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| **Watershed Condition Framework** |
| **FY2012**  **Watershed Restoration**  **Action Plan** |
| **Pacific Northwest Region Wallowa-Whitman National Forest Whitman Ranger District** |

United States Department of Agriculture



Forest Service

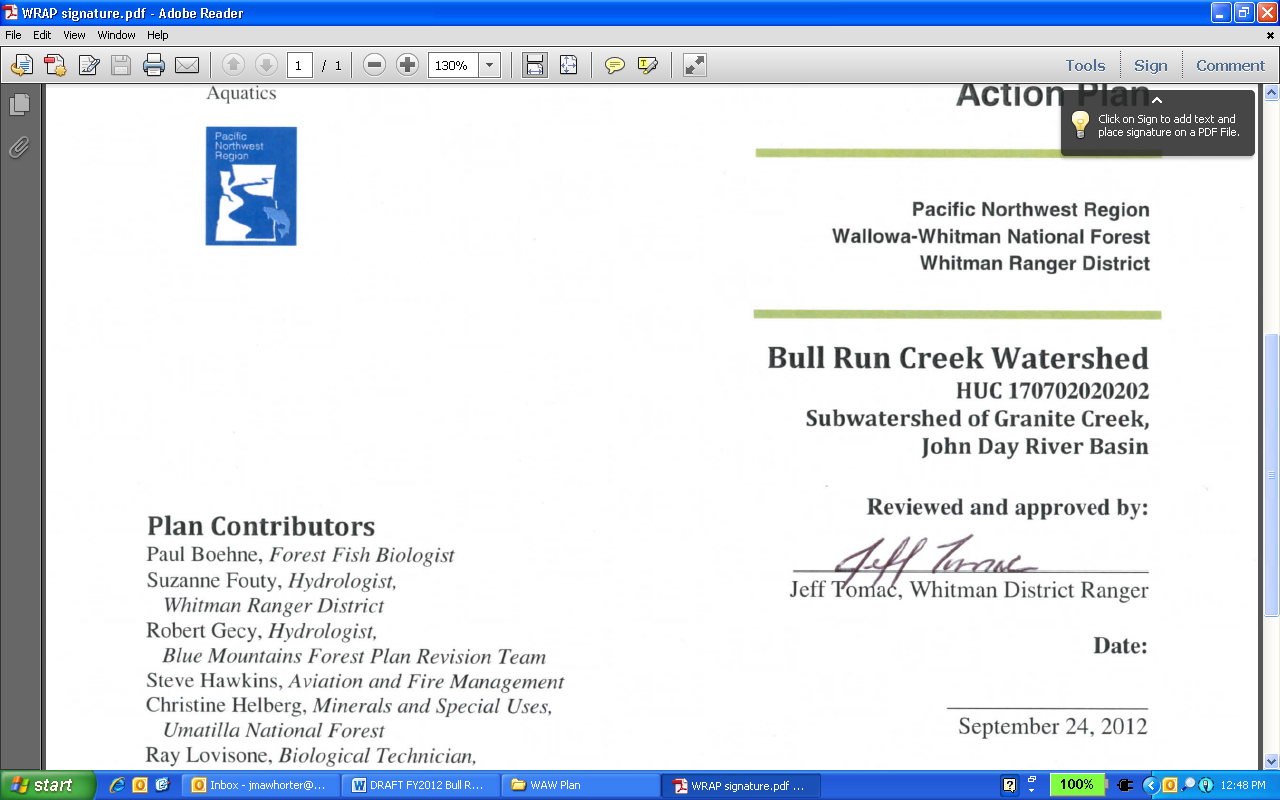


Pacific

Northwest Region

Aquatics





**Bull Run Creek Watershed**

**HUC 170702020202**

**Subwatershed of Granite Creek, John Day River Basin**

**Plan Date:**

September 24, 2012

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**USDA Forest Service Watershed Condition Framework**

**BULL RUN CREEK WATERSHED RESTORATION ACTION PLAN**

**Introduction**

This Watershed Restoration Action Plan for Bull Run Creek watershed has been developed under the USDA Forest Service’s national Watershed Condition Framework, adopted by the agency in 2010 (USDA 2011).The Watershed Condition Framework establishes a new consistent, comparable, and credible process for improving the health of watersheds on national forests and grasslands. In the first step of this framework, the Wallowa-Whitman National Forest, along with other units across the country, completed a watershed condition classification in 2011 for all watersheds on the forest. The results of this nationwide process can be viewed online in an interactive map at ([www.fs.fed.us/publications/watershed/](http://www.fs.fed.us/publications/watershed/)). Drawing on the results of this assessment, forests selected an initial set of priority watersheds for development of Watershed Restoration Action Plans (WRAPs). In future years, as these plans are carried out in collaboration with partner organizations, additional priority watersheds will be selected for action plan development and implementation.

In the Pacific Northwest Region, these planning efforts align with and build upon priorities set forth in the regional Aquatic Restoration Strategy (USDA 2005). Under the Aquatic Restoration Strategy, Granite Creek was identified as a Regional Focus Watershed within the high priority John Day River basin. This plan identifies a suite of essential projects needed to improve aquatic habitat in the Bull Run Creek subwatershed of Granite Creek. Strategic partnerships to implement these projects will be vital in order to achieve the restoration goals of this plan.

# 1. SUMMARY

1. **Watershed Name and HUC:** Bull Run Creek Watershed-170702020202

*\*Note: although Bull Run Creek is classified as a subwatershed (6th-level/12-digit) of the Granite Creek watershed (5th-level/HUC10), it is referred to simply as “watershed” throughout this document.*

1. **General Location:** Located in Northeast Oregon approximately 40 miles west of Baker City, Oregon in Grant County.

1. **Total Watershed Area:** 19,400 acres**; National Forest System (NFS) area within watershed:** 97%.
2. **Watershed Characterization**
3. **General Physiography**

Bull Run Creek is one of five subwatersheds in the Granite Creek watershed of the North Fork John Day River subbasin, which ultimately drains to the Columbia River. The Bull Run Creek watershed occurs on the western slope of the Elkhorn Mountains in the Blue Mountain physiographic province. Elevations range from 8321 feet at Mount Ireland, the second highest peak in the Blue Mountains, to 4577 feet at the confluence of Bull Run Creek and Granite Creek.

1. **Land Use**

The Bull Run Creek watershed lies within ceded lands of the Confederated Tribes of the Umatilla Indian Reservation. By treaty, Indian tribes have retained rights to hunting, fishing, and gathering on these lands.

