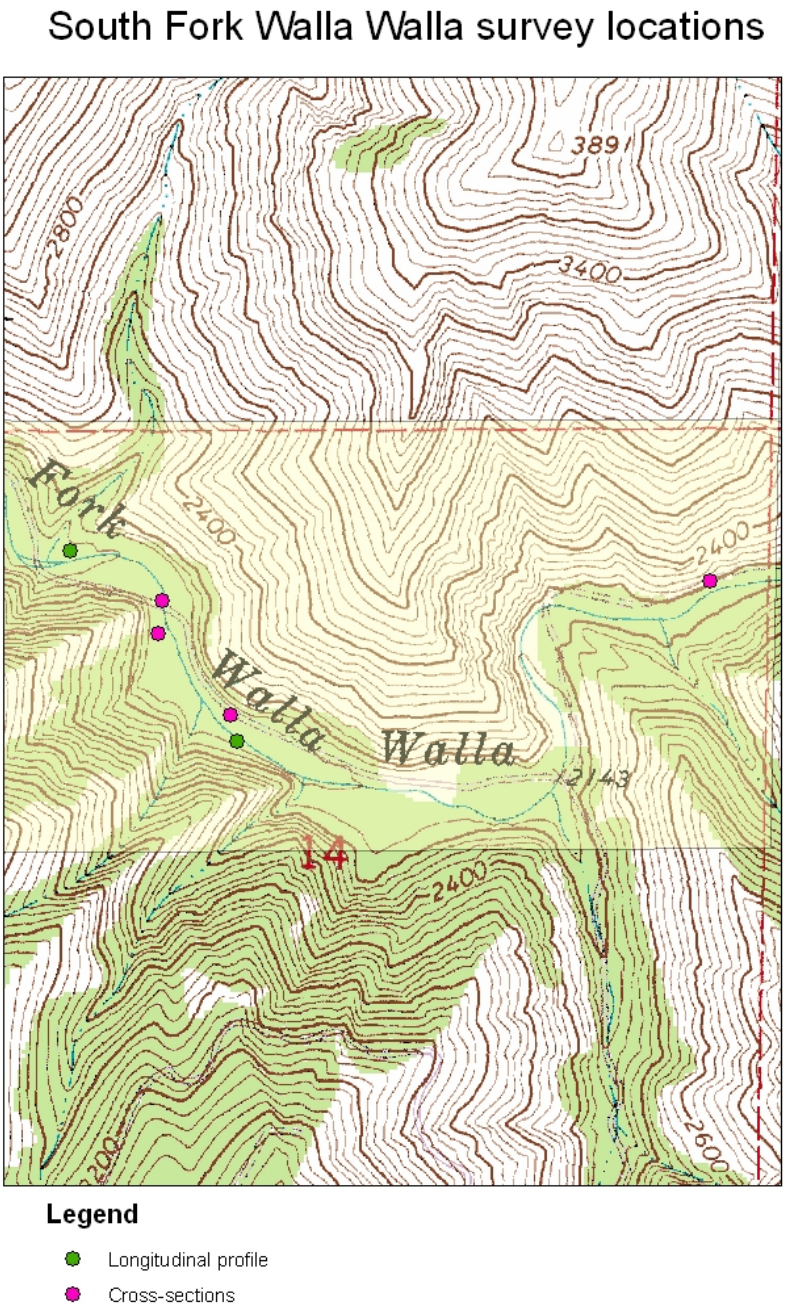
PFC does not necessarily equate to potential natural community, advanced ecological status or desired future condition. Rather, PFC demonstrates the level of resilience required for a system to function and allow for maintenance and recovery of desired values such as water quality and fish habitat. In some areas, streams which have a rating of PFC may be identified for restoration activities because of the relative low cost associated with a high probability of successfully achieving a potential natural community.

The BLM conducted PFC surveys in 1999 along the SFWW. The entire reach that flows through BLM administered lands was rated at PFC. The survey indicated good tree and shrub components which provide shade to the stream. Some sedimentation and channel widening where the road crossings intercepted the stream was also noted during the survey.

In 2006, the BLM conducted stream surveys to collect data on channel morphology. The location of the longitudinal survey and channel cross-sections and the data recorded during the stream survey is presented below. The longitudinal profile was developed based on measurements starting at the first stream crossing and extending upstream for over 1800 feet. Three cross-sections were surveyed within the area of the longitudinal profile and one additional cross-section was surveyed upstream of Elbow Creek.