The primary human uses that have shaped the Bull Run Creek watershed over the past 150 years include beaver trapping, placer gold mining, timber harvest and associated road construction, and livestock grazing. The impacts of these historic land use activities on watershed condition are described throughout this document (see Table 1). Under the 1990 Wallowa-Whitman National Land and Resource Management Plan, approximately 92% of the watershed is managed for Anadromous Fish Emphasis, with the remainder managed as Old Growth Preserves (~5%) and Backcountry (~3%). Although livestock grazing occurred in the past, there is no grazing currently permitted in the watershed. The last commercial timber harvest within the watershed occurred in the late 1970s to 1980s, and some precommercial thinning occurred in the 1990s. Recreational uses in the watershed include hunting, hiking and skiing, snowmobile and other OHV use, and dispersed camping.

Gold was discovered in Granite Creek in 1861, and the Granite mining district was established for Bull Run Creek, Granite Creek and other portions of the North Fork John Day River Basin soon after. Placer mines were established and dredged throughout the late 1890s into the early 1900s. Today the most common placer equipment includes the use of hand tools, trommels, highbankers and State Department of Environmental Quality regulated equipment, such as small suction dredges and sluice boxes. According to the Bureau of Land Management, 13 mining claims exist within the Bull Run Creek watershed in 2012. Of these, only 2 claims (Bull Run / Blue Sky) are proposing work that will require approval in a Plan of Operations. Their proposal will be addressed in the Granite Mining Environmental Impact Statement, which is currently under development as a joint effort between the Wallowa-Whitman and the Umatilla National Forests. The other claims and non-claimed prospectors in the area have either not made their intents known or are operating within the guidelines established in Forest Service mining regulations 36 CFR 228.4.

The 624 acres of private land in the watershed are associated with patented mining claims and include some residential use. The small town of Granite (population 23) lies just downstream of the watershed and is a designated Wildland Urban Interface (WUI) area due to high wildfire risks. The majority of the watershed falls within the Granite Community Wildfire Protection Plan boundary.

1. **General Overview of Concerns**

The Bull Run Creek watershed has been significantly impacted by historic land use activities. Early gold mining using dredging/hydraulic mining practices has resulted in channel straightening, widening, and channel incision, and a loss of channel complexity in Bull Run Creek and portions of its tributaries. In the mined areas, soils throughout the flood plain were reduced to piled placer tailings which confined many of the low gradient streams and caused a loss of riparian vegetation and functional floodplain/stream valley floor hydrologic connection.

Past timber harvest and mining activities gave rise to a dense road network, with approximately 50 miles of road constructed within the 300 foot Riparian Habitat Conservation Area buffer zone. County Road 24, the main highway traversing the watershed, constrains the functional floodplain and riparian vegetation along most of the length of Bull Run Creek. There are 22 culverts at road-stream crossings in the watershed, 12 of which have been identified as partial fish passage barriers of high priority for replacement.

The combined effects of these land use activities has resulted in Bull Run Creek being listed as 303(d) water quality limited due to high summer stream temperatures and sedimentation (channel embeddedness). The watershed has been identified as a priority area for restoration to promote the recovery of threatened steelhead and bull trout populations.

Fuel loadings and associated wildlfire risks have increased significantly from the historical range, due to a combination of past timber harvest practices, insect and disease, and an aggressive fire suppression policy. Fuel reduction treatments are recommended to improve watershed resiliency and support the objectives of the Granite Community Wildfire Protection Plan.

Section 3 of this plan sets forth a suite of essential projects designed to improve watershed condition with the following objectives:

* Restore stream-valley floor hydrologic connection in areas impacted by mine tailings
* Improve aquatic habitat, including addition of large woody debris where appropriate
* Eliminate high priority fish passage barriers at road-stream crossings
* Enhance riparian areas through conifer thinning or removal, planting riparian woody vegetation, and managing invasive plants
* Decrease maximum summer stream temperatures
* Reduce potential sediment inputs and other hydrologic impacts from roads adjacent to streams
* Increase the amount of water stored in the watershed
* Improve and expand meadow habitat
* Reduce fuel loadings to improve watershed resiliency/Fire Regime Condition Class

1. **Important Ecological Values**

The Bull Run Creek watershed provides vital headwaters habitat supporting the high value fisheries of the John Day River basin. The John Day River is the only undammed major river basin in the State, and the North Fork John Day River supports the largest and most important runs of anadromous fish within this basin. The genetic integrity of the runs is unique compared to the majority of Columbia River Basin anadromous fish runs, which are supplemented by hatchery fish or were established from non-native stocks. Bull Run Creek and its major tributaries have been designated as critical habitat for the federally listed Middle Columbia River steelhead and Columbia River Basin bull trout.

1. **Current Condition Class:** Functioning at Risk (Class 2)

**Target Condition Class:** Functioning Properly (Class 1)\*

*\*Legacy mining impacts are an obstacle to achieving Condition Class 1 so the goals are to complete essential projects and maintain conditions with improving trend in water quality, habitat and anadromous fish runs.*

1. **Key Watershed Issues**
2. **Attributes/Indicators within Forest Service control to affect Watershed Condition**

For more information on Watershed Condition Framework indicators, see [Watershed Condition Classification Technical Guide](http://www.fs.fed.us/publications/watershed/watershed_classification_guide.pdf))

**Table 1. Attributes/Indicators within Forest Service control to affect Watershed Condition**

|  |  |
| --- | --- |
| **ATTRIBUTES /INDICATOR** | **REASON FOR RATING** |
| 1.1 Water Quality: Impaired waters | *Bull Run Creek is identified as impaired for high summer stream temperatures and excess sediment in the 2010 Total Maximum Daily Load for the John Day River Basin. Contributing factors include changes to stream hydrology, channel widening and incision, reduced summer base flows, and loss of riparian vegetation resulting from past beaver trapping, placer mining, timber harvest, and grazing.* |
| 3.1 Aquatic Habitat: Habitat Fragmentation | *A 2003 culvert inventory of Forest Service roads identified 22 culverts at road-stream crossings in the Bull Run Creek watershed that present potential fish passage barriers. Nine of these on FS roads have been identified as high priority for replacement to meet Oregon Department of Fish & Wildlife standards for fish passage.* |
| 3.2 Aquatic Habitat: Large Woody Debris | *The 1997 Granite Watershed Analysis, based on 1990-1993 stream surveys, indicates that large woody debris may be deficient in some stream segments. Updated quantitative surveys are needed to determine the status of large woody debris in the watershed and develop site-specific recommendations for restoration projects.* |
| 3.3 Aquatic Habitat: Channel Shape and Function | *E Significant impacts to channel shape and function occurred as a result of placer gold mining, most prominently in the lower reach of Bull Run Creek where major dredging occurred. The residual soils along the creek consist of piled placer tailings, which confine the channel and disrupt floodplain connectivity and function.* |
| 5.1 Riparian Vegetation Condition | *Riparian vegetation in some areas has been reduced from historic mining, timber harvest, roads and grazing. Elk browse is limiting riparian woody vegetation in some areas. Fire suppression has led to overstocking of conifers in many riparian areas and encroachment of conifers into meadow habitat, which impedes expansion of riparian woody vegetation.* |
| 6.1 Roads & Trails: High Open Road Density | *Total road density in the watershed is high, at approximately 5.61 miles per square mile (includes open and closed roads). The result is changes in stream hydrographs, reduced summer base flows, and an overall drying out of the watershed.* |
| 6.3 Roads: Proximity to streams | *There are nearly 50 miles of roads (33% of total) in the watershed occurring in 300-foot Riparian Habitat Conservation Area buffer zones.* |
| 8.1 Fire Regime: Fire Condition Class | *Fuel loadings have increased in recent years due to insect and disease activity coupled with an aggressive fire suppression policy. The fire return interval is rated as highly departed from historical conditions (92%). The watershed lies within the Granite Wildland Urban Interface.* |

1. **Attributes/Indicators that require other parties to address Watershed Condition**

**Table 2. Attributes/Indicators that require other parties to address Watershed Condition**

|  |  |  |
| --- | --- | --- |
| **ATTRIBUTES /INDICATOR** | **REASON FOR RATING** | |
| 3.1 Habitat Fragmentation | *A 2006 assessment of culverts on Wallowa-Whitman Forest Highway segments identified 3 culverts with potential fish passage issues on County Road 24. Grant County has jurisdiction over this road and is eligible to apply for federal highway funds to replace the culverts to improve fish passage/habitat connectivity.* |
| 1.1 Water Quality: Impaired waters  3.3 Channel Shape and Function  5.1 Riparian Vegetation Condition | *E A significant portion of Bull Run Creek that was dredged and heavily impacted by placer mining is under private ownership and patented mining claims. Current and future placer mining activities in this and other sections of the watershed may affect the timing and availability of restoration projects.* | |

# 2. WATERSHED CHARACTERISTICS AND CONDITIONS

1. **General Context/Overview of the Watershed**

Bull Run Creek watershed occurs in the North Fork John Day River subbasin, which is part of the Blue Mountains physiographic province. This province is a complex of mountain ranges, eroded and dissected uplands (mostly gently dipping volcanic plateaus), broad inter-montane valleys and narrow, steep-sided canyons. Average annual precipitation ranges from 30 to 40 inches, most accumulating as snow between November and April, with peak streamflows occurring in May and June during snowmelt runoff. Highest precipitation intensities result from occasional, localized summer convective storms.

Bull Run Creek begins north of the Gold Center Spring, flowing northwest 9.3 miles to join Granite Creek at the small town of Granite. Over two-thirds of the length of Bull Run Creek runs adjacent to County Road 24, the main highway traversing the watershed. Tributaries to Bull Run Creek on the north side include Deep Creek, Channel Creek, Boundary Creek, Onion Gulch and Corral Creek and have perennial flow. South side tributaries include Swamp Creek, Pasture Creek, Gutridge Creek, and Lamb Creek. At least Swamp and Lamb Creek have only seasonal flow.

The Bull Run Creek watershed provides vital headwaters habitat for a number of important fish species (Table 3). The watershed contains the federally listed Middle Columbia River steelhead (*Oncorhynchus mykiss*) and has been identified as a priority area for habitat restoration in the recovery plan for this species (ODFW 2009). In 2010, Bull Run Creek and its tributaries Deep and Boundary Creek were designated as critical habitat for the federally listed Columbia River Basin bull trout (*Salvelinus confluentus*). The watershed also supports spring Chinook salmon (*O. tshawytscha*), inland redband trout (*O. mykiss gairdneri*), and other native species.

**Table 3. Fish distribution (miles) in Bull Run Creek and major tributaries**

(Source: [www.streamnet.org](http://www.streamnet.org))

|  |  |  |  |
| --- | --- | --- | --- |
| **Stream** | **Summer Steelhead** | **Spring Chinook** | **Redband Trout** |
| Bull Run Creek | 7.29 | 3.07 | 9.36 |
| Boundary Creek | 2.55 |  | \* |
| Deep Creek | 2.32 |  | 3.25 |
| Corral Creek | 2.69 |  | 4.41 |

*\*Redband trout are not shown in the streamnet.org database for Boundary Creek but are likely to inhabit areas with summer steelhead.*

Bull Run Creek is 303(d) listed by Oregon Department of Environmental Quality(ODEQ) as impaired due to high summer stream temperatures and sediment. ODEQ completed a Total Maximum Daily Load and Water Quality Management Plan for the John Day River Basin in 2010, in coordination with the US Forest Service and other stakeholders (ODEQ 2010).

1. **Watershed Conditions**
2. **Uplands**

Potential Vegetative Types in the Bull Run Creek watershed are Warm Dry Grand Fir (21%), Warm Dry Ponderosa Pine (4%), Moist Forest (62%), Cold Forest (8%), and other forest types (5%). Vegetation composition and forest stand structure within the watershed have departed from historical conditions and are currently moderately departed at 36%. This departure represents an increase in stand densities and multi-layer stand compositions characteristic of stand replacement fire events. Warm/dry forest types are highly departed from historical conditions, with excess mid-seral closed stands lacking late seral open stands. Moist forest types are highly over represented by early seral 20-30 year old stands while lacking late seral stand types. These departures and conditions have been influenced primarily by logging, insects and disease, and fire exclusion. Fire return intervals are considerably longer than the historical regime and are rated as highly departed at 92%. There has been an increase in fuel loading in recent decades due to an increase in insect and disease activity coupled with an aggressive fire suppression policy. Fire intensity, severity, and scale of disturbance will rise as fuel loadings increase outside their historical range.

Timber harvest in the watershed was initially done in order to support mining activities and the establishment of several towns. Significant areas of the watershed were extensively logged in the 1970s after a major outbreak of mountain pine beetle in the lodgepole pine-dominated stands. These logged areas have regenerated to dense, even-age stands of lodgepole pine and larch. Some of these areas were precommercially thinned in the 1990s. The last commercial timber harvests within the watershed occurred in the 1970s and 1980s resulting in a large amount of single story 20-30 year old stands.

The watershed contains native aspen stands at risk due to conifer encroachment, and without silvicultural treatment, these will continue to diminish. The western portion of the watershed also contains one of the only known native Western White Pine stands which is at risk due to past timber harvest and overstocking.

The watershed contains around 150 miles of forest roads used in the past for timber harvest and mining activities, with a high road density of 5.61 miles of road per square mile. Forest roads have the potential to deliver sediment to streams and negatively impact hydrologic function.

Under existing management direction, ~40 miles are designated open roads, ~105 miles are closed, and 8 miles have been decommissioned. The Wallowa-Whitman National Forest is currently evaluating the road system to develop a Travel Management Plan for the forest with public input. The potential exists to treat certain priority roads for water quality improvements while maintaining road access needed for fire management, private residences, recreational use, and mining claims.