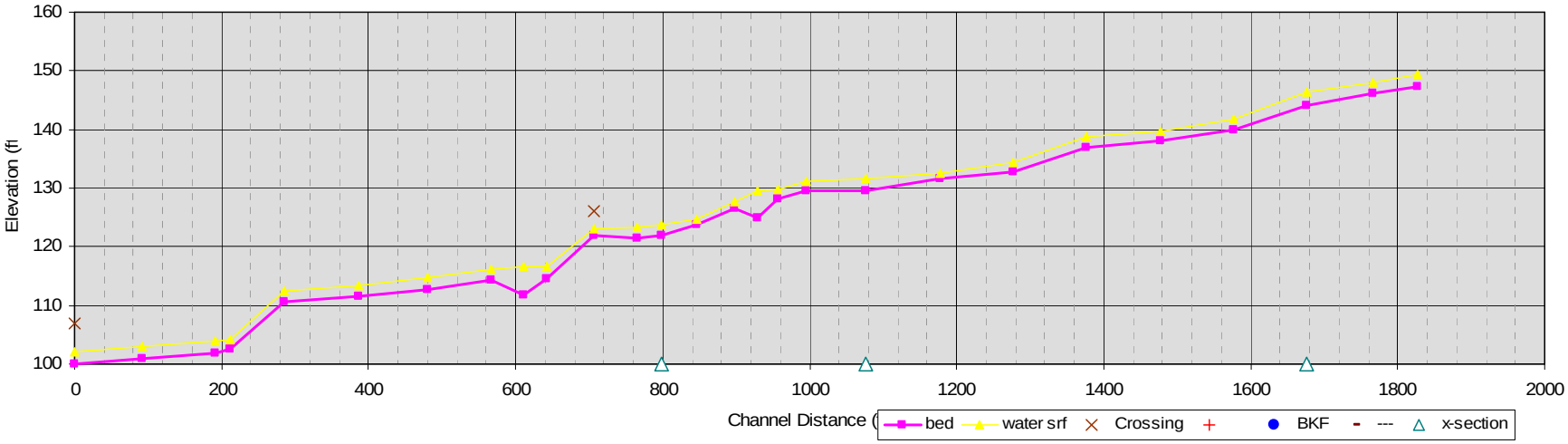
Based on the longitudinal profile the stream gradient was approximately 2.6% and sinuosity was 1.2. Based on these measurements the stream was typed as a "B3" according to the Rosgen stream classification (Rosgen, 1996).

Figure 1. Location of 2006 BLM Longitudinal profile and Cross-section surveys.