1. **Riparian Conditions**

Riparian areas are characterized by forest, grass/sedge/rush meadow, riparian hardwood, or a combination of these. The condition of riparian zone vegetation varies throughout the watershed depending on stream type and past disturbances. Table 4 shows the available data on riparian condition from stream surveys conducted from 1990 to 1993. Tree and shrub regeneration has occurred in the 20 years since the surveys. Most of the stream banks are now vegetated either with conifers or a mix of conifers and riparian woody. Some streams have reaches in which conifers have come to dominate the stream banks and floodplain (i.e. Onion Gulch, Deep Creek, portions of Bull Run Creek).

**Table 4. Stream survey data on riparian conditions (1990-1993)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stream** | **Year Surveyed** | **Reach** | **Length Surveyed (miles)** | **Bank Ground Cover** | **% of Riparian Conifer Dominant** | **% of Riparian Hardwood Dominant** | **% of Riparian Grass/Forb Dominant** | **Riparian Condition** |
| Bull Run Creek | 1991 | 1 | 4.64 | 26-50% | 20.2% | 7.1% | 72.7% | Poor/Fair |
|  | 2 | 2.72 | 51-74% | 1.5% | 36.3% | 62.2% |
| Boundary Creek | 1990 | 1 | 1.21 | 76-100% | 44.3% | 5.4% | 50.4% | Fair/Good |
|  | 2 | 2.07 | 100.0% | 0.0% | 0.0% |
| Channel Creek | 1993 | 1 | 1.68 | 51-75% | 0.0% | 0.0% | 100.0% | Fair |
|  | 2 | 1.22 | 0.0% | 0.0% | 100.0% |
| Corral Creek | 1993 | 1 | 2.91 | 76-100% | 0.0% | 0.0% | 100.0% | Good |
|  | 2 | 1.61 | 51-76% | 0.0% | 51.6% | 48.4% |
| Deep Creek | 1993 | 1 | 1.94 | 51-76% | 0.0% | 56.8% | 43.2% | Fair/Good |
|  | 2 | 2.07 | 51-76% | 0.0% | 0.0% | 100.0% |
| Gutridge Creek | 1993 | 1 | 0.56 | 76-100% | 0.0% | 0.0% | 100.0% | Good |
| Onion Gulch | 1993 | 1 | 1.26 | 76-100% | 0.0% | 0.0% | 100.0% | Good |
| Pasture Creek | 1993 | 1 | 2.53 | 51-76% | 20.2% | 13.4% | 66.4% | Good |

Along the lower reach of Bull Run Creek, the natural floodplain hydrology and riparian vegetation has been displaced by large piles of placer mine tailings. Impacts to riparian vegetation and floodplain function also occur to a lesser degree in portions of tributaries throughout the watershed where smaller scale mining has occurred. Riparian areas impacted by historic logging and livestock grazing have been recovering over the decades since these disturbances were removed from the landscape. Ongoing elk browse in riparian areas is limiting regeneration of native deciduous woody vegetation along some portions of the streams.

The riparian vegetation and floodplain function along many stream miles in Bull Run Creek and its tributaries have also been constrained due to the presence of roads. Of the 150 road miles that exist in the watershed, approximately one-third of (~50 miles) occur within the 300 foot Riparian Habitat Conservation Area buffer zone surrounding streams. Roads in riparian areas can reduce the effectiveness of the buffering capacity of the riparian area, may provide sources of sediment to the stream, decrease the area available for the expansion of riparian habitat and thus decrease the quality of the habitat.

There are several important wet meadow areas along portions of Bull Run Creek and some of its smaller tributaries. Fire suppression has led to the encroachment of conifers in the meadow areas. In the absence of fire, silvicultural treatment is needed in order to maintain the beneficial habitat and hydrologic function of these meadows. In addition, some riparian areas have become overstocked with young conifers/lodgepole pine. These areas would benefit from silvicultural treatment to improve the growth of woody deciduous vegetation and larger shade trees along streams.

1. **In-channel Habitat Conditions**

The quality of instream habitat varies throughout the watershed. Placer gold mining in the late 1880s and early 1990s resulted in the most significant alterations to channel structure and function in portions of Bull Run Creek and its tributaries. Major dredging occurred in the lower reach of Bull Run Creek. Dredging/hydraulic mining also occurred on portions of Channel Creek and Onion Gulch, where there is currently some recovering vegetation but no topsoil. Past timber harvest and road building may have contributed to altered hydrologic function and sediment routing, further impacting channel condition and function in some areas. Table 5 provides a summary of in-channel habitat data from stream surveys conducted in the 1990s for Bull Run Creek and its main tributaries. The 1997 Granite Watershed Analysis, based on 1990-1993 stream surveys, indicates that large woody debris may be deficient in some stream segments (USDA 1997). Updated quantitative surveys are needed to determine the status of large woody debris in the watershed and develop site-specific recommendations for restoration projects..

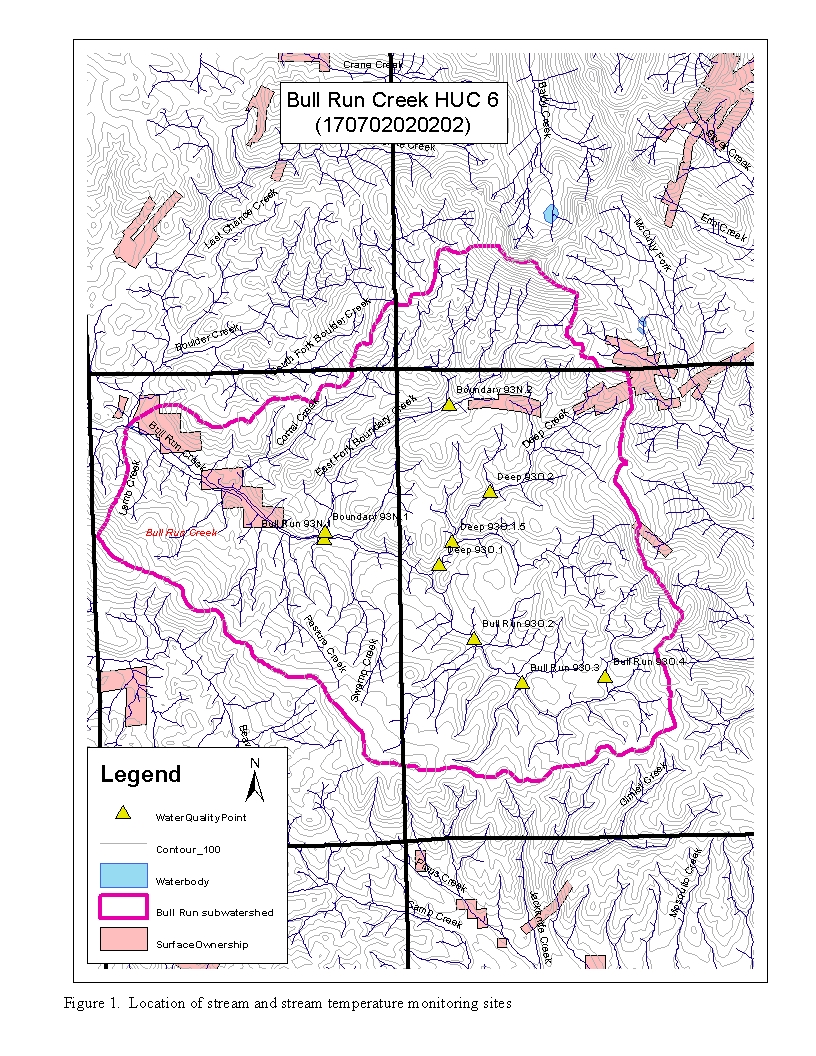
Bull Run Creek is currently 303(d) listed by Oregon Department of Environmental Quality as water quality limited for temperature and sedimentation (channel embeddedness). Contributing factors include changes to stream hydrology and loss of riparian vegetation resulting from historic placer mining, timber harvest, and grazing.Summer stream temperatures in portions of Bull Run Creek and tributaries exceed the applicable State water quality standard of 53.6\*F. Table 6 shows stream temperature data available for the Bull Run watershed and Figure 1 shows the location of those temperature monitoring sites.