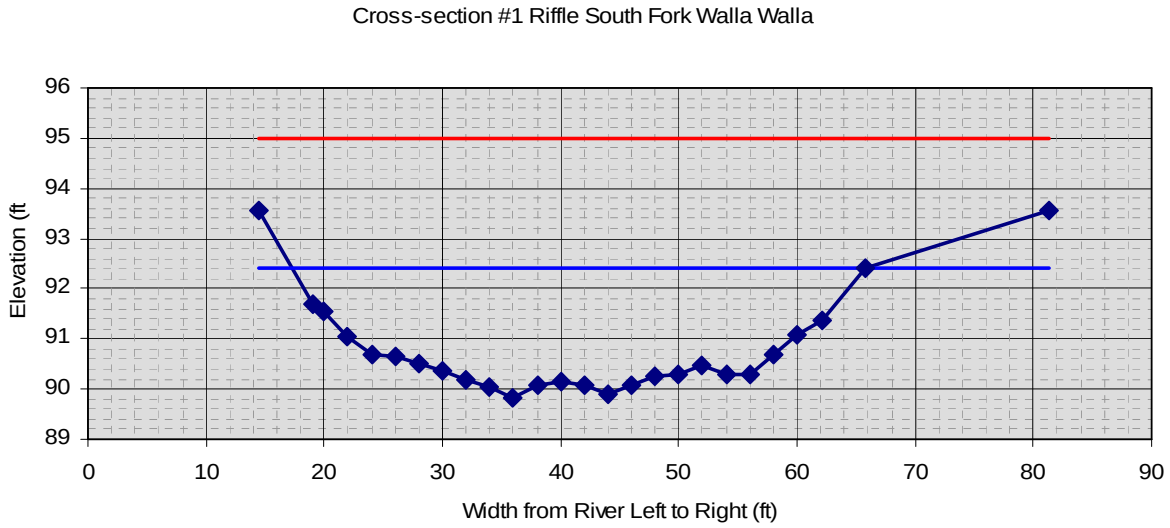


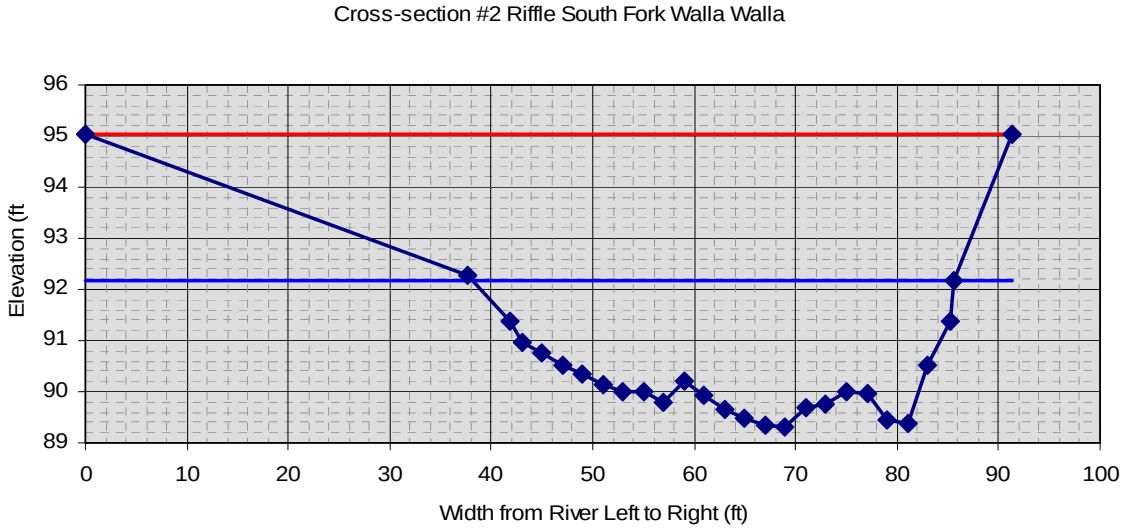
The shaded area in Figure 1 above indicates some of the BLM managed land along the SFWW.

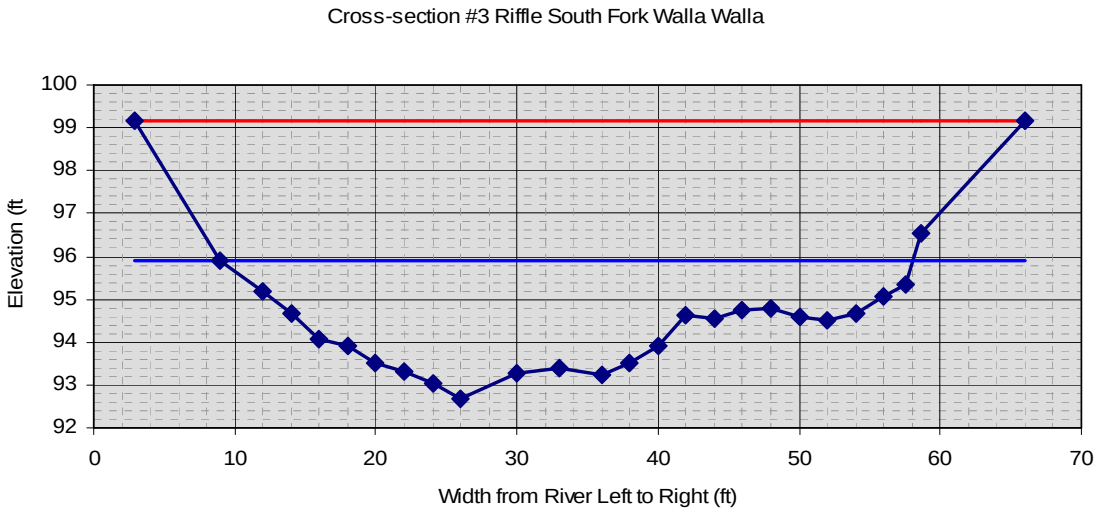
Figure 2. Longitudinal profile of SFWW. Upper line is water surface, lower line is bed surface. The two "X" above the water surface indicate where the first two stream crossings used by vehicles are located and the "^" at the bottom of the graph mark the locations where cross-section measurements were taken.