**Table 5. Summary of in-channel conditions from stream surveys conducted 1990-1993.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Stream** | **Acres in Drainage Area** | **Year Surveyed** | **Reach** | **Length Surveyed (Miles)** | **Pools per Mile** | **Width/ Depth Ratio** |
| Bull Run Creek | 19,400 | 1991 | 1 | 4.64 | 18.97 | 29.8 |
| 2 | 2.72 | 32.35 | 24.22 |
| Boundary Creek | 2901 | 1990 | 1 | 1.21 | 51.24 | 10.13 |
| 2 | 2.07 | 18.36 | 12.83 |
| Channel Creek | 1561 | 1993 | 1 | 1.68 | 4.76 | 6.54 |
| 2 | 1.22 | 4.92 | 6.31 |
| Corral Creek | 1535 | 1993 | 1 | 2.91 | 5.15 | 12.69 |
| 2 | 1.61 | 3.11 | 3.41 |
| Deep Creek | 4247 | 1993 | 1 | 1.94 | 10.31 | 8.8 |
| 2 | 2.07 | 9.18 | 3.45 |
| Gutridge Creek | 591 | 1993 | 1 | 0.56 | 5.36 | 15 |
| Onion Gulch | 98 | 1993 | 1 | 1.26 | 2.38 | 10 |
| Pasture Creek | 775 | 1993 | 1 | 2.53 | 13.44 | 3.79 |

**Table 6. Maximum 7-day average of the daily stream temperatures.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stream** | **Hobo No.** | **Elevation (ft)** | **1995** | **1996** | **1997** | **1998** | **1999** | **2002** | **2003** | **2005** |
| Boundary Creek | 93N.1 | 4722 | 59.87 | \* | \* | 60.77 | \* | 64.59 | 65.33 | 62.85 |
| Boundary Creek | 93N.2 | 5520 | \* | \* | \* | 54.9 | 53.26 | \* | 56.85 | 54.5 |
| Bull Run Creek | 93N.1 | 4709 | 69.9 | 70.60 | 70.90 | \* | \* | \* | \* | \* |
| Bull Run Creek | 93O.2 | 5036 | \* | 68.2 | \* | \* | \* | \* | \* | \* |
| Bull Run Creek | 93O.3 | 5133 | \* | \* | 68.04 | 70 | 67.12 | \* | 70.26 | 67.99 |
| Bull Run Creek | 93O.4 | 5297 | \* | \* | 72.28 | \* | \* | \* | \* | \* |
| Deep Creek | 93O.1 | 4880 | 63.3 | \* | \* | \* | \* | \* | \* | \* |
| Deep Creek | 93O.1.5 | 4941 | \* | \* | \* | 63.14 | 62.07 | \* | 63.69 | 63.54 |
| Deep Creek | 93O.2 | 5129 | \* | \* | \* | 55.77 | 54.58 | 56.66 | 57.55 | 55.86 |



The high density of roads near streams in the watershed presents potential challenges for habitat connectivity and aquatic organism passage at road-stream crossings. According to a 2003 inventory conducted on the Wallowa-Whitman National Forest, the Bull Run Creek watershed has 22 culverts at road-stream crossings on Forest Service roads. Nine of these have been identified as high priority for replacement in order to meet Oregon Department of Fish & Wildlife fish passage standards. An additional three culverts on County Road 24 were assessed as possible fish passage barriers in a 2007 Federal Highways Administration funded inventory.

# 3. RESTORATION GOALS, OBJECTIVES AND OPPORTUNITIES

1. **Goal Identification and Desired Condition**

The overarching goal of this plan is to improve watershed condition through implementing a suite of essential projects designed to support the following objectives:

* Restore stream valley floor hydrologic connection in areas impacted by mine tailings, by pulling the mine tailings back or removing, thus expanding the floodplain width
* Improve aquatic habitat through activities such as addition of large woody debris where appropriate
* Eliminate high priority fish passage barriers at road-stream crossings
* Enhance riparian vegetation through conifer thinning, riparian woody plantings, managing invasive plants, and expanding the floodplain area
* Decrease maximum summer stream temperatures
* Reduce potential sediment inputs and other hydrologic impacts from roads in the watershed
* Improve the amount of water stored and the water storage capability of the watershed by recontouring selected roads, moving tailings away from the stream and expanding the floodplain widths, and removing encroaching conifers from meadows
* Reduce fuel loadings in the uplands and along riparian zones to improve watershed resiliency and Fire Regime Condition Class

1. **Objectives**
2. **Alignment with National, Regional, or Forest Priorities**

Under the priorities set forth in the Forest Service Pacific Northwest Region’s 2005 Aquatic Restoration Strategy, Bull Run Creek is located in a Regional Focus Watershed (Granite Creek) in a high priority basin (John Day River). This plan builds upon earlier collaborative efforts of the Wallowa-Whitman National Forest, Umatilla National Forest and partners to strategically target restoration efforts through the Granite Watershed Action Plan (USDA 2007). Bull Run Creek has been identified as a restoration priority in regional fisheries recovery efforts, such as the Northwest Power and Conservation Council’s John Day Subbasin Plan (NPCC 2005) and the Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River (ODFW 2009). The essential projects set forth in this action plan align with objectives and strategies set forth in those documents.