In the graphs of the four cross-sections below, the upper line represents the flood-prone area and the lower line represents the bankfull stage as determined during field measurements.







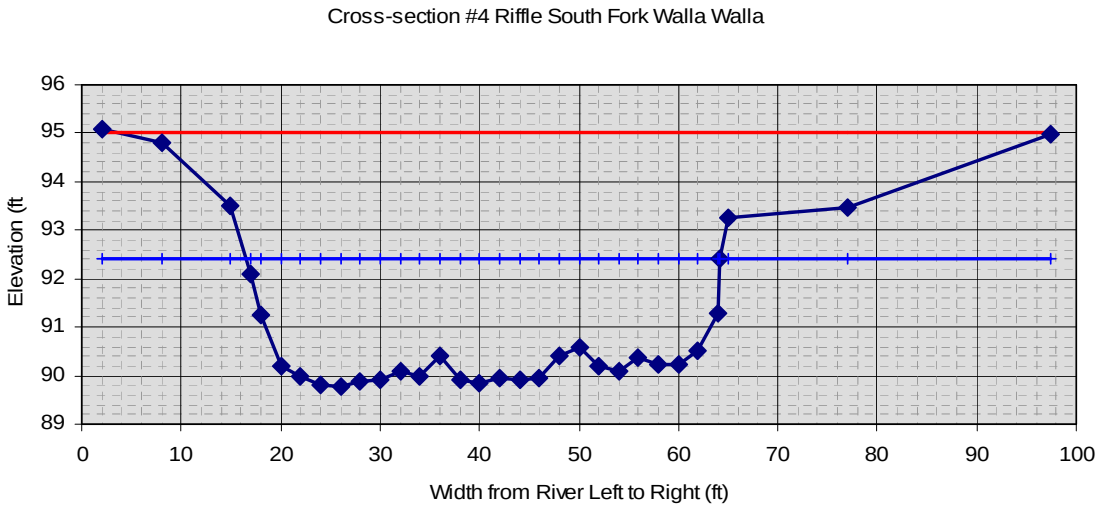
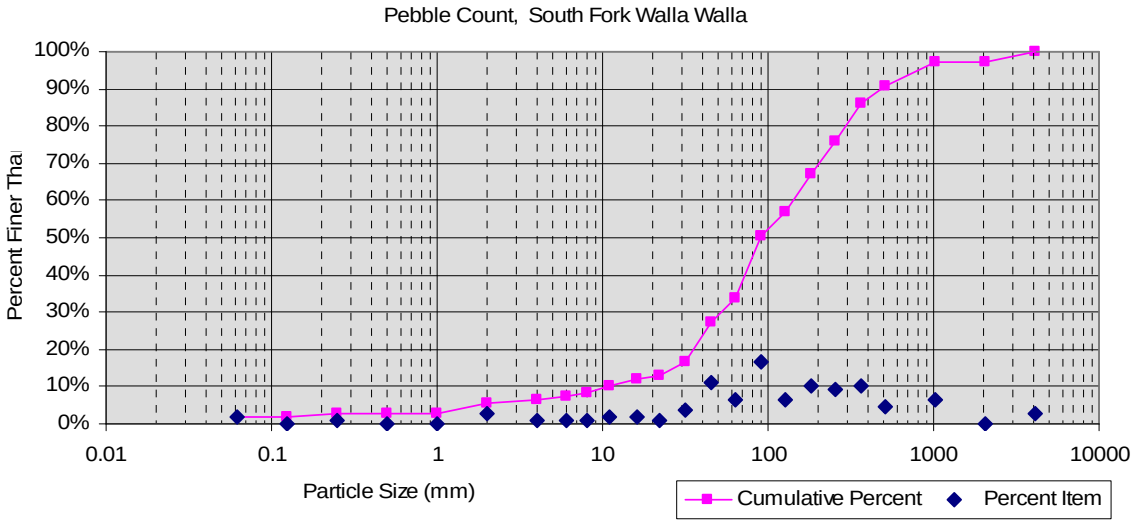