1. **Alignment with State or local goals**

ODEQ completed a Total Maximum Daily Load (TMDL) and Water Quality Management Plan (WQMP) for the John Day River Basin in 2010. This action plan helps to implement the TMDL and WQMP by addressing temperature and sediment issues in Bull Run Creek. The North Fork John Day Watershed Council, Confederated Tribes of the Umatilla Indian Reservation, and other local partners have been working together in recent years to improve water quality and habitat in adjacent subwatersheds within the Granite Creek watershed. The projects identified in this plan will complement and extend the benefits of these prior restoration investments to Bull Run Creek and its tributaries. Fuels reduction projects set forth in this plan support the objectives of the Granite Community Wildfire Protection Plan.

1. **Opportunities**
2. **Partnership Involvement**

The Wallowa-Whitman National Forest will work with partners in the North Fork John Day subbasin to gain support and assistance in implementing this plan. Table 7 lists the essential projects needed to improve watershed condition and indicates potential partners and possible funding sources that may be pursued for each project. Potential partner roles may include, but are not limited to, the following:

* The *North Fork John Day Watershed Council* (NFJDWC) is a key partner that connects diverse stakeholders in regional watershed conservation and restoration activities. NFJDWC could assist with grant writing to help fund the restoration projects outlined in this plan.
* Possible funding partners include the *Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Ecotrust/Whole Watersheds Restoration Initiative (WWRI), Oregon Watershed Enhancement Board (OWEB), National Fish & Wildlife Foundation (NFWF), Trout Unlimited (TU), NOAA Fisheries Restoration Center* and others.
* *Grant County* is an important local partner to coordinate with on potential restoration activities, including priority culvert replacement projects on County Road 24, the main road traversing the watershed along Bull Run Creek. The *Federal Highways Administration* could be a funding partner in these projects.
* The Forest Service could work in conjunction with the *Grant County Collaborative, Granite Community Wildfire Protection Plan,* and *Oregon Department of Forestry (ODF)* in planning for proposed fuels reduction projects that would benefit the Wildland Urban Interface area of the town of Granite.

1. **Outcomes/Outputs**
2. Performance Measure Accomplishment

Estimated performance measure accomplishments for the essential projects are as follows:

* 2 miles stream/floodplain restoration in mine tailings area
* 4 miles of stream habitat improved through large wood placement where needed
* 2.5 miles streamside road decommissioning/floodplain restoration
* 12 culverts replaced, improving fish access to ~35 miles of stream habitat
* 2 culverts removed, improving fish access to ~4.5 miles of stream habitat
* 6.5 miles riparian enhancement – planting
* 6 miles riparian enhancement – conifer thinning
* 100 acres meadow restoration (removal of encroaching conifers)
* 8800 acres fuels reduction to improve Fire Regime Condition Class

1. Socioeconomic Considerations

Projects are expected to contribute to local and regional economies by creating jobs, as has been the case with prior restoration projects in the Granite watershed. Previous restoration contracts drew from the local contractor pool, and landowners have been involved by supplying materials and equipment. Ongoing restoration has helped improve relationships with communities and forest visitors, and future work would continue to foster relationships as long as local contacts are maintained and project objectives are communicated. The North Fork John Day Watershed Council is uniquely positioned to feature projects on their website and help strengthen local relationships. Forest Service restoration projects have been highlighted in the past in local media, providing information to local communities on the issues and solutions of restoring fish habitat and water quality.

1. **Specific Project Activities (Essential Projects)**

Table 7 provides information for 11 essential projects that will be pursued by the Forest Service and interested partners in order to improve watershed condition in the Bull Run Creek watershed. Figure 2 provides a map showing the projects (1-8) that have discrete locations identified. The cost and scope of the projects reflect a preliminary estimate and will be adjusted as needed based on planning, surveys, design, contracting, and further coordination with partners. Table 8 provides an estimate of total costs. This action plan should be viewed as an adaptive “working draft” capturing restoration priorities and project needs, which may be updated over time as knowledge and opportunities evolve.

Other Projects (Non-Essential)

In addition to the essential projects listed, there may be other beneficial projects to be pursued in the Bull Run Creek watershed, depending on further investigation and available resources. Potential exists to decommission portions of closed, streamside roads and remove 3 culverts in the headwaters area of Channel Creek, but road access needs and mining claims must be assessed. The forest is undergoing a Minimum Roads System analysis which may identify additional roads to be decommissioned or treated to reduce water quality impacts. Additional low-moderate priority culverts could be replaced for fish passage, after high priorities have been completed. A survey of the documented and undocumented Abandon Mines sites has been started in the Granite Watershed and is now in its second year. Early indications show that many of the known adits in this watershed have collapsed and are no longer accessible to the general public. Additional surveys still need to be completed in this area in addition to addressing the potential affects from private (patented) mining on Forest Service land, which could result in potential projects.

**Table 7. Specific Project Activities (Essential Projects)**

| **PROJECT #** | **Essential Project Name** | **Project Description** | **Attribute/**  **Indicator Addressed\*** | **Scale (miles and/or acres)** | **Potential Partner Involvement\*\*** | **Time line: Starting (year) and**  **for (#) of**  **years** | **Estimated Cost & Potential Funding**  **(BLI)\*\*\*** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Bull Run Creek Mine Tailings Restoration | Mine tailings restoration on up to 2 miles of stream. The restoration would include mine tailings removal/recontour for floodplain restoration, large wood placement, and riparian planting. *(\*scope dependent on addressing mining claims)* | Water Quality 1.1  Aquatic Habitat  3.2, 3.3  Riparian 5.1 | 2 miles | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF, NOAA Fisheries (possible partner funding) | Starting 2014, for 4 years | $480,000  FS-NFWF  FS-NFVW  Partners |
| 2 | Large Wood Placement: Upper Bull Run, Deep Crk | Large wood placement where appropriate on approximately 3.5 miles of upper Bull Run Creek and lower Deep Creek. | Aquatic Habitat  3.2 | 3.5 miles | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF, NOAA Fisheries (possible partner funding) | Starting 2013, for 3 years | $87,500  FS-NFWF  FS-NFVW  Partners |
| 3 | Replace High Priority Culverts for fish passage (Phase 1) | Replace 3 high priority culverts: 2 on Deep Creek/7370 Rd., 1 on Bull Run/Corrigal Springs Rd. Rehab adjacent section of Road 7370 to improve stream channel/riparian area *(\*NEPA/design in process 2012)* | Aquatic Habitat  3.1, 3.3  Riparian 5.1  Roads 6.3 | 10 miles improved access | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF (possible partner funding) | Starting 2013, for 2 years | $585,000  FS-NFWF  FS-NFVW  FS-CMLG  Partners |
| 4 | Replace High Priority Culverts for fish passage (Phase 2) | Replace up to 6 high priority culverts for anadromous fish passage: 1 on Deep Creek, 4 on Boundary Creek, 1 on Corral Creek. | Aquatic Habitat  3.1 | 17 miles improved access | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF, NOAA Fisheries (possible partner funding) | Starting 2013, for 4 years | $1,220,000  FS-NFWF  FS-NFVW  FS-CMLG  Partners |
| 5 | Replace High Priority Culverts for fish passage  (County Rd 24) | Replace up to 3 high priority culverts for anadromous fish passage on County Rd 24  *(\*non FS road, dependent on Grant County to pursue and implement projects)* | Aquatic Habitat  3.1 | 8 miles improved access | NFJDWC (grant writing)  Grant County (planning/ implementation)  Federal Highways Admin (possible funding) | Starting 2014, for 2 years | $1,040,000  HTAP  Partners |
| 6 | Corral Creek Restoration | Decommission 2 miles closed road, remove 1 culvert, floodplain restoration/planting | Water Quality 1.1, Roads 6.3  Aquatic Habitat  3.1, 3.3  Riparian 5.1 | 2 miles  road  2 mi access | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF (possible partner funding) | Starting 2013, for 3 years | $72,500  FS-NFWF  FS-NFVW  Partners |
| 7 | Deep Creek Restoration – upper reach | Obliterate/recontour .5 mile of closed road 7370/162 adjacent to Deep Creek; floodplain restoration, wood placement and riparian planting. | Water Quality 1.1, Roads 6.3  Aquatic Habitat  3.2, 3.3  Riparian 5.1 | .5 miles | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF (possible partner funding) | Starting 2013, for 3 years | $26,000  FS-NFWF  FS-NFVW  Partners |
| 8 | Channel Creek Restoration | Remove 1 culvert on closed road, construct defined access points on dispersed recreation site | Aquatic Habitat  3.1  Roads & Trails  6.3 | 2.5 miles improved access | NFJDWC (grant writing) CTUIR, OWEB, WWRI, NFWF (possible partner funding) | Starting 2013, for 3 years | $11,000  FS-NFWF  FS-NFVW  Partners |
| 9 | Meadow & Riparian Restoration | Restore 100 acres meadow habitat through removal of encroaching conifers; thinning along 6 mi. of stream to promote expansion of riparian woody vegetation, shade, habitat; instream wood placement where appropriate; 2 mi. riparian planting | Water Quality  1.1  Riparian 5.1 | 100 acres  6 miles  2 miles | NFJDWC (grant writing) CTUIR, OWEB, WWRI, Rocky Mountain Elk Foundation (possible partner funding), EPA | Starting 2014, for 5 years | $129,000  FS-NFWF  FS-NFVW  Partners |
| 10 | Fuels Treatment to improve watershed resiliency | Thinning/burning projects to reduce Fire Regime Condition Class departure. Potential for biomass/firewood/CCF.  Precommercial Thin: 3000 acres, Piling: 600 acres; Commercial Thin: 2000 Acres  RX Fire: 3200 Acres | Fire Regime  8.1 | 8800 acres | Potential partners: Grant County (CWPP), ODF, Rocky Mountain Elk Foundation, Blue Mountain Elk Initiative | Starting in 2015, for 10 years | $1,900,000  WFHF  NFIR  Partners |
| 11 | Invasive Plant Management | Treatment and monitoring of existing weed management sites. Project site assessment. Risk assessment for potential spread at project site. | Terrestrial Invasive 11.1  Riparian 5.1 | 1 acre | NFJDWC (grant writing) CTUIR, OWEB, Title II (Grant county) | Starting in 2013, for 5 years | $20,000  NFVW |

\* See Watershed Condition Framework Attributes/Indicators in Tables 1 and 2

\*\* See potential partner names/acronyms on p.13

\*\*\* Forest Service Budget Line Item (BLI) codes for program funding: NFWF (Fish/Wildlife), NFVW (Vegetation/Water), CMLG (Legacy Roads & Trails), HTAP (Federal Highways), WFHF (Wildland Fire/Hazardous Fuels), NFIR (National Forest Integrated Restoration)

**Figure 2. Locations of Essential Projects 1-8** (double click map to open pdf)****

1. **Estimated Costs to Implement Essential Projects**

**Table 8. Estimated Costs to Implement Essential Projects**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Planning** | **Design** | **Implementation** | **Project Monitoring** | **TOTAL** |
| Forest Service Contribution | $449,500 | $61,000 | $2,021,000 | $49,500 | **$2,591,000** |
| Partner Contribution | $65,000 | $250,000 | $2,665,000 | $0 | **$2,980,000** |
| **TOTAL** | **$514,500** | **$311,000** | **$4,696,000** | **$49,500** | **$5,571,000** |

\*All project costs and possible partner contributions listed reflect preliminary, unsecured estimates. The Wallowa-Whitman National Forest will collaborate with partners so that grant funding will be sought to design, plan and implement these projects.

1. **Timelines and Project Scheduling**

Table 9 displays the estimated timeline and funding needs by project task for planning, design, implementation, and monitoring. The aim is to implement all projects within a 5-10 year period, with the actual project timelines dependent on planning/design issues and available resources. The fuels reduction project (#10) is estimated to be completed on a 10 year timeline.



Figure 3. Bull Run culvert to be replaced to improve fish passage



Figure 4. Placer mine tailings along Bull Run Creek in need of floodplain/riparian restoration

**Table 9. Estimated Timeline and Costs by Project Task**

*Note:* *Costs are in 1000s and reflect preliminary estimates only; actual costs to be determined by planning, surveys, design, contracting, and further coordination with partners. Timeline may extend past 5 years depending on planning issues and resources available.*