Table 1. South Fork Walla Walla stream morphology

Cross-section	Bankfull width (feet)	Mean bankfull depth (feet)	Max. bankfull depth (feet)	Bankfull w/d ratio	Flood-prone width (feet)	Entrenchment ratio	Cross-sectional area (feet^2)
1	42.7	1.9	2.6	21.9	95.0	2.2	83.2
2	47.5	2.0	2.9	23.5	91.3	1.9	96.0
3	49.0	1.8	3.2	26.7	63.0	1.3	90.0
4	47.6	2.2	2.6	21.8	95.5	2.0	104.1

A pebble count was taken in the area of the longitudinal profile and the results are presented on the graph and table below.



Size percent less than (mm)					Percent by substrate type					
D16	D35	D50	D84	D95	silt/clay	sand	gravel	cobble	boulder	bedrock
30.365	65.41	89.2	335	803	2%	4%	28%	41%	23%	3%

As mentioned above, the results of the stream survey show that the reach surveyed is a B3 stream type (Rosgen, 1996) with a bankfull width less than 50 feet. B type streams are moderately entrenched with moderate gradient and are riffle dominated with infrequent pools (Rosgen, 1996). Rosgen (1996) also describes B type streams as having a very stable plan and profile with stable banks. Specifically, B3 stream types have channel materials consisting primarily of cobble with some boulders and lesser amounts of gravel and sand (Rosgen, 1996). The bed and bank materials of B3 stream types are stable and contribute only small quantities of sediment during runoff events (Rosgen, 1996).

Stream crossings along the surveyed reach provide access to private land upstream of BLM administered. As the survey results indicate the stream channel widened at most of these crossings. However, other than in the immediate vicinity of the crossings, channel widening was not evident. Other than vegetation loss at the crossings and along the road, riparian vegetation is well established along the reach. Vegetation was verified by field observation and low level aerial photography conducted by BLM in 2004. Field observations also indicate good channel bank stability along this reach of the SFWW. Direct impacts to the stream channel, vegetation, and streambanks from the vehicle crossings constitutes approximately one percent of the stream segment managed by the BLM.

Based on this information and further by field observations, the BLM believes the SFWW is a stable B3 stream type with an excellent vegetation component. In addition,

while past management may have impacted riparian habitat, current management is contributing to improved riparian condition. The TMDL (Figure 1-11 pg 1-21, DEQ, 2005) indicates that the target potential channel width should be approximately 15 meters while the existing channel width is over 20 meters along the BLM managed portion of the SFWW. Surveys conducted by the BLM in 2006 illustrate that bankfull channel width is between approximately 43 and 49 feet (13-15 meters). This information would indicate that the South Fork Walla Walla is at or near the potential channel width described in the TMDL. The BLM acknowledges that at most of the stream crossings the channel is wider. However field observations illustrated that the impact is specific to the stream crossings and affects only about one percent of the stream segment managed by the BLM.

Vegetation along the South Fork Walla Walla is also well established along the stream segment administered by the BLM. Historic photographs are the basis for concluding that riparian conditions have improved since the designation of the ACEC. Field observation and aerial photographs also indicate the presence of substantial riparian vegetation along the SFWW. As with channel widening, the stream crossings are devoid of riparian vegetation although the acreage or proportion is negligible compared to the entire reach administered by the BLM. The BLM expects improved conditions since much of the vegetation (e.g., alder, cottonwood, and willow) was established in the last 15 years. Currently there is a wide range of conifer age classes along the river. The vegetation is dominated by young to mature hardwoods with few older hardwoods. Passive restoration (e.g., succession) will contributed to development of a diversity of age classes better able to adapt to disturbance, more mature vegetation which will provide more stream shade, an increased source of large woody debris, and increased root strength providing better streambank stability.

From the data presented above and the professional opinions of BLM specialists, the BLM believes that the lands managed by the Baker Resource Area and the SFWW are at or near potential. If ODEQ has additional criteria with which to evaluate this assumption, the BLM would entertain supplementary monitoring in cooperation with ODEQ.