| **Project ID** | **Project Name** | **Project Task** | **Project Implementation Plan** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(funding listed in thousands, 1 = $1,000)** | | | | | | | | | | | |
| **2013** | | **2014** | | **2015** | | **2016** | | **2017 & beyond** | | **TOTAL** | |
| **USFS** | **Partners** | **USFS** | **Partners** | **USFS** | **Partners** | **USFS** | **Partners** | **USFS** | **Partners** | **USFS** | **Partners** |
| 1 | Bull Run Mine Tailings Restoration | Planning |  |  | 15 |  |  |  |  |  |  |  | 15 | 0 |
| Design |  |  | 15 |  |  |  |  |  |  |  | 15 | 0 |
| Implementation |  |  |  |  | 100 | 200 | 40 | 100 |  |  | 140 | 300 |
| Monitoring |  |  |  |  |  |  | 10 |  |  |  | 10 | 0 |
| 2 | Large Wood Placement: Upper Bull Run, Deep Creek | Planning | 7.5 |  |  |  |  |  |  |  |  |  | 7.5 | 0 |
| Design | 5 |  |  |  |  |  |  |  |  |  | 5 | 0 |
| Implementation |  |  | 20 | 50 |  |  |  |  |  |  | 20 | 50 |
| Monitoring |  |  |  |  | 5 |  |  |  |  |  | 5 | 0 |
| 3 | Replace High Priority Culverts (phase 1) | Planning | 15 |  |  |  |  |  |  |  |  |  | 15 | 0 |
| Design |  | 40 |  |  |  |  |  |  |  |  | 0 | 40 |
| Implementation | 100 | 425 |  |  |  |  |  |  |  |  | 100 | 425 |
| Monitoring |  |  | 5 |  |  |  |  |  |  |  | 5 | 0 |
| 4 | Replace High Priority Culverts (phase 2) | Planning | 10 | 10 | 10 | 10 | 10 | 10 |  |  |  |  | 30 | 30 |
| Design | 7 | 37 | 7 | 37 | 6 | 36 |  |  |  |  | 20 | 110 |
| Implementation |  |  | 67 | 275 | 67 | 275 | 66 | 275 |  |  | 200 | 825 |
| Monitoring |  |  |  |  | 1.7 |  | 1.7 |  | 1.6 |  | 5 | 0 |
| 5 | Replace High Priority Culverts (county) | Planning |  |  |  | 35 |  |  |  |  |  |  | 0 | 35 |
| Design |  |  |  | 100 |  |  |  |  |  |  | 0 | 100 |
| Implementation |  |  |  |  |  | 900 |  |  |  |  | 0 | 900 |
| Monitoring |  |  |  |  |  |  | 5 |  |  |  | 5 | 0 |
| 6 | Corral Creek Restoration | Planning | 5 |  |  |  |  |  |  |  |  |  | 5 | 0 |
| Design | 5 |  |  |  |  |  |  |  |  |  | 5 | 0 |
| Implementation |  |  | 5 | 40 |  | 15 |  |  |  |  | 5 | 55 |
| Monitoring |  |  |  |  | 2.5 |  |  |  |  |  | 2.5 | 0 |
| 7 | Deep Creek Restoration | Planning | 2.5 |  |  |  |  |  |  |  |  |  | 2.5 | 0 |
| Design | 2.5 |  |  |  |  |  |  |  |  |  | 2.5 | 0 |
| Implementation |  |  |  | 15 | 5 |  |  |  |  |  | 5 | 15 |
| Monitoring |  |  |  |  | 1 |  |  |  |  |  | 1 | 0 |
| 8 | Channel Creek Restoration | Planning | 2.5 |  |  |  |  |  |  |  |  |  | 2.5 | 0 |
| Design | 1.5 |  |  |  |  |  |  |  |  |  | 1.5 | 0 |
| Implementation |  |  | 1 | 5 |  |  |  |  |  |  | 1 | 5 |
| Monitoring |  |  |  |  | 1 |  |  |  |  |  | 1 | 0 |
| 9 | Meadow & Riparian Restoration | Planning |  |  | 12 |  |  |  |  |  |  |  | 12 | 0 |
| Design |  |  | 12 |  |  |  |  |  |  |  | 12 | 0 |
| Implementation |  |  |  |  |  |  | 5 | 15 | 5 | 75 | 10 | 90 |
| Monitoring |  |  |  |  |  |  |  |  | 5 |  | 5 | 0 |
| 10 | Fuels Treatment | Planning | 180 |  | 180 |  |  |  |  |  |  |  | 360 | 0 |
| Design |  |  |  |  |  |  |  |  |  |  | 0 | 0 |
| Implementation |  |  |  |  | 191 |  | 191 |  | 1158 |  | 1540 | 0 |
| Monitoring |  |  |  |  |  |  |  |  |  |  | 0 | 0 |
| 11 | Weed Management | Planning |  |  |  |  |  |  |  |  |  |  | 0 | 0 |
| Design |  |  |  |  |  |  |  |  |  |  | 0 | 0 |
| Implementation | 2 |  | 2 |  | 2 |  | 2 |  | 2 |  | 10 | 0 |
| Monitoring | 2 |  | 2 |  | 2 |  | 2 |  | 2 |  | 10 | 0 |

# 4. RESTORATION PROJECT MONITORING AND EVALUATION

There are a variety of project monitoring and evaluation approaches that may be used by the Forest Service and/or project partners, depending on the nature of the restoration activities and the monitoring resources available. Performance will be measured by conducting monitoring immediately after completion of each project (implementation monitoring). This could be followed by longer term effectiveness monitoring that will determine how well the project contributed to the desired condition. The Whitman Ranger District maintains 9 long term stream temperature monitoring sites in the Bull Run Creek watershed. These will be used to monitor stream temperatures associated with projects. Channel measurements may be taken before and after the project to note geomorphic changes such as narrowing of the active stream channel, increased pool habitat, increased channel complexity, increased side channel habitats, presence and distribution of beaver dams, etc. Riparian planting and conifer thinning sites may be monitored for growth and species composition. Meadows may be monitored for changes in vegetation after removal of conifers. Longer term monitoring could be used to measure the response of adult and juvenile salmon to the habitat changes, including higher densities of spawners and rearing juveniles in the project reaches.

**Table 10. Project Monitoring and Evaluation Opportunities**

| **Project Activity** | **Possible Range of Parameters to be Monitored\*** | **Suggested Frequency** |
| --- | --- | --- |
| Mine tailings restoration | Fish and aquatic habitat surveys, photo points, and spawning surveys | Post project and after major flood event |
| Large wood placement | Fish and aquatic habitat surveys, photo points, and spawning surveys | Post project and after major flood event |
| Decommissioning/ stabilization of roads | Photo points and storm patrols | Post project and five years |
| Removal/replacement of aquatic organism barriers | Number of miles of habitat opened to year-round fish migration | Post project |
| Riparian conifer thinning | Measurement of canopy cover and density, survival and stocking surveys and vegetation presence/absence, noxious weeds presence/absence, and summer stream temperature | Post project and five years |
| Riparian woody vegetation planting | Photo points, plots, summer stream temperature (long term), presence/distribution of beaver dams | Post project and five years |
| Invasive species removal | Pre and post mapping | Post project and five years |

**\*Description of Parameters – Photo Points**: Determines visual change in amount of habitat and vegetation planted through pre and post project photos. **Spawning and Habitat Surveys**: Inventories fish habitat and salmonid spawners. **Stream Temperature:** Determines if there is a decrease in stream temperature over time. **Storm Patrols (decommissioned road):** Determines if there are visible sediment inputs to the stream. **Vegetation Presence / Absence, Survival, and Stocking Surveys:** Determines success of planting and subsequent need for re-planting.

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