Goals and Objectives

The goal of this WQRP is restore or maintain conditions necessary for the attainment of State water quality standards for temperature that are necessary to support the designated beneficial uses for the SFWW (Table 330A). Oregon Administrative Rule (OAR) 340-041-0028(12)(g) states that the BLM must meet the requirements of this rule and that water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices (BMPs) and aquatic conservation strategies. As a Designated Management Agency the BLM is deemed compliant with this rule through the implementation of these plans, practices and strategies.

Elimination or reduction of non-point source pollution on public lands is accomplished through development and implementation of BMPs, including active and passive

management, to maintain and/or restore the attributes and processes of a healthy riparian system. These goals and objectives are supported through existing BLM policy and regulation which are identified below.

Baker Resource Management Plan (BLM, 1989). The Baker RMP lists broad objectives and management actions for various resources within the Blue Mountain Geographic Unit. Some of these objectives and management actions related to riparian areas are:

1. Improve riparian habitat on poor to fair condition stream that support anadromous fish.
2. Exclude livestock grazing along selected stream segments, bogs and stream overflows where grazing is not compatible with other resource objectives.
3. Continue riparian inventory and monitor riparian habitat condition, emphasizing anadromous fishery streams.
4. Maintain or improve habitat for fisheries.

The management plan for the SFWW ACEC (South Fork of the Walla Walla River Area Plan Amendment, BLM, 1992) lists more specific objectives, for scenic, fisheries, and riparian values; and protection of these and other important values. Among the protections provided by the ACEC are restricted vehicular access, no overnight camping, no livestock grazing, and reduction of the available timber harvest by 99% (BLM, 1992).

The TMDL and WQMP (DEQ, 2005) indicate that although the SFWW exceeds stream temperature criteria where it flows through lands administered by the Forest Service just upstream of the BLM managed land, the river is considered to be at potential in terms of vegetation and channel conditions. Therefore, it is infeasible to expect that temperature criteria will be met where the segment flows through BLM administered lands. Thus, the WQRP is focused on meeting the effective shade surrogate identified in the TMDL (pg. 1-19, DEQ, 2005) along the BLM administered portion of the SFWW. The WQRP includes provisions to maintain and enhance existing riparian vegetation which provides shade to the stream and to maintain channel integrity so that recreation use and vehicular access do not continue to impact stream quality.

Proposed Management Actions

Proposed management intends to provide access to private lands upstream of BLM administered lands and to continue to provide recreational use of the area.

Currently, riparian vegetation is well established along the stream segment administered by the BLM. Other than at a limited number of sites, the stream channel is stable with little bank erosion. Management should not increase bank erosion or decrease riparian vegetation or stream shade. The ACEC was designated, in part, for riparian habitat values which provide habitat as well as contribute shade to the SFWW. Management of the ACEC will continue to protect this and other values and continue to provide for recreation use and private access. Continued use of the stream crossings by vehicles will be monitored to ensure no increased disturbance to stream channel morphology or

riparian vegetation. Protection of existing vegetation will facilitate improved or increased stream shade over time. Disturbance from vehicle access occurs on approximately one percent of the stream channel administered by the BLM. Any actions to improve access are not likely to increase disturbance. Relocation, realignment, or improved stream crossings would be evaluated to determine the benefits that would result from such an action. If stream crossings are moved or otherwise improved, disturbed areas would be blocked to restrict vehicular access and exposed soils re-vegetated. Other alternatives to improve water quality would consider trail improvement or realignment on the north side of the SFWW to reduce sedimentation and minimize damage to springs that are intercepted by the footprint of the existing trail.

By limiting disturbance to the current area of impact, stream channel integrity should be maintained and bank erosion and sedimentation should be minimized. Stream width should remain at or near potential and vegetation should continue to develop which should allow the SFWW to reach its potential in relation to stream channel morphology and riparian vegetation and habitat which the BLM anticipates will result in attainment of the effective shade surrogate of the TMDL.

Reasonable Assurance of Implementation

The Federal Land Policy and Management Act of 1976 states that the public lands will be managed to protect a variety of resources including water resource values. The Baker BLM is also guided by an RMP (BLM, 1989) which among other things states that riparian and fisheries habitat will be maintained or improved.

In addition, there has been marked improvement in riparian vegetation and habitat since the creation of the ACEC in 1992. This designation will continue to stay in place and should continue to provide for maintenance and improvement of riparian habitat and vegetation.

The completion of this WQRP is a commitment by the BLM to implement the Clean Water Act and to protect and restore the water quality of public waters under BLM's jurisdiction (USFS/BLM, 2003). A Memorandum of Agreement (MOA) between the BLM and ODEQ defines the process by which the agencies will cooperate to meet State and Federal water quality rules and regulations. The MOA defines BLM responsibilities to include "*management of BLM lands to protect, restore, and maintain water quality so that Federal and State water quality laws and regulations are met or exceeded to support beneficial uses* and *BLM will manage water quality limited water bodies within its jurisdiction to protect and restore water quality conditions"*.

Responsible Parties

Participants in this WQRP for Federally-administered lands include the BLM and ODEQ. This WQRP will be appended to the WQMP developed for the Walla Walla Subbasin Stream Temperature TMDL. ODEQ prepared the Walla Walla Subbasin Stream Temperature TMDL with contributions from the Walla Walla Basin Watershed Council,

Washington Department of Ecology, Washington Department of Fish and Wildlife, Umatilla National Forest, Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, Oregon Water Resources Department, U. S. Army Corps of Engineers, and the USDA Natural Resource Conservation Service. The BLM was a party to and participated in that process. The BLM will implement this WQRP and conduct monitoring described below to ensure compliance with the WQRP and TMDL.

Monitoring and Evaluation

The South Fork Walla Walla Landowner Access EA includes provisions for implementation monitoring to determine whether BMPs and mitigations are in place and effective. Effectiveness monitoring to address the question whether management objectives are being met is also included as a provision of the EA. (see EA Monitoring sections pages 10-11, 32-33, 40, 43, 50, 53).

For actions that could potentially alter stream channel integrity, ,monitoring stream crossing(s) at permanent cross-sections that can be re-measured to determine whether repeated use is contributing to channel widening and stream bank instability.

Photo-points would be established at modified stream crossings to document trend of riparian vegetation.

In addition, monitoring for biological assessments (BAs) and/or biological opinions (BOs) will continue (see No Action Alternative Monitoring Section EA pages 32-33).

This WQRP addresses temperature impaired streams. The proposed monitoring is more comprehensive than what would be necessary to evaluate effectiveness of restoration actions for improving stream temperature. However, other resource values are of concern and the data and information generated will be used to assess the health of the entire drainage including water quality, riparian and upland vegetation, aquatic and wildlife habitat, forest and rangeland health, and stream channel stability.

This WQRP is an adaptive management tool which will utilize the monitoring and evaluation to evaluate progress toward meeting the water quality standards. Alternative management strategies, other restoration opportunities, or management changes in response to changing water quality standards may necessitate revision of the WQRP.

Public Involvement

This WQRP will be submitted to ODEQ for review and approval before attachment to the WQMP section of the Walla Walla Subbasin Stream Temperature TMDL. The DEQ provided opportunity for public review of the TMDL before it was submitted to the EPA.

Maintenance of Effort Over Time

Implementation of the WQRP will continue until the effective shade surrogate outlined in the TMDL is met for the SFWW. Establishment of the ACEC and the improvement of riparian habitat since the ACEC designation have already shown a commitment by the BLM to protect the natural resources of the SFWW area. In addition to the ACEC plan, the monitoring described above will be utilized to measure the progress of achieving the water quality standards. The MOA between BLM and ODEQ to meet the water quality rules and regulations also establishes a commitment to meet annually to discuss project and program-level activities and progress towards meeting water quality objectives. In addition, the BLM protocol for addressing 303(d) listed streams (USFS/BLM, 1999) also identifies the WQRP process as a priority for the agency.

Discussion of Costs and Funding

Appropriations and priorities for the BLM are subject to annual Congressional action, and as such the guarantee of funding is not possible. The BLM will make every effort to secure funding for implementation of WQRPs and the associated projects and monitoring. These BLM receives funding for monitoring and restoration activities under different BLM programs such as Clean Water Watershed Restoration funding, Challenge Cost Share funding, and Science Initiative funding. In addition, where feasible and there are willing partners, the BLM will attempt to enter into agreements to cost-share and/or matching funds obligations.

